

MacUser

JULY 1997

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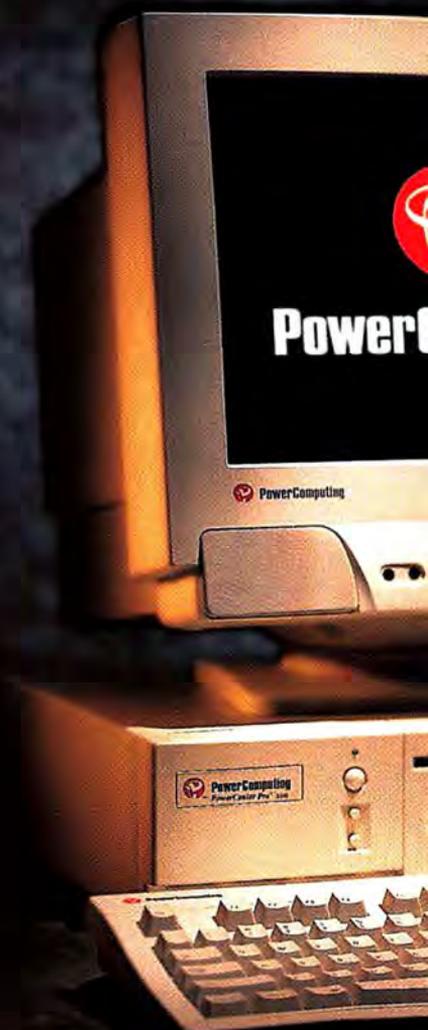
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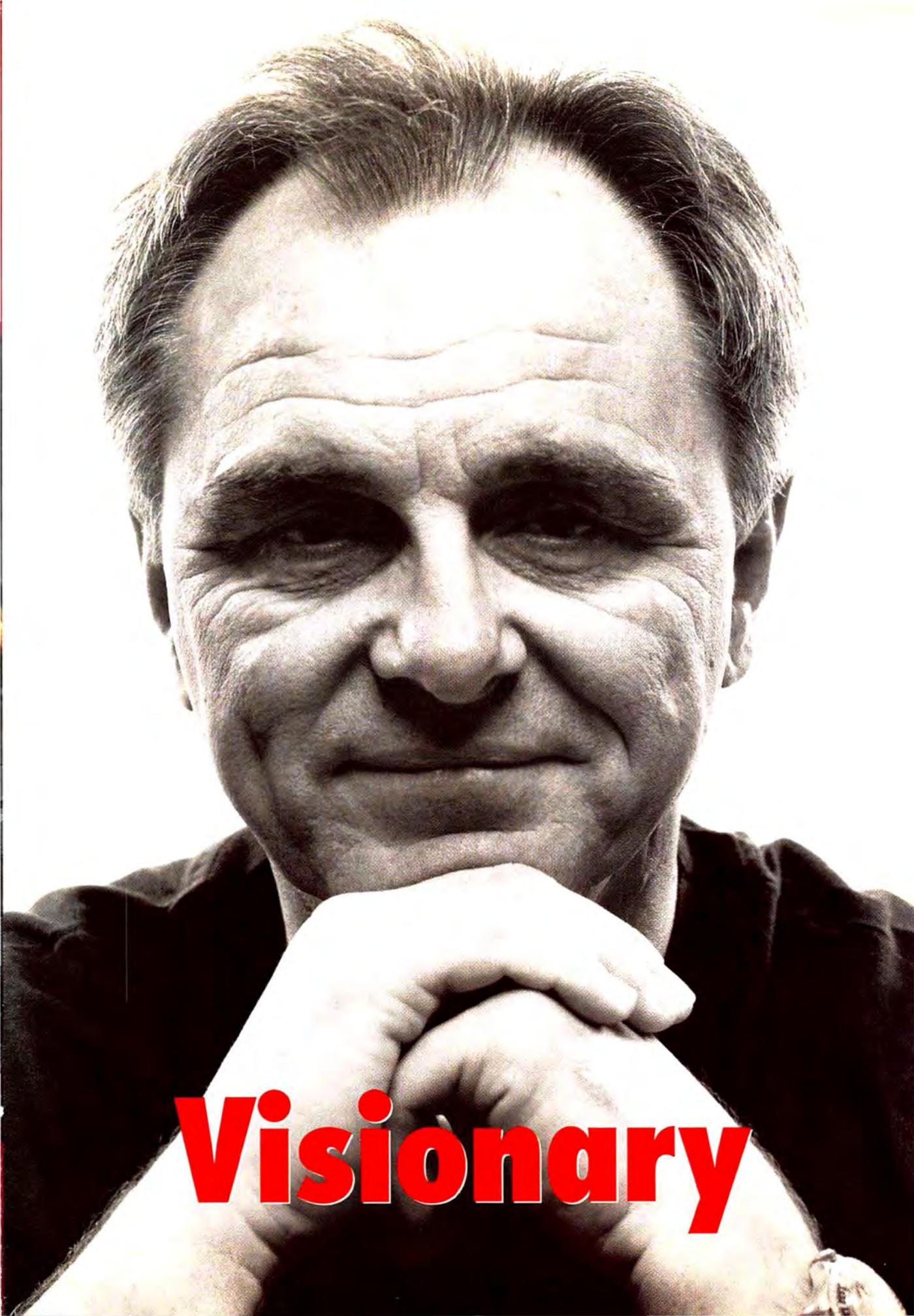
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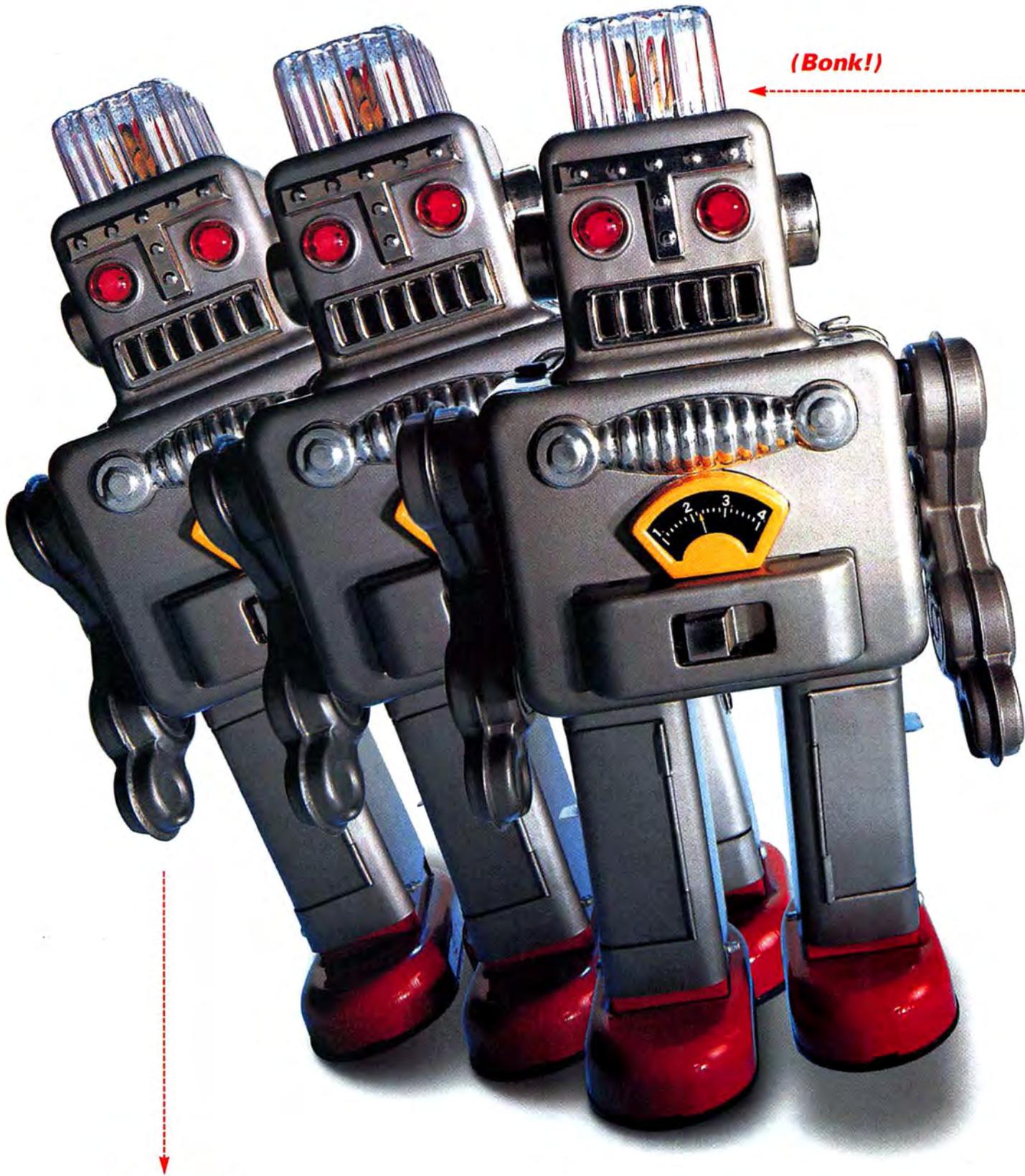
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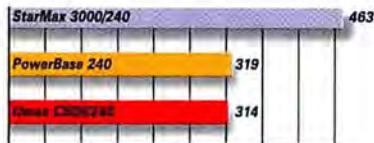
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Up Front

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Feedback

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Macs Populi

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Start Up

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First Looks

New PowerBook 2400c, the "Comet," is one lightweight heavenly body; BeyondPress 3.0 joins the big boys in Web authoring; and Media Cleaner Pro 2.0 prepares movies for CD-ROM and the Web. · 28

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Andy Ihnatko

Andy Ihnatko pays tribute to the geeks of America, who have spurned high-school dating in favor of erecting the digital city on the hill. · 166

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Product Reviews**Low-Cost Cameras, Low-Quality Images**

MacUser LABS The latest offerings from Agfa, Apple, Kodak, and Sony cost under \$1,000 apiece but fail to capture our vote on image quality. · 36

**Insta.html** · 42

Convert your FreeHand 7.0 documents into Web-ready pages without the hassles of HTML code, but beware of the interface idiosyncrasies.

Texture Creator 2.0 · 44

Texture-generation app Adobe TextureMaker gets reincarnated, with increased rendering speed but a decreased feature list.

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Contact manager with a twist: This one lets you indulge your flexible, free-form nature.

Touch-3D 2 · 52

Simple scale models step out of your Mac and into 3-D space.

CommuniGate · 54

Jack-of-all-trades telecom package shoots high but misses by a mile.

ClickWorks 1.0.4 · 54

A paradox: This multimedia tool accelerates production of poky presentations.

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What do subwoofers, spelling checkers, the Bible, restored historical images, TelePromPTers, and CD-ROM speedups have in common? They're all here!

**MacUser LABS MacUser Labs Tests****Power Computing PowerCenter Pro 210 and 180** · 38

Nimble new systems ascend the speed throne, thanks in part to the fastest system bus yet.

SoftWindows 95 4.0 · 40

Not as fast as the real McCoy, but as close as software can take you to a Wintel PC.

Panasonic KXL-783M · 42

This external 8x CD-ROM drive for your PowerBook does double-duty as an audio-CD player.

Tektronix Phaser 600 Wide Format Printer · 44

Jumbo printer of jumbo images won't fit on your desk — or maybe even in your office elevator.

Sony DKC-1D1 Digital Still Camera · 51

A successful cross between professional- and consumer-level digital cameras is still a chimera.

RunShare GSA 2 for PCI Macintosh · 52

Pricy control-panel/extension combo boosts large-file transfers via an AppleTalk-packet switcheroo.

Buyers Guide: Multimedia Projectors · 58

Junk that monolithic monitor in your conference room, and fire up one of these ten portable, user-friendly babies for great image and sound quality.



For one-click access to all Web sites mentioned in this issue, go to www.macuser.com/bookmark

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Cover Photo Steven Underwood

Hands On

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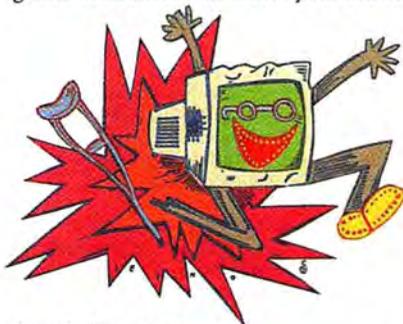
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An affordable alternative to whizbang-gizmo consumerism: Retool your old Mac!



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Bob and Chris answer all your questions.

MaxUser

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Make nice with the nosy neighbors by fixing up your funky home and garden, once and for all.

The Game Room · 164

The goodies and the baddies go to war — which side are you on? Be strategic in battle, or your soldiers may desert you at the crucial moment.

DVD Comes to the Mac

You've heard the hype. Now read the facts on what it'll take to get DVD on your Mac.



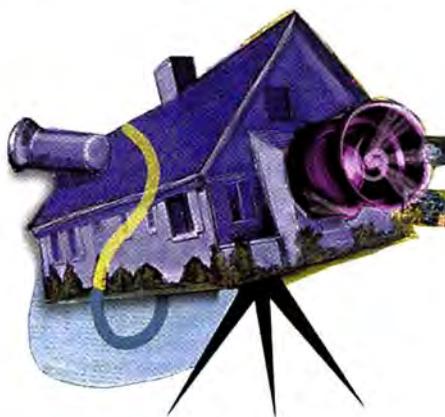
Make no mistake: It's only a matter of time before your Mac will sport a DVD-ROM drive. The burning question isn't whether or not you should venture into this amazing, capacious, high-quality storage frontier; it's when — and how. Follow the leader. By JIM SHATZ-AKIN · 74



MacUser QuickStart: Adobe Illustrator 7.0

By SHELLEY CRYAN · 60

Ugly and untidy, Illustrator 6.0 was crying out for an upgrade. Sporting new features for Web-page designers and graphics pros, Version 7.0 mirrors the interfaces of its Adobe siblings. At last this ugly duckling is spreading its wings to fly.



Home Video on the Cheap

By CHRISTOPHER BREEN · 66

Do your friends sprint the 100-yard dash at the mere mention of your dreary documentaries? Then read about a new generation of video-capture cards that offers video quality, image quality, capture/editing software, reasonable file sizes, and ease of use to land you smack in the director's chair — without an *Independence Day*-sized budget.

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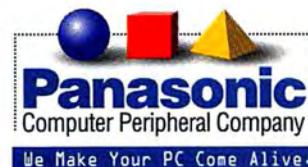
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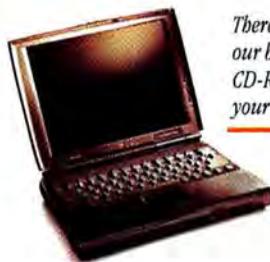
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Macintosh



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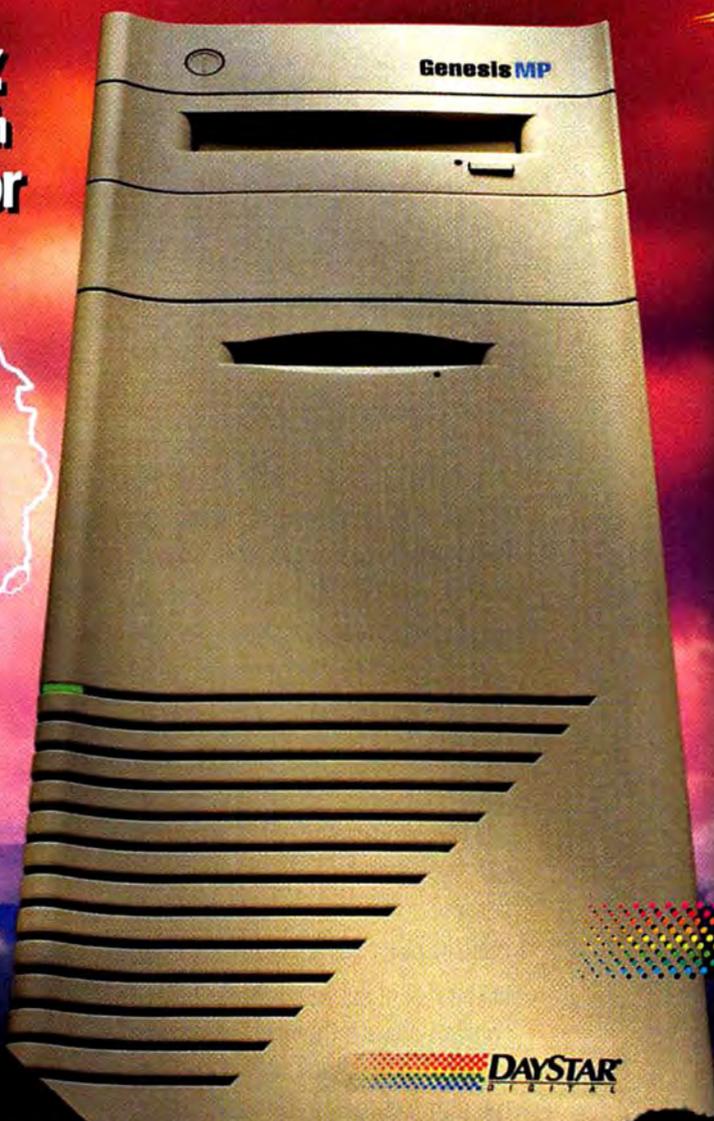
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Heart of Clone

Pamela Pfiffner is exactly right! I couldn't care less if Apple's market share drops to, say, 4 percent — if, in return, Mac OS market share rises to around 14 to 17 percent ("Everybody Must Get Cloned," May '97, page 19). Let the clone makers hype the hardware. Apple just can't do it alone anymore.

David S., hobbes25@alaska.net

Clones will be the salvation for Apple. The biggest reason Apple could never penetrate the corporate market was because of the "single source" problem. Clones will not only push the envelope for innovation and price but will also relieve Apple of the pressure to market by itself. Everyone is quick to point out that Apple is losing sales to Wintel. But what is Wintel? Today it might be Compaq, tomorrow Dell, and the next day Gateway. Apple can benefit only if there are several other proponents of its technology.

Jim Bryson, jim.bryson@CRHA-Health.Ab.Ca

Yellow Journalism; Crabbed Apple

Who cares what the media thinks? It's not the problem ("Point Counterpoint," May '97, page 154). Apple shouldn't expect journalists to trumpet the virtues of the Mac when Apple doesn't do so effectively itself. Apple's lack of self-promotion is incomprehensible.

The reason people buy Pentium-based machines is that the Intel name is everywhere — in magazines, on TV, on the radio, on the Internet. Why can't Apple do the same? Apple should have learned by now from Microsoft and Intel that when you go after the public mind share, market share is sure to follow.

Darrin Bell, darrin@lemontbrown.com

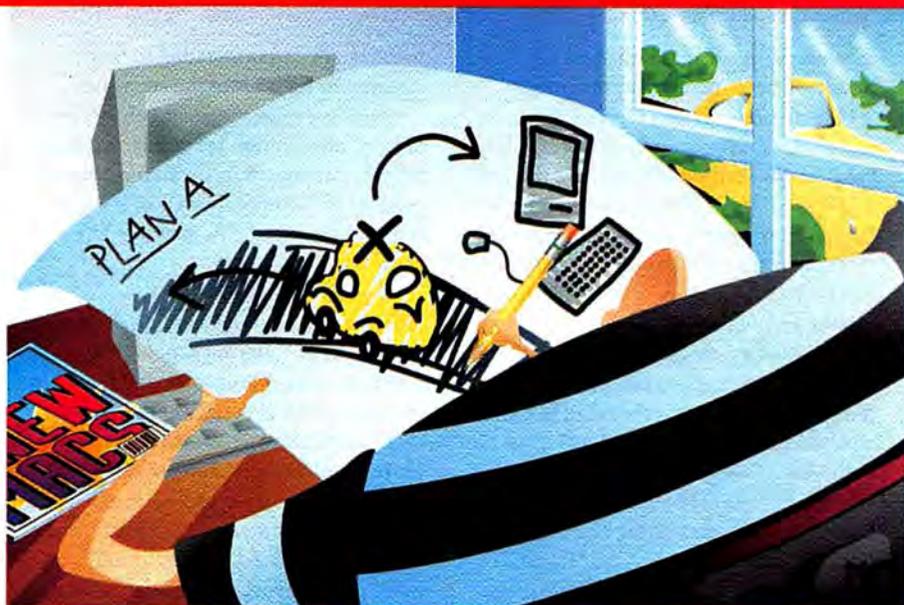
Soothing Subtext

These days, it's really tough being a Mac user. Add to everything that's happening with Apple the fact that I just bought a new Mac when I could have got an NT box with all of NT's advantages and the security of Microsoft's future. Now you know how good it felt to read the Between the Lines interview with Avie Tevanian ("Mac OS to Run on Intel Chips," May '97, page 24). Thanks, guys.

Trevaughn Neely, aneely@BAHAMAS.NET.BS

And the Band Played . . . On

Your review of Audiotracer (May '97, page 51) did not mention Audiotracer's biggest



drawback — the required two-second posttrack gap that Audiotracer inserts between *all* tracks on the finished CD whether you like it or not. This is a *serious* drawback for users who want to create continuous-music CDs, such as dance-club-style mixes or live recordings.

This software is useless to me, because I make more live-recording compilations and club mixes than anything else. And when the music stops completely for two seconds after each track, that destroys the continuity of the original source. Software with such serious limits does not deserve a four-mouse rating.

Stephen M. Caraco, scaraco@tiac.net

Windows on the Future

The article "Future Mac" (May '97, page 56) is missing a critical element that seems to have escaped many industry watchers. Namely, if you abstract the Mac OS from the machine's hardware, you end up with . . . Windows.

Windows is an exercise in vast compromise. Microsoft literally spews drivers, enablers, contingency files, and whatnot all over its OS, because the OS cannot presume what the hardware beneath it will look like or react to. The premise: Windows must be ready for anything as far as the hardware is concerned. The result: Windows is ready for nothing. That's why even now, Windows cannot recognize when a disk is inserted into a floppy. "Plug and play" on PCs is a cruel joke.

When the Mac OS is running on an abstracted PPCP computer, the situation will be the same. The Mac OS will have no idea what the manufacturer has done to the

Open Folder

"I WANT TO KNOW how I can get rid of my old computer so I can get a better one." — hhlui@uci.edu

[Make it look like an accident. — Ed.]

"I WAS SHOCKED at the vocabulary required to read your April issue. You used *ubiquitous* twice. *Ubiquitous* isn't a word. It's a prank orchestrated by dictionary manufacturers."

— mcclure111@earthlink.net

[Many people don't know that Noah Webster also invented the whoopee cushion, which we use in the office regardless of the issue. — Ed.]

"I HAVE BEEN exclusively using and complaining about Macs since 1984, and I still talk about how much Apple sucks. Some companies shoot themselves in the foot, but I think Apple has been shooting itself in the head ever since the Mac was introduced." — Alex Funk
[It's a good thing Apple's marksmanship is no better than its marketing. — Ed.]

"DID THOSE IDIOT CULTISTS at Heaven's Gate use Macs or PCs?"

— Joseph de Dios-Valerio

[We heard they used phenobarbital. — Ed.]

"A TERRIBLE THING HAPPENS when you don't promote . . . Nothing."

— Steven Shmerler

[Any number times zero is still zero. — Ed.]

"ANDY IHNATKO STATES that 'the Mac OS is where all the cool stuff is happening.' What's so cool about going out of business?" — Kurt Lowman

[It worked for Harley Davidson. — Ed.]

Feedback

machine's physical design. But it will have to. There are only two solutions: (a) Create new, slightly tweaked versions of the Mac OS for every new hardware twist, or (b) abstract the OS from the hardware (as Microsoft was forced to do with Windows from the very beginning) and scatter the result with every driver and software combination for every hardware contingency known.

The Mac's greatest strength has always been its almost mind-reading intuitiveness as to what the user wanted and what hardware it had access to at any given moment. Yes, it's arguably costlier to do it that way — tying the OS directly to the hardware. But doing things the right way is often more expensive. The Mac was built the right way from the beginning.

Marshall Henderson
britishcar@earthlink.net

MacUser Wrong; Mariner Write

In your review of Nisus Writer 5.0 (May '97, page 44), you state, "Nisus Writer is the only Mac word processor that lets you select sections of noncontiguous text."

Not so. I'm a delighted customer of Mariner Write, and I regularly use this feature to select scattered items in a list and drag them as a group to a new list. All the usual benefits of selection apply.

Alton Ryder, A.Ryder@ix.netcom.com

Change Our Tune

Your review of the La Cie FM Radio Module (May '97, page 47) missed some very important facts:

Many people don't have desk space for a boom box or a stereo system. Most (good) external speakers have two inputs, so you don't have to use the microphone port on the Mac. There are *no* extensions or control panels to affect your system.

In my case (given my Bose Acoustimass sound system), for \$50 I end up with a \$1,000 sound system that can now *also* play the radio. Naturally, no one is going to go out and buy the speakers and the tuner just to listen to the radio, but if the investment in audio peripherals has already been made, then this is a great little gadget that hides in the mess of wires behind the monitor.

NetGuru, via the Internet

Signs of Life Forms

Your review of Fractal Design Poser 2.0 and Life Forms 2.0 (May '97, page 42) did not take into account what each program

was designed for and failed to mention significant features of the software.

Poser 2.0 is a very decent character-animation program for delivering final rendered images and animation, but it cannot, unfortunately, export its animation information. This is where Life Forms comes in.

If you want to compare Poser 2.0 with Life Forms 2.0 based solely on the programs' final rendering capabilities, then Poser should get four mice and Life Forms two and a half. If you want to compare the two programs based on their use for professional-level character animation and on the option to render animation through programs such as ElectricImage, Infini-D, Extreme 3D, and any SGI program that supports the BioVision Motion Capture data format, then you have to give Poser one mouse and Life Forms four.

Walt Sterdan, wsterdan@mts.net

Your review of Poser 2.0 and Life Forms 2.0 lacked a balanced presentation of strengths and weaknesses, contained factual errors, overlooked some *major* features of Life Forms, and failed to recognize that the two programs serve very different purposes.

Although both programs deal with the human figure, Poser 2.0 and Life Forms 2.0 are addressing different user requirements. Please produce a *real* review of Life Forms 2.0!

Sang Mah and the Life Forms team
Credo Multimedia Software

We clearly stated in the review that Life Forms and Poser are different programs with different purposes. Concerning Life Forms' ability to export animation data to third-party programs: There is no mention of this in the Life Forms manual, nor is there any reference to the BioVision output plug-in, which wasn't included in the Life Forms package. We did attempt to import the scripts and 3-D data into Infini-D and ElectricImage. The results: massive errors in both programs. Assuming you could export data without error, the mere fact that you need to employ other programs to create finished animations makes Life Forms a less valuable application. — David Biedny and Nathan Moody

Apocalypse Later

About three months ago, I realized that my Mac had reached the limits of upgradability. So I went shopping for a new machine. All the sales agents I spoke

"THE MAC IS LIKE A MAYTAG: You never need to get it fixed." — Gladys Schuil [Apple, here's the solution to your marketing woes. Find a Gordon Jump look-alike to plug your product during morning game shows. — Ed.]

"COULD YOU EXPLAIN Apple's code words (all based on music)? How do Copland, Gershwin, and Rhapsody relate to music? Tempo and Allegro are obvious." — Eric Fraser

[You should probably ask Gil "Evans" Amelio, Ellen "Fitzgerald" Hancock, and Avie "Shankar" Tevanian for the answer. — Ed.]

"I'VE LEARNED MORE than I need to know about the Mac and have had more fun than Elvis in a McDonald's."

— Erin Sidney

[*"Since my baby left me, I found a new place to swell . . ." — Ed.*]

"APPLE IS AN ANIMAL whose day has surely passed (Sugar Ray Leonard). The mid-'80s are over." — Nick Cruz [Remember George Foreman. — Ed.]

with told me I was a fool for looking at Macs. They pointed me at all these articles describing Apple's impending doom in apocalyptic language.

So I looked at IBM clones and Windows software. For a month.

And then I bought a Macintosh.

Andrew B. Watt, arvon@neca.com

Clarification

We distributed with the January '97 issue of *MacUser* a booklet titled "Fifty Simple Things You Can Do to Save the Mac." "Fifty Simple Things" is a registered trademark of the Earthworks Group, and the Earthworks Group and John Javna did not endorse or sponsor and were not otherwise associated with that booklet. ☐

Corrections

Joel Kocher is Power Computing's COO ("Power CEO Says It's Time to Evolve," June '97, page 24). Stephen Kahng is Power's CEO.

The Mac's internal SCSI bus transfers data at 10 MB per second and the external SCSI bus at 5 MB per second ("CD-ROM Drives," May '97, page 54).

The correct toll-free number for UMAX Computer is 800-232-8629 ("Dual-Processor Systems," May '97, page 34).

Handmade Software's Image Alchemy (Reviews, May '97, page 48) can calculate a single optimum palette for a series of images.

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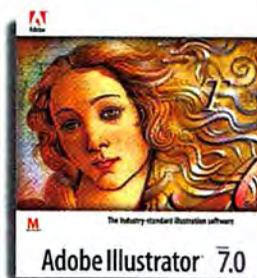
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Edit View



By Pamela Pfiffner

pam@macuser.com

The Read Me File

Here's how to get up and running with *MacUser's* exciting new look.

THERE ARE LOTS OF REASONS why publications redesign, and in my years at other magazines, I've been through them all. But this redesign is about more than updating an older look.

Fact is, I was tired of hearing how there's nothing interesting happening in the Mac market anymore and how no third-party organization is willing to invest in doing something new and innovative for the Mac. Well, the *MacUser* you're holding is proof to the contrary.

Welcome to the new *MacUser*. It's a lot like the old *MacUser* — in the sense that all the things you've always loved, such as timely reviews, insightful features, and helpful how-tos, are still here. But now they come with Something Extra: cleaner, more readable type; more ways to get at the information you're most interested in; spicy new elements such as the Short List and Start Up; and a lot of Web integration — all with a killer new look.

New Look

For our first redesign in three years, we turned to MetaDesign, an international design studio known for cutting-edge typography and information design. After learning of our desire for a more open typeface that looks good in a variety of sizes and situations, Meta designer Conor Mangat recommended Proforma, designed by Petr von Bloklund and available from the Font Bureau, as our text face. Our new logo is also a variation of Proforma. Lucas de Groot's Thesis, available from the FontShop, is the accent face. Finishing touches on the design were supplied by our own art department, under the capable direction of Lisa Orsini.

The most obvious design change is the color bars at the top of each page. These bars (which we call infobars) serve three purposes: to provide better organization, to ease navigation, and to give readers instant access to key info. Using colors as your guide, you can find sections quickly.

New Information

MacUser has always given you the Bottom Line — clear-cut product-buying recommendations. Now we give you the top line too — where to find reviewed products, vendor Web sites — at the top of the page. Information is literally at your fingertips.

We're aware that the Internet offers a wealth of additional resources. Ever since the introduction of ZDNet/Mac in 1990, *MacUser* has provided readers with an extensive library of shareware and other online resources. Now we've pulled that information to the top of the page to point you exactly to the right place — for MacDownload, our shareware library, and CPU Report Cards, our up-to-the-minute performance reports on all Mac OS systems, as well as other online resources.

But we also know that accessing the Internet from a print publication isn't as easy as double-clicking on a Web address. That's why this design expands on the *MacUser* Bookmark. Each month we collect the URLs for key Web sites mentioned in the issue and place them all in one central location on our Web site (see our table of contents).

New Sections

As you go through this issue, you'll notice some brand-new sections, along with many old friends. *MacUser* is divided into

four main departments: Up Front contains news, analysis, and sneak peeks at new products. Reviews features in-depth product reviews with our authoritative lab-based testing. Features continues to offer comparative product reviews and technical analyses. And Hands On provides the tips, techniques, and troubleshooting you need in order to get the most out of your Macintosh.

In the Up Front section, you'll notice a couple of new elements. Based on *MacUser* reviews, the Short List is *MacUser* editors' recommendations of must-have products for key markets. It also features the most comprehensive list of Mac OS systems anywhere. You'll also find an expanded First Looks section — hands-on evaluations of prerelease products (our coveted mouse rating is bestowed only on shipping products). And just in front of First Looks, you'll find Start Up, a section chock-full of interesting nuggets about the Mac experience.

I've always thought our productivity department was one of *MacUser's* hidden treasures. We've renamed the productivity sections to more clearly identify their



purpose: GraphicsUser, which covers desktop publishing, prepress, digital video, and Web design; NetUser, which focuses on the Internet, intranets, and networking; SmartUser, which features application tips and general system troubleshooting; and MaxUser, which covers games and other leisure activities for those who are so enthusiastic about the Mac that they take their Macs to the maximum.

There are plenty more changes sprinkled in these pages. But one thing about *MacUser* will never change: our commitment to providing readers with authoritative advice based on advanced lab testing and the most-experienced editors in the Mac business. ☺

Introducing the MessagePad 2000, the only handheld computer you can actually use.

Of all the handheld computers, only the MessagePad 2000 offers sharp, crisp backlighting and a 16-level, high-resolution gray-scale screen that rotates on command. Which means you can always see your work in the best orientation—horizontal or vertical, even upside down. And in the best light. Bright. Or dim.

The MessagePad 2000 gives you more flexibility, thanks to its two PC slots (other handhelds have only one slot). So, for example, you can dedicate one to a wired or wireless modem and use the other for additional memory.

How much can you do in three to six weeks? That's how long a set of AA batteries lasts under normal usage. Note: normal usage here means a lot. Like having backlighting on, using the modem, crunching numbers, writing e-mail, drawing, doodling, whatever.

Built-in software lets you connect directly to a variety of serial, IrDA and LocalTalk printers—unlike most Windows® CE devices, which have to be hooked up to a PC in order to print.

There's fast. And then there's fast. The MessagePad 2000 comes with a screaming 160 MHz RISC processor, which offers up to five times the performance of the 20-40 MHz processors you get with other handheld devices.

The usable area of the MessagePad 2000 screen is up to 56% larger than what you'll find on most Windows CE products. So, instead of having to decipher small sections at a time, you can read the entire width of a fax or Web page.

A built-in microphone and speaker let you record and play back voice dictation. And the MessagePad 2000 is the only handheld computer that lets you record and take notes simultaneously.

The MessagePad 2000 works easily with desktop computers. So you can create documents on the MessagePad 2000, then transfer them to and from Microsoft® Excel or Word on any Windows or Mac® OS-based system. Or you can keep your calendar and address book current by synchronizing them with desktop programs like Microsoft Schedule+ 7.0 or Claris Organizer™ 2.0. And it's easy: with Auto Dock, the MessagePad 2000 makes these transfers automatically.

Unlike Windows CE-based devices, MessagePad 2000 is the only handheld computer that lets you exchange data with both Windows and Mac OS-based computers.

The MessagePad 2000 handheld computer offers a real detachable keyboard (not a tiny, finger-cramping version). So you can quickly and easily type e-mail, business letters, project reports. Only your superb writing style—not your aching fingers—will determine the length of your documents.

Of all the handheld computers out there, only one makes it truly easy to be productive on the road. Introducing the MessagePad® 2000. Rather than just letting you view data, the MessagePad 2000 lets you carry out sophisticated tasks with the greatest of ease. For example: you can now write a full-length proposal, insert information downloaded from the Web— even include pricing from your company's Intranet— and then fax or e-mail it to a client. Try that with an ordinary handheld computer. The MessagePad 2000 has more power, more storage, more flexibility. All contained within the most innovative design, optimized for usefulness. Of course, there's only one real way to understand how incredible the new MessagePad 2000 is: try it yourself. For the name of a dealer near you, or to get more information, call 800-909-0260. Or visit us at www.newton.apple.com/useit.



Macs Populi



By Henry Bortman
henry@macuser.com

What's Your DQ?

Who cares if software is powerful if you can't figure it out?

JUDGING FROM THE RESPONSE to last month's column, some people think I was too harsh on Apple's Open Transport software interface. "Why didn't you Read The F—ing Manual (RTFM)?" they demanded. "If you had, you would have known what to do." Perhaps. But then that would mean I'd have had to read a *manual*.

I don't, of course. I received an equal number of responses containing comments such as "I'm glad to know I'm not the only person who couldn't figure it out." This group tended to share the intimate details of their personal adventures in interface frustration.

I suppose that the first group, the critics, might offer the same advice to the members of Group 2, the frustrati, that they offered me: RTFM. But would they be right? I don't think so.

Assigning Blame

I get a lot of tech-support calls from friends who are intimidated by hardware and intimidated by software. They think that every time their Mac crashes it's their fault. They think that if they can't figure out how to do something, it's their fault. They think that every time something doesn't behave the way they expected it to, it's their fault.

People intimidated by computers seem to view manuals as yet another trial to be endured. They don't read manuals because odds are the manuals aren't any easier to understand than the software that confused them in the first place.

Which brings me to my main point: People shouldn't have to learn how to use software. Software should be discoverable.



Your DQ Test

Discoverable software rewards exploration with success. When you use discoverable software, you sit at your computer and think, "I want to do X." So you click on a button here, pull down a menu there, and eventually find what you're looking for, in some rational location. Sounds obvious. But most software isn't like that.

I'll show you what I mean with Bortman's patented DQ (Discoverability Quotient) test. I've chosen three tasks that someone might reasonably want to accomplish with Microsoft Word and Excel, the two most widely used applications in the Mac market. Your challenge is to complete each task in less than five minutes. Online help is permitted; you get bonus points if you don't use printed documentation. The solutions are at the bottom of the page. Play fair: If you already know how to accomplish a task, substitute some other equally mundane goal.

Task #1: The default font used by Word is Geneva. Change it to Helvetica. Note: You haven't succeeded if you merely change the font in an *already opened*

document from Geneva to Helvetica. Successful completion requires that when you *open* a new document for the first time, the default font used by Word is Helvetica.

Task #2: Create a small Excel table, one column wide by four rows deep, with room at the top and left for column and row labels. At the top of the column, put the word *Sales*. Label the rows *1994*, *1995*, *1996*, and *1997*. Enter some data in the four cells. Now create a bar chart. Feel free to use the Chart Wizard if you like. But here's the catch: The bars in the chart have to be in the same order, from top to bottom, as the rows in the table.

Task #3: Keep open the Excel document you used in task #2, and then open a Word document as well. Using any method you like, import the data from the table in your Excel file into your Word file as tab-delimited text. Importing the data as a Word table doesn't count. It has to be tab-delimited text. Retyping the data manually in the Word document is cheating. (If you don't have enough memory to have both Word and Excel open at the same time, you can take ten minutes for this task.)

When you're done with all three tasks, answer the following questions:

1. Was it easy to accomplish these tasks?
2. If it wasn't, whose fault is that: yours or Microsoft's? ☒

.....
1. Select Style from the Format menu. From the lower left corner of the Modify Style dialog box to activate this option, and then click on the OK button. Finally, click on the Apply button in the Style dialog box.
2. Sorry. This was a trick question. But I couldn't resist. In Excel, you *can't* get a bar chart to appear in the same top-to-bottom order as the data table from which it's created. There is a workaround, however: Create a second table, upside-down from the original, and create the chart from the upside-down table. Very intuitive.
3. In Excel, save your spreadsheet as a tab-delimited text file (we'll call this file the table document). Open Word. Open the document into which you want to place the tab-delimited text (we'll call this the base document). Still within Word, open the table document. Select the text in the table document and drag it (or copy-and-paste it) into the base document.

Solutions:

We Don't Need No Stinkin' OS

Mac-software vendors move to distance themselves from an OS association — Mac or Windows.

MAC OS 7. RHAPSODY. BLUE BOX. BE BOX.

Windows 95. Windows NT. In the cross fire of today's bloody operating-system wars, a new battle strategy has arisen, summed up by the phrase *operating-system independence*.

Take, for example, the graphics-software company MetaTools. Cofounder Kai Krause has referred to the firm's new products premiering this spring not only as "OS-independent" but also as "new operating systems" in and of themselves.

"We have gone out of our way to eliminate dependencies on outside providers," Krause said. Traditionally a provider of plug-ins for applications such as Adobe Photoshop, MetaTools has decided to shun its dependency not only on the plug-in format but on the trappings of the major operating systems as well. Each of MetaTools' new products will be a modular component of one "MetaWorld," starting with the \$49 image editor Soap.

In addition to including more features that bypass standard OS functionality (for instance, an independent virtual-memory scheme), the applications will include no sign of the standard Mac OS or Windows 95 user interface. The user will be transported instead to the MetaWorld, where old rules of operating systems seemingly don't apply.



Although MetaTools' choice to shun standard interfaces is extreme, its attempt to minimize its products' platform dependence is not.

Where companies once supported independent Windows and Mac engineering teams, now their efforts for the two platforms are often unified. And where vendors once boasted of features tailored to platform strengths, now they more often talk about cross-platform parity. "We want to make it so that whether you're on Mac or Windows, you're not looking at the other platform with envy," says Kevin Connor, product marketing manager for Adobe Photoshop.

Part hype and part hope, the phrase OS

independence points to a long-developing trend — many traditional Mac vendors are trying to position and promote their applications as tools that are worthy in their own right regardless of trials and tribulations of the Mac platform. Unfortunately, this can lead to conflicts between vendors and their users who feel strongly about the Mac.

Macromedia Director users grumbled when Intel CEO Andy Grove spoke at the Macromedia User Conference last September. Macromedia's sales are still 60 percent Macintosh-based, according to Macromedia itself. But the company is not interested in getting in the middle of a platform-preference war. "We're here to build tools for people to make great multimedia. One has to look past operating systems. They're no longer interesting, and they're practically equal," says Norm Meyrowitz, Macromedia's executive vice president of Internet and multimedia.

Oddly enough, the one major Mac-software vendor that is bucking this trend is Microsoft, which recently established a separate Macintosh development team after years of basing all its Mac products on code shared with Windows. The new Mac team is now working on making the next version of Microsoft Office "uniquely Mac." — Scholle Sawyer

Mac Stat • Andrew Gore

Retail Macs Steal Share from PCs



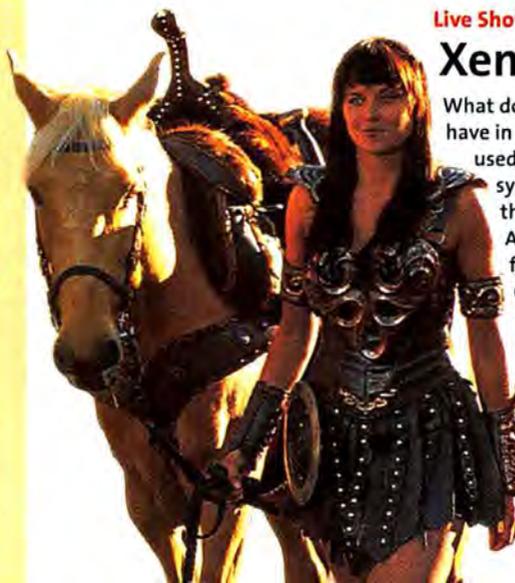
Computer Intelligence surveyed over 1,100 U.S. computer retailers on their desktop-PC sales by platform and found that the Mac platform steadily increased its share of retail sales at the expense of Wintel computers. For January 1997, Mac OS-system retail sales were up over 61 percent from January 1996.

Live Shot • Andrew Gore

Xena Does Macintosh

What do warrior princesses, demigods, and the Macintosh have in common? Why, special effects, of course. The Mac is used to produce over 50 effects a week for the No. 1 U.S. syndicated television show, *Xena, Warrior Princess*, and the top-rated *Hercules, The Legendary Journeys*. According to the company that does the effects work for both shows, Flat Earth Productions, of Burbank, California, the Mac has become a cornerstone in the production of special effects in both shows and shortens turnaround time.

Examples of Flat Earth's Mac-based special effects include the title sequence at the opening of *Xena*, where the watery visage of Neptune rises 50 feet from the ocean to confront the show's barbarian heroine. In *Hercules*, the Mac has done everything from creating flaming demons to helping bring back to life a squad of skeleton warriors.



Future Tech • Rik Myslewski

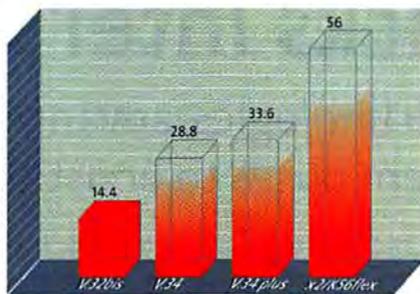
The 56-kbps-Modem Scam

Read the ads for 56-kbps modems. They allude to blazing 56,000-bit-per-second throughput over standard phone lines. Well, sorry, but it ain't that easy.

In fact, if you use a modem based on one of the two competing 56-kbps-modem standards — U.S. Robotics' x2 — it isn't even possible: Current FCC rules limit modem-power output to a level that restricts x2 technology to 53 kbps, even under perfect conditions. Kudos to U.S. Robotics for fessing up in its ads, spankies for doing so in a one-millimeter-high footnote.

But don't just rush off to buy a 56-kbps modem based on the competing Rockwell/Lucent K56flex technology — at least not before you know exactly what you're getting.

Unlike V.34 and slower models, two 56-kbps modems can't simply link up and swap data at max throughput: For 56-kbps technology to work, there can be only one analog-to-digital conversion in the circuit. A 56-kbps modem is capable of achieving 56-kbps throughput only when transmitting data from a server (an ISP, for example) to a client (you, for example) that's using the



same technology. Your communications to the ISP move at standard V.34 speeds: 33.6 kbps, 28.8 kbps, or whatever speed your certainly less-than-ideal phone line can manage.

To make matters even more dicey, a significant number of U.S. phone lines (and all U.S.-to-Europe lines) are incapable of carrying any 56-kbps traffic, because they employ in-link digital-signal conversion, ADPCM or SLCs (ask your phone company), or enhancements such as AT&T's True Voice.

For ISP connections over good, clean lines, 56-kbps technology may be a boon. But ask for a money-back guarantee — just in case.

OS 8: Old Name, New Face

MAC OS 8 IS DEAD! Long live Mac OS 8! In a bizarre plot twist that only Apple marketing could dream up, the July release of the Mac OS (a.k.a. Tempo) will be called Mac OS 8.

OS 8 will boast many of the user-experience features first promised as part of the ill-fated Copland (which was briefly dubbed Mac OS 8). Most noticeable will be Finder changes. It will integrate the new 3-D look that many users are already enjoying, courtesy of the Aaron extension. A one-click button view and a redesigned list view will join the standard icon view as display choices within the Finder.

There will be several other innovations on the desktop as well: Spring-loaded folders will open automatically whenever you drag another icon over them. When you drag a window to the bottom of the screen, it will be reduced to a file-folder tab that can be expanded by double-clicking. You'll be able to access many commands relevant to an object by holding down the Option key and clicking on the object. Similarly, holding down the Command and Option keys while dragging a file will allow you to move, copy, or make an alias of the file.

The Finder in OS 8 will be PowerPC-native (read: faster). And it will be multithreaded, allowing multiple simultaneous file operations such as copying or deleting.

In addition to bundled copies of Netscape Navigator, Microsoft Internet Explorer, and Claris E-mailer Lite, Mac OS 8 will offer Personal Web Sharing, which will let you create and serve your own Web site from your desktop.

Users of early Mac models should note that Mac OS 8 will support only 68040- and PowerPC-based Macs. • Henry Bortman

In Brief

Cacheless Society. The latest release of the Mac OS — 7.6.1 — turns off the Level 2 cache on Macs that are based on the Alchemy logic board, including the Power Mac 5400 and 6400, Power Computing PowerBase, and UMAX SuperMac C600 and C500 systems. Apple has posted a patch that fixes the bug at support.info.apple.com/ftp/7.6.1/7.6.1flash.html.

PowerBooks Catch Fire. Hardly noticed with all the noise over Apple's latest quarterly loss was how fast PowerBook sales are growing. PowerBooks were 22 percent of all Apple-system sales for the second quarter, up from 10 percent from the previous quarter.

Crack a Mac. Swedish computer-consulting firm Infnit has declared a winner in its Crack a Mac contest: the Mac. After two months of offering a cash prize of \$15,000 to the first hacker to break into its Power Mac 8500/150-based Web server, the contest was closed, with the Mac intact.

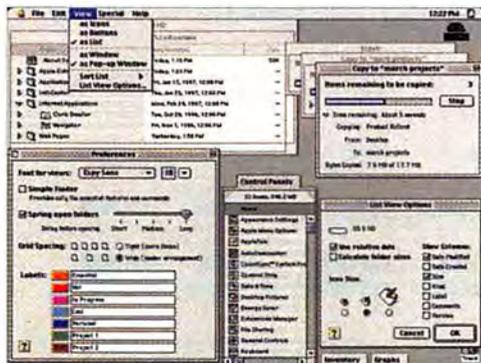
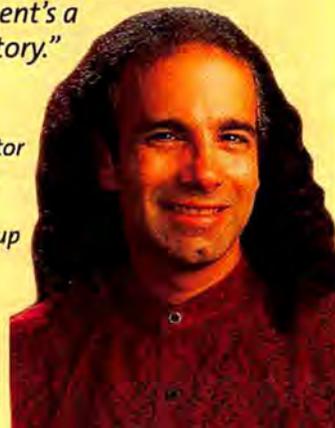
Dead Yet? After three years as the primary proponent of OpenDoc component technology, CI Labs has been dissolved by its board of directors and has transferred key assets to its sponsor companies, including Apple. As part of its recent reorganization, Apple announced that it would no longer invest in OpenDoc.

Between the Lines

Apple Exec's Exit Interview

"You won't find a lot of people who have left Apple of their own accord or have been laid off who speak badly of Apple Computer. However, management's a different story."

— Frank Casanova, former director of the Apple Advanced Systems Group



Special Report: PowerPC Kicks Intel's Butt Again

New chip technologies, advanced cache designs, and speedy system buses to boost the Mac advantage.

NEW DEVELOPMENTS from Exponential, Motorola, and Power Computing may soon give Mac OS systems a combination of speed and affordability unachievable in the Wintel world.

Exponential X⁷⁰⁴. A small Silicon Valley startup, optimistically named Exponential, last year announced its plans to build a 533-MHz PowerPC-compatible microprocessor. At the time, we were skeptical. However, MacUser Labs recently tested a preproduction Mac OS system based on a 450-MHz Exponential X⁷⁰⁴ microprocessor, and our skepticism is evaporating.

Key to the X⁷⁰⁴'s high clock speed is BiCMOS, a unique combination of traditional CMOS transistors and ultrahigh-speed bipolar junction transistors. Bipolar transistors are notoriously power-hungry, however, and the X⁷⁰⁴ requires a hefty 75 watts — don't look for X⁷⁰⁴-based laptops anytime soon. But thanks in part to some thermal-transfer tricks Exponential builds into the X⁷⁰⁴, the cooling schemes in prerelease X⁷⁰⁴ implementations we've seen are both simple and effective.

Expect 533-MHz X⁷⁰⁴ chips to appear in Mac OS systems by late summer — and

don't let your favorite vendor charge you too much for one of these screamers: According to Exponential, an X⁷⁰⁴ should cost only a couple of hundred dollars more than a top-end PowerPC 604e.

New Cache Designs. Another of the X⁷⁰⁴'s speed tricks is its on-chip L2 cache. Although it's a tiny 32K, the L2 cache has direct one-to-one clock-cycle communication with the microprocessor core. Since it's independent of the CPU bus, it's known as a *backside* cache and will be used by some of the AIM (Apple/IBM/Motorola) Alliance's G3 microprocessors. Current Mac OS systems use what are known as *lookaside* L2 caches, which share the system bus with the microprocessor and its RAM — an inefficient mix.

Some microprocessor integrators are investigating a third type of cache, *inline*, which sits between the microprocessor and the system bus — it's less expensive than a backside cache and more efficient than a lookaside cache. Expect to hear more about inline caches soon.

300-MHz PowerPC 603e. Although the Exponential X⁷⁰⁴ is a power user's dream, fiscally challenged Mac users have some-

thing to cheer about as well — the first low-power, low-cost microprocessor to break the 300-MHz barrier. Early samples have been bouncing around clone vendors' labs for some months, and Motorola and Apple have announced affordable 603e/300 systems: Motorola's is available now; Apple's will be released in late May. By the way, the 603e's Intel counterpart, the Pentium, remains mired at 200 MHz.

Faster System Buses. Power Computing was the first Mac OS-system vendor to show a 603e/300 system — and the company has now announced that it won't sell one. Instead it will focus on low-cost 604e-based systems that have the fastest system buses you can buy: 60 MHz (see review of Power Computing's new PowerCenter Pro series elsewhere in this issue). As our tests show, this zippy bus breaks the long-standing speed record of Power Computing's PowerTower Pro 225/RAID — and on a system that runs at 210 MHz.

Even faster buses are on the way. Our tests of prerelease PowerPC Platform systems demonstrate that their 66-MHz system bus provides a significant speed boost. • Rik Myslewski

Unprecedented Power • Three new Mac OS systems leapfrog the competition

The X⁷⁰⁴-based system we tested was a Power Mac 9600/200 in which the 200-MHz PowerPC was replaced by a 450-MHz X⁷⁰⁴; it had a 45-MHz bus, 128 MB of RAM, a 1-MB L2 cache, a 4-GB hard drive, and a 12x CD-ROM drive and was running System 7.6.1. It had low graphics scores since the system we tested didn't yet have PCI DMA enabled. The 300-MHz PowerPC 603e-equipped Motorola StarMax 3000/300 had a 50-MHz bus, 32 MB of RAM, a 512K L2 cache, a 4.3-GB hard drive, and a 16x CD-ROM drive; it was running

System 7.6. The Power Computing PowerCenter Pro 210 had a 60-MHz bus, 32 MB of RAM, ATI-based graphics with 2 MB of graphics RAM, a 1-MB L2 cache, a 2-GB hard drive, and a 16x CD-ROM drive; it was also running System 7.6. We compared the three new systems with a 225-MHz 604e-equipped Power Computing PowerTower Pro 225/RAID with a 45-MHz bus, 32 MB of RAM, a 1-MB L2 cache, an 8-MB IMS Twin Turbo 128 card, a 7.9-GB IBM RAID, and an 8x CD-ROM and was running System 7.5.3.

	MacBench 4.0 Processor Score	Floating Point Score	Disk Score	Publishing Disk Score	Graphics Score	Lo-Res Publishing Graphics Score	Hi-Res Publishing Graphics Score	CD-ROM Score
BETA APPLE POWER MAC 9600/200 WITH A 450-MHZ EXPONENTIAL X ⁷⁰⁴	712	972	377	350	272	311	402	513
MOTOROLA STARMAX 3000/300 WITH A 300-MHZ 603e	441	552	392	263	498	468	584	453
POWER COMPUTING POWERCENTER PRO 210 WITH A 60-MHZ SYSTEM BUS	568	422	383	329	437	462	526	455
POWER COMPUTING POWERTOWER PRO 225/RAID Reference system	461	449	487	372	608	560	650	404

MacBench 4.0 scores are relative to those of an Apple Power Mac 6100/60 running System 7.5.5 with a 30-MHz bus, 16 MB of RAM, 2 MB of built-in graphics RAM, no L2 cache, and a 250-MB hard drive. This baseline system is assigned a score of 100 for all MacBench tests. All systems are tested as configured by vendors but with AppleTalk turned off and virtual memory turned on.

Virtual PC: Fast and Easy Pentium Emulation

POWERPC CHIPS are getting so powerful that they can even pretend to be Pentium chips in their spare time, thanks to Connectix's Intel Pentium emulator, Virtual PC.

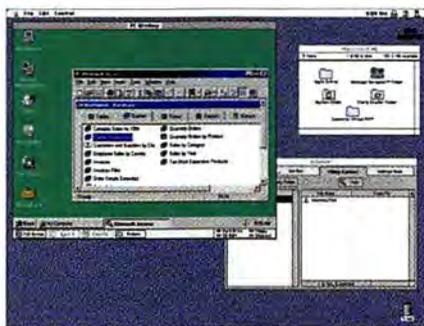
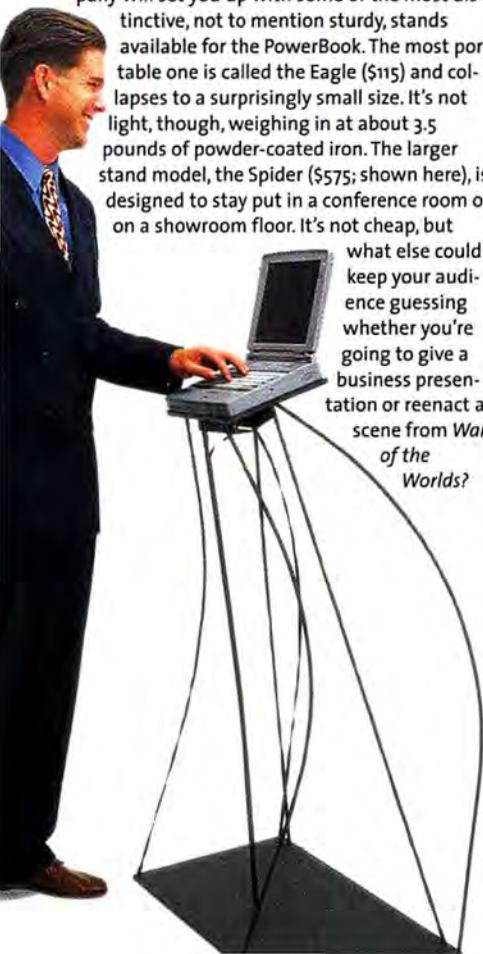
With Virtual PC installed, any PowerPC-based Mac OS system (including those with 601 chips) will be able to run unmodified versions of MS-DOS or any of the Windows operating systems, including Windows NT, straight out of the box. Virtual PC uses the same dynamically recompiling emulation techniques that power the Mac OS' 680x0 emulation for the PowerPC, meaning that, just like that of the 68K emulator, Virtual PC speed will

The Off Beat • Nancy Peterson

Spider-Stand, Spider-Stand

If you like the freedom to stand and stroll while you give your PowerBook presentations, Presentech can help you do it in style. The company will set you up with some of the most distinctive, not to mention sturdy, stands available for the PowerBook. The most portable one is called the Eagle (\$115) and collapses to a surprisingly small size. It's not light, though, weighing in at about 3.5 pounds of powder-coated iron. The larger stand model, the Spider (\$575; shown here), is designed to stay put in a conference room or on a showroom floor. It's not cheap, but

what else could keep your audience guessing whether you're going to give a business presentation or reenact a scene from *War of the Worlds*?



scale with the speed of the PowerPC chip it is running on. According to Connectix, most PowerPC systems will be able to deliver "playable" PC emulation for running games and multimedia titles.

And speaking of games, Virtual PC will emulate Creative Labs' SoundBlaster Pro sound card and will work with several Mac joysticks, which should finally allow Mac users with PC-title envy the chance to run all those DOS and Windows games. Virtual PC will also map all the primary components of a Pentium-based PC — including the hard drive, CD-ROM drive, display, keyboard, modem, printer, mouse, and Ethernet — to the equivalent Macintosh subsystem. This should ensure a high level of compatibility for all PC applications, not simply entertainment titles.

At press time, Connectix had not set pricing and had not determined if Windows 95 would be bundled with the product. • *Andrew Gore*

Online

Utility of the Month. Look at your Macintosh through kaleidoscope eyes: This month's exclusive utility is a collection of the winners of our online Kaleidoscope Color Scheme contest. Kaleidoscope is a control panel that allows users to customize their Mac's interface. Color Schemes are plug-ins that anyone who has a bit of ResEdit savvy can create to make their own Macintosh interface design. Our esteemed judges have narrowed down the field to the best five, all of which are available, beginning May 30, exclusively from ZDNet Mac Download on the Web (www.macdownload.com) and on CompuServe (GO ZMC:MACUSER).

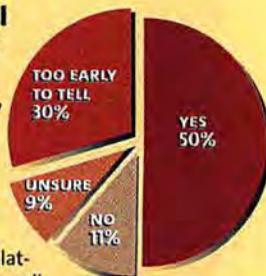


Let's Duke It Out. Macsoft is putting the finishing touches on the long-awaited Mac version of the first-person shooter Duke Nukem. The scheduled release date is June 15, and you can get an exclusive demo at ZDNet Mac Download (www.macdownload.com) on that date — maybe even sooner. Check for your copy.



Online Poll

Q. Now that Apple has reorganized, is the company on the right track?



To vote in the latest Mac online poll, go to www.zdnet.com/mac/opinion.html.

Adobe May Climb Aboard the Enterprise

SO, YOU'RE A \$1 BILLION graphics-software company and want to be at \$2 billion by the year 2000. What do you do? If you're Adobe, you explore strange new markets.

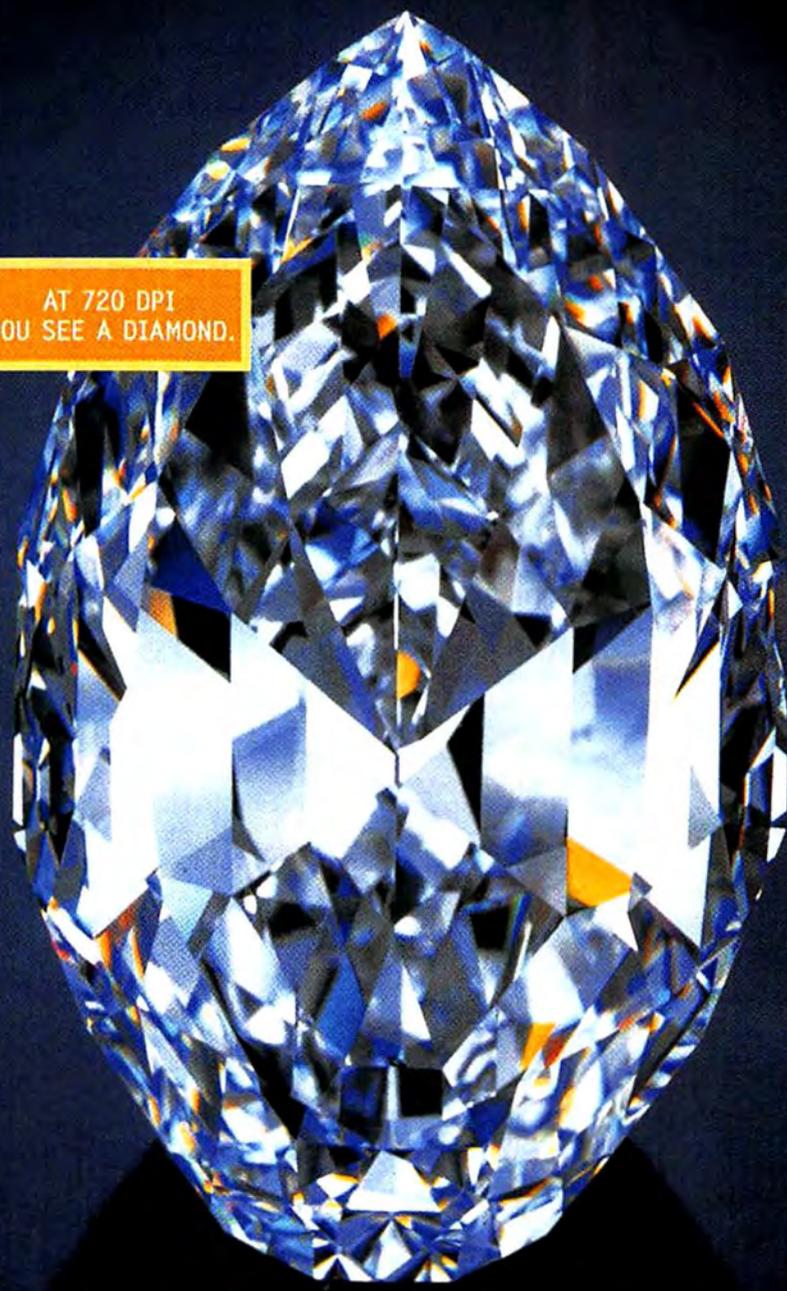
Adobe is looking to move beyond its core graphics business, according to company executives. One greener pasture Adobe is contemplating is the enterprise, where the company's expertise in Web publishing could be leveraged to gain access to the booming market for intranet-based publishing tools. However, these are not the only new areas Adobe is considering, officials said.

No matter what new market it chooses to explore, Adobe will continue its commitment to graphics products, according to the company.

In related news, Adobe recently renewed its commitment to support the Rhapsody operating system. At a very minimum, the company will port its linchpin graphics apps — Photoshop, PageMaker, and Illustrator — to run native on Rhapsody, although it wouldn't commit to a timetable for those releases or say whether all Adobe apps would be available for the new OS. • *Andrew Gore*

AT 360 DPI
YOU SEE A STONE.

AT 720 DPI
YOU SEE A DIAMOND.



The Nikon Software Testing Laboratory Inc. (NSTL) found the Epson Stylus Color 600 outperforms all speeds of the HP DeskJet 6940C by 31% and the Canon BJC-420 by 38%. The Epson Stylus Color 800 outperforms all speeds of the HP DeskJet 6700C by 25%. Print speeds tested with Windows 95 and Microsoft Word, Microsoft Excel, Microsoft PowerPoint, Adobe PageMaker and Adobe Photoshop. NSTL, most available by calling 1-800-GO-EPSON. Prices may vary. EPSON, Epson Stylus and EPSON Stylus are registered trademarks of Seiko Epson Corp. Micro Piezo is a trademark of Epson America, Inc. © 1997 Epson America, Inc.

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CIRCLE 123 ON READER SERVICE CARD

The Incredible Shrinking PowerBook

Four-pound laptop delivers good things in a small package.

MacUser LABS **HALE-BOPP WON'T BE** the only comet making news in '97. We at *MacUser* just got a sneak peek at another heavenly body that's sure to attract attention: the soon-to-be-released PowerBook 2400c, code named Comet. Finally, there's a PowerBook for those of us who think size and weight are critical factors in defining portability.

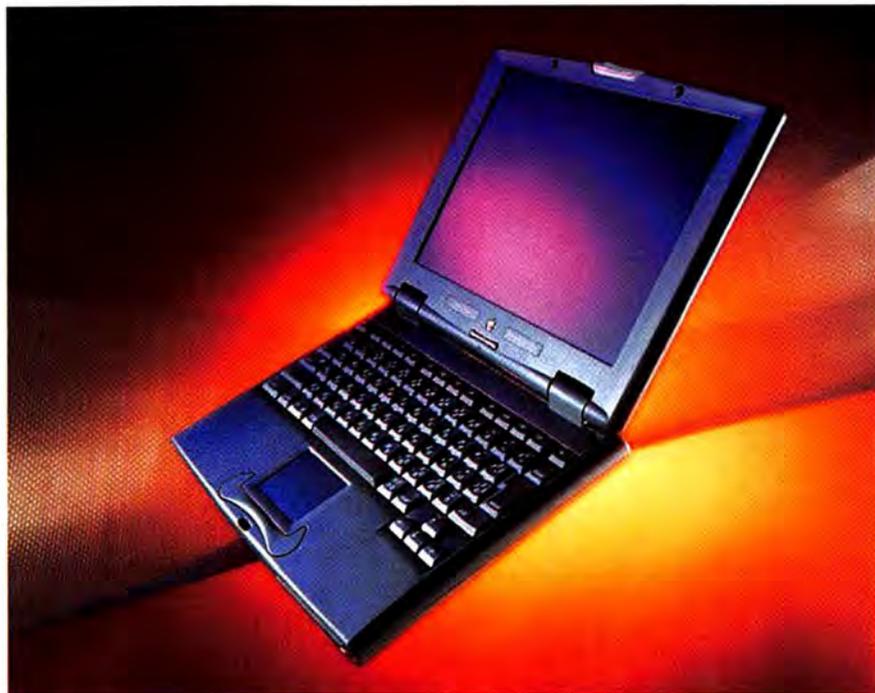
The PowerBook 2400c is Apple's first attempt to build a subnotebook-class laptop since the PowerBook Duo. However, the 2400c's compact-yet-complete design is more reminiscent of Apple's first effort at a small portable Mac, the PowerBook 100, than it is like the dockable Duo.

We were blown away when we saw just how many features and functions Apple and co-designer IBM were able to squeeze into the Comet's tiny body.

Think Small, Be Small

When we originally saw the 2400c, the first thing that struck us was how compact it is: At 10.5 x 8.4 x 1.8 inches, it's about the same size as a Newton eMate — and at 4.2 pounds, it weighs about the same as well.

However, measurements by themselves don't paint a complete picture of how small, sleek, and fun-to-handle this new PowerBook is. Its industrial design — the first truly elegant PowerBook chassis since the 500 series — invites you to pick



Photography - Jim Karageorge

it up, and its lightness-of-being makes carrying it around a pleasure. How long has it been since you've been able to say *that* about a PowerBook?

No, it's not merely a design concept; it's the PowerBook 2400c, Apple's first subnotebook-class laptop since the Duo. The U.S. keyboard (a Japanese model, which we tested, is pictured above) will swap the positions of the Control and Caps Lock keys and will have a larger space bar that will displace two Japan-only special keys on either side. The 2400c is the first PowerBook to feature an inverted-T cursor pad.

But the 2400c's design is more than just attractive; it's also functional. For

example, the convex surface of the lid adds to the strength of the chassis by evenly distributing any weight put on top of the lid. Unlike the Duo, which had a well-deserved reputation for being delicate, the Comet seems rock-solid.

MacUser LABS **BETA** **Mighty Mite** The 2400c delivers a lot of punch in a little package

Within the compact dimensions of the PowerBook 2400c lurks the power of a full-fledged PowerBook 3400 — and far more oomph than that possessed by a PowerBook 1400. In fact, the PowerBook 2400c's speedy hard drive boosts it *past* its heavyweight sibling on the MacBench 4.0 Disk test. Only the MacBench 4.0 graphics scores of our prerelease model lagged well behind the competition's.

We compared the PowerBook 2400c with 180- and 200-MHz versions of the PowerBook 3400 — all are based on the same 40-MHz PCI

logic board. We also included the low-end PowerBook 1400.

MacBench 4.0 scores are relative to those of a Power Macintosh 6100/60 with no L2 cache, a 250-MB hard drive, and 2 MB of built-in graphics RAM. We assign this reference system a score of 100 on all tests. We tested all systems as configured by the vendor but with AppleTalk off and virtual memory on. Due to the fixed resolution of their built-in screens, all PowerBooks were tested with a screen resolution of 800 x 600 pixels set to 256 colors.

	Mouse Rating	Price As Tested	Processor/Clock Speed	L2 Cache	MacBench 4.0 Processor Score	Floating Point Score	Disk Score	Publishing Disk Score	Graphics Score	Lo-Res Publishing Graphics Score
APPLE POWERBOOK 2400c	NA	\$3,499	603e/180	256K	301	240	187	152	173	165
APPLE POWERBOOK 3400/200	★★★★	\$5,500	603e/200	256K	308	272	159	165	257	251
APPLE POWERBOOK 3400/180	★★★★	\$5,000	603e/180	256K	293	232	131	142	218	226
APPLE POWERBOOK 1400/117	★★★	\$3,499	603e/117	NONE	114	126	113	124	109	91

Reference systems

Also unlike the Duo, the 2400c offers a complete set of interfaces: serial, ADB, HDI-30 SCSI — even a standard SVGA video-out port. About the only thing the Comet doesn't have is an internal floppy drive; it relies instead on an external drive, much as did the PowerBook 100.

All Keyed Up

A few more surprises await you as you open the 2400c and fire it up: The image on the 10.5-inch active-matrix color screen is bright, and the display circuitry supports SVGA (800 x 600 pixel) 16-bit-color resolution. There's also a new trackpad with a button that wraps around the bottom. Although the new input device looks slick, some of us who are used to the standard trackpad button had a bit of trouble adjusting to the new design — others, however, found it easier to use.

Another surprise is the keyboard, which is noticeably smaller than a standard PowerBook keyboard. Although the key caps are small, the keyboard action is fast and crisp. We had several *MacUser* editors try out the 2400c — some with hands the size of Kerri Strugg's, others with mitts more comparable to Shaquille O'Neal's. All said they felt comfortable with the smaller keyboard. Even touch-typists said they didn't have a problem with the small key caps.

Dimensionally Transcendent

With only minimal compromises on the outside, what did Apple have to remove from the inside of the 2400c to achieve its modest dimensions? Again, the answer is: surprisingly little.

The 2400c is based on the same PCI logic board as its 7.4-pound sibling, the 3400. The Comet is powered by a 180-MHz 603e and comes complete with a 1.3-GB hard drive and 16 MB of RAM — all for a \$3,499 estimated street price (Apple plans to offer only one configuration of the 2400c). The 2400c comes with the 3400's fast memory bus, DMA peripheral bus, and SCSI technology. The single RAM slot can accommodate an additional 64 MB of RAM, for a total of 80 MB. It's missing one important 3400 feature, though: There are no internal PCI slots.

The 2400c bests the 3400 in one important way: It's the first PowerBook to offer two 32-bit CardBus PC Card slots, instead of the slower 16-bit PCMCIA slots used by other PC Card-equipped Mac laptops.

According to Apple, the CardBus slots will be able to accept all standard PC Cards plus cards for high-speed Ethernet and even RAM expansion. Unfortunately, at press time, the CardBus software for the 2400c was not completed, so we could not verify Apple's claims.

The 2400c's L2 cache is identical to that of the 3400: 256K. With the same basic motherboard design, 603e microprocessor, and L2-cache size, it's no surprise that the 2400c performs similarly to its big brother — the only surprise is that it actually *beat* a 180-MHz 3400 in some tests. For example, our preproduction Comet achieved a higher MacBench 4.0 Processor score than did the 180-MHz 3400. It also did very well on the disk tests but fell a little short of the 3400 in graphics performance, despite its hardware 2-D-graphics acceleration.

Tiny Triumph

Apple's laptop fortunes have truly risen, Phoenix-like, from the ashes — literally, at times — that were the 5300. First, the 1400 made it safe to buy a PowerBook again. Next, the fastest-notebook-in-the-world 3400 brought innovation back to the PowerBook family. The only hole that remained in the mobile-Mac lineup was in the small, lightweight-laptop category. This hole is now filled by the 2400c — and with panache and style we feared had been lost from Apple's portable line.

The 2400c is as close to being a no-compromise solution to the subnotebook-design problem as we could reasonably expect to see in a four-pound package. And, unlike the Duo, the 2400c is a *complete* solution — no dongles to buy, no docks to attach. Yes, if you want a CD-ROM drive, you'll have to invest in an external model (we recommend the \$399 Sony CD-ROM Discman and the \$499 speaker-equipped Panasonic KXL-783M). And, yes, you'll have to use PC Cards for your modem or Ethernet connection. Even so, at \$3,499, the 2400c is a lot of Mac laptop — and a lot *less* Mac laptop — for the money. —*Andrew Gore*

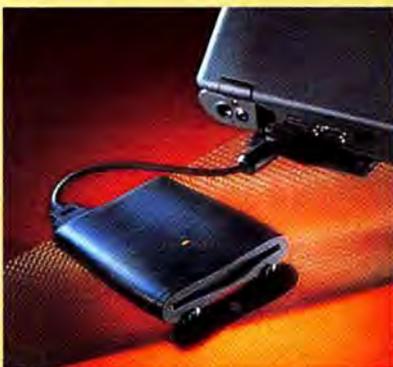
Pros: Attractive design. Large, sharp screen. Full set of ports. Four-pound weight.

Cons: Minimal expansion options. Small keyboard. Unfamiliar trackpad-button design.

Expected: Mid-July.

Not Much Missing

Smaller than a ream of paper — and a lot lighter — the PowerBook 2400c still manages to include almost everything you need in a laptop. What's left out — a floppy drive, for example — is easily attachable to one of its numerous ports.



Fancy Floppy

Nope, it's not a hip flask — it's the stylish new external floppy for the PowerBook 2400c. The curved front of the drive flips down to reveal the floppy slot and also acts as a stand. The drive connects to the PowerBook through a thin proprietary connector.



All Sorts of Ports

Unlike the Duo, the PowerBook 2400c comes with a complete set of ports. From left to right, the ports are ADB, AppleTalk/serial, floppy, standard SVGA video-out, HDI-30 SCSI, and an IrDA infrared transceiver. There are also stereo-sound-in and -out ports on the left side of the laptop.

In addition to the ports, the 2400c's back panel sports two Type II 32-bit CardBus PC Card slots which are capable of using standard PC Cards as well as faster CardBus cards for Ethernet or even for RAM expansion; the eject buttons are inside the clamshell, just under the left hinge.

Multimedia Tool Gains Power

If you think Movie Cleaner Pro is impressive, wait 'til you use Media Cleaner Pro 2.0.

MAYBE IT CAN'T MATCH the ease of use of its predecessor, but the wealth of welcome new features in Media Cleaner Pro 2.0 more than makes up for the increase in complexity over Terran Interactive's original multimedia tool, the elegant Movie Cleaner Pro.

Our first look shows Media Cleaner Pro 2.0 (\$359) to be an indispensable tool for preparing not only movies for CD-ROM but also movies and animations for the Web. Although QuickTime support is still integral, the new version adds support for VDOLive, Progressive Networks' RealMedia/RealAudio, and Iterated Systems' ClearVideo formats — capabilities aimed straight at Webmasters grappling with the problem of how to compress motion graphics for Web broadcast.

Media Cleaner Pro 2.0 adds a much larger array of tools for the fine-tuning of



Media Cleaner Pro 2.0 offers a host of new features, including batch processing, the versatile Preview window, and support for multiple video formats.

motion graphics for playback on an increased number of hardware platforms — full support for Wintel and Mac platforms ensures cross-platform compatibility for CD-ROM authors.

New movie-enhancement controls allow higher-quality video than with the previous version. A new data-rate-control feature intelligently maximizes playback quality. Media Cleaner Pro also lets you generate palettes for 8-bit-video playback — the reduced palette doesn't dramatically affect image quality, but it does noticeably increase movie-playback rates.

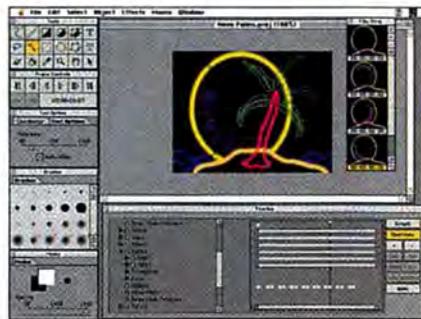
Also new is a before-and-after slider, with a Preview window that lets you see the effects of your settings before compression, anywhere in the movie. You'll also be impressed with the new Adobe Premiere Export plug-in support, which allows you to export directly to Media Cleaner Pro without having to save an intermediate file.

Another much needed new feature is batch processing. You can now set up movie processing for different output levels (for the Web, CD-ROM with Cinepak, and RealMedia, for example) and render the movies later. Support for multiprocessor machines such as the DayStar Digital Genesis MP is also featured. Nice job, guys. — *Kennedy Grey*

Pros: Support for VDOLive, Progressive Networks' RealMedia/RealAudio, and Iterated Systems' ClearVideo formats, as well as Adobe Premiere-native files. Split-screen Preview window. Batch compression. Multiprocessor support.

Cons: Not as easy to use as the previous version, Movie Cleaner Pro.

Expected: Spring 1997.



Illuminaire Paint lets you change any brush and shape characteristics over time. In this example, the transparency of the palm-tree leaves is set to change, indicated by the keyframes in the Timeline window.

embarrassment of riches, one feature (which was reportedly in beta versions of the program) is missing: a Fractal Design Painter-like ability to record brushing motion in real time. — *David Biedny*

Pros: Advanced vector-based brushes. Excellent precision and control of effects.

Cons: No real-time record function.

Expected: Spring 1997.

New & Notable

Infini-D 4.0. A completely redesigned interface houses a slew of new features in this 3-D-graphics-and-animation package, including a scan-line renderer, a vertex-level editor, real-time particle systems, volumetric lighting effects, and animated deformations. Improved video integration includes field rendering and an audio track in the sequencer. \$899. Specular: 800-433-7722 or 413-253-3100; www.specular.com.

Visioneer PaperPort Strobe.

Sleek and futuristic looking, this petite sheetfed paper scanner transforms scanned documents into 24-bit, 300-dpi RGB and 2,400-dpi black-and-white digital text and images. It comes with PaperPort 5.0 software, Xerox Textbridge OCR software, and PictureWorks PhotoEnhancer. \$329. Visioneer: 510-608-0300; www.visioneer.com.



Art Explosion 125,000 Gold Edition.

Bursting with 125,000 images plus 1,500 TrueType and PostScript fonts on 13 CD-ROMs, this hefty clip-art package will either intimidate or delight you. Its lighterweight cousin, Web Explosion 20,000, comprises 2 CD-ROMs full of buttons, bullets, textures, banners, and Web-page dividers. Art Explosion 125,000, \$80; Web Explosion 20,000, \$50. Nova Development: 800-395-6682 or 818-591-9600; www.novadevcorp.com.

FloStat 2. This low-fat statistics software can handle more than 1,000 variables in data sets while processing them via a range of statistical procedures — all using only 2 MB of RAM, according to its developer. \$149. Senecio Software: 419-352-4371; www.senecio.com.

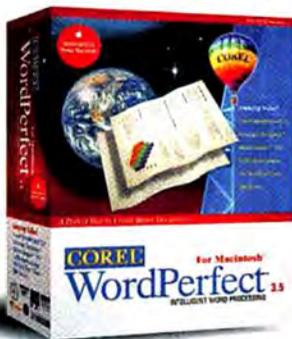
Four Elements. Create naturalistic effects with Fractal's new Earth, Wind, Fire, and Water extensions for Ray Dream Studio and Ray Dream Designer. Add mountains, fire effects, bodies of water, atmosphere, and weather effects to 3-D scenes with Four Elements' terrain editor and a variety of shaders. \$149. Fractal Design: 800-846-0111 or 408-430-4000; www.fractal.com.

— *Brooke Wheeler*

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- QuickDraw™ GX printing
- PowerTalk™ (AOCE)
- MacinTalk™
- AppleScript™
- WorldScript™
- QuickTime™

Page Layout Features

- Columns (3 types), up to 24
- Styles, kerning, borders
- Text boxes
- Headers and footers

Graphics Features

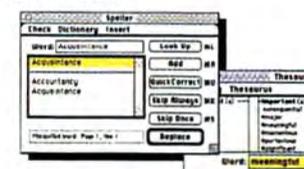
- Drawing and Equation Editors
- Page overlay/watermarks
- Bézier curves
- TIFF, EPS, PICT, JPEG, GIF

Documentation Processing Features

- Macros
- Integrated grammar checker
- Speller/Thesaurus
- Sort/Merge/Outlining
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Let Corel® WordPerfect® 3.5 check grammar, style and spelling for you. It can even correct typos as you go! Is a letter too long—or a paper too short? The Make It Fit™ function can shrink or expand your document to just the right size. And with support for Apple® MacinTalk™, Corel WordPerfect 3.5 will even read it to you in your choice of voices.



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The #1 word processor for the Mac.



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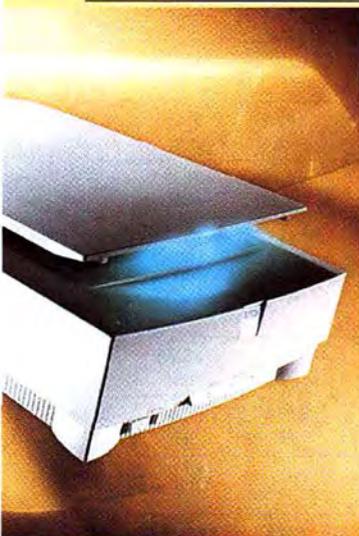
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Document # 1168

Short List

MACUSER RECOMMENDS: Graphics & Publishing

Based on reviews published in MacUser, our editors recommend these top products.

HARDWARE

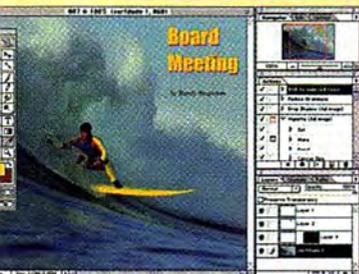


Color Printer, High-End	Phaser 480X Tektronix	For on-site digital-image proofing, nothing beats a top-quality dye-sublimation printer.	★★★★ Dec. '96	\$14,995	800-835-6100 www.tek.com
Color Printer, Low-Cost	Stylus Color 800 Epson	You'll be amazed by the quality of the images produced by this inkjet printer. We were.	★★★★ June '97	\$449 estimated street	800-463-7766 www.epson.com
Digital Camera	D-200L Olympus	Of the many consumer-level digital cameras, this is the only one we can heartily recommend.	★★★★ Apr. '97	\$599 estimated street	800-622-6372 www.olympus.com/digital
Display	PressView 17 SR Radius	If you're looking for the sharpest, most color-accurate monitor possible, this is the one.	★★★★ Feb. '96	\$2,499	800-227-2795 www.radius.com
Display Card	Imagine 128 8-MB Number Nine	It blasts past competitors on our MacBench 4.0 Hi-Res Publishing Graphics test. 'Nuff said.	★★★★ Apr. '97	\$699	800-438-6463 www.nine.com
Scanner	Expression 636 Epson	The latest in Epson's long line of low-cost, high-quality scanners is by far the best.	★★★★ Mar. '97	\$899 and up	800-463-7766 www.epson.com
Storage System, RAID	SledgeHammer Pro StreamLogic	Publishing pros require snappy file-transfer speed; this system more than fills the bill.	★★★★ May '97	\$3,679 and up	800-585-5888 www.sledgehammer.com
Storage System, Removable-Cartridge	Jaz Iomega	In a close race with the SyQuest SyJet, the Jaz's ubiquity wins the Jaz our recommendation.	★★★★ July '96	\$399 estimated street	800-697-8833 www.iomega.com

SOFTWARE

Design Utility	PhotoTools 1.0 Extensis	This elegant tool overcomes Photoshop's most glaring deficiency: type handling.	★★★★ Feb. '97	\$99	800-796-9798 www.extensis.com
Font Utility	Adobe Type Manager Deluxe 4.0 Adobe	ATM is indispensable for the publishing pro, and the latest version is the best yet.	★★★★ June '97	\$100	800-685-3505 www.adobe.com
Illustration Software	FreeHand 7 Macromedia	In its ongoing battle with Adobe Illustrator, FreeHand 7 is our editors' current pick.	★★★★ Mar. '97	\$400	800-326-2128 www.macromedia.com
Image-Editing Software	Adobe Photoshop 4.0 Adobe	Everybody uses it, and for good reason: It's remarkably powerful yet easy to use.	★★★★ Mar. '97	\$895	800-685-3505 www.adobe.com
Image-Processing Utility	ScanPrep Pro 3.1 ImageXpress	Create exceptionally accurate color separations, whether you're a novice or a pro in a hurry.	★★★★ Mar. '96	\$695	770-564-9924 www.scanprep.com
Page-Layout Software	Adobe PageMaker 6.5 Adobe	Its top competitor hasn't had a serious upgrade in six years, and PageMaker has edged ahead.	★★★★ June '97	\$895	800-685-3505 www.adobe.com
Paint Software	Fractal Design Painter 4.0 Fractal Design	Nothing comes close when you need to create vibrant pixel-based art.	★★★★ Apr. '96	\$549	800-297-2665 www.fractal.com
Web-Page-Design Software	BBEdit 4.0.3 Bare Bones Software	If you're a professional Web-page designer, you gotta have BBEdit — but you already know that.	★★★★ June '97	\$100	617-778-3100 www.barebones.com
WYSIWYG Web-Page-Design Software	Adobe PageMill 2.0 Adobe	In an ever more crowded field of competitors, an updated pioneer remains our favorite.	★★★★ Jan. '97	\$149	800-685-3505 www.adobe.com

All prices are suggested retail (list), unless otherwise noted.



Short List



MACUSER REPORT CARDS • Mac OS Systems

A comprehensive list of every Mac OS system on the market

APPLE • 800-538-9696 • www.apple.com

PRODUCT NAME PROCESSOR/CLOCK SPEED • RAM/HARD DRIVE/L2 CACHE	MOUSE RATING DATE RATED	PRICE MACBENCH 4.0 PROCESSOR SCORE
POWER MACINTOSH 9600/233 604e/233 • 32MB/4GB/512K	NEW	\$4,200
POWER MACINTOSH 9600/200 604e/200 • 32MB/3.9GB/512K	★★★★ JUNE '97	\$3,700 409
POWER MACINTOSH 8600/200 604e/200 • 32MB/2GB/256K	NEW	\$3,200
POWER MACINTOSH 7300/200 604e/200 • 32MB/2GB/256K	NEW	\$2,700
POWER MACINTOSH 7300/180 604e/180 • 16MB/2GB/256K	★★★★ JUNE '97	\$2,300 330
POWER MACINTOSH 6500/300 603e/300 • 64MB/4GB/512K	NEW	\$2,999
POWER MACINTOSH 6500/275 CREATIVE STUDIO 603e/275 • 32MB/4GB/512K	NEW	\$2,999
POWER MACINTOSH 6500/250 603e/250 • 32MB/4GB/256K	NEW	\$2,299
POWER MACINTOSH 6500/250 EDUCATION SERIES 603e/250 • 32MB/3GB/256K	NEW	\$2,099
POWER MACINTOSH 6500/250 SMALL BUSINESS 603e/250 • 32MB/4GB/256K	NEW	\$2,599
POWER MACINTOSH 6500/225 603e/225 • 32MB/3GB/256K	NEW	\$1,999
POWER MACINTOSH 6500/225 EDUCATION SERIES 603e/225 • 32MB/2GB/256K	NEW	\$1,799
POWER MACINTOSH 4400/200 603e/200 • 16MB/2GB/256K	★★ JUNE '97	\$1,700 284
POWER MACINTOSH 4400/200 PC COMPATIBLE 603e/200 • 32MB/2GB/256K	NEW	\$2,399

PRODUCT NAME
PROCESSOR/CLOCK SPEED • RAM/HARD DRIVE/L2 CACHE

MOUSE RATING
DATE RATED

PRICE
MACBENCH 4.0
PROCESSOR SCORE

ALL PRODUCTS, CONFIGURATIONS, AND PRICES ARE AS OF APRIL 15, 1997. SINGLE-PROCESSOR SYSTEMS ONLY.



Speed dominated the news in this month's Mac market: Motorola shipped the first 300-MHz Mac OS system, the StarMax 5000/300 (above), and Power Computing introduced the ultrahigh-performance PowerCenter Pro 210. In other news, Apple introduced multiple versions of its new Power Mac 6500, each tailored for a different type of user, and PowerTools and APS expanded their low-cost lines.

POWER MACINTOSH 4400/200 SMALL BUSINESS 603e/200 • 32MB/2GB/256K	NEW	\$1,799
POWER MACINTOSH 4400/166 PC COMPATIBLE 603e/166 • 16MB/2GB/256K	NEW	\$2,399
PERFORMA 6400/200 603e/200 • 16MB/2.4GB/256K	★★ OCT. '96	\$1,599 258
PERFORMA 6400/180 603e/180 • 16MB/1.6GB/NONE	★★ OCT. '96	\$1,399 184
PERFORMA 6360 603e/160 • 16MB/1.2GB/NONE	★★★★ FEB. '97	\$1,199 175
POWERBOOK 3400c/240 603e/240 • 16MB/3GB/256K	NEW	\$6,500
POWERBOOK 3400c/200 603e/200 • 16MB/2GB/256K	★★★★ APR. '97	\$5,500 308
POWERBOOK 3400c/180 603e/180 • 16MB/1.3GB/256K	★★★★ APR. '97	\$5,000 293
POWERBOOK 1400c/133 603e/133 • 16MB/1GB/128K	NEW	\$3,199
POWERBOOK 1400cs/117 (w/ CD-ROM) 603e/117 • 16MB/750MB/128K	★★★★ DEC. '96	\$1,999 114
POWERBOOK 1400cs/117 (w/o CD-ROM) 603e/117 • 12MB/750MB/128K	★★★★ DEC. '96	\$1,699 114

APS TECHNOLOGIES • 800-568-2891 • www.apstech.com

M•POWER 604e200 604e/200 • 160MB/4GB/512K	NEW	\$4,699
M•POWER 604e200 604e/200 • 32MB/4GB/512K	NEW	\$2,399
M•POWER 604e200 604e/200 • 32MB/3GB/512K	NEW	\$1,999
M•POWER 604e200 604e/200 • 24MB/2.5GB/512K	★★★★ APR. '97	\$1,899 365
M•POWER 603e240 603e/240 • 32MB/3GB/512K	NEW	\$1,899
M•POWER 603e240 603e/240 • 24MB/2.5GB/256K	★★ JUNE '97	\$1,799 338
M•POWER 603e200 603e/200 • 32MB/3GB/256K	NEW	\$1,699
M•POWER 603e200 603e/200 • 24MB/2.5GB/256K	NEW	\$1,599
M•POWER 603e180 603e/180 • 32MB/3GB/256K	NEW	\$1,599
M•POWER 603e180 603e/180 • 16MB/1.2GB/256K	NEW	\$1,399

MOTOROLA • 800-759-1107 • www.mot.com/computer/starmax

STARMAX 5000/300 603e/300 • 32MB/4.3GB/512K	NEW	\$2,899
STARMAX 4000/200 MT 604e/200 • 32MB/2.5GB/512K	★★★★ MAR. '97	\$2,699 367
STARMAX 4000/200 MT ENTERPRISE 604e/200 • 32MB/2.5GB/512K	NEW	\$3,099
STARMAX 4000/160 MT 604e/160 • 32MB/2.5GB/512K	★★★★ MAR. '97	\$1,899 331

PRODUCT NAME
PROCESSOR/CLOCK SPEED • RAM/HARD DRIVE/L2 CACHE

MOUSE RATING
DATE RATED

PRICE
MACBENCH 4.0
PROCESSOR SCORE

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STARMAX 3000/240 MT 603e/240 · 32MB/2.5GB/512K	★★★★ JUNE '97	\$2,299 376
STARMAX 3000/240 MT ENTERPRISE 603e/200 · 32MB/2.5GB/512K	NEW	\$2,499
STARMAX 3000/200 DT 603e/200 · 16MB/1.2GB/256K	★★★ MAR. '97	\$1,299 277
STARMAX 3000/200 MT 603e/200 · 32MB/2.5GB/512K	★★★★ MAR. '97	\$1,799 273
STARMAX 3000/180 DT 603e/180 · 16MB/1.2GB/256K	★★★★ JUNE '97	\$1,249 287
STARMAX 3000/180 MT 603e/180 · 32MB/2.5GB/256K	★★★★ JUNE '97	\$1,395 298

POWER COMPUTING · 800-999-7279 · www.powercc.com

POWERTOWER Pro 250 604e/250 · 32MB/2GB/1MB	NEW	\$4,495
POWERTOWER Pro 225 604e/225 · 32MB/2GB/1MB	★★★★ MAR. '97	\$3,695 461
POWERTOWER Pro 225 RAID 604e/225 · 32MB/8GB/1MB	★★★★ SEP. '96	\$6,280 461
POWERTOWER Pro 200 604e/200 · 16MB/2GB/1MB	★★★★ MAR. '97	\$2,695 452
POWERTOWER Pro 200 RAID 604e/200 · 32MB/8GB/1MB	★★★★ MAR. '97	\$5,780 451
POWERTOWER Pro 180 604e/180 · 16MB/2GB/1MB	★★★ MAR. '97	\$4,195 398
POWERTOWER Pro 180 RAID 604e/180 · 32MB/8GB/1MB	★★★★ MAR. '97	\$6,150 415
POWERTOWER 200e 604e/200 · 32MB/2GB/1MB	★★★★ MAR. '97	\$3,755 456
POWERTOWER 180e 604e/180 · 32MB/2GB/1MB	★★★★ MAR. '97	\$3,455 438
POWERCENTER Pro 210 604e/210 · 32MB/2GB/1MB	★★★★ JULY '97	\$2,525 568
POWERCENTER Pro 180 604e/180 · 32MB/2GB/1MB	★★★★ JULY '97	\$2,225 528
POWERCENTER 180 604/180 · 16MB/2GB/512K	★★★★ MAR. '97	\$2,795 363
POWERCENTER 166 604/166 · 16MB/2GB/512K	★★★★ MAR. '97	\$2,395 333
POWERCENTER 150 604/150 · 16MB/1GB/512K	★★★★ AUG. '96	\$1,495 307
POWERBASE 240 603e/240 · 16MB/1.2GB/256K	★★★★ MAR. '97	\$1,895 309
POWERBASE 200 603e/200 · 16MB/1.2GB/256K	★★★★ MAR. '97	\$1,495 285
POWERBASE 180 603e/180 · 16MB/1.2GB/256K	★★★★ OCT. '96	\$1,295 271

PRODUCT NAME PROCESSOR/CLOCK SPEED · RAM/HARD DRIVE/L2 CACHE	MOUSE RATING DATE RATED	PRICE MacBENCH 4.0 PROCESSOR SCORE
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ALL PRODUCTS, CONFIGURATIONS, AND PRICES ARE AS OF APRIL 15, 1997. SINGLE-PROCESSOR SYSTEMS ONLY.

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INFINITI 4200 DVP 2 604e/200 · 32MB/11.6GB/512K	NEW	\$4,398
INFINITI 4200 DVP 1 604e/200 · 32MB/3.2GB/512K	NEW	\$2,998
INFINITI 4200 ELITE 604e/200 · 32MB/3.2GB/512K	NEW	\$2,898
INFINITI 4200 Pro 604e/200 · 32MB/3.2GB/512K	★★★★ MAY '97	\$2,349 419
INFINITI 4200 SMART 604e/200 · 16MB/2.2GB/256K	NEW	\$1,899
INFINITI 3240 ELITE 603e/240 · 32MB/3.2GB/512K	NEW	\$2,698
INFINITI 3240 POWER 603e/240 · 32MB/3GB/512K	★★★★ MAY '97	\$2,499 374
INFINITI 3240 Pro 603e/240 · 32MB/3.2GB/512K	NEW	\$2,149
INFINITI 3240 SMART 603e/240 · 16MB/2.2GB/256K	NEW	\$1,699
INFINITI 3200 DVP 603e/200 · 32MB/3.2GB/512K	NEW	\$4,297
INFINITI 3200 Pro 603e/200 · 32MB/3.2GB/512K	NEW	\$1,949
INFINITI 3200 SMART 603e/200 · 16MB/2.2GB/256K	NEW	\$1,499
INFINITI 3180 SMART 603e/180 · 16MB/2.2GB/256K	NEW	\$1,349

UMAX · 800-232-8629 · www.supermac.com

SUPERMAC S900/250 604e/250 · 32MB/2.1GB/512K	NEW	\$4,899
SUPERMAC S900/233 604e/233 · 32MB/2.1GB/512K	NEW	\$4,199
SUPERMAC S900/225 604e/225 · 32MB/2GB/512K	★★★ JAN. '97	\$3,699 410
SUPERMAC S900/200 604e/200 · 32MB/2GB/512K	★★★★ JAN. '97	\$3,099 408
SUPERMAC S900/180 604e/180 · 32MB/2GB/512K	★★★ JAN. '97	\$2,999 377
SUPERMAC J700/180 604e/180 · 24MB/2GB/512K	★★★★ MAR. '97	\$2,499 376
SUPERMAC J700/150 604/150 · 16MB/2GB/512K	★★★ JAN. '97	\$2,199 298
SUPERMAC C600/240 603e/240 · 24MB/2GB/256K	★★★★ FEB. '97	\$1,999 299
SUPERMAC C600/200 603e/200 · 16MB/2GB/256K	★★★ MAR. '97	\$1,699 280
SUPERMAC C600/180 603e/180 · 16MB/1.2GB/256K	★★★★ MAR. '97	\$1,499 259
SUPERMAC C500/180 603e/180 · 16MB/1.4GB/256K	★★★★ JUNE '97	\$1,199 268
SUPERMAC C500/160 603e/160 · 16MB/1.2GB/256K	NEW	\$1,199

PRODUCT NAME PROCESSOR/CLOCK SPEED · RAM/HARD DRIVE/L2 CACHE	MOUSE RATING DATE RATED	PRICE MacBENCH 4.0 PROCESSOR SCORE
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ALL PRODUCTS, CONFIGURATIONS, AND PRICES ARE AS OF APRIL 15, 1997. SINGLE-PROCESSOR SYSTEMS ONLY.

Reviews



Low-Cost Cameras, Low-Quality Images

Agfa ePhoto 307

\$299 (list)



Apple QuickTake 200

\$600 (estimated street)



Kodak DC25

\$499 (list)



Sony DSC-F1

\$899 (list)



Digital cameras under \$1,000 are suddenly everywhere, but we've found only one that we can confidently recommend — and it's not one of the four cameras reviewed here.



THEY LOOK SPIFFY, and they're certainly conversation starters. But behind the lens of each of the four consumer-level digital cameras we take a look at this month is a camera that fails to capture outstanding — or even marginally better than acceptable — images. The Agfa ePhoto 307, Apple QuickTake 200, Kodak DC25, and Sony DSC-F1 are the newest cameras priced under \$1,000, and only one — the Agfa ePhoto 307 — produces acceptable image quality. What's more, none of these cameras can match the image quality of the \$600 Olympus D-200L, which we reviewed in our April '97 issue.

When we opened the images we took with the Apple QuickTake 200, Kodak

DC25, and Sony DSC-F1 in Adobe Photoshop, we found they all had a considerable level of *noise* — random pixels that have no relationship to nearby pixels that constitute the image. In the extreme case of the Kodak DC25, there was so much noise that correction was impossible; if the DC25's images had been any more blotchy, we would have sent them to a dermatologist rather than to an image-processing pro. The Agfa ePhoto 307's images exhibited enough noise to require correction, but they were not as severely impaired as those from the other cameras.

The noise problem went hand in hand with artifacts (extraneous pixels resulting from the compression process) and a lack

of sharpness. Images that were taken by the Apple QuickTake 200, Kodak DC25, and Sony DSC-F1 lacked sharpness and edge definition, and the artifacts in their images could neither be corrected nor eliminated.

All the cameras generated images that showed greens as greens and blues as blues instead of greens as yellows and blues as purples — an ability not always found in low-cost digital cameras. Although we can't declare a hands-down winner for the truest color *fidelity*, the overall best color *quality* came from the Agfa ePhoto 307. The heavy presence of artifacts in the Apple QuickTake 200 and Kodak DC25 images made the blue sky in our images look smog-filled.

Each camera also exhibited *blooming* — the tendency of bright spots in an image to bleed into adjoining areas. We saw evidence of blooming in images captured both in bright daylight and with an electronic flash.

Say Cheese, Please

Once you've mastered these cameras — they're not as easy to use as a traditional point-and-click film camera — their individual features can be quite useful. The supplied manual for each camera is straightforward, although each has an occasional blip that requires you to reread the passage and have the camera in front of you to ensure that you are correctly doing whatever you're doing.

The Apple, Kodak, and Sony cameras each have a built-in LCD you can use as the viewfinder or to view the images you've just captured — an exceptionally useful feature whose absence is conspicuous in the otherwise well-designed Agfa ePhoto 307. The Kodak DC25 also has a built-in optical viewfinder, and Apple provides a clip-on optical viewfinder for the QuickTake 200 — but the cheesy plastic attachment puts the eye well above and to the right of the lens axis.

Since each camera has only so much storage space, you need to be able to edit out images that are not worth keeping. The LCD gives you the luxury of editing the images during a photo session. You can look at individual images, or you can look at thumbnails of several images at one time and then select which image you would like to view on the full screen. The Apple QuickTake 200 lets you see nine thumbnails at one time, the Sony DSC-F1 displays six at a time, and the Kodak DC25 displays four. If the image looks correct, keep it; if not, you can erase individual images and free up some space to capture more.

The Apple and Sony cameras have a feature that allows you to vary the LCD brightness, but in bright daylight, the LCD's picture is difficult to see, regardless of the setting. The controls of the cameras with LCD displays are accessible through scrollable menus on the LCDs. Common to all the cameras are controls for image-quality (compression-level) settings, downloading and uploading of images to and from your Mac, exposure control, and shutter-speed control. Built-in flash control is available for the flash-equipped cameras: the Agfa ePhoto 307, Kodak

DC25, and Sony DSC-F1.

Digital cameras don't have a lens shutter, as do traditional cameras, so to give you the audio feedback that a tripping shutter provides, the Agfa, Apple, and Kodak cameras all synthesize the sound of a clicking shutter. That's a good idea, but we would prefer either that their sounds be noticeably louder or that some sort of tactile feedback be included with the audio. The Sony DSC-F1 provides no audio feedback — you don't know if you have actually taken the picture.

Since all these cameras store their images in memory and not on film (the Apple QuickTake 200 uses tiny removable SmartMedia cards, each holding 20 to 30 images), they all depend completely on battery power. The Agfa camera did the best job of conserving battery life, capturing several dozen images without signs of battery drain. The Kodak and Apple cameras ran through their battery life quickly, and users would be well advised to carry a spare set. The Kodak camera uses expensive C123 lithium batteries; Agfa and Apple suggest using lithium AA batteries instead of alkaline AA batteries, because of their longer life. The Sony camera uses a proprietary rechargeable lithium battery that, according to the camera's manual, should take up to five hours to fully recharge. But our tests demonstrated that, on average, it takes seven hours to

fully recharge the battery, and that charge is likely to let you capture fewer than 100 images.

All the image-handling applications supplied with these cameras leave something to be desired, although Apple's was the most intuitive and powerful. However, all were very slow in acquisition mode — and we're talking time-to-take-your-lunch-break slow. Inconveniently, the Sony and Agfa software doesn't permit you to interrupt the image acquisition once it has started, and it doesn't let you specify where you want your images to be saved. Each camera comes bundled with an Adobe Photoshop image-acquisition plug-in.

The Bottom Line: Although you can't expect high-quality images from cameras at these prices, you should at least get consistently *usable* images — and that's what the Agfa ePhoto 307 provides. Unfortunately, it can't compete with the previously reviewed Olympus D200-L. The Sony DSC-F1, although loaded with numerous fine features — movable lens, multiple-exposure capability, handy controls — produces images whose quality is unacceptable except when they are taken under ideal lighting conditions. Still, it's better than the Kodak DC25 and the Apple QuickTake 200, both of which produce images that border on the unusable. • Rick Oldano



Cute, Convenient, and Disappointing

Digital cameras may be all the rage, but few are worth your hard-earned dollars. Of the four we tested, only the Agfa ePhoto 307 produced images of a quality that we could, charitably, call usable.



Agfa ePhoto 307

The Agfa ePhoto 307's images had consistently good color quality and acceptable detail, even in the image's shadows and highlights.



Kodak DC25

Images from the Kodak DC25 were disappointing. Notice the purplish sky and the loss of detail in the shadows and highlights.

Reviews

Power Computing PowerCenter Pro 210



32 MB/2 GB/1-MB L2, \$2,525 (direct)

Power Computing PowerCenter Pro 180



32 MB/2 GB/1-MB L2, \$2,225 (direct)

Midrange Mac OS systems from Power Computing now outrace the former top-of-the-line PowerTower Pro 225, thanks to System 7.6 and an increase in bus speed.



WHAT A DIFFERENCE a year makes.

Power Computing's new — and eminently affordable — PowerCenter Pro 210 and PowerCenter Pro 180 post MacBench 4.0 Processor-test scores that beat even last year's speed king, the more expensive Power Computing PowerTower Pro 225. Replacing the current PowerCenter 180 and 150, the PowerCenter Pro 210 and 180 are not only worthy successors to the speed throne but they also come with a larger cache, a faster graphics controller, and a higher-speed CD-ROM drive.

The PowerCenter Pro 210 and 180 are based on the same Apple-developed Catalyst architecture found in Power Computing's PowerCenter series. However, Apple limited the speed of the system bus — also known as the *memory bus* — on its Catalyst-based systems to 50 MHz or less. Power Computing has cranked the bus up to 60 MHz, as per Apple's original design. Otherwise, the basic configuration remains the same: an upgradable processor card, three PCI slots, 32 MB of RAM (expandable to 512 MB), a 2-GB hard drive, and a 1-MB L2 cache.

To add even more oomph to these systems, a new ATI graphics chip set and an ATI 3-D-graphics accelerator replace the



standard graphics hardware used in the Catalyst architecture, and graphics RAM has been doubled from 1 MB to 2 MB (expandable to 4 MB). The two machines are also the first Mac OS systems to sport 16x CD-ROM drives.

Like the older PowerCenter models, the PowerCenter Pro boxes are sturdy, accessible, easy to open and upgrade — and not likely to win any beauty contests. Each model is available in a desktop or minitower case, with a \$100 price premium for the tower. You can add a second hard drive and a Zip or Jaz drive to the tower models, which include two empty 5.25-inch bays. Although the systems we tested had their internal Narrow SCSI hard drives connected to an Ultra Wide

SCSI PCI card from Adaptec, Power Computing plans to switch to a Fast-and-Narrow SCSI card soon.

The PowerCenter Pro 210 and 180 ports include sound input/output and built-in 10BASE-T and AAUI Ethernet ports, as well as SCSI, monitor, and ADB ports and two serial ports.

Power's business bundle continues to feature ClarisWorks, Nisus Writer, and Now Up-to-Date/Contact. Asanté's NetDoubler network accelerator and FWB's CD-ROM ToolKit and Hard Disk ToolKit PE round out the commercial utilities.

Perhaps the most important piece of software included with the PowerCenter Pro 210 and 180 is Mac OS System 7.6. Primarily a speed upgrade, System 7.6 — along with the PowerCenter Pros' 60-MHz system bus — boosts the PowerCenters' speed to No. 1 on our MacBench Processor test (see chart). The PowerCenter Pro 210 and 180, with Processor-test scores of 568 and 528, respectively, beat every other 180-MHz 604e-based Mac OS system available. Drive speed also benefited from System 7.6, increasing by 33 percent, even though Power continues to use the same IBM DOKS-32160 drive found in the PowerCenter line.

The Bottom Line: The PowerCenter Pro line continues its predecessors' tradition of solid features and excellent speed at a fair price. At \$2,525 and \$2,225, respectively, the PowerCenter Pro 210 and 180 desktop models are priced aggressively. The PowerCenter Pros' lead may be short-lived, however, as other vendors begin shipping systems with the faster OS and as speedier processors are introduced. But when you're pricing PowerCenter Pro systems against the competition, don't forget the software bundle. — *Shelly Brisbin*



A 60-MHz Bus and System 7.6 • a potent combination creates a new processor-speed champ

To see how fast the PowerCenter Pro 210 and 180 can go, we subjected them to our industry-standard MacBench 4.0 test suite. Thanks to their 60-MHz bus and their use of System 7.6, the PowerCenter Pro 210 and 180 compared favorably to two other systems in Power's lineup: the PowerTower Pro 225, which has a 45-MHz bus and System 7.5.3, and the PowerCenter 180, which has a 60-MHz bus

and System 7.5.3. The tested systems each come with 32 MB of RAM, a 1-MB L2 cache, a 2-GB hard drive, a 16x CD-ROM drive, and an ATI chip set for 2-D and 3-D graphics. MacBench 4.0 scores are relative to those of an Apple Power Mac 6100/60 with a 30-MHz memory bus, a 250-MB hard drive, 2 MB of built-in graphics RAM, and no L2 cache. This baseline system is assigned a score of 100 on all tests.

	MacBench 4.0 Processor Score	Floating Point Score	Disk Score	Publishing Disk Score	Graphics Score	Lo-Res Publishing Graphics Score	Hi-Res Publishing Graphics Score	CD-ROM Score
POWER COMPUTING POWERCENTER PRO 210	568	422	383	329	437	462	526	455
POWER COMPUTING POWERCENTER PRO 180	528	366	381	329	407	435	499	451
POWER COMPUTING POWERTOWER PRO 225	461	446	339	264	528	494	553	362
POWER COMPUTING POWERCENTER 180 <small>Reference systems</small>	363	314	250	178	368	366	445	321



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Reviews

SoftWindows 95 4.0



\$349; upgrade, \$99 (estimated street)



IT'LL NEVER REPLACE a real flesh-and-blood PC, but SoftWindows 95 4.0 — at about one-third the cost of a Pentium-equipped PCI card — is an affordable software-only alternative, if you can put up with its lackluster speed.

SoftWindows 95 4.0 delivers more Windows 95 functionality than any hardware solution: It sports complete Internet readiness, PC and Mac networking, and better multimedia support than previous SoftWindows versions. SoftWindows 95 4.0 is also faster than its predecessors, but even running on a high-speed Power Mac, a 9500/200, it's still only about as fast as a 50-MHz 486DX-based PC.

SoftWindows 95 4.0 displays Windows 95 on your entire monitor or in a separate Mac window. Either way, you can copy and paste between Mac and Windows or DOS applications.

Like past versions, SoftWindows 95 4.0 emulates a 486 processor, and it now adds Pentium instruction sets for better compatibility. In our compatibility testing, we had no trouble running a range of Windows software, including Microsoft Access, PowerPoint, Word, and Excel, as well as CorelDraw, Adobe PageMaker, Borland Paradox, Lotus Word Pro, and Macromedia Backstage. SoftWindows 95 4.0 is the first version that runs on PowerBooks — it ran smoothly on our PowerBook 3400/200.

SoftWindows 95 4.0 now supports PC



Speedy It Ain't

The *raison d'être* of SoftWindows 95 4.0 is convenience, not speed — which we discovered when we tested it by using WinBench 97, the industry-standard benchmarking tool for PCs, on a Power Mac 9500/200 with 32 MB of RAM. For comparison, we also tested three Wintel PCs based on three different microprocessors: 90-MHz and 200-MHz Pentiums and a 50-MHz 486DX.

WinBench CPU WinMark32 Score

SOFTWINDOWS 95 4.0 53

50-MHz 486DX PC 49

90-MHz PENTIUM PC 176

200-MHz PENTIUM PC 392

Reference systems

PC-emulation software is getting faster, and Insignia Solutions' latest offering is Internet-ready, includes improved multimedia capabilities, and boots up in a flash.

and Mac SCSI devices. You can use the Mac's CD-ROM drive for Windows discs, and a new Windows ASPI device driver allows you to bypass the Mac's CD-ROM driver to run dual-format Windows CD-ROMs; previous versions didn't.

Also new are 32-bit sound drivers, which support the Microsoft Direct X

Too Bad It's So Slow

To gauge SoftWindows 95 4.0's speed, we used WinStone 97 and WinBench, standard Windows benchmarking tools. We first used an Apple Performa 6400/200 with SoftWindows 95 4.0's RAM allocation set to 24 MB. The WinStone 97 Business benchmark showed that



Install Insignia Solutions' SoftWindows 95 4.0, and you can run Windows 95 on your Mac OS system and have access to Windows Internet and networking software.

driver to provide 44-kHz Sound Blaster-compatible audio; however, Sound Blaster audio is still not supported in DOS — a real drawback for DOS-based games. New 32-bit video drivers enable SoftWindows 95 4.0 to go beyond its former 8-bit-color limit and display thousands or millions of colors.

SoftWindows 95 4.0 comes with a copy of Microsoft Internet Explorer 3.0 and related plug-ins, including Microsoft Office viewers, RealAudio, StuffIt Expander, PK.ZIP, and Macromedia's Shockwave. Web developers who need to see how their Web pages look on both Mac OS and Windows systems can run browsers simultaneously in both environments, using a single IP address. TCP/IP and other network connections run over the Mac's Open Transport or classic networking.

Using SoftWindows 95 4.0 is also an easy way to connect your Mac to PC LANs; it includes Windows client software for Novell NetWare and LAN Manager. You can also connect to Banyan VINES and DEC PathWorks networks by installing your own client software.

SoftWindows 95 4.0 ran 22 percent faster overall than the previous version, SoftWindows 95 1.0, and 30 percent faster in the spreadsheet and word-processor tests.

We then installed SoftWindows 95 4.0 on a Power Mac 9500/200, gave it a 32-MB RAM allocation, and ran WinBench's 32-bit CPU WinMark. Its processor score was less than a third of that turned in by a 90-MHz Pentium PC and only slightly better than that of a 50-MHz 486DX PC with 16 MB of RAM. SoftWindows 95 did beat the Pentium PC in one area, however: Insignia's TurboStart feature can launch Windows 95 in 20 seconds.

The Bottom Line: If you need to run Windows productivity software or hook up to a PC network, getting SoftWindows 95 4.0 is an alternative to buying a Pentium card or a Wintel PC. Gamers who want to blast their way through the morass of PC-only shoot-'em-ups, however, should buy a Pentium-based PC — or at least wait until we test Connectix's Virtual PC when it's released later this summer. • John Rizzo



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Reviews

Panasonic KXL-783M

\$499 (list)



APPLE HAS FINALLY AWAKENED and shipped a couple of PowerBooks with built-in CD-ROM drives, but owners of earlier PowerBooks must turn to external drives to play — or listen to — their favorite silver discs. The new portable Panasonic KXL-783M not only provides high-speed 8x drive performance but it also doubles as an audio-CD player.

Weighing slightly over a pound, the KXL-783M is shaped more like a Walkman-type CD player than a bulky desktop unit. It has an LCD and all controls conveniently placed on top. Its two small speakers are also handy, saving you the trouble of lugging around a set of external speakers — unfortunately, they produce tinny and weak sound, even with the KXL-783M's Spatializer 3-D-stereo enhancement. (An external-speaker jack is included.)

The drive is easy to set up and use, but it comes only with a SCSI-2-to-PowerBook (HD-30) cable; if you want to hook up the drive to your desktop Mac, you'll need to buy a SCSI-2-to-DB-25 cable — not the easiest cable to find. The KXL-783M has a 128K buffer cache and ships with FWB's CD-ROM Toolkit. Unfortunately, setting the SCSI ID involves the use of DIP switches. The drive uses six AA batteries, but running off batteries results in decreased speed. An AC adapter is included, and an optional rechargeable battery is available for \$59.

To gauge the KXL-783M's speed, we ran it through MacBench 4.0's CD-ROM test, which emulates the drive-access activities of five popular CD-ROMs. We first

Portable, speaker-equipped CD-ROM drive is fast when plugged in but slow when on batteries.

tested the KXL-783M plugged in via the AC adapter. It had good overall speed and compared favorably to other 8x CD-ROM drives in our last roundup (May '97, page 54), scoring 286 in the CD-ROM test. But when we ran the same tests, using battery power, we saw a drastic (40 percent) decrease in speed. The batteries powered the drive for approximately two hours, and

speed slowed as battery power drained. Panasonic recommends using the battery option only when there is no power source nearby. If you must use batteries, we recommend purchasing the rechargeable battery. Using the drive strictly for audio purposes consumes less power.

The Bottom Line: At \$499, the Panasonic KXL-783M is a bit expensive and its sound is weak, but for mobile users, its portability and audio integration may be worth investigating. Although battery life is brief, using the drive with the supplied AC adapter provides good speed. • *Martin Wong*

Insta.html

\$179 (list)



DROP IT INTO YOUR FreeHand 7.0 Xtra folder, and Insta.html, from Trailer Parc Technologies, will accurately convert FreeHand documents for Web use. It even maintains the format of complex layouts, without your having to deal with the pain of sifting through HTML code. But Insta.html isn't completely pain-free — instead, the pain comes from its inefficient interface.

Insta.html's best features include automatic conversion of graphics to GIF or JPEG format and the ability to group items and output them as a single image. Insta.html also supports Netscape Navigator and Microsoft Font Face attributes, so you can designate substitute fonts to display in compliant browsers if your first choice is unavailable on the target system.

Another nice feature in Insta.html is that it recognizes and maintains hyperlinks you set up with FreeHand's URL Editor. Also, if you put placeholders for Java applets and Shockwave animations into your FreeHand documents, Insta.html will automatically create the necessary code to incorporate them into your Web pages.

Unfortunately, accessing Insta.html's helpful features is annoying and clumsy. The worst example crops up in an everyday task: setting transparent backgrounds for GIFs. First, using FreeHand, you have to export a dummy GIF — any GIF with a transparent background. Unfortunately, you need to jump through these hoops every time you launch FreeHand — if you don't, the GIF images on your Web pages

FreeHand tool puts your art on the Web — with some difficulty.



Insta.html accurately converts FreeHand 7.0 files for use on the Web, but its awkward interface needs work.

will be surrounded by white rectangular backgrounds, spoiling the polished look of graphics floating on the designated background.

Insta.html's dialog boxes could be better organized: You must shuffle among several windows rather than move smoothly through the export-setup and -execution processes. Also, when you want to link a Java applet or Shockwave animation to your page, you're offered no avenue for searching directories to select the source file. And since Insta.html does not support standard Copy and Paste commands, you must type in the exact name of that Java applet's parameters from memory.

The Bottom Line: Insta.html is a helpful tool for FreeHand users who need to convert their files into Web-ready pages. Unfortunately, its unwieldy interface needs substantial improvements.

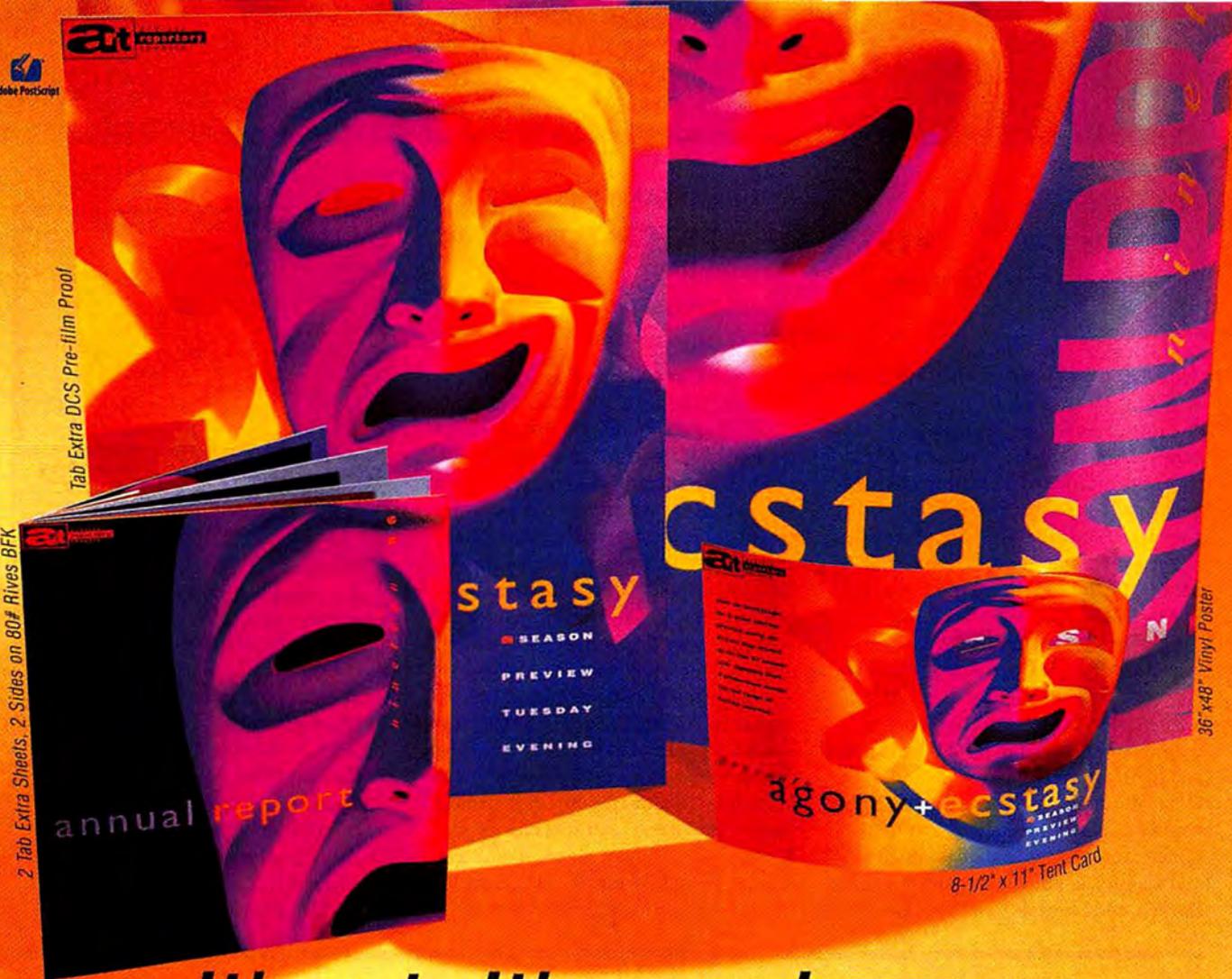
• *Shelley Cryan*



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Reviews

Texture Creator 2.0



\$129; upgrade from Adobe TextureMaker, \$79 (list)

DEAD AS ADOBE TEXTUREMAKER but reborn as Texture Creator 2.0, from Three D Graphics, this texture-generation application has some interface enhancements, twice the number of texture presets, and newfound rendering speed compared to its previous incarnation. Unfortunately, it has also lost some features that would have made this iteration a more productive tool.

You use Texture Creator to design organic-looking textures and surfaces by combining up to seven layers of effects, from built-in procedural effects (wood, marble, stone, and clouds) to colorization and lighting layers. You can also adjust 3-D transformations, color and gradient controls, opacity, procedural texture parameters (pattern turbulence, variance, and scaling), application modes (Lighten, Darken, and Multiply), and rotation.

Texture-creation tool is fast and versatile but includes fewer features than did its previous incarnation.

Texture Creator's most welcome new aspect is its faster speed. Three D Graphics claims that it's ten times as fast; our testing indicates three to five times as fast.

One new feature is a step-by-step Wizard that takes you through the process of creating specific types of textures. The Wizard uses a series of questions about the desired look of the texture: size, resolution, type, color and lighting characteristics, and specific parameters for different procedural-texture types.

Oddly, you can't make QuickTime movies in Texture Creator — a much heralded feature of TextureMaker. Two other TextureMaker features that were left out of Texture Creator are support for Adobe Photoshop filters (TextureMaker implementation was buggy, however) and a text prompt bar at the bottom of the working window to help identify tools, button



Texture Creator 2.0's rich layer-parameter interface isn't a significant advance over that of the original TextureMaker application.

features, and the texture-creation process.

The Bottom Line: Those currently using TextureMaker will want to upgrade for the improved speed but will not find anything new in the way of texture-creation parameters. For digital artists looking for yet another source of textures, Texture Creator is certainly worth a close look. • David Biedny and Nathan Moody

Tektronix Phaser 600 Wide Format Printer



\$11,995 (list)

Wide-format printer uses solid-ink technology to produce impressively large images of less-than-impressive quality.

THE HOT ACTION in color printing these days may be on the desktop, with a crowd of top-quality inkjet printers now available for well under \$500, but Tektronix is bucking the downsizing trend: Its \$11,995 Phaser 600 Wide Format Printer won't fit on your desk — in fact, it didn't even fit in our building's elevator — and its prints are 36 inches wide and up to 44 inches long. Bigger can also be better.

Wide-format printers have been around for several years, usually using one of two ink-delivery methods: inkjet or electrostatic. The Phaser 600 Wide Format Printer uses a third technology: the same solid-ink system that has proven so successful for Tektronix's Phaser 300-series printers.

The Phaser 600 comes with its own internal RIP, 8 MB of RAM (expandable to 40 MB), 17 resident fonts (expandable to



39), and an internal 1-GB hard drive. Using Tektronix ColorStix solid ink, you don't have to worry about messing around with bottles of liquid ink or wondering how much is left — the sticks of ink are in plain view.

We printed the same 24-x-28-inch Adobe Photoshop image, using Apple's

LaserWriter 8 driver, at three resolutions: 300 dpi, 150 dpi, and 75 dpi. Although the RIP time differed, the printing time was very close: around 11 minutes for each run. The output quality also did not vary: It was nearly impossible for even a trained eye to see differences in quality between 75-dpi and 300-dpi images.

A constant shortcoming we saw with all three Photoshop files — as well as with Adobe Illustrator and QuarkXPress files — was noticeable banding. We also found banding when we printed CMYK ramps in Illustrator as well as several squares filled with black or various combinations of CMYK percentages.

Another trait we noticed in all the output was the fragility of the ink on the paper. We saw several examples of the ink smearing when something as sturdy as a fingernail was dragged across it. Output from the Phaser 600 should be treated with a fixative or should be laminated, to protect the image.

The Bottom Line: Although the Tektronix Phaser 600 Wide Format Printer does exhibit some shortcomings, it's a useful tool for creative professionals who need jumbo images — given the right setting. • Rick Oldano



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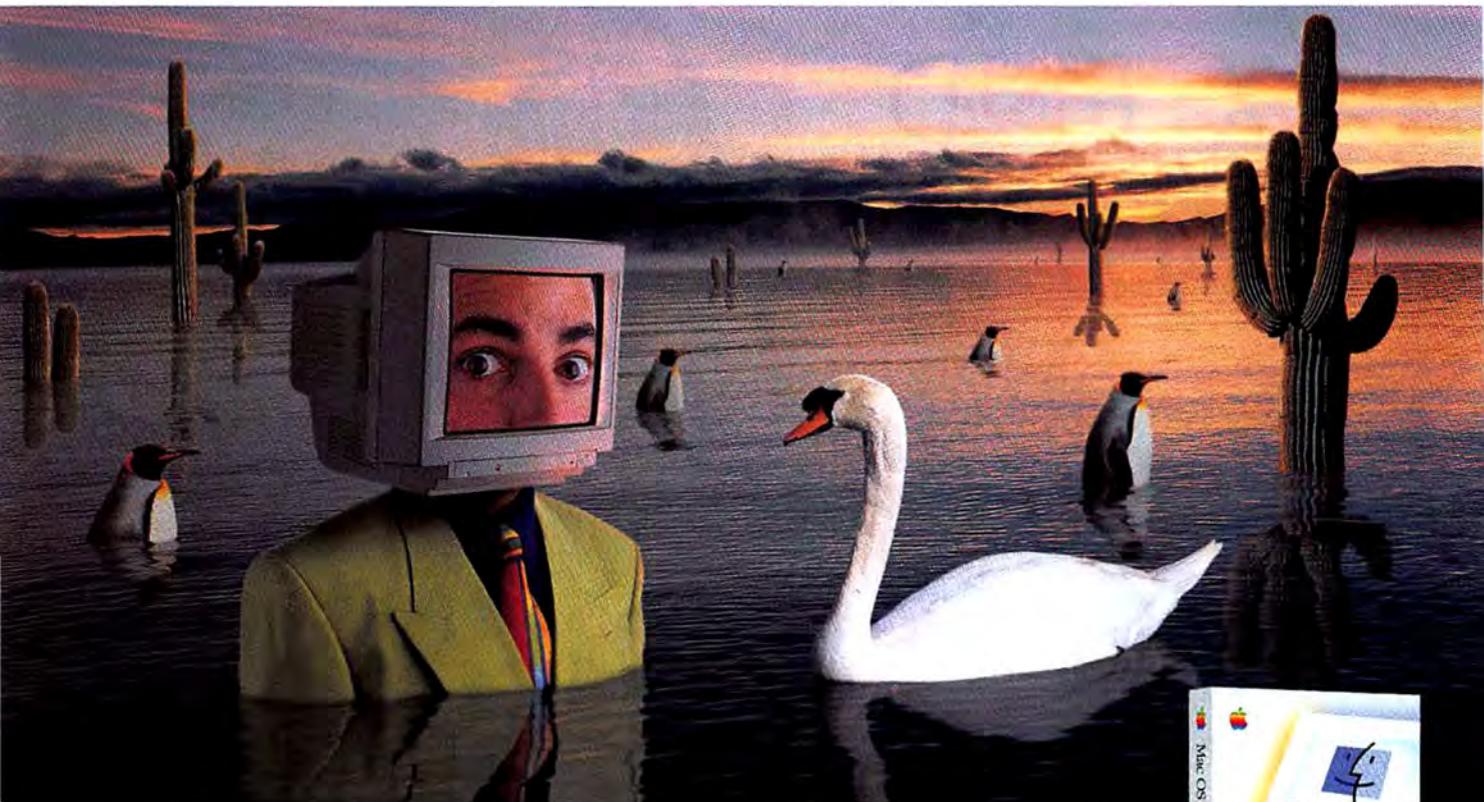
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InfoGenie 2

\$79.95 (list)

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InfoGenie's looks haven't changed from those of version 1: In addition to menu-bar commands, it includes a bar of buttons for such common actions as adding and deleting records, inserting the current date and time, and printing envelopes and it also has a field for quick-find searches.

InfoGenie 2 includes a link for Visioneer's popular PaperPort scanners — just drop the link (or an alias of it) into the Extras folder in the PaperPort software folder, and an icon for InfoGenie will appear in the PaperPort software. When you drop a scanned document into the InfoGenie link, the document is read into a text file and dropped into an InfoGenie free-form file. You have to create a separate link for each file and the links will not work with field-based files, but since InfoGenie can also import e-mail files, the PaperPort link makes this database perfect for keeping a searchable log of your correspondence, both electronic and paper.

Another new feature lets you use InfoGenie as a URL-bookmarking utility. If you set up a file that includes fields called Name, URL, and Notes, two new buttons will appear in InfoGenie's button bar. One will read the URL of the Web page currently in your Web browser and create a record for it in InfoGenie; the other will send the URL shown in the data file's current record to a Web browser.

The Bottom Line: InfoGenie 2 makes it easy to tailor a simple database to your individual needs. If your information just doesn't fit other programs and ClarisWorks is too much — or too little — for what you want to do, you'll find InfoGenie a flexible and easy database manager that's well suited to all kinds of personal data. • Carolyn Bickford

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CIRCLE 71 ON READER SERVICE CARD

Reviews

Sony DKC-ID1 Digital Still Camera
 Sony, Park Ridge, NJ
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Sony DKC-ID1 Digital Still Camera



\$1,795 (list)



LEAVE IT TO SONY to be one of the first companies to attack the niche between consumer and professional digital cameras. Priced at \$1,795, its new DKC-ID1 Digital Still Camera includes several features borrowed from professional cameras — such as Type II PC Card storage and a SCSI port — but it's designed to be as easy to use as a consumer-level model.

The DKC-ID1 also features a 12:1 zoom lens, built-in flash, programmed or shutter-priority autoexposure, adjustable viewfinder focus, manual or autofocus capability, and the ability to play back the images already captured in its CRT viewfinder.

That viewfinder, however, presents problems that need to be addressed to improve the camera's usability: First of all, it's dark even in optimal low-light situations. Also, it proves to be unreliable for manual focusing; we recommend that you leave the DKC-ID1 in its autofocus mode. The viewfinder is also saddled with a rubber eyecup that does not effectively block out ambient light; too much light leaks into the viewfinder, degrading its usability further. The viewfinder is also beset by highly visible raster-scan lines. Not only are these a distraction but eye fatigue also soon sets in.

We found that connecting the DKC-ID1 to a Mac is problematic. Carefully following the manual's instructions, we were never able to get the supplied software to "see" the camera so that we could view or download the images from the PC Card. Every test generated the error message "Sony camera not found or not ready." Our only option here was to copy all the images from the PC Card by inserting it into Sony's optional PC Card reader or into the PC Card slots in a PowerBook.

The manual is also remiss in its description of a few features. For example, it doesn't provide information on how to white-balance the DKC-ID1. You see the "WB" in the viewfinder, but you have no information on how to adjust to the light source under which you are shooting.

On the plus side, the images captured by the DKC-ID1 show little evidence of the artifacts we have come to expect from

Feature-rich digital camera can't produce images of a quality that justifies its price.



other nonprofessional digital cameras. However, they do exhibit a marked tendency toward softness — so much so that many images appeared completely out of focus. We believe that this is most likely a CCD problem, as the softness was evident whether the camera was on autofocus or on manual focus. Again autofocus did seem to fare better, especially when the image was close to the lens. Strangely, the images seemed to be sharper when viewed in Adobe Photoshop instead of in the supplied PhotoStudio software.

Also, the DKC-ID1 is not immune to *blooming* — an image-marring phenomenon common to most digital cameras, from \$500 consumer models to multi-thousand-dollar professional rigs. Blooming occurs when a pixel on a camera's CCD is hit with too much light; the resulting excessive charge then cascades over to surrounding pixels on the CCD, where it blows out the information originally captured — the pixel records white where it should be recording color. The best cameras show the least blooming; the DKC-ID1 is not one of the best cameras.

The Bottom Line: The Sony DKC-ID1 Digital Still Camera does address many of the concerns about a paucity of features in the under-\$1,000 camera bracket, for a relatively few extra dollars. It has many features that provide a flexibility that's lacking in less expensive cameras. However, these benefits are offset by the camera's many problems. Its viewfinder, software, and soft images can all be worked around or accepted, but overall the DKC-ID1 isn't the problem solver it has the potential for being. · Rick Oldano

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Reviews

Touch-3D 2



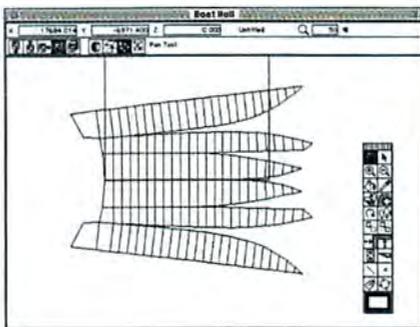
\$395 (list)

IF YOU'RE A DESIGNER who works in 3-D, you no longer have to content yourself with 2-D printouts. Lundström Design's Touch-3D 2 lets you create 3-D models and then unfolds them into 2-D profiles that you can print out and fold up into physical models of your 3-D creations.

Version 2 adds simple modeling features and much needed tools for better control of the way a model is unfolded. Despite these improvements, however, the program is still difficult to use.

Touch-3D has none of the primitive-creation or basic extrusion and lathing tools that have come to be standard tools for a 3-D modeler. Instead, you make models by creating individual three- or four-sided polygons and then attaching them to each other, using various tools. Learning to use the modeler without the manual is nearly impossible — although the poorly organized, confusing manual

3-D model maker creates 2-D prints you fold into 3-D shapes.



Using Touch-3D, you can create 3-D images and then "unfold" them into 2-D images that can be printed, cut out, and hand-folded into models of the original 3-D shape. Shown here is a boat hull in unfolded form, ready to be printed.

doesn't provide much help.

Although the program lacks built-in primitive-creation tools, several premade, ready-to-import shapes such as spheres and cubes are included. Touch-3D can

import 2-D and 3-D DXF files, MiniCAD files, and 3DMF documents, but because it supports only three- and four-sided polygons, not all the shapes in these files will necessarily import.

You can switch among four viewing modes — front, side, isometric, and unfolded — to look at your Touch-3D models. Some of Touch-3D's modeling tools work in the unfolded view, a handy feature when you want a little more control over the unfolding of a shape.

Touch-3D doesn't necessarily create a clean, ready-to-fold model. Various model components often overlap in a confusing mass of lines. With the new Resort tool, it's possible to organize your model to better facilitate its eventual folding. However, like the other tools, the Resort tool requires a lot of experimentation.

The Bottom Line: If you regularly use 3-D models for visualization, using Touch-3D is a good way to get simple shapes out of the computer and into 3-D form. Unfortunately, getting the desired results may require a lot of work. • *Ben Long*

RunShare GSA 2 for PCI Macintosh



\$1,799; with five client licenses, \$2,299 (list)

Network utility provides a significant speed boost to all your large-file transfers.

MacUser LABS **DOUBLE YOUR PLEASURE** — actually, more than double it — with RunShare GSA 2 for PCI Macintosh, from RUN. This nifty utility can give a significant speed boost to network file transfers: According to our

testing at MacUser Labs, RunShare GSA's trick of replacing normal-sized AppleTalk packets with its own, larger AppleTalk packets that require less overhead can more than double the speed with which files move to and from your server. Sure, RunShare GSA is expensive, but if you're in a high-pressure content-creation environment, every second saved is a dollar earned.

RunShare GSA is a control panel/extension combination that resides on an AppleShare server and accelerates file transfers between the server and networked Macs that have RunShare GSA's client software installed. The software is completely transparent, meaning there's no special interface: You simply move and open files normally, using the Finder. The \$2,299 server package comes with five client licenses, whereas the \$1,799 package is server-only.

In order to put RunShare GSA through its paces, we compared its file-transfer speed with that of unaccelerated AppleTalk and with that of Asanté's NetDoubler

software (see review, November '96, page 70). We found that, on average, RunShare GSA delivered our test file two and a half times as fast as unaccelerated AppleTalk. RunShare GSA was also faster than NetDoubler, although the margin wasn't as big. Our test network was based on 10BASE-T Ethernet — although you should also experience speed improvements if your network uses 10BASE-T Ethernet, we recommend that you upgrade to 100BASE-T before investing in RunShare GSA 2.

The RunShare GSA client software can also speed file transfers among networked Mac clients. And if you store Photoshop, Illustrator, or FreeHand files on a server and open them and/or save them to client Macs, RunShare GSA will accelerate these operations as well. Print acceleration works with AppleShare's print spooler as well as with Luminous' Color Central and PrintCentral spoolers.

The Bottom Line: RunShare GSA 2 is faster than NetDoubler, and it offers application and print acceleration, features NetDoubler lacks; it's also way faster than using unaccelerated AppleTalk. But you pay a bundle for RunShare GSA 2's speed and features: It's an order of magnitude more expensive than the \$99-per-user NetDoubler. • *Shelly Brisbin*

RunShare Saves You Time

We were impressed by the speed gains RunShare GSA 2 can provide. We performed a Finder copy of a 100-MB Adobe Photoshop file from an Apple Workgroup Server 8550/180 to a Power Mac 7600/132 client without any software acceleration, with NetDoubler on both the server and the client, and with RunShare GSA 2 on both the server and the client. Both machines used Fast Ethernet (100BASE-T) PCI cards as well as a Fast Ethernet hub.

Network file transfer
Seconds

RUNSHARE GSA 2	63
ASANTÉ NETDOUBLER	85
UNACCELERATED APPLE TALK 161	

Reference systems

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It's got to be perfect, but color output costs too much.

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Reviews

CommuniGate

\$200 (25-user license); modules (SMTPGate, FaxGate, UUCPGate, PagerGate, FileGate), \$100 each (list)

A JACK-OF-ALL-TRADES communications wannabe, Stalker Software's CommuniGate has ambitious goals as a modular telecommunications package. But even though it offers e-mail, fax capability, voice and pager message management, and other features, the program is bogged down by its serious interface and documentation shortcomings.

CommuniGate uses a single interface to move messages among users, both locally and via the Internet. With CommuniGate on the server and the CommuniGator application on each client system, you create messages within a multipaned window.

Unfortunately, getting the CommuniGate system up and running is a tiresome chore. Stalker does not provide an installer application to ease the process of getting the myriad CommuniGate files

Telecommunications tool does almost everything but is hard to install and annoying to use.

and modules from their individual StuffIt files into their proper locations — a severe drawback, since installation of the server software and the modules must be completed in a precise sequence.

Users of CommuniGate will find that



Behind CommuniGate's sleek message window, which supports styled and colored text, lurks a cumbersome, counterintuitive interface.

the manual is a constant companion. Unfortunately, it's a very poor companion, filled with distracting notes and warnings designed to address a variety of special cases associated with the way your Internet access is set up. As useful as this information may be, it should be organized in addenda in the back of the manual. You'll find that individual modules are poorly documented and that the dense language is jargon-filled.

The client software's user interface is also poorly implemented. For example, CommuniGator actually lacks a Send button; to send a message, you press Command-E. Intuitive, eh? It supports graphics, styled text, and multiple address books (personal and shared), but you may have trouble remembering what information should go in the unlabeled fields.

The Bottom Line: In terms of its capabilities alone, CommuniGate is a versatile package. But the multiple errors in its interface and documentation make it impossible to recommend, particularly for the individuals and small-business users for whom it is intended. — Shelly Brisbin

ClickWorks 1.0.4

\$985 (list)

CLICKWORKS PROVIDES a fast way to create slow multimedia. Its interface is simple and efficient. Click on one palette to add text, images, video, or sound. Click on another to add interactivity. Click on a third to control how your presentations will unfold over time. Because the program's point-and-click interface keeps you free from scripting, beginners can quickly produce attractive multimedia projects.

However, when we played back our creations, moving from screen to screen was unacceptably slow. (We tested on peppy equipment: an Apple Power Mac 9500/120 and PowerBook 3400/180.)

This turgid speed is a pity, because ClickWorks does some powerful stuff. We easily imported a variety of material, which could then respond to typical multimedia commands (such as MouseUp and GoTo). We quickly built a rich set of behaviors by combining these events as parts of IF/THEN/ELSE statements.

Although ClickWorks' interface is generally easy to use, a scripting option (as with Director 6 or SuperCard 3) would let

Multimedia tool builds complex projects quickly and easily.

advanced developers rapidly go beyond what ClickWorks permits. Currently, you can extend ClickWorks only with C++.

ClickWorks exhibited other strengths: Screen templates were easy to create, and any changes to them showed up in their clones. Objects could be controlled via timelines (that is, sequentially) or via mouse clicks, allowing us, for example, to have a movie appear after a screen opened and then to let end users click to start it playing. We could also assign different de-

sign elements to different members of a production team and easily fuse them.

ClickWorks ships with an extension for creating hybrid CD-ROM/Web presentations, so end users can download and display the latest version of time-sensitive information. Although it has potential, it works only with single images or text files, not whole Web pages.

ClickWorks also suffers from version-1 blahs. It occasionally crashed, it couldn't scroll text, and MIDI files wouldn't play.

The Bottom Line: ClickWorks accelerates multimedia development, but given its price, its finished presentations should run a lot faster. — Arnie Keller 



ClickWorks' palettes make it easy to choose media, style text, and set how objects will behave when end users click on them.

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cally under your desk — near an outlet for its AC plug.

The LCS-2408 makes multimedia soundtracks richer and greatly improves the fidelity of audio CDs. (It also adds immediacy to explosions and other sound effects in your favorite games.) Getting one may be the least expensive way to upgrade your computer audio system. • *Jim Shatz-Akin*

SpellTools 1.2.1



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SpellTools also excels at cleaning up e-mail text, letting you strip out carriage returns, delete extra spaces, and eliminate those copious > characters from e-mail.

In addition, you can find and replace text; change case; get word, line, and character counts; and have selections read back to you by Apple's Text-to-Speech. Despite a few bugs (running the program with Microsoft Word can send margins and fonts back to their defaults), SpellTools can quickly become indispensable.

• *Brooke C. Wheeler*

Daniel in the Lions' Den



The Story of Creation



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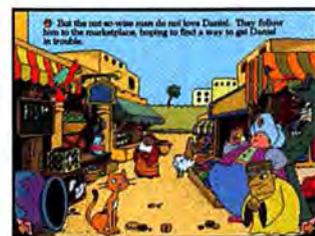
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Daniel in the Lions' Den features three bumbling villains and three comical hyenas, and The Story of Creation uses bright colors and absolutely engaging music to tell this simple story. Kudos to Marc Aramian for his wonderful compositions — it's rare to find such enjoyable music in a kids' CD-ROM. • *LaMont Ridgell*

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www.ilap.com/collections

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DIGGING THROUGH the past can turn up unusual treasures — and you'll find plenty in this ten-CD-ROM collection of 3,505 well-restored historical images, in high and low resolutions. The library includes its share of intricate scientific engravings and unusual portraits as well as sketches of nondescript tools.



The breadth of All Our Yesterdays' collection as a graphic resource makes it a worthy investment for artists who want to save hours of research. The graphics are indexed and well organized. But for the price, it's disappointing that you'll still do your time in Photoshop — almost all the images are silhouetted on white backgrounds, but none include clipping paths. • *Scholle Sawyer*

SPeechPrompter 1.1 and SPeechPrompter 2.3



\$89.95 (list)

The Orator Co., Chula Vista, CA

800-565-7504 or 619-420-9150

Reader service: circle #424

FOR A MERE \$89.95, The Orator Co. provides you with two versions of its turn-your-Mac-into-a-TelePrompTer software. Too bad they're so poorly designed.

Neither is easy to use, and both scroll your speech — erratically — on only a fraction of your Mac or PowerBook screen. The monochrome version, 1.1, is buggy in the extreme and doesn't resize its window to fit a PowerBook 100-series screen; important buttons are unreachable. The color version's rudimentary slide-display capability gives new meaning to the word *kludge*. Back to the drawing board, guys. • *Rik Myslewski*

CD-Speedster 1.0



\$29.95 (estimated street)

Synchronys Softcorp, Culver City, CA

888-777-5600 or 407-333-4237

www.synchronys.com

Reader service: circle #422

PROMISING TO BURN rubber, this new utility claims to speed up any CD-ROM drive through its high-performance caching routines. Instead, it crashes and burns.

The utility consists of a control panel and its caching extension. Before installing it, back up your current driver, or it will be deleted. Synchronys also recommends disabling any third-party driver, such as FWB's CD-ROM Toolkit.

Although CD-Speedster did produce some speed gains, we discovered numerous problems: system lockups, random crashes, and the inability to recognize some CD-ROMs. If you're dying for more speed, you may want to wait for the next version. • *Martin Wong*

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CIRCLE 90 ON READER SERVICE CARD

Buyers Guide

Multimedia Projectors

The newest projectors may replace the typical conference-room monitor.

MacUser LABS WHEN IT'S TIME TO MAKE that critical sales pitch on the road, or when you need a display system more flexible — and viewable — than that monolithic monitor in your conference room, it's time to invest in a multimedia projector. However, until recently, most multimedia projectors — whether they were based on LCD (*liquid-crystal display*) or DLP (*digital light processor*) technology — had less than top-notch image quality and were difficult to use.

Good news: The newest batch of multimedia projectors delivers improved performance, especially when displaying the latest trendy presentation technology — full-motion video. To see which are best suited for presenters' needs, MacUser Labs tested ten.

Weighing the Form Factor

With well-designed controls, Mac-like menus, and setup accessories, the In Focus projectors were the easiest to hook up and use. Both are also quite portable: The LitePro 220V weighs 16 pounds, and the LitePro 720 checks in at 12 pounds.

Both the LitePro 220V and the LitePro 720 ship with a Cable Wizard — a

cleverly designed, hassle-reducing connection accessory that separates the Mac mouse, video, and audio ports from their PC counterparts by means of a dial that conceals the unnecessary ports.

More rugged than the In Focus projectors is the compact Sarif Shuttle LT800, which has a muscular design that's well suited for the abuse of travel. Manual zoom and focus controls are all easily adjustable, but the Shuttle's controls lack the finesse of backlighting, making them hard to see in a dark room.

Weighing a trim 9.3 pounds, the Lightware VP800 has the smallest footprint of all the projectors we tested. It comes with a padded case suitable for use as check-in luggage. Unfortunately, its remote control is not backlit and doesn't match the controls on the projector. We did, however, like the remote's freeze and pointer functions, which let you move a cursor around the projection surface and freeze the image during video playback.

At 26 pounds, the Proxima DP4100z is the heaviest and one of the largest of the bunch. Because of its weight, it's best used as a conference-room projector. Its on-screen controls use a helpful gauge that

leaves a ghost of your previous settings while you make changes. As with the Proxima DP5600, the DP4100z's projector controls are backlit but don't match the controls on the remote. Also, instead of backlighting the controls on the projectors' remotes, Proxima uses an ineffective glow-in-the-dark ink. (All Proxima projectors ship with a new Cyclops interactive pointer wand, but it was not ready during our testing cycle.)

The Sony VPL-V500Q has zoom-lens and manual-focus functions, but it was the only projector of the bunch that did not ship with video or audio cables. This 22-pound projector comes with a remote control that isn't backlit, and the video adapter has annoying DIP switches that need to be set correctly for video synchronization. Fortunately, the documentation provides the correct settings.

The basic, sturdy design of the Sharp XG-E69OU makes the projector appropriate for ceiling mounting but light enough for carrying. Its controls are well conceived and effective, but the backlit controls on its remote control differ from those on the projector.

On-Screen Scrutinizing

The Proxima DP5600 produces sharp images and good brightness, which we measured at 701 lumens. The Sony VPL-V500Q's brightness, 695 lumens, comes

	IN FOCUS LITEPRO 220V	IN FOCUS LITEPRO 720	LIGHTWARE VP800	PROXIMA DP4100z	PROXIMA DP5600
RATING	★★★★	★★★★	★★★★	★★★★	★★★
LIST PRICE	\$5,499	\$9,500	\$6,995	\$7,750	\$9,165
EST. STREET PRICE	\$4,295	\$7,500	\$4,600	\$4,499	\$6,699
DISPLAY TECHNOLOGY	LCD	LCD	LCD	DLP	LCD
MAX. NUMBER OF COLORS	16.7 MILLION	16.7 MILLION	16.7 MILLION	16.7 MILLION	16.7 MILLION
RESOLUTIONS (PIXELS)	800 x 600, 1,024 x 768	800 x 600, 1,024 x 768	832 x 624	640 x 480	640 x 480, 800 x 600
COMPOSITE NTSC	●	●	●	●	●
S-VIDEO	●	●	●	●	●
PAL	●	●	●	●	●
SECAM	●	●	●	●	●
REMOTE CONTROL	●	●	●	●	●
DIMENSIONS (L x W x H)	13.25 x 16.25 x 6.6 IN.	15.3 x 11.7 x 6.6 IN.	12.5 x 10.2 x 6.4 IN.	16 x 13 x 7.9 IN.	18.1 x 11.6 x 5.9 IN.
WEIGHT	16 LB.	12 LB.	9.3 LB.	26 LB.	16.5 LB.
WARRANTY	1 YEAR	1 YEAR	1 YEAR	1 YEAR	1 YEAR
COMPANY	IN FOCUS WILSONVILLE, OR 800-294-6400 503-685-8888 503-685-8887 (FAX) www.infs.com	IN FOCUS WILSONVILLE, OR 800-294-6400 503-685-8888 503-685-8887 (FAX) www.infs.com	LIGHTWARE BEAVERTON, OR 800-445-9396 503-641-7873 503-626-8439 (FAX) www.lightware.com	PROXIMA SAN DIEGO, CA 800-447-7692 619-457-5500 619-457-9647 (FAX) www.prxm.com	PROXIMA SAN DIEGO, CA 800-447-7692 619-457-5500 619-457-9647 (FAX) www.prxm.com

BEST BUY

*DIRECT PRICE

- backlit controls
- available screen resolutions
- extras such as carrying case, pointers, and presentation software
- differences between controls on remote and controls on projector
- Mac adapters and/or connectors



close to the DP5600's, but the color needs improvement: Flesh tones had a distinctive green cast when viewed from both Mac and VCR output.

Both the In Focus LitePro 220V and the LitePro 720 have outstanding image quality: Both offer the most-accurate flesh tones and the purest white point.

The Sarif Shuttle LT800 provides outstanding colors. Using a proprietary polysilicon active-matrix LCD, it offers a sharp picture with very few artifacts.

The Proxima Model LB10 lacked image clarity, sharpness, and — during VCR playback — crispness. It supports only 640-x-480-pixel resolution. Image quality was better on the LB10's sibling, the

Proxima Model LB20, which supports 640-x-480- and 832-x-624-pixel resolutions.

The only DLP-based projector in our roundup, the Proxima DP4100z, displayed good color quality. The Sharp XG-E690U has manual keystone adjustment, rich color, and good full-motion-video quality.

Pump Up the Volume

The sound produced by the In Focus LitePro 220V is robust enough to fill a room that accommodates 20 to 30 people, thanks to the projector's JBL 15-watt stereo sound system. The Proxima Model LB20's sound is also impressive. Good for a ten-person audience, it has little distortion at high volumes. The Proxima Model

LB10 sounds more like a clock radio than a presentation system; we recommend external speakers.

The Proxima DP4100z includes two built-in speakers powered by a 3-watt amplifier — enough oomph for a roomful of about ten people. Unfortunately, its speakers aren't the only thing making noise: The DP4100z has an annoyingly loud fan. The DP4100z's sibling, the DP5600, has a loud fan and speakers that are difficult to hear from behind, because they are placed low in the front of the projector. The Sarif Shuttle LT800 provides clear sound with no distortion on the highest level, and its fan noise is virtually unnoticeable.

Although the Sharp XG-E690U's fan can be heard slightly, the unit provides dynamic, loud sound on low and high notes, enough to be heard by a five- to ten-person audience. Conversely, the Sony VPL-V500Q has weak audio volume, good for only five listeners.

The Bottom Line

For an easy-to-use, full-featured portable, look at the In Focus LitePro 720. The In Focus LitePro 220V is a midsized portable that's versatile enough for conference-room demonstrations and occasional travel. Finally, if you're looking to replace that old, oversized monitor in your conference room, the Sharp XG-E690U provides the most functional and complete package of all the larger models. •Michelle Campanale

Michelle Campanale is a technical specialist at ZD Labs.

	PROXIMA MODEL LB10	PROXIMA MODEL LB20	SARIF SHUTTLE LT800	SHARP XG-E690U	SONY VPL-V500Q
RATING	★★★	★★★★	★★★★	★★★★	★★★
LIST PRICE	\$4,999	\$6,000	\$7,690*	\$5,495	\$7,990
EST. STREET PRICE	\$3,599	\$4,500	NA	\$4,600	\$5,999
DISPLAY TECHNOLOGY	LCD	LCD	LCD	LCD	LCD
MAX. NUMBER OF COLORS	16.7 MILLION	16.7 MILLION	16.7 MILLION	16.7 MILLION	16.7 MILLION
RESOLUTIONS (PIXELS)	640 x 480	640 x 480, 832 x 624	800 x 600	832 x 624	640 x 480
COMPOSITE NTSC	●	●	●	●	●
S-VIDEO	●	●	●	●	●
PAL	●	●	●	●	●
SECAM	●	●	●	●	●
REMOTE CONTROL	●	●	●	●	●
DIMENSIONS (L x W x H)	13.5 x 9.4 x 4.9 IN.	13.5 x 9.4 x 4.9 IN.	9 x 6.5 x 13 IN.	12.3 x 15.2 x 6.9 IN.	16.7 x 14.5 x 7 IN.
WEIGHT	11.4 LB.	11.4 LB.	13.9 LB.	18.7 LB.	22 LB.
WARRANTY	1 YEAR	1 YEAR	1 YEAR	1 YEAR	3 YEARS
COMPANY	PROXIMA SAN DIEGO, CA 800-447-7692 619-457-5500 619-457-9647 (FAX) www.prxm.com	PROXIMA SAN DIEGO, CA 800-447-7692 619-457-5500 619-457-9647 (FAX) www.prxm.com	SARIF VANCOUVER, WA 888-937-2743 360-750-0242 360-50-0244 (FAX) www.sarif.com	SHARP ELECTRONICS MAHWAH, NJ 800-237-4277 201-529-8200 201-529-8413 (FAX) www.sharp-usa.com	SONY ELECTRONICS SAN JOSE, CA 800-326-9551 408-432-1600 408-943-0740 (FAX) www.sel.sony.com

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MacUser QuickStart:

Adobe Illustrator 7.0

A sneak preview to get you ready for the upgrade that finally tames Illustrator's unwieldy interface — and to answer the big question: Is it a FreeHand stopper?

IF YOU HAVE A LOVE/HATE RELATIONSHIP WITH ADOBE ILLUSTRATOR 6.0, YOU'RE NOT ALONE. Despite an elegant Bézier environment and features that let your imagination soar, it has one major drawback that most graphic designers agree on: It's ugly. Menu organization is haphazard. There's no consistency among palettes. And who can find anything with more than two dozen poorly organized tools clogging the screen? When we got a chance to look at a late-beta version of the upcoming Illustrator 7.0, we crossed our fingers that Adobe had finally tamed this tangled mess. Fortunately, it has.

The new version of Illustrator sports one heck of a face-lift. And none too soon. If software years are akin to dog years — one calendar year equals seven software years — the new look is overdue, given Illustrator's ripe old age of ten.

Also overdue and included in version 7.0 are features to please Web-page designers and other graphics pros. The Web-oriented features include support for RGB color and the ability to attach Web addresses — URLs — to objects in a piece of artwork. Toss in improved image handling, on-the-fly adjustments for multiple-master fonts, support for an industrywide color-management system, a new Reshape tool, and cross-platform compatibility, and version 7.0 looks like a strong release.

If you're wondering whether you should plan to upgrade — either from version 6 or from a rival product such as Macromedia FreeHand — read on. This guided tour will give you the scoop on all the changes and new features and how well they succeed, along with some tips to help you out if you choose to make the transition.

When you first launch Illustrator 7.0 (assuming you get past the new, heftier RAM requirements — see the "Transition Tips" sidebar), you'll immediately see some of the interface changes. You're greeted by a streamlined menu and a redesigned Toolbox that suggests purely intentional imitation of Adobe Photoshop's and PageMaker's — and if you've got any palettes open, you'll

BY SHELLEY CRYAN

BETA Illustrator 7.0 at a Glance

WHO NEEDS IT: Graphic artists and Web designers, especially those who also use Adobe Photoshop and/or PageMaker.

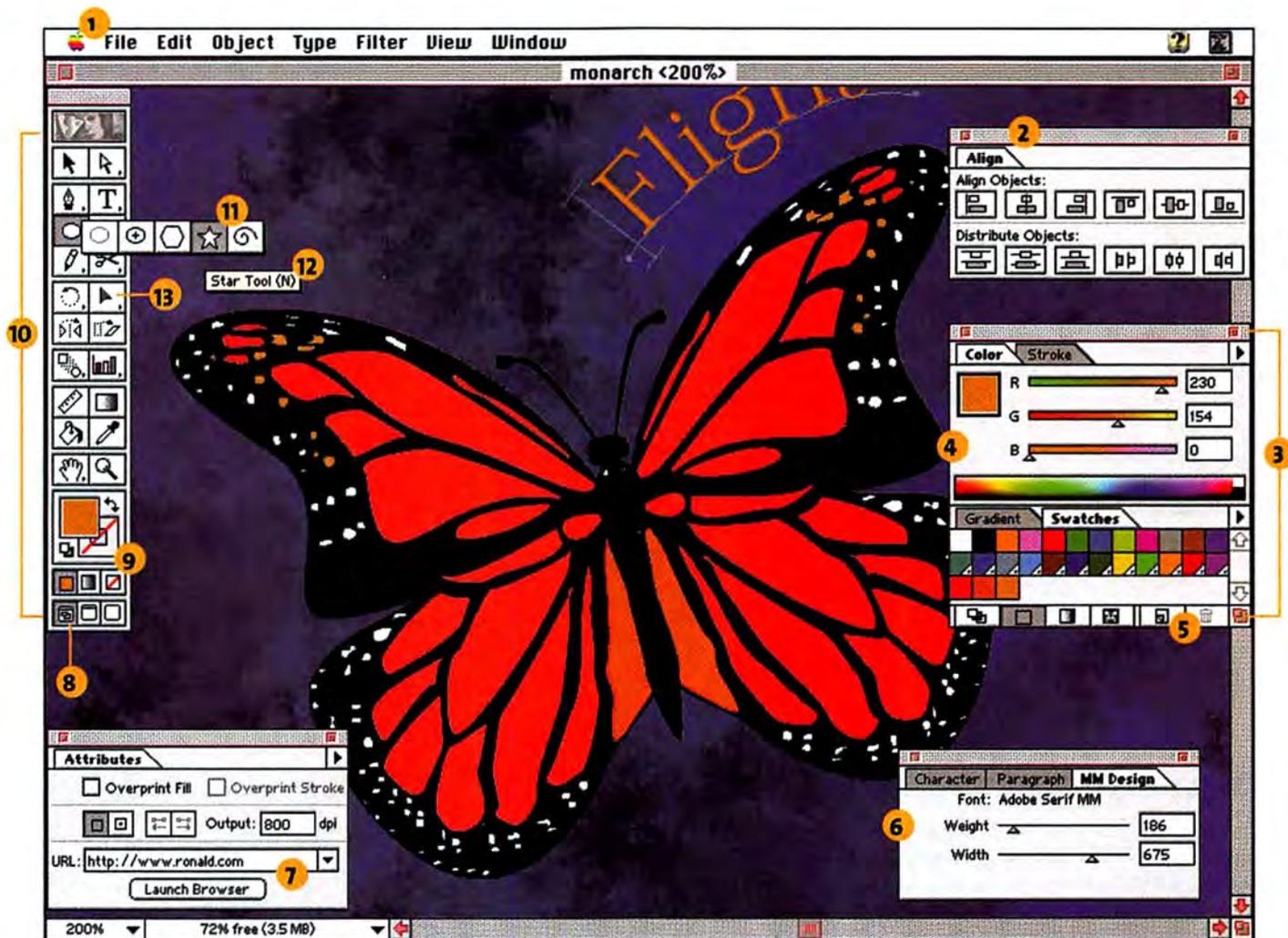
WHY: High-end drawing features are now more accessible, thanks to improved interface; RGB-color support and URL links to objects make Web design easier.

BEST NEW FEATURE: Streamlined interface not only improves access to features but also mimics the look and feel of Adobe Photoshop for easier program hopping.

WORST OMISSION: Still lacks ability to blend more than two objects or recalculate blends automatically when shapes are altered.

COMPANY INFO: Adobe Systems, San Jose, CA; 800-833-6687 or 408-536-6000; www.adobe.com.

PRICE: \$595; upgrade from previous version, \$99; competitive upgrade, \$149 (upgrade prices good through September 1).



A leaner, cleaner interface makes it easier to access Illustrator's features in version 7.0. The strong resemblance to Adobe's own Photoshop and PageMaker is intentional.

1. Streamlined main menu bar has two fewer menu headings than before. Items from the missing menus have been intelligently folded into other, reorganized menus.

2. Tabbed palettes like those in Photoshop and PageMaker provide easier access to features.

3. When you attach, or *dock*, palettes to each other, they stay together and move as a unit. If you click on the minimize button, all you'll see are the tabs for each of the docked palettes.

4. Long overdue support for RGB color will please Web designers and others whose artwork will be viewed on-screen.

5. Support for color management helps improve the correlation between on-screen and printed color as well as the color correlation between Illustrator and other similarly color-managed applications.

6. Adjust the weight and width of multiple-master fonts, and see the effect in your document immediately.

7. Add URLs to objects in an illustration to create an image map for use in your Web pages.

8. Cycle among different types of screen display, with and without a menu bar and scroll bars.

9. Photoshop-like controls make it easy to select fill or stroke.

10. Tools are now organized logically, by function. Selection tools are up top, followed by primary drawing tools, transformation tools, secondary tools, and then view-related tools.

11. Plug-in tools no longer reside in a separate toolbox but are intelligently incorporated into the main Toolbox. Here, the Polygon, Star, and Spiral share space with the Ellipse tool. The Knife plug-in tool now lives with the Scissors.

12. Let your cursor hover over tool icons for a moment, and a small box (called a Tool Tip) pops up to identify the tool and its new keyboard shortcut.

13. The new Reshape tool speeds editing and is especially useful when you're fine-tuning intricate paths.

notice they've been revamped too.

If you're worried about adjusting to these massive interface changes, don't be. Even those intimately familiar with Illustrator 6.0 will find the transition to version 7.0 easy once they see how much more logically the features are organized. For example, although the Font menu heading has disappeared from the menu bar, it's now wisely incorporated under the Type menu heading. The Arrange menu heading is now also gone from the menu bar, but its new placement on the Object menu makes sense, since the feature provides ways of arranging objects. Additionally, Adobe evicted some unwelcome denizens of the heretofore bloated Filter menu and sent them to their proper places. Filter items relocated to the Object menu include the Pathfinder options, which let you build new objects formed by the intersections of several objects, and the Add Anchor Points command. The Same Stroke Color command was wisely moved to the Edit menu, near Select All. Our one menu-related quibble is that in the beta version we looked at, Adobe inexplicably left commands for customizing masks buried in the Filter menu; a more logical approach would be to put these options on the Object menu along with Create Mask.

If you're familiar with Photoshop or PageMaker, you'll have an especially easy time adjusting to Illustrator 7.0. Adobe lifted the new Toolbox design from these software siblings, as part of an effort to create a consistent look among its products (see the "Separated at Birth?" sidebar). The effort to create a familial interface could have resulted in contrived menus and palettes if similarity took precedence over functionality, but here it works.

Separated at Birth? Uncanny resemblances between Illustrator 7.0 and key Adobe siblings

THE SIMILARITIES JUMP RIGHT OUT AT YOU when you compare Illustrator 7.0's interface with those of Adobe siblings Photoshop and PageMaker. This intentional resemblance is not only a clever tactic to help Adobe dominate a market — a strategy Microsoft knows well — but also a boon for users. Similarity makes it easier to learn a companion program, and it lessens the mental shift you need to make when hopping among programs.

TOOLBOX TRIPLETS

In addition to the common look of all the toolboxes, the three programs have their tools organized in similar fashion. Object-selection tools are in the top row, creation and transformation tools are in the middle rows, and the Hand and Zoom tools make up the last row. Illustrator and Photoshop also sport a section near the bottom of the toolbox for toggling between fill/stroke and foreground/background modes and cycling among different display modes.



ILLUSTRATOR TOOLBOX



PHOTOSHOP TOOLBOX



PAGEMAKER TOOLBOX

With Illustrator 7.0, the plug-in tools have lost their own toolbox and are now incorporated nicely into the main Toolbox. The plug-in Knife tool, for example, now resides behind the Scissors tool, the Twirl tool is behind the Rotate tool, and the specialized-shape tools (Spiral, Star, and Polygon) are tucked beneath the Ellipse tool. All that shuffling made room for Photoshop-like icons in the bottom part of the Toolbox that make it easier to select fills and strokes and that let you cycle among different types of display modes.

Illustrator's new tabbed palettes are also a direct knockoff of counterparts in Photoshop and PageMaker and offer improved access to Illustrator's powerful features. Each palette resides in a container — just drag any palette into or out of any container to create your own custom grouping of palettes. Illustrator also adds an innovative twist to the tabbed-palette concept: If you drag one palette to the bottom of another, the palettes will attach, or *dock*, to each other and will move as a unit.

This palette structure is especially well suited as a replacement for version 6's overstuffed, screen-hogging Paint Style palette. In place of the old palette are several smaller palettes that facilitate the creation and application of gradients, patterns, and colors. If you use color libraries, such as Pantone's, you'll appreciate that library colors now reside on their own separate palette. This way, you have the option of dragging only the colors you need to your list of custom colors.

Adobe could have further exploited the tabbed-palette concept by creating a palette for Illustrator's innovative Path Patterns filter. Since this filter essentially provides intricate types of

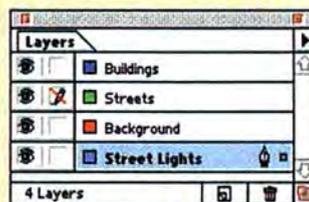
PARALLEL PALETTES

Floating palettes in all three programs are structured similarly, with tabs controlling the display of the palette's contents and with the same black triangle in the upper right corner offering access to the palette's menu.

When palettes provide the same function in Illustrator, Photoshop, and PageMaker — as the Layers palettes shown here do — they look nearly identical in all three programs.

SIMILAR SHORTCUTS

Photoshop and Illustrator — but not PageMaker, in which single-key shortcuts could be confused with entered text — share many keyboard shortcuts; a dozen of these select tools when you press a single letter on the keyboard. For example, in either program, you press T to select the Type tool, I for the Eyedropper, and Z for the Zoom tool (the magnifying glass).



ILLUSTRATOR LAYERS PALETTE



PHOTOSHOP LAYERS PALETTE



PAGEMAKER LAYERS PALETTE

strokes, it would have been handy to group such a palette with the Strokes palette, creating a container full of object-outline controls. Instead, you still have to dig through the Filter menu to access these options.

Not Just a Pretty Face

Illustrator's overhaul isn't limited to an interface update. Adobe has also added a slew of new features, both to catch up with FreeHand and to inch ahead in a few areas.

SMALLER FILES. One catch-up feature is the ability to link placed images from other applications to Illustrator files. Before, such images became part of the Illustrator file itself, increasing file size greatly. Now the Illustrator file can hold a pointer to the image's source file, just as PageMaker and QuarkXPress files can.

SPEEDIER REDRAWS. Also new on the image-handling front is speedier screen redraw of raster images. Illustrator 7.0 uses an image-caching technique that bests FreeHand's efforts in this area. Here's how it works: Say you've imported a 300-pixel-per-inch (ppi) raster image. Because your monitor can handle only 72 ppi for display purposes, Illustrator holds all the image information in a cache but sends your monitor information at only 72 ppi. If you zoom in, Illustrator retrieves more pixels' worth of information but never bombards your monitor with more information than it can handle. By minimizing the amount of data transferred, Illustrator keeps image quality at its maximum while reducing screen-redraw time considerably.

To test how well this technology works in practice, we placed a 3,072-x-2,048-pixel color image in Illustrator 6 and in the beta version of Illustrator 7.0, using a Power Mac 7500/100, and then zoomed in 400 percent. Screen redraw was more than three times as fast — less than two seconds versus eight seconds — in the version 7.0 beta. Results were even more dramatic when we drew with the Pen tool on top of that same image; the annoying redraw delays of version 6 were nonexistent in version 7.0. This newfound fluidity will certainly add to Illustrator's longtime reputation as a program whose tools simply feel good.

MANAGED COLOR. Improved color fidelity — for raster images as well as vector artwork — is another much needed improvement (and FreeHand-catch-up feature) in version 7.0. Using Apple ColorSync 2.0 and ICC (International Color Consortium) profiles, Illustrator promises to deliver on-screen color that not only more closely matches what you'll see on printed output but also ought to match the color you'll see in Photoshop and PageMaker, which both support ColorSync as well.

But be aware that color management isn't an exact science. The color you see on-screen depends on variables that aren't all easily controllable, including the room lighting, the age of your monitor, the color of shirt you're wearing (since it's reflected off the monitor), and whether Jupiter aligns with Mars (OK, we were kidding about that last one). The bottom line? Color-management schemes can make the color you see more reliable, but professionals may still prefer to rely on swatch books.

NEW TOOLS. Of more practical value than the color-management improvements are two new Illustrator exclusives that improve its font-adjusting and path-shaping capabilities. The new font feature is a palette that lets you adjust the weight and width of multiple-master fonts on the fly — just select a block of multiple-master type, move the two sliders, and watch the type adjust in real time. (We'd be extra thrilled if ATM Deluxe owners could save these adjustments as multiple-master instances for future reuse, but it is not so.) Version 7.0 also adds a Reshape tool to aid in editing intricate paths. You can anchor selected control

Transition Tips Ease your upgrade path

ALTHOUGH ADOBE has tried to make this Illustrator upgrade an easy one, we wouldn't be doing our part if we didn't point out ways you can make it even easier. First, though, let us reassure you that we didn't encounter any compatibility problems. And Adobe promised that the shipping version would offer both forward and backward compatibility — that is, you'll be able to open not only a version 6 file with version 7.0 but also a version 7.0 file with version 6, losing only elements that version 6 doesn't support (RGB colors will be converted to CMYK, for example). Adobe also promised that 99 percent of the third-party plug-ins that work with version 6 will work in 7.0.

Now, on to the word-to-the-wise areas. Here are some tips on dealing with the hefty new RAM requirements; remembering the new keyboard shortcuts; and making the most of the new, docked palettes.

RAM SLIMMERS. If you're upgrading from Illustrator 6, the toughest change will be the increased RAM requirement. Although version 6 requires only 8.8 MB (2.7 MB less if virtual memory is on), version 7.0's preferred partition is — gulp — 15.3 MB (3.3 MB less if virtual memory is on). What can you do if you're caught in the RAM Cram?

The best solution is to continue running version 6 until you can purchase more RAM or get RAM Doubler, from Connectix. But if you're just itching to try out the new interface, here's a tip. Locate the Plug-Ins folder inside version 7.0's Illustrator folder. There you'll see several folders, including one named Required. You can reduce Illustrator's RAM appetite by tossing out anything in the Plug-Ins folder that you can bear to part with (the names make clear which functions you'll be torpedoing), except for the stuff in the Required folder. Sure, you'll have fewer

features, but you'll have put this RAM hog on a strict diet.

NEW SHORTCUT MNEMONICS.

Upgraders may also have trouble memorizing the new, single-key keyboard shortcuts, but they're easy to learn if you keep a few clues in mind. For many tools, the key you need to press is the first letter of the tool's name (P for Pen, T for Type) or main function (C for cutting, which brings up the Scissors/Knife tool combination). For others, the shape of the letters resembles the tools they summon (press V or A for selection tools). Other keyboard-shortcut letters share a strong sound with the name of the tool they select (K for Paint Bucket, I for Eyedropper). Only a few aren't obvious (such as N for Ellipse and J for Graph). For these, let your cursor hover above the tool's icon. The name and keyboard shortcut for the tool then appear on-screen in a *Tool Tip*, which disappears when you move the cursor off the tool.

PALETTE POINTERS. The new, tabbed palettes, with their docking ability, can help you set up the optimal work environment. In early stages of design, it helps to put the Color, Gradient, and color-library palettes into one container. Dock that container with your Swatches palette, which holds the colors you plan to use in the document. Once you've created or chosen most of the gradients, mixed colors, and library colors, drag the Swatches palette out to its own container. Then click on the zoom box to collapse the container that holds the three swatch-source palettes so it won't take up much room (see figure below).

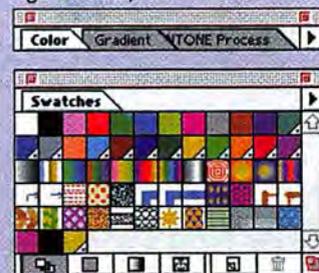




Figure 1 • ILLUSTRATOR'S NEW RESHAPE TOOL lets you adjust sections of a path while keeping its overall shape integrity. For example, you can bend this scallop-edged leaf (made of a single, closed path) without ruining the scallops. Use the Direct Selection tool to select the points you want to move (these then appear filled-in). Deselect any points you

points to the art board while you drag others — one at a time or as a group — with this tool (see Figure 1). The technique takes some time to master, but it's a valuable option.

Wending Webward

Until a few years ago, the vast majority of artwork created in a drawing package such as Illustrator was destined for the printed page. Hence, drawing packages have historically provided support for the color model that matches what printing presses use. The CMYK model — the letters represent the cyan, magenta, yellow, and black color plates on a four-color printing press — is the only one supported in Illustrator 6.

But illustrations these days are apt to wind up on-screen, either in videos or on the World Wide Web. Because monitors display images as values of red, green, and blue, it makes sense for illustrations destined for on-screen display to use the RGB color model. FreeHand recognized this fact of Web life long ago; with this upgrade, Illustrator will finally offer support for RGB color.

Another new feature that caters to Web designers — and plays catch-up with FreeHand — is the ability to embed URLs in documents to create image maps. You can attach various URLs to objects in an illustration. Then, when you export your illustration as a GIF89a file and select the proper options, Illustrator creates not only a GIF file but the accompanying HTML file as well. It's not a perfect transfer, though — placed EPS files show up in the HTML document with annoying opaque bounding boxes, and Illustrator maps URLs to objects' bounding boxes rather than to the outlines of the objects themselves. And we wish Illustrator provided the range of options you can get by pairing FreeHand



want to keep pinned to the art board (these appear hollow and won't move). Using the Reshape tool, select one or more anchor points to pull the selected points. We've selected the very tip of the leaf, marked with a tiny square (Leaf 1). Drag that point to bend the leaf, and the selected points will follow while the scalloped edge remains intact (Leaf 2).

with Trailer Parc Technologies' Insta.html, a FreeHand Xtra for converting FreeHand files to HTML files. Insta.html normally costs \$179, but it was being given away free with FreeHand 7 and FreeHand Graphics Studio at press time.

Windows on the World

Adobe has upgraded Illustrator for Windows along with the Mac version — a significant leap for Windows folks (from version 4.1 to 7.0) that isn't without its benefits to Mac users. Feature parity is a plus for anyone who shares files with someone on a PC. Additionally, the Macintosh version sports conveniences born on the Windows side of the aisle. These include Tool Tips, which are a less intrusive version of Balloon Help, as well as context-sensitive menus, which appear conveniently when you Control-click on single or multiple paths, grouped paths, images, text, guides, graphs, or masked objects.

The Early Verdict

Should you upgrade to Illustrator 7.0 from version 6? Based on the beta version we saw, we'd have to say yes — if you've got the RAM. The streamlined interface is much easier to use, the image-handling speed is much better, the color-management and Web design features are finally up to par, and you get whizzy new tools for reshaping paths and controlling multiple-master fonts.

Whether you should go for a competitive upgrade from FreeHand is another question. With a RAM requirement of about 12.5 MB (8 MB with virtual memory on), FreeHand is still noticeably less RAM-hungry than Illustrator 7.0, and if you sat down and drew up a laundry list of features, FreeHand would still come out ahead. Even when you add Illustrator 7.0's new tools to the advantages version 6 already had over FreeHand (such as automatic image masking, a better eyedropper, and a unique Path Pattern filter), FreeHand still tips the feature scales with superior object blends, better control over text on a path, object styles, envelope distortions, multiple-page support, and the unique Find and Replace Graphics time-saver.

But a program is more than the sum of its features. For designers who bounce between Illustrator and Photoshop all day long, the interface similarity and superior image handling can be enough to weight the scales in favor of Illustrator. Just be sure you factor those weighty RAM requirements — 15 MB or so for Illustrator alone — into your decision. ☞

Shelley Cryan is a graphics designer and MacUser contributing editor who prefers to follow the Bézier path of least resistance.



Bookmark

For more information about Adobe Illustrator, check out these related Internet sites:

Illustrator Message Board

A handy resource for users who want to post and read Illustrator-related messages, hosted by desktopPublishing.com.
desktoppublishing.com/illustrator/illustratortalk.html

Adobe Plug-in Source — Adobe Illustrator Plug-ins

Hosted by Adobe's Image Club Graphics division, this site provides information about Illustrator plug-ins and how to order them.
www.pluginsource.com/illustrator

Or, for one-click access to these and other sites, go to
www.macuser.com/bookmarks.

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Unlike novice Web authoring tools, GoLive CyberStudio lets you visually layout Web pages using a grid and frames. Simply drag-and-drop files directly from the Finder onto your Web page. You precisely control the placement of objects—just as you would with page layout software.

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key benefits

Gain Creative Control and Flexibly

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Leverage Your Macintosh Investment

Maximize Your Productivity

Focus on Design—Not Technology

Integrate Multimedia and Interactivity

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<http://www.golive.com>

GoLive Systems, Inc. Tel: 415-463-1580 Fax: 415-463-1598

Available from



MacMall
Place Your Order 24 Hours a Day
1-800-222-2808

The Mac Zone

1-800-408-9663

MacWAREHOUSE
1-800-255-6227



HOME VIDEO

on the Cheap

These budget video-capture cards prove that you don't need an *Independence Day*-sized budget to make independent movies.



PRODUCING PILES OF PHOTOGRAPHS, ASSEMBLING MIND-NUMBING SLIDE SHOWS, and shooting shaky home movies are the classic ways in which to preserve your personal world for posterity. But technology keeps blessing us with easier ways to drive our friends to distraction. New, affordable Mac video products make your camcorder — the one that's captured endless hours of holiday, family, and kiddie-birthday footage — your gateway to a friendlier, more streamlined world in which friends don't run away screaming when you say "home videos."

Thanks to a new generation of affordable video-capture cards for Mac OS computers, you can edit your dreary documentaries to transform them into snappy and — more important — *brief* multimedia productions. You'll have fun, you'll impress the crowds, and you'll retain those hard-won friendships.

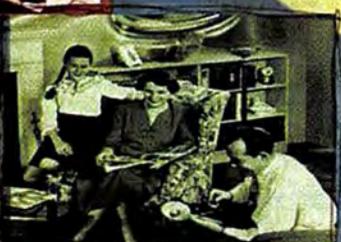
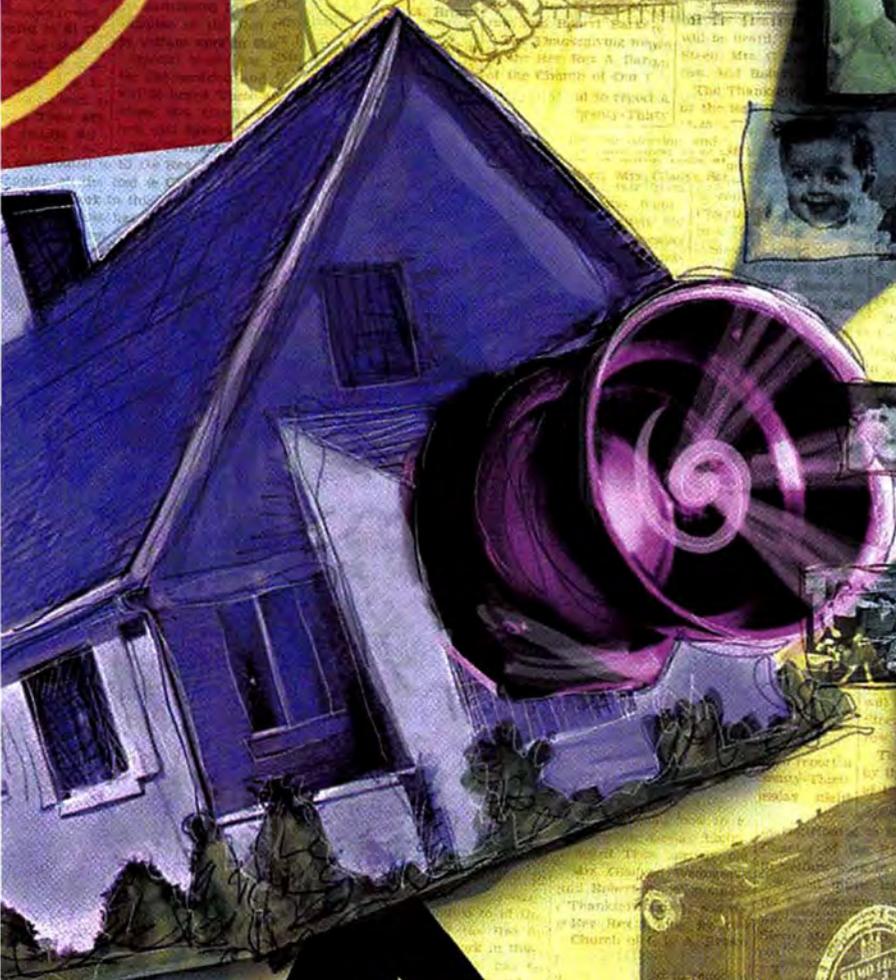
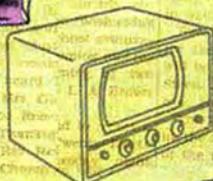
To help you assess your low-budget video-editing options, we took a look at five products, each priced under \$700. Four — the ATI Xclaim VR, Avid Cinema (developed by Avid Technology but sold as an Apple product), miro miroMOTION DC20, and

BY CHRISTOPHER BREEN



Illustration • Andrew Faulkner

Make superb movies of the Fair



Fair

Truevision Bravado 1000 — are PCI cards. The fifth is something of an oddball: Newer Technology's CardCam, a PC Card digitizer that works only with PC Card-enabled PowerBooks; we've included it because it's the only capture card available for PowerBooks.

We used each card with its supplied capture/editing software in a bid to tame the footage — make that *yardage* — we amassed at this year's San Francisco Macworld Expo, shooting just about anything that moved with our Sony CCD-TR700 Hi-8 camcorder.

We installed each of the PCI cards in a midrange system — an Apple Power Mac 7600/132 with 32 MB of RAM and a 1.2-GB Quantum Fireball hard drive. To test the CardCam, we installed it in a PowerBook 5300ce with a 1-GB internal hard drive. Setup was straightforward and easy, thanks to clear instructions in each product's documentation. We used the software that shipped with each card — and a variety of video-quality and -compression settings — to capture video from our camcorder.

Each of the bundles supports S-video as well as the lower-quality composite-video standard. Our camcorder had an S-video-output port, so we chose to take the high road and use it. To see how our video would look when recorded back to tape, we connected an external NTSC monitor to each card's video-output port (except for with the CardCam, which is purely a capture device for generating QuickTime movies).

Only two of the cards we tested — the miro miroMOTION DC20 and the Truevision Bravado 1000 — can capture full-

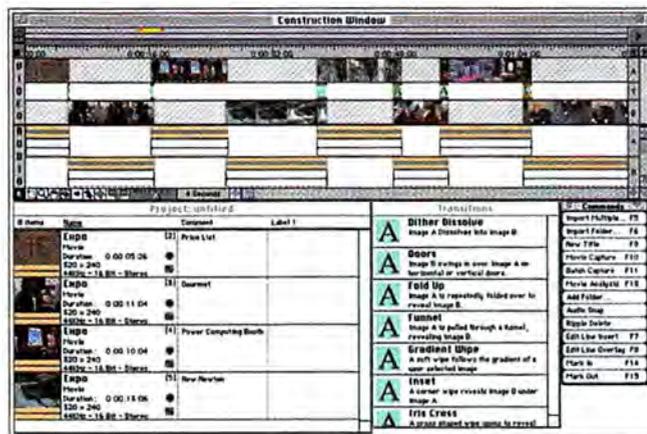


Figure 1 • Daunting for uninitiated users, Adobe Premiere (\$795 list) is powerful but hard to master. Although its drag-and-drop interface is relatively easy to understand, the program's endless layers of dialog boxes can mire you in confusion.

The Bottom Line

miro miroMOTION DC20



Pros: Very good image quality at resolutions of both 320 x 240 and 640 x 480 pixels. Compact captured files. **Cons:** Limited edition of Premiere lacks some desirable features. **Price:** \$699 (estimated street).

Truevision Bravado 1000



Pros: Best video quality among tested cards at resolutions of both 320 x 240 and 640 x 480 pixels. Extra video outputs and full version of Adobe Premiere make this the most versatile package we tested. **Cons:** Large captured files. **Price:** \$699 (estimated street).

Avid Cinema



Pros: Remarkably easy to use. **Cons:** PCI-card hardware compatible only with AV-equipped Apple computers. Software limits effects and transitions. Hardware doesn't work with more-sophisticated programs. **Price:** \$459 (estimated street).

ATI Xclaim VR



Pros: Versatile card accelerates graphics and 3-D. **Cons:** Huge file sizes. Jumpy video quality. Inability to capture audio-CD quality sound (16-bit at 44.1 kHz). **Price:** \$269 to \$299 (estimated street).

Newer CardCam



Pros: The only PowerBook video-capture option (requires PC Card-capable PowerBook). **Cons:** No audio capture or video output. Software lacks even basic editing capabilities. Poor image quality. **Price:** \$399 (estimated street).

miro Computer Products

Palo Alto, CA
800-249-6476
415-855-0955
www.miro.com

Truevision

Santa Clara, CA
800-522-8783
408-562-4200
www.truevision.com

Apple Computer

Cupertino, CA
800-776-2333
408-996-1010
www.apple.com

ATI Technologies

Thornhill, ON
Canada
905-882-2600
www.atitech.ca

Newer Technology

Wichita, KS
800-678-3726
316-943-0222
www.newertech.com

screen, full-motion 640-x-480-pixel video, so we tested captures at 320 x 240 pixels, or quarter-screen resolution, in order to better compare the performance of all the packages. When possible, we captured audio in stereo, sampling 16 bits at a frequency of 44.1 kHz. Because none of the video cards have their own audio inputs, we connected a cable from the camcorder's audio output to the sound-input ports on the Power Mac 7600's AV module. (If you didn't have an AV computer, you'd route the audio through the microphone port.) Sound was not a concern with the PowerBook 5300, because the CardCam cannot capture audio.

To gauge capture success, we used Adobe Premiere 4.2.1's Movie Analysis tool to measure each clip's video-capture rate in frames per second (fps). We also used Premiere to count the number of dropped frames during each capture. (Dropped frames are gaps in a clip that occur when the capture card cannot digitize data as quickly as the camcorder is feeding it.) Mindful of precious hard-disk space, we checked the file size of each captured clip. The results of our tests are shown in the "Stats and Stuff" table. Finally, we inspected each clip for overall image quality.

For reference, we performed the same captures by using the Power Mac 7600's video-in circuitry, which has no compression hardware. Raw-video files captured by the Power Mac 7600 were much larger than those captured by the compression-capable cards. The Power Mac 7600 also dropped a lot of frames, which was visible as occasional jumps and stutters in video and audio. Clearly, the 7600 could use some help.

Truevision Bravado 1000 and miro miroMOTION DC20

For starters, we looked at the two cards capable of full-screen (640-x-480-pixel) video capture — the Truevision Bravado 1000 and the miro miroMOTION DC20. Installation of each card was a snap. Software installation was also simple: Each card ships with a version of Adobe Premiere and plug-ins that let you control the capture process (specify frame rates, desired video quality, and so on) from within Premiere. You can use Premiere to edit and arrange clips, apply transitions and special effects to them, and choose an output medium. Premiere lets you save your finished movie back to videotape, on CD-ROM, or as a QuickTime movie for playback from a hard disk or the Web.

Listing is alphabetical within groups of equal mouse ratings.



Avid Cinema is the polar opposite, simple to learn but somewhat lacking in sophistication and features. Its crystal-clear interface simplifies movie creation, breaking it down into four steps and presenting each step on a separate control screen.

The Bravado 1000 ships with the full version of Premiere; the miroMOTION DC20 ships with Premiere LE (Limited Edition). Both versions include capture and editing tools adequate for the kinds of tasks you're likely to want to perform. The full version does offer some niceties, however — a larger selection of transition effects, the ability to control your VCR or camcorder from within Premiere, and the ability to import Adobe Illustrator files into movies (for use in titles, for example). The full version also supports SMPTE time code, used by professional moviemakers for synchronizing sound and video.

Since Premiere is the gateway to professional video editing on the Mac, it's worth mentioning just how daunting the program can be. Although the timeline interface — with its drag-and-drop video, transition, and audio tracks — is easy enough to understand, things can quickly become confusing once you delve into Premiere's dialog boxes. For example, the program has two Compression Settings dialog boxes — one you access via the Make menu and another that appears when you select Video Input from the Movie Capture menu. If these settings don't match — and no, Premiere won't automatically change one when the other is changed — you could wind up specifying a capture rate or compression setting different from the one you intended.

Both the Bravado 1000 and the miroMOTION DC20 successfully captured video at 30 fps with no dropped frames at our comparison resolution of 320 x 240 pixels and at full-screen (640-x-480-pixel) resolution. Clips captured from each card were smooth and clear. Along with the video signal, we captured sound at audio-CD quality (16-bit sampling at 44.1 kHz), with generally good results. The sound quality was fine, but synchronization of the sound with video tended to drift after as little as a minute or two. This problem is endemic in all QuickTime-based video editing and occurred with all the cards we tested. The only remedy is to use a sound-editing package such as Macromedia's SoundEdit 16, which lets you link sounds in QuickTime soundtracks to specific movie frames.

The miroMOTION DC20 offered an advantage over the Bravado 1000 in terms of raw-video file size: With Premiere's highest-quality setting, a minute of 320-x-240-pixel video captured

HARDWARE TIPS

- Your best bet for successfully capturing full-motion video at 320 x 240 pixels is to use a Power Mac 7500/100 or better with at least 32 MB of RAM and a 2-GB hard drive.
- For better results, use an auxiliary SCSI hard drive (that is, a drive other than the one that contains your boot volume). Using an AV drive — which can suspend *thermal recalibration* (a data-transfer-interrupting self-correction for heat expansion) — is even better.
- If your computer has a fast internal SCSI bus, install the AV drive inside your computer. If you don't have a fast internal SCSI bus, use an external AV drive and consider getting a SCSI-2 accelerator for it.
- To avoid surprises when you play video output back to tape, connect an NTSC monitor to your video card's video output. Be prepared to adjust the picture in your video-editing application — computer and TV monitors display pictures differently.
- Turn off AppleTalk, and use an extensions manager to turn off unnecessary extensions and control panels. Keep QuickTime, Sound Manager, and the driver for your video card, but everything else should go.
- Religiously defragment the disk you use for capturing with a utility such as Alsoft's DiskExpress Pro or the Speed Disk component of Symantec's Norton Utilities.
- To increase the consistency of 30-fps captures, try placing a CD-ROM and floppy disk in their corresponding drives. The Mac occasionally polls these devices if they're empty, diverting precious processor cycles from your video capture.
- If video capture is spotty, try reducing the audio-capture rate from 44.1-kHz, 16-bit stereo to 22.05-kHz, 8-bit mono.
- If all else fails, capture to a smaller window or use a frame rate of 15 fps. A smooth-running movie — even at a lower resolution or frame rate — is always preferable to one with video or audio dropouts.
- If your video will be viewed as a QuickTime movie on a PC, you must *flatten* it — that is, convert it from a Mac binary file with a resource and data fork into a unitary file. Also, stick to audio-sampling rates of 44.1, 22.05, or 11.025 kHz; other rates are incompatible with PC sound cards.
- If you're using the full version of Adobe Premiere, consider getting Videonics' MediaMotion 2.6 (\$99 estimated street). It lets you control a camcorder or VCR from within Premiere, via an included cable that connects to your computer's serial port and your video device's Edit Control port. Videonics, Campbell, CA; 800-338-3348 or 408-866-8300; www.videonics.com.

at 30 fps with the miroMOTION DC20 occupied 49.6 MB, 39 percent less than the same clip captured with the Bravado 1000. Nevertheless, we felt that the Bravado 1000 had a slight edge over the miroMOTION DC20. Besides shipping with the full version of Premiere, the Truevision card has two other advantages:

Software Add-ons

EVEN IF YOU LIKE THE SOFTWARE that shipped with your video-capture card, you should know there are other fish in the sea. The following programs can replace or augment your current editing and capture applications and may make your moviemaking career even more stellar:

MOVIECLIPS 1.0 (◆◆◆), from Digerati, is an easy-to-use yet powerful QuickTime editor and video-capture tool that's available in two versions: a \$99 Lite version and a \$249 full-featured version that adds transition effects and support for SMPTE time code.

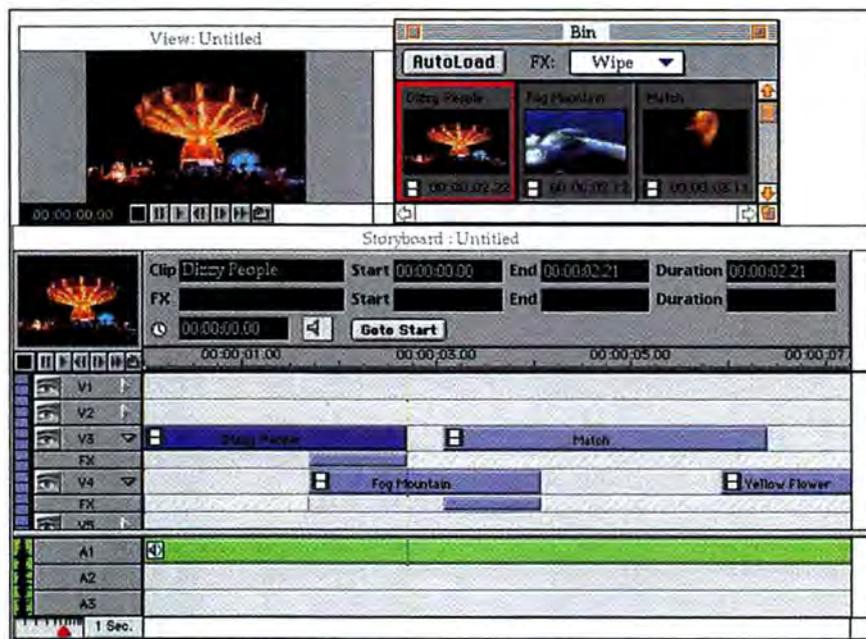
MovieClips' rendering engine is just as powerful as Adobe Premiere's, but the interface is easier to grasp. You use the Bin window to hold movie elements (with thumbnails); you can also arrange them in the desired order here if you like. You use the Storyboard window to trim and sequence elements in a timeline view and the View window to preview the results. (For those with little RAM to spare, a tiny window in the top left corner of the Storyboard can also be used for previews.) Macintosh Drag and Drop support makes it easy to arrange and rearrange video clips, transitions, and AIFF and system sounds in your movie.

MovieClips' great simplicity comes in part at the cost of audio tools: You can't edit sound files. MovieClips doesn't support Premiere or Photoshop plug-ins but has its own plug-in architecture and a budding collection of effects and transitions.

Digerati, Santa Cruz, CA; 408-454-0239;
www.digerati-multimedia.com.

STRATA VIDEOSHOP 3.0.4 (◆◆◆; \$395 list) approaches Adobe Premiere in the variety and complexity of the features it offers, but its interface makes tools easier to access.

VideoShop's Clips, Canvas, and Sequencer windows are analogous to MovieClips' Bin, Storyboard, and View windows; however,



The straightforward, intuitive interface of Digerati's MovieClips gives you drag-and-drop editing and fun effects, with a minimum of confusion.

Besides its single S-video-input port, it sports two composite-video-input ports. (The miroMOTION DC20 has one composite-video port that — in conjunction with an included Y cable — handles input and output.) If your video has multiple sources, those software-switchable ports will come in handy. Beyond that, images captured with the Bravado 1000 were a little sharper and cleaner than those captured with the miroMOTION DC20.

Avid Cinema

The Avid Cinema hardware is easy to install and use, but it's more limited than the other PCI cards we tested. It has no video-input ports, so it works only in Apple systems that have video-in modules, such as the Performa 5400 and 6400 series and the Power Mac 6500, 7500, 7600, 8500, and 8600 models. If you have one of these systems, you'll find that Cinema offers the easiest means available for capturing video with a Mac.

Avid Cinema, the software that comes with its namesake card, is the exact opposite of Adobe Premiere. Where Premiere is exceptionally powerful but hard to master, Avid Cinema is simple to learn but lacks sophistication. The software's crystal-clear interface presents you with a different control screen for each of the four steps in the movie-creation process: Storyboard, where you block out the scenes you'll be using in your movie;

Bring Video In, the area for capturing video; Edit Movie, where you import and arrange sound and movie clips, add effects and transitions, and create titles; and Send Movie Out, where you can preview your finished movie, send it to a video deck, or compress it and save it as a QuickTime movie.

The card and software achieved 30 fps at a resolution of 320 x 240 pixels, with no dropped frames. Although capturing our clip was a breeze and the movie played back flawlessly in Avid Cinema's Viewer window, we did have a couple of problems. To begin, if your source material isn't as clean as a hound's tooth, you're in trouble — for example, our source video's soundtrack was loud enough to cause *clipping* (audio distortion) when the video was captured to the hard disk. Because Avid Cinema doesn't let you adjust audio-input gain (Premiere does), we were stuck with the distortion unless we first routed the sound through a mixing board and controlled gain from there. Performa 6400 and Power Mac 6500 users can control input gain with the volume control on the front of their computers. Also unlike Premiere, Cinema doesn't let you adjust the brightness of your movie, which can be a real problem if you're considering creating a cross-platform QuickTime movie. QuickTime movies are invariably 10 to 20 percent darker on a PC, so brightening them with a 10-percent gamma boost improves their viewability

VideoShop's layout controls are more precise. Numerous buttons in the Sequencer window make VideoShop's features much more accessible than Premiere's.

VideoShop lets you capture video and import QuickTime files and various kinds of audio files, including MIDI. A clip log and a device-control interface assist in your capture process.

Additional windows include a floating Info Bar that displays SMPTE time codes and button definitions as you drag your cursor over buttons on the Sequencer. There's a window that lets you search any mounted volume for movies and sound files and sort them. VideoShop also offers rudimentary text tools for making your own quick-and-dirty titles and credits.

Strata, St. George, UT; 800-787-2823 or 801-628-5218; www.strata3d.com.

MOVIE CLEANER PRO (★★★★; \$189.95 list), from Terran Interactive, is a necessary add-on for those who are at all serious about authoring QuickTime movies, no matter what capture/editing software they use. This utility guides you through the thorny world of QuickTime compression, helping you select the appropriate compression scheme for your movie's content and its intended playback medium. It also compresses your QuickTime footage faster and more adroitly than even



Buttons in Strata VideoShop's Sequencer window make the program's more complex features accessible.

the postcompression function built into Premiere's Make Movie command. You can even batch-process QuickTime files. Video output looks *cleaner* — with fewer artifacts — when processed with Movie Cleaner Pro.

Movie Cleaner Pro's renamed upgrade, Media Cleaner Pro 2.0 (see First Look in this

issue), will be available by the time you read this. It promises special Web-video features and support for additional media formats, including VDOLive and RealAudio.

Terran Interactive, San Jose, CA; 800-577-3443 or 408-278-9065; www.terran.com.

— Brooke C. Wheeler and Christopher Breen

greatly. Finally, we found that editing within Cinema by chopping up a long sequence into smaller parts was a formula for disaster. Although version 1.1 of the Cinema software lets you break up a movie at any point(s) you choose, it doesn't let you rename the resulting clips or attach preview icons to them, which makes it virtually impossible to tell one clip from another.

It would be easier to live with the Cinema software's limitations if you knew you could upgrade to Premiere once you'd outgrown Cinema. But you can't. We found that the Cinema card was completely incompatible with Premiere; in fact, Apple doesn't guarantee that it's compatible with anything but the Cinema software.

ATI Xclaim VR

With its built-in QuickDraw 3D-acceleration hardware, 2-D-graphics acceleration, video capture, and 2 or 4 MB of video RAM, the low-cost ATI Xclaim VR qualifies as the most versatile budget graphics card on the market. Regrettably, the quality of the card's various functions isn't consistent. The Xclaim VR performs some chores — accelerating QuickDraw 3D-based games, for example — very well, but its video-capture abilities are far from impressive.

When we used the card with ATI's Xclaim Video Player

software to capture video at 320 x 240 pixels and 30 fps, Premiere's Movie Analysis tool reported over 100 dropped frames and an average capture rate of 24 fps. The resulting movies were jumpy, and due to the card's lack of hardware compression, the file size for the raw capture was a hefty 212 MB. By reducing the movie window's resolution to 160 x 120 pixels, we were able to increase the capture rate to 30 fps, yet we still noted more than two dozen dropped frames.

In order to provide the best video-capture rate, Xclaim Video Player does not record audio at any setting other than 8-bit mono at 11.025 kHz — audio quality typical of a cheap transistor radio. As with the Avid Cinema software, you can't control audio gain, so you must control gain elsewhere or suffer the consequences. Xclaim Video Player offers no editing features whatsoever and refuses to launch unless you have a monitor plugged into the Xclaim VR card. There are a lot of good reasons for owning an Xclaim VR, but capturing quality video isn't one of them.

Newer CardCam

One of the more interesting odds and ends we gathered for this story was Newer Technology's CardCam. This little card works with any 68040 or more powerful PowerBook that accepts Type II PC Cards. The CardCam comes with an adapter cable that



Bookmark

For more information about digital video, check out these related Internet sites:

jump cut

Online magazine for digital-video hobbyists, including primer, tips, and techniques.

www.raley.com/jumpcut/index.htm

Apple QuickTime Home Page

Updates, discussions of QuickTime-related issues, and lots of movie samples.

quicktime.apple.com

A QT to GIF 89a Animation Resource

Collection of links to shareware, freeware, and tips for Web-video publishers.

www.zone.org/foltz/qt-gif

Or, for one-click access to these and other sites, go to

www.macuser.com/bookmarks.

contains an S-video input and a composite-video input. To capture video, you insert the card in a Type II slot; install and run the CardCam's software, CardCam App; and start your capture.

The CardCam really shouldn't be considered a competitor to the other video-capture cards we looked at. The CardCam App doesn't let you capture audio; to do so, you need to run an application such as Premiere. Second, the CardCam is incapable of generating anything near 30 fps at 320 x 240 pixels. Using a PowerBook 5300ce, we were able to squeeze a bare 7 fps from the CardCam. Even at this low rate, Premiere detected over 100 dropped frames. Your best hope of success with the CardCam is to use the smallest window possible for capture.

Complete Packages

You may prefer to buy a video package rather than make à la carte purchases. We looked at three video bundles: a prototype Apple Creative Studio bundle, with a Power Mac 6500/275; a Power Computing AV PowerBase 200; and a PowerTools Infiniti 4200 with dVp1 bundle. All were ready to go, right out of the box.

Apple's prototype Creative Studio (\$2,999 list) had a 275-MHz PowerPC 603e, 32 MB of RAM, and a 4-GB hard drive. It shipped with the Avid Cinema setup and ATI hardware 3-D-graphics acceleration (the same as the Xclaim VR's) plus software, including

Steinberg Cubasis AV, Adobe Photo Deluxe, and Fractal Design Dabblers II. Because the Apple bundle was a prototype, we tussled with a few alpha drivers to get the Avid Cinema to work reliably. But once it did, it performed as we expected, giving us quality 320-x-240-pixel capture at 30 fps.

Power Computing's AV PowerBase 200 (\$2,600 direct), which has a 200-MHz 603e, came with 64 MB of RAM, a 2-GB AV hard drive, a miroMOTION DC20, and Adobe Premiere LE. When we captured video at 640 x 480 pixels, our results with the PowerBase 200 were nearly the same as with the Power Mac 7600 with the miroMOTION DC20: 29.9 fps for 320-x-240-pixel capture. The Power Tools Infiniti 4200 plus dVp1 bundle (\$3,098 direct) — with a 200-MHz 604e, 32 MB of RAM, a 3-GB IDE hard drive, a miroMOTION DC20, and Adobe Premiere LE — also produced results similar in quality to those of the Power Mac 7600 with the miroMOTION DC20.

It's a Wrap

Any of the three bundled systems is ideal if you're starting from scratch and want a no-brainer setup. Since all three produced similar results, price is the defining issue. For piece-by-piece setup, we recommend the CardCam only for PowerBook users who have no other video-capture option — and who are willing to settle for mediocre video quality in a small playback window. Similarly, the ATI Xclaim VR is a good choice only if you want the card's other graphics-acceleration features and video capture is purely an afterthought; it's a poor choice as dedicated video-capture hardware. For those who have a Mac that supports the Avid Cinema card and don't need full-motion, full-screen 640-x-480-pixel capture or the advanced editing features available in Premiere, Avid Cinema is a solid choice. But for full-screen capture and professional-caliber editing and production tools, the Truevision Bravado 1000 narrowly beats the miro miroMOTION DC20 for our Best Buy recommendation. Both the Bravado 1000 and the miroMOTION DC20 deliver high-quality video and audio at resolutions of 640 x 480 and 320 x 240 pixels, but the Bravado 1000 takes the lead with more output options, better overall image quality, and the full version of Adobe Premiere. ☐

Contributing Editor Christopher Breen, author of The Macintosh Bible Guide to Games (Peachpit Press, 1996), would just as soon not see your childbirth video. But he's dying to show you some pictures of his last trip abroad....



Stats and Stuff *capture-card test data, features*

This table details features and video-capture statistics for the five capture cards we tested. The capture-rate and file-size data shown here is for raw files of a one-minute movie captured

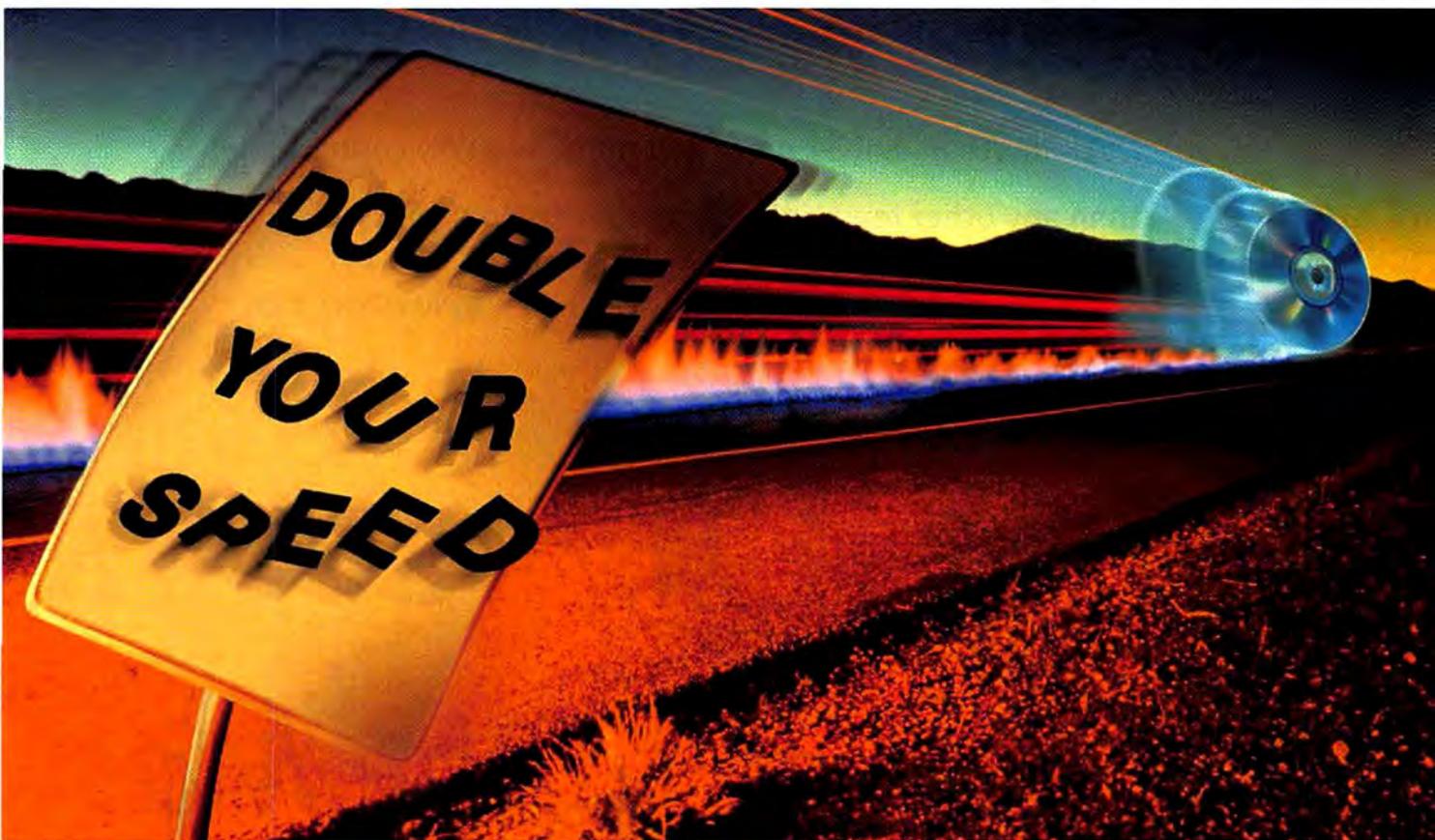
via S-video with our Sony Hi-8 camcorder. Except where noted, the movie's soundtrack was captured at a sampling bit depth of 16 bits, at 44.1 kHz.

	CAPTURE/EDITING SOFTWARE	MAXIMUM CAPTURE RESOLUTION	CAPTURE RATE	NUMBER OF DROPPED FRAMES	CAPTURED-FILE SIZE
ATI XCLAIM VR	XCLAIM VIDEO PLAYER 2.01*	320 x 240 PIXELS	24 FPS	100+	212 MB
AVID CINEMA	AVID CINEMA	320 x 240 PIXELS	30 FPS	0	55.3 MB
MIRO MIROMOTION DC20	ADOBE PREMIERE LE 4.2.1	640 x 480 PIXELS	30 FPS	0	49.6 MB
NEWER CARDCAM	CARDCAM APP [†]	320 x 240 PIXELS	7 FPS	100+	62.8 MB
TRUEVISION BRAVADO 1000	ADOBE PREMIERE 4.2.1	640 x 480 PIXELS	30 FPS	0	81.7 MB
REFERENCE SYSTEM					
BUILT-IN VIDEO-IN CIRCUITRY IN APPLE POWER MAC 7600	APPLE VIDEO PLAYER	320 x 240 PIXELS	28 FPS	46	261.7 MB

BEST BUY

*CAPTURES AUDIO ONLY AT 8-BIT, 11-KHZ MONO.

[†]DOES NOT RECORD AUDIO, ALTHOUGH YOU CAN USE ADOBE PREMIERE FOR RECORDING AUDIO WITH THE CARDCAM.



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 CIRCLE 22 ON READER SERVICE CARD

DVD-ROM can deliver more and higher-quality content than any other read-only storage technology, but is it ready for Mac prime time?

By Jim Shatz-Akin

DVD

Comes to the Mac



MAKE NO MISTAKE: Your Mac will have a DVD-ROM drive someday. You'll watch feature films on DVD-Video discs; you'll play elaborate and, hopefully, engaging interactive games on DVD-ROMs; and you'll access huge amounts of data stored on DVD-RAM jukeboxes on your office network. In fact, it won't be long before the first expression of DVD technology, the DVD-ROM drive, completely displaces the CD-ROM drive as the read-only standard for new computers. The burning question isn't whether or not you should embrace DVD, it's when — and how.

The inherent advantages of DVD technology are indisputable: huge capacity, backward compatibility with CD technology, the potential for video quality that surpasses that of laserdisc, multi-channel sound quality far better than that of audio CD, and great interactive-multimedia capabilities.

But there are some questions you'll need answered if you want to try out DVD today: Can you upgrade your current Mac to support DVD-ROM, and if so, what will you have to buy? How much will it cost? When will you be able to get it? And, of course, when you get it, will there be anything you'll be able to run in your shiny new DVD-ROM drive?

To help you decide whether to jump on the DVD bandwagon, we recently went into the labs to test the first-ever Macintosh equipped with a DVD-ROM drive, the one Apple has been hauling around the globe to show off the new storage technology's potential. We have also done some digging around to find out which vendors are creating Mac DVD products and what it will take to get your Mac up and running with a new drive today. And, finally, we've tracked down several key features of DVD products, highlighting the advantages (Upsides) and the risks (Downsides) of each. You should weigh them for yourself, but

remember, no matter which way you go, DVD technology is in your future.

A New Capacity

The single biggest advantage of a DVD-ROM is its vast storage capacity — a direct consequence of the type of laser DVD-ROM drives use. The new laser, with wavelengths of 635 to 650 nanometers, can be focused on a smaller spot than a CD-ROM drive's 780-nanometer laser.

This means that the microscopic pits used to represent data on a DVD-ROM can be smaller than those used on a CD-ROM, allowing a DVD disc to store more data per square inch. Most of the first DVD-ROMs will be single-sided and single-layer, but a DVD-ROM can use up to four physical surfaces for storage (see the "How DVD Works" figure). This means that a single DVD-ROM can potentially hold as much as 15.9 GB of data — roughly 25 times the 650-MB capacity of a CD-ROM. That's enough to store about eight hours of high-quality, full-screen digital video with a high-quality 5.1-channel soundtrack and multiple language and subtitle tracks. Small wonder that the first DVD-ROMs to hit the market, known as DVD-Video discs, contain movies.



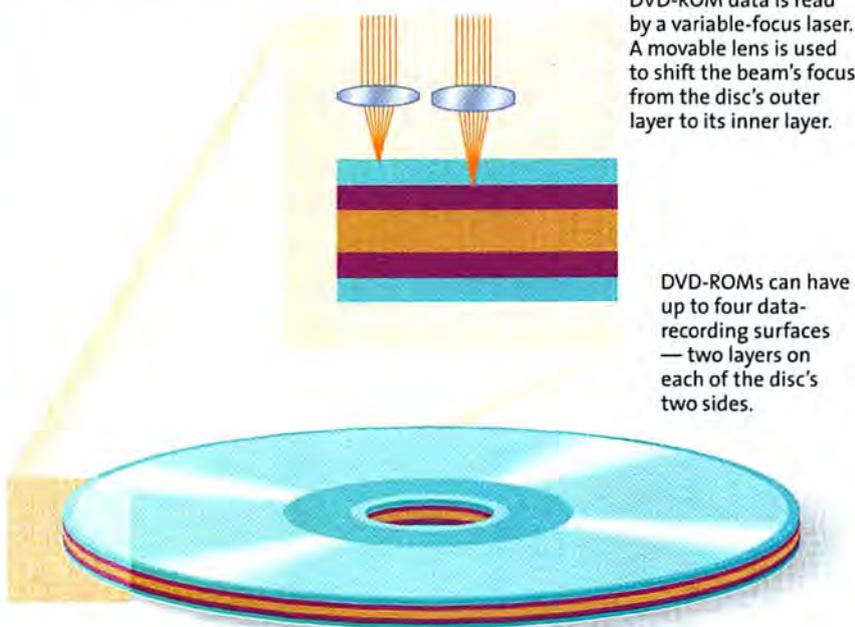
Joining the Club

To get in on the DVD action, you'll need two hardware components: a DVD-ROM drive, which looks very similar to a CD-ROM drive, and hardware for decompressing MPEG-2 video and Dolby AC-3 audio, which are the standards for the DVD format. MPEG-2, the encoding and compression method used for digital satellite TV transmissions, can produce excellent, full-screen (640-x-480-pixel) video when it is mastered properly. Dolby AC-3 sound mimics that of movie-theater sound systems by delivering five-channel Surround Sound plus a subwoofer signal.

MPEG-2 and AC-3 are the best video and sound compression the DVD format can deliver, but they are not required for DVD to deliver sound and video. DVD also supports lower-quality, MPEG-1 and QuickTime/Cinepak video compression and MPEG mono and stereo sound compression. In fact, because MPEG-1 video and audio compression have been widely used for producing video CD-ROMs, many of the initial DVD-Video and DVD-ROM products use video that has already been encoded with the lower-quality standard.

Eventually, the video- and audio-decoding chips required for

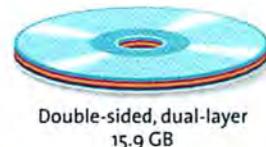
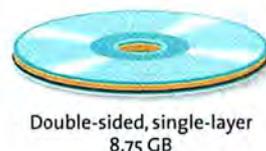
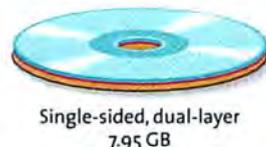
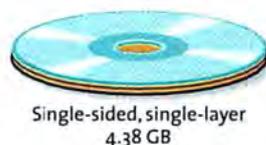
How DVD Works



DVD-ROM data is read by a variable-focus laser. A movable lens is used to shift the beam's focus from the disc's outer layer to its inner layer.

DVD-ROMs can have up to four data-recording surfaces — two layers on each of the disc's two sides.

DVD: Four Faces, Four Capacities



DVD-ROM will be incorporated in system logic boards through custom chips or possibly multimedia processors such as Philips Semiconductors' TriMedia. Alternatively, the chips' functions may be emulated in software. But when the first wave of computers equipped with DVD-ROM drives appears this fall (in time for back-to-school sales), Apple will be furnishing decoding hardware on a PCI card. Power Computing, which plans to offer DVD-ROM drives in its PowerBase and PowerCenter lines, will put the decompression hardware on the replaceable PCI riser card that also houses those machines' graphics-display subsystems.

All DVD-ROM drives are designed to read single- and dual-layer DVD discs as well as CD-ROMs. There is a hitch, however: The first-generation drives now being evaluated by computer-system vendors cannot read CD-Rs (recordable CDs) or Kodak's Photo CD discs. That's because, instead of being encoded as a pattern of pits in the disc's surface, as with DVD- and CD-ROM, data on those discs is recorded by alteration of the color of a pigment embedded in the disc — and the dye is invisible to a DVD-ROM drive's shorter-wavelength laser. Second-generation drives now being developed by such manufacturers as Matsushita, Pioneer,

Sony, and Toshiba will have a second CD-ROM-style laser pickup in order to remedy this problem.

To play DVD-Video discs, such as those now shipping for consumer DVD players, your Mac will need to be able to bypass a few copy-protection measures. They may not be used for every movie, but they'll be common. To recognize a particular disc, the drive must carry a regional code that corresponds to one burned into the disc. There are separate codes for six regions around the globe — including North America and China — so you may not be able to play movies from abroad. Your computer will also have to be able to decode CSS (Content Scrambling System), an encryption scheme like that used on satellite TV signals that movie studios have insisted also be used on DVD titles.

A Steep Upgrade

If you want to add DVD capability to your current Mac OS-based computer, you'll need Mac-compatible player and driver software as well as video and audio decoder hardware. Only one currently announced product — E4's CoolDVD (\$599 list) — puts all these elements into one box. The package includes a PCI card

MASSIVE CAPACITY

UPSIDE: Double-sided, dual-layer disc design provides a storage capacity as high as 15.9 GB.

DOWNSIDE: None of the initial DVD-ROM software offerings will fill even half of that capacity.

DRIVE SPEED

UPSIDE: Data-transfer speed from DVD-ROMs will be comparable to what you get with a 9x CD-ROM drive.

DOWNSIDE: Data-transfer speed from CD-ROMs will be comparable to what you get with a 6x CD-ROM drive.

MUSIC

UPSIDE: DVD-ROM drives can read audio CDs.

DOWNSIDE: The recording industry hasn't yet settled on a format for music DVD discs, so currently available DVD-ROM drives may not conform to the future standard.

COMPATIBILITY

UPSIDE: DVD-ROM drives can read today's CD-ROMs.

DOWNSIDE: First-generation DVD-ROM drives can't read CD-R or Photo CD discs, but the second generation will be able to.

ADVANCED VIDEO/AUDIO

UPSIDE: Support for MPEG-2 video compression and Dolby Surround Sound audio will set new standards in multimedia quality.

DOWNSIDE: Many early DVD-ROMs will use lower-quality MPEG-1 video and sound encoding.

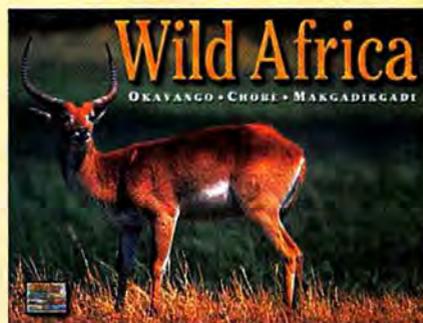
What's Playing DVD-ROM offerings

A DVD-ROM DRIVE IS ONLY AS USEFUL (or as fun) as the discs you put into it. Here's a sampling of the kinds of content you can expect to see on DVD-ROM for the Mac OS:

- **ENHANCED MULTIMEDIA.** New additions to several established multimedia series use the higher capacity of DVD-ROM to improve significantly on their CD-ROM predecessors. *Wild Africa 2*, from Sumeria, for example, has 16-bit photos of wildlife in place of the 8-bit images on CD-ROMs and full-screen MPEG-1-encoded video in place of 160-x-320-pixel QuickTime.
- **MOVIES.** You'll be able to watch videos of feature-length films such as *Blade Runner* and *Batman* in a 640-x-480-pixel window on your Mac OS computer, provided you have the hardware or software for decrypting CSS

(Content Scrambling System) copy protection. A couple dozen of these DVD-Video discs are already on the market, with many more expected to ship during the summer.

- **DATABASES.** Two U.S. telephone-directory programs are among the first products to take advantage of DVD-ROM as a bulk-storage medium. ProCD's PhonePro and American Business Information's PhoneDisc each use a single DVD-ROM to store data that previously consumed six CD-ROMs each. One disc is far easier to search — and cheaper to produce and ship — than six.
- **NEW EXPERIENCES.** The DVD-ROM standard's



support for branching video streams and for as many as nine user-selectable camera angles gives developers a host of new storytelling opportunities. Combined with high-quality, full-screen video and Dolby Surround Sound, these capabilities promise to set new standards for interactivity.

containing MPEG-2 and AC-3 decoding hardware, hardware CSS decryption, and a DVD-ROM drive. Unfortunately, the drive is an internal one with an IDE interface, so it can't work with Macs that have only a SCSI bus.

To make matters worse for SCSI-bus Macs, drive manufacturers report that they're focusing on building low-cost, PC-standard ATAPI and IDE drives and may produce SCSI drives only after the first DVD wave is over — if they build them at all.

That's fine for future Apple systems, since Apple has announced that all its computers will adopt IDE for internal drives. With earlier Mac systems, though, the IDE interface was largely confined to consumer-oriented and low-cost PowerPC 603e-based machines. For years now, high-end Mac systems have come with an internal SCSI bus. Apple says that it is encouraging third parties to develop more Mac upgrade kits, but no deals had been announced at press time.

If you're willing to buy a drive and an MPEG-2 decoder separately, you'll have more options. ATAPI and IDE drives built by Hitachi, Matsushita, Sony, Toshiba, and others will be widely available for \$300 to \$400 each, although Mac driver software will probably have to wait for OEM deals with Mac-oriented drive vendors such as APS, FWB, and La Cie.

MPEG-2 decoders for the Mac OS have been announced by

several vendors. ATI plans to incorporate its new 3D RAGE II + DVD processor, which decodes MPEG audio and video (but not AC-3 sound), in a forthcoming upgrade of its Xclaim VR card. Wired's \$750 MasonX MPEG-2 decoder — the card Apple used for wiring a Matsushita DVD-ROM drive into the modified Performa 5400 we used for testing — is already shipping. Wired claims that it has AC-3 sound-decoding software running in its labs and will release it for use with the MasonX card as soon as some licensing legalities have been resolved. (Apple has said that the Performa-based DVD system is not the basis for any future product, and the company won't disclose whose decoding hardware will ship in future DVD-capable PowerPC Macs.)

On the portables front, Apple says we can expect to see PowerBooks equipped with DVD-ROM drives sometime in early 1998, but third-party options may be available sooner than that. ATI has announced a low-profile, low-power version of the 3D RAGE + DVD chip for use in portable computers, and by the time you read this, Wired plans to be shipping DVD-to-Go, a \$399 PCI MPEG-2 decoder for the PowerBook 3400. Half-height DVD-ROM-drive mechanisms are still under development but should be available by the end of the year.

The Final Analysis

If you depend on databases or other reference products that currently span multiple CD-ROMs, you'll see immediate benefits from buying a DVD-ROM drive (or a computer equipped with one), assuming that you can get those multiple CD-ROMs remastered in DVD format. However, if you're looking to bring your Mac multimedia experience to the next level, be warned that it's going to be a while before the installed base of DVD-ROM drives is large enough to justify the cost title creators face to master discs for the new format (see the "What's Playing" sidebar).

Despite the lack of titles, one thing is clear: DVD is coming — fast. If you're planning to buy a new Mac OS computer sometime in the next year, think seriously about getting one with a DVD-ROM drive. But to ensure compatibility with the full range of DVD products as well as with CD-ROMs, CD-Rs, and Photo CD discs, look for a second-generation drive and decoder hardware (or software) that can handle MPEG-2 video and audio, AC-3 audio, and CSS decryption. ☞

Jim Shatz-Akin is a MacUser senior editor.

Bookmark

For more information about DVD, check out these related Internet sites:

DVD Info

Tons of links to DVD news articles, FAQs, and resources, including movie titles scheduled for DVD-ROM release.
www.unik.no/~robert/hifi/dvd

MPEG.ORG DVD Resources

More info, FAQs, and links to other DVD pages, including DVD reseller sites.
www.mpeg.org/~tristan/MPEG/dvd.html

NB Digital Solutions

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CIRCLE 125 ON READER SERVICE CARD



ADMIT IT: You wish you could have finished that QuarkXPress job last Tuesday in time to make it home to watch *Mad About You*. But to do it right, you gritted your teeth, wished you got paid overtime, and stayed until your documents were printed and packaged.

Life doesn't have to be this way. Although there are things about XPress that only an accelerator card — or an upgraded version — can speed up, chances are you could shave time off your workday simply by taking more advantage of the program's rich set of features.

The ten tips listed here range from the basic to the advanced. A couple call for XTensions, but the majority require nothing more than XPress itself. All these tips are guaranteed to make your life easier once you find the time to sit down and try them!

By Brad Walrod

graphicsuser@macuser.com

XPress Express

Reclaim your summer nights with these top-ten time-saving tips.

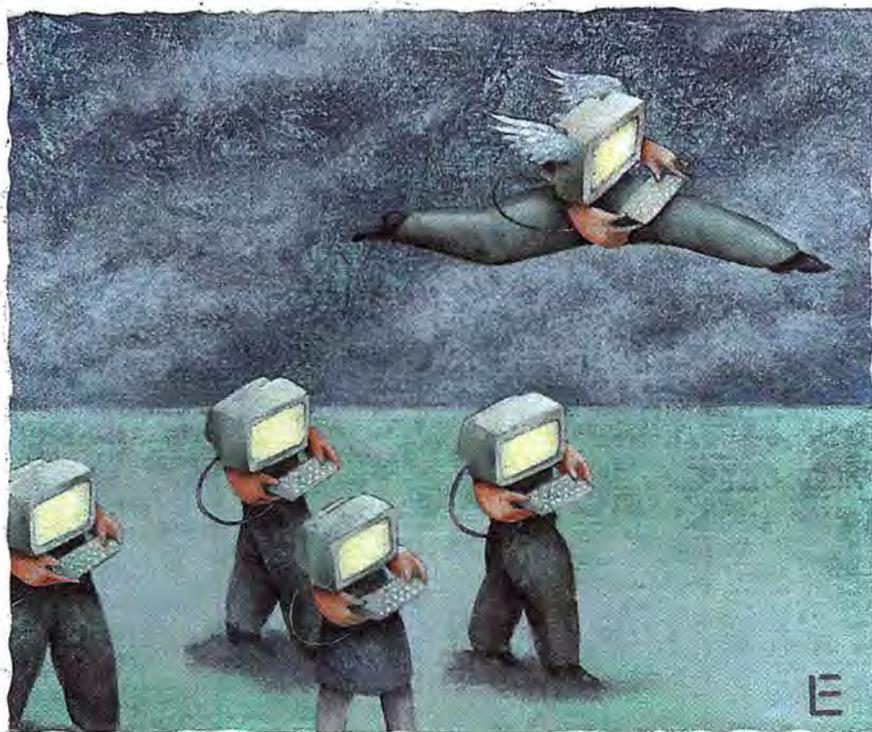


Illustration · Elizabeth Lada

Tip #1: Save Editing Time by Setting Document Preferences

If you find yourself performing the same actions over and over, you may be able to speed things up by making a trip to the preferences dialog boxes (Edit: Preferences). Here you can determine personal preferences for everything from trapping to tool behavior.

If you set preferences when no document is open, they will apply to all subsequently created documents. For example, if you change your Tools preferences so that all your text boxes have 0-point text insets as well as 0-point item run-arounds, that will be your default — you'll never have to change those settings on text boxes again.

On the other hand, if you set your preferences while a document is open, they will apply to that document only. This can be helpful when you're working with attributes that change from job to job, such as the amount of scaling for superscript, subscript, and superior characters (see figure 1).

Tip #2: Stop Messing with Extra Returns; Automate Your Spacing Options

No matter how tempting it may be to hit one or more extra returns between paragraphs to create vertical spacing, it's a bad habit. Why? Extra returns don't disappear from the tops and bottoms of columns, but Space Before and Space After values do. (You can find these options in the Paragraph Formats dialog box [Style: Formats]). That may not seem like much of an issue when you first create a file, but it can be a real pain when your document shifts around after editing. If you don't notice that an errant return has crept to the top of a column, a page may get printed with incorrect alignment.

Another great reason for using the Space Before and Space After options is that you have much more flexibility assigning and editing the space values you've used. This means that when you're trying to get text to fit on the page, you can make one quick adjustment in a style sheet and take care of it all, instead of manually changing the leading for all the extra returns in your document.

Tip #3: Avoid Mice and Menus; Learn More Keyboard Shortcuts

Although using a mouse to pull down menus and navigate through dialog boxes

GraphicsUser

is helpful when you're learning, in the long run those extra clicks really slow down production. Everyone can benefit from using more keyboard shortcuts.

The trick is to learn a few shortcuts at a time. Start with the ones you can see on the righthand side of the menus when you pull them down to access dialog boxes. All of them use these keys: ⌘ = Command, ⌥ = Option, ⇧ = Shift. After you've learned the shortcuts for commands you commonly access through menus, experiment with other basic keyboard commands, such as the shortcuts for selecting text (see the "Text-Selection Keyboard Shortcuts" table). Pick a few that you think would be immediately useful. As soon as the initial commands become second nature, come back and learn the rest.

Tip #4: Spare Yourself Emergency Trips to the Service Bureau by Collecting Files Systematically

When you send XPress documents to an output bureau or a printer, always run a Collect for Output report (File: Collect for Output), or you may end up forgetting to send important files. Running a report is the quickest and most accurate way to collect all the pieces of art in your document and to generate information about any fonts used in the document or EPS artwork. In other words, it's the quickest way to make sure you have everything you need to properly output the job.

Pour the report into the Output Request Template that comes with XPress. (This template can usually be found in the same folder as the application.) It contains a worksheet that lets you fill in (on screen) or check off (after printing) various bits of information, such as your name and address and whether you want film positives or negatives.

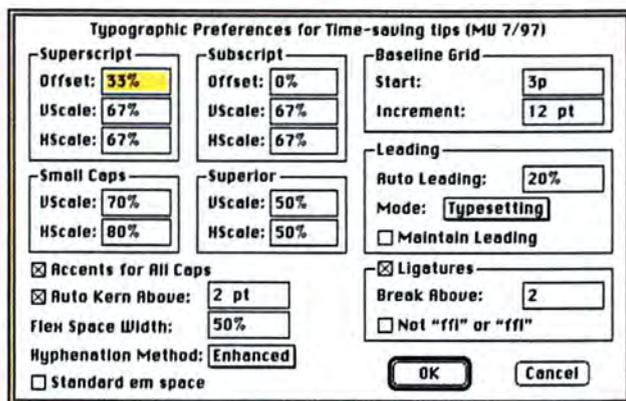


Figure 1 - There's no need to set and reset project-based preferences like these every time you create a new document for the job. Make a template and set your preferences before you save the file. All files created from the template (for instance, every chapter of a book) will then have the job preferences preset.

Text-Selection Keyboard Shortcuts

	SELECT THE PREVIOUS	SELECT THE NEXT
Character	⇧ ←	⇧ →
Word	⌘ ⇧ ←	⌘ ⇧ →
Paragraph	⌘ ⇧ ↑	⌘ ⇧ ↓
Line (to margin)	⌘ ⌥ ⇧ ←	⌘ ⌥ ⇧ →

⌘ Command ⌥ Option ⇧ Shift
 ← Left cursor → Right cursor ↑ Up cursor ↓ Down cursor

Keyboard shortcuts can save you serious time mousing around. A good way to learn these shortcuts for selecting text is to start with two, get comfortable with them, and then add the rest a couple at a time. Note that if you remove the Shift key from any of these shortcuts, your cursor will move by the described amount without selecting anything.

Collect for Output doesn't perform the final step of collecting all the fonts used in your document, but it does create a font list that can help you make sure not to miss one when you prepare your disk for the printer.

Tip #5: Speed up Text Formatting with the Free Xstyle XTension

Popping into the Paragraph Formats dialog box every time you need to change spacing values on a paragraph is a major time waster. The Xstyle XTension, available in the Freebies section of the Em Software Web site, can save you the trip by displaying all the paragraph-indent and -spacing values, as well as the main character-style attributes, in an unobtrusive, editable palette (see figure 2).

To speed things up further, Xstyle also lets you define a keyboard shortcut to jump you into the palette, even remembering the last field you were in.

Tip #6: Save Time Formatting and Reformating by Creating Custom Hyphenation and Justification Styles

Most jobs can benefit from at least a couple of hyphenation and justification (H&J) styles to use in style sheets and for fixing problem paragraphs. Customized H&J styles (Edit: H&Js) enable you to

ensure that all elements of a certain kind — such as subheads — behave consistently throughout a document. It's a heck of a lot speedier to assign an H&J style that doesn't allow hyphenation in your subhead style sheet than it is to go through a document manually rebreaking heads.

You can also create a couple of H&J styles that are variations on the Standard H&J style, which is the XPress default. First, modify the Standard to reflect the settings you use most often. Then create a new style, which automatically will be identical to the Standard. Make a subtle change, such as allowing three hyphens in a row instead of two or allowing two characters to break before a hyphen instead of three. Once you name this new H&J style, it will show up in the Paragraph Formats dialog box, so you need only click in a problem paragraph, jump into the Paragraph Formats dialog box, and apply one or more of the custom styles to see if they cure loose lines or paragraph widows.

Tip #7: Automate Object Relationships Instead of Repeatedly Aligning Them by Hand

Why nudge all your photograph credits into place — aligned to the bottom of

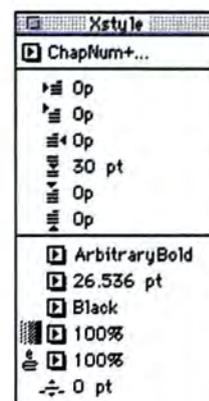
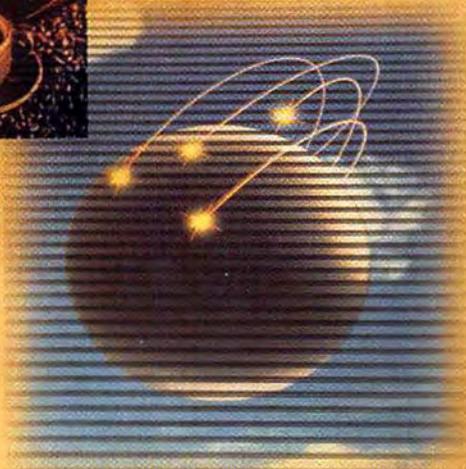
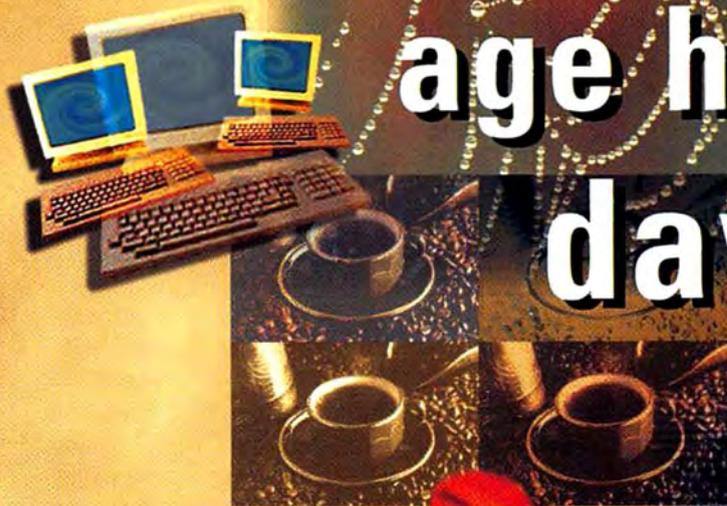


Figure 2 - Why make multiple trips to the Paragraph Formats dialog box to set indents or change paragraph-spacing values? The free Xstyle XTension makes most paragraph and character attributes accessible in this handy palette.

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smell the **JAVA:**
a new computing
age has
dawned**



Nobody can afford to scrap their huge investments in existing information systems.



what's the answer?

**THE
ANSWER
IS JAVA™**

As a quick way to publish and access information, there is nothing quite like the Internet. In just a couple of years, it's transformed the way most companies think about doing business, and for a few organizations, Internet-inspired change is already dramatically underway as this new and flexible channel to customers, business partners and suppliers opens wider and wider.

Like many new opportunities, Internet changes must be pursued with a new set of tools and techniques. The old ways simply aren't effective: just as you wouldn't travel an interstate highway in a Model T, neither can you expect to exploit the competitive opportunities of the information highway with the quickly aging proprietary computing platforms still in use today.

After all, the multiple platforms that currently populate corporate information systems infrastructures are pretty much entirely incompatible with each other – nothing fits together, so exchanging information between them remains very difficult and error-prone. These platforms are also resource-intensive and incredibly complex, which makes them costly to buy and maintain and prohibitively expensive to update or expand.

But, troublesome though they may be, nobody can afford to scrap their huge investments in existing information systems. It is not practicable to toss out entire databases of

invaluable knowledge or retrain workers in new computing environments and techniques.



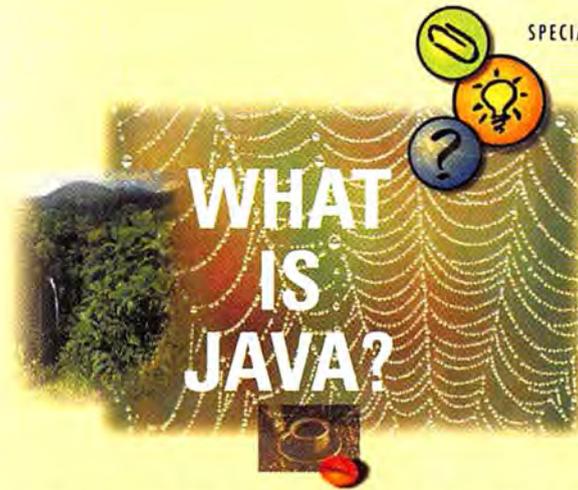
**So what's
the answer?**

The answer is Java™, an entirely new kind of cross-platform computing environment that first can be placed on top of – and work with – your organization's existing systems and networks, and then later can slowly replace costlier, less efficient elements. The result? A rational, significantly less expensive information systems infrastructure where, finally, most everything does fit together and is easy to maintain, easy to grow and easy for even inexperienced desktop computer users to master.

Java uses the Internet, but Java is much more than just an Internet language. In fact, Java is a programming environment in its own right and is designed to be used in applications that venture far beyond the corporate desktop, even beyond handheld devices like personal digital assistants (PDAs) and into industrial devices, toys, cars, cellular phones, appliances – anything using a microprocessor or microcontroller.

Because it was designed from the outset as a cross-platform computing environment that exploits the openness and universality of Internet technologies, the Java computing platform makes it easy to create an Internet-based channel to customers,





To understand Java and its implications, begin by thinking of Java as an applications development platform. Java is a portable, interpreted, high-performance, simple object-oriented programming language and runtime environment.

Java computing puts object-oriented programming to breakthrough use: it enables network computing by downloading nuggets of Java application code (applets) from server to client on demand, regardless of the platform. Sometimes the applications are stored in cache on a client hard disk, sometimes they're stored only in DRAM.

Shifting the center of client/server gravity

Since Java applications normally reside on a server and are delivered to a client via standard network protocol only when needed, client data storage is centralized on servers, as is administration and configuration control, and desktop client computers can become "thin" again. This sort of network-centric computing enables organizations to increase the cost-efficiency of their information systems infrastructure.

Crossing platform barriers in a single bound

How does this work across all those incompatible computing platforms? The answer is the open, standards-based Java Virtual Machine. Anywhere there's a Java VM, Java applets and applications can be dynamically downloaded and run.

partners and suppliers. With Java, your organization can provide selective, secure access to key applications, so those you want — your employees, your customers, your partners — have a Java based window into the enterprise for delivery of goods, services and information.

Extending the enterprise with Java computing

Ultimately, Java is an enabling technology for a whole new kind of computing in which the network is central and most desktop clients can simply serve as interfaces to the

network. Applications and processing power are distributed among many different types of computers in many different locations, and the network controls the flow of information among authorized users. Because they are Java applications, they are written only once, then run *as is* on just about any type of computer.



An end to obsolescence

The impact of this network-centric approach on traditional computing environments is profound, because it preserves the entire system legacy,

So Java apps can run in any Java enabled web browser, like Netscape Navigator™ or Microsoft's Internet Explorer.

Keeping it simple. Meanwhile, JavaOS™ stands in stark contrast to lumbering, traditional operating systems. JavaOS and the Java Virtual Machine can be stored at the client in flash ROM or can be booted from the network.

Standard, open protocols. Java relies on standard network protocols like TCP/IP (which is built in) but more sophisticated client/server protocols can be used, too. The Java Database Connectivity (JDBC™) protocol provides SQL-oriented connectivity to databases. More complex, three-tiered applications can be built using distributed objects with industry-standard CORBA (Common Object Request Broker Architecture) protocols.

New kinds of clients. Java computing spans much more than traditional desktop environments. Java has been

THE SPAN OF JAVA: FROM PAGERS TO FAULT-TOLERANT SERVERS

EMBEDDED DEVICES	DESKTOP	ENTERPRISE
Cell Phones	PC's	Database Servers
Pagers	NC's	Networking-Infrastructure
PDA's	Workstations	
Palmtops	All Major OS's	
Thermostats		

licensed for use in "smart" telephones with built-in displays, PDA-like devices, set-top boxes, kiosks, point-of-sale devices, even home video game machines.

Unlike any other kind of computing environment, Java offers an architecture that leverages enterprise computing investments across all platforms. If you want to revitalize, not replace your legacy systems, you need Java. And if you want to exploit emerging opportunities in Internet-enabled commerce, Java is downright essential.

staving off obsolescence indefinitely. Existing systems and data interoperate easily with Java enabled computers, so you can build Java frontends onto your current systems and take advantage of the benefits of Java while protecting your investments in hardware, software and training.

Consider: for your specialized applications requiring local processing power, you can keep your high-powered desktop systems and add Java computing capabilities without incurring *any* hardware replacement or retraining costs.

What's more, you can add Java capabilities now to large numbers of

Customer service applications at British Telecom are being delivered with Java computing to a broader business and commercial customer base than traditional information technology permits.

your proprietary PC platforms and standalone applications, then gradually supplement them with low-cost, easy-to-administer network computers or replace them at your business convenience.

And when you're ready to take the next step toward web-based commerce, your foundation technology based on Java computing can be extended and expanded as more Java based hardware and software products continue to emerge.



Designed for the future

Java also opens up an entire new spectrum of opportunities on the Internet, the web and corporate intranets. Most organizations venture into the Internet and web-based technologies by degrees.

First comes *web marketing* – an

external website is established to inform customers and prospects about products and services. Next, in *collaborative communication*, internal websites protected from public access by firewalls form a core intranet system used to inform and educate employees.

Business applications follow, as web servers to gateway systems are installed, enabling web-based access to business-critical data. This use can even be transactional – examples include employee expense reporting, inventory control, decision support.

Finally, organizations will participate in a *networked marketplace* in which internal business applications are mature enough to be released for customer or supplier interactions through extranets or the Internet itself. At this point, corporate firewalls can be opened up for true electronic

commerce, such as online shopping and online banking.

The Java computing platform is the enabling technology supporting each of these steps, providing an easily accessible, low-risk means of establishing a web presence, a secure medium for internal and external information exchange and the foundation for true electronic commerce.

The future, long promised and long delayed, is here at last. On the pages that follow, we'll show you what Java means for enterprise computing, why Java makes business sense, and how you can start right now developing, deploying and managing Java computing in your organization.

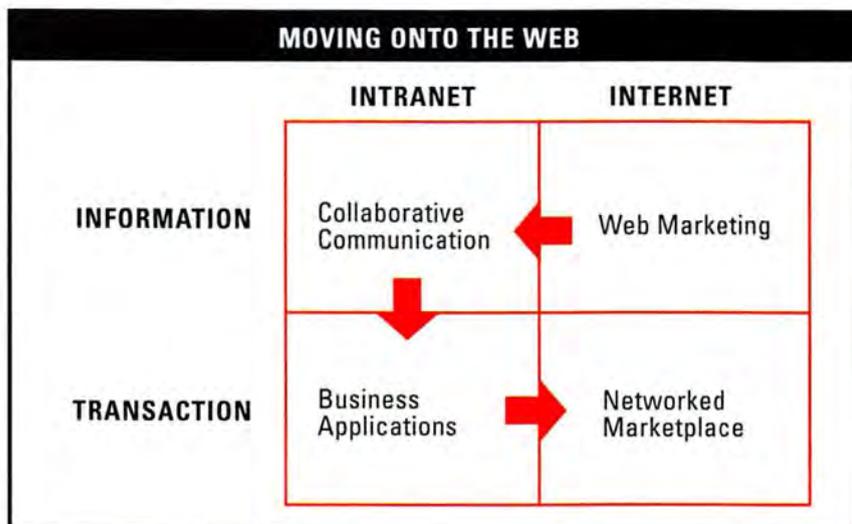
Java in context: Starting with an intranet

With a little help from Internet technologies, Java computing can combine the best of both traditional mainframe computing and the more recent client/server paradigm.

Unlike the mainframes that preceded them, distributed client/server computing enables organizations to:

- Leverage existing IT resources,
- Redistribute digital information to the desktops of a broad spectrum of users via local and wide area networks,
- Use friendly graphical user interfaces (GUIs) to improve worker productivity and potentially access data in legacy mainframe systems,
- Achieve high desktop computing performance,
- Expand systems at comparatively low cost,
- Choose from large amounts of off-the-shelf software applications,
- Develop applications more quickly.

Alas, nothing comes for free: distributed client/server computing has drawbacks, too. And a couple of the major ones are starting to hurt many organizations' ability to





WHY 100% PURE JAVA™ MATTERS: IT'S MORE THAN JUST A LOGO

By the end of 1997, industry-watchers say, there will be something like 100 million Java enabled desktops. And by the beginning of the next millennium, there will be 100 million network computers at work.

Why? Mostly because Java based network computing is platform-independent. Unlike other offerings that tie developers to a single platform, Java unites many platforms with a common language. The result: organizations can afford to exploit new Internet- and web-inspired opportunities with Java "Write Once, Run Anywhere"™ capability.

The danger of "captive" platforms

Since Java is an open architecture, anyone can use it. Today, Java is available on all major computing platforms and has been licensed for still others.

But Java platform-independence can be sustained only if everyone uses the same Java. Pure Java. In fact, we need a standard for 100% Pure Java™.

Why? Because contaminated Java loses its platform-independence and its abilities to ensure a secure computing environment. Which means that contaminated Java simply isn't Java at all. But some might still claim it's Java, even though it's a proprietary knock-off that can't do the job.

There are any number of ways this can happen. Take Microsoft's ActiveX as an example. Whereas Java makes *links* to components in other computing models, ActiveX *encapsulates* components, which thereafter can run only on proprietary ActiveX platforms. When Java is encapsulated into ActiveX, its cross-platform attributes have been compromised.

The 100% Pure Java logo: It ensures the cross-platform compatibility of Java applications

Many believe that genuine platform-independent network computing depends on establishing and enforcing open, non-proprietary standards for the Java platform. Both end users and developers need assurance that programs written in the Java language will indeed run flawlessly on any Java certified platform or device.

The 100% Pure Java Initiative, supported by more than 100 vendors, uses a variety of testing certification, technical assistance, education and co-marketing programs to guarantee compatibility in the Java environment.

Look for the 100% Pure Java logo on the products you buy to make sure that your organization's Java compatibility won't be contaminated or compromised.

What's it all about: 100% Pure Java defined

Only full compliance with the 100% Pure Java Initiative earns the 100% Pure Java logo. Here's what it takes:

- **Written 100% in Java.** The first and most obvious criterion for 100% Pure Java compliance is that the software be coded entirely in the Java language. Although Java can resemble C or C++, pure Java code cannot include C or C++ code because the resulting applet or application wouldn't take advantage of Java cross-platform capabilities. With the Java Virtual Machine, the Java platform provides a level of abstraction that hides the underlying operating system from the application; neither C nor C++ do this.

- **No native method calls.** Attempting to interface native code with Java code typically compromises several key Java benefits, most notably security. Those who mix Java and native method calls have no assurance that code will remain virus-free after download. And if a native method has a pointer overrun or tries to access unauthorized memory, the result is a general protection fault. Products that interface native code with Java code are not eligible for 100% Pure Java certification unless the desired function is also implemented in 100% Pure Java and included with the application.

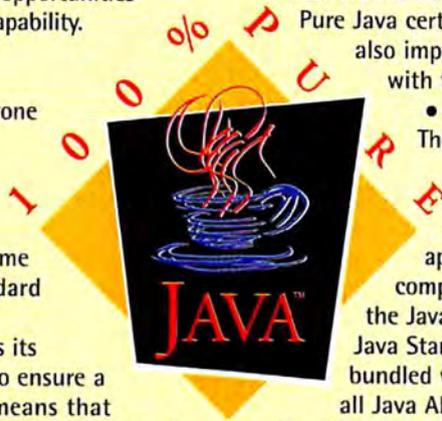
- **Conforms to Java Core API specifications.** The Java API forms a standard interface to components, applets and applications and is the essential framework for application development. 100% Pure Java applications must conform with both key components of the API: the Java Core API and the Java Standard Extension API. If a 100% Pure Java Standard Extension API is used, it must be bundled with the application. The specifications for all Java APIs are freely accessible on the web at <http://java.sun.com>.

- **Bundles libraries or uses libraries included in the Java Reference Implementation.** Libraries invoked by Java applications must also be 100% Pure Java or JDK™ libraries to guarantee that the applet or application invoking them remains 100% Pure Java compliant. The Java Reference Implementation is available on the web at <http://java.sun.com>.

- **Passes certification test.** A simple yet thorough test suite has been developed by Sun Microsystems, Inc. that will help ensure that certified products have all of the cross-platform attributes of a pure Java application. Each individual product that passes the 100% Pure Java test suite will be certified and become eligible to use the 100% Pure Java logo on packaging, advertising, websites and marketing materials. As part of the certification agreement, the software may be audit tested with updated versions of the test suite at any time.

100% Pure Java benefits everybody

Products that have achieved 100% Pure Java certification are written entirely in Java according to these requirements,



Continued on page S6



Continued from page S5

have been successfully tested for compliance using the 100% Pure Java test suite and have been submitted to an independent testing center for formal certification testing.

So when you see the 100% Pure Java logo, you know you'll get:

- **Compatibility with all platforms, not just "Wintel," and not just the Mac.** Users of 100% Pure Java products are secure in the knowledge that their applications are truly multi-platform.

- **Higher-quality Java applets, applications and JavaBeans™ component APIs.** The 100% Pure Java Initiative eases the transition to Java based computing, an end-to-end, secure network computing solution based on distributed Java applications and low-cost Java network devices.

exploit competitive opportunities:

- Distributed client/server systems carry high and still-growing desktop management costs, due chiefly to their dependence on expensive networked PCs – so-called "fat clients" – that too often run only "thin" applications, and,

- A rigid application architecture limits the ways in which computers can add value when executing transactions, servicing customers, analyzing data and so on.

Java based shipping and tracking applications deployed into major customers' workplaces via network has already saved CSX \$6 million in application development, distribution and upgrades.



The advent of network computing

What's the solution? A low-cost, low-administration network-access desktop that couples the flexibility of client/server systems with the centralized maintenance and administration of mainframes. This is network computing and what it offers is worth noting:

- ☑ Centralized IT management,
- ☑ Low-cost, easy-to-replace desktops,
- ☑ Ability to instantly update applications on all network computers, thus eliminating versioning problems,
- ☑ Elimination of local administration of configuration files,
- ☑ Low desktop management cost,
- ☑ Scalability, allowing a comparatively high ratio of network computers per server.



Time for a thin client

At the heart of this merger of computing paradigms is the notion of a "thin client," a stateless desktop device linked via network to one or more servers. Everything that constitutes a state – the operating system, applications, data, integrity, etc. – has been relocated from client to server. While this stateless, thin-client network computer is skinny in terms of desktop management costs, it's actually remarkably rich in function-

- **Greater satisfaction.** With 100% Pure Java certification, it's easier to quickly recognize products that won't jeopardize your organization's cross-platform computing capabilities or the security of its transactions.

- **Faster evolution of the Java platform.** Clearly, the Java platform makes application development work easier. Java is a small, "knowable" system coupled with an increasingly comprehensive set of component APIs, so developers can build applications from shared, reusable objects.

The 100% Pure Java Initiative, supported by more than 100 independent computing vendors, defines an objective, consistent quality standard for Java software and publishing API specifications. Keep your future safe. Use only 100% Pure Java.

ality. That's because of the Internet and the nature of the Java language.

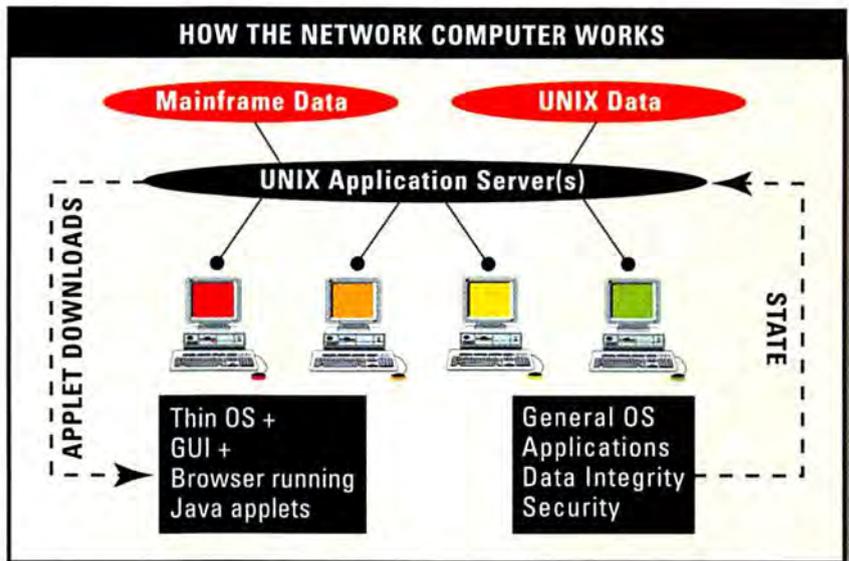
Standard, open Internet technologies and protocols form a universal networking capability which can be easily inserted – if it hasn't been already – into an organization's information systems infrastructure. This ability to access every computer means the recentralization of certain capabilities – such as desktop systems management – again makes economic sense.

Meanwhile, just what can be effectively recentralized depends on software techniques that emphasize modularity, reusability, reliability and ability to function in a network environment. This is called component-based software and Java is its premiere embodiment; the idea is to construct applications by assembling reusable parts into new applications. Component-based software like Java consists of three elements:

- **Components:** software objects, either simple or complex, that include some program logic.
- **Containers:** objects used to assemble components and provide a context in which they interact.
- **Scripting:** the ability to initiate and direct interactions between components.

In Java based network computing, the favorite container is a web browser

like Netscape Navigator or HotJava™, which includes Java container software, The Java Virtual Machine. Components can be loaded not just from a file server but also from a web server located on a corporate intranet or somewhere on the Internet. And these components can contain much more than merely text or graphics files – Java components can carry executable code, so data can be downloaded along with the code required to work with that data.



From applet to enterprise

These days, Java is used for much more than creating applets, those small applications typically embedded in web pages and run from within a web browser. Increasingly, Java is going mission-critical and being used to create full, standalone applications. For instance, Corel is developing a version of its Office Suite, including WordPerfect, written completely in Java that will be able to run on all computer platforms that support Java.

Indeed, interest in Java is growing fast and some estimate that there are already 300,000 people programming in Java. It's not hard to see why. The Java platform gives developers a powerful object-oriented language without the complex, heavyweight object housekeeping required by other models. Its compact runtime framework is easy to include in a range of devices, from smartcards to kiosks. Designed from the outset to be network-aware, Java support for the Internet's TCP/IP protocol is built in.

Java applications easily adapt to changing environments, since users dynamically download code from anywhere on the network. Processing is neither centralized nor entirely localized – it's flexibly distributed depending on the requirements of the

job. Java applications are fast, because today's processors provide efficient virtual-machine execution. Just-in-time compiling and Java microprocessors can deliver even more performance, while Java built-in multithreading means high-performing graphical applications and GUI functions.

With Java runtime system managing memory and inspecting all code before it's downloaded, Java apps are robust and secure. Component-based Java is simple to learn and use and speeds application development and turnaround, thanks to code reuse, easier testing and rapid internet deployment.

The advantages of Java computing

It's worth taking a closer look at how organizations can expect to benefit from Java based network computing.



Platform-independent open computing

Deployment of consistent Java Virtual Machine platforms enables you to run any Java compliant application program across the enterprise. Because Java runs on the Windows, Macintosh and UNIX® platforms, it's possible to "Write Once, Run Anywhere," giving Java applica-

tions the world's largest user base.

This eliminates the need to port applications to separate, incompatible client environments and it overcomes the lack of availability of certain application features and functions on inherently limited platforms. Also, organizations are no longer trapped into having to deploy incompatible platform-dependent applications.



Less complex computing environment

Since all code, data and configuration information are stored and managed centrally, computing life is easier for everybody: applications, data and infrastructure resources can be managed from one place. This results in:

☑ *Dramatically lower costs of administration and ownership.* One Fortune 500 company with 15,000 computing seats expects to save as much as \$100 million in hardware and software maintenance costs by switching from PCs to Java thin-client seats.

☑ *Rapid development and deployment of new applications.* "Write Once, Run Anywhere" Java reduces time spent on application development, testing and rollout, so there are more resources left for creating new added-value applications. Java developer productivity is two to five times greater than with traditional

languages like C and C++, thanks to such Java capabilities as strong type checking, automatic memory management and exception handling. This sort of instant rollout of applications on an intranet website permits shorter, more iterative application development cycles, an ability to react quickly to bugs and happier users.



Improved security on an enterprise scale

Java addresses several vulnerabilities of current enterprise computing environments:

- **Strong memory protection.** Java applications and applets cannot gain

unauthorized memory access to read or change accounts because Java removes the possibility of either maliciously or inadvertently reading and/or corrupting memory locations outside boundaries of the program.

- **Encryption and signatures.** Java uses powerful encryption technology to verify that an applet came from an authorized source and has not been modified.

- **Rules enforcement.** Java objects and classes make it simple to represent corporate information entities, and the rules governing their use is embedded within the objects themselves – the result is that the introduction of ad hoc access

and manipulation methods can be controlled.

- **Runtime verification.** Java runtime verification system inspects all code for viruses and tampering before running it, ensuring that all applications and applets downloaded to the client will not violate the integrity of the environment.



Greater reliability

The Java language itself, meanwhile, encourages production of reliable, simple code. Its object and component orientation promotes re-use and library-building. Java also



In traditional enterprise computing, a client machine is typically a PC that runs a highly complex operating system and uses much of its substantial supply of memory and local storage to house an assortment of resource-intensive applications, including e-mail and other network access software.

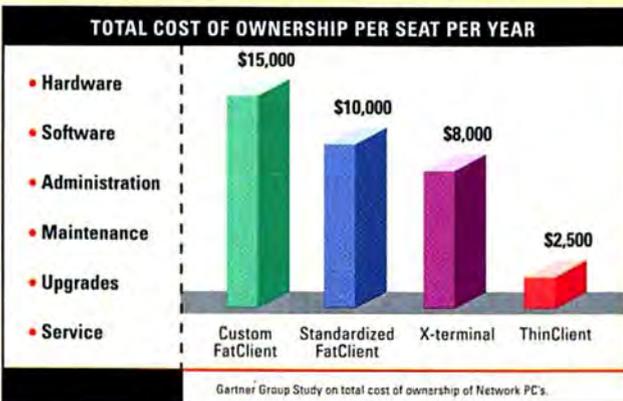
These are "fat clients" and they're rather pricey. The total cost of owning a networked Microsoft Windows-based PC – including the original purchase price, software updates and upgrades, configuration assistance, technical troubleshooting, and other needs – adds up to nearly \$12,000 per year, according to the Gartner Group.

By comparison, the same Gartner Group research indicates that the kind of "thin client" that Java computing makes possible costs just \$2,500 per year. Part of that is the original pricetag: thin Java clients need less local storage, since all code, data and configuration information are stored and managed centrally.

But there's more to it than machine price. Up to 55% of a PC's total cost over a five-year period, reports Gartner, comes from software product updating. This task is hugely simplified by the centralized administration and management that's a hallmark of thin-client network computing.

So just how much can an organization save by shifting from fat clients to thin ones and adopting Java based computing?

Compare the cost of a 1,000-node environment, figuring the cost of thin Java clients at \$2,500 per year and fat clients at between \$10,000 per year (standard) and \$15,000 per year (custom).



100% fat-client PCs	\$10.00 million
90% Java network computers 10% fat-client PCs	\$ 3.75 million
Potential saving with Java	\$ 6.25 million

How quickly you decide to shift from your fat clients to Java network computing will go a long way toward determining how much of what you're now spending on traditional PC environments can be saved.

promotes good software engineering practices, such as clearly separating interfaces from implementation and easily handling exceptions. And Java automatic memory management and lack of programmable memory management tools such as pointers eliminate one of the largest causes of programming errors.



Revitalization, not replacement

Java will save your legacy systems from obsolescence by layering on top of them a universal means of access and update. Since Java enabled browsers can display any HTML page, they can run forms-based HTML applications. With web servers acting as gateways to legacy systems, HTML can be used as a way to publish information within and beyond your organization so the right people – employees, suppliers, even customers – can get the information they need when they need it.



Incremental implementation

With Java, you can make the shift to thin-client, network computing gradually, as your budget and your business require. Given that Java works perfectly well on fat clients, too, once you've installed Java enabled browsers at all of your organization's desktops, migration to a network computing environment can be conducted in small, controlled steps without immediately discarding even a single computing platform or application.



Easier adoption of online technologies

Whether your organization is just beginning to move onto the Internet and establish a presence on the World Wide Web or you're marching toward full-fledged web commerce, Java

Balance sheet applications at First Union National Bank run under 3270 emulation on thin-client JavaStation™ network computers, to be followed by Java applications that access databases on mainframes and servers. Result: Total cost of computing has dropped from \$4,000-\$5,000 per seat per year to well under \$1,000.

makes it all easier, more secure, less expensive and more scalable and flexible for future growth.

What, then, can Java mean for *your* organization? Quite simply, the end of information system incompatibilities and isolation. And an unparalleled ability to adapt computing systems to changing conditions, because, finally, applications can be sent to users wherever they are, no matter what desktop computer or network computer they're using.

You've been hearing these promises for years, of course. So consider, just one more time, what it means to have such promises fulfilled. It means a breakthrough, stunning in its scope, an innovative yet safe choice that fully delivers on the promise of enterprise compatibility and connectivity – with zero client administration cost. And there are many Java choices indeed.

The need for 100% Pure Java

Java platform-independence works as long as vendors continue using the same Java and resist the urge to add non-uniform features that destroy its portability.

This is always a risk. In Microsoft's ActiveX component software strategy, for instance, Java applets are swallowed whole (encapsulation) and are no longer able to run on anything but

Microsoft's proprietary Win32 platform.

In fact, the risk of contaminated Java is strong enough that more than 100 vendors, led by Sun Microsystems, Inc. have launched the 100% Pure Java Initiative that defines an objective, consistent quality standard for Java software and publishing API specifications.

Only products that have achieved 100% Pure Java certification can exhibit the 100% Pure Java logo. The logo's presence on software and hardware products indicates its compatibility with all other 100% Pure Java products. So Java buyers get better products and more effective network computing environments.

Java's many facets

A program written in Java can run wherever a Java platform is present, regardless of the underlying proprietary platform, without needing to be compiled for any particular underlying platform.

Each underlying platform has its own implementation of the Java Virtual Machine, but since there's only one Java Virtual Machine specification, the Java platform acts as a standard, uniform programming interface to applets and applications on any hardware.

An end-to-end solution encompassing hardware, software, develop-

Key business applications at FedEx are being browser-enabled with JavaStations that replace tens of thousands of terminals.



JavaOS

The first system software specifically designed to execute Java programs on web-based network computers, the Java operating system that implements the Java Base Platform is being widely ported to micro-processors, including the JavaChip™ family.

JavaOS is written in Java and includes the Java Virtual Machine and class libraries, plus the system software necessary to run them

without a full-blown operating system. Unlike other operating systems, JavaOS requires no filesystem, no virtual memory subsystem, no multiple address spaces and no support for multiple programming languages.



The Java Base Platform

The minimum that must be present for running Java powered applets and applications on network computers, desktop computers and workstations is described as the Java Base Platform. It contains the Java Virtual Machine

ment tools, management and administration tools, security and services, Java takes many forms.



As more and more businesses come to understand the important role the Internet already plays in their competitive futures, a critical question arises: Java or Microsoft's ActiveX?

Both are object-oriented component software strategies – they build applications from reusable parts by plugging software components into some kind of container – but the capabilities they can each bring to an organization differ dramatically.

Multi-lingual vs. multi-platform

Like Java applets, ActiveX controls are self-contained pieces of functionality that run inside some kind of container. But unlike Java applets, ActiveX controls can be written in various languages (C++ is most common).

The tradeoff comes at the other end: Java applets are downloaded in a machine-independent format and

either just-in-time compiled (faster) or interpreted in any container with the Java Virtual Machine software installed (slower); but ActiveX controls are binaries and typically require Intel-based hardware that supports the Win32 interface – i.e., Windows 95 or Windows/NT.

Of security and sandboxes

For computing security, users trust their servers not to deliver malicious components. What else can be done? A couple of things: sandboxing, which constrains downloaded components from executing functions that can damage the local system; and digitally signing each downloaded component, so signatures can be checked by the local system.

Beside trusting servers, Java supports sandboxing and Java developers are at work on digital signing of downloadable components. ActiveX offers digital signing, too, but since ActiveX controls have full access to a computer's operating system, files and applications, sandboxing is not an option, and users still could end up with ActiveX controls that behave like viruses or act maliciously.

COMPARING JAVA AND ACTIVE X

JAVA		ACTIVE X	
PRO	CON	PRO	CON
<ul style="list-style-type: none"> ☛ Works across many types of platform ☛ Components are reusable ☛ Programs written once can be run on many diverse machines ☛ Users safe from rogue code ☛ Fast-growing support from software vendors 	<ul style="list-style-type: none"> ☛ Young technology ☛ Small installed base ☛ Not well understood ☛ Requires knowledge of the programming language—however, Java visual tools are coming to market that enable developers to work in Java without knowledge of the Java programming language 	<ul style="list-style-type: none"> ☛ Runs in all Windows applications ☛ Extends existing technology for using software objects ☛ Has support from software vendors 	<ul style="list-style-type: none"> ☛ Runs only in Windows applications ☛ Large components (ActiveX controls) ☛ Much code is not reusable ☛ Users could download viruses, rogue code

and a minimal API set – known as the Java Base API or the Java Applet API – to run basic applets and applications. Developers writing to this minimum set can feel secure that their Java programs will run anywhere without need for additional class libraries.



The Java Virtual Machine

A “soft” machine that can be implemented in either hardware or software, the Java Virtual Machine is an abstract computer designed to reside atop existing processors. Its porting interface and adapters enable it to be easily ported to new operating systems without being completely rewritten.



Java APIs

The Java platform has been extended beyond the Java Core API with the Java Standard Extension API, which is a published, uniform, open standard available to anyone wishing to implement an extension. As Java APIs continue to proliferate, some of the Standard Extension API will migrate to the Core API. Together, these form a standard interface to applets and applications, and they're the essential framework for Java application development.

JavaBeans™ enhance the Java platform still further by facilitating richer, more dynamic interactions between components. JavaBeans can be implemented in web browsers or as standalone applications by layering them on top of existing environments. The actual implementation is hidden by the JavaBeans APIs, so developers can write application components without regard to the platform on which the component will eventually run, since the code is portable among all Java enabled platforms.

The JavaBeans specification defines

a set of standard, device- and operating system-independent component software APIs for the Java Platform. Designed by a partnership of industry leaders, JavaBeans is the ideal choice for developing or assembling network-aware solutions for heterogeneous hardware and operating system environments – within the enterprise or across the Internet.

A JavaBeans component can be anything from a GUI widget to a robust component to a full-scale application. Because it'll run on any platform with a Java Virtual Machine, a JavaBeans component can be re-used everywhere, incorporated into multiple solutions without the need to rewrite a single line of code.

JavaBeans component software integrates seamlessly with other industry component models, such as ActiveX, with no additional development required. And this interoperability is free, via a Sun Microsystems-developed ActiveX control called the JavaBeans Bridge for ActiveX, which lets JavaBeans run in legacy ActiveX containers like Microsoft Office and Visual Basic.

A wide range of JavaBeans resources and rapid application development tools are already available. You can leverage a growing array of outstanding tools for the enterprise, the web and commercial development, including IBM's AppletAuthor and VisualAge for Java, Powersoft's Jato, Java™ Workshop™ and Project Studio from Sun Microsystems, Inc. JBuilder from Borland, Visual Cafe from Symantec, and Mojo from Penumbra Software.



The Java language

As professional programming languages go, Java is simple, flexible and powerful. Source code written in Java can call an assortment of APIs. Java enables developers to do several kinds of things critical to enterprise computing and encourages catching bugs early, during design and development. Its multithreading capabilities will enable a new generation of concurrent applications and services.



HotJava Browser

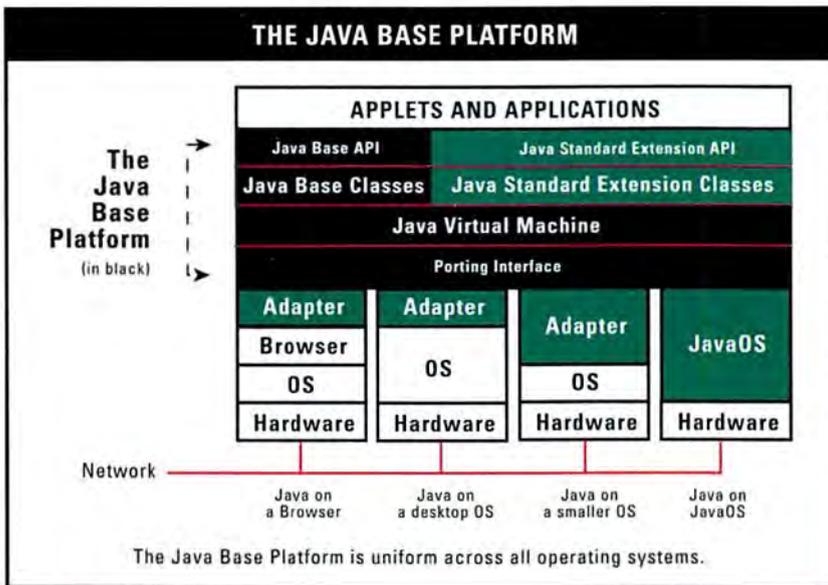
The first major application created using the Java language and its run-time system, the HotJava Browser is a highly-customizable, extensible web browser. Users can easily modify the user interface to provide their own look and feel.

HotJava Browser accesses applications in a new way: software migrates

COMPANIES LICENSING THE JAVA BASE PLATFORM TO EMBED IN OPERATING SYSTEMS

Windows	Microsoft Corp. IBM Corp.	Windows 95, NT Windows 3.1
Macintosh	Apple Computer	Mac OS
OS/2	IBM Corp.	OS/2
UNIX	Hewlett-Packard Hitachi Ltd. IBM Corp. Silicon Graphics SunSoft, Sun Microsystems The Santa Cruz Operation Tandem Computers	HPUX Hitachi OS AIX Irix Solaris™ UnixWare Non-Stop Kernel
Network OS	Novell	NetWare 4.0
Mainframe OS	IBM Corp.	MVS

transparently across the network as it's needed. No longer does software have to be “installed.” Although HotJava Browser is very small, since all of the protocol and data handlers are brought



graphics circuits and features next-generation enhancements, making it an excellent solution for advanced 3-D graphics and other multimedia-intensive applications.



Of partnership and value added

In addition to Java development efforts by Sun Microsystems, Inc. and JavaSoft, many other vendors have grasped the breakthrough significance of Java and are hard at work on Java enabled products that exploit the competitive advantages of web-based network computing and electronic commerce. The list of Java committed vendors is long, distinguished and getting longer.

Java computing with 100% Pure Java opens up a whole new spectrum of opportunities and possibilities for your company. It's a true breakthrough in technology that enables your business to create breakaway success strategies.

Network computing is here, solving some of the most challenging problems that enterprises face. A complete, end-to-end network computing solution, Java computing is more than a single breakthrough, it's a series of innovations that carry the future of enterprise computing.

Now is the time to carefully consider the possibilities and opportunities that Java computing opens up for your organization.



For more information about Sun Microsystems, Inc. JavaSoft or the 100% Pure Java Initiative, please visit our website at <http://java.sun.com> or <http://www.javasoft.com> or call 1-800-PURE JAVA.

in from the outside, its ability to seamlessly deliver dynamic content, dynamic data types and dynamic protocols means content creators now have an entirely new tool to use in the fast-emerging worlds of electronic commerce and education.



Java Development Kit

You can develop both applets to run in browsers supporting JDK 1.1 (such as HotJava and Netscape Navigator and Microsoft Internet Explorer) as well as standalone Java applications with JDK 1.1, which now features JavaBeans, database connectivity and enhancements to security, networking and performance.

JDK 1.1 includes a runtime version with interpreter and core classes, tools (including source files, compiler, debugger and much more) documentation and demos.



JavaStation

Sun Microsystems' new line of Java enabled network computers,

JavaStation systems, are optimized for Java computing and can serve as both interfaces and nodes in a Java enabled network. JavaStations have significant local processing power and take advantage of the network for all storage requirements, minimizing cost and maximizing network resources.



JavaChip family

Java processors offer significant advantages over general-purpose microprocessors in terms of performance, power and cost optimization:

- *picoJava*[™] is designed to be the industry's best price/performance silicon fabrication supporting the Java Virtual Machine specification and will be used in cell phones, printers and other business and consumer products.

- *microJava*[™] adds I/O, memory, communications and control functions to the picoJava core. Controllers, service station kiosks, telecom carrier equipment and the like will use microJava chips.

- *UltraJava*[™] leverages advanced

each picture box, 3 points away — when you could click on a button and be done? Many items on a page, such as photograph credits and picture boxes, often have set relationships to each other, but instead of positioning everything by hand, you can automate these relationships quickly and easily with the Space/Align Item command (Item: Space/Align).

It may take a while to figure out which spacing is controlled by the Horizontal command and which by the Vertical (see figure 3), but it's easy to test your results by pushing the Apply button. Once you've set a relationship up, XPress will remember the values and let you apply the same settings to other sets of items.

Tip #8: Duplicate Similar Master Pages to Quicken Page Layout

When working on a job that requires multiple master pages for different layouts or differing section elements (such as running heads that change by section), you can save a lot of time by duplicating similar, existing master pages instead of creating new ones from scratch. By duplicating a page that already contains an automatic text box, for example, you avoid the dreary task of creating a new text box and linking it to the automatic text chain.

In general, make one master page for normal text pages and duplicate it for chapter openers and closers (see figure 4). If other master pages require different numbers of columns or exceptional elements not found on other pages, duplicate among them. Remember that it's always easier to delete than to add items, so try to start with the page that includes the most elements.

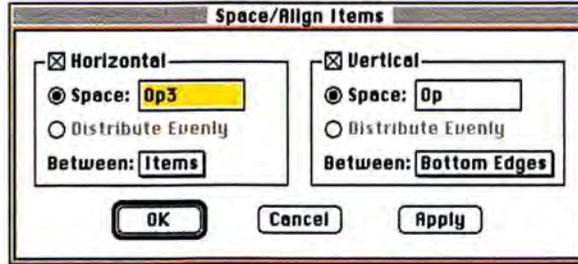


Figure 3 · Don't waste another moment nudging consistent elements — such as picture boxes and photo captions — into place. By using the Space/Align Items command, you can automate the relationship between objects and quickly ensure that items are always placed in exact relation to each other.

Tip #9: Speed Up Work with Tagged Text by Using the Xtags XTension

If you're already preformatting your text by coding text files and then importing them using the XPress Tags filter, you should seriously consider getting a copy of Em Software's Xtags XTension (\$199, available from XChange and The World-Wide Power Company). Xtags not only lets you import text that has been tagged with Xtags' enhanced set of markup commands but it also does a cleaner job of exporting text from XPress.

One of the more time-consuming chores of working with tagged text is dealing with those portions of a file that weren't coded properly. Xtags handles that task gracefully by reporting errors in a convenient way and then letting you copy and paste text to and from the clipboard while translating it to and from Xtags codes. This makes it possible, for example, to go back to a text file, fix some bad code, copy the affected text, and paste it into an XPress document, all while simultaneously interpreting the new Xtags codes.

Tip #10: Read a Book!

There's always something more to learn. Reading this article is certainly a good start, but you'll also be surprised what

you'll discover if you just take the time to reread the XPress manuals once you have worked with the program for a while. If nothing else, you should take a look at the documentation that came with your last upgrade. We generally know best the program version we learn first, but there may be time-saving features that you missed (or forgot).

Also, try picking up a book that has a fresh take you haven't considered before. There are books from the perspective of QuarkXPress users, designers, editors, scripters, trainers, and service bureaus. You can browse synopses of books by looking at the book section in The World-Wide Power Company's Web site (www.thepowerco.com) or simply by searching for QuarkXPress at the Amazon Books Web site (www.amazon.com). No matter what you use XPress for, you'll probably be able to find a book that resonates with the work you do. And who knows? A little extra time reading just might save you some time sitting in front of the computer screen. ☞

Brad Walrod (brad@cis.compuserve.com) is a New York City-based typesetter/consultant and the author of the upcoming book QuarkXPress 4.0 Studio Secrets.

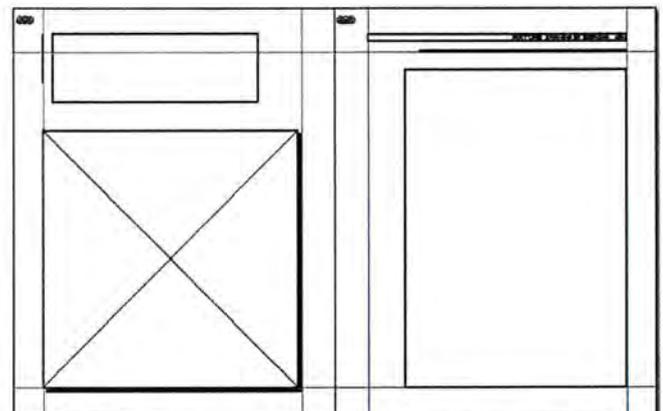
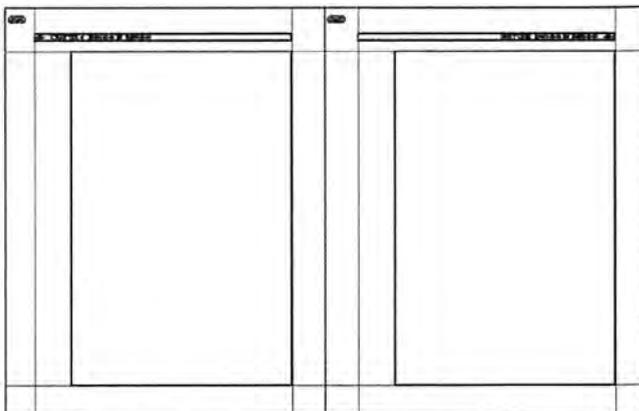


Figure 4 · When a job requires more than one master page, don't start each one from scratch — duplicate one that's similar to what you need, and modify it to your liking. The master page you see here to the left was the main master page used for flowing text in a book project.

We copied it to create the master page for chapter openers, shown at right. The right-hand pages (recto) were almost the same, but it was necessary to build the chapter opener's left-hand page (verso) from scratch.

By Janet Ashford

graphicsuser@macuser.com

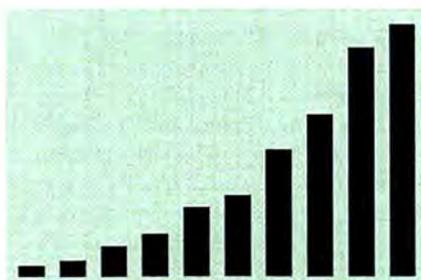
From Chart to Art

Tired of hum-drum charts and graphs? Jazz them up with Adobe Illustrator and Photoshop.



1 Choose your background image and edit in Photoshop.

Choose a photo that fits your subject matter, and open it in Photoshop. Crop it so that your graph won't obscure any important visual information. We chose a photograph of a country inn to emphasize our theme (top). Use the Levels control (Image: Adjust: Levels) to improve the image's contrast, if necessary, by moving the black and white Input Levels sliders slightly inward and sliding the gray slider slightly to the left. If your photo is washed out, experiment with its color saturation (Image: Adjust: Hue/Saturation). We wanted to boost the color of the flowers at the front of our image, so we also used Selective Color (Image: Adjust: Selective Color) to select the flowers by their color group and enhance their magenta and yellow tones (bottom).



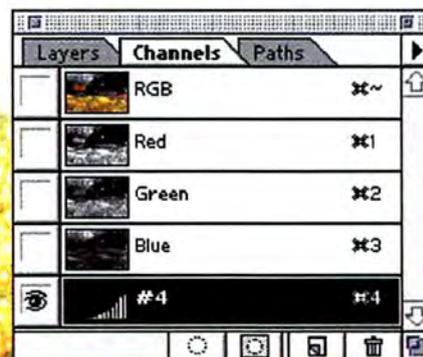
2 Create your graph in Illustrator.

To make sure your bars are the right size, draw a background box the size of your photograph and create an evenly spaced grid within it by dragging guides from the rulers (View: Show Rulers). Use the grid to draw and align black-filled bars of the correct proportions. (If your data is more complicated than ours was, you may want to try using the Graph tool in the main Tool palette instead.) Then delete the background box and save the bars as an Illustrator EPS file.



3 Create a new channel in your background image, and paste the graph into it.

Open your EPS file in Photoshop, specifying the same resolution and size as your background photo. Select the graph image (Select: Select All), and copy it to the clipboard (Edit: Copy). Open your background image, and create a new channel by choosing New Channel from the pop-up menu on the Channels palette (Window: Show Channels). Be sure to select the "Color Indicates: Masked Areas" option, which makes everything that's not black a selection area. Then paste (Edit: Paste) the graph into the new channel. The bars will appear as selection outlines. Use the paint-bucket tool to fill the outlines with solid white.



FOR BETTER OR WORSE, charts and graphs are an important part of most annual reports and textbooks. Graphs help us grasp numerical data more easily, but sometimes they can also be visually dull. One solution is to add solid colors, blends, or patterns to graph shapes and backgrounds, but for even more impact, try using a photographic background. A photo can add visual interest without interfering with numerical accuracy, and if chosen wisely, can also make the numbers' meaning more clear.

Begin by finding an image that fits your subject matter, and then enhance it in Photoshop. The photograph may be provided

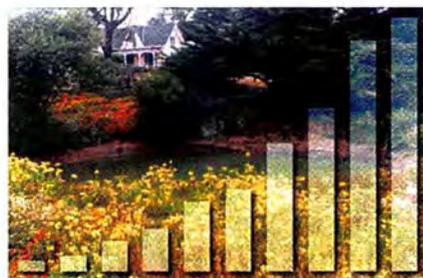
by your client, or you can use one of the thousands available in copyright-free CD-ROM collections. Images that are fairly monochromatic and uncluttered work best.

Once you've settled on a photograph, create your graph in Illustrator, either by using the program's graphing tool to convert spreadsheet data or by working with Illustrator's drawing tools to create your graph by hand. After you're done, you can open the graph in Photoshop and combine it with your photograph, as we'll show here.

The goal of our project was to create an attractive bar graph to

illustrate the change in inn occupancy over many years, but you can apply these basic techniques even if you're working with line graphs or pie charts. Once you begin working with photographic backgrounds, you'll find that the charts and graphs in your publications become illustrative assets rather than just necessary evils.

Janet Ashford is the coauthor of *Start with a Scan: A Guide to Transforming Scanned Photos and Objects into High Quality Art* (Peachpit, 1996). Visit her Webpage at www.jashford.com/.

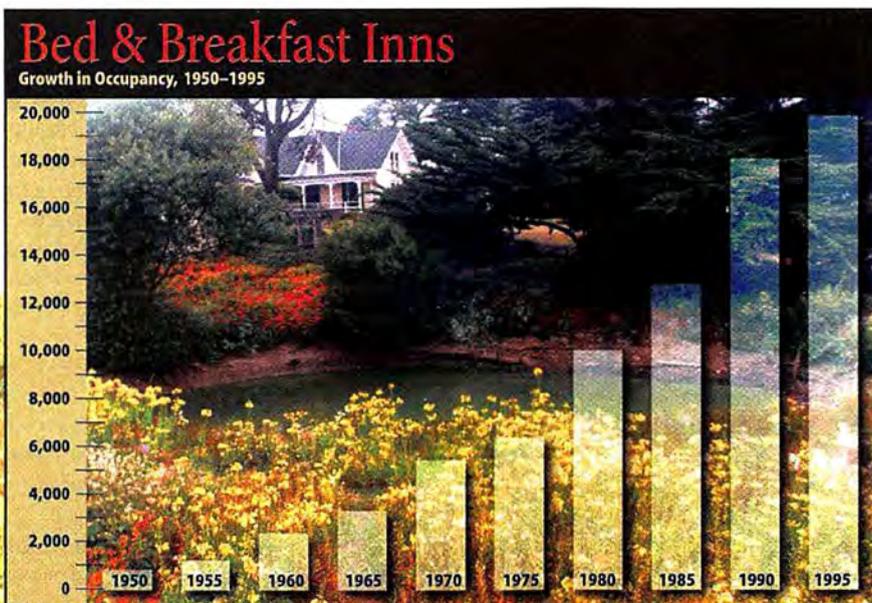


4 Lighten the selection areas.

Select the RGB channel by clicking on it in the Channels palette. The outline of your bars should appear as selection outlines. If they don't, choose Load Selection from the Select pull-down menu, picking your background-photo file as the document and channel #4 as your channel. Once you have the bar areas selected, go to the Levels palette and lighten the midtones in the selected areas by sliding the gray Input Level slider to the left.

5 Give your bars drop shadows.

To create your drop shadows, begin by duplicating channel #4 to create another new channel named #5 (choose Duplicate Channel in the Channels palette pop-up menu). Select the image in the new channel, and apply a Gaussian blur (Filter: Blur: Gaussian Blur). We used a 12-pixel blur on a 1,200-x-1,800-pixel image (left). Then move the image slightly down and to the right with the Offset filter (Filter: Other: Offset). Next, to make sure your shadows won't blot out the bars themselves, load the selection (Select: Load Selection) in channel #4 into channel #5 and fill that selection area with black using the Fill command (Edit: Fill). Then load this new selection into your composite image, choosing channel #5 as the channel source and your composite image as your document. To finish your drop shadows, fill the selection with black, choosing 80 percent opacity and the multiply mode (right).



6 Add the finishing touches to your graph in Illustrator.

Import the finished image into Illustrator, and add your title type, numbers, and tick marks to complete the graph. Voilà!

By Jason Snell

jason@macuser.com

Big Brother Meets the Cookie Monster

If Web-site cookies make you mad, read on: They're not the evildoers you think they are.

THE FLOOD OF COMPLAINTS hit us before we even knew what was going on. An e-mail firestorm swept through *MacUser's* online department, all the messages complaining about one thing: cookies.

Although we in the magazine industry do appreciate desserts, these particular cookies aren't the edible variety but an Internet delicacy known as HTTP cookies — little parcels of information sent back and forth between a Web site and your Web browser.

Some people view cookies as a devious scheme to find out who they are and what they do, secretly over the Internet. Others think cookies are harmless. Like the persistent myth that your system can catch a virus if you read e-mail, there's a vague nugget of truth in there, but it's wrapped in so many misconceptions that the truth seems to have been lost. All that's left is fear, anger, and accusations.

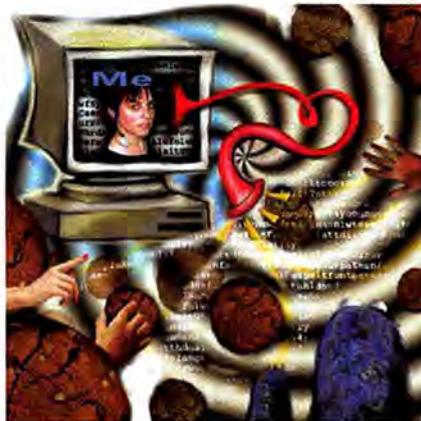
Me Want Cookie

So what is a cookie? It's a little piece of text that's sent to your Web browser from a Web site you're viewing. What's in a cookie is usually a string of characters, unique to you, that's generated by the Web site. Later, when you go back to that same Web site, it can grab the cookie from your Mac and remember who you are.

This is where the controversy comes in. This feature has led to all sorts of myths on the Net: that cookies let unscrupulous types find out all about your computer's configuration, what software

you're using, personal information, even your credit-card numbers; that cookies can wipe out your hard disk or poison your system with viruses. In reality, though, cookies are safe: A cookie can't be larger than 4K, and cookies can be read only by the Web site that sent them. So the creeps at snakeoil.com may be able to plant a cookie, but they won't be able to retrieve personal information of yours unless you've already given it to them and they won't be able to read any of the data placed there by a more reputable Web site.

Beyond simple paranoia that cookies are doing something they can't, however, is a more legitimate concern — that a cookie represents an invasion of privacy. Once a Web site has sent a cookie to your system, it can track your movements through the site. And when you come back later, it knows you've been there before. A Web site may use cookies to track what advertisements you've seen and make sure you see only ads you haven't been exposed to before. Or it may note what ads you've clicked on and show you more ads like that in the future. But cookies are also used for user convenience — for example, at sites such as that of the *New York Times* (www.nytimes.com), use



of a cookie can replace site log-in, which forces users to enter a user name and a password every time they log onto the site. That data is stored in a cookie instead.

Your Browser's Squealing

If a Webmaster watches where you go while you're attached to a Web site, is that an invasion of privacy? That's your call. But cookies are hardly the only means by which Webmasters learn about you. Every time you download a Web page, your browser sends the Web server information about what Web browser and operating system you're using, the URL of the last page you visited, and the IP address of the computer you're using. That's a lot of personal information, and every browser sends it every time you click on a link.

So why do Webmasters like using cookies, if they've got so much information about you already? The reason is *persistence*. It's pretty easy to track people as they move through a Web site during one session — the Webmaster can look for all the files requested by a given IP address or insert some "junk" into the URL that's passed back and forth, purely for identification purposes.

The Cookie Crumbles

So should you be afraid of cookies? In most cases, the answer is no. All they can do is let Webmasters keep better track of where you go on their sites over time. If ever there was a technology on the Internet that's harmless, it's cookies.

If you're philosophically opposed to cookies as yet another step down the road to a total loss of privacy, you can stop them. In Netscape Navigator's Options: Network Preferences: Protocols window, check the box for Show an Alert Before Accepting a Cookie, and Navigator will warn you every time a site tries to send you one. You can also delete Navigator's cookie file by tossing the file called MagicCookie into the Trash. Microsoft's Internet Explorer browser falls down when it comes to cookies — there's no way to prevent Explorer from accepting cookies, nor is there any easy way of deleting an Explorer cookie. Perhaps Explorer's programmers decided that cookies are so harmless, they should be transparent. That's the way the cookie crumbles. ☹

Jason Snell is *MacUser's* senior editor, online, and has been the editor of the online magazine *InterText* since 1991.

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A QUICK GLANCE at the cover of just about any *MacUser* reveals this: Mac users adore new technology. When a Mac model sporting spectacular processor speeds and futuristic whizbang gizmos appears, our salivary glands kick into overdrive. But most of us can't afford to plunk down several Gs for every shiny new Mac that crosses our path. Sometimes we just have to make do with our old stuff.

Whether you're trying to squeeze a few more years out of your old Mac or simply found a Mac Plus for an irresistible price at a weekend garage sale, we can help you keep your Mac productively employed. Here's a listing of hardware upgrades and some RAM-saving software that can make your old Mac a new machine. We also throw in a couple of tricks to make it jump through new hoops (see the "Power-User Tips" sidebar).

Hardware Enhancements

Today's Macs are capable of holding hundreds of megabytes of RAM, and their CPUs can blaze away at over 200 MHz. Such was not always the case. Early Macs

were both RAM- and speed-deprived. Thankfully, a creaky old Mac can be brought nearly up to snuff with the help of an add-on accelerator.

Most accelerator vendors have fallen by the wayside in the past few years, yet some of their designs live on. MicroMac Technology has incorporated accelerators originally developed by such firms as DiiMO, Dove, Harris, and Mobius into its product line. The company offers accelerators for the Mac Plus, SE, SE/30, and Performa 400 and the Classic, LC, and II families. An FPU is optional for many of these accelerators, and they let you add RAM beyond the previous RAM limits of some Macs, such as the Plus, SE, Classic, LC, and LC II. Prices start at around \$200, with most cards running about \$250 each.

Sonnet Technologies' Allegro SE and Classic 68030 accelerators let you add as much as 16 MB of RAM to a Mac SE or Classic. The company also offers 68030 and 68040 accelerators and FPUs for the LC, II, and Quadra/Centris lines. Prices start at around \$200 each.

Some of the least expensive accelerators available are those from NewLife Systems. Its 68030 accelerators for the 512Ke, Plus, and SE start at around \$100 each. An FPU is optional. Although these cards don't provide any extra RAM slots, they do come with Connectix's Compact Virtual software, which gives your Mac 16 MB of virtual memory. If you want to connect an external monochrome monitor to an SE, you can do so by using NewLife's SE Accelerator (around \$190).

Quirks and Limitations

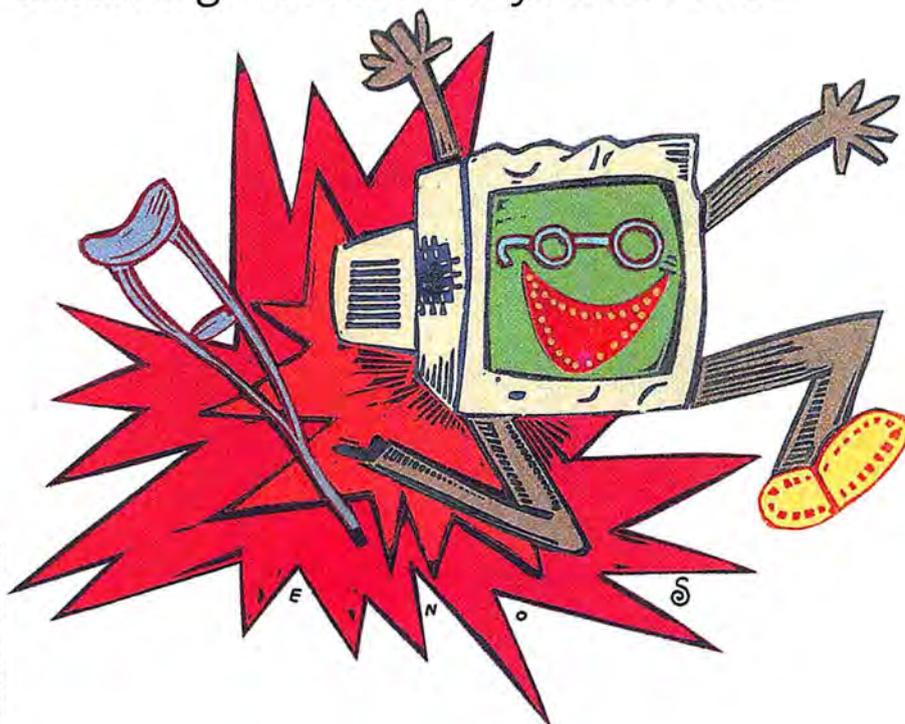
Compact Macs (Plus, SE, Classic, and earlier models). Although the original 128K and 512K Macs sport the same all-in-one design as their younger siblings, their minimal RAM and lack of a SCSI port render them perfectly useless for modern computing — they make dandy doorstops and curios, though. NewLife Systems still has a few 512Ke upgrade kits that add a SCSI port and let you increase the RAM to 4 MB.

Although the Plus, the SE, and the Classic include that all-important SCSI port, they have limitations too. From the factory, these models topped out at 4 MB of RAM each, their 68000 processors chugged along at a scant 8 MHz, their serial ports were slow, and the floppy drives couldn't read high-density floppies. First and foremost, you must up the RAM on

By Christopher Breen
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Never Say Die

Lifesaving measures for your old Mac.



SmartUser

these machines and add a hard drive. An accelerator can help expand the RAM beyond 4 MB and can boost processor speed, but there's no way to juice up the serial ports or access high-density floppies. If you're considering a modem, don't waste your money on one faster than 9,600 bps — these compact Macs' serial ports can't handle anything faster. If you need to use high-density floppies, trade up to a Mac that reads them (or see the "Power-User Tips" sidebar for a workaround).

Mac II Family, SE/30, and Performa 600. With these Macs, RAM limits aren't an issue — they can support at least 65 MB of RAM — but they have a couple of other peculiar memory issues. The Macintosh II, IIx, IIcx, and SE/30 have "dirty" ROMs, which don't support 32-bit addressing — meaning that they can't recognize more than 8 MB of RAM unless you install Connectix's MODE32 control panel. (You can get it online from Connectix.) Also, in

order to address more than 8 MB of RAM, the Macintosh II and IIx require PAL SIMMs — special SIMMs that each carry nine chips instead of eight. You should be able to special-order PAL SIMMs from memory dealers.

Software

With an older Mac, you have the challenge of trying to squeeze today's bloated, memory-hungry applications onto it. Start off by using System 7. It's not as slim as System 6, but it's compatible with many more programs.

If you want to conserve RAM and disk space, one way is to use older versions of software. Your best bet is to buy programs from current users, since you can no longer get them from the original publishers. Your local user group is a good place to start looking. Be warned: Pirating old software is just as illegal as copying current stuff. Fortunately, most software

publishers allow their software licenses to be transferred between individuals. Read the agreement to be sure.

Rather than go through the hassle of trying to find out-of-date software, you can instead get software that's suited for even the most meager Mac. Try these on for size:

Combo Platter. ClarisWorks can fit nicely on an older Mac. It gives you the capabilities of many applications — a word processor, database manager, painting program, drawing program, spreadsheet program, and very basic communications program. The minimal-install option takes up a modest 1 MB of disk space and requires only 960K of RAM.

Word Processing. Akimbo Systems' FullWrite (around \$400) and SoftKey's WriteNow 4.0 (around \$50) work on anything from a Mac Plus on up. Each supports System 6.0.7 and later and comes on low-density floppy disks. If you don't need a full-featured word processor, consider a text editor such as Tom Bender's \$10 Text-Edit Plus shareware.

Communications/Internet. Current versions of AOL and CompuServe Information Manager can't run on an unaccelerated compact Mac. However, you can still access CompuServe by using a communications program such as ZTerm (shareware). And fear not, the Internet is not closed to you. With a dial-up account, MacPPP 2.0.1, MacTCP 2.0.6, MacWeb 1.1.1 (all three are shareware), and a modem, you can surf the Net like the big boys and girls — although at a glacial pace on a compact Mac, due to its slow serial port. Use Qualcomm's free-ware Eudora 1.3.1 for e-mail.

Financial. Unless you can find an old copy of Microsoft Excel or you decide to get ClarisWorks, your options are limited. For those who have a 68030 Mac, Casady & Greene's Spreadsheet 2000 (around \$110) is a good choice.

Graphics. Photoshop use may be beyond the capabilities of older Macs, but your artistic urges needn't go unfulfilled. Delta Tao's Color MacCheese 3.0/Apprentice bundle (\$62 direct) comprises a pair of 32-bit paint programs. Color MacCheese requires only a 4-MB Mac and works in black-and-white or color; Apprentice is a color-Mac-only application. Shareware graphics programs are well represented by Humayun S. Lari's black-and-white paint program LightningPaint (\$14); Matt Batey's full-color Matt Paint



Power-User Tips 2 new tricks for an old Mac

YOUR OLD MAC may be capable of more than you realize. After you've added the right hardware and software to stretch its limits, it's time to teach it a few tricks. Here are a couple of useful ones:

Tame High-Density Floppies. The Mac Plus, early SEs, and IIs lack a high-density floppy drive. Owners of SEs and IIs can purchase a ROM/FDHD-drive upgrade from a Mac-parts company such as Galaxy HP (www.galaxyhp.com), but Plus owners are out of luck. Those of you stuck with no HD-floppy drive can simulate one by using a removable-media drive (an Iomega Zip, for example), Chad Magendanz's ShrinkWrap 2.1 shareware, and the kindness of others.

Here's how: Using a friend's Mac (or another Mac of your own) that has an HD-floppy drive, use ShrinkWrap to create a disk image of the HD floppy you want to use. Copy the disk image to the removable cartridge, connect the drive to your geriatric Mac, mount the image with ShrinkWrap, and use it as you would any floppy disk.

Work Around Stubborn Installers. Those who have accelerators may think they've transcended the problems inherent in early Macs. Not so. Many software installers query the processor installed on your motherboard, not the processor actually running your Mac. If that motherboard processor doesn't meet the installer's requirements, the installer will rudely quit. Like your HD-drive-less friends, you need to use a Zip drive.

To use a Zip drive to make the installer do its job, first create a startup cartridge, open the Control Panels and Extensions folders, select everything in them (Command-A), and assign their contents a distinct label (red, for example). Then, connect the Zip drive to a Mac that meets the requirements of the finicky installer. Boot that Mac from the Zip cartridge and install the program on that cartridge. Restart, and move everything in the Control Panels and Extensions folders that's not distinctly labeled (not red, using our example) to a new folder called Install in System Folder. Now connect the Zip drive to your old Mac — don't boot from the Zip cartridge. Drag the folder containing your installed program to the old Mac's hard disk, and drag the contents of Install in System Folder to the old Mac's System Folder. Of course, if you already have the extensions and control panels the installer installs, don't bother dragging new copies in unless they're updated versions that work with your Mac.

Directory

Accelerators

MicroMac Technology, Aliso Viejo, CA
800-600-6227 or 714-362-1000
www.micromac.com

Accelerators

Sonnet Technologies, Irvine, CA
800-786-6260 or 714-261-2800
www.sonnettech.com

Accelerators, 512Ke upgrade kits

NewLife Systems, Eganville, ON, Canada
800-663-6395 or 613-628-1646

ClarisWorks

Claris, Santa Clara, CA
800-544-8554 or 408-727-8227
www.claris.com

Color MacCheese 3.0/Apprentice bundle

Delta Tao, Sunnyvale, CA
800-827-9316 or 408-730-9336
www.outland.com/deltatao

FullWrite

Akimbo Systems, Somerville, MA
800-375-6515 or 510-843-6888
www.akimbo.com

Microsoft Excel

Microsoft, Redmond, WA
800-426-9400 or 206-882-8080
www.microsoft.com

Paint It!

MicroFrontier, Des Moines, IA
800-388-8109 or 515-270-7030
www.microfrontier.com

Spreadsheet 2000

Casady & Greene, Salinas, CA
800-359-4920 or 408-484-9228
www.casadyg.com

WriteNow 4.0

SoftKey, Cambridge, MA
800-227-5609 or 617-494-1200
www.softkey.com

(\$25); and Pierce Software's excellent drawing program, ShareDraw (\$24.95). MicroFrontier is now distributing its entry-level 32-bit-color paint program, Paint It!, as shareware (\$15). Paint It! requires a 68020 Mac or later.

Still Going

OK, so your geriatric Macintosh may not be the envy of the neighborhood, but, by gum, the old box is still capable of doing some honest work. You've got our best suggestions for hardware and software. What more does your Mac need? How about a bumper sticker that reads, "I may be slow, but at least I'm paid for." ☹

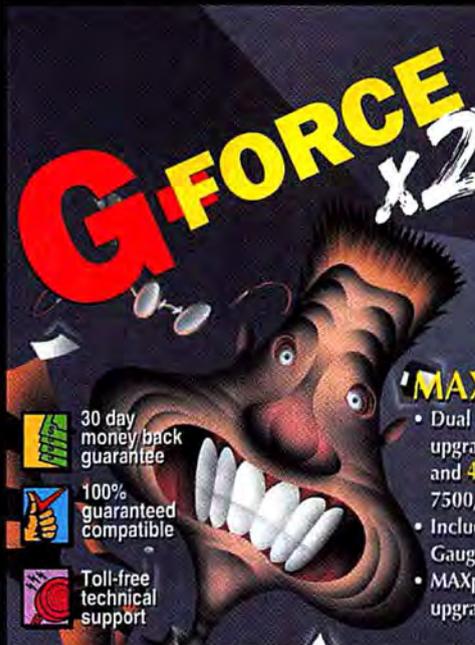
MacUser Contributing Editor Christopher Breen would like to express his thanks to his faithful Mac SE for sticking with him in the preparation of this article.

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APPLE'S NEW SERVER SOFTWARE

MacUser takes a close look at Apple's new server software and how it integrates Internet and intranet technologies into Macintosh local area networks. The experts in MacUser Labs test this new Mac server software to measure speed and compare performance with Windows NT, StarNine's WebStar and Apple's AppleShare. Is this the end of AppleShare as we know it today? Find out in the September issue of MacUser.

PHOTOSHOP AT TOP SPEED

Are you a desktop publisher or graphics professional who demands more speed from Adobe Photoshop? If so, be sure to read the September issue of MacUser. In the new section GraphicsUser, Bruce Fraser, author of the bestseller *Real World Photoshop*, gets under the hood of Photoshop and provides solutions for getting better and faster results.

BUYERS GUIDE: INKJET COLOR PRINTERS

If you're looking to add a color printer to your small office/home office, don't miss the September issue of MacUser, where MacUser Labs tests up to 10 inkjet color printers, all priced under \$500! Due to recent developments in technology, these color printers are extremely capable of photo-quality output at a low price.

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By Bob LeVitus and Christopher Breen

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Help Folder

Putting the Mac on TV
 and getting a new
 CD-ROM drive.

Use Mac with TV As Monitor?

I'd like to connect my Mac to a 25-inch television screen for a presentation at work. How would I go about doing this? My Mac has only a monitor port for video out. The TV has RCA audio and video plugs and a cable hookup. What parts would I need to buy, and where can I get them?

Jennifer S. Minton, via the Internet

Chris: What you need is called an RGB-to-NTSC converter, a little black box that takes the video signal from your Mac, performs some voodoo on it, and then spits it onto a plain-old (read inexpensive) television set.

There are lots of converters on the market, from companies such as Digital Vision, Focus Enhancements, and others. Prices start at around 250 simoleons, with more-expensive models including bells and whistles such as the ability to display Mac screens at resolutions higher than 640 x 480 pixels. Digital Vision's \$500 TelevEyes/SC, for example, lets you display Mac screen sizes of up to 800 x 600 pixels on your TV screen.

Bob: Another feature to look for is flicker reduction. Because of the way these little black boxes convert computer screen images from RGB (red, green, blue) to an

NTSC (for Never Twice the Same Color — just kidding) television screen image, one-pixel-thick lines that look fine on your Mac screen will vibrate or flicker on a TV. Make sure your converter offers some kind of flicker-reduction (sometimes called line-averaging) technology.

Chris: One caveat: Although you can usually get away with this kind of scheme for a presentation, don't even think of trying to use a TV set as your everyday computer monitor unless you savor the kind of pain induced by rabid weasels gnawing at your brain.

Bob: No matter how much you spend on a converter, the image won't be clear enough for day-to-day computer work close up. Which is why a 20-inch RGB computer monitor costs around \$1,500 and a 31-inch television costs around \$500.

Although an RGB-to-NTSC converter is good enough for a presentation to a crowd, it's not good enough to enable a cheap TV to replace the expensive computer monitor on your desk.

Internal Versus External CD-ROM

My internal CD-ROM drive no longer works. It probably doesn't make sense to fix it, so I'd like to get a new one. Trouble is, most drives on the market (and there aren't that many to choose from) are externals. Should I (a) buy an external drive and attach it to my SCSI chain; (b) buy an external CD-ROM drive, remove it from its case, and install it in my Mac; or (c) find an internal CD-ROM drive? If I choose c, where can I find such a drive?

Mary Russell, Sussex Downs, England

Bob: Well, Chris and I agree on at least one thing

Chris and Bob, in unison: It probably doesn't make sense to fix the drive.

Chris: Further proof of the undeniable fact that today's consumer-electronics and computer products have — like cigarette lighters, cameras, and diapers — become disposable. Think about how few of the devices scattered around your office are "worth fixing."

Bob: But we digress. All the options you mention have some merit, although we (Chris and I) agree that cannibalizing an external drive is not exactly cost-effective.

The reason: It just isn't that difficult to find an internal CD-ROM drive from a reputable vendor. I just so happen to have an APS catalog right here; it offers at least

one internal CD-ROM device that may suit your needs.

Chris: Or call almost any of the storage vendors whose advertisements grace the pages of fine magazines such as this one — even if you don't see internal CD-ROM drives in the ad. Because internal CD-ROM drives are not particularly strong sellers, probably due to the fact that almost every computer sold in the past few years has one built in, storage vendors are likely to offer one or two internal CD-ROM drives but just not advertise them.

You can also try your local computer dealer. A SCSI CD-ROM drive is a SCSI CD-ROM drive — the device cares not an iota whether you catapult it into a PC or a Mac. Of course, you don't want to get an IDE drive, so check the box before you carry it off.

A caveat: Those of you who aren't replacing an internal CD-ROM drive but are rather thinking of adding an internal drive to a Mac that didn't previously come with one are faced with an additional dilemma. Unlike most PCs, Apple Macs have distinctive cases, and just about every one of 'em has a different bezel and kit for mounting CD-ROM drives. You won't find these bezels and kits piled in the corner of your local computer shop. They're special-order items that must be purchased through an Apple authorized dealer. They're not terribly expensive (around \$25), but dealers may give you the hairy eyeball if they suspect you're going to install your own CD-ROM drive.

Bob: As far as the internal-versus-external question goes, I'm a fan of external drives. That way, if it breaks, or if you've just gotta have a 64x hummer when it becomes available, you just unplug the old standby from the SCSI chain and repair or replace it.

Chris: The exception to that rule — and there's always an exception — is if you have one of those Macs with dual SCSI chains: a fast SCSI internal one and a regular SCSI external one. You'll find dual buses in the Apple Power Macintosh 9500 and many Mac OS compatibles. If you have a dual-bus computer, you'll probably get better performance with an internal drive connected to the faster internal SCSI bus.

Bob: If your Mac has an Apple logo on it, you're pretty much done. Relax, and fire up your copy of Pro Pinball. If, on the other hand, you have a Mac-compatible from Power Computing, Motorola, or

another clone vendor, there's one more fence to jump. Apple's CD-ROM driver software doesn't work with clones. That's why Mac OS licensees bundle FWB's CD-ROM Toolkit or another third-party CD-ROM driver package with their machines. If you've had your clone for a while, chances are that the CD-ROM driver software that came with the machine doesn't support the new, fast drive you just purchased. If you got the drive from a Mac-oriented catalog company or dealer, chances are that you'll be sailing once you've installed the provided driver software and restarted. If, however, you've bought yourself a generic SCSI CD-ROM drive on the strength of Chris' advice that all SCSI drives are created equal, don't be surprised if there's no Mac driver software and if your machine's bundled driver doesn't quite perform up to par. First, get on the phone with the drive vendor and ask for a Mac driver. If that doesn't do the trick, call the company that supplied your clone's original driver and ask if there's an updated version that supports your new drive.

Keystroke Saver?

I have a Performa 6200CD and need a program that will save all keystrokes to a separate folder for each application. Any help you can provide would be greatly appreciated.

Marty Grolier, via the Internet

Bob: Well, the only program I know that does everything you ask happens to be a program I consider well worth having for features other than this one — saving your every keystroke into a text file in a separate folder for each program you use. That program is Casady & Greene's lovable Spell Catcher (formerly Thunder 7). The fact that it's the best universal spelling checker, glossary, and thesaurus money can buy and that it costs only about \$55 or \$60 on the street is the icing on the cake.

Chris: The feature Bob's talking about is called GhostWriter in Spell Catcher parlance. Merely turn it on in the Spell Catcher Preferences dialog box, and you'll get exactly what you asked for: text files containing all your keystrokes, saved automatically in folders by application name. It even creates a separate GhostWriter file for each document you create with each application!

Bob: And, of course, you're also getting a

great spelling checker, thesaurus, and glossary for free!

Chris: Quite frankly, we like Spell Catcher so much that we're tempted to tell you it's the best thing going and that you should buy a copy, and leave it at that. But we're Bob and Chris at the Help Folder, by gum, and we're duty-bound to provide you with a peck of less expensive solutions.

Bob: On the commercial front, there's Last Resort, from Working Software. It records every keystroke to a file on your hard disk. Although it may be the consummate keystroke-saving program (that's all it does, for about \$40), it just doesn't do that folder thing you want.

Chris: Although it's no less expensive than Spell Catcher, Now Utilities' Now Save also has a keystroke-capture function. Like Last Resort, it saves keystrokes into a file and indicates which program each collection of keystrokes came from.

For those who are willing to forgo the folder feature, there are even-cheaper solutions. Among the shareware programs that capture keystrokes to a text file, there's Super Save, \$10 shareware by Michael F. Kamprath, and the even more affordable EventLogger, \$5 shareware by Sam Madden.

What Is That VM Storage File?

There's an invisible file called VM Storage at the root level of my startup disk. Although Virtual Memory is set at only 1 MB above the total RAM installed, this VM Storage file is a whopping 33 MB. Why is that?

Kunio Mitsuma, via the Internet

Bob: I would say it's there because the engineers at Apple aren't nearly as good at virtual memory as the engineers at Connectix.

Put another way, Connectix's RAM Doubler 2 gives you all the advantages of Apple's virtual-memory scheme and none of the disadvantages, such as that unsightly 33-MB file hogging space on your hard disk. And although VM in Mac OS 7.6 provides much more speed than in earlier system-software releases, RAM Doubler provides even more.

Chris: One other advantage RAM Doubler has is that it works with some — dare I say many — games that absolutely do not work with Apple's virtual memory turned on.

Bob: It's yet another product worth paying for. I think RAM Doubler is worth having

Tips · System

Extensions Revealed

System 7.6's Extensions Manager can create a text file listing the extensions and control panels with their Name, Size, Version, and Creator and indicate whether they are active or disabled. To save this file, simply choose Create Text File from the File menu. I discovered that this file is tab-delimited, so it can be opened in a spreadsheet program. Entries are neatly lined up in columns with the correct headings — a lot easier to use than the text file. Microsoft Excel can open the file after asking a formatting question or two. To open the file in ClarisWorks, you must first open it as a text document, select all (Command-A), and then paste it into a new spreadsheet document.

David Roberson, Marietta, OK

Stopping Startup Items

In addition to the tricks Bob and Chris mention in February '97's Help Folder, there's another way to bypass startup items without using any extensions or tricky key combinations. Make a broken alias file. Here's how:

Create an alias and then discard the original file — creating a new folder works nicely. Place a space before its name so that it will load first, and put it in the Startup Items folder. Now when you start your Mac, a dialog box appears, informing you that the original file connected to the alias couldn't be found. In the dialog box, you'll see an OK button and a Cancel button. If you press OK, the other startup items will launch. If you press Cancel, the Finder will refrain from launching any other startup items.

Ernst Mulder, Eindhoven, The Netherlands

About This What!?

With the intro of System 7.6, Apple pays tribute to the clone makers by eliminating the tried-and-true phrase "About This Macintosh" from the Apple menu. Instead, we read, "About This Computer." Here's how to set things right with ResEdit:

Make a copy of the Finder, and open it with ResEdit. Open the STR# resource, and select ID 5000. Scroll down to NumString 56 — you'll see that it reads "About This Computer . . ." Delete *Computer* and type *Macintosh* in its place. (If you have another Mac OS system, you can type that system's name there — *Power Clone*, for example). Save the altered Finder. Now remove your original Finder from the System Folder, and tuck it away in a safe place. Install your new Finder, restart, look on the Apple menu, and breathe a sigh of relief.

Bill Fisher, Philadelphia, PA



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even if you have plenty of RAM already. I have 96 MB of real RAM, for gosh sake, and I almost always have RAM Doubler 2 turned on.

Ricky, You've Lost That Number

I've lost my registration card for Claris EMailer 1.1.3, and I need to reinstall the application on a hard disk I plan to reformat. I see the serial number very briefly when the program launches, but I can't seem to find it anywhere else. How can I get my serial number back?

Richard Strickland, via the Internet

Chris: We've got a couple of solutions, but before we reveal all, we have to make the appropriate *tsk*ing noises and waggle our collection of index fingers at you. Bob, the sound effects please?

Bob: *Tsk-tsk-tsk.*

Chris: Thank you, Bob. Richard, you'll have to take it on faith that our fingers have been set a-wagging as we type.

This is one of those "ounce of prevention" situations your mother used to go on and on about. I — the messiest guy associated with *MacUser* (well, excluding Jim Shatz-Akin, whose untidiness is truly stupefying) — have nothing but sympathy for those who misplace registration cards, floppy disks, monitors, and small French automobiles. But I've found over the years that it pays to organize your stuff before you lose it. Here's what I do:

As soon as you install any software package, grab a felt-tipped pen and write the registration number on the front page of the manual, on the floppy, on a piece of tape stuck to the CD-ROM case, and on your calendar. If you can restrain your unkempt tendencies for just a bit longer, create a database and enter the registration number there as well.

Bob: And don't forget to register your software — either by mail or electronically. We can't guarantee that calling a software company for a lost serial number will be the winning ticket, but you're going to have better luck if you're in the company database.

Chris: I understand that EMailer is different, but most applications reveal the registration number if you pull down the Apple menu and look in the About box. And, of course, on slower Macs, the splash screen stays around a while — usually long enough for you to spy the magic number.

Bob: If you don't see the serial number

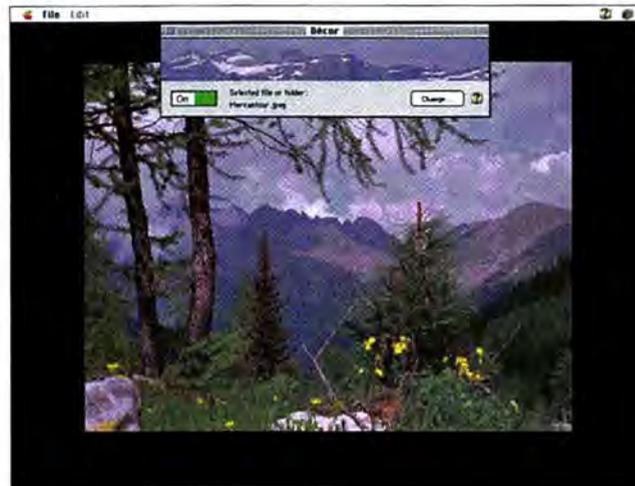


Figure 1 • You can turn PICT, GIF, or JPEG files into nifty desktop patterns with the très bon Décor.

there and you need to reinstall your software, locate the application's preferences file and copy it to a safe place. Now perform the reinstall and drop the preferences file back where you found it. More often than not, the serial number is embedded somewhere in that file and will let the application know that you're already registered. EMailer keeps its preferences file in the Claris folder inside your System Folder.

Chris: I have one final trick that will work like a charm — provided you have a registered, working copy of EMailer. Download a copy of Ambrosia's \$20 Snapz Pro — one of the finest screen-capture utilities around. When EMailer first boots, immediately type the screen-snapshot keyboard shortcut (the default is Shift-Command-3). Snapz Pro freezes the screen and — *lookie! lookie!* — there's your serial number. You can use this trick for capturing just about any fleeting screen object.

Picture Perfect

I want to use an awesome *Star Trek* graphic as my desktop pattern. I saved it to the Desktop Patterns control panel, but when I clicked to change my pattern, a whole bunch of tiny images filled my screen. How do I create one full-screen image instead of lots of little ones?

DRPIES, via AOL

Chris: Dr. Pies? Drippies? Draperies!? Aren't AOL screen names a hoot?

Bob: Whatever your real name is, the Desktop Patterns control panel is doing just what it's supposed to; taking a PICT file, reducing it to 128 x 128 pixels, and tiling it across your desktop. With a little

planning and an artistic eye, you can create some pretty impressive-looking patterns.

Chris: The idea behind Desktop Patterns came from a program called Wallpaper (in case anyone's litigating the matter, I should state for the record that I'm just guessing, and for all I know Desktop Patterns may just be a happy coincidence). In the old days, desktops were a dull affair made up of tiny repetitive patterns (8 x 8 pixels). With Wallpaper you could create much larger patterns and — as with Desktop Patterns — tile them across the screen. Groovy!

But because you don't need row after row of little starships warping across your screen, Desktop Patterns isn't the tool for you. Instead, beam yourself down to your favorite shareware source and put the Vulcan death grip on a copy of François Pottier's \$10 shareware beauty Décor. This chock-full-o'-codey-goodness utility allows you to replace your dull desktop with a PICT, GIF, JPEG, or StartupScreen of your choosing. It'll even fling random pictures onto the display with each restart. *C'est magnifique!*

Bob: Because you're a Trekker, you may already have an alternative solution in hand. If you have a recent copy of After Dark (you *must* have the *Star Trek* collection), you'll find that it contains something called WallZapper, a utility that plasters a PICT file across your screen. ☺

Bob LeVitus is the Mac columnist for the Houston Chronicle and a consultant to the Motorola Computer Group. Christopher Breen is the author of The Macintosh Bible Guide to Games, published by Peachpit Press.

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2.0GB	Atlas 7200 RPM	8ms	-	Fast SCSI 2	495	565
2.0GB	Atlas 7200 RPM	8ms	11.0 MB/Sec.	F&W SCSI 2	555	630
4.5GB	Atlas II 7200 RPM	7.9ms	-	Ultra SCSI 3	795	855
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9.1GB	Atlas II 7200 RPM	7.9ms	12.7 MB/Sec.	F&W Ultra SCSI 3	1495	1565

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365MB	Quantum	10ms	-	Fast SCSI 2	155	215
535MB	Quantum	9ms	(5400RPM, 512K Buffer)	Fast SCSI 2	N/A	229
1280MB	Fireball TM	10.5ms	-	Ultra SCSI 3	225	285
2.1GB	Fireball TM	10.5ms	-	Ultra SCSI 3	295	355
3.2GB	Fireball TM	10.5ms	-	Ultra SCSI 3	345	395

All Value Drives are 4500 RPM, 128K Buffer with a 3 year manufacturers warranty.

IBM UltraStar Drives

SIZE	DRIVE	SEEK TIME	RATE	INTERFACE	INT.	EXT.
2.2GB	UltraStar ES (5400 RPM)	8.5ms	-	Ultra SCSI 3	425	485
4.3GB	UltraStar 2 ES 34300 (5400 RPM)	8.5ms	-	Ultra SCSI 3	595	655
4.3GB	UltraStar 2 ES 34300W	8.5ms	16.2 MB/Sec.	F&W Ultra SCSI 3	695	765
4.5GB	UltraStar 2 XP 34550 (7200 RPM)	8.5ms	-	Ultra SCSI 3	745	805
4.5GB	UltraStar 2 XP 34550W	8.5ms	16.2 MB/Sec.	F&W Ultra SCSI 3	795	865
9.1GB	UltraStar 2 XP 39100W	7.9ms	-	Ultra SCSI 3	1445	1505
9.1GB	UltraStar 2 XP Wide 39100W	7.9ms	15 MB/Sec.	F&W Ultra SCSI 3	1525	1595

All IBM UltraStar 2 drives listed are 7200 RPM, 512K Buffer (unless noted otherwise) and are covered by a five year manufacturers warranty. Work station disk tab entry information available upon request.

Micropolis Drives MICROPOLIS

SIZE	DRIVE	SEEK TIME	RATE	INTERFACE	INT.	EXT.
4.3GB	Microp. Tomahawk 4345	7.9ms	-	Ultra SCSI 3	795	855
4.5GB	Microp. Tomahawk 4345AV	7.9ms	2MB CACHE	F&W Ultra SCSI 3	875	935
4.5GB	Microp. Tomahawk 4345W	7.9ms	-	F&W Ultra SCSI 3	830	900
4.5GB	Microp. Tomahawk 4345WAV	7.9ms	2MB CACHE	F&W Ultra SCSI 3	955	1025
9.1GB	Microp. Tomahawk 3391	7.9ms	-	Ultra SCSI 3	1395	1455
9.1GB	Microp. Tomahawk 3391AV	7.9ms	2MB CACHE	Ultra SCSI 3	1475	1535
9.1GB	Microp. Tomahawk 3391W	7.9ms	-	F&W Ultra SCSI 3	1415	1485
9.1GB	Microp. Tomahawk 3391WAV	7.9ms	2MB CACHE	F&W Ultra SCSI 3	1495	1570

All Micropolis drives are 7200 RPM, 512K Buffer and covered by a 5 year warranty. Mounting brackets and cables available for all current and former Mac's & Clones.

Barracuda 2 Series Seagate

SIZE	DRIVE	SEEK TIME	RATE	INTERFACE	INT.	EXT.
2.5GB	Barracuda ST32171N	8ms	-	Ultra SCSI 3	575	635
2.5GB*	Barracuda ST32171W	8ms	17.6 MB/Sec.	F&W Ultra SCSI 3	635	695
4.5GB	Barracuda LP ST34371N	7.9ms	-	Ultra SCSI 3	885	945
4.5GB*	Barracuda LP ST34371W	7.9ms	17.6 MB/Sec.	F&W Ultra SCSI 3	945	1015
9.1GB	Barracuda 19171N	7.9ms	-	Ultra SCSI 3	1675	1735
9.1GB*	Barracuda 19171W	7.9ms	18 MB/Sec.	F&W Ultra SCSI 3	1745	1825

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4.5GB	Cheetah ST34501W	7.9ms	(10,000 RPM)	F&W Ultra SCSI 3	1075	1175
9.0GB	Elite ST410800W (5400 RPM)	11ms	15MB/Sec.	F&W SCSI 2	1875	1975
23GB	Elite23 ST423451N	8ms	-	Ultra SCSI 3	4095	4195
23GB	Elite23 ST423451W	8ms	-	F&W Ultra SCSI 3	4195	4295

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Barracuda drives are 7200 RPM, 512K Buffer (unless noted) w/5 yr. manf. warranty.

Fujitsu Drives FUJITSU

SIZE	DRIVE	SEEK TIME	RATE	INTERFACE	INT.	EXT.
4.5GB	Speed-Tuned for AV 512K Buffer	-	-	Ultra SCSI 3	835	895
4.5GB	Speed-Tuned for AV 512K Buffer	-	-	F&W Ultra SCSI 3	845	920
9 GB	F2959 Speed-Tuned for AV 8ms 512K Buffer	-	-	Ultra SCSI 3	1465	1525
9 GB	F2959W Speed-Tuned for AV 8ms 512K Buffer	-	-	F&W Ultra SCSI 3	1475	1550

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8	Cheetah ST34501W	Single Channel	3295	3495
8	Cheetah ST34501W	Multi Channel	3675	3875
18	Barracuda ST19171W	Single Channel	4495	4695
18	Barracuda ST19171W	Multi Channel	4820	4995
27	Barracuda ST19171W	Multi Channel	6895	7195
36	Barracuda ST19171W	Multi Channel	8895	9095
54	Barracuda ST19171W	Multi Channel	13295	13495
63	Barracuda ST19171W	Multi Channel	14935	15695

Micropolis PowerRAIDS

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8	Tomahawk M4345WAV	Multi Channel	2995	3195
18	Tomahawk M3391WAV	Single Channel	3795	3995
18	Tomahawk M3391WAV	Multi Channel	4265	4465
27	Tomahawk M3391WAV	Multi Channel	5995	6345
36	Tomahawk M3391WAV	Multi Channel	7595	7995
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GIGS	PRODUCT	MEDIA	TRANSFER/MIN.	INT.	EXT.
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40	Quantum DLT4000	DLT	180MB	-	4195
4	Conner TravanQIC	QIC 80 M	20 MB	-	485
4-8	Hewlett Packard QIC533 DAT DDS-2	DAT 120M	60MB	-	895
4-8	Sony 7000 DAT DDS-2	DAT 120M	90MB	-	989
24-48	HP1553 Auto Tape Loader	DAT 120M	60MB	-	2495
5-7	Exabyte 8505XL	8mm	60 MB	1995	2055
14	Exabyte 8700	8mm	60 MB	N/A	1475

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1.2GB Tempest	QM31280TMS	10.5ms	Ultra SCSI-3	4500	'229	'289
2.1GB Tempest	QM32100TMA	11ms	Fast ATA-2 (IDE)	4500	'249	----
1.6GB Tempest	QM32150TMS	10.5ms	Ultra SCSI-3	4500	'299	'359
2.1GB Stratus	QM32160STS	10ms	Ultra SCSI-3	5400	'349	'409
3.2GB Tempest	QM33200TMA	11ms	Fast ATA-2 (IDE)	4500	'289	----
3.2GB Tempest	QM33255TMS	10.5ms	Ultra SCSI-3	4500	'349	'409
3.2GB Stratus	QM33240STS	10ms	Ultra SCSI-3	5400	'399	'459
3.8GB Tempest	QM33840TMA	11ms	Fast ATA-2 (IDE)	4500	'329	----
4.3GB Stratus	QM34320STS	10ms	Ultra SCSI-3	5400	'489	'549
4.5GB Atlas II	QM34550ALS	8ms	Ultra SCSI-3	7200	'799	'859
4.5GB Atlas II	QM34550ALW	8ms	UltraWide SCSI-3	7200	'899	'959
6.4GB Stratus	QM36480STS	10ms	Ultra SCSI-3	5400	'599	'649
9.1GB Atlas II	QM39100ALS	8ms	Ultra SCSI-3	7200	'1399	'1459
9.1GB Atlas II	QM39100ALW	8ms	UltraWide SCSI-3	7200	'1449	'1549

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4.3GB Enterprise	WDE4360W	8ms	UltraWide SCSI-3	7200	'849	'949

Seagate

Seagate drives carry a 5 Year Warranty

Description	Model	Access	Interface	RPM	Int	Ext
2.1GB Barracuda 4LP	ST32171N	8.5ms	Ultra SCSI-3	7200	'579	'639
2.1GB Barracuda 4LP	ST32171W	8.5ms	UltraWide SCSI-3	7200	'649	'749
4.3GB Barracuda 4LP	ST34371N	8.5ms	Ultra SCSI-3	7200	'839	'899
4.3GB Barracuda 4LP	ST34371W	8.5ms	UltraWide SCSI-3	7200	'899	'999
4.3GB Cheetah	ST34501N	8ms	Ultra SCSI-3	10000	'979	'1039
4.3GB Cheetah	ST34501W	8ms	UltraWide SCSI-3	10000	'1029	'1129
9.1GB Barracuda 9	ST19171N	8ms	Ultra SCSI-3	7200	'1539	'1599
9.1GB Barracuda 9	ST19171W	8ms	UltraWide SCSI-3	7200	'1599	'1699
23GB Elite 23	ST423451N	8ms	Fast SCSI-2	5400	'3149	'3249
23GB Elite 23	ST423451W	8ms	Fast&Wide SCSI-2	5400	'3249	'3369

TOSHIBA

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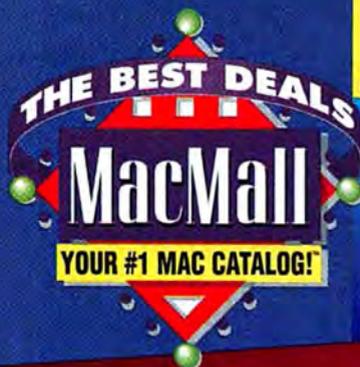
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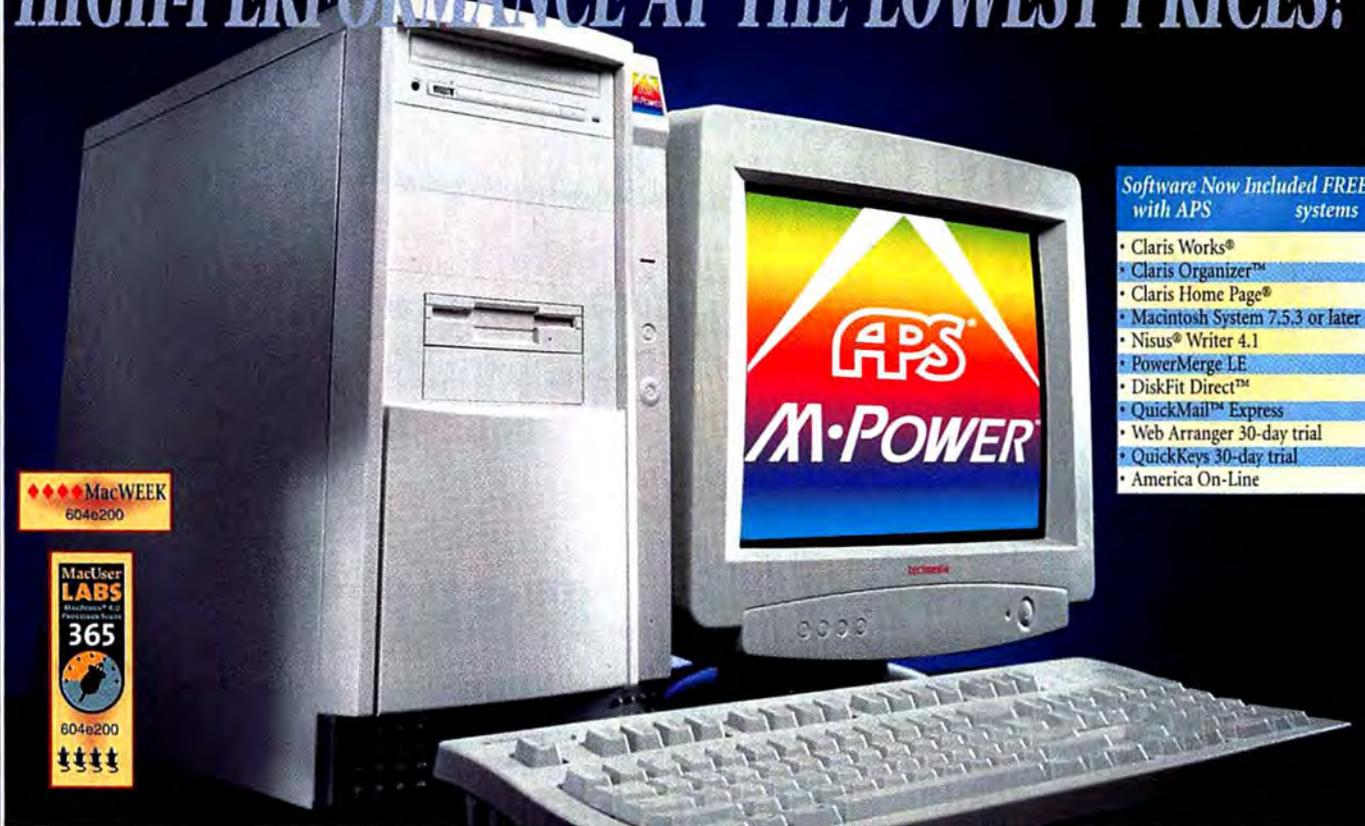
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Model	Description	Int.	SR 2000	APS Pro
APS Q 1280	Quantum Fireball TM, 1222MB, 4500 rpm	\$229 ⁹⁵	\$279 ⁹⁵	N/A
APS Q 2100	Quantum Fireball TM, 2014MB, 4500 rpm	299 ⁹⁵	379 ⁹⁵	N/A
APS Q 3200	Quantum Fireball TM, 3067MB, 4500 rpm	349 ⁹⁵	399 ⁹⁵	N/A
APS WD 2000	Western Digital Enterprise, 2077MB, 7200 rpm	549 ⁹⁵	599 ⁹⁵	N/A
APS I 4300	IBM DCAS - 34330, 4134MB, 5400 rpm	599 ⁹⁵	649 ⁹⁵	N/A
APS WD 4300	Western Digital Enterprise, 4157MB, 7200 rpm	799 ⁹⁵	849 ⁹⁵	\$899 ⁹⁵
APS Q 4300	Quantum Atlas II, 4341MB, 7200 rpm	849 ⁹⁵	899 ⁹⁵	949 ⁹⁵
APS ST 4300	Seagate Barracuda, 4148MB, 7200 rpm	N/A	999 ⁹⁵	1099 ⁹⁵
APS MS 4300 AV	Micropolis 4345AV, 4240MB, 7200 rpm	999 ⁹⁵	1049 ⁹⁵	1099 ⁹⁵
APS Q 9000	Quantum Atlas II, 8682MB, 7200 rpm	1449 ⁹⁵	1499 ⁹⁵	1549 ⁹⁵
APS MS 9000 AV	Micropolis 3391AV, 8669MB, 7200 rpm	1549 ⁹⁵	1599 ⁹⁵	1649 ⁹⁵

APS ULTRA WIDE SCSI DRIVES*

Model	Description	Int.	SR 2000	APS Pro
APS WD 2000 W	Western Digital Enterprise, 2077MB, 7200 rpm	\$599 ⁹⁵	\$649 ⁹⁵	\$699 ⁹⁵
APS WD 4300 W	Western Digital Enterprise, 4157MB, 7200 rpm	849 ⁹⁵	899 ⁹⁵	949 ⁹⁵
APS Q 4300 W	Quantum Atlas II, 4341MB, 7200 rpm	949 ⁹⁵	999 ⁹⁵	1049 ⁹⁵
APS MS 4300 WAV	Micropolis 4345 AV, 4157MB, 7200 rpm	1099 ⁹⁵	1149 ⁹⁵	1199 ⁹⁵

APS IDE DRIVES

Model	Description	Int.	SR 2000	APS Pro
APS WD 3000	Western Digital Caviar, 3020MB, 5200 rpm	\$299 ⁹⁵	N/A	N/A
APS I 4000	IBM DCAA-34330, 4134MB, 5400 rpm	499 ⁹⁵	N/A	N/A
APS I 2.1	IBM 2.5 17mm DCRA-22160, 2067MB, 4900 rpm	599 ⁹⁵	N/A	N/A

APS POWERBOOK STORAGE

Model	Description	Int.	SR 2000	APS Pro
APS PowerBook Drive	IBM DSOA-21080, 1080MB, 4000 rpm w/ SCSI converter card	\$599 ⁹⁵	N/A	N/A

APS REMOVABLE DRIVES

Model	Description	Int.	SR 1000	SR 2000
APS SQ 5200	SyQuest 5200, 190MB	N/A	N/A	\$389 ⁹⁵
APS Jaz	(with 1 cartridge) 1GB	N/A	\$399 ⁹⁵	399⁹⁵
APS Jaz	(with 4 cartridges) 1GB	N/A	699 ⁹⁵	699⁹⁵

APS MO DRIVES

Model	Description	Int.	SR 1000	SR 2000
APS 230 MO	(with 1 cartridge) 217MB	N/A	\$299 ⁹⁵	\$379 ⁹⁵

APS CD-ROM DRIVES

Model	Description	Internal	External
APS CD12	12X CD-ROM in Slimline Case		\$159 ⁹⁵
APS CD-R	2X record/6X read CD-R (Phillips)		499 ⁹⁵
APS CD-R Plus	2X record/6X read CD-R (Sony)		499 ⁹⁵
APS CD-R Pro	4X record/6X read CD-R in Pro Enclosure		899 ⁹⁵
APS CD-R Pro	4X record/6X read CD-R in Full Height Enclosure		999 ⁹⁵
APS Jaz/CD-R System	2X record/6X read CD-R		999 ⁹⁵

*Available in an SR 2000 Enclosure for an additional \$100.00

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Model	Description	Internal	External
APS HyperQIC™	Travan 4 Conner QIC 3095, 8GB	\$349 ⁹⁵	\$399 ⁹⁵
APS HyperDAT®	DDS-20C, 8GB	749 ⁹⁵	799 ⁹⁵
APS HyperDAT® Pro	DDS-20C, 8GB	849 ⁹⁵	899 ⁹⁵
APS HyperDAT® III	DDS-30C, 24GB	1149 ⁹⁵	1199 ⁹⁵

■ Red indicates either new price or product



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Internal configuration

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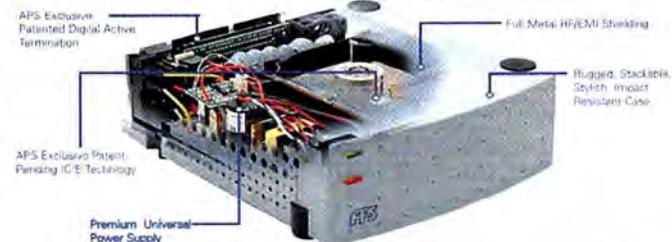
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Internal configuration

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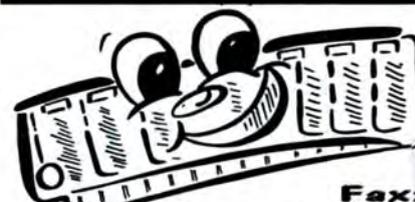
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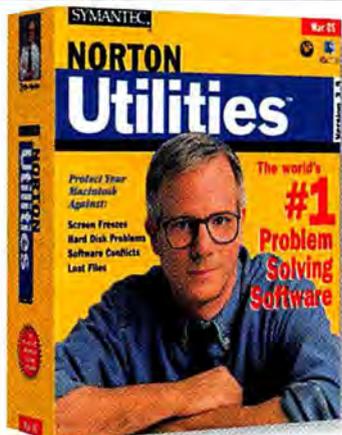
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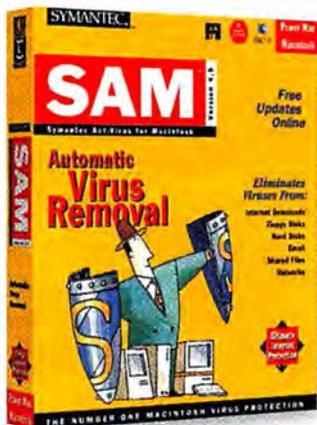
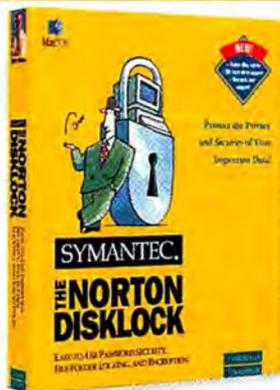
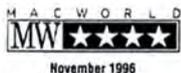
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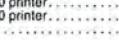


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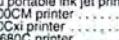
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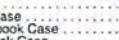


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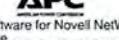
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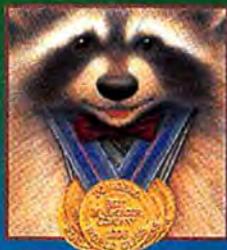
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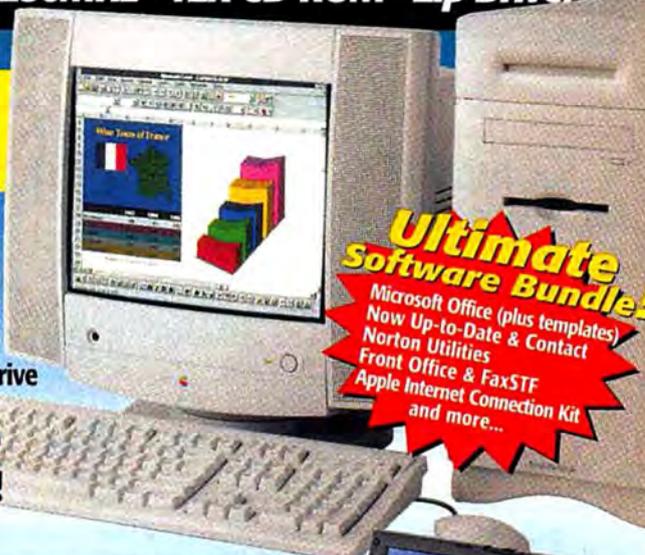
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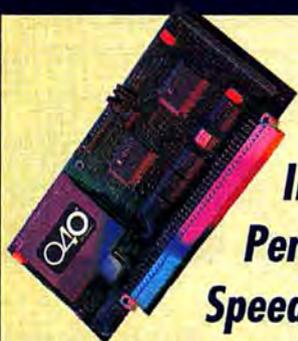
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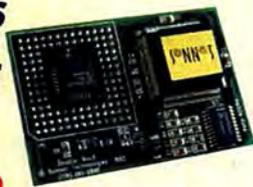
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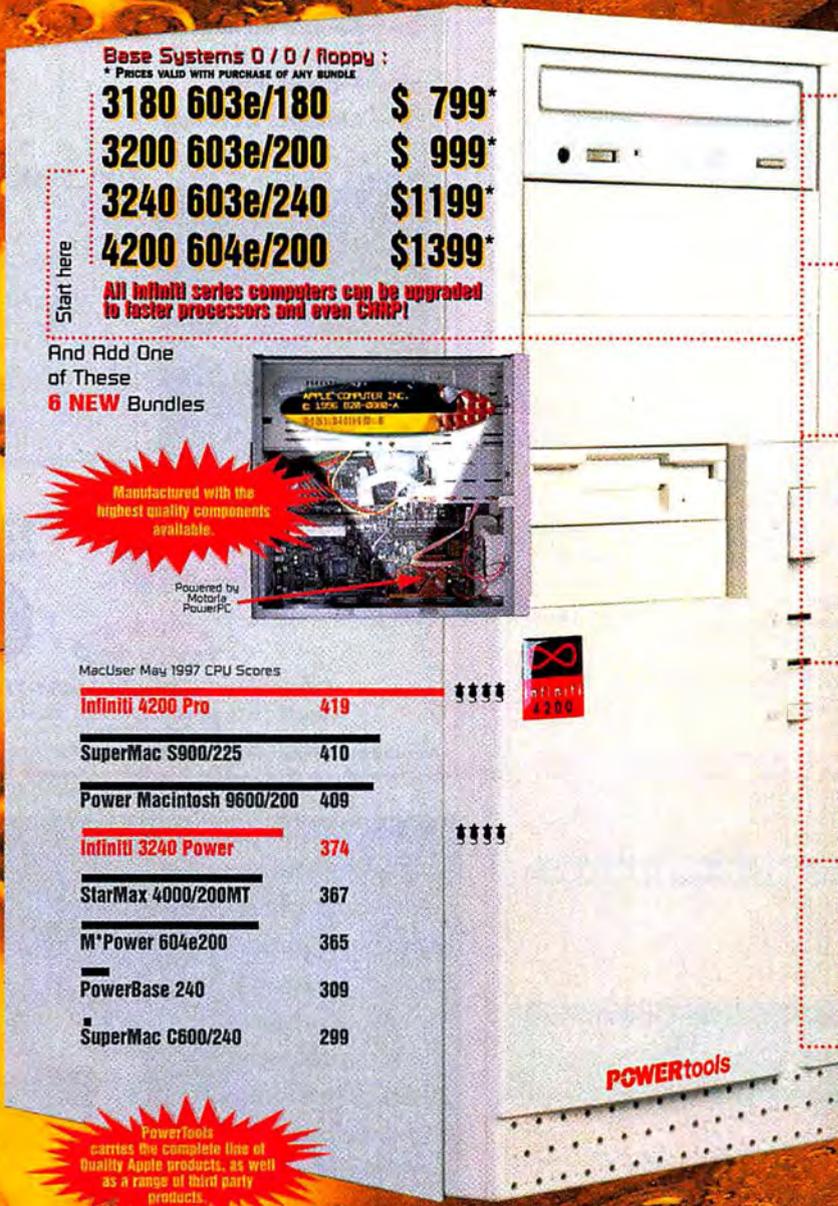
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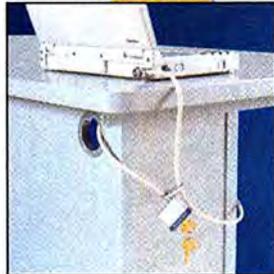
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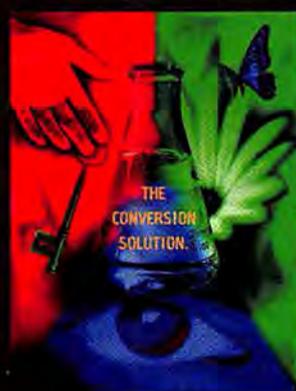
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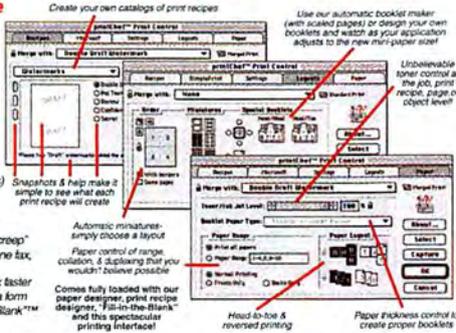
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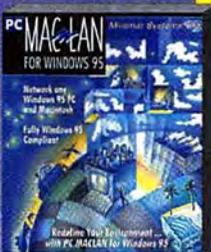
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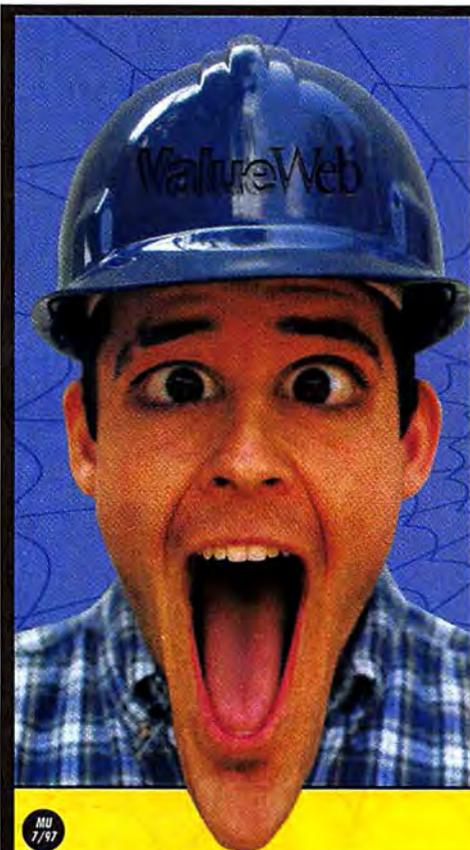
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700/150	32/1GB/CD/UNIX	7899
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3000/180 MT	32MB/2.5GB/8XCD/L2	1399
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3000/240 MT	32MB/2.5GB/8XCD/L2	2139
4000/180 MT	16MB/1.2GB/8XCD/L2	1499
4000/180 DT	32MB/2.5GB/8XCD/L2	1699
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C800/180	16/1.2GB/8XCD/KEY/28.8	\$ 1379
C800/200	16/1.2GB/8XCD/KEY/28.8	1557
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J700/150	16/2GB/6.7CD/KEY/V-Card	2025
J700/180	24/2GB/6.7CD/KEY/V-Card	2299
8900/250	32/2GB/8.0CD/KEY/V-Card	4499
8900/240	32/2GB/8.0CD/KEY/V-Card	4599
8900/225	32/2GB/8.0CD/KEY/V-Card	3349
8900/200	Dual Processor Model	3995
8900/200	32/2GB/8.0CD/KEY/V-Card	2995
8900/180	Dual Processor Model	3975
8900/180	32/2GB/8.0CD/KEY/V-Card	2749

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3400C/240	16/3GB/12XCD/Flop.	\$ 6849
3400C/200	16/2GB/8XCD/Flop.	7725
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3400C/180	16/1.3GB/Flop.	4045
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Radius Extended Keyboard	48

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6400/200	16/2.4GB/8XCD/Kbd/28.8/Vid	1999

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8MB	72 Pin Simm	46
16MB	72 Pin Simm	87
32MB	72 Pin Simm	169
8MB	168 Pin Dimm	52
16MB	168 Pin Dimm	89
32MB	168 Pin Dimm	169
16MB	168 Pin Dimm/Motorola	120
32MB	168 Pin Dimm/Motorola	195
64MB	168 Pin Dimm/Motorola	345
8MB	PB 1400 Memory Mod.	82
16MB	PB 1400 Memory Mod.	120
32MB	PB 1400 Memory Mod.	239
48MB	PB 1400 Memory Mod.	Call
8MB	PB 3400 Memory Mod.	82
16MB	PB 3400 Memory Mod.	125
32MB	PB 3400 Memory Mod.	260
48MB	PB 3400 Memory Mod.	325

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1MB	7200,7500,7600,8500 Series	\$ 49
2MB	ATI VRAM Card-8500 Series	89

CACHE CARDS

256K	Performa 6400 Series	\$ 110
256K	L2 Dimm, 7200-8500 Series	49
512K	L2 Dimm, 7200-8500 Series	129

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Apple	Multiscan 15"	\$ 379
Apple	Multiscan 15" AV	442
Apple	Multiscan 1705	688
Apple	Multiscan 1710	888
Apple	Multiscan 1710AV	788
Apple	Multiscan 21"	1488
Hitachi	All Models	Call
Iiyama	All Models	Call
Mitsubishi	All Models	Call
NEC	All Models	Call
Radius	All Models	Call
Sony	All Models	Call
Viewsonic	All Models	Call

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Apple	LaserWriter 4/800	\$ 799
Apple	LaserWriter 12/840	1378
Apple	Stylewriter 1800	195
Apple	Stylewriter 2500	328
Epson	Stylus Color 800 1440dpi	278
Epson	Stylus Color 800 1440dpi	408
HP	LaserJet 4MV	2725
HP	Color LaserJet 5M	4939
HP	LaserJet 6MP	5578

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Umax	VistaS12 Photo Deluxe	448
Umax	VistaS12 FV Photoshop	618

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omega	Jaz 1 GB Generic & Cart.	418
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Quantum	3.2 GB Fireball Im	393
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Pinn. Micro	2.8 GB Vertex Ext.	1498

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Truevision	Targa 2000 (Pro)	8399
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ATI	ExclaimVR 4mb V-card	289
ATI	Twin Turbo 4mb V-card	442
ATI	Twin Turbo 3mb V-card	548

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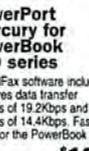
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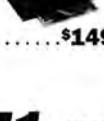


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I HAVE A CONFESSION: I tend to be a little untidy. Although I've tried to contain my messy habits, they've apparently crept out of the house and the neighbors are taking notice. Flyers for landscaping services are routinely tacked to the front door; building contractors gather in front of the house just after sunrise, toot their horns, and beg me to employ their services before it's too late; and if I'm not mistaken, last week the postman used a machete to hack a path to the mailbox.

Message to the neighbors: "All right already, I've got the point! With the help of my Macintosh and a wheelbarrow full of home-improvement software, I'll do my best to clean the joint up!"

Yard Work

To avoid becoming an item on the next City Council agenda, I determined to

quell my neighbors' complaints by first tackling the outside of the house. My weapons: **3D Landscape** (★★★★; \$60 estimated street) and **Mum's the Word Plus** (★★★★; \$95 list).

3D Landscape provides a way to create and stroll through your personal, virtual Garden of Eden. You are supplied with both a 2-D and a 3-D view of your yard. Also included is a database of over 2,200 plants, complete with photographs, and a function that lets you see how your garden may look 100 years in the future and how your garden grows during different times of the year. It also has a plant selector that lets you choose plants by such attributes as type, shape, height, usage, and bloom season. Serious landscaping enthusiasts won't find a better program for the Mac — but you could hardly term it a speed demon. Even on a fast Mac, its chunky graphics are rendered at a snail's pace and the frame rate you achieve as you stroll about the grounds is anything but spunky.

Mum's the Word Plus is a much sprightlier application, probably because it lacks 3-D features. This program gives you a 2-D view of a garden made up of low-resolution bitmapped graphics. It's essentially an enhanced draw program with a searchable plant database. To fill your yard with greenery, simply drag and drop plants from the database onto the design window. Although it's not a multimedia extravaganza, Mum's the Word Plus would be a good choice for PowerBook-bearing landscape designers who need to make a quick sketch while on-site.

The Green, Green Grass of Home

Landscaping is all well and good, but what use is it if you can't tell basil from a bougainvillea? My reborn house must have greenery, preferably greenery that won't succumb to my brown thumb.

Two blooming-good sources for garden info are **Better Homes and Gardens Complete Guide to Gardening** (★★★★; \$19.95 estimated street) and **Garden Encyclopedia** (★★★★; \$30 estimated street). Each of these CD-ROMs provides you with information regarding such basics as planting, watering, and pruning techniques; plant varieties; and pest and disease control. Garden Encyclopedia has a slight edge, due to its wealth of helpful QuickTime movies as well as its advocacy of natural pest controls. But frankly, you'll be pleased with either one.

By Christopher Breen

maxuser@macuser.com

The Home-Improving Mac

Fix up your home, landscape the grounds, and keep peace with your neighbors.



Moving Inside

Once the bush barriers were down, I realized that my prying neighbors would now gain an unimpeded view of the jumbled insides of the house. Swell. Time to re-decorate. Thankfully, software again proved to be my salvation, with **Better Homes and Gardens Remodeling Your Home** (★★★★; \$29.95 estimated street) and **Better Homes and Gardens Decorating Your Home** (★★★★; \$19.95 estimated street). Both of these CD-ROMs are multimedia treasures. Remodeling Your Home gives you over 100 remodeled rooms — providing before and after floor plans and the occasional amazing morphing QuickTime movie that gradually melts the old room into the new. The Decorating Your Home CD-ROM provides you with information on the basics of color, patterns, and furniture arrangement. Both products use QuickTime VR tours of a variety of show houses to inspire you.

Of course, if the inside of the house had a proper form, it would be expected to function properly as well. *Sigh*. OK, OK, hand me the crescent wrench and the radial sander — it's tool time for Christopher, with ▼ **Home Improvement 1-2-3** (★★★★; \$19.95 estimated street), **Home Repair Encyclopedia** (★★★★; \$19.95 list), and **Hometime Weekend Home Projects** (★★★★; \$39.95 list). Home Improvement 1-2-3, although chock-full of references to The Home Depot, is the most well rounded of the three. You'll find

projects, as does Home Improvement 1-2-3. Hometime Weekend Home Projects does provide QuickTime walk-throughs of repair projects, but the choice of projects is a little odd. For example, there are no instructions for connecting a simple light switch but there is a section devoted to wiring a GFCI receptacle. If, like me, you haven't a clue what a GFCI receptacle is, Hometime Weekend Home Projects isn't for you — the talk gets technical in a hurry.

Home-Sweet-Home Page

My journey home wouldn't be complete without a trek across the Net. I first visited the **Home Ideas** Web page, which features a home-improvement discussion board, product brochures, an online store, a searchable database of *Today's Homeowner Magazine*, and links to lots of other homey sites.

Considering how helpful I found the Better Homes and Gardens CD-ROMs, I wasn't surprised to discover all the wonderfulness that is **Better Homes and Gardens Online**. In addition to articles from the print magazine, it gives you access to the Home Improvement Encyclopedia.

Home Boy, Oh Boy

I was nearly ready to proceed from the planning stage to the "let's do something about it" stage, when I opened the day's mail. Inside an official-looking envelope was a citation — that's right, the neighbors had petitioned the city to issue me a ticket for not complying with neighborhood standards. A man can take only so much. I flung open the front door and shouted:

"That's it! Forget the landscaping! Forget the garden! Forget the redecorating! I'm donating this place to the first whacked-out religious cult I can find, taking the tax break, and building my own home on a billion acres in the Australian Outback! And you know what? I'm going to use **Better Homes and Gardens Planning Your Home** (★★★★; \$29.95 estimated street), to help me do it!"

And I meant it to sting.

On this marvelous, loaded-with-cool-home-ideas CD-ROM, you'll find representations of 561 different houses, complete with floor plans, exterior views, 3-D overviews of the interior, and a few photographs of various rooms in the house. If you absolutely must have one of the structures shown on the disc, you're wel-

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Better Homes and Gardens series and Home Improvement 1-2-3
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come to purchase blueprints from Home Planners (for well over \$500 each). The CD-ROM also offers QuickTime VR tours of show houses, a section that explains the ins and outs of financing a home, and a financial planner containing budgeting worksheets.

Others wishing to create their home from scratch might examine **Design Your Own Home 3D WalkAround** (★★★★; \$99.95 list). Operating much like a standard 2-D draw program, Design Your Own Home has an additional 3-D component that provides a way to walk through your creations — just draw a floor plan, plopp in some supplied furnishings, and click on the 3-D button. Although the walk-through is handy if you want to lay out your furnishings, the 3-D rendering looks mighty primitive — the textures are downright ugly, and the camera has a wide-angle effect that causes objects on the periphery to stretch and distort.

Heading South

With a PowerBook, a slab of VB, and a bit of tucker shoved into my swag, I'm heading off to the never-never — leaving my whingeing neighbors far behind. However, I'm taking the CD-ROMs with me. Although I expect my Outback home to be more than cozy, there's always room for improvement. ☞

MacUser contributing editor Christopher Breen would like to define these Australian terms: slab = a case of beer, VB = Victoria Bitter beer, tucker = food, swag = bedroll, never-never = middle of nowhere, whinge = complain.



helpful instructions for everything from such relatively simple tasks as fixing a leaky faucet to more-complex projects such as refinishing hardwood floors. It even lets you know the approximate time each project will take, based on your skill level.

Home Repair Encyclopedia, although a competent collection of tips, has few graphics and doesn't walk you through

hLeP me, Mavis.

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clever.net/banzai/MaG

WarCraft, is that too many of a game's missions come down to simple wars of attrition. If you want a strategy game that instead emphasizes tactics, Close Combat (shown below) is what you're looking for.

Close Combat's theme is not terribly out of the ordinary: The game is modeled after a series of World War II battles, in which you can choose to control American or German troops. What makes it unique is that the soldiers aren't simple drones who do what

By Roman Loyola
gamerroom@macuser.com

The Game Room

It's a call to arms in this month's Game Room — I look at three strategy games that have battle themes.

Close Combat

★★★★
\$50 (estimated street)
Microsoft, Redmond, WA
800-426-9400 or 206-882-8080
www.microsoft.com
Reader service: circle #427

THE ONE COMPLAINT some gamers may have about strategy games, such as Command & Conquer or Blizzard's

they're told. You have to learn to predict how they'll react to your orders. For instance, if your troops have suffered a huge number of casualties, they may decide to flee a battle rather than obey you.

Another unique aspect of Close Combat is the world in which everything takes place. The scenery is a more active factor than in other strategy games. You can use the trees and rocks for cover, and you can attack from buildings.

Close Combat has a slightly higher learning curve than Command & Conquer or WarCraft. But once you've become familiar with the battle tactics and maneuvers, you'll appreciate the game's complexity.

Command & Conquer

★★★★½
\$50 (estimated street)
Westwood Studios, Las Vegas, NV
800-874-4607 or 702-228-4040
www.westwood.com
Reader service: circle #428

GETTING YOUR adrenaline flowing, with a breakneck pace and effects that sound like a Schwarzenegger movie, is what this futuristic game is all about.

You can play on the good side with the Global Defense Initiative or be as bad as you want by joining the Brotherhood of Nod. By successfully completing your missions, you gain territory and inch toward defeating your opponent.

The key to winning is the proper allocation of resources and the building of your army. The structures you build are all key to a powerful army — for instance, you need barracks for training troops and a factory for getting vehicles.

All your training and building leads up to an attack on your opponent. The action occurs in real time, so you often have only seconds in which to react and plan your strategy. The result is a frenetic pace, accentuated by technosounding background music and the rat-a-tat of gunfire.

If you liked the game WarCraft, you'll love Command & Conquer. About the only drawback is that the characters on the map are small.

Heroes of Might and Magic

★★★★
\$45 (estimated street)
New World Computing,
Agoura Hills, CA
800-336-3506 or 415-261-3000
www.nwcomputing.com
Reader service: circle #429

I'VE NEVER BEEN a big fan of role-playing games (RPGs). The 20-sided dice of the traditional RPGs sparked my curiosity, but



I've never had the patience for those games. Well, times have changed — either I've mellowed with age, or I've developed an unconscious desire to become a knight in shining armor. I really like the role-playing game Heroes of Might and Magic (shown above).

In this game, you are one of four warlords. You start with a castle and a knight, and it's up to you to build your troops, gather resources, and beat the opposing warlords into submission.

Where my interest in RPGs usually starts to wane is during the battle sequences. That's because, rather than battling in real time, every character takes a turn, one at a time. I used to hate all this turn-taking, but now that I've matured, I appreciate having the time to think out a careful strategy. Not only do you have the time to strategize in Heroes of Might and Magic but you also have the time to take advantage of a unique feature — close-up screens. Because you don't have to keep track of several battles happening at the same time — as you do in real-time strategy games — you can take the time to zoom in on battle action or the construction of new buildings.

Like Command & Conquer, Heroes of Might and Magic supports network and modem play for two-player games. ☐

MacUser Associate Editor Roman Loyola played his first strategy war game with a neighbor, little green army men, a sandpit, and a pack of firecrackers.



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Wall Street Journal

"★★★★★" (5 out of 5 stars)

PC Games

"★★★★★" (4 out of 4 stars)

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Computer Gaming World

"A perfect 10!"

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System Requirements: Any Macintosh with a 68040 or higher microprocessor, 8MB RAM, color monitor and CD-ROM drive. Also accelerated for Power Macintosh.

CIRCLE 27 ON READER SERVICE CARD

Andy Ihnatko



By Andy Ihnatko
andyi@macuser.com

some manner offends Leary, who takes a seat completely uninvited and starts berating that person for having fun reading about what the cast of *Emergency One!* is up to these days when any *thinking* person knows that the Internet is there to be exploited by big business. If there isn't a steady stream of fifties spooling out of your disk-drive slot, then Denis wants you to know that you're just a colossal loser. "Lotus is about to give the Internet a giant smack upside

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Andy's Enormous Ego
freely roams his Colossal
Waste of Bandwidth at
[www.macuser.com/
people/andyi](http://www.macuser.com/people/andyi)

overweight, unwashed goons with no social skills and terrible fashion sense! When was the last time you saw a geek like *that*, anyway?

Oh, I've had it with the Community At Large biting the hand that feeds it. This digital city wasn't built on rock and roll, after all! It was built on the stooped backs and carpal-ravaged wrists of the Geeks of America. We had *plenty* of opportunities to date back in high school, let me tell you, and not just the Hoodie Girls either.

problem, and getting a good shot at making a million bajillion dollars like Steve Wozniak. Well, that part never really worked out for yours truly, but dammit, the knowledge that so many dozens of you read and enjoy this column each and every month is thanks enough.

Now that Society has gotten what it needs out of us, we find ourselves, instead of being treated to a nationally sponsored annual Geek Day parade, being scorned and ridiculed by the same entities and organizations that rely on the technologies we create and support. I mean, isn't it unfathomable? It's sort of like inviting someone to a party and, once he's there, discovering that he's making you the butt of his jokes all evening long, evidently too drunk to realize that you're also his only ride home.

Denis Leary thinks it's wrong not to be making money from the Internet? Oh, how proud he'll surely be when he writes a geek a check for \$20,000 to recover a valuable original manuscript his hard drive inexplicably ate. You know, back in 1979, I thought Eric Goldstein's idea of an Unrepentant Arse Revenge Trap chip in every computer was un-called for, but I'm beginning to reconsider my position . . .

No Cure for Commerce

Still surfin' the Web?
Whatta jerk! Get a real job
— like the Dime Lady.

A DISPARAGING REMARK regarding actor Denis Leary: Sam Kinison did the Angry Loud Man shtick first, and better, and the Universe was kind enough to kill him off before he had a chance to make a movie with Charlene Tilton. And here's A Disparaging Remark regarding Candice Bergen: Hmm. Ah. Well, according to the Internet Movie Database, she once was in a film entitled *La Fine del Mondo nel Nostro Solito Letto in una Notte Piena di Pioggia*, which seems like entirely too long a title for any one movie. Sorry, but that's really the best I can do.

Besides, I'm just lashing out, to be completely honest; I mean, I'm not so concerned about my "macho" public persona that I won't admit that Denis and Candice's new commercials *hurt*, dash it! Leary is all over TV pimping for Lotus' new Internet product, Domino. Some peaceful, kind fellow American is having a nice cup of coffee and a browse through the World Wide Web. This in

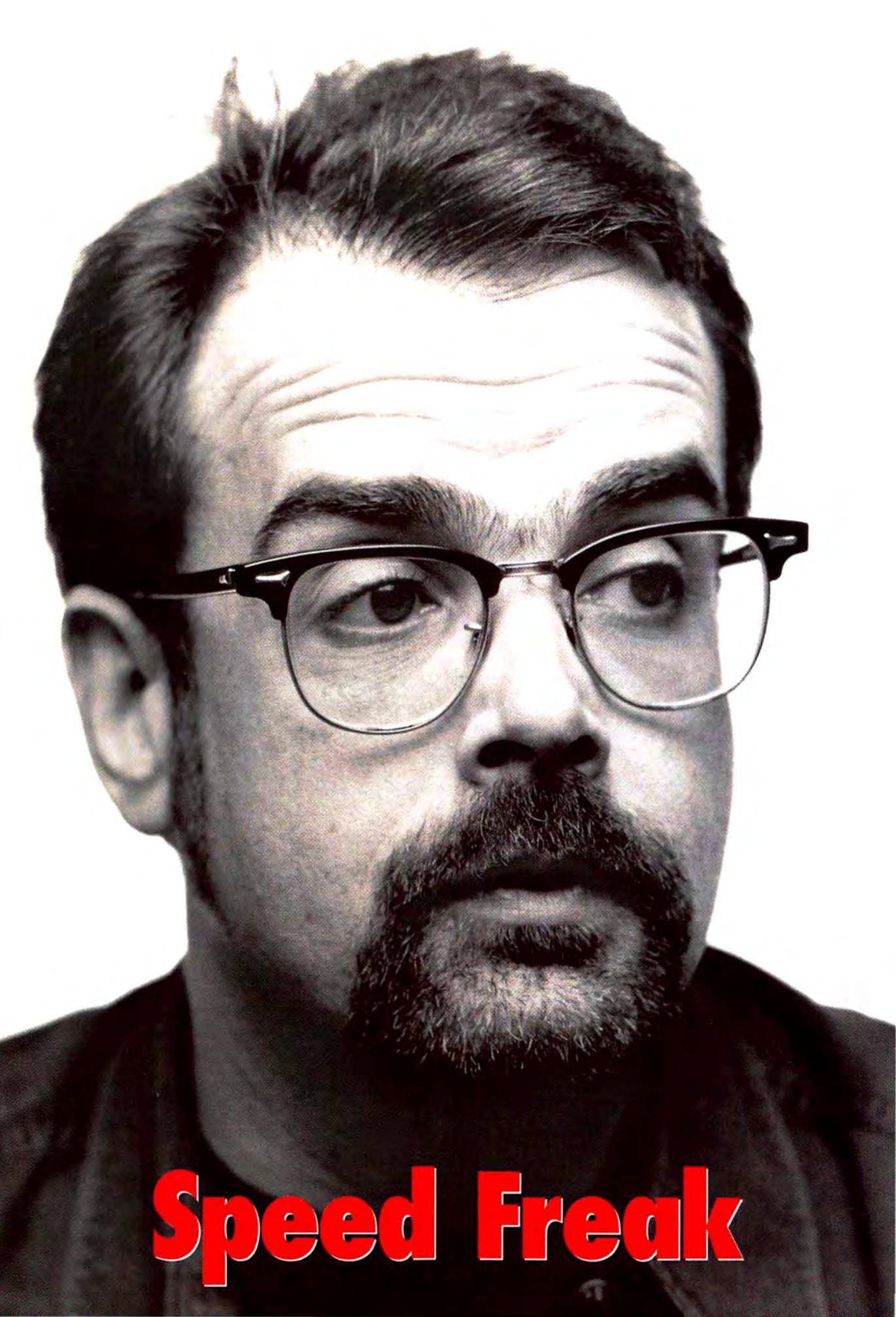
the head!" he smirks. Evidently Denis has plenty of time to tour the cybercafés of America. He sure as hell doesn't have to spend a lot of time calculating his percentage of the gross from *Operation Dumbo Drop*.

As for Candice, well, honestly it isn't her fault. No, it's really her parent company. Sprint has begun offering Internet service to its customers, and to publicize this, they show a roomful of Stereotypical Geeks whining that, thanks to Sprint, their "Own personal private playground" has become so simple that *anyone* can use it. Oooooo, look at that photo of the three members of Sprint's technical-assistance team. Look how *handsome* they are, in their shirts and ties. Well, let's see how cheerful these pretty-boy Future Mr. Elizabeth Taylors are after their first hour of trying to explain to the newbies what a UART is and why Windows refuses to run until it can find one. And look at the morons they hired to play the Geeks! All of 'em

When Ruby "Redd" Mulliner, the delectable heiress of Old Man Mulliner's vast fiberglass-insulation fortune, who was in my Western Civ class, appeared at our doorstep on Prom Night despite my daily protestations, I had to come down, kiss her gently on the cheek, and break it to her as gently as I could that the comings and goings of two people like us amounted to a hill of beans compared to the importance of Society's being able to access phony nude photos of Princess Di in ten years' time.

And what did we expect in return? Nothing but the satisfaction of being part of the solution instead of part of the





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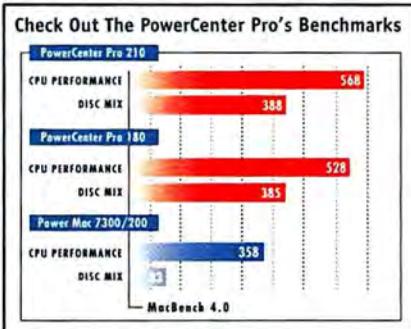
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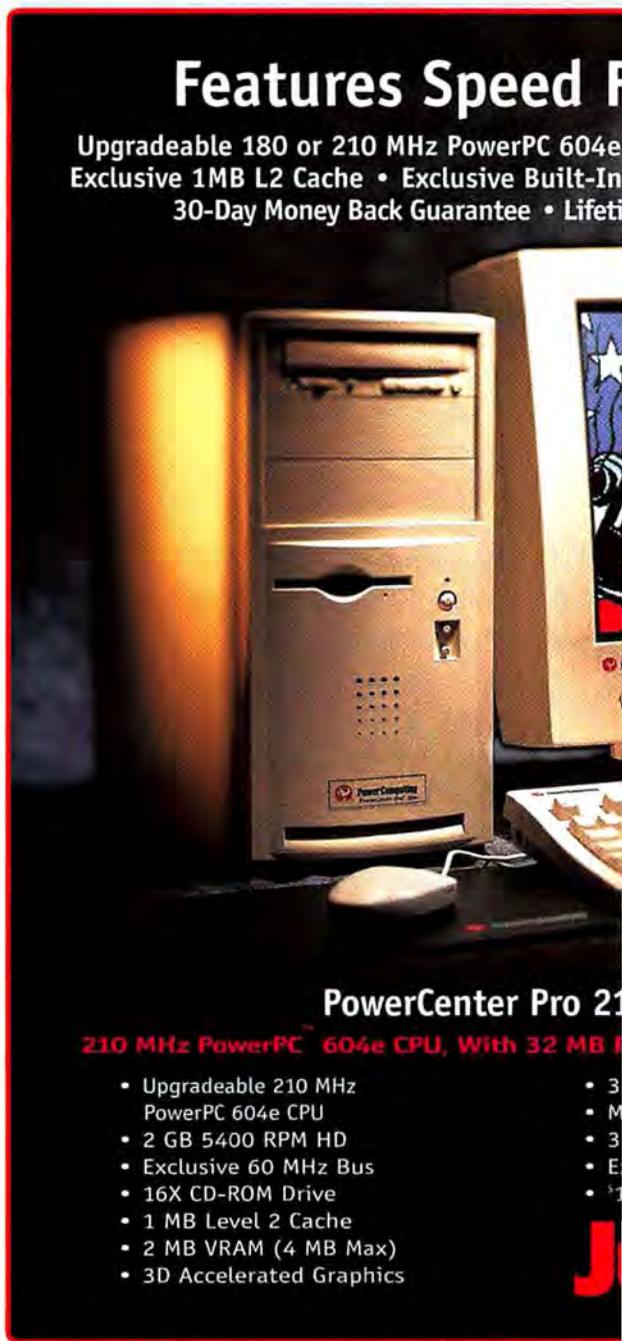
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