You are on your Power Mac.

You open Microsoft® Excel 5.0a.

You begin with a hunch.

You begin at zero.

1. You open a worksheet.
   You type "Jan."
   You use AutoFill
   And the rest of the months
   Are filled in for you.
   Automatically.

2. You enter numbers.
   You click AutoFilter
   And the data you want to see
   Rises to the top
   So you can focus on
   What you need to focus on.
happen

revealations

here

in
You want to slice
And dice your numbers.
You build a PivotTable®
To see them
From any perspective
You want.

You see
Patterns form.
You come
To understand.
You get it.
in here mistakes are forgiven
You are on
Your Power Mac™
You are in
Microsoft® Word 6.01.
Your mind
Is racing.
Your fingers
Are racing
To keep up
With your thoughts.

You begin
A new sentence
With
A lowercase letter.
This mistake is corrected
Automatically.
Knowing there are
100 levels
Of Undo.
And 100 levels
Of Redo.
Just in case.

You begin a new
Sentence with
An abbreviation
You created.
It becomes
An entire phrase.
Automatically.

Until you have finished.
You click AutoFormat.
And the block of words
Can become
A letter.
A proposal.
A story.
Automatically.

Because you can.

Microsoft
WHERE DO YOU WANT TO GO TODAY?
NEW ON THE MENU

Clone Watch 13 and counting. / CPU Doubler Double the speed of your foreground app. / Audio New tools purify Mac sound. / ZMac Utility of the Month Macintosh Catalog Database. / Plus Macintosh price index. / 22

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CHOOSING THE RIGHT MAC

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A Mac or a clone? Used or an upgrade option? Identify yourself among our profiles of typical users, and we'll lead you to the right system.

By Shelley Cryan / 67

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POSTMASTER: Send address changes to MacUser, P.O. Box 56986, Boulder, CO 80322-6986. Second-class postage paid at New York, NY 10016, and at other mailing offices.

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LETTERS

The Other Adobe

Brendan Bolles

Adobe has also recharged PageMaker in a way only it could, restoring innovation to a standard for all digital typesetting, and Adobe invented it. It wasn’t bought from a small company that didn’t know better.

Microsoft’s programs seem to get more and more stagnant as time goes by, but I am consistently impressed by programs such as Photoshop, which get more and more powerful with every upgrade. It seems Adobe has also recharged PageMaker in a way only it could, restoring innovation to a program that has been resting on its laurels for too long.

The fact that innovation can still be found down there in Mountain View after all these years is a testament to the quality company that is Adobe Systems. That’s much more than we can say about the folks up in Redmond.

Brendan Bolles
mrb@server.berkeley.edu

Gates at the Gates

JOHN C. DVORAK was right on track (“Barbarians at the Windows,” November ’95, page 210) — a refreshing change in a publication that is sometimes too inward-looking. I think Apple was hoping Windows 95 would go down in flames, so it could catch up with Copland. Apple needs to keep the focus on the future and meet the challenge to put the Mac OS back on top!

Michael Ash
via the Internet

THE GLOOM AND DOOM Dvorak summons up can be cut with a paper knife. Yes, the folks at Apple are very confused about what they should be doing. But, nevertheless, they have a fine system that can withstand the assault of Bill Gates.

Perry Myers
via the Internet

DVORAK WRITES an entertaining column, but he’s no Edward Gibbon. The Roman Empire did not fall because Romans became fat and lazy. Instead, the Empire’s fall was caused by a precipitous decline in the population of the Roman aristocracy (loss of market share?) coupled with a succession of mediocre emperors (Scullius and Spindlerum?) who relied too much on mercenary armies of barbarians to protect the empire’s borders (Microsoft Word and Excel remain the dominant word-processing and spreadsheet apps on the Mac).

Finally, although Rome fell in the fifth century A.D., it was succeeded by numerous Roman Empire wannabes. I guess we can look forward to Attila the Gates peddling his lame OS as being “just like a Mac” well into the next century.

John Howard
drspanky@aol.com

WRITE TO LETTERS

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OPEN FOLDER

Peace and love: That’s what the global village known as the Internet will bring to the world, right? That’s the way it sounds to Gregoire Faist, who wrote: “I would give the Nobel Prize to the genius who created the Internet.” That’s appropriate — give a prize named after the man who invented gunpowder to the U.S. defense department, which constructed the Internet to create a network that could survive nuclear attack. Just make sure it’s not the Nobel Peace Prize.

We shouldn’t complain that the Internet is a legacy of the Cold War — it would be belying after hearing about Ward Larkin, who compared his past in war-torn third-world countries to life as a Mac user: “Save the metal-on-metal clack of the safety being released from a fully automatic rifle aimed point-blank at my chest, nothing has come close to the frustration of trying to deal with Macromedia’s customer-service department.” Things might be different if you were waiting for Windows 95 tech support.

Great art is sometimes created during times of war, and a letter we received from Ben Jacobs-Swearingen makes it clear that we’re a nation at peace. Ben sent us a verse in the style of Alexander Pope decrying the price of new Macs. Ben’s six stanzas brought tears to our eyes, though not necessarily from the poem’s emotional impact. A sampling: “By now you know what this bad poem means / I want you to lower your price in reams / For not all of us do have the money now / To buy that which our dreams now do sow.” From what we hear, Apple was about to give Ben a steep discount on a new Power Mac until they heard he had tried to rhyme means with reams. Sorry, Ben — the deal’s off.

Maybe poetry is a dying medium. Reader Bill Duckworth seems to have latched onto a much more appropriate art form for the ’90s: “I have a great idea for an Apple T-shirt. Do you know whom I could contact at Apple with the idea?” Inspirational T-shirts are no doubt the province of new Apple Fellow Guy Kawasaki. Just make sure your new slogan is catchy than “Windows 95: So What?”
New PowerBooks

YOUR ARTICLE introducing the PowerPC-based PowerBooks ("PowerPC Portables," November '95, page 74) states, "Although the 603e performs similarly to the 604, it is a different chip entirely."

It is a different chip entirely, but does it really perform similarly to the 604? Your own benchmark tests suggest that megahertz for megahertz, not only does the 603e not perform similarly to the 604 but it doesn’t even perform as well as the 601 or the 603.

Mark Mineart
ARMADO@eworld.com

/ We apologize for our unclear wording. The 603e performs similarly to the 604 in that the two chips handle tasks in much the same manner — however, that does not mean their speeds are identical. The 603e’s lack of an L2 cache, which can really speed things up, also hurts these PowerBooks. / CE

ARE YOU AS BOTHERED as I am that Apple has not produced a multimedia laptop incorporating a CD-ROM drive? I’ve owned seven different Mac models, going back to the original 512K, and I have purchased countless Apple add-ons. There beats in me a Mac heart.

But how long can one wait? Today’s software is on CD-ROM. I actually purchased an IBM 755CD ThinkPad back in May. I love the computer, although Windows is still just a marvelous advertisement for the Mac OS. And once the CD-ROM-based software gets spinning, using it is usually not that much different from running Mac software.

Wake up, Apple! I can’t be the only Mac fanatic who wants an Apple-made Mac (or even a decent clone) that can do the wonderful things my ThinkPad does.

Claude O’Connor
via the Internet

LATELY YOU HAVE taken on a decidedly negative tone when discussing anything about Apple. From your review of the new PowerBook 5300 series to the always fatalistic Mr. Dvorak, you take every opportunity to point out areas where you perceive PC-based hardware to have some minor edge, and from this you prognosticate the demise of the Macintosh.

The leading PC magazines did not berate Windows 95 for offering no real advantages over the Mac operating system. Compared to existing PowerBooks, the 5300 series may be more conventional in design, but the new machines offer significant performance and expandability advances, with little impact on street prices. Compare Apple to Apple, and stop trying to sell me a Windows machine.

Daniel M. Webster
via the Internet

/ The last thing we want to do is sell you a Windows machine — witness our December '95 cover story, "Windows 95: So What?" We do like Macs and have even been criticized for liking them too much! However, our reputation rests on our ability to objectively look at the computer industry — and that includes Apple’s failings. This will become even more important as, over the next few years, Apple begins to have some competition in the field of Macintosh OS-compatible notebook computers. / CE

Hindenbook

THE LESSON WE LEARN from the recent PowerBooks-on-fire fiasco should be clear: License the Mac OS as if there’s no tomorrow. A successful operating system is too valuable an asset to tie its fate to a single hardware brand. Would anybody worry about the future of Microsoft Windows if a few Compaq notebook computers caught on fire?

However, maybe the problem is more serious. Recently, John Dvorak wrote in PC Magazine that IBM should let OS/2 be developed by a separate company, to foster the success of that operating system. Maybe Apple should get rid of its hardware business, in order to save the Macintosh OS from oblivion.

In any case, I will seriously consider an IBM CHRP notebook when it’s time to replace my PowerBook, and I am not sure this is entirely against Apple’s interests.

Vincenzo Tschinke
via the Internet

Of Multitasking and Memory

YOUR MAC TO PC column is usually one of my favorites in the magazine, but the November '95 installment (“Mac Meets Windows 95,” page 123) had a good deal of technically inaccurate information.

Preemptive multitasking has nothing to do with allowing “multiple applications to reside in [their] own memory space.” Instead, it allows one application or background task to get control of the computer even when other applications don’t explicitly yield control. Applications having their own memory space is a feature known as memory protection.

Memory protection and preemptive multitasking are both needed features — other operating systems such as UNIX have had them both for years — and it would do good for users in the Mac community to understand what both are, why we need them, and how difficult it may be for Apple to deliver them both along with backward compatibility.

Rob Newberry
via the Internet

I’M A MAC USER who is very impressed with Windows 95’s multitasking. However, as I write this, I’m downloading a movie over my Ethernet connection to the Internet and downloading a program from eWorld — and a desktop poster program is changing my desktop picture every 30 minutes. I’m not jealous of Windows 95.

Joe Ledgett
mtjoe@u.washington.edu

Working It Out

I ENJOYED YOUR review of ClarisWorks 4.0 (November ’95, page 52), but I would like to offer an alternative view. You look at each module and explain that the individual modules are not as full-featured as stand-alone programs. This approach treats an integrated package as a low-end “jack of all trades” approach for those who cannot afford a full set of stand-alone applications.

On the other hand, my view is that ClarisWorks is more full-featured than a collection of stand-alone packages. Most of my documents contain mixtures of text, graphics, and spreadsheets. ClarisWorks excels at creating these integrated documents. For writing a letter, the graphic capabilities of ClarisWorks are far above those of my stand-alone word-processing program. My spreadsheets often require text blocks and graphical elements for embellishment. Again, ClarisWorks handles this mixed-mode situation much better than my stand-alone application does.

The interapplication communication of these stand-alone packages offer does not provide anywhere near the seamless integration of ClarisWorks. I would say that it’s the best choice for producing...
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CIRCLE 29 ON READER SERVICE CARD
LETTERS

mixed-mode documents, and it does so at a bargain price too.

Michael Harris
via the Internet

LIKE A LOT of other people, I’d like to see someone — anyone — really challenge Microsoft. But that doesn’t blind me to the fact that ClarisWorks 4.0 is inferior to a stand-alone word processor such as Microsoft Word. However, you seem to believe that ClarisWorks compares favorably to Word.

I, on the other hand, think the lack of drag-and-drop editing is inexcusable in today’s world. ClarisWorks’ Tables feature uses a spreadsheet as a model, so cells continue to grow horizontally as you type, instead of wrapping around like Word’s cells. I’ve been using style sheets for over ten years, and I’ve never seen a system as clunky and inflexible as ClarisWorks’.

The bottom line is that you guys gave this application a rating of 4.5 out of 5. Relative to other integrated programs, that may be an accurate assessment. But if you’re really going to insist on comparing it with stand-alone programs, ClarisWorks is going to look pathetic every time.

Dennis Globus
PinotEnvy@aol.com

MOO Hogs

I ENJOYED YOUR article about MOOs and MUDs (“Meeting in the MUD,” November ’95, page 135). I’ve been having fun with them for years, but I have some serious concerns about their educational value:

At my school, we have determined that borderline-academic students have an inordinate interest in anything that promotes procrastination. A MUD or a MOO is perfect for them. It is anonymous, endlessly interesting, and available at any time. Even students with good grades are spending all their free time playing MUDs, dropping extracurricular activities and real socializing in favor of the artificial social construct a MOO presents. Even when faced with all the good things MOOs have done, I’m still not convinced.

I’ve also had to counsel several students about inappropriate conversations initiated by anonymous participants in MUDs. I am not one to champion censorship, but these programs do offer the twisted mind the opportunity to expose itself anonymously.

Derek Smith
via the Internet

LIKE MANY technologies, the Internet can be dangerously misused. MUDs and IRC (Internet Relay Chat) have great potential for good, but stories abound of people practically destroying their lives by spending all their waking hours in MUDs or on IRC channels. Thanks for the important reminder.

JS

Performa Warning

YOUR REVIEW of the Macintosh Performa 5215CD (November ’95, page 39) mentions the ease of expanding the machine’s RAM for “do-it-yourself types.” I would like to comment on your approach to at-home RAM expansion.

Where you mentioned the ease of RAM expansion, I think you should have also mentioned that the expansion of RAM, by anyone other than an authorized Apple
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can't hold more than a few at a time. But even a puny 20-GB drive can hold hundreds of fonts; attach it to the printer's SCSI port, use the downloading utility that came with the printer to format the disk, and download the fonts just once — then sit back and relax. And as an added bonus, you can remove all those PostScript font files from your Mac's own hard disk, unless you use Adobe Type Manager or some other program that relies on their presence.

Jeff Saxe
via the Internet

ANDY'S MENTION of his Exidy computer brought tears to my eyes. My first computer was an Exidy Sorcerer. It still resides somewhere in my basement, collecting dust and wondering what ever happened to polyester suits.

It was 1978. Those sleek lines. That punchy keyboard. That joystick I soldered together. 32K of RAM! A word processor that selfishly demanded 5K of RAM. CP/M. A power supply that ran hot enough to burn toast on top of the case!

The Sorcerer is dead — long live the Macintosh!
Zzenon M. Feszczak
via the Internet

I APPLAUD ANDY'S suggestion to salvage an old 40-GB drive, almost laughably low-capacity for actual day-to-day use in today's world. An external drive with a bootable System Folder, Norton Utilities, and the like would have helped me out a couple of times in the past.

But there's also another use for a low-capacity drive mechanism in an external case: as a font-storage hard drive attached directly to a PostScript laser printer. If you use a lot of nonresident fonts, the time lag for downloading them during every job gets to be a drag, and printers with limited RAM
FOR A DESIGNER OR ILLUSTRATOR
THE ONLY TOOL MORE IMPORTANT
THAN CANVAS™ 5
IS THE COFFEE MACHINE.

We who put words and images on paper for a living have lots of reasons to be profoundly thankful for the new Canvas 5. Not only does Canvas 5 include all the features that have long made it the program of choice for technical illustrators, it now combines the major functions of Illustrator™, FreeHand™, QuarkXPress™ and Photoshop™. An awesome array of tools for illustration and page design. Typography and publishing. Photo design and image editing. Wrapped around a radically simplified, intuitive interface. It’s quick. It’s easy. It’s complete.

Now, for the first time you can stay with a single program from concept to comp to illustration all the way through to color separations and pre-press.

Canvas 5 has the potential to turn our 16 hour work days into 12 hour days (while making our stuff look better). Excellent. Now maybe we can have a life.”
All your colorful ideas are loaded in a hard drive. Here's the trigger.
First it was just an idea in your mind's eye. Then you fleshed it out on your monitor, breathed life into it with color. Now the only thing between your idea and proof of its brilliance is your printer. Better make sure it's an EPSON. 720 x 720 dpi of Photo Quality, inkjet color for as little as $449. Color so beautiful even Mother Nature will be jealous. We call it Epson Color. To see it, call 1-800-BUY-EPSON x3100 or see us at http://www.epson.com. And free your ideas from the tyranny of black and white.

The line of Epson printers starts for as little as $449. NOTE: Manufacturer cannot be held responsible for incidents of shock, awe, or over-stimulation resulting from exposure to 720 x 720 dpi of concentrated, Photo Quality, slap-in-the-brain Epson Color.
The computer pointing device that's an extension of your identity. As easy to install as a mouse. More accurate than a trackball. The product of years of neural network research, and the end of repetitive motion risk. Point, drag, tap.

Gosh, it's like you were created for each other.

For information, call 1-800-223-6433.

The Touché Touch Pad is available at:

in Canada:

COMPUCENTRE

CompuSmart
WHEN YOU GO OUT TO BUY A CAR, YOU usually rely on two things: a firsthand impression, whether it's from kicking the tires or taking it for a quick spin around the block; and an expert opinion, whether it's from your next-door neighbor with the half-dismantled Chevy in his garage or from the latest copy of Consumer Reports.

But how about when you go out to buy a Mac? Kicking the tires or the keyboard won't do you a lot of good. But you can take it for a spin. And you can get reliable performance data from an unbiased source. The tool that makes those things possible is called MacBench.

MacBench is our answer to some very important questions: What's the best way to test a Mac, a graphics card, or a hard drive? We ask ourselves these questions constantly, because they are the key to our ability to bring you useful data about Macs and peripherals. If you're going to spend thousands of dollars on a computer, you want some assurance that you know exactly what kind of performance you're getting for your money, especially now that you have more than one vendor to choose from.

Some say the only way to test Macs is with real applications. We agree that application-based testing has its place, but getting locked into a single approach to testing can lead you to collect results that appear more meaningful than they are. If you pick test applications arbitrarily, the data you collect will also be arbitrary. That's how some magazines approach the problem.

Not MacUser. Ziff-Davis Benchmark Operation (ZDBOp) has just finished version 3.0 of MacBench. In the two and a half years since MacBench was first released, it has become the industry standard (developers use it, buyers use it, and even competitors use it). With the release of version 3.0, many leading system and storage vendors will be bundling MacBench with their products.

We call MacBench a "subsystem level" benchmark. This kind of benchmark is ideal for isolating the specific reasons why one Mac's processor, storage device, graphics accelerator, or CD-ROM drive is faster than another. Although MacBench is a subsystem-level benchmark, it's no stranger to applications. Five of its seven main scores are based on extensive profiling of common user tasks in more than a dozen applications — but not arbitrarily picked applications. They're the ones people use every day. For example, the Graphics Mix and Disk Mix scores are both based on profiling common tasks performed in the 13 best-selling programs that have the largest share of the Mac software market. The profiling data is then weighted according to each program's market share. When you run these tests, MacBench is exercising your Mac the same way you do.

Business applications exercise a Mac's graphics and disk subsystems differently than DTP apps do. Publishing and design programs are represented in MacBench's standard Disk and Graphics Mix tests, but because their market share is much smaller than programs such as Word and Excel, they have little influence on these scores. That's why version 3.0 also includes two new MacBench tests: the Publishing Graphics Mix and the Publishing Disk Mix. These are based entirely on profiling QuarkXPress and Photoshop. These new tests will let you make more-discriminating buying decisions.

For this issue of MacUser, we've tested Apple's current desktop Macs, Performas, and PowerBooks, as well as systems from Power Computing, Radius, and DayStar Digital. It's the most comprehensive set of Mac OS-system test results you'll find anywhere. If you want to see how your own Mac measures up, you can get a personal copy of MacBench by downloading it from CompuServe or from our Web page, at http://www.macuser.ziff.com/~macuser/. I guarantee you'll find it more enlightening than kicking tires.

If you pick test applications arbitrarily, the data you collect will also be arbitrary.

The Best and Brightest

MacBench 3.0 is not the only new thing we're introducing with this issue. First of all, I'm pleased to announce that the 11th annual Eddy awards are going online. Each year, MacUser editors spend months testing and evaluating and arguing about products that will get the coveted Eddy awards. This year, you can check out the finalists and winners on our first ever Eddy Web site, at http://www.macuser.ziff.com/~macuser/eddy95. You can download demos and link to reviews and articles previously published in MacUser, and we even have RealAudio commentary from the editors who bring you this magazine.

We're also cosponsoring an online contest with Microsoft to celebrate Excel's ten-year anniversary. You can win a Power Mac 8500/120 or a host of products from Microsoft. Here's how it works: Go to the MacUser Web site (see above), and fill out the forms. (Winners will be announced in late February).
NEW ON THE MENU

COLOR MONITORS /

Slim, Sleek, and Affordable

NEC brings LCD monitors down to a manageable price.

IN FUTURISTIC FILMS, computer monitors are always flat. High-quality liquid-crystal-display (LCD) monitors exist today, but their exorbitant prices have prevented widespread adoption (except by those like Bill Gates, who can afford to decorate his house with LCDs). Now NEC is releasing two LCD multifrequency monitors that won't send corporate financial officers into sticker shock.

The NEC MultiSync LCD200 ($3,999) and LCD300 ($5,999), both slated for release in late January, are high-resolution active-matrix monitors that cost about half as much as current comparably configured LCD monitors. These new LCD monitors also occupy half the desktop space and consume about half the power of their CRT-based cousins. The LCD300, for instance, requires about 45 watts or less. Each NEC model is only 6.7 inches deep. The LCD200 weighs 16.1 pounds, and the LCD300 is just 15 pounds.

Unlike other LCD monitors, the NEC models output analog signals directly from the graphics cards instead of converting the video signals to digital. As a result, analog LCD monitors offer more-consistent color than the dithered spectrum offered by digital LCD monitors. The displays require no special graphics cards.

Unlike CRT monitors, in which the size of the tube and the viewing area don't always match up, the 12-inch LCD200 and the 13-inch LCD300 take advantage of the whole display area. Both models offer several resolutions, but thanks to NEC's FIT technology, even images displayed at lower resolutions fit the entire screen, enlarging the viewing area and eliminating the borders that occur when lower-resolution images appear on digital monitors.

The LCD200 boasts an optical resolution of 1,024 x 768 pixels and a dot pitch of .24 mm. Besides 1,024 x 768 pixels, the monitor supports resolutions of 640 x 480 and 800 x 600 pixels. The LCD200 comes with NEC's On-Screen Manager, which lets you adjust the monitor's image with front-panel controls.

The LCD300 offers higher resolution than the LCD200. It has an optical resolution of 1,280 x 1,024 pixels and a dot pitch of .20 mm. Besides 1,280 x 1,024 pixels, it supports a resolution of 640 x 480 pixels. 800-632-4636 or 708-860-9500. / Pamela Pfiffner

Online Services Caught in the Web

THE INTERNET keeps growing in popularity, and commercial online services are struggling to stay on top in a world where the Web is king. The first service to defect to the Internet is Apple's eWorld, which will be transformed from an online service to a Web site in the next few months.

EWorld Wide Web. In mid-1996 Apple will replace the current eWorld software, based on America Online technology, with Internet-based systems. At that point, eWorld content will be available to anyone with Web access. In addition to traditional Web pages, eWorld plans to use new Internet technologies to create chat areas, message sections, and more — essentially a complete online service, but on the Web instead.

Among the Web sites Apple will provide are eWorld on the Web, featuring the best of the current eWorld content; the Learning Community, an education-based resource; and Apple Salon, an arts-and-leisure service. Ask Apple, Apple's online technical-support system, will also be available to all Internet users.

This transition will spell the end of Apple's efforts as an online-access provider. Apple officials believe that the company's strength is in providing content, not an Internet dial tone. Existing eWorld customers will eventually relocate to an independent Internet service provider, such as PSI or Netcom.

AOL and CompuServe. The other major services aren't following Apple yet — they're just beefing up their Internet connectivity. America Online recently unveiled Global Network Navigator, a separate online service that will provide standard Internet access. And for several months, CompuServe users have been able to use their existing accounts to connect directly to the Internet via the Point-to-Point Protocol. In addition, both companies have been stockpiling on Net savvy, buying Internet-oriented companies left and right.

Netcom. Ironically, as the online services loosen their grip on their proprietary systems,
CLONE WATCH

PowerPC Platform Opens Clone Doors

UMAX joins the ranks of Mac OS licensees.

MAC OS LICENSEES haven’t exactly been coming out of the woodwork. In the U.S., they number three, to be exact: DayStar Digital, Power Computing, and Radius. The number of Mac OS licensees outside the U.S. is inching upward. Taiwan-based UMAX, known in this country for its scanners, recently said that it will begin shipping Mac clones in Taiwan and China by the end of 1995 and in the U.S. by late 1996.

But there’s a good reason why the number of Mac OS licensees worldwide hasn’t hit double digits: Apple.

Any vendor shipping a Mac today has to rely on Apple’s ASICs (custom chip sets) for things such as floppy-drive, SCSI, and network controllers. You know that parts shortage Apple keeps saying is the reason it can’t build enough systems to meet customer demand? With only Apple as the source of these critical ASICs, clone vendors are constrained by the same shortages as Apple. Apple could sign up a dozen licensees, but there’d just be more vendors fighting over the same scarce parts.

A solution to this impasse may finally be in sight, with the launch of the PowerPC Microprocessor Common Hardware Reference Platform — PowerPC Platform, for short. With this new multivendor standard in place, third parties that want to build Mac OS-compliant systems won’t have to rely exclusively on Apple for the technology.

Formerly known as CHRP (Common Hardware Reference Platform), the PowerPC Platform was developed jointly by Apple, IBM, and Motorola as a set of system specifications that defines the minimum hardware a compliant system must include. To qualify as PowerPC Platform-compliant, systems must be able to run the Mac OS as well as Windows NT, OS/2, Solaris (Sun’s UNIX operating system), AIX (IBM’s UNIX operating system), and Novell’s NetWare.

The standard-formerly-known-as-CHRP has been a hot topic ever since the three participating companies announced their intention to develop it, back in November 1994. One year later, version 1.0 of the PowerPC Platform is a reality. Now the rush is on. Expect to see many more vendors offer systems that can do the Mac thing. More than a dozen companies have announced their intention to support the PowerPC Platform (see the “Lucky 13” list).

Having a standard is great, but how will it translate into more Mac OS-compliant systems? The PowerPC Platform will help alleviate the parts shortage that plagued earlier licensing efforts, by defining a set of open hardware specs for various system interfaces. The specs will enable anyone to build compatible chip sets. Several vendors in addition to IBM and Motorola have already indicated their intention to manufacture these chips. With multiple chip-set providers in the market, availability will increase and prices presumably will decrease.

By the way, because PowerPC Platform systems are designed to support PC as well as Mac operating systems, they’ll include dual hardware interfaces — IDE and SCSI ports, for example, and PC and ADB (Mac) keyboard and mouse connections.

But there’s a catch. Although 13 system vendors have committed to the PowerPC Platform so far, less than half of them are currently licensing the Mac OS. Those that haven’t yet jumped on the Mac OS bandwagon all point the finger at Apple: System vendors say they’ll have hardware ready when Apple has a version of its system software that will run on the PowerPC Platform — the current version of System 7.5 doesn’t. Apple says that it will have a PowerPC Platform-compliant version of the Mac OS available in the second half of 1996. Apple’s line: When the hardware vendors are ready, the Mac OS will be ready. Ever heard the one about the chicken and the egg?

It’s anyone’s guess when we’ll see PowerPC Platform systems. My guess? Check back this time next year. / Jason Snell
NEW ON THE MENU

IF 1995 WAS THE YEAR color laser printers became a reality, 1996 may mark the year they reach critical mass. New players are becoming a reality, 1996 may mark the year new players are among them Digital Equipment, engine-manufacturer Canon, and Panasonic. Driving several of these devices is technology from Electronics for Imaging, which is migrating its Fiery controller from color laser copiers to desktop printers. What marks this latest crop is faster print speeds and better output quality.

**Digital Colorwriter LSR 2000.** The Digital Colorwriter LSR 2000 is the first color laser printer to incorporate EFI's Fiery XJE controller, a scaled-down version of its popular PostScript processor for color laser copiers. EFI claims that its 100-MHz controller is capable of producing pages at the Canon engine's rated speed of 3 ppm in color and 12 ppm in monochrome. The PostScript printer produces 600 x 600-dpi continuous-tone color output. It ships with 32 MB of RAM (upgradable to 48 MB) and a 340-MB internal hard drive. Parallel, Ethernet, and SCSI ports are standard. Pricing for the unit, expected to ship in January, hadn't been set at press time. 800-344-4825 or 308-493-5111.

**Canon 360PS.** The manufacturer of the engine found in the Digital printer as well as in color laser printers from Apple and Lexmark plans to introduce a color laser printer under its own label. Because it also uses EFI's controller, the Canon 360PS will have specs similar to those of the Digital printer: 600-dpi continuous-tone color output at 3 ppm, with advanced image-processing and memory-compression schemes. It too will ship with 32 MB of RAM; a 340-MB hard drive; and parallel, Ethernet, and SCSI ports. The 360PS, scheduled to ship in February, will start at about $10,000. 800-652-2666 or 516-488-6700.

**Panasonic KK-P8475.** Based on an engine manufactured by parent company Matsushita, the Panasonic KK-P8475 is rated to produce pages at 3.5 ppm in color and 14 ppm in monochrome. It contains a 33-MHz RISC PostScript Level 2 controller. The printer also offers 600-dpi color and monochrome output. Slated for release this spring, the KK-P8475 ships with 8 MB of RAM (upgradable to 72 MB) and a parallel port; LocalTalk, Ethernet, and token ring are extra. Base price is about $6,500. 800-742-8086 or 201-348-7000.

**Tektronix Phaser 550.** Tektronix was first out of the gate with the Matsushita engine. In its second incarnation, the printer offers a higher resolution of 1,200 x 1,200 dpi for both color and monochrome and a faster color-output speed of 5 ppm at 600 dpi, thanks to all-new software and hardware components. Tektronix also announced PhaserLink, an Internet-based printer-management utility that takes advantage of Netscape Communications' browser to monitor printer status, change printer configuration, access technical support, and so on. Like the earlier Phaser 540 color laser printer, the Phaser 550 ships with SCSI and parallel ports; Ethernet, LocalTalk, and other network options are sold separately. The Phaser 550 is priced at $6,995. 800-835-6100 or 503-682-7377. / Pamela Pfiffner

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**MACUSER/ZMAC UTILITY OF THE MONTH**

**The Mac, from A to Z**

PULLING OUT YOUR HAIR trying to tell the Power Macintosh 5200/75 LC from the Performa 5215CD? Want to impress your friends by citing the intro date of the ill-fated Macintosh ILuv? We have some very good news for you. ZMac's famous Macintosh Catalog Database is back, and it's packed with all the specs, all the pricing information, and all the technical trivia any obsessive-compulsive Mac maven could ever wish for. Every Mac ever made by Apple is covered in exhaustive detail, along with a complete survey of Mac compatibles (clones, in the vulgar vernacular). And if you don't have FileMaker Pro 2.0, help yourself to a run-time package that includes Clairs' FileMaker Pro User software!

Created by Mark Simmons, the Macintosh Catalog Database is available exclusively from ZD Net/Mac on CompuServe (GO ZMC:MACUSER), eWorld (shortcut:MacUser), and the World Wide Web (http://www.zdnet.com/~macuser/), starting December 30. / Mark Simmons
MODELERS AND ANIMATORS working in 3-D can boost productivity with two new cards that accelerate QuickDraw 3D's interactive render: Apple's, aptly named the QuickDraw 3D Accelerator Card, and Newer Technology's, code-named the Z/Render card. If you use applications — such as Strata's Studio Pro 1.75+ and Specular's Infini-D 3.1 — that incorporate QuickDraw 3D, you'll want one of these cards.

Apple QuickDraw 3D Accelerator Card. Apple's card packs a lot of features into a small space. The PCI card includes an Apple-designed proprietary chip and 128K of static RAM for caching texture maps.

The QuickDraw 3D Accelerator Card is not a graphics card, however, although it does accelerate the display of 3-D graphics in any window on any display attached to a PCI-based Power Mac. The card has the unique ability to apply trilinear anti-aliasing (a high-quality method of smoothing mapped images onto 3-D objects) to texture mapping during acceleration. In addition, the card can speed the display of transparent objects and solid geometric constructions. $399, 800-776-2333 or 408-996-1010.

Newer Z/Render. Owners of 6100-, 7100-, and 8100-series Power Macs with NuBus slots will want to check out Newer's graphics card. Newer's NuBus card replaces the PDS-based graphics card in these systems with a new graphics card capable of higher resolution and QuickDraw 3D acceleration. It supports single-buffered and double-buffered display to provide flicker-free 3-D animations. It also accelerates the display of 2-D and 3-D graphics, using the GLiNT chip, from 3Dlabs.

At its base configuration of 2 MB of VRAM and 2 MB of DRAM ($1,775), the card can display single-buffered graphics in 256 colors at a resolution of 1,600 x 1,200 pixels or double-buffered graphics in thousands of colors at a resolution of 832 x 624 pixels. Upgrades offering 2 MB of VRAM and 2 MB of DRAM or 6 MB of VRAM and 6 MB of DRAM boost the supported bit depth of the card. A PCI version of the as-yet-unnamed card was expected in January. A more expensive but faster version, featuring texture-map acceleration, will be available by Q2 of 1996. 316-685-4904. / Sean J. Safreed

UTILITY /

Do Your Work in Double Time

KEEPING APPLICATIONS OPEN in the background while working in another may seem innocent, but the other applications siphon processor speed from the application you're using. You can drive a stake through the hearts of these vampirish foreground programs with Orchard Software's CPU Doubler.

An $80 control panel, CPU Doubler makes a foreground application run faster by increasing the amount of processor time that application receives. Orchard Software says CPU Doubler can speed up foreground applications by as much as 100 percent, depending on the number of open applications and active extensions. You can exclude any background processes, such as printing, from being affected by CPU Doubler.

CPU Doubler is compatible with Connectix's Speed Doubler and RAM Doubler; it includes Orchard Software's Cron Manager, which automatically opens documents at a specified time. 617-876-4608. / Carolyn Bickford

3-D ACCELERATION /

New Cards Speed QuickDraw 3D

Apple and Newer fuel high-end rendering.

GOOD AUDIO IMPROVES any multimedia title or presentation. Now two new tools from InVision Interactive and Macromedia make Mac audio sound better.

CyberSynth. With QuickTime 2.0, Apple put a MIDI synthesizer into every Mac, but the quality is frankly less than professional. InVision, the sound-design firm behind Seinfeld's catchy bass riff, replaces the QuickTime Musical Instruments extension with its own MIDI synthesizer, which features 500 professionally produced sounds. The library includes the standard 128 General MIDI instruments, a host of drum and rhythm loops, and realistic sounds. The software can play back any MIDI or QuickTime MIDI track and ships with a simple yet complete MIDI sequencer. CyberSynth supports the OMS (Open Music System) driver, for hooking into sequencers such as Studio Vision Pro.

Any of the 1,000 sounds in InVision's library can be plugged into CyberSynth. $249. 415-812-7380.

SoundEdit 16 v.2. Macromedia has responded to the needs of multimedia and sound professionals with version 2 of SoundEdit 16, which offers a batch-processing application and supports AppleScript, to automate sound-file conversion and compression. Newly supported audio formats include Sun AU, popular on the Internet, and QuickTime 2.1's IMA format, which compresses 16-bit audio to a quarter of its original size. SoundEdit 16 ships with three Xtra plug-ins for CD-audio import, loop tuning, and multitap preverb. Audio plug-ins that support the Adobe Premiere plug-in format also work in SoundEdit 16. $399. Upgrade, $129. 800-288-4797 or 415-252-2000. / JJS

SOUND /

New Apps Edit Audio, MIDI

GOOD AUDIO IMPROVES any multimedia title or presentation. Now two new tools from InVision Interactive and Macromedia make Mac audio sound better.

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"I said yellow ochre, and I mean yellow.

Hey, you know what color's supposed to look like. Whether it's primary, complementary, cobalt, magenta or moon glow verdigris. Which is why you'll probably appreciate the dialed-in color of an EPSON Stylus Pro XL printer. 720 x 720 dpi of eye-popping, Photo Quality color. Epson Color. If you'd like to find out more, give us a call at 1-800-241-5373 x3200 (no yelling), or see us on the Web at http://www.epson.com. And get yourself a printer with an eye for color almost as good as yours.

*Price includes optional Adobe PostScript software with Pantone calibrated colors. Street price may vary. Mac compatible. EPSON and EPSON Stylus are registered trademarks of Seiko Epson Corp. All other trademarks and registered trademarks are property of their respective owners. ©1999 Epson America, Inc.
assment of having to yell, when I say yellow ochre, ochre."

YOU'VE GOT TO SEE IT IN EPSON COLOR.
EXORCISE THOSE RED-EYED demons in your photos with two inexpensive photo-editing packages. Storm's EasyPhoto Reader and Adobe PhotoDeluxe enable you to make family snapshots look their best for sending on greeting cards or via e-mail.

Storm EasyPhoto Reader.  Designed to capture photos as large as 5 x 7 inches at 600 dpi in color, this compact scanner comes with Storm's EasyPhoto 1.5 software at a street price of just $259. The scanner connects through your serial port, and the scanner driver automatically brightens dark areas as it scans your picture.

The EasyPhoto software, also sold separately for $59, compresses the pictures into JPEG format and creates a searchable catalog for them on your hard disk. Using easy-to-understand filters with before-and-after previews, you can adjust contrast on an overexposed picture, remove scratches, and clear up the red-eye effect caused by camera flash. EasyPhoto saves the scans as a digital slide show, which you can distribute with Storm's free viewer. 800-275-5734 or 415-961-6600.

Adobe PhotoDeluxe.  If you already have a scanner — or a digital camera — you can acquire and touch up your photos in Adobe PhotoDeluxe, the $89 consumer-oriented cousin of Photoshop. You can fix photographic flaws such as red eye and scratches in PhotoDeluxe, as you can in EasyPhoto. PhotoDeluxe lacks a catalog, but it does provide the ability to run Photoshop-compatible filters such as Kai's Power Tools. It contains several painting and retouching brushes à la Photoshop, but for novices, one-click buttons replace the complex steps of adding drop shadows and other effects to images.

PhotoDeluxe also gives you step-by-step instructions for integrating the photos into printable greeting cards or calendars or digital slide shows. 800-888-6293 or 415-961-4400. / Carolyn Bickford

Mr. Mojo Risin'

THE SEAMY UNDERBELLY — or perhaps underrefrigerator — of virtual reality awaits you in Bad Mojo (estimated street price, $55), a new game from Pulse Entertainment that turns Kafka's man-into-cockroach premise into an itchily realistic adventure (hint: keep your cat away from the screen). You help Roger the scientist-turned-cockroach negotiate graphically visceral 3-D-rendered sewers, roach motels, and sharp-bladed garbage disposals on his quest to discover his true identity and redeem his wretched, roached existence. 310-264-5579. / Karen J. Ohlson

All Taxed Out

TAXES ARE BAD ENOUGH, so tax-preparation software shouldn't cost an arm and a leg. Parsons Technology's $19 Personal Tax Edge may give other tax programs a run for the money.

Like its higher-priced competitors, Personal Tax Edge uses a step-by-step interview to help you prepare your federal income-tax return. It also includes IRS instructions, tax-saving tips, a tax-law update, and an accuracy guarantee and lets you import information from personal-finance programs such as Intuit's Quicken and others that support TXF files. In addition, Personal Tax Edge includes a online version of J. K. Lasser's Tax Guide, and you can use the program to file your tax return electronically.

For preparing state income-tax returns, State Tax Edge versions are available for only $19 each. 800-223-6925 or 319-395-7300. / CB

CD-ROMS /

Face the Music

MUSICAL MAYHEM Erupts in this eclectic array of CD-ROMs that has you moshing to Mozart, turning back time with Forrest Gump, and tracking down tunes via Music Central.

Digital Beethoven on Cyberspeed.  "Years ago we had Beethoven, and now we have Mariah Carey. Where's the justice?" screams the leather-clad Great Kat, a Juilliard graduate who aims to right history's wrong. The Bureau of Electronic Publishing revives the classics with this fast-paced CD-ROM title that drops you smack in the middle of the Great Kat's den, where you can play in a cyberorchestra, take a guitar ride through music history, or get the lowdown on bungee-jumping composers. $60. 800-828-4766 or 201-808-2700.

Music buffs can dig up dirt on more than 80,000 albums, sorted by genre, artist, awards, or release date. Rock, jazz, country, and world-music artists are represented in biographies, album reviews, and photos as well as music clips and performance footage. For the latest dish on the music biz, passport carrying Internet travelers can also use Music Central to download up to 150 new album reviews and artist updates each month. $45. 800-426-9400 or 206-882-8080. / Nikki Echler
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NEW & NOTABLE

HARDWARE /

Hunter Digital NoHands Mouse. Put your pedal to the metal with this input device that completely eliminates the need for you to use your hands while you control your Mac. Instead, you move the cursor by tilting one foot while clicking with the other. The foot pedals are interchangeable, so it doesn’t matter if you’re right- or left-footed. Expected to cost less than $125. 310-471-5852.

Sony Multiscan 511 Displays. Designed for home and office, Sony’s new multiple-frequency monitors feature aperture-grille Trinitron CRTs. The $649 Multiscan 511 (viewing area, 13.9 inches) and the $1,099 Multiscan 1751 (viewing area, 16 inches) each offer a 25-mm dot pitch and a maximum resolution of 1,280 x 1,024 pixels at 60 MHz. The $2,299 Multiscan 2051 (viewing area, 19.1 inches) has a 30-mm dot pitch and a maximum resolution of 1,600 x 1,200 pixels at 60 MHz. 800-352-7669.

Proxima Desktop Projector 2400. Featuring 640-x-480-pixel resolution and the ability to display up to 2 million colors from a 24-bit color palette, this portable LCD projector weighs just 21 pounds. $619. 619-457-5891.

Hitachi 172. The 5.25-inch magneto-optical drives in this series use 2.6-GB media. Sporting a SCSI-2 interface, the drives are available in external ($3,100) and half-height internal ($2,600) configurations. 800-448-2244 or 415-589-8300.

Dataproducts Typhoon 40. The latest in the Typhoon series of high-speed workgroup printers, the Typhoon 40 is rated at 40 pages per minute at 300 or 400 dpi. Duplex printing is standard, as is an internal 80-GB hard-disk drive and 16 MB of RAM. The printer uses the PlixiPage emulation of PostScript; an Ethernet card ($995) is optional. $30,995. 800-980-0374 or 703-860-8084 (fax).

Polaroid ProPalette 8000. This digital color film recorder offers 8,000 lines of resolution for 35mm positives or negatives. Able to print in 16.8 million colors, the ProPalette 8000 is equipped with a 35mm camera back that automatically loads and rewinds film. $13,995. 800-816-2611, ext. 972.

SOFTWARE /

The Native Americans. Based on the book and the miniseries of the same name, this CD-ROM looks at America through the eyes of the continent’s earliest inhabitants. In addition to providing a view of the history of native Americans, this disc features hundreds of images; sound and video clips; the full text of the original book; and the miniseries’ original soundtrack, composed by Robbie Robertson. $40. Image Smith. 310-325-5999.

Simile, Missions in the Rainforest. The latest in Maxis’ series of Sim software is this simulation game set on a group of exotic islands. Each island brings with it several unique scenarios that must be dealt with in order to save the island. Obstacles include offshore oil leases, illegal-drug producers, and that old SimCity standard, the devastating earthquake. $40. 800-526-2947 or 510-933-5630.

Reading SEARCH: In Search of the Lost Folktales. Aimed at improving reading comprehension for children ages 7 to 12, this CD-ROM sends players on a time-travel adventure to gather clues, artifacts, and folktales in settings ranging from Mayan villages to a Tang Dynasty palace. $70. Great Wave Software. 408-438-1990.

Alien Tales. Was Shakespeare an alien? That’s one question posed by this CD-ROM game, designed to improve children’s reading skills. Players compete in a game show (complete with host and sidekick) against aliens who claim to have written famous Earth books. So does that mean Stephen King is really a Reticulant? $45. Broderbund. 800-521-6263 or 415-372-4700.

CyberFinder. Available only online, this utility makes collecting Internet addresses—from Web sites to FTP directories to e-mail addresses—as simple as creating an alias in the Finder. Bookmarks can be stored as individual files or in folderlike Libraries. Double-click on an item to automatically launch the appropriate Internet program and go to the address in question. $30. Aladdin Systems. http://www.aladdinsys.com or info@aladdinsys.com.

MACINTOSH PRICE INDEX

THE UNITED COMPUTER EXCHANGE index reflects average sales prices of new and used Macs as of November 7, 1995. Prices (except those for compact models, Performas, and LCs) do not include a monitor or a keyboard. The United Computer Exchange is a national clearinghouse of used microcomputer equipment.

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* = discontinued model

For more pricing information on these and other models, call 800-755-3033 or 770-955-0569, or visit http://www.ucx.com. And find it on ZD Net/Mac, in Library 1 (Special Reports) of the MacUser Forum (GO MACUSER). On eWorld, go to shortcut MACUSER, in Software Library/MacUser Special Files.
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Radius PressView 17 SR and 21 SR / Award-winning screen play for Photoshop pros.

GETTING THE picture hasn't always been as easy as it should be for imaging pros who use expensive color monitors. The colors you see on your monitor aren't exactly what you see in your output, and calibration can be a hit-or-miss proposition. Until now, that is. The display experts at Radius have come up with two new monitors that are sure to win applause, especially from prepress and Photoshop users. The Eddy Award-winning PressView 17 SR features top-notch color and unprecedented sharpness and brightness for a 17-inch monitor. The PressView 21 SR is the latest iteration of Radius' top-of-the-line 21-inch monitors. What makes each monitor stand out — in addition to its image quality — is Radius' new software, which provides the most sophisticated level of control over a display you can find, bar none.

At $2,499 for the PressView 17 SR and $3,999 for the PressView 21 SR, Radius' new monitors are pricey. But after we saw the quality of the image (especially impressive on the 17-inch monitor) and put the control software through its paces, we concluded that if you make your living using Photoshop to prepare press-ready color files, the new monitors are worth every penny.

Capable of displaying resolutions of up to 1,600 x 1,200 pixels, each system uses a specially manufactured premium aperture-grille monitor from Mitsubishi. Radius houses the monitors in neutral-gray cases and equips them with light-shielding hoods to minimize reflection. You even get a special black "stealth" robe to wear while using the monitors, which eliminates reflections from your clothing. In addition to the software, each monitor comes with its own display calibrator.

There's much more to setting up the new PressView monitors than simply connecting a video cable. For starters, you need to connect a cable between your Mac's serial port and the monitor, to enable the Radius PressView application to control the display. You also have to attach the ProSense calibrator to your ADB chain — the unit has two ports and a short cable, so you can add it in-line with other devices.

Then there's the software. The PressView application lets you adjust the monitor by controlling size, position, convergence, pincushion, tilt, moiré, and more, while the ColorSentry software runs in the background and makes sure all saved settings remain correct when you change resolution or shut down. The PressView-application controls are the most sophisticated we've seen for any software-controlled monitor. However, even experienced users will need some time to master them. Fortunately, the software comes with good Apple Guide support to help you learn the controls.

You can use the ProSense calibrator and accompanying software to adjust the monitor's red, green, and blue output levels as well as the color tables in your graphics card's or built-in video circuitry's DAC (digital-to-analog converter). Worth noting is that the ProSense software is compatible with Radius graphics cards that feature 30-bit DACs, such as those in the Radius Thunder 30 family. That means you can calibrate the white point and gamma of your PressView display without losing any of the available colors.

Another big plus for color-conscious users is ProSense's support of all the popular color-management systems, including Apple's ColorSync II, EFI's EfiColor, Kodak's KCMS, and Agfa's FotoFlow. ProSense also comes with Radius' ColorMatch Photoshop separation tables for creating a monitor profile, which ensures that files are accurately translated from the CMYK to the RGB color space. Radius provides ColorMatch separation tables for SWOP coated 3M Matchprint, SWOP coated DuPont proof, Eurosacle coated 3M Matchprint, and Toyo...
The PressView application that comes with the PressView 17 SR and 21 SR monitors from Radius offers an unprecedented level of control over the display. But the flip side of the controls’ sophistication is their steep learning curve. Fortunately, there’s Apple Guide support to help you master the software.

The combination of ProSense’s color-management support and the ColorMatch separation tables goes a long way toward delivering print-to-display color matching, especially for Photoshop users.

By the time this review appears, Radius will offer a ProSense upgrade with a “Teach and Learn” feature, which will let you measure the current calibration settings of your PressView display, save them to a file, and then use that file with another PressView monitor to achieve the same display performance.

During our setup of the PressView 17 SR, we found the monitor’s image positioning to be good and its geometry excellent, right out of the box. To calibrate the monitor, we launched ProSense, set a white point of D50 (the print-proofing standard) and a gamma of 1.0 to get the best match for our monitor-testing gear (a gamma of 1.8 is recommended for print proofing), and clicked on the Calibrate button. The entire process from launch, including the automatic calibration-accuracy measurements, took less than two minutes.

When you quit the ProSense application, your monitor’s color settings are written to the color-management system you’ve specified and a Photoshop monitor profile is created, if you’ve selected that option. Then you’ll probably want to go back to the PressView application and tweak the red, green, and blue levels to get the monitor’s white point to exactly match your paper stock as it appears under your lighting conditions.

The PressView manuals do an OK job of explaining the calibration process, and they provide a few helpful hints. We found ourselves referring to them often. Unfortunately, some of the instructions aren’t quite complete. For example, the manual tells you how to start using your monitor profile in Photoshop, but it neglects to mention that you must first quit the ProSense application to save the file and make it available to Photoshop.

To get an objective view of how the new PressView monitors compare to others in their class, we ran the MacUser Labs standard suite of monitor tests. Using our Power Mac 7100’s built-in VRAM-based graphics, we tested the 17-inch monitor at 832 x 624 pixels and the 21-inch at 1,152 x 870 pixels. In our MTF (modulation-transfer function) sharpness test, the 17-inch monitor achieved a very impressive score of 70 percent contrast between single-pixel white and black lines (a score of 50 percent is acceptable). The 21-inch monitor achieved a score of 61 percent — a very good showing, but not as impressive as the 17-inch monitor’s.

When calibrated, each monitor had a brightness reading that was lower than that of other monitors we’ve tested. However, that’s by design — because they’re less bright, they can achieve higher-quality color matching. If you disable calibration, the PressView monitors are very bright.

In our color-tracking tests, which measure how accurately the monitor displays subtle shades of gray, the 17-inch monitor achieved an excellent 99-percent accuracy (a score above 90 percent is considered acceptable) and the 21 SR scored 95 percent. In our misconvergence test, which measures how well a monitor’s red, green, and blue beams align with each other, the 17-inch monitor once again rated an excellent and the 21-inch monitor rated a very good.

Although the PressView 17 SR is a top-notch performer, it may not be for everyone. At a 1,600-x-1,200-pixel resolution, the image displays at about 136 pixels per inch, or about twice the resolution of a standard Mac monitor. At this resolution, type is downright tiny, so if you frequently work with type in page-layout programs, the 21-inch display may be a better choice. However, for power Photoshop users on a budget or with limited work space, the 17-inch monitor is a great deal. At an 832-x-624-pixel resolution, it’s capable of displaying razor-sharp WYSIWYG images.

The Bottom Line

Billed as Color Reference Display Systems, the Radius PressView 17 SR and 21 SR each offer obvious advantages to prepress users who require the ultimate in color accuracy and consistency between display image and printed output. Although it takes some time to master the monitors’ sophisticated software controls, the results are well worth the effort. Our only caveat is this: Once you get used to the exceptional display quality of the PressView systems, you’ll have a hard time looking at other monitors. Compared to the PressView monitors, they simply look, well, wrong. / Jeff Pittelkau

**Radius PressView 17 SR**

Price: $2,499 (list).


Cons: Steep learning curve for software controls. Some inaccuracies in manual.

Company: Radius, Sunnyvale, CA; 800-227-2795 or 408-541-6100.

Reader Service: Circle #401.

**Radius PressView 21 SR**

Price: $3,999 (list).


Cons: Steep learning curve for software controls. Some inaccuracies in manual.

Reader Service: Circle #402.
Now for around $2,000 you can own Microtek’s award-winning 36-bit ScanMaker® III. It’s one of the fastest and most advanced single-pass color flatbeds available. In fact, Publish magazine called the ScanMaker III “the flatbed to beat.” This 600 x 1200 dpi scanner includes the full-version of Adobe Photoshop, ScanWizard™—Microtek’s powerful, new scanner controller software, and Microtek’s DCR color calibration system. And now, Microtek includes the Transparent Media Adapter for scanning transparencies and negatives, and OCR software for scanning text. But we’re not through yet! Purchase a Microtek ScanMaker III from October 1, 1995 to January 31, 1996 and you also get your choice of one of the packages below. Just look for the coupon in your ScanMaker III box.

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200MB Internal

<table>
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<th>Drive</th>
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<th>Warranty</th>
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270MB Internal

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CIRCLE 42 ON READER SERVICE CARD
Microfield Graphics SoftBoard 205
Compact electronic whiteboard records your scribbles and schematics.

YOUR TEAM CAN brainstorm without pausing to take notes if you're writing everyone's ideas on a Microfield Graphics SoftBoard instead of a whiteboard. This unique electronic whiteboard digitizes each stroke made with its markers into a series of pictures in its own software application. Meeting participants can take everything that was written on the whiteboard with them and replay it — or use the same technology to attend the presentation from a distance, dialing in by modem. The standard-sized version won a 1994 Eddy Award; the latest SoftBoard — Model 205 — is a personal version, small enough to fit into the most crowded of meeting rooms, into a cubicle, or on top of a desk.

Mark My Words
The SoftBoard looks like a conventional whiteboard, and you can write on it with regular markers, without having to hold your hand in an awkward position. From a cable on its lower left edge, the SoftBoard connects to a Mac through a serial port. A receiver, which runs along the top of the SoftBoard, sends laser beams along the surface of the board. You attach one of the four color sleeves to each marker. As you draw on the SoftBoard with the marker, this sleeve reflects the receiver's laser beams. A fifth sleeve attaches to the eraser and works in the same way. The receiver interprets the reflections and reproduces everything that's happening on the whiteboard in an image that appears on the attached Mac.

The SoftBoard 205 is 39 inches high by 40.5 inches wide and has a 25.5-inch-high by 34-inch-wide writing area. Installing it was a breeze, thanks to easy-to-understand documentation on how to connect and set up the power-cable and serial-line connections. We were able to use the software — the recording program, SBRecord; the runtime viewer, SBView; and the remote-access program, SBRemote — without having to change any of the default settings. Among the settings you can change are the pen colors and the playback speed. You use a fourth program, SBDiag, for setup — it lets us know that the receiving sensors had shifted out of alignment slightly during shipping and gave us succinct on-screen directions on how to use the included Allen wrench to make necessary adjustments.

SBRecord, the key SoftBoard program, runs on the connected Mac. It has buttons that look like the buttons on a home cassette or CD player. As soon as you click on the Record button, SBRecord saves each mark or erasure you make on the board as a page in a series of pages. When the meeting is over, you click on the Stop button and can save the recorded actions as a file, which anyone with the freely distributable SBView program can play back like a movie or review screen by screen.

SBRemote's interface allows remote meeting participants to dial in and view the marks being made on the SoftBoard on their own computers. If the people at the other site have their own SoftBoard, they can also send a digitized image of their whiteboard to you — the image of each SoftBoard appears in its own window on each connected Mac.

Silent Vision
None of the SoftBoard software lets you record sound with it, which can be problematic if some points need explanation.

SBRemote users have to dial in on a conference call as well as on a modem line in order to participate in the meeting. And since the SoftBoard connects through a serial port, you may need to juggle printer, SoftBoard, and modem connections unless you buy a serial-port expander.

We tried hard to confuse the SoftBoard into making false marks. We found that if we held the marker at an angle close to the writing surface, the marker's color would appear as a color different from what it actually was on the Mac. And if we didn't move the pen more than a quarter inch away from the surface between separate letters or marks, it could generate false lines. But with a little care, we had no trouble creating text and drawings that transmitted accurately in SBView.

Besides the wall-mounting kit that comes with the SoftBoard 205, you can buy kits that let you set it up on the wall of a cubicle or on top of a desk. Each optional kit costs $99.

The Bottom Line
The SoftBoard brings the simplicity of a whiteboard to the computer, although without sound, viewers of SoftBoard files could end up missing essential meeting discussions. But if other methods, such as teleconferencing and shared collaboration, don't work as well as a meeting in front of a whiteboard, the SoftBoard is a great start on sharing your meetings with others who may otherwise not be able to participate. With the SoftBoard, participants can focus on listening rather than on jotting down notes. And if you have participants dialing in for a conference call, you can now also have them dial in for visual brainstorming. / Nathan Garcia
So why are all these big printer manufacturers paying so much attention to us?

Could be they're starting to think of us as competition. After all, PowerPrint lets you print from your Mac to almost any PC printer known to mankind. And for under $150 (including the cable), it's a heckuva lot cheaper than buying a big, fancy new printer. No need for portable printers either. PowerPrint will work with all those PC printer at hotels and airports. We even have a network version. And we offer phenomenal tech support. Now that's attention getting.
NEC SuperScript Color 3000M / Three color-printing technologies in one.

NEC's first entry into the world of hybrid color printers, the SuperScript Color 3000M, is both versatile and inexpensive. The Color 3000M gives you three printing modes—dye-sublimation, regular thermal-wax, and variable-dot thermal-wax. You switch among printing modes by changing paper and the printer's ribbon. The Color 3000M is a QuickDraw printer, so your Mac has to handle all the processing chores, which makes printing quite slow. But if all you need is good-quality color printing at a low price and you don't need PostScript, the Color 3000M fills the bill.

Easy Setup

Setting up the Color 3000M took less than ten minutes. You install the ribbon for the printing mode you want into a cassette, which you place in the printer. You clip the paper feeder onto the top of the printer, load the appropriate paper into the paper tray, connect the printer to a serial port, and install the printer driver.

Each of the three print technologies requires you to trade off print time and cost per page for output quality. Of the three technologies, regular thermal-wax printing is the fastest and cheapest but produces the least-attractive output. It's fine for business graphics such as Excel charts, but it doesn't work well with photographic images or graphics with subtle color gradations. On the other hand, it's the only technology that lets you use plain paper. The Color 3000M's engine speed for thermal-wax printing is about one page per minute, and printing a three-color page will cost you about 55¢.

By using a fine dithering pattern with varying dot sizes, variable-dot thermal-wax printing gives you much-better-looking results than regular thermal-wax printing. It requires special thermal-transfer paper, however, which makes it somewhat more expensive than regular thermal-wax printing. The Color 3000M's engine speed for variable-dot printing is about ten minutes a page, and each color page costs about 80¢ in paper and consumables.

Dye-sublimation printing provides the best quality, but it also has the highest cost per page—about $3—for its special paper and consumables. As with variable-dot printing, the engine is rated to print one page in about ten minutes.

Protracted Printing

Engine-speed ratings are a poor indicator of how long it actually takes to produce a printed page with the Color 3000M. Even with a Power Mac 8100/100 with 136 MB of RAM, we often encountered print times longer than half an hour when we printed a color page. Most of this time was for processing the data on the Mac. Text and QuickDraw-based vector graphics such as charts printed faster, but speed is definitely not this printer's forte. A direct-export plug-in that lets Photoshop communicate directly with the printer cuts times almost in half. But even so, printing a full-page 300-dpi color image from Photoshop through this plug-in took a little more than 25 minutes, 24 of which tied up our Mac with processing duties.

The Color 3000M gives you some control over halftones, but color matching was a chore. The print driver lets you adjust halftone settings for thermal-wax printing and control ink intensity and lightness for variable-dot and dye-sublimation. However, there's no way to tweak the built-in color-matching settings in the driver. Ironically, we obtained better screen-to-print color matching with variable-dot printing than with dye-sublimation. We hope NEC will implement ColorSync color matching in a future version of the driver, since it would make color matching much simpler.

The documentation for the Color 3000M is adequate, but we would have liked it to include some discussion about which printing resolution works best with which technology. By trial and error, we determined that there's little reason to use any resolution higher than 200 dpi for variable-dot printing or any setting higher than 150 dpi for thermal-wax printing. Using the printer's highest resolution—300 dpi—makes sense only for dye-sublimation printing.

The Bottom Line

For those who aren't in a hurry and don't need PostScript output, the Color 3000M will provide excellent color prints, and at a street price under $750, it won't break the bank. It was easy to install and use, and it didn't have any nasty tendencies to jam or to misfeed paper. If it had more-sophisticated color-matching features, it would be even better. / Bruce Fraser
This color output was printed on the Apple Color StyleWriter 2400.

This color output was printed on the Apple Color StyleWriter 2400 with StyleScript.

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Just get StyleScript™ and an Apple StyleWriter™ and you'll have incredibly affordable PostScript™ printing capabilities—right at your fingertips. StyleScript utilizes genuine Adobe™ PostScript Level 2 software and it only costs $149. Since it works easily with your Apple StyleWriter, you get the ability to print crisp, clear images anytime you need them. Whether it's for school or the office, you'll get flawless printouts—everytime. So when you show people your work, you no longer have to make excuses about the quality of your outputs.

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REVIEWS SCANNERS

Nikon LS-1000 SuperCoolscan and Polaroid SprintScan 35 / Little slide scanners deliver big results.

FASTER AND LESS EXPENSIVE than their high-end counterparts, two compact slide scanners have recently been upgraded. The Nikon LS-1000 SuperCoolscan and the Polaroid SprintScan 35 each offer 2,700-dpi image quality and include color-correction tools. The $2,695 Nikon scanner samples data at 12 bits per channel, and the $1,995 Polaroid SprintScan 35 samples it at 10 bits. Both SCSI-2-compliant scanners are plug-and-play when it comes to setup, but getting the most out of each device will depend largely on your skill level and understanding of each scanner's software.

Nikon LS-1000 SuperCoolscan

The compact Nikon scanner weighs only 4 pounds and has a footprint small enough to fit within the borders of this page. If space is really limited, you can turn it over on its 2.5-inch side and still use it. The SuperCoolscan can handle mounted 35mm slides and unmounted 35mm positive and negative filmstrips.

Images captured by the Nikon scanner exhibited good detail in highlights and shadows as well as smooth tonal reproduction. However, without color correction, the images looked flat, tending to be overly neutral and gray compared with the originals.

Scanning speed was highly dependent on the amount of RAM and the processor of the connected Mac. In our tests with a Power Mac 8100/110 with 76 MB of RAM, scans were fast — scans of color slides at 2,700 dpi took about 53 seconds each. However, scanning the same images with a Power Mac 6100/66 with 16 MB of RAM (10 MB of which was allocated to Photoshop) took longer — about 3.5 minutes for each slide.

Mirroring features available in software that accompanies more-expensive scanners, Nikon's plug-in software provides sophisticated tools for prescan color correction, exposure, and cropping. The real beauty of the software is that it presents all the tools you need in a single window.

But to take full advantage of the SuperCoolscan's software tools, you need some experience in dealing with color images. The on-screen interactive help isn't as comprehensive as we would have liked, and the three-part manual is confusing at best — missing is any kind of helpful information on how to obtain better scans.

Polaroid SprintScan 35

The SprintScan 35 is bulkier than the Nikon scanner — it has about the same footprint, but it is more than twice the height and weighs 10 pounds. It's equipped with a fan, so it's also noisier. Like the SuperCoolscan, the SprintScan 35 can scan mounted 35mm slides and unmounted 35mm positive and negative filmstrips.

We found that images scanned with the SprintScan 35 showed greater contrast than those scanned with the Nikon scanner. Colors were richly saturated and color casts exaggerated. However, there was not as much detail in shadows as there was in images scanned with the Nikon scanner, although the Polaroid scanner's results were adequate for most needs.

The SprintScan 35's scanning speed was nearly equal to the Nikon scanner's when we were using the Power Mac 8100/110 with 76 MB of RAM. The SprintScan 35 took, on average, 57 seconds to scan a color slide at 2,700 dpi, compared to the Nikon scanner's 53 seconds. However, the SprintScan 35's plug-in module opened 4 seconds faster than the Nikon scanner's, making up for the difference in scan times.

But the SprintScan 35 showed a speed advantage over the Nikon scanner when we used it with the less powerful Mac. With the Power Mac 6100/66 with 16 MB of RAM (with 10 MB allocated to Photoshop), the SprintScan 35 took about 2 minutes, compared to the Nikon scanner's 3.5 minutes to scan a color slide.

For novices and hurried users, Polaroid's plug-in software offers advantages over Nikon's. Preassigned settings help you obtain optimal scans quickly. You begin by selecting the appropriate film type — Ektachrome 200 or Fujicolor 100 — before you scan, and the software automatically assigns color correction to images based on preassigned lookup tables. You can use the same easy point-and-click method to control color cast, contrast/brightness, saturation, and sharpness. However, the effectiveness of the controls varies — the color cast and sharpness controls are helpful, but the contrast/brightness and saturation settings prove less effective.
One convenient window contains all the tools you need in order to preview and manage images scanned with the Nikon LS-1000 SuperCoolscan.

And unlike the single-window approach of the SuperCoolscan's software, the Polaroid software uses several windows to display scanner settings and previews. Each image-correction feature has a separate dialog box as well. Overall, we found that the multiple-window-and-dialog-box approach was somewhat awkward.

The SprintScan 35's manual, on the other hand, was much more helpful than the SuperCoolscan's—it did a good job of simplifying the hows and whys of scanning.

The Bottom Line
The Nikon LS-1000 SuperCoolscan and the Polaroid SprintScan 35 offer compact, affordable, and capable alternatives to bulky, high-priced scanners for those who don't require the highest-quality scans—newspaper publishers are a prime target audience. Choosing the scanner that's right for you will depend on the system you have, your level of scanning experience, and your image-quality needs.

The Nikon scanner is pricier than Polaroid's offering, but it captures more image information, results in images that have more details in highlights and shadows, and comes with software that's more full-featured. The Polaroid scanner, on the other hand, has the overall speed advantage, particularly for those working with less powerful Macs, and its ease of use, automatic controls, and good documentation will be a boon to inexperienced users. One last caveat: Neither scanner comes close to its advertised speed with the recommended 16 MB of RAM. / Bob Steinberg

**Nikon LS-1000 SuperCoolscan**

- **Price:** $2,695 (list).
- **Pros:** Good dynamic range in scanned images. Full-featured software.
- **Cons:** Good scanning speed highly dependent on RAM. Poor documentation. Relatively pricey.
- **Company:** Nikon Electronic Imaging Division, Melville, NY; 800-526-4566 or 516-547-4355.
- **Reader Service:** Circle #405.

**Polaroid SprintScan 35**

- **Price:** $1,995 (list).
- **Pros:** Fast scans with a wide range of Mac models. Good value. Helpful documentation. Software-automated scanning.
- **Cons:** Images lack some detail in shadows. Relatively awkward software.
- **Company:** Polaroid Electronic Imaging Systems Group, Cambridge, MA; 800-816-2611.
- **Reader Service:** Circle #406.
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Astound 2.0 / New graphics effects and more interactivity options add drama to multimedia presentations.

By combining the best features of traditional slide-show presentation programs with a timeline for each slide, Astound lets you create dazzling, complex multimedia presentations with a minimum of effort. Astound 2.0’s bag of tricks is bigger and includes more graphics effects and design options than the previous version’s. And if you have a Power Mac, you’ll appreciate the speed boost, especially during playback, thanks to PowerPC-native code.

Timed Exposures
Like traditional slide-based presentation programs such as Microsoft PowerPoint and Adobe Persuasion, Astound has an outliner, slide sorter, charting features, and design templates. You can drop sounds, graphics, and movies into your presentations and output 35mm slides with Astound, just as you can with PowerPoint and Persuasion. However, with Astound, you also have a timeline that lets you precisely control when elements on your slides appear and disappear. Furthermore, Astound has a solid set of commands that let you cue actions when you interact with elements on-screen, so it’s not only a terrific presentation program but also a good prototyping program for multimedia projects.

With the new Astound, you can have sounds span a series of slides. For seamless background music throughout a presentation, you select the same sound file for adjoining slides. The music will then continue uninterrupted through all the slides.

With this version, you can set up markers in a slide timeline. That means you can return to a slide with a marker in its timeline and start playing your presentation back from a point you’ve selected rather than from the beginning. For instance, say you have a presentation that opens with four headings tumbling in, one by one, accompanied by a fanfare. Clicking on one of the headings branches you off into a subject. When you’ve finished exploring the subject, the presentation returns you to the introductory slide and you have to sit through the fanfare and tumbling headings again. You can use Astound’s slide markers to make specific transition effects appear only once. To do so in our example, you drop a marker into the opening slide’s timeline, placing the marker right after the transition effects. You then direct Astound to play the slide from the marker on after the slide has been played the entire way through. You can also use the slide markers to create pauses in your presentation or loop part of your presentation between markers.

In version 2.0, Gold Disk has beefed up the variety of ways users can interact with presentations. Clicking on buttons and objects can now hide and reveal other objects. You can also play and stop QuickTime movies and even launch other applications from within a presentation. And, as before, you can control the order of the slides or the sound volume by interacting with an object on a slide.

New features for manipulating graphics you create within Astound can give your presentation a more professional or dramatic look. The Extrude command lets you create 3-D shapes within the program. You pick any object you have created with
Our inny just became an outy.

It's time to start looking at things from the outside in. Apple's new PowerBooks now come with PowerPort PC Card slots for increased functionality. So, instead of installing an internal fax/modem, now you just slip in one of our new PowerPort™ PC Cards. But, at Global Village, we haven't just changed our shape.

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Global Village modems are used in more PowerBooks than any other brand. It's because no products make communicating easier. The PowerPort PC Card line is no exception. In fact, our dual-function PowerPort Platinum™ Pro can be used simultaneously as a cellular-ready modem and Ethernet adapter. So you can use the modem while connected to your network.

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Astound’s drawing tools and select the Extrude command. The dialog box that appears lets you adjust perspective, depth, and light-source direction; Astound then pulls the shape out to give it a 3-D form. However, you can extrude only shapes, not text, and you can’t rotate the extruded objects. For 3-D text and other effects you can’t get with Astound’s Extrude command, you have to import 3-D text and objects from more fullfeatured modelers, such as Adobe Dimensions or Ray Dream’s AddDepth.

You can make object surfaces and slide backgrounds even more interesting visually with Astound’s new texture fills. You select either an object or the background and fill it with a texture, just as you’d fill it with a color via the Object Fill dialog box. You can choose one of 50 textures, including colorful fractal designs, wood grains, and cloud patterns, that come bundled with the program.

The Object Fill dialog box itself is still poorly designed. There is one large Preview window, and the five kinds of fills — patterns, gradients, textures, and foreground and background colors — each have their own preview window as well. This can become rather confusing. For instance, if you select a wood-grain texture as a fill, you’ll see a preview of the wood grain in the Texture preview window as well as in the large Preview window. At the same time, you’re looking at fills you considered earlier, such as a checkerboard pattern that remains visible in the Pattern preview window and a pink foreground color that remains visible in the Foreground Color preview window.

Radio buttons for choosing which kind of fill you’re using would probably work better than six preview windows.

The appropriately named Tween feature creates some fun effects. After you have selected any two objects created with Astound’s shape drawing tool, the Tween effect will draw a series of intermediate shapes between them. You can show all the shapes at once, or you can display each intermediary shape one at a time, for an animated transformation effect.

On the more practical side, Astound now has a Document Colors palette, which gives you a choice of modifiable color schemes you can use throughout a slide or your presentation. However, unlike PowerPoint, Astound doesn’t help you find colors that work well together.

**Your presentation** has even more interactive appeal with Astound 2.0’s abilities to hide and reveal objects or launch another application when you click on an element.

A new panel lets you start, stop, fast-forward, rewind, and pause your presentation. This panel is convenient when you’re addressing a lively group and is particularly useful as a previewing tool when you’re setting up your presentation.

The new floating button palette is a great idea executed in a mediocre way. The palette changes according to which item you’ve selected and what you can do with the item, but several of the button icons are so small and poorly designed that it’s difficult to figure out what the buttons do.

This feature-packed update gobbles up almost 8 MB of RAM. Astound 2.0 comes on a CD-ROM jammed with templates, clip art, QuickTime movies, and sounds. The program imports and exports all the major graphics, sound, animation, video, spreadsheet, and text formats, and you can create self-running presentations for Mac as well as Windows computers and distribute presentations with a run-time player.

**The Bottom Line**

With the latest release of Astound, Gold Disk has packed improvements into an already versatile and feature-rich program. Version 3.0 makes creating dramatic multimedia presentations even easier. / Shelley Cryan

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**Astound 2.0**

**Price:** $249.95 (list).

**Pros:** PowerPC-native. Sounds can span multiple slides. Slide markers. More interactivity features. More graphics options, including texture fills.

**Cons:** Poorly designed tool bar and Object Fill dialog box.

**Company:** Gold Disk, Santa Clara, CA; 408-982-0200.

**Reader Service:** Circle #407.
Adaptive Solutions PowerShop
Accelerator card supercharges Photoshop.

YOU CAN NEVER be too thin or too rich, and you can never run Photoshop too fast, particularly if you’re a prepress or publishing professional. Even for those lucky enough to own a top-of-the-line Power Mac 9500/132 loaded to the gills with RAM, using Photoshop can still be a huge time sink, especially if it’s processing humongous image files.

Enter the Adaptive Solutions PowerShop, a Photoshop-accelerator card that is available for NuBus as well as PCI Macs. Billed as “The Power of 64,” the PowerShop has four DSPs onboard, each of which has sixteen 25-MHz coprocessors. In our tests, the PowerShop delivered impressive results, making a variety of Photoshop functions as much as 13.5 times as fast. The card is street-priced at about $2,000, and we think it will easily be worth the price to graphics pros who rely heavily on time-consuming Photoshop operations. An added plus is the PowerShop’s ability to work with Kodak’s high-end DCS series of digital cameras — the PowerShop speeds image acquisition from the cameras and allows users to capture more image data.

Power Up
Installing the PowerShop is as simple as with any other Mac PCI or NuBus card — either version takes up only one card slot. The software consists of a control panel and a PowerPC- or 68040-based Photoshop plug-in. To find out what sort of speed gains users can expect from the PowerShop, we performed four Photoshop operations — Mode Conversion, Unsharp Mask, Arbitrary Rotate, and Resize — on a 50-MB file. We tested the PCI version of the PowerShop on a Power Mac 9500/132 and the NuBus version on a Quadra 950. Each machine had 256 MB of RAM and a Radius accelerated-graphics card — the Power Mac 9500 was equipped with a ThunderColor 30/1600 and the Quadra 950 with a Thunder IV GX (the DSP daughtercards on the Radius cards must be disabled when the PowerShop card is in use).

The PowerShop delivered the most dramatic speed gains to the Quadra 950. Overall speed results showed that Photoshop ran almost 8 times as fast as on a stock Quadra 950 and more than twice as fast as on a Quadra 950 equipped with a Radius Thunder IV GX. And with the PowerShop installed, the Quadra 950 was even able to outperform the Power Mac 9500 aided by the Radius ThunderColor 30/1600 in three out of four of our Photoshop test operations — Unsharp Mask, Arbitrary Rotate, and Resize.

Although the speed gains with the PowerShop running on the Power Mac 9500 were not as impressive as on the Quadra 950, they were significant enough to make investment in the card well worth it for users looking to squeeze every ounce of speed out of Photoshop. With the PowerShop, the Power Mac 9500 was able to process operations more than 2.5 times as fast overall as without it. And compared to the speed of the Power Mac 9500 with the ThunderColor 30/1600, the PowerShop-equipped Power Mac 9500 was twice as fast overall.

Although the PowerShop does not accelerate mode conversions from RGB to CMYK on PCI Macs, although it does so on NuBus Macs. In fact, in our tests with the PCI-based Power Mac 9500, we saw a slight decrease in speed for mode conversions when using the PowerShop. According to Adaptive Solutions, mode conversions are not accelerated on PCI Macs because the native handling of these functions is already quite fast and since the functions are slowed by the shuttling that occurs between the Mac’s processor and the PowerShop. On the other hand, the Quadra 950 equipped with the PowerShop was more than 3 times as fast as a stock machine at processing the mode conversion. It’s also important to note that, currently, the PowerShop does not accelerate third-party Photoshop plug-ins, although Adaptive Solutions says it plans to add plug-in support soon.

Picture Perfect
The PowerShop is also a plus for users of the Kodak DCS series of digital cameras. Included with the card is Adaptive Solutions’ CNAPShot Photoshop plug-in. Replacing the Kodak software that comes with the camera with the CNAPShot plug-in gives you the option of acquiring images as 48-bit files, rather than as 24-bit files. That means you have more flexibility for making tonal adjustments with Photoshop in highlight and shadow areas than you do with a 24-bit file.

Teamed with the PowerShop, the CNAPShot plug-in also doubles the speed of image acquisition — in our tests, we were able to acquire an 18-MB image in about 11 seconds with CNAPShot, compared to about 22 seconds with the Kodak plug-in.

Once you’ve adjusted your image and converted it back to 24-bit format, you can use the other component of CNAPShot, the PhotoPerfect filter. Adaptive Solutions says this filter eliminates noise in images without requiring you to convert the images from RGB to Lab Color in Photoshop and fiddle with the channels. But in our tests, we
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COLOR MANAGEMENT

Is frustration over color inconsistency between the screen image and the printed image making you see red (especially if you wanted to see green)? Color management promises to iron out color discrepancies, but does it? Find out in the April issue of MacUser. Our editors perform real-world tests using current top color management technology and tools. If you want to know how to get the best out of color management, this issue spells it all out in black and white.

APRIL AD CLOSE: TUESDAY, JANUARY 23, 1996

REMOVABLE STORAGE

Anyone who uses removable storage knows that all systems are not created equal. In the April issue, MacUser editors look closely at various technologies that power the different magnetic and optical media and drive mechanisms. What are their strengths, their weaknesses... and which of today's emerging technologies promise to be tomorrow's standards? Our editors also put magnetic and optical media to the test for media durability, speed and performance. You'll be getting the whole removable storage story, inside and out.

PRESS-READY

Prepress pros will appreciate an added bonus available free to registered PowerShop users. ImageXpress’ ScanPrepPro Photoshop plug-in (a $695 value), teamed with the PowerShop, speeds the process of acquiring images from scanners. It improves the quality of your scans and automatically generates press-ready line art, halftones, and separations. You supply information on the source of your image (ScanPrepPro has a long list of scanner profiles) as well as on final output size and output device, and ScanPrepPro automatically processes the image and produces a press-ready file. In our tests, ScanPrepPro took less than 2 minutes to process a 50-MB file and only 50 seconds to process an 18-MB file — a fraction of the time it would take to process the files manually. The plug-in can also process any existing image that opens in Photoshop.

THE BOTTOM LINE

Overall, the Adaptive Solutions PowerShop accelerator card lives up to its billing. If you are looking for a way to speed up Photoshop operations but can’t afford a new high-end PCI Power Mac, the PowerShop is a cost-effective alternative that will give you speed better than that of a stock Power Mac 9500/132 for running Photoshop. And you won’t have to throw away the significant investment you’ve made in hard drives, RAM, and other accessories for your NuBus Mac. If you already own a top-of-the-line PCI Power Mac, the PowerShop can, cumulatively, shave off a significant amount of the time you spend every day manipulating images in Photoshop. / Rick Oldano

Adaptive Solutions PowerShop

Price: $2,000 (estimated street).
Cons: Current version doesn't accelerate all Photoshop operations. Lacks support for third-party filters.
Company: Adaptive Solutions, Beaverton, OR; 800-482-6277 or 503-690-1236.
Reader Service: Circle #408.
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**QUICK CLICKS**

**Chagall / Surreally poor design**

BILLIED AS AN EASY-TO-USE painting and image-editing application that doesn't require a lot of RAM, Chagall is actually an awkward program that has little functionality as a creative tool.

You have access to most of Chagall's painting, masking, and special-effects tools in floating palettes. But the icons are confusing: The Lightener and Darkener tools (which work like the dodge and burn tools in Photoshop) look like brushes, and the Toner and Restorer tools look like pencils.

The drawing and painting tools are difficult to manage. Each pen and brush has modifiable settings for spacing as well as size and opacity. Spacing determines how fast you can draw. The lower the spacing, the slower — and theoretically, the more smoothly — the brush follows your strokes. But the results are inconsistent, and we frequently ended up with a series of dots instead of lines, even with a fairly low spacing setting. Some of the tools create anti-aliased lines, and some don't. You can't change the smoothness of lines after you draw them. Furthermore, drawing tools can have only an odd number of pixels.

Chagall can run with a minimum of 4 MB of RAM, as advertised, but it really needs much more. With 4 MB of RAM, there's no room for an undo buffer if you're working on a 2-MB image. In addition, the tools don't work efficiently and caused irregular movements and inaccurate strokes even when we ran the program on a Power Mac and allocated 30 MB of RAM to it.

**Inelegant Undos.** In fact, the unlimited undos Chagall boasts of are a misnomer. The Undo feature doesn't undo your last action; it makes your image revert to what it looked like the last time you issued the Update Undo command.

The texture that appears under the Chalk, Lightener, and Darkener tools gives you the illusion of working on real-life paper, but you're stuck with only one kind of paper and a very grainy one at that.

You can paint a mask onto your image and edit the mask within the image file or save it separately as its own editable, grayscale image file. However, you can't change the opacity of the mask overlay. You can edit or store only 1 mask channel with each image — a shame, considering that you can save images as Photoshop 2.5 files, which support up to 24 channels.

Chagall's documentation is sketchy and unbalanced. For instance, it describes in great detail how check boxes work but provides information on TIFF only, even though it has its own proprietary file format and supports five more.

There is nothing outstanding or unique about Chagall, and its counterintuitive interface and poor performance keep it from being competitive on any level. / David Biedny and Nathan Moody

**Chagall 1.0 / Price:** $299 (list). **Company:** Technosystems USA, Radcliff, KY; 800-417-0108 or 502-351-0108. **Reader Service:** Circle #410.
**QUICK CLICKS**

**QX-Tools / XTension XPansion**

SPORTING A SLICK, integrated interface patterned after the popular Now Utilities, QX-Tools, a set of ten XTensions for QuarkXPress, will streamline your desktop-publishing tasks.

Printing in QuarkXPress finally gets some perks with QX-Print. With it, you can print noncontiguous ranges of pages, specify that a document’s spot colors be printed as process colors, and print a selected number of color plates in a color-plate job. Without QX-Print, you either have to print every color plate in a job or only one at a time.

With QX-Filters, you can apply Photoshop filters to images within a QuarkXPress document. You can create especially dramatic effects if you create a mask within QuarkXPress and mask out parts of an image to which you’ve applied a filter.

QX-Viewer gives you a thumbnail view of any page or spread in your QuarkXPress document. When you click on any area in the thumbnail view, your document window zooms in on that area—at up to 900-percent magnification, twice the maximum 400-percent magnification level you get in an XTension-less QuarkXPress.

The QX-Scaler extension provides a floating palette that lets you scale an object by dragging the item handles to resize it. You can select which elements of an object you want scaled, such as text or borders, and only those elements get resized.

Other nifty XTensions in the QX-Tools set include QX-Layers, which enables you to create layers in your QuarkXPress document and shuffle, lock, hide, and delete them; QX-Tips & Tricks, which gives you a QuarkXPress tip when you open or quit QuarkXPress; and QX-Dingbats, which displays all the characters in a typeface. When you click on a character in the QX-Dingbats window, QX-Dingbats automatically places the character in your document. The XTension even comes with five dingbats typefaces.

**Over-XTended.** Two other XTensions are less impressive. QX-Bars lets you create customized floating tool bars and stuff them with icons for various QuarkXPress functions—the result may make QuarkXPress look as unattractive as Microsoft Word 6. If you drag one of these tool-bar palettes to the edge of your screen, it becomes a docked button bar.

QX-Styles adds character-level styles to QuarkXPress style sheets. However, like similar extensions from other companies, QX-Styles doesn’t really create a character-based style sheet; it simply uses glorified shortcuts for applying character formatting. It updates your text formatting by using little more than high-speed search-and-replace for character attributes.

So you won’t be bogged down with too many of these XTensions at once, QX-Manager lets you turn XTensions on or off and define XTension sets. Even if you end up using only two or three of the QX-Tools, this package would be a steal at twice the price.

**Eric Taub**

SCSI PowerPlug II / Plug and play live
IF YOU FIND YOURSELF shutting down your Mac several times a day just to add, remove, or swap SCSI devices on your SCSI chain, the SCSI PowerPlug II can make your life a whole lot easier. The PowerPlug II connector, with its digital active termination and software, lets you exchange SCSI devices while your computer is on.

Easy SCSI Swapping. To add a device to your SCSI chain, you select any open SCSI ID in the PowerPlug control panel and click on the Add Device button. Then you move the data-throughput switch on the connector to the off position, attach the SCSI device (with a non-conflicting SCSI address), and turn the switch back on. The PowerPlug II uses its own driver during the mounting process, which prevents some of the driver-incompatibility problems that plagued the first PowerPlug. The PowerPlug II driver closes itself as soon as you unmount a device.

You might have trouble unmounting a SCSI device that wasn't mounted with the PowerPlug software. In such cases, the PowerPlug software tries to close the device's driver, but it warns you if it can't. If the software isn't able to close the driver, the driver will remain active and you may have problems mounting other SCSI devices, unless you shut off your Mac first.

With the PowerPlug II, you can save money by sharing one backup device and, most important, save time by not having to shut down constantly. / Jim Galbraith


DOS Mounter 5.0 / Download DOS files fast
WHEN YOUR CLIENTS hand you DOS-based removable cartridges or floppy disks, you can mount them and download the information quickly and easily with the latest version of DOS Mounter.

Driven Driver. DOS Mounter 5.0 transfers files from DOS media to your Mac four to five times as fast as System 7.5's PC Exchange does. This speed increase is due to the MultiMounter SCSI driver, which DOS Mounter installs. Transfers are another 20 percent faster on PowerPC-based computers, since DOS Mounter 5.0 comes in a PowerPC-native version. MultiMounter is compatible with SCSI Manager 4.3, and it will give your Mac a speed boost when you're doing Finder copies as well as when you're accessing DOS media from within Mac applications.

The other key component of DOS Mounter is the improved MultiFormatter, which lets you use your Mac to format, partition, and test DOS-based SyQuest and magneto-optical cartridges. And now MultiFormatter lets you create Mac and DOS partitions on the same cartridge.

Windows and DOS users who want to access and format Mac media in the same way that Mac users access PC media can get DOS Mounter's PC counterpart, Software Architect's Here & Now.

In short, DOS Mounter 5.0 bridges the gap between PC and Mac data in the easiest and fastest way possible. / John Rizzo

DOS Mounter 5.0 ★★★★★ / Price: $89.95 (list). Company: Software Architects, Bothell, WA; 800-405-0002 or 206-487-0122. Reader Service: Circle #413.
When Wildflower Productions wanted to build a groundbreaking interface to digital maps, they couldn’t use just any authoring tool. They needed one that delivered real innovation, real fast.

That’s why they chose SuperCard for their dazzling new TOPO! series of interactive topographical maps. Wildflower discovered what many top-notch developers already know:

SuperCard is the fastest, most flexible tool for delivering professional quality, cross-platform multimedia applications.

- Applications that stand out from the crowd with unique interface features, unparalleled user interactivity and complete platform support that the other tools just can’t deliver.
- Applications that can be easily reused with new content, so you can deliver the next version without starting from scratch.
- Applications that leverage your time by letting you build your own custom authoring tools, accelerating your development to new levels.

SuperCard’s simple scripting language, extensive media support and straightforward object-based approach make it easy to start your projects yet offer the depth required for even the most seasoned developers, such as Wildflower.

Whether your mission is delivering a multimedia CD-ROM title, corporate-level CBT, or a fully custom “shrink-wrapped” application such as TOPO!, SuperCard is clearly the authoring tool of choice.

So, when you’re ready to blaze a new trail in multimedia, pick up a copy of SuperCard today...and start putting your work on the map.

FREE SUPERCARD TRIAL VERSION
Call 800-255-8258 or visit our web site at www.allegiant.com for more information.

CIRCLE 68 ON READER SERVICE CARD
GrabNet 2.0 / Internet PIM

WORLD WIDE WEB BROWSERS don't give you a convenient way to save URLs (Uniform Resource Locators) or manage the mountain of information you can download. Using GrabNet, an information-gathering tool, in conjunction with a browser, you can use a command or drag-and-drop to save a URL, so you can return to a Web site by double-clicking on its URL or on an icon you create for it.

Granted, Netscape Navigator and other browsers can perform many of the same functions, although to a more limited extent. Netscape Navigator, for instance, lets you create URL bookmarks, but it doesn't let you keep notes with URLs and create icons for them, as GrabNet does. GrabNet also requires just a few mouse clicks to download and save all or part of a Web site.

Grab and Drop. GrabNet 2.0 has Finder-like hierarchical folders, Macintosh Drag and Drop URLs, and the ability to export Web pages to HTML. Drag and Drop is the most impressive of these new features. You can drag URLs onto the desktop or into any folder in the Finder. You can even drag Web-page elements into other applications that support Drag and Drop. For instance, you can drop a graphic from a Web page into a Microsoft Word or Adobe PageMaker document.

GrabNet 2.0 isn't a must-have item, but it does give Net surfers a better way to gather and organize information. / William Harrell

CyberSound FX / QuickTime-audio postproduction

YOU CAN ADD a subtle volume boost to the quieter portions of your audio track or create the sound of a robot gurgling under water in your QuickTime movies, with CyberSound FX. This new set of plug-in filters for Adobe Premiere lets you engineer your own postproduction-like sound effects directly within your videos.

The 15 plug-ins are a collection of controls for popular sound effects. Using the plug-ins, you can shift pitch, add reverb or flange, and equalize tones or balance volume levels in any portion of your sound track. In Premiere's construction timeline, you apply the sound effects as you would apply a filter to an audio clip and use the various slider controls — up to nine, as in the case of the multiple-delay plug-in — to create just the effect you want.

Learning by Ear. The plug-ins come with several descriptively named templates, such as Chipmunk Voice and Indoor Basketball Court, which are extremely helpful for guiding you through the daunting number of possible control settings and can give you a starting point. CyberSound FX's online help gives you descriptions of each slider and tips on using it.

Most important, the audio effects you create with these modules sound great. For the punch it packs in creating an awesome sound track, CyberSound FX is a terrific value. / Jeffy Milstead

RAM Doubler

The more memory your Mac has, the more productive you'll be. But forget about adding SIMMs. RAM Doubler is software that doubles your Mac's memory. RAM Doubler does what it says it will do.—Macworld. And you don't have to open your Mac. Just run RAM Doubler's 15 second installation and you can run twice as many applications — instantly. May well be the best investment you make this year.—MacUser. You'll agree. Buy RAM Doubler today and double your RAM with one click. Your satisfaction is guaranteed. RAM Doubler is available wherever great software is sold.
If you still think CD is a read-only medium, it's time you discovered the error of your ways.

That's because Olympus has turned CD into something you can write to, as well. And while there are other CD writers out there, none holds a prayer to what the Deltis™ CD-R2 can do.

Not only is the CD-R2 double-speed, it's multi-session and multi-format, too. So you can record just about whatever you want, and start and stop recording wherever and whenever you choose. It's also designed to adapt to future formats, so it won't become obsolete overnight.

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All of which make this CD recorder perfect for packing up to 650 MB of information or presentation materials, with audio and animation, onto a disk. As well as for making your own music, data or Photo CD.

So call 1-800-347-4027 and find out where you can get the Deltis CD-R2 today.

Because with so much going for it, you simply can't go ROM.
BeyondPress / QuarkXPress yourself on the Web

WITH THE ATTENTION the World Wide Web has been getting recently, it's not surprising to see the development of authoring packages designed to help users generate HTML (HyperText Markup Language, the Web's language) quickly. One of the latest contenders in this field is Astrobyte's BeyondPress QuarkXPress XTension, which turns QuarkXPress layouts into Web pages.

Easy Translation. BeyondPress' major strength is that it lets you generate basic HTML code with minimal effort. With BeyondPress, you can integrate any or all of the elements in your QuarkXPress layout into a list of HTML elements and create a basic, modifiable Web page, which BeyondPress calls an article. You can preview your articles, using your favorite Web browser. HTML tags (such as for line breaks and horizontal rules) can be inserted into articles without having an effect on the original QuarkXPress layout; in fact, manipulating any HTML element doesn't alter the QuarkXPress layout. Type styles set in QuarkXPress translate into HTML automatically, and BeyondPress lets you map QuarkXPress style sheets to HTML styles. We did notice, however, that BeyondPress doesn't generate the cleanest, most efficient HTML code we've seen, which means you should expect to spend some time tweaking the output yourself for maximum efficiency.

Tinkering Required. BeyondPress is especially problematic with graphics. It sets up HTML code for graphics placement and linking, takes a graphic from QuarkXPress (in TIFF, PICT or EPS format), and turns it into a JPEG or GIF file. The compression, transparency, and interlacing controls are adequate, if not as thorough as we'd like. All images are dithered to the 8-bit Mac color palette, whether you want that palette or not and regardless of the image's previous format and color depth.

Also lacking is support for some of the more colorful HTML 3.0 commands (such as those for creating customized backgrounds and color text). Designers will usually have to wind up reworking graphics outside BeyondPress by using image-translation and image-editing programs and relinking them to the Web page. In addition, with the growing number of commercial HTML-authoring options, we think BeyondPress' $595 price is too high.

BeyondPress is a solid program for using QuarkXPress as a template tool for generating basic HTML code, but it's almost impossible to use without resorting to a word processor to further refine the code. BeyondPress may provide a good start for creating well-designed, attractive Web sites, but it isn't a one-stop application.

David Biedny and Nathan Moody

Yield to Temptation

The XCLAIM™ GA True Color Graphics Accelerator from ATI reveals a vista of 16.7 million accelerated colors at resolutions you'll be powerless to resist — up to 1600 x 1200. And you'll experience performance up to eight times faster than unaccelerated graphics.

The fruit of ATI's years of expertise and proven track record in PCI technology, XCLAIM GA is designed for all PCI-based Power Macs.

In fact, it's based on the same graphics accelerator technology Apple chose for some of their new PCI Power Mac 9500 series. You'll enjoy Mac-specific features like AppleGuide on-line help, as well as unparalleled customer support and a tantalizing price — only $449 for 2MB, $649 for 4MB, and $249 for a 2MB memory upgrade module.

XCLAIM GA True Color Graphics Accelerator from ATI. Don't Resist.

For more, call one of the resellers below or contact ATI via Fax Info to receive literature at (905) 882-2600, Press 2, Document 3000; CompuServe at GO ATITECH; Worldwide Web at http://www.atitech.ca; or call (905) 882-2600, Press 1 for Sales.

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Mac Mall 1-800-222-2808
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Mac Zone Micro Center for nearest location call 1-814-481-9041
NCA Computer Products 1-800-993-1260
NEC Direct 1-800-961-9209
PrePress Direct 1-800-443-6600
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PC & MAC Connection 1-800-600-1171
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Quicken Family Lawyer / Legal software on the mark

MOVE OVER, NOLO PRESS — there's a new player in the legal-software arena. Intuit recently acquired Parsons Technology and its It's Legal product. Now renamed Quicken Family Lawyer, this product sports a brand-new, elegant interface and more online legal help than you can shake a gavel at.

Dozens of Documents. Quicken Family Lawyer can prepare 61 different documents that are automatically customized for each state (if necessary), and it includes state-specific notary forms. The documents are grouped according to category — Estate Planning, Powers of Attorney, Health & Medical, Family/Personal, Real Estate, Employment, Consumer Credit, Corporate, and Financial — and involve legal matters applicable to both home and business.

There are two ways to create a document: the interview method, where Family Lawyer asks you a question and you type the answer, and the fill-in-the-blank method. The interview provides an easy way for people with little legal knowledge to create a legal document; the fill-in-the-blank method is quicker and is suited to people familiar with law and the legal process. Each method will give you an accurate and legally binding document comparable to any prepared by an attorney. We compared a Power of Attorney document we created with Family Lawyer to one created for us by a practicing lawyer, and the documents were virtually identical.

Family Lawyer's new interface is clutter-free, simple, and elegant, and the help system is extensive and reassuring. When you create a document, you get tips from hint panes to the left of every screen (similar to Quicken's Q Cards) and a Document Reference section, accessible from Apple Guide or the toolbar, that gives advice tailored to the current document. Apple Guide also contains an interactive tour and product support as well as the Legal Reference Help System, for explanations of legal terms and concepts. The program lets you know when you need to consult an attorney, such as when a legal matter is beyond the scope of a basic legal template.

Password protection is available on a document-by-document basis — we would have preferred passwords for each user. The built-in spelling checker contains 100,000 words, including legal terms, but lacks an Ignore All button.

Problematic Printing. Printing is Family Lawyer's weakest point: You can't edit the Print Preview, and the program doesn't currently support fractional widths. Family Lawyer has several print options, but you can't change a document's fonts or margins. However, you can export a finished file in RTF or text format and open it in a word processor to take advantage of its layout and printing options.

Quicken Family Lawyer offers a plethora of legal documents, a good interface, and an attractive list price of $49 — enough to challenge any product in the Nolo Press line for the top spot in Mac legal software. / Ken Gruberman

Quicken Family Lawyer 1.0  ★★★★★ / Price: $49 (list). Company: Parsons Technology (An Intuit Company), Hiawatha, IA; 800-223-6925 or 319-395-9626. Reader Service: Circle #417.

What Do You Do With A $100 Digital Video Camera?

Have A Ball.

QuickCam™ includes everything you need to make movies and take pictures with your Mac. Plug in one cable, install the software and you're ready to roll. Add still photos to documents, newsletters, databases. Record QuickTime® training movies, video conference, create animated cartoons — all for around $100. Works with all QuickTime compatible software and on all QuickTime compatible Macs, including PowerBooks®. It's easy, fun, and your satisfaction is guaranteed. Get your QuickCam today where fine computer products are sold.

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CIRCLE 64 ON READER SERVICE CARD
The meeting's in an hour, the charts are in Windows, and you can't find the sticky with the client's address.

Let's talk System 7.5

Millions of Apple® Macintosh® users are finding that life at the office is a whole lot easier with Macintosh System 7.5—especially in a crunch.

It's better organized, so you can be too.
System 7.5 is full of new ways to help you be more efficient. Like 'WindowShade' to let you get at what's behind a window without closing or moving it: a double click on the title bar and the window disappears, but the bar stays. 'Find File' now has more search criteria so you get to the document you want, faster. And the Apple menu has new hierarchical sub-menus that take you straight to control panels and applications—no more clicking your way through layers of windows.

Putting it all together.
Integrating other people's work into yours is a snap with System 7.5. No matter what application or personal computer they used, System 7.5 treats their files just like Macintosh files. And now with a free copy of MacLinkPlus translators, it's even easier to share material with others.

A whole new level of on-line assistance.
System 7.5's new Apple Guide interactive help system walks you through functions step by step, pointing out exactly what to do next. Now you can learn faster by 'doing', instead of just reading instructions.

It's powerful, it's easy to see—it's the new operating system for your Macintosh.

Of course the best time to upgrade to System 7.5 is before the next crisis hits. So order today by calling 1-800-950-5382 ext. 785 (1-800-361-6075 ext. 131 in Canada). Or call 1-800-538-9696 ext. 250 for the Apple reseller nearest you.
CHOOSING THE RIGHT MAC

By Shelley Cryan

Buying a computer is a lot like purchasing stock. Pick the right one, at the right time and at the right price, and — Nirvana. It’s tricky business, though, with thousands of dollars at stake. So how do you win? It boils down to a pair of Ws: When to buy and What to buy.

When is easy: now. Trouble is, it’s always now. Because computer prices drop and features improve over time, computers are cheaper and more powerful at any given moment than ever before. You’re back to where you started.

But this time, “now” is an even better answer than usual: Apple’s second-generation Power Macs, with dramatically faster PowerPC chips and PCI expansion slots, ushered in unprecedented Mac computing power — and forced down prices on their less endowed (but still formidable) first-generation cousins. The advent of the first Mac OS-compatible computers further fueled price cuts: Clone makers Power Computing, DayStar Digital, and Radius are all offering their own Mac OS systems, bringing the total number of currently shipping machines to roughly three dozen — all jockeying to be the best value.

That brings us back to the other W — What to buy — and that’s where we come in. To help answer that question, we sat down and identified four major groups of Mac users: home-based users, academics, creatives, and businesspeople. We created a profile of an archetypal user within each group and identified an ideal machine for that user, basing our decision on features, specs, price, bundled software and hardware, and expansion and upgrade options. We also profiled a handful of alternative users, whose needs (or budgets) vary one way or another from the “typical” user in each group.

Finally, we scanned the ranks of the 100 or so discontinued Mac systems still available in the used-computer market and identified suitable systems in each category; these may appeal to you if you’re willing to sacrifice some speed or features for a bargain price.

Your job is to find yourself in these pages. Family-finance managers, check out the Home section. Moviemakers and graphic artists, turn to the Creatives section. Academics and businesspeople, well, you get the idea. Among the handful of profiles in each section, we hope you’ll find one that mirrors your situation.

In the fast-changing world of computers, we can’t guarantee that the prices and specs on the following pages will be accurate by the time you read this article. But any changes will probably be in your favor: Your dream machine may have a higher-capacity hard drive, faster clock speed, and/or better price than what you see listed here. If only the stock market behaved that way, we’d all be rich.

Freelance writer Shelley Cryan has used Macs at work, school, and home and has assisted national consumer and fashion magazines in identifying the right Macs for their staffs.
CHOOSING THE RIGHT MAC

THE MAC AT HOME

Bill Payer, 38 / hospital administrator, father of three

WHY BUY? "I use a computer at work. My wife uses one at work. Two of our three kids use computers at school. Everything's going digital. It's inevitable.

"Besides, last week at the computer store, my kid whipped me in Glider. I need to sneak in some late-night practice."

PLANNED COMPUTER USES. Manage family finances. Occasionally pull up spreadsheets from work. Keep in touch with far-flung extended family via e-mail. Kids say they want to use it for homework. Bill knows they also want to play the latest multimedia CD-ROMs. Wife needs it for after-hours work and also wants to explore landscaping software.

PURCHASE CONSTRAINTS. Oldest daughter uses Macs in her eighth-grade class and is keen on researching projects online. Bill can afford a decent system but doesn't want to pay for extraneous features. And with yard work, soccer-coaching duties, and chauffeuring the kids around, who has time for setup hassles?

RECOMMENDED SYSTEM. Apple Performa 6205CD

Bill had a tough time deciding between this machine and the Apple Performa 5215CD. The latter is essentially the same machine with a slower modem and a single case that contains both monitor and computer.

DRAWBACK. The biggest drawback of the 6205 is that its internal expansion options are limited: It has slots for Apple's proprietary video-capture and TV-tuner cards, but it does not accommodate the far more versatile (and popular) PDS, NuBus, or PCI expansion-card options for supporting larger monitors, hard-drive arrays, or network adapters.

RECOMMENDED SYSTEM

Apple Performa 6205CD

- 73-MHz PowerPC 603 processor
- 8 MB of RAM
- 1-GB hard drive
- 4x CD-ROM drive
- 15-inch Apple Multiple Scan Color Monitor
- 28.8-kbps internal fax modem

Price: $2,099
The Home-Office Professional / startup entrepreneur needs affordable versatility

WHO. Bill's neighbor, Max, runs a successful consulting business out of his spare bedroom. He loves the tax write-off — and the 15-second commute. His daily challenge: making clients think his suburban high-ranch is a corporate high-rise. Max needs a system that can help him impress his clients.

RECOMMENDED SYSTEM. Power Computing Power 100

WHY. Max can crank out polished presentations and reports quickly, thanks to the power of the 601 chip. Without an art staff, he relies on clip media he can access via the speedy CD-ROM drive, which also comes in handy for after-hours entertainment. A slower modem could save him some cash, but he'll need the added speed for research on the Internet's World Wide Web. The terrific home-office bundle jump-starts his software collection, with such titles as Quicken and Now Up-To-Date & Contact.

Jostlin' Elders / retirees in RV need affordable portability

WHO. Bill's parents are retired, but they're busier than ever. Mom is the wheel of their well-equipped RV; Dad's the chief navigator and gas pumpers. This month, it's Arizona — next month, who knows? The senior Payners plan to research destinations online and will keep in touch with friends and family via e-mail. A pair of fat pension checks each month, plus income from substantial investments, keeps them well in the black. They plan to maintain financial health by using personal-finance software.

RECOMMENDED SYSTEM. Apple PowerBook 190cs

WHY. About the size of a fat spiral notebook, this PowerBook tucks nicely beside the passenger seat of the space-constrained RV. The color screen adds $350 to the price, but since they don't have space for a desktop monitor, the senior Payners will appreciate a color image. The fax-modem card is critical — since friends and family can't reach them by phone too easily, the Payners will rely on their electronic mailbox as their cyber-answering machine. The 190cs is upgradeable to PowerPC status.

DRAWBACKS. You pay a premium for portability — for the same money, you can get a much speedier desktop model. The 190cs' passive-matrix screen is far less vivid than a desktop monitor.

Jetsons' Aspirations, Waltons' Budget / full features on a shoestring

WHO. Bill's fellow youth-soccer coach, Ham String, is new to computers. He wants a Mac, but the kids' braces, dance classes, and fancy high-tops leave his wallet thinner than a microchip. He and his wife have got a decent stash socked away, but that's for college.

RECOMMENDED SYSTEM. Apple Performa 631CD

WHY. There isn't a new, complete computer system with family-friendly features for less than you'll pay for a 631CD. It comes with nearly everything you need, including a CD-ROM drive, a monitor, a fax modem, and a passel of family-targeted software. When money pressures ease up, they can upgrade to PowerPC performance.

DRAWBACKS. Everything — the CD-ROM drive, the fax modem, and the processor — is relatively slow. The monitor is on the small side. Although the 631CD is upgradeable to PowerPC via the Macintosh Processor Upgrade Card (about $600), it will not be able to support Apple's advanced Copland operating system, likely to ship in early 1997.

Used-Mac Option

WHY. The Performa 550CD combines the monitor and CPU in a single box, so it's unobtrusive in the den (and easily moved to the dining-room table when necessary). It's no speed demon, but it's perfect for pounding out the Great American Novel or the Mediocre Book Report.

DRAWBACKS. Sluggish processor and CD-ROM drive. Only enough RAM to run one, or perhaps two, applications at the same time. The hard disk will fill up fast.
CHOOSING THE RIGHT MAC

Belle Curve, 18 / college freshman, liberal-arts major

WHY BUY? "My uncle offered me his old electric typewriter to take to school. Yeah, right. Like I'm really going to sit there with my little bottle of white-out, blotting out typos page-by-page. Who do I look like, Wilma Flintstone? Get real. I've been using computers since seventh grade."

PLANNED COMPUTER USES. Write term papers, do research online and with reference CD-ROMs. Practice French lessons with CD-ROM-based tutor. Hook into campus mainframe. Exchange e-mail via the Internet with high-school buddies who are now at faraway colleges. Beg parents for money via e-mail.

PURCHASE CONSTRAINTS. Belle's got to keep her entire computer cost — CPU, monitor, printer, and software — under $3,000. Her parents say this computer is the last one they'll buy her, so she needs it to have a decent life span.

RECOMMENDED SYSTEM. Apple Performa 5215CD

WHY. The 5215CD's all-in-one design is tailor-made for a cluttered dorm room. With the monitor built right into the chassis, Belle has minimal cable spaghetti to contend with. And moving the computer from dorm to home to apartment is no problem.

This computer's a champ on the inside too. It's speedy enough to handle Belle's assignments, and the onboard PowerPC processor will be ready for Apple's forthcoming Copland operating system.

Since Belle, like most other college kids, can look forward to cramped living quarters, buying the listed add-ons can let the Mac take the place of several dorm de rigueurs. Unmodified, out of the box, the computer will double as an answering machine; add decent speakers, and the Mac becomes a fine audio-CD player. And with the Apple TV/Video System, Belle can watch Letterman — or Masterpiece Theater, Mom — right on the computer screen and even capture and edit video snippets for use in multimedia term papers.

Bundled software will help Belle stay within her budget: ClarisWorks is more than powerful enough to generate any college report, and although many of the 5215CD's programs are geared for younger kids, she'll get good mileage from the included dictionary and atlas. Oh — the games may prove useful too.

For the best deal, Belle ought to purchase her computer from her campus computer store, which may be able to pass along special pricing and software bundles aimed at students (the price we show here is what she'd pay in a computer superstore or electronics store). If her school doesn't sell computers, she should call Apple's Campus Direct sales program (800-780-5006) and investigate the always changing, and often terrific, deals Apple offers students.

DRAWBACK. The relatively slow modem is OK for cruising commercial online services and for exchanging e-mail, but if Belle's dependent on the modem for Internet access, she'll definitely want to upgrade. Conversely, if her school offers a faster Internet connection via Ethernet, she may still have to buy a new modem, because the 5215's Ethernet card ($149) displaces the built-in internal modem.
ACADEMIC ALTERNATIVES

Mac to School / primary-grade computer lab

**WHO.** Belle's aunt teaches fourth grade at a financially strapped elementary school and is on the purchasing committee for the school's small computer lab. She's in luck — Apple offers special discounts and hardware/software bundles to school districts.

**RECOMMENDED SYSTEM.** Apple Macintosh LC 580

**WHY.** The LC 580 is a solid performer at a low price, enabling schools on tight budgets to introduce their students to computers. Its all-in-one design, with the monitor and CPU housed in a single case, is particularly convenient for computer labs. Teacher training and materials are available separately. If Belle's aunt wants to purchase a computer for home use, she should contact Apple's Educator Advantage (800-800-2775), where she'll find great deals for K – 12 educators.

**DRAWBACKS.** The processor and CD-ROM drive are slow, and the monitor is on the small side by today's standards.

Publish-or-Perish Portable / prof on the move needs mobile power

**WHO.** Belle's academic advisor, literature professor Dee Construct, needs a computer to do online research; track students' grades; argue with far-flung colleagues via e-mail; and, most important, work on her latest monograph. The computer must accompany Dee everywhere — office, library, home, and her favorite coffeehouse.

**RECOMMENDED SYSTEM.** Apple PowerBook 190

**WHY.** The 190 lets Dee be ready whenever a flash of genius strikes. Now that she's got her latest manuscript on the PowerBook, her briefcase is considerably lighter. If only the computer could tackle that heap of paper in her office.

**DRAWBACKS.** Can't add an internal CD-ROM drive. Portability jacks up the price.

The Brainy Boyfriend / engineering tasks require flexible muscle

**WHO.** Belle's first-semester beau, Dexter, is an engineering grad student who needs a computer to handle serious number analysis and complex scientific modeling. He also writes his own programs and wants to have enough horsepower to handle whatever he might throw at it. He's got a stash of grant money, so he can afford the computer he needs.

**RECOMMENDED SYSTEM.** Power Computing PowerWave 604/120

**WHY.** Many specialized, small-market data-acquisition cards, in fields such as medical imaging and gas chromatography, are available only as NuBus cards and are unlikely to appear in PCI versions. Yet investing in a NuBus-only machine closes off the promised speed boost and lowers prices of PCI cards. The PowerWave offers NuBus as well as PCI slots, so Dexter gets the best of both worlds, along with a blazingly fast CPU boosted by a Level 2 cache.

**DRAWBACK.** Power's Stargate technology, for combining NuBus and PCI slots on the same board, is brand-new and unproven.

Used-Mac Option

**RECOMMENDED SYSTEM.** Apple PowerBook 520

**WHY.** Without any bells and whistles, the 520 offers zippy performance on all basic academic tasks, from calculating test grades to cranking out essays and poems. It's speedy, small, and light enough to tote around campus in a backpack. Video-out capabilities mean you can hook the 520 up to a desktop monitor, and built-in Ethernet is set to connect to the college network. Finally, when you've saved enough pennies, you can upgrade the 520 to PowerPC.

**DRAWBACKS.** Theft is a very real risk with any portable computer, especially in a dorm. Buying a used PowerBook is inherently risky — you never know what machines have been through. The passive-matrix screen is tough on the eyes over extended periods.
CHOOSING THE RIGHT MAC

THE CREATIVE MAC

Art Deco, 29 / designer, Entertainment Life magazine

WHY BUY? “Six years ago, our magazine was among the first to toss out the waxers and pasteup boards and go digital with some then-blazing Macs — Ilfx's and Iici's. Now, my buddies at other magazines haze me about our prehistoric hardware. Sure, we've put in some upgrade cards and accelerators, but even those are now old. I hate waiting for complex spreads to open in QuarkXPress. I'm tired of slow redrives. I need a new Mac.”

PLANNED COMPUTER USES. Page design, page design, and page design, all day long. Hopping among QuarkXPress, Adobe Illustrator, and Adobe Photoshop. Occasional forays into type-manipulation software to create fancy drop caps and funky-looking headlines. Exchanging files over fast Ethernet with rest of magazine staff.

PURCHASE CONSTRAINTS. Given the magazine's purchasing track record, this is the last new machine Art will see for some time. It's got to last, and Art's boss has finagled sufficient funds for the right machine.

RECOMMENDED SYSTEM. Apple Power Mac 9500/132

WHY. To handle complex manipulations on high-resolution images, Art needs the muscle of the Power Mac 9500's speedy, powerful 604 chip. And the Power Mac 9500's six expansion slots allow Art to install the add-on cards his networked, highly customized production machine needs — a fast-Ethernet card for network file transfers, a video card to drive his 21-inch monitor at a 24-bit color depth, a Photoshop accelerator, and a Fast-and-Wide SCSI-2 adapter for the external hard drive that serves as the magazine's image repository.

When next year's purchasing budget comes through, Art may request a tape drive or magneto-optical drive for installation in one of the 9500's two vacant 3.5-inch SCSI-device expansion bays.

DRAWBACKS. Can't use older NuBus expansion cards without purchase of an external card chassis. Physically difficult to add memory or PCI cards or to swap the processor daughtercard. Can't use SIMMs from older machines; requires purchase of DIMMs (or use of third-party SIMM adapters).

RECOMMENDED SYSTEM
Apple Power Mac 9500/132
- 132-MHz PowerPC 604 processor
- 32 MB of RAM
- 2-GB hard drive
- 4x CD-ROM drive
Price: $5,999

RECOMMENDED ADD-ONS
- Keyboard
- 21-inch color monitor
- 24-bit accelerated-graphics card
- Photoshop-accelerator card
- Fast-Ethernet adapter card
- Fast-and-Wide SCSI-2 adapter
- 64 MB of RAM (two 32-MB DIMMs)
Estimated price of add-ons: $9,000
CREATIVE ALTERNATIVES

**Image Magician / prepress pro wants Photoshop to fly**

**WHO.** Art sends all his photo retouching work to Michelle, a one-woman service bureau who cleans up the large, four-color files, working almost exclusively in Adobe Photoshop.

**RECOMMENDED SYSTEM.** Power Computing PowerWave 604/150

**WHY.** The PowerWave boasts the fastest shipping PowerPC chip, which will without a doubt be handy for processor-intensive Photoshop work. The 604 chip is on a daughtercard, so when faster chips become available, it'll be easy just to pop one into the PowerWave.

Of more immediate value to Michelle is Power Computing's proprietary Stargate technology, which lets the PowerWave accommodate NuBus as well as PCI cards. That means Michelle can squeeze some extra mileage out of her aging NuBus graphics-accelerator and Photoshop-accelerator cards until she can spring for newer, faster PCI cards.

**DRAWBACK.** Unproven Stargate technology.

**Recommended Add-ons:** 21-inch color monitor, 24-bit accelerated graphics card

**Estimated price of add-ons:** $4,600

**Multimedia Developer / pixel pusher wants Mac with workstation power**

**WHO.** Art's design-school roommate, Sol, followed a different route after graduation: He's employed at a successful multimedia-development company. There he creates and edits video clips, 3-D graphics, and animations. He pulls up high-resolution photos and morphs them, recolors them, and rearranges their pixels. Until now, he wouldn't have been able to do this kind of CPU-intensive work on a Mac and his company would have been taking out a bank loan to purchase an SGI workstation.

**RECOMMENDED SYSTEM.** DayStar Genesis MP

**WHY.** With not one, but four, PowerPC chips at its core, the Genesis MP has the potential to become the world's fastest Mac, at least at compute-intensive tasks such as 3-D rendering, blurs, and a variety of distortion effects — the sort of stuff Sol sometimes waits days to complete. The new Genesis MP promises to reduce that downtime considerably.

**DRAWBACK.** Few programs can tap the Genesis MP's full power yet.

**Recommended Add-ons:** 21-inch color monitor, NuBus accelerator

**Estimated price of add-ons:** $4,200

**Presentation Producer / taking control of sound, video**

**WHO.** Another of Art's college buddies took the corporate route after graduation. C.B. works for an in-house production department at a Fortune 500 company, where she's often called on to produce slick investor-relations presentations and corporate training materials. Output is often on videotape, but slides and on-screen presentations are also included.

**RECOMMENDED SYSTEM.** Apple Power Mac 8500

**WHY.** The AV subsystem on the 8500 is its claim to fame. Straight out of the box, it supports capture, display, editing, and output of full-motion, 24-bit video and CD-quality audio. The DAV 2 expansion slot lets you add third-party video-compression hardware. And the processor is on a separate card, so upgrading to a faster chip is, literally, a snap.

**DRAWBACKS.** Physically difficult to access innards. Old SIMMs won't work in 8500.

**Recommended Add-ons:** 17-inch color monitor

**Estimated price of add-ons:** $850

**Used-Mac Option**

**Recommended System**

**Apple Quadra 840AV**

- 33-MHz 68040 processor
- 16 MB of RAM
- 600 MB hard drive
- CD-ROM drive
- Keyboard

**Used price:** $1,875

**Recommended Add-on**

- 21-inch color monitor

**Estimated price of add-on:** $2,000

**WHY.** The upshot of the waning days of NuBus is that older NuBus cards can be purchased cheaply, packed into a powerful 68040-based Mac such as the Quadra 840AV, and used to create a formidable graphic-arts workstation. The Quadra 840AV's DSP (digital-signal processor) architecture accelerates a variety of Photoshop tasks and supports digital-audio and -video recording. Apple has announced it will offer an 8100/80AV logic-board upgrade for the 840AV (about $1,200). **DRAWBACKS.** Lack of PowerPC chip means slower performance on potent PowerPC-native applications. Low-capacity hard drive.
CHOOSING THE RIGHT MAC DOWN TO BUSINESS

WHY BUY? “Meetings with the marketing staff, strategic-planning sessions, ad design consults, budget battles — I've got precious little time at my desk. Who has time to futz with a poky, underpowered computer? It's time to upgrade so my computer can keep up with me.”

PLANNED COMPUTER USES. Number crunching, creating and playing back multimedia presentations, report writing, project scheduling. Ivana often likes to run several applications concurrently. And who knows what new uses may arise? Next week, Ivana may need to jump into teleconferencing.

PURCHASE CONSTRAINTS. It's a headache to navigate the capital appropriations procedures for a new machine, so Ivana wants to make sure her new computer has plenty of room to grow. Her new Mac has to incorporate state-of-the-art technology and be easy to upgrade.

RECOMMENDED SYSTEM. Apple Power Mac 7500/100

WHY. Apple's Power Mac 7500 offers Ivana three things she prizes: speed, upgradability, and versatility. Her thousand-plus-cell spreadsheets recalcul in an instant, and animated presentations run smoothly.

Three PCI slots put this machine on the technological cutting edge; the processor is what will become obsolete first, in a few years. She's covered there — the processor's on a daughter card, so upgrading will mean a simple card swap. Furthermore, the 7500's newly designed chassis makes its logic board and other innards extremely accessible. If Ivana's calendar weren't so full, she could see for herself that installing an add-in card in a Power Mac 7500 is actually enjoyable.

Plenty of RAM lets Ivana keep several applications open at once, making it easy to refer to detailed spreadsheet data while she cranks out weekly financial-status reports. The roomy hard disk is far from filled, even after Ivana loads her varied applications. Built-in video-in ports let her transfer snippets of proposed TV commercials to use in computer-based presentations. And, with Apple's optional QuickTime Conferencing Kit ($200), she'll be able to meet face-to-face with colleagues on other floors of her building — without taking the elevator.

DRAWBACKS. The biggest minus of the 7500 is the price tag: about $1,000 above machines a tier lower. At press time, Apple was still tracking down printing bugs in the 7500's system software.

Ivana Profi t, 42 / product manager, Nifty Widget Co.
ALTERNATIVE BUSINESS MACS

No-Frills Efficiency / administrative assistant gets basic speed

WHO. Ivana's loyal and efficient assistant, Bob, keeps her organized; manages her schedule with a calendar program; types her letters; sends and receives faxes; and updates and distributes Ivana's presentations and project schedules, accessing them over the office's Ethernet network.

RECOMMENDED SYSTEM. Power Computing Power 100

WHY. If Bob's computer slows him down, Ivana can miss important, timely information. That means Bob's computer must be speedy. But it doesn't need multimedia razzle-dazzle; as long as Bob can plug into the office network, he's all set. The Power 100 edges out its competition — the Apple 7200 models — by omitting a CD-ROM drive and delivering more processing power for less money.

DRAWBACKS. The Power 100 lacks PCI slots and instead packs older, slower NuBus expansion slots. The processor is attached to the motherboard, making processor upgrades trickier than for the 7500, for example.

Demanding Mucky-Muck / a system for an exec who craves power

WHO. Ivana's boss's boss, Napoleon, has assigned Ivana the dubious honor of recommending his next Mac. From what she knows about his job, she's certain he doesn't need the AV features of Apple's 7500 and he knows that a 120-MHz processor will satisfy even Napoleon's craving for power. She's left, then, to debate whether to be frugal and get a NuBus system or ride the cutting edge by suggesting a costlier PCI box.

RECOMMENDED SYSTEM. Power Computing PowerWave 604/120

WHY. Ivana feels that the PowerWave 120 is an ideal executive-class computer. Its main processor is on a daughter card, for easy upgrades; it comes equipped with a performance-boosting Level 2 cache; and it ships with Microsoft Office. She also decides to save $250 by forgoing the NuBus/PCI option and betting on PCI as solid, promising technology. When she explains this to Napoleon, he praises her foresight.

DRAWBACK. The PCI/NuBus flexibility is untried technology.

The Go-Between / straddling the Mac/PC divide

WHO. Ivana's financial-planning manager, Jason, provides up-to-date profit-and-loss statements for Ivana's product-management team. He's also in charge of providing his team's profit estimates to the parent corporation and must use a custom-built, DOS-based application to do so. He spends about 30 percent of his time in DOS.

RECOMMENDED SYSTEM. Apple Power Mac 7200/90

WHY. Jason's day-to-day duties, which focus on dollars and cents, don't require enormous processing power. What he does need is zippy DOS performance, so Jason opts for a hardware approach rather than software-based PC emulation. PCI-based cards are speedier than NuBus cards, so Jason picks Orange Micro's 420 card, a PCI card sporting a 66-MHz 486 processor and 8 MB of RAM. Always the bean counter, he forgoes Apple's speediest PCI processor is attached to the motherboard, making processor upgrades trickier than for the 7500, for example.

RECOMMENDED SYSTEM. Apple Power Mac 7200/90

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Used-Mac Option

WHY. The Quadra 610 is a workhorse. It's no match for a PowerPC-based machine, but it is more than adequate for many business tasks. Built-in Ethernet provides an easy fit into most offices, and in case PowerPC power becomes necessary, a now-discontinued 6100/60 logic-board upgrade is still available from dealers (about $1,100).

DRAWBACKS. The processor is relatively slow. Room for just one expansion card (PDS or NuBus). Low-capacity hard drive.

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ALTERNATIVE BUSINESS MACS, CONTINUED

Salesperson Unplugged / making a case on the road

WHO. Wanda, the top salesperson in Ivana’s division, uses any available tool to convey her message to her clients, including multimedia presentations with jazzy sound and snazzy animated graphics. She’s on the road constantly, so she also relies on her computer for more-mundane tasks such as faxing and e-mailing and keeping a customer database.

RECOMMENDED SYSTEM. Apple PowerBook 5300c

WHY. The 5300 is a snappy business-productivity computer, and presentations will look terrific on its active-matrix color screen. Wanda could have saved $1,000 by opting for a dimmer passive-matrix screen, but she can’t be sure every client will have a spare monitor impressive enough for her presentations. Many of her pitches are created in the Promotions Department, and — thanks to the 5300’s infrared transceiver and a desktop IR receiver — she can transfer them to her PowerBook easily.

DRAWBACKS. The active-matrix screen hogs battery power; spare batteries are a must. Can’t accommodate an internal CD-ROM drive.

Convenience Unleashed / new business needs room to grow — without hassle

WHO. Ivana’s younger sister, Maura, is launching an upscale dog-grooming business. She’s no computer whiz — she cares far more about bites than bytes — but she needs a Mac for maintaining a customer list, performing accounting, producing invoices, and perhaps producing handbills to pass out at dog shows. She’ll consider her computer purchase a success if the computer works out of the box and she doesn’t have to think about new computer hardware or software for at least the next few years.

RECOMMENDED SYSTEM. Apple Performa 6300CD

WHY. The Performa 6300 was designed for home users, but its powerful 100-MHz processor and generous software bundle make it a fine first Mac for business. Convenience is the concept here. Nearly everything Maura needs — hardware and software — comes in a single package. Heck, she could go to her local computer reseller on her way back from the kennel, purchase the system, set it up, and produce her first memo in less than an hour. The 6300CD — the most muscular Performa ever — is powerful enough to handle her fairly predictable computing needs. Plenty of RAM, hard-disk space, and speed ensure that she won’t have to worry about the care and feeding of her Mac for years to come.

DRAWBACK. The processor is attached directly to the motherboard, so upgrading will be difficult, if not impossible.

Quantitative Quality / sophisticated number crunching demands processing muscle

WHO. For assistance mapping out a strategic-marketing plan for her product, Ivana relies on her company’s management-information director, Mark, who analyzes sales records, industry statistics, demographic data, and economic indicators to uncover potential sales.

RECOMMENDED SYSTEM. Power Computing Power 120 minitower

WHY. Serious number crunching needs serious power — and a 120-MHz 601 processor offers plenty. Its speed will help when Mark’s trying to analyze multivariable relationships while three product managers wait — impatiently — for information. A Zip drive is handy for archiving reports.

DRAWBACKS. No PCI. Minimal built-in color bit depth supported, although this shouldn’t be a problem for data crunching.

Used-Mac Option

RECOMMENDED SYSTEM. Apple Power Mac 6100/60

WHY. Getting a used 6100/60, the original entry-level Power Mac, is a great, inexpensive way to hop on the PowerPC bandwagon. Newer, faster models put strong downward pressure on the price, making this a terrific bargain.


Used price: $950

RECOMMENDED ADD-ON

• 15-inch color monitor

Estimated price of used add-on: $150

RECOMMENDED SYSTEM. Apple PowerBook 5300c

• 100-MHz PowerPC 603e processor

• 16 MB of RAM

• 750-MB hard drive

Price: $4,499

RECOMMENDED ADD-ON

• 28.8-kbps fax-modem card

Estimated price of add-on: $300

RECOMMENDED SYSTEM. Apple Performa 6300CD

• 100-MHz PowerPC 603e processor

• 16 MB of RAM

• 1.2-GB hard drive

• 4x CD-ROM drive

• 15-inch color monitor

• 28.8-kbps internal fax modem

Price: $2,799

RECOMMENDED SYSTEM. Power Computing Power 120 minitower

• 120-MHz PowerPC 601 processor

• 16 MB of RAM

• 2-GB hard drive

• Internal Iomega Zip drive

• Keyboard

Price: $3,438

RECOMMENDED ADD-ONS

• Accelerated-graphics card

• 17-inch color monitor

• 10BASE-T Ethernet connector

Estimated price of add-ons: $2,500

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CHOOSE THE RIGHT MAC

YOUR 680x0 MAC IS STARTING TO SHOW ITS AGE. IT'S SERVED FAITHFULLY, BUT YOU'RE TIRED OF WATCHING FRIENDS' POWERPC-NATIVE APPLICATIONS BLAZE. AND YOU SUSPECT (JUSTIFIABLY) THAT APPLE WON'T BE SUPPORTING 680x0 MACHINES IN FUTURE SYSTEM-SOFTWARE ROLLOUTS.

THE TIME HAS COME TO UPGRADE TO A POWER PC PROCESSOR. BUT WITH ALL THE UPGRADE CARDS, PROCESSOR SWAPS, AND MOTHERBOARD REPLACEMENTS, WHICH PATH DO YOU TAKE?

FIND YOUR MAC IN THE LIST ON THE LEFT, AND NOTE THE PATH NUMBER WE'VE ASSIGNED IT. THEN FIND THE BOX WITH THE CORRESPONDING PATH NUMBER TO SEE HOW YOU CAN UPGRADE YOUR MAC.

A COUPLE OF CAVEATS: BE AWARE THAT YOUR OLDER MAC MAY NOT PERFORM AS SPEEDILY AS POWER MACS WITH SIMILAR PROCESSORS, Owing TO OLDER DATA-BUS ARCHITECTURES, SLOWER HARD DRIVES AND VIDEO CARDS, AND SO ON. ALSO, KNOW THAT ALTHOUGH UPGRADE CARDS WILL LET YOU USE POWERPC-NATIVE SOFTWARE, THEY WON'T LET YOU RUN COPLAND, APPLE'S UPCOMING POWERPC-ONLY OPERATING SYSTEM, WHICH WILL WORK ONLY ON MACS THAT HAVE POWERPC CHIPS ON THE MOTHERBOARD.

FINALLY, BE AWARE THAT APPLE HAS DROPPED LOGIC BOARD UPGRADES TO POWER MAC 6100, 7100, AND 8100 STATUS FROM ITS PRICE LIST. THERE ARE STILL A FEW FLOATING AROUND AT DEALERSHIPS, BUT IF YOU WANT ONE, FIND IT FAST AND BUY IT.

PATH 1

PREREQUISITE: Upgrade to Ici.
POWERPC UPGRADE: DayStar 100-MHz Turbo 601 ($1,299) or 66-MHz Turbo 601 ($899).
TYPE: PDS card.
PROCESSOR: 100- or 66-MHz PowerPC 601.
NOTES: Requires dealer installation (about $50). You get the 7100 motherboard, you'll probably want to add more RAM as well. Be sure to get the L2 cache — it's well worth the extra $125 to $260.

PATH 2

UPGRADE: Apple Power Mac 7100 motherboard ($1,599).
TYPE: Motherboard replacement.
PROCESSOR: 80-MHz PowerPC 601.
NOTES: Requires dealer installation (about $50). Once you get the 7100 motherboard, you'll probably want to add more RAM as well. Be sure to get the L2 cache — it's well worth the extra $125 to $260.

PATH 3

PREREQUISITE: Upgrade Performa- and LC-class Macs to Performa 475/LC 475.
POWERPC UPGRADE: Apple 50-MHz Processor Upgrade ($695); DayStar 100-MHz PowerCard ($999) or 50-MHz PowerCard 601 ($649).
TYPE: Processor replacement.
PROCESSOR: 100- or 50-MHz PowerPC 601.
NOTES: These upgrade processors replace the 68040 chip on your system's motherboard. The Apple upgrade must be installed by a dealer (about $50); it includes System 7.5 and ClarisWorks 3.0. The DayStar upgrade, which includes System 7.5, is sold as a do-it-yourself kit, with tools and instructions. But beware: Installation can be tricky.
UPGRADES

By Roman Loyola

PATH 4

PREREQUISITE: Upgrade Performa- and LC-class Macs to Performa 575/LC 575 or better.
POWERPC UPGRADE: Apple 66-MHz Processor Upgrade ($659); DayStar 100-MHz PowerCard 601 ($999) or 66-MHz PowerCard 601 ($649).
TYPE: Processor replacement.
PROCESSOR: 100- or 66-MHz PowerPC 601.
NOTES: These upgrade processors replace the 68040 chip on your system's motherboard. The Apple upgrade must be installed by a dealer (about $50). It includes System 7.5 and ClarisWorks 3.0. The DayStar upgrade, which includes System 7.5, is sold as a do-it-yourself kit, with tools and instructions. But beware: Installation can be tricky.

PATH 5

POWERPC UPGRADE: DayStar 100-MHz PowerPro 601 ($1,299) or 40/50-MHz PowerPro 601 ($529); Apple Power Mac 6100 motherboard ($1,049).
TYPE: The DayStar upgrades are PDS cards. The Apple upgrade is a motherboard replacement.
PROCESSOR: The DayStar cards use a 100-, 50-, or 40-MHz PowerPC 601 processor. The 6100 motherboard contains a 66-MHz PowerPC 601.
NOTES: The 100-MHz DayStar card works at 80 MHz in the Centris 610. It requires System 7.5 (not included — $58); a NuBus-card adapter ($59) is also required. An included control panel lets you switch back and forth between the PowerPC processor and the motherboard's 68040 processor. The 7100 motherboard must be installed by a dealer (about $50). Be sure to get the L2 cache — it's well worth the extra $125 to $260.

PATH 6

UPGRADE: DayStar 100-MHz PowerPro 601 ($1,299); Apple 7100 motherboard ($1,599).
TYPE: The DayStar card is user-installable. It requires, but doesn't ship with, System 7.5 ($98 from Apple). An included control panel lets you switch back and forth between the PowerPC processor and the motherboard's 68040 processor. The 7100 motherboard must be installed by a dealer (about $50). Be sure to get the L2 cache — it's well worth the extra $125 to $260.

PATH 7

UPGRADE: Apple Power Mac 6100 motherboard ($1,049).
TYPE: Motherboard replacement.
PROCESSOR: 66-MHz PowerPC 601.
NOTES: The 6100 motherboard uses a PowerPC 601 processor and comes with 8 MB of soldered-on RAM and two 72-pin DRAM SIMM slots.

PATH 8

UPGRADE: DayStar 100-MHz PowerPro 601 ($1,299) or 50/66-MHz PowerPro 601 ($529).
TYPE: PDS card.
PROCESSOR: 100-, 66-, or 50-MHz PowerPC 601.
NOTES: The DayStar cards are user-installable and require, but do not ship with, System 7.5 ($98 from Apple). A control panel lets you switch between the PowerPC processor and the motherboard's 68040 processor.

PATH 9

UPGRADE: Apple Power Mac 8500 motherboard.
TYPE: Motherboard replacement.
PROCESSOR: 120-MHz PowerPC 604.
NOTES: The 8500 motherboard gets you a PowerPC 604 on a daughterboard, meaning that future processor upgrades should be as easy as swapping a card (and not necessarily from Apple). Quadra 800-series owners can take half a step up and upgrade to a Power Mac 8100, for $1,999. Availability and price are yet to be determined.

PATH 10

UPGRADE: Apple Power Mac 5300/6300 motherboard ($699 to $799).
TYPE: Motherboard replacement.
PROCESSOR: 100-MHz PowerPC 603e.
NOTES: Comes with 1 MB of VRAM. Requires installation by dealer (about $50). Performa 630 owners will need to buy more RAM. This upgrade won't be available until early 1996.

PATH 11

UPGRADE: Apple Power Mac 7500 motherboard.
TYPE: Motherboard replacement.
PROCESSOR: 100-MHz PowerPC 601.
NOTES: Requires dealer installation (about $50). The 7500 motherboard has the processor on a daughterboard to make future processor upgrades simple. Availability and price are yet to be determined.

PATH 12

You're out of luck: There aren't any upgrade paths for these machines. Pony up for a new PowerPC-based system; to get extra speed, try Connectix's Speed Doubler ($55); or add more RAM. For Power Mac models, you might also try adding a Level 2 cache ($125 to $260); using a clock accelerator from Newer or Alacrity (each about $100 to $300); or if you can find one, try a PowerPC 604-based Total Power application-accelerator card (about $1,500, from Total Impact).

PATH 13

These machines are part of the current Macintosh line and are too current to have an upgrade path. Since their processors are on daughterboards, upgrading the processors will simply involve a daughterboard swap. And instead of having only one source (Apple) for getting new processors, you can expect third-party vendors to offer solutions. If you need extra speed now, you can use Connectix's Speed Doubler ($55) or any of the clock accelerators from various vendors or you can add more RAM.
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The Smart Shopper

You've done the research. You've got the money. You're finally ready to buy a computer... or are you? By Nikki Echler

Believe it or not, figuring out where to buy your Mac may be just as important — and just as difficult — as deciding which one to buy. Should you go to the superstore downtown that seems to have everything, or should you drive directly to your local dealer? Depending on your needs, you may not even need to leave the comfort of your home.

Mac compatibles from DayStar Digital, Power Computing, and Radius are sold at only a few types of outlets, making your decision on where to buy such systems fairly easy. But Apple's Macs are sold in an ever-increasing variety of places nationwide. To help you sort through this array of outlets, we've grouped stores into seven kinds — local dealers, superstores, value-added resellers, mail-order companies, campus stores, refurbishers, and online stores — based on characteristics they have in common. We'll tell you what to expect and what not to expect from each type of store, in terms of service, pricing, and selection. In the end, you'll know where to shop, based on your particular needs, and how to get the best deal.
CHOOSING THE RIGHT MAC

WHAT IT MEANS TO BE APPLE-AUTHORIZED

In order to sell Macs, a store must be authorized by Apple. In other words, it must comply with a host of restrictions and regulations. But different types of stores apply those rules in different ways. For example, although all Apple-authorized resellers must offer customer service, the level of service varies — from simply sending Macs under warranty back to Apple for repair to providing on-site installation and troubleshooting. (Reseller is a general term used to describe any vendor that sells Macs.)

In order to become Apple-authorized, a reseller must purchase at least $500,000 worth of Apple products per year. Most resellers can choose to buy directly from Apple or through distributors. The price difference to the reseller is minimal, however, unless it sells $5 million worth of Apple products a year. Mass merchandisers (generally large national chains such as CompUSA) that deal in such volume pay Apple's B-level prices, which are discounted 3 to 5 percent by Apple. They then pass these savings on to consumers. Everyone else either pays A-level prices or buys from a distributor that offers a price point somewhere between the A- and B-level ranges.

Resellers must also abide by Apple's minimum-advertised-pricing policy. This means that if a store advertises a sale price below Apple's established price for a specific product, the store forfeits the co-op fund that Apple rebates it for that product. The co-op fund is a percentage of each store's sales of each product and can be a significant chunk of change — one that can be quite painful to lose.

Stores have figured out how to get around this policy, however. Most sell below the Apple price, even if they don't advertise below the set rate. (However, don't expect to get any great deals on hot new models, such as the Power Mac 7500 and 8500, that resellers can't even keep in stock.) Other stores bundle various non-Apple-brand products, such as a monitor and a scanner, with the Mac and then advertise "unbeatable" prices on the whole bundle. Although this scheme prevents Apple from figuring out where the price cuts are coming from, it doesn't always work. If Apple suspects that a store is breaking the rules, it can take away the store's co-op fund, without warning or without explaining why.

SMALL AND FRIENDLY: LOCAL DEALERS

Long ago, before computers became big business, you pretty much had only one option of where to go to buy a Mac — a local dealer. These small, independent stores still exist, although there are fewer of them now than there were several years ago. Like small-town doctors, local dealers are there to hold your hand, to see you through your time of need. In effect, they care.

Generally knowledgeable and enthusiastic about the Mac, local dealers often sell products that the store owner or manager personally likes and recommends. And although the salespeople at these stores aren't required to take any Apple-sponsored training classes, local dealers breed informed salespeople almost by default. You are, after all, what you sell.

Many local dealers also double as complete authorized service centers — a real boon if you have any problems with your Mac once you get it home. All new Apple products are covered by a one-year warranty, but for immediate repairs, you have to take your computer to an authorized service center. Otherwise, you must either send your Mac back to Apple or, if you're covered by an on-site service warranty such as the one included with Performas, wait for Apple to come to you.

But although local dealers generally offer excellent service, you won't get rock-bottom prices from these stores. That's because most local dealers do not move large amounts of inventory and therefore do not receive Apple's top discounts. In our experience, however, local dealers can often come close to matching the prices offered by superstores.

BUYING FROM BOZOS / 10 stupid things our salesman said

YOU'D BE SAFER buying a Mac from a monkey than from several of the salespeople we met. We could hardly believe our ears in some cases. Here are some of the more entertaining statements we heard while shopping for a Mac:

1. "How long would we have to wait to take this machine home?"
   "You can take it home today, if we have it in stock."
   "Well, do you have it in stock?"
   "Um, no."

2. "This machine has a multimedia. It is so popular that pretty soon it will probably be impossible to buy a computer without it."
   "What is a multimedia?"
   "Well, a multimedia plays audio CDs and answers your telephone."

3. [Our salesman as he ran his finger down a feature list]
   "This Performa has eight em-bees."
   "What's an 'em-bee'?
   "Just a second. Let me look it up."

4. "Why is this color printer the same price as the monochrome printer?"
   "Because it's been discontinued, and HP shipped us a lot of them."
   "Discontinued? Could we still get tech support for it?"
   "Of course. It's not officially discontinued. Besides, there are a lot of them out there."

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BIG BUT BUSY: SUPERSTORES

Walk down the wide, impersonal aisles of Circuit City or CompUSA. Wind through the dizzying forest of bedspreads and fitted sheets at Sears. Keep going... Keep going... Eventually you will find the Macs squeezed in between the PCs and the portable phones.

Superstores are broadly defined to include large electronics stores such as Circuit City, mass merchandisers such as Sears, computer superstores such as CompUSA, and warehouse stores such as Costco. You can expect low prices from these Goliaths, but you won’t find the same Mac-savvy salespeople that you do at local dealers. Nor will you always find the entire line of Macs. For example, Sears, the Wiz, and Staples carry Performas only.

What makes the superstores most appealing, however, is their convenience. Many towns are not large enough to support a local dealer. Superstores, however, are usually a mere car ride away from Anywhere, USA. These ubiquitous stores also tend to stock a large supply of Macs; you can frequently take the product of your choice home the same day. And many superstores offer extended shopping hours as well as store credit lines, making shopping even more accessible and affordable.

If a local dealer does exist in your area, however, your best bet is to use the superstores for pricing leverage: The hassle involved in getting reliable, quick service at a superstore isn’t worth the minimal savings. Salespeople at superstores must remember the basic selling points for a huge selection of products for Macs and for PCs, and they frequently must help several customers simultaneously.

TARGETING NICHE MARKETS: VARs

Value-added resellers (VARs, for those in the know) sell high-end, custom-configured Macs to specific types of users, such as graphics professionals and small-business owners. Although many VARs operate like regular stores — you can go in on any day and purchase any of the products for sale — they also act as personal consultants, helping you configure your system. Apple also requires VARs to provide installation and ongoing support for the systems they design for you. So, for example, a VAR that specializes in graphic design should be able to recommend, set up, and troubleshoot a system that suits the hefty-RAM, high-speed, and big-screen needs of most graphics professionals. It should also be able to offer useful advice on, say, color-management systems and prepress software and hardware.

Unlike other authorized resellers, VARs must purchase only $25,000 worth of Apple products per year and they must purchase those products from distributors such as Merisel; Americas, Inc.; and Ingram Micro rather than from Apple itself. And Apple does not allow VARs, unlike other resellers, to sell Performas. But one of the biggest differences between VARs and other resellers is that VARs are usually not willing to budge on price, even by a nickel.

INEXPENSIVE AND EASY: MAIL-ORDER COMPANIES

If you want rock-bottom prices, then you should start flipping through mail-order catalogs. Mail-order companies can sell Macs for very low prices, because they deal in huge quantities and don’t incur the high overhead that storefront sellers do. Also, buying from mail-order companies can often allow you to bypass state sales taxes — money that can score you a modem or a set of stereo speakers.

Although you are legally required to pay your state’s sales tax on any product you purchase from an out-of-state mail-order company, most people don’t bother coughing up the dough when buying a system for personal use, and no harm ever comes to them. However, because some states are starting to demand their share of the wealth, some mail-order companies are required to collect state sales tax from you. Before choosing a mail-order company, be sure to read the fine print on your order form that tells you whether or not you have to pay state sales tax.

Be forewarned, however, that mail-order companies provide very little assistance in choosing a system. They are even less help if you have installation or repair problems. If you call up a mail-order company to ask a
CHOOSING THE RIGHT MAC

technical question, the representative will most likely forward you to Apple's help line. Also, be aware that although some mail-order companies offer 30-day money-back guarantees, these might not apply to Apple products.

Apple began authorizing companies to sell Macs through the mail only about a year ago, but many of these mail-order companies — such as MacMall, MacWarehouse, and The Mac Zone — have been in business for years, selling software, hardware, and accessories, and have built up solid reputations. Still, if you purchase a computer from a mail-order company, you should be sure to pay with a credit card so that you'll have some form of recourse if you don't get what you want or if it doesn't make it to your door. We've heard horror stories from people who paid less reputable companies by check and never got their merchandise or who got the wrong product but never got their money back.

FOR COLLEGES ONLY: CAMPUS STORES

Apple offers a special educational discount to college students, staff, and professors that can often save you more money than if you bought from a mail-order catalog. Apple allows each university to have one authorized reseller on its campus that offers the discount. The more Macs a school sells, the higher the discount from Apple and the lower the cost of Macs for students. Savings are always quite good, no matter what the sales levels are, however. You can usually find hardware and software for at least 10 to 20 percent less than you can at any of the other outlets.

TRUE-LIFE TALES / a Silicon Valley shopping extravaganza

CONFUSED BY CONSTANTLY changing computer features? Don't know which Mac to buy? You aren't alone. Chances are, your local computer salesperson is equally befuddled.

That's what we found when we sent two of our editors on a quest to buy a new Mac. Our editors shopped at five types of stores — a local dealer, a consumer-electronics retailer, a computer superstore, a mass merchandiser, and a mail-order house — using the same guise: novice users who wanted to buy a home system after getting jobs in an office that uses Macs. We noted how each type of store fared when it came to ambiance, service, recommendations, post-sale support (other than honoring Apple's warranty), pricing, and selection. By comparing the experiences we had in dealing with each type of store, you'll gain valuable insight into the great gamble that is computer shopping.

LOCAL DEALER: COMPUTERWARE

AMBIENCE: Clean and well organized. Packed with Mac products, from computers to Escher mouse pads. Neil Young played on the stereo.

SERVICE: Wandered around for two minutes before a smart, well-informed salesman named "Jeff" came over. Jeff listened to our system criteria and then asked a few detailed questions. Based on our answers, he suggested an appropriate Mac. He also clearly explained the pros and cons of a few alternative systems.

RECOMMENDATIONS: A Performa 631CD. Jeff told us that this all-in-one Mac had everything we needed and was relatively inexpensive. Jeff also mentioned a Power Mac 6100 but said that although it was faster, it might be excessive since we wouldn't be working with graphics. For a printer, he suggested "any lower-priced model from Apple or HP." Jeff suggested that we invest in a set of inexpensive computer speakers too.

POSTSALE SUPPORT: Sure, Jeff would help out, but maybe we should think about buying an extended three-year warranty from General Electric, which covered on-site service (parts and labor) for hardware problems.

PRICING: Performa 631CD, $1,499; Power Mac 6100, $1,849; Altec Lansing ACS53 computer speakers, $79; GE warranty, $159 to $179 — depending on the price of the system. Total: $1,737 to $2,107.

SELECTION: A well-chosen variety of peripherals, software, and gadgets. The clear omission was a pleasant one: nothing PC-related.

CONSUMER-ELECTRONICS RETAILER: FRY'S

AMBIENCE: Wild West motif carried throughout the store, poorly masking the gray industrial building. Computers were conveniently displayed on a shorn-off, simulated covered wagon. The illusion of a train track was created on the floor by alternating patterns of linoleum. Pop music blared.

SERVICE: Waited five minutes before the chat- ing group of salesmen disbanded and "Sid" approached us. Sid was willing to help but had to consult a specifications binder every time we asked a question. Eventually, Sid suggested a Performa 6116CD (the system we were physically closest to), but by then he had lost all credibility due to his lack of knowledge and his apparent confusion. "John," his supervisor, overheard and quickly took over. John's knowledge wasn't much better.

RECOMMENDATIONS: To meet our needs, the minimum system we should get would be a PowerPC-based Mac. For economy, our best bet would be a Performa 6200CD. A good printer for our purposes would be either the Apple StyleWriter 1200 or the Hewlett-Packard DeskWriter 660C.

POSTSALE SUPPORT: We could try calling, but that was not their strength.

PRICING: Performa 6116CD, $1,847; Performa 6200CD, $2,297; Apple StyleWriter 1200, $280; HP DeskWriter 660C, $227. Total: $2,074 to $2,577.

SELECTION: Several different systems, both Mac and PC, were displayed. Software selection was extensive as well.
That’s the good news. The bad news is that schools are the lowest sellers on Apple’s food chain, and when hot items are in short supply, many students are often left waiting for weeks. Even products that are in stock usually require a delivery period. Also, some campus stores offer only a few Macs, leaving you to choose from an anemic price list.

In addition to discount prices for students, Apple also offers loans. Its popular student-loan program dished out $217 million in 1994. Students can get their hands on money for a Mac in about three days if they meet the requirements for loan approval. A solid credit line and a $15,000 annual income are prerequisites for borrowing a minimum of $1,000 and a maximum of $10,000. Although the loan requirements may seem steep, students who don’t meet them can enlist the aid of a cosigner.

Loan recipients have eight years to repay the loan, at an annual percentage rate of about 13.6 percent. As with most other student loans, students have to pay only the monthly interest while they’re taking classes, which comes to about $11 per month for every $1,000 borrowed. For more information on the Apple Loan Program, call 800-277-5356.

NEARLY NEW PRODUCTS:

If you belong to an Apple-authorized user group, you can take advantage of the User Group Store, a cataloger based in Soquel, California, that sells refurbished and discontinued hardware as well as new Mac software. In the case of Apple products, Apple refurbishes hardware that is flawed or that has been removed from the original packaging (say, for use as a demo machine or as a loan to a developer). Apple then sells these products to the User Group Store.

Originally part of Apple (and known as the User Group Connection), the User

**NEARLY NEW PRODUCTS:**

**REFURBISHERS:**

**MAACWAREHOUSE**

AMBIANCE: None.

SERVICE: Waited on the phone for less than two minutes. "Adam," our salesman, was calm, knowledgeable, and friendly. He gave us some good suggestions on which system to buy. However, we were fortunate — MacWarehouse does not guarantee that its sales staff can help with product recommendations.

**RECOMMENDATIONS:** The Performa 631CD, which comes with all the basics, except a printer. For a printer, Adam suggested a refurbished HP DeskWriter 560C.

**PRICING:** Performa 631CD, $1,499; HP DeskWriter 560C, $389; Apple StyleWriter 1200, $250. Total: $1,749 to $1,998.

**SELECTION:** An extensive selection of peripherals and software for Macs as well as PCs. Boxes full of the displayed peripherals lined the store walls.

**MAIL-ORDER HOUSE: MACWAREHOUSE**

AMBIANCE: Bright lights, bare rafters, and wide aisles. Packed with people, even on a Saturday evening. Young kids hovered around the Macs, playing games and preventing us from getting close to the displays. Early-'80s pop music was piped in. There were about 3 computer salespeople for every 45 customers.

SERVICE: "Bryan" acknowledged us right away, but 12 minutes elapsed before he was available to help us. Bryan was knowledgeable and opinionated but also spread way too thin. He helped 4 customers simultaneously, turning his attention only long enough to answer each rapid-fire question. It turned out that this was his hobby — his other gig was teaching computer science.

**RECOMMENDATIONS:** Don't buy a Power Mac if you’re an economically rational person (unless you’re planning to do graphics). He compared the Power Mac to a Porsche — excessive if you aren’t on the autobahn. Instead, he recommended the Performa 631CD or 638CD. For a printer, he suggested the HP DeskWriter 660C or the Apple StyleWriter 1200, although he said that the DeskWriter 660C “handled paper” better.

**POSTSALE SUPPORT:** Bryan would be glad to answer questions, but he worked only two days a week.

**PRICING:** Performa 631CD, $1,499; Performa 638CD, $1,599; HP DeskWriter 660C, $389; Apple StyleWriter 1200, $250. Total: $1,749 to $1,998.

**SELECTION:** An extensive selection of peripherals and software for Macs as well as PCs. Boxes full of the displayed peripherals lined the store walls.

**COMPUTER SUPERSTORE: COMPUSA**

AMBIANCE: Bright lights, bare rafters, and wide aisles. Packed with people, even on a Saturday evening. Young kids hovered around the Macs, playing games and preventing us from getting close to the displays. Early-'80s pop music was piped in. There were about 3 computer salespeople for every 45 customers.

SERVICE: "Bryan" acknowledged us right away, but 12 minutes elapsed before he was available to help us. Bryan was knowledgeable and opinionated but also spread way too thin. He helped 4 customers simultaneously, turning his attention only long enough to answer each rapid-fire question. It turned out that this was his hobby — his other gig was teaching computer science.

**RECOMMENDATIONS:** Don't buy a Power Mac if you’re an economically rational person (unless you’re planning to do graphics). He compared the Power Mac to a Porsche — excessive if you aren’t on the autobahn. Instead, he recommended the Performa 631CD or 638CD. For a printer, he suggested the HP DeskWriter 660C or the Apple StyleWriter 1200, although he said that the DeskWriter 660C “handled paper” better.

**POSTSALE SUPPORT:** Bryan would be glad to answer questions, but he worked only two days a week.

**PRICING:** Performa 631CD, $1,499; Performa 638CD, $1,599; HP DeskWriter 660C, $389; Apple StyleWriter 1200, $250. Total: $1,749 to $1,998.

**SELECTION:** An extensive selection of peripherals and software for Macs as well as PCs. Boxes full of the displayed peripherals lined the store walls.

**MAACWAREHOUSE**

AMBIANCE: None.

SERVICE: Waited on the phone for less than two minutes. "Adam," our salesman, was calm, knowledgeable, and friendly. He gave us some good suggestions on which system to buy. However, we were fortunate — MacWarehouse does not guarantee that its sales staff can help with product recommendations.

**RECOMMENDATIONS:** The Performa 631CD, which comes with all the basics, except a printer. For a printer, Adam suggested a refurbished HP DeskWriter 560C.

**PRICING:** Performa 631CD, $1,499; HP DeskWriter 560C, $389; Apple StyleWriter 1200, $250. Total: $1,749 to $1,998.

**SELECTION:** An extensive selection of peripherals and software for Macs as well as PCs. Boxes full of the displayed peripherals lined the store walls.

**MAIL-ORDER HOUSE: MACWAREHOUSE**

AMBIANCE: Bright lights, bare rafters, and wide aisles. Packed with people, even on a Saturday evening. Young kids hovered around the Macs, playing games and preventing us from getting close to the displays. Early-'80s pop music was piped in. There were about 3 computer salespeople for every 45 customers.

SERVICE: "Bryan" acknowledged us right away, but 12 minutes elapsed before he was available to help us. Bryan was knowledgeable and opinionated but also spread way too thin. He helped 4 customers simultaneously, turning his attention only long enough to answer each rapid-fire question. It turned out that this was his hobby — his other gig was teaching computer science.

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CHOOSING THE RIGHT MAC

Group Store is now contracted by Apple to sell refurbished hardware. Although the company earns no special discounts from its founder, refurbished goods and discontinued products generally cost much less than equivalent new Macs or peripherals. Buying refurbished can save you anywhere from 30 to 50 percent over what you'd pay for a model that's hot off the assembly line. Shoppers are limited to taking home only two of any product per person, however.

Product selection is based on the recommendations of a council composed of 30 user-group leaders from around the country. If you aren't satisfied with your purchase, you have 30 days to return it and get your money back. Of course, the disadvantage of the User Group Store is that product selection varies quite drastically from month to month and can sometimes be meager. To find an authorized user group in your area, call Apple at 800-538-9696.

CUTTING-EDGE CONVENIENCE: ONLINE STORES

With the exploding popularity of the Internet, "cyberstores" are appearing on the scene like earthworms after a heavy rain. Unfortunately, Apple has not yet authorized stores to sell new hardware over the Internet. Mail-order companies — such as MacWarehouse — that set up Web sites can advertise new Apple products, but to order them, you still need to pick up the phone and call the company. Cyberstores can, however, sell discontinued Apple products.

Thus, when buying a new Mac, the Internet is more useful as a research tool than as a shopping mall. Browsing through various Mac Web sites can give you a good idea of product prices and of the availability of new as well as used Macs. You can also check up on reseller locations and reputations or tap into a Mac user-group directory, simply by cruising the Net.

WHERE TO FIND THE CLONES

Anyone who's spent an hour on the phone waiting to speak to someone at Apple has gotten the feeling that the company purposely avoids direct human contact. This is definitely the case if you're buying a Mac — Apple does not sell direct. Neither does Radius, which sells its computers through local dealers, VARs, and CompUSA.

Apple's other protégés do deal with the public. DayStar and Power Computing both sell direct. DayStar, however, primarily sells its high-end systems through VARs, which can devote a lot of attention to helping users get their systems running. Power Computing also sells its systems through local dealers, Computer City, and MacMall.

Wherever you do business, you should be sure to do your homework first. The more you know about what you want and where to get it, the more likely you are to leave with a system you'll love. And at a price you can afford.

Nikki Echler is a MacUser assistant editor. Research assistant Rebecca Olson also contributed to this article.

THE MAC-BUYING JUNGLE / how not to get ripped off

BE PREPARED — that's advice you should take to heart when shopping for a Mac. Many salespeople are honest, upstanding individuals who are just trying to hook you up with the Mac of your dreams. Some, however, may try to take advantage of you, pressure you into buying more than you need, or trick you into purchasing an extended warranty. Here are our top tips for making sure you're treated fairly:

• DO YOUR RESEARCH. Know what you want and what it's worth. Check newspaper ads and mail-order catalogs to determine the going rate for the Mac you want — this way you won't be bargaining blindly. Many salespeople will match their competitor's prices rather than lose a sale, so have the ads handy when you're ready to negotiate.

• BRING A BUDDY. If you don't feel comfortable confronting a salesperson alone, take along a computer-savvy friend. A friend can help prevent misunderstandings, whether they be on your part or the salesperson's. Besides, it doesn't hurt to have someone along to help carry the boxes to the car.

• JOIN A USER GROUP. If you're running short on computer-literate pals, join or consult a local Macintosh user group. More than 2,000 user groups, with over 600,000 members nationwide, meet regularly to discuss the concerns of the Mac community. People this passionate about their computers are generally knowledgeable enough to give you the straight dirt on which Mac to buy and where to buy it.

• PLAY NICE. In many stores, the salesperson has the authority to negotiate with customers on a case-by-case basis — so it can literally pay to be pleasant. However, doormats don't get deals. Know what you want, but if the salesperson asks questions designed to better help you, be cooperative. For example, providing a complete answer if the salesperson asks you how much you plan to spend or what you plan to do with your Mac can get you pointed in the appropriate direction.

• DON'T BE AFRAID TO KISS UP EITHER. An experienced salesperson gave us a line to use that anyone in sales likes to hear, "I found that product X is less expensive at store X, but I really feel comfortable with you and would like to work something out with you if possible."

• CHECK OUT A STORE'S REPUTATION. Consult with friends, colleagues, or local user groups to verify a store's reputation before trusting it with your money. Some stores may advertise low prices, but their salespeople might stick you with inferior parts or poor post-sale support. For example, if you request a faster hard drive, a salesperson at a disreputable store might slip you a low-quality drive instead — and you might never know.

• UNDERSTAND THAT DELIVERY DATES MIGHT SLIP. If you absolutely, positively must have your new computer by a certain date, you should try to find one in stock. At the very least, you should get a promised delivery date that is earlier than the date you really need the computer — that way, you still have some time to think of an alternative solution if the computer doesn't materialize on time.

• DON'T BE PRESSURED INTO PURCHASING AN EXTENDED WARRANTY. Apple's one-year warranty is generally long enough to cover any major problems your Mac may have. About the only reason to purchase an extended warranty is if it offers something else you find valuable — on-site service or delivery and installation, for example. / Nikki Echler
OUR NEW 128-BIT GRAPHICS ACCELERATOR.
IT'S PRIMAL SCREAM THERAPY FOR YOUR POWER MAC.

The Power Macintosh™ with PCI is here, and there's only one way to make it really scream. Introducing the Imagine™ 128 graphics accelerator. It's the only 128-bit board in the world. And it won't hold your Power Mac back like those puny 64-bit boards. That's because only the Imagine 128 gives you the power of 128-bit graphics, a 128-bit internal data path and a 128-bit memory bus. So you'll see millions of colors at ultra-high resolution—up to 1600 x 1200 even on the largest monitors—instantaneous screen redraw, real-time scrolling and zooming of true color images. The bottom line: your new Mac will move like never before. The

Imagine 128 Power Mac PCI is available with 4 or 8MB of high performance VRAM brought to you by Number Nine, a leader in high performance graphics accelerators. Call us for more info today. And see what all the yelling's about.

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CompUSA (1-800-COMP-USA)

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You're ready to build your own Web site, but you're wracking your brains. Don't despair. With WebSTAR, from StarNine®, you can quickly make mind-blowing Web sites, or simply share documents on your internal network. All it takes is WebSTAR, your Mac, and a double-click.

WebSTAR's power and flexibility will instantly turn any file on your Mac into a URL on the Web. You can even publish the information in your database. If you're worried about security, WebSTAR password protects files and the optional SSL Security Toolkit encrypts pages. All this power on your desktop without the hassle of UNIX®.

With WebSTAR, you also get a ton of free stuff... including FTP and Gopher servers, a trial version of ListSTAR™ (our cool listserver), plus a bunch of third-party demos.

Net novices and Web masters alike are already creating mind-blowing Web sites on the Mac, so what are you waiting for? Blow your mind with WebSTAR.

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THE YEAR OF THE
CLONES

IT'S BEEN OVER A YEAR SINCE APPLE ANNOUNCED THAT IT WOULD LICENSE THE MAC OS. HERE'S WHAT CLONES HAVE — AND HAVEN'T — DONE FOR US SINCE THEN.

By Henry Bortman

Over the last year, the product plans of DayStar Digital, Power Computing, and Radius — the first three Mac OS licensees — have begun to take shape. But back in November 1994, when Apple first announced that it would license the Mac OS to other computer manufacturers, no one foresaw what today's clone market would look like. Everyone agreed that Apple should have played its clone card years earlier. And everyone pointed out that clones would cost less than Macs. But stating the obvious was easy. Predicting how clones would affect the Mac market was a more difficult task.

Some folks claimed that by the end of 1995, there would be as many as a dozen Mac-clone makers — including PC giants such as Compaq, Dell, Gateway, and IBM — and that all these contenders would cannibalize Apple's market. Still others foretold a compatibility nightmare, warning that Mac clones would flop.

And we were cautioned to expect neither any performance edge nor any technical innovation from clone vendors, because they would likely settle for churning out less expensive copies of Apple's Mac designs.

It hasn't turned out quite that way.
CHOOSING THE RIGHT MAC

THE TECHNICAL EDGE

The biggest surprise has been that clone vendors have not simply followed in Apple's footsteps. DayStar and Power Computing have both shipped systems that are more powerful than Apple's fastest Mac, the Power Mac 9500/132. And both have pushed Macintosh technology beyond the boundaries established by Apple.

DayStar, with its Genesis MP systems, is perhaps the best example of a clone vendor that is leapfrogging Apple in certain areas. DayStar offers three systems, based on Apple's Power Mac 7500, 8500, and 9500 motherboards. One of the features both DayStar's and Apple's systems have in common is that each machine's processors are on a daughtercard that plugs into a special processor slot on the motherboard. Apple puts a single processor on the daughtercard — a PowerPC 601 on the Power Mac 7500 and a PowerPC 604 on the Power Mac 8500 and 9500. A Genesis MP system, however, has four 604 processors on its daughtercard.

These extra processors make DayStar's systems roughly 2.5 times as fast as comparable Apple single-processor systems — in some cases, that is. Software must be updated to recognize and use all four processors simultaneously. As we went to press, only one application — Adobe Photoshop — could take advantage of this multiprocessing capability. But others are on the way (see the "Multiprocessing" sidebar).

Why DayStar? Why didn't Apple create a multiple-processor card? Actually, Apple probably will sell multiprocessing systems at some point. But Apple is no longer the company it was when it was in Steve Jobs' parents' garage. For one of its systems to be profitable, Apple has to sell tens of thousands of units — a goal that's currently unattainable for very high-end, specialized systems such as the Genesis MP.

Also, to remain competitive with Wintel-system vendors, Apple must keep the price of even its high-end systems down. Have you ever noticed that although Macs keep getting more and more powerful, each new high-end system always starts at around $5,500? When Apple can produce a multiprocessing system at this price, it will. And that system will become the new high end of its line. But until then, Apple is better off selling a clone — some other vendor take the lead.

DayStar is that other vendor. A much smaller enterprise, it isn't under the same constraints as Apple. It can run a very profitable business marketing a relatively expensive, high-profit-margin machine to an admittedly limited audience. In the process, DayStar is helping Apple evangelize multiprocessing, build a stable of software that takes advantage of multiple processors, work out the technical snafus, and bring down the cost, thus paving the way for Apple to adopt this technology.

But DayStar isn't the only clone vendor to provide innovative technology. Power Computing, with its PowerWave systems, is also filling a niche that Apple can't or doesn't want to fill. Apple, with its second generation of Power Macs (the Power Macintosh 7200, 7500, 8500, and 9500), abandoned the NuBus system-expansion bus in favor of the PC-industry-standard bus, PCI. In the long run, this shift will benefit Macintosh users by enabling them to purchase higher-performance add-in cards at lower cost.

But many users have NuBus cards that are critical to their work. In some cases, PCI versions of these cards aren't available; in others, users simply don't want to plunk down money for PCI cards that duplicate the functions of NuBus cards they already own. And although Second Wave offers external multilots NuBus expansion chassis that attach to a PCI slot, some users may not want to have yet another box sitting on their desks. In any case, Apple itself has no analogous product for these users.

Power Computing does, though. The expansion slots in its PowerWave systems reside on a riser card, not on the motherboard. A PowerWave system can hold either a riser card containing three PCI expansion slots or one containing two NuBus slots and two PCI slots. The latter $249 option allows users to continue using their NuBus cards while gaining the speed advantage of a fast, 604 processor. Although no six-slot PowerWave system is available — Apple's Power Macintosh 9500 has six PCI slots — many users will find a PowerWave system's dual-bus option compelling. Apple has indicated that it

TO BUY OR NOT TO BUY / who should consider a clone

YOU'RE IN THE MARKET for a new Mac. Should you consider purchasing a clone? In all likelihood, the answer is, Yes.

If you're a graphics or multimedia professional who works with one or more of the applications slated for multiprocessing support in the near future — Photoshop already supports multiprocessing — take a close look at DayStar's Genesis MP systems. At $10,000 and up, they're expensive, but their speed may be worth the cost.

An alternative is the one-stop-shopping hardware-and-software bundles Radius offers to artists, designers, and multimedia authors. If you intend to purchase a Thunder or ThunderColor accelerated graphics card and a PressView monitor with your system, you may be able to achieve substantial savings by purchasing the whole kit and caboodle from Radius.

For graphics-processing power on a budget, consider the PowerWave 604/150, from Power Computing. PowerWave systems are also the clear choice if you're looking for PowerPC 604 speed but are hampered by legacy NuBus cards you simply can't do without — or can't afford to replace. Take a close look at Power's software-bundling options too. If the Microsoft and Adobe products the company offers are ones you plan to buy, you may be able to save significant amounts of money.

But for rock-bottom prices on lower-end systems, Apple has the advantage, with its bargain-priced Performas and Power Mac 7200. And for those who need more than three PCI expansion slots but don't have any need for the DayStar systems' multiprocessing capability or simply can't afford it, Apple's Power Mac 9500 systems are still the way to go. The built-in digital-video capability of Apple's Power Mac 7500 and 8500 is also unmatched by any of the systems.

Although the clones have increased your buying options, they have also increased the difficulty of making a purchasing decision. Know exactly what you want before you buy. That way, you can weigh the worth of bundles or higher-end configurations before making a final decision.
DAYSTAR DIGITAL made Mac history recently by shipping the first Mac OS computer system to support multiprocessing. Others have attempted to use multiple processors in a variety of ways in the past. What makes DayStar’s effort different is that the company has Apple's full cooperation. DayStar implements multiprocessing via a shared library (a special type of system extension) called DayStar MPLibrary. Early next year, DayStar will give a version of the shared library to Apple that will officially become part of the Mac OS.

From today’s vantage point, it might look as though multiprocessing is of interest only to a limited market. After all, when DayStar’s Genesis MP systems began shipping, in November 1995, only Adobe Photoshop 3.0.4 could take advantage of multiprocessing. On several compute-intensive Photoshop tasks, the Genesis MP was an average of 2.5 times as fast as a stock Power Mac 9500/132.

However, the list of developers who are actively working on multiprocessing-capable software reads like a Who's Who of the graphics and multimedia industry. Adobe is considering multiprocessing support for Premiere and After Effects; Specular, Strata, and Ray Dream are considering it for their 3-D products; and Crossfield is looking at it for its Celox 2000 Imagesetter. Elastic Reality, Kodak, Live Picture, Macromedia, and many others are also actively working to support multiprocessing. Even Apple is rumored to be working on multiprocessing-enabled versions of QuickTime and QuickDraw 3D.

This trend will accelerate by February 1996, when Apple begins distributing the multiprocessing shared library. Look for dual-601 or -604 systems, possibly even dual-603 systems, from Power Computing. Radius is more likely to compete directly with DayStar at the high end, offering quad-604 systems. And don’t be surprised to see Apple ship multiprocessing systems in 1996 as well.

Multiprocessing also offers hot prospects for upgrades. Apple’s Power Macintosh 7500, 8500, and 9500 each contain a processor-card slot capable of supporting a dual-processor card. Power Computing’s PowerWave systems and forthcoming systems from Radius will also contain such a slot.

Late in 1996, we'll begin to see the first CHRP-based systems. CHRP, by allowing system vendors to customize their hardware to a greater extent than is possible with current Mac motherboard designs, will fuel the creation of multiprocessing systems. Rumor has it that DayStar is already at work on a CHRP system.

At the same time, the Copland operating system will ship — we hope it too will support multiprocessing. (Don’t worry: Copland’s multiprocessing implementation will support the current form.)

So although it might look as if multiprocessing is limited in use, it won’t stay that way for long. Ten years from now, as we look back at today’s single-processor systems much as we now look back at the original 128K Mac, with its single 40K floppy-disk drive and 9-inch black-and-white monitor, and ask, How did we ever get any work done?

won’t ship a system such as this.

With the announcement of its PowerWave 604/150, Power Computing has also taken a temporary performance lead over Apple. The PowerWave 604/150 sports a 150-MHz PowerPC 604 processor, which is clocked some 14 percent faster than the 132-MHz PowerPC 604 in Apple’s top-of-the-line machine, the Power Mac 9500/132.

If Apple sticks to tradition, it will “speedbump” its current Power Mac lineup sometime in the first half of 1996. All current models will get faster processors; there’s a good chance the 9500/132 will bump up to a 9500/150. But clone vendors have clearly gotten the jump on Apple with this high-speed chip. By the time you read this, DayStar will also be shipping a system with four 150-MHz 604 processors.

THE ISSUE OF PRICE

These innovations, however, have come only recently. DayStar didn’t even begin shipping Genesis MP systems until November 1995. And Power Computing’s and Radius’ designs, for most of the first year of the clone era, were essentially cost-reduced remakes of Apple systems. Not to belittle the importance of cost reduction. Even before the advent of clones, Apple had begun to lower its prices to bring the cost of Macs more in line with those of Wintel systems. The competition from clone vendors — Power Computing’s systems have sold for some 15 percent less than equivalent Macs — has made Apple feel this pressure even more. For example, Apple’s new 7200/75 can be had for as little as $1,699.

Has price competition hurt Apple’s sales? Not really. The total combined Power Computing and Radius unit sales in the first year were in the tens of thousands, a drop in the bucket compared to Apple’s multimillion-unit annual Macintosh sales. Apple, plagued by chronic underpredictions of user demand and consequent product shortages of its most popular models, has done a fair better job than its licensees could ever hope to of eating away at its own market. Rather than undercutting Apple, clone vendors, by providing systems when Apple couldn’t, may have prevented frustrated Macintosh customers from moving to more-plentiful Wintel systems.

A QUESTION OF CUSTOMIZATION

Innovation, speed, and pricing are perhaps the most tangible benefits of clones. But there is another advantage clone vendors have brought to the Mac market: flexibility. Apple typically ships Macs in a limited set of configurations. It seems, though, that none of the combinations Apple chooses are ever quite what you’re looking for. And although resellers offer a wider array of configurations than the handful on Apple’s price list, these alternative packages are often driven by what kind of margins dealers can get on individual components.

Power Computing, in contrast, has made configuration flexibility a corporate hallmark. When you order a system from Power Computing, you specify what you want: the processor speed, the amount of RAM, and the hard-drive capacity — as well as several...
Drive a High-Res, full page Photoshop image.

“Genesis MP is an incredible time saver. It makes Photoshop fun again!”

John Lund, Digital Photographer
Real-time. Anytime with Genesis MP.

You know the tracks are there even if they’re covered under seven feet of snow. You know how to get the job done. You just need more time... or more power. **Power counts.** Especially when you have to produce an image in time to make the last courier. **The less time spent waiting on Photoshop, the more time you have to be creative and still make it under the wire.**

The revolutionary Genesis MP is a powerful new Mac OS system using four of the fastest PowerPC 604 processors available. Now you can drive huge files in real time rather than just pushing pixels.

With a Genesis MP from DayStar you can run Photoshop seven times faster than your current Mac. It’s four times faster than Apple’s new PowerMac 9500. Even an SGI workstation costing three times as much runs at a fraction of the speed. **Nobody does it faster than a Genesis MP.**

In addition to Adobe’s Photoshop, Premiere and After Effects, and Strata’s Studio Pro, **over 200 Mac software titles for publishing are being boosted to multiprocessing performance.**

Genesis MP was envisioned from the beginning to be the most powerful, yet user-friendly workstation ever created. Not only does it use the Mac OS, the most intuitive operating system in the world, but adding a card or memory, or even extra hard drives is a simple two step procedure. Just open the side panel and pop in the upgrade. It’s that simple.

So, it’s time to make tracks. Get a Genesis MP.

Look us up on the web at http://www.daystar.com, or **call us at 800.984.4510** for some hard data on the new line of Genesis MP computers.

**Genesis MP: A new beginning in Mac workstation performance.**
CHOOSING THE RIGHT MAC

other system details. You can, for example, order a Power Computing system with 72 MB of RAM and a 4-GB hard drive. The most stuffed system Apple offers is one with 16 MB of RAM and a 2-GB hard drive.

Power Computing also offers options that are difficult, or impossible, to come by in an Apple Mac: You can order a Power Computing system with an internal Iomega Zip drive, for example. And if you want to price a particular configuration before you buy? Simple: Log onto the online configurator on Power Computing's Web site (the URL is http://www.powercc.com/BYOB/index.html). The configurator will walk you through all the available options, letting you specify the system of your dreams, and will tell you exactly how much it will cost. If you don't have access to the Web, you can get the same information by calling Power Computing (512-258-1350) or you can obtain a complete price list from the company's faxback number (800-788-3783).

ONE-STOP SHOPPING

And then there are bundles — with the exception of Performas, bundles are not an area in which Apple has excelled. When you buy a non-Performa Mac, you get a Mac, plus system software and a mouse. That's it. Not even a keyboard. Sometimes you luck out and get a microphone. For a brief period, Apple was pushing CD-ROM drives, so it bundled a few underwhelming CD-ROM titles with CD-ROM-equipped systems.

And with Power Mac 7500s and 8500s, it currently includes some telephone and video-editing software. Not the kind of stuff to write home about.

Some clone vendors have moved in to fill the gap. Power Computing provides the most-extensive software bundles with its computers. The list currently includes half a dozen utility and productivity applications as well as a CD-ROM containing 250 fonts. The total value of Power Computing's systems cost two to three times as much as Apple's top-of-the-line Power Macintosh 9500/132, but each has four PowerPC 604 processors that can work simultaneously when used with special versions of current software. Radius, with its System 100, offers one-stop shopping

## COMPARING CURRENT SYSTEMS / what the clones and the Macs offer

WITH THE INTRODUCTION of the clones, choosing a Mac OS-compatible computer has gotten tougher. You'll find that all the current systems, including Apple's, have a few things in common: They each ship with System 7.5 or later, they each include a mouse, they each have a quad-speed CD-ROM drive, and they each have an AUII Ethernet port. Beyond that, however, they vary widely. Power Computing bundles a vast array of software and lets you custom-configure systems with, say, the exact amount of RAM and storage space you need. DayStar's Genesis MP

<table>
<thead>
<tr>
<th>Apple</th>
<th>Power Mac 7200/75</th>
<th>Power Mac 7200/90</th>
<th>Power Mac 7500/100</th>
<th>Power Mac 8500/120</th>
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</table>

### BUNDLED SOFTWARE

A. Cypress Research's MegaPhone, Adobe Acrobat (reader)
B. Apple Media Conference, Cypress Research's MegaPhone, Avid VideoShop, Adobe Acrobat (reader)
C. ClarisWorks, Intuit's QuickBooks, Now Software's Now Utilities, Now Contact, and Now Up-to-Date; FWB's Hard Disk Toolkit and CD-ROM Toolkit; 250 Bitstream Type 1 and TrueType fonts; America Online; Visual Compactor; Access 1600 Multimedia Encyclopedia
D. Adobe Photoshop, ATM, and Acrobat (reader); FWB's Hard Disk Toolkit and CD-ROM Toolkit
E. FWB's Hard Disk Toolkit and CD-ROM Toolkit
F. Multiprocessor Accelerator plug-in for Photoshop, FWB's Hard Disk Toolkit and CD-ROM Toolkit
standard bundle is in the hundreds of dollars, although calculating its actual value to users is more difficult. If you happen to need the software in the bundle, you’re in luck. Problem is, though, that Power Computing provides the same bundle with every system, regardless of how its configured or what it’s likely to be used for. Not everyone needs ClarisWorks and NuBus Compact.

As we went to press, however, Power Computing was putting the final touches on a new software-bundling program. It will soon offer customers the option of purchasing, at substantial discounts, Microsof Office and many of Apple’s most popular applications (such as Photoshop, Illustrator, Premiere, PageMaker, and Persuasion). Other deals were also in the works. This is cool. But there is a catch: To get the discount, you have to purchase the software at the same time as you purchase the computer. How much of a discount? Stay tuned. Final pricing was not set in time for this article.

Radius is also talking bundles, but more-targeted ones. Its System 100 is preconfigured specifically for heavy-duty Photoshop users. (Radius 811100, however, is simply a remake of Apple’s now discontinued Power Mac 8100/110.) The System 100 includes 72 MB of RAM; a Thunder IV GX-1600 accelerated-graphics adapter with a DSP-based Photoshop-acceleration daughter card; FNB’s Jackhammer Fast and Wide SCSI-2 card and a high-speed, 2-GB drive; and Photoshop. One particularly nice touch is that not only does Photoshop come preinstalled on the hard drive but both the software software and Photoshop are also pretweaked for maximum Photoshop performance. And the installation CD-ROM Radius includes can restore all the custom system and application settings. If you’ve ever spent hours (or days) tuning your system, only to have your Mac crash, requiring you to fully reinstall your system software, you’ll appreciate this benefit.

Radius plans to go further with bundles. Through deals with its distributor, Ingram Micro, the company will offer targeted bundles for desktop-publishing specialists, multimedia authors, and Web authors. Details on what will be in these bundles and what they will cost weren’t available at press time. Radius also plans to offer discounts on its accelerated-graphics cards and high-performance monitors to customers who purchase its computer systems.

WHERE THE CLONES STAND

So that was the state of clonedom as 1995 drew to a close. Despite predictions, clone vendors haven’t cannibalized Apple’s sales, the systems haven’t had compatibility problems, and the systems certainly haven’t flopped. Quite the contrary, in fact.

Clone vendors have clearly aided the Macintosh market. They’ve helped bring Mac prices down. They’ve taken the lead in the performance race, forcing Apple to play catch-up. They’ve developed new technologies that might have taken Apple another year or two to come out with. They’ve expanded users’ configuration options. And they’ve put together hardware and software bundles that are attractive alternatives to Apple’s offerings for many users. All that, and there wasn’t even a big PC vendor among them. Not a bad list of achievements for Year 1.

But there’s plenty left to do. First, there are the things someone ought to have done already. For example, none of the clone vendors offers a DOS compatibility card. None — even Power Computing, with its penchant for configurability — offers a modem as an option. In the era of the information superhighway, that’s pitiful. Not to mention the fact that no one bundles a Web browser. Get with the program! Of course, users can always go out and buy these additions to their systems on their own. But why should they have to?

Then there are the things that are just on the horizon. QuickDraw 3D acceleration. MPEG support. High-speed network adapters. Digital-video capture. Integrated telephony. To maintain a compelling advantage over Apple — and in some cases, to catch up — clone vendors will need to implement these technologies quickly.

Finally, there are three technologies that are definitely on the timeline for late 1996: CHRP (Common Hardware Reference Platform). CHRP will enable a much broader group of computer manufacturers to produce systems that run the Mac OS, because it will reduce these vendors’ dependency on Apple’s custom ASICs and thus their dependency on support from the already strained Apple engineers.

PowerPC 615. Although IBM won’t confirm its existence, this split-personality chip, capable of executing PowerPC-native and Intel x86-native instructions, will make possible low-cost systems that run Macintosh and Windows applications with reasonable performance.

Multiprocessing. Already adopted as the centerpiece of DayStar’s Genesis MP systems, multiprocessing will become more pervasive in 1996.

Stay tuned to the pages of MacUser. The clone market is nothing if not fast-moving, and the pace will only increase in 1996. We promise to keep you up-to-date.

Henry Borman is MacUser’s technical director. Senior Project Leader Jeffery Milstead managed the testing for this article.
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To leave a message please call: 1-613-728-0826 ext. 81609.

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*USS plus applicable taxes. 1Suggested list price. Dealer may sell for less.

CIRCLE 77 ON READER SERVICE CARD
AND WHY

HERE'S HOW YOU CAN BENEFIT FROM THE UPDATED VERSION OF MACBENCH, OUR INDUSTRY-STANDARD BENCHMARK-TEST SUITE.

By Henry Bortman

You're about to buy a Power Mac 9500/132, but it doesn't come with a graphics-display card. Which card should you get? Or you're wondering if a system from Power Computing can outrun a Mac. Or maybe you're planning to outfit everyone in your office with Power Mac 7500/100s, and the Mac expert in the department says you'll get better performance if you spring for the optional L2 cache. But how much better?

Wouldn't it be great if there were a single tool that could answer such a broad array of questions? A tool you could rely on for evaluating your alternatives? A tool that doesn't cost you anything? There is. It's called MacBench, and version 3.0 is coming soon to a computer near you.

Since its release in 1993, MacBench has steadily grown in popularity and has come to be recognized within the Mac industry as the standard set of benchmark tests for measuring the performance of Mac OS systems and peripherals. Last year, ZDBOp (Ziff-Davis Benchmark Operation), the creator of MacBench, distributed over 200,000 copies of version 2.0 of the program. With the release of version 3.0, many major vendors of computer systems and peripherals will begin bundling MacBench with their products.

HOW MACBENCH 3.0 WORKS

MacBench works by isolating and measuring the main subsystems that make up your Mac: processor, floating-point unit, disk, graphics, and CD-ROM. MacBench Disk and Graphics Mix tests are based on profiling lengthy series of tasks that people commonly perform with the 13 best-selling Mac applications: Microsoft Word, Excel, PowerPoint, and Works; Adobe Photoshop, PageMaker, and Illustrator; Novell's WordPerfect; Claris' FileMaker Pro and ClarisWorks; Intuit's Quicken; Quark's QuarkXPress; and Macromedia FreeHand. Version 3.0 also adds Publishing Disk and Graphics Mix tests, based on profiling high-end work in Photoshop and QuarkXPress. Here's the scoop on the tests:

Processor. The processor subsystem includes the microprocessor; the system memory (RAM); and the L2 cache, if present. ZDBOp worked closely with Apple and Motorola to ensure that the mix of processor instructions the test performs closely matches the instructions the processor in your Mac executes as you go about your usual tasks. As expected, this test shows a performance difference between 68040 and PowerPC processors. For a given processor, this test also shows a steady performance progression as clock speed increases.

In particular, the Processor scores for DayStar Digital's Genesis MP systems attracted our attention. Although these systems sport four PowerPC 604 processors apiece, their Processor scores are lower than those of models from Apple and Power Computing that contain only one PowerPC 604 processor each. DayStar's Genesis MP processor card contains circuitry that acts as a traffic cop, sending data to the correct processor. Even if only one processor is being used...
CHOOSING THE RIGHT MAC

by the application software, the circuitry is still active, thus causing a slight delay in data processing. When we installed a 132-MHz 604 single-processor card from a Power Mac 9500/132 in a Genesis MP, DayStar's system yielded results nearly identical to those of a Power Mac 9500/132.

Floating Point. MacBench's Floating Point test measures the speed at which a Mac can perform floating-point calculations, which are used extensively in such tasks as 3-D rendering and solving scientific equations.

Disk Mix and Publishing Disk Mix. These two tests measure the speed of a Mac's hard-disk subsystem, which includes the drive or array specified for testing; the software driver; the Mac's SCSI controller (or, if present, a high-speed SCSI adapter card); SCSI Manager and File Manager software; and to some extent, the Mac's processor.

The Disk Mix and Publishing Disk Mix tests can be used to examine the effect of changes in any of these disk-subsystem components. For example, you can use the tests to compare the speed of hard drives from different vendors. Or to see the effect of formatting a disk with, say, FWB's Hard Disk ToolKit instead of with Apple's driver.

Why two Disk Mix tests? Because we found that different types of applications stress a hard drive in different ways. The "standard" Disk Mix test is based on profiles of lengthy sequences of typical user tasks in our suite of 13 popular applications. When you run the Disk Mix test, MacBench plays back the sequences of disk-subsystem calls that occurred while the profiled tasks were performed. The results are then weighted according to each application's market share. Thus, applications such as Microsoft Word and Excel and ClarisWorks weigh heavily in the overall Disk Mix score.

But the applications used by publishing professionals interact with drives differently than do business applications. Business applications tend to read and write lots of very small blocks of data, whereas high-end publishing applications read and write data in larger blocks. That's why, this year, we added the Publishing Disk Mix test. Its score is based on profiles of Adobe Photoshop and QuarkXPress. Although we also profiled these applications in the standard Disk Mix test, because their market share relative to top-selling business programs such as Word and Excel is relatively small, their influence on the standard Disk Mix score is minimal. Also, we used much larger files and did more-complex tasks when we profiled these two applications for the Publishing Disk Mix test than we did for the standard Disk Mix test.

What's the value to you? Here's an example. We first tested the internal 2-GB drive on a Power Mac 9500/132. We then installed ATTO's ExpressPCI-MC Fast-and-Wide SCSI adapter in the same machine and attached a pair of ultrafast Seagate drives configured as a 3.5-GB RAID Level 0 array. Although the high-speed array outran the internal drive by nearly 60 percent in the Publishing Disk Mix test, it was only 10 percent faster in the standard Disk Mix test.

Our results held up under even closer scrutiny: When we examined the individual disk subtests MacBench can perform, we found that the Disk Mix test correlates closely with MacBench's smaller-buffer-size tests and that the Publishing Disk Mix test correlates closely with larger-buffer-size ones.

Graphics Mix and Publishing Graphics Mix. These tests measure the speed at which the computer's graphics subsystem, which includes built-in VRAM or an accelerated-graphics adapter; the expansion bus; QuickDraw software; and to some extent, the processor. The standard Graphics Mix test is based on

![SIZING UP THE COMPETITION](image)

APPLE'S FINALLY GOT COMPETITION. To help you compare Mac OS systems, we've assigned mouse ratings to currently shipping machines. We considered each computer's features; price; and, of course, its speed in MacBench 3.0 tests.

<table>
<thead>
<tr>
<th>APPLE COMPUTER SYSTEMS</th>
<th>PROCESSOR/CLOCK SPEED (MHz)</th>
<th>RAM</th>
<th>HARD-DRIVE CAPACITY</th>
<th>CD-ROM/DVD DRIVE SPEED</th>
<th>L2 CACHE SIZE</th>
<th>GRAPHICS/HARDWARE</th>
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<tbody>
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<td>PowerMac 604CD OS/800</td>
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<td>16MB</td>
<td>500 MB</td>
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<td>500 MB</td>
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<tr>
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<tr>
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<td>VRAM</td>
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<tr>
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<tr>
<td>Power Book 9500/132</td>
<td>604/132</td>
<td>16MB</td>
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<th>DAYSTAR DIGITAL SYSTEMS</th>
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<th>RAM</th>
<th>HARD-DRIVE CAPACITY</th>
<th>CD-ROM/DVD DRIVE SPEED</th>
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<th>GRAPHICS/HARDWARE</th>
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<td>Genesis MP (132 MHz)</td>
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<tr>
<td>Genesis MP (150 MHz)</td>
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<th>POWER COMPUTING SYSTEMS</th>
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<td>256K</td>
<td>VRAM</td>
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*At 640 x 480 pixels, the Performas and the PowerBook Duo 2300c/100 and 5300cs/100 have a maximum bit depth of 16 bits, the PowerBook 190cs/66 and 5300cs/100 have a maximum bit depth of 8 bits, and the PowerBook 190/66 has a maximum bit depth of 4 bits. Uses an IDE drive.

**At** 640 x 480 pixels, the Performas and the PowerBook Duo 2300c/100 and 5300cs/100 have a maximum bit depth of 16 bits, the PowerBook 190cs/66 and 5300cs/100 have a maximum bit depth of 8 bits, and the PowerBook 190/66 has a maximum bit depth of 4 bits. Uses an IDE drive.
of a new version of MacBench to take stock of current Mac OS-system offerings. This year, we tested not only Apple Power Mac, Performa, and PowerBook systems but also Mac OS-compatibles from DayStar, Power Computing, and Radius. This is the most comprehensive roundup of Mac OS-system performance available from any source.

In the coming year, we'll use MacBench 3.0 to answer your most pressing questions. Alternatively, you can perform your own testing with MacBench. As of January 8, you'll be able to download it from ZD Net/Mac or MacUser's Web page, or you can fax a request to ZDNet, at 919-308-2879.

Henry Bortman is MacUser's technical director. Senior Project Leader Jeffrey Milstead managed the testing. Thanks also to Scott Lane and the MacBench team at ZDNet.

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## Macs and compatibles compare to one another

<table>
<thead>
<tr>
<th>Processor</th>
<th>Floating Point</th>
<th>Disk Mix</th>
<th>Publishing Disk Mix</th>
<th>Publishing Graphics Mix*</th>
<th>Graphics Mix*</th>
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<td>10.0</td>
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</tr>
</tbody>
</table>

* BEST PERFORMANCE IN EACH TEST

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The MacBench 3.0 scores for the Power Mac 6100/60 reference system were generated with monitor settings of 640 x 480 pixels at 8-bit color and, for the Publishing Graphics Mix test, we used monitor settings of 640 x 480 pixels at 24-bit color. All scores for the Power Mac 6100/60 reference system were generated with monitor settings of 640 x 480 pixels at 8-bit color. Hard disks in Apple systems were formatted with Apple's non-caching driver; disks in other vendors' systems were formatted with FWB's Hard Disk Toolkit. Apple and DayStar systems used Apple's CD-ROM driver; Power Computing and Radius systems used FWB's CD-ROM Toolkit. All MacBench 3.0 scores are relative to those of the Power Mac 6100/60, which is assigned a score of 10.0 in each test.
In the Quick Labs game, it sometimes feels like feast or famine. One month we get more products than we can hope to test; another month, it feels as though vendors are hibernating and new products are frightfully scarce. And it's not just product availability that leads to a boom-or-bust sensation: Sometimes it's overall product impressiveness.

Most months, there's at least one product in one of our testing categories that emerges as a real star. It could be a printer that raises the output-quality bar, a hard drive that sets new price-per-megabyte records, or a gorgeous monitor with easy-as-pie controls. Almost as often, one of the products we test stands out as a real loser — a bona fide dud you wouldn't wish on your worst enemy. (It's almost as much fun to warn you of the lemons as it is to trumpet the stars.)

But as this month's batch of products attests, there are times when all the products are solid and workmanlike but nothing to do cartwheels over. Across all the categories, this month's crop performed solidly on our tests, and all the products were acceptably easy to set up and use. No horror stories, but no jubilation either — although the products do the jobs they set out to do, which is certainly cause for quiet celebration.

Next month, we'll be announcing some changes to Quick Labs that will help us better address product-availability fluctuations and ensure that we continue to furnish the most up-to-date, useful product information. Stay tuned.

With the Lexmark Optra R+, we were tempted to take the easy route — simply cutting the review of Lexmark's Optra Lx+ from our last Quick Labs and pasting it here. Except for the RAM configuration and the paper tray, there's not much difference between the two printers: The Optra Lx+ comes standard with 4 MB of RAM and a 500-sheet paper tray; the Optra R+ comes with 2 MB of RAM and a 200-sheet paper tray (you can also hand-feed it legal-sized sheets).

But it's a good thing we tested the $1,700 Optra R+, because we learned a few things in the process. Our first lesson: Most users should purchase extra RAM for the Optra R+ right away — its standard 2 MB proved insufficient to print our graphics-laden, PageMaker test file. Lexmark suggests having at least 8 MB if you plan to print complex PostScript files, but we were able to print our PageMaker file after installing just 2 MB of additional RAM ($169). The Optra R+ can handle a maximum of 64 MB and uses standard 72-pin SIMMs.

Once we'd added the extra RAM, the Optra R+ performed admirably: Line art and text were crisp and clean at 1,200 dpi. It printed grayscale photos and art with excellent detail and consistency and at a respectable speed. As you'd expect, pages print about twice as fast at 600 dpi as they do at 1,200 dpi.

The Optra R+ also comes with MarkVision, Lexmark's network-printer-management utility. It lets network administrators adjust printer settings and get progress reports on print jobs from anywhere on the network.

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<tr>
<th>REVIEWER</th>
<th>ROMAN LOYOLA TESTING</th>
<th>JIM GALBRAITH</th>
</tr>
</thead>
<tbody>
<tr>
<td>OUTSTANDING</td>
<td>ACCEPTABLE</td>
<td>POOR</td>
</tr>
<tr>
<td><strong>Lexmark Optra R+</strong></td>
<td><strong>$1,700</strong></td>
<td>1,200 dpi 1 year + + + - -</td>
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<tr>
<td>RESOLUTION</td>
<td>WARRANTY</td>
<td>TEXT QUALITY</td>
</tr>
<tr>
<td>+</td>
<td>1 year</td>
<td>+</td>
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<tr>
<td>PAGES PER MINUTE</td>
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<tr>
<td><strong>FASTER</strong></td>
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PHOTOGRAPHY / MICHAEL FALCONER

*With 2 MB of RAM.
FOUR NEW HARD DRIVES

This month's quartet of hard drives collectively offer an interesting range of features and price/performance. All ship with straightforward manuals and simple, versatile software, yet none stands out as a star.

The Microtech BLUE Storm 2000 (pictured) is the most sophisticated—and expensive—drive in the batch. Its SCSL-2 connectors attach directly to the logic board (without cables) in order to minimize signal noise, and an LCD supplies drive-status information. Although impressive, this wizardry is worth the extra cost only for the most-demanding situations, such as digital-video playback.

The MacProducts Magic Quantum Lightning 730 MB, an appealing buy at $269, ships with a handy active external terminator. The 700-MB capacity, once seemingly vast, is now rather meager, however. The Mac Zone Performantz 1GB External Hard Drive offers a more practical capacity and a slightly better price per megabyte, but it lacks an active terminator and offers a measly one-year warranty.

We tested drive speed by using MacBench 2.0's Disk Mix test. The results are relative to that of a 250-MB Quantum IDE drive in a Quadra 630, which has a score of 10.

**REVIEWER**
Jim Shatz-Akin
**TESTING**
Martin Wong

<table>
<thead>
<tr>
<th>DRIVE TYPE</th>
<th>PRICE</th>
<th>CAPACITY</th>
<th>PRICE/MEGABYTE</th>
<th>WARRANTY</th>
<th>SOFTWARE/ MANUALS</th>
<th>SUPPORT</th>
<th>COMMENTS</th>
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<td>2,045.5 MB</td>
<td>$.68</td>
<td>5 years</td>
<td>+</td>
<td>+</td>
<td>Fast. Great price/megabyte. Big. No active terminator.</td>
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<td>Mac Zone Performantz 1GB</td>
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<td>1,027.8 MB</td>
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<td>•</td>
<td>Good general-purpose drive value. Skimpy warranty.</td>
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<td>MacProducts Magic Quantum 4.2 GB</td>
<td>$1,198*</td>
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<td>5 years</td>
<td>•</td>
<td>•</td>
<td>Attractively priced, but bigger would be better.</td>
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<td>Mac Products Magic Quantum 730 MB</td>
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<td>696.9 MB</td>
<td>$.39</td>
<td>2 years</td>
<td>•</td>
<td>•</td>
<td>Business users won't appreciate advanced, costly design.</td>
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</table>

*Direct price.

**LISTING IS ALPHABETICAL WITHIN GROUPS OF EQUAL MOUSE RATINGS.**

SIX NEW MONITORS

With this month's crop of monitors, strengths and weaknesses conspired to cancel each other out, resulting in a lackluster field. Top image-quality honors, for example, go to two PowerMax displays — the 17-inch PM17T and the 20-inch PM20T — but clumsy push-button controls detract from their great looks.

The 20-inch IBM P201 (pictured) has a similar story — excellent focus and color image quality good enough for demanding desktop publishers, but adjusting its push-button controls, which lack numerical indexes for color and geometry settings, is tough.

In theory, on-screen-menu controls, such as those on the Princeton E015, the Samsung SyncMaster 6Ne, and the Smile CA2111, are far easier to use than the older-style, push-button ones. But you still have to use buttons to invoke the menus, and the Princeton monitor's buttons are so tiny that they may be awkward for the large-fingered. And alas, with the exception of the Samsung SyncMaster 6Ne, the monitors boasting on-screen menus yielded image-quality results that were just better than acceptable in our tests.

The image-quality scores reflect the results of our tests for image sharpness, focus, brightness, uniformity, pincushioning, color range and accuracy, and vibrancy. Keeping focus and sharpness on larger monitors is harder, so they tend to score lower than smaller ones. 1.0 is considered acceptable.

**REVIEWER**
Roman Loyola
**TESTING**
Brian Fikes

<table>
<thead>
<tr>
<th>MONITOR</th>
<th>PRICE</th>
<th>SIZE</th>
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<tr>
<td>Samsung SyncMaster 6Ne</td>
<td>$699</td>
<td>17 in.</td>
<td>1,024 x 768 pixels</td>
<td>3 years</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>Good combination of good image quality and controls.</td>
<td>BETTER</td>
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<tr>
<td>IBM P201</td>
<td>$2,675</td>
<td>20 in.</td>
<td>1,600 x 1,280 pixels</td>
<td>3 years</td>
<td>+</td>
<td>•</td>
<td>•</td>
<td>Good monitor for desktop publishers, but expensive.</td>
<td>BETTER</td>
</tr>
<tr>
<td>PowerMax PM17T</td>
<td>$839</td>
<td>17 in.</td>
<td>1,280 x 1,024 pixels</td>
<td>3 years</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>Great image quality, but controls lack elegance.</td>
<td>BETTER</td>
</tr>
<tr>
<td>PowerMax PM20T</td>
<td>$1,849</td>
<td>20 in.</td>
<td>1,600 x 1,280 pixels</td>
<td>3 years</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>Almost the same as the PM17T, with similar image quality.</td>
<td>BETTER</td>
</tr>
<tr>
<td>Princeton E015</td>
<td>$400</td>
<td>15 in.</td>
<td>1,280 x 1,024 pixels</td>
<td>1 year</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>Average image quality but great controls.</td>
<td>BETTER</td>
</tr>
<tr>
<td>Smile CA2111</td>
<td>$795</td>
<td>21 in.</td>
<td>1,600 x 1,280 pixels</td>
<td>1 year</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>Very inexpensive, but lackluster image quality.</td>
<td>BETTER</td>
</tr>
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**LISTING IS ALPHABETICAL WITHIN GROUPS OF EQUAL MOUSE RATINGS.**

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Imacon Flexes Scanning Muscle

Scanner boasts several new scanning technologies.

BREAKING THE scanner mold, Copenhagen-based Imacon is ready to offer the FlexTight, which looks stylish outside and has innovative electronics inside. According to Imacon, this new technology makes the $16,995 scanner the equal of drum and CCD scanners that cost three to four times as much.

The technology inside is unlike that of any other scanner, combining the basic features of drum scanners and flatbeds into one unit. Like a drum scanner, the FlexTight bends the original in front of the scanning unit; and like a typical flatbed scanner, it uses a CCD to capture the RGB data in a single pass.

Unlike a drum scanner, however, the FlexTight has a unique flexible, magnetic mounting system that holds the original completely flat as it is passed by the scanning elements. This eliminates the need for adhesives, speeds the scanning process, and keeps the original in focus.

The FlexTight also contains electronics that minimize the introduction of noise into the scanned data and that are capable of capturing 13 bits of data in each channel. The combination of the scanning mechanism and the electronics allows the FlexTight to capture more than 8,000 levels of color per channel.

Resolution shouldn't be an issue either. The FlexTight can scan A4-sized originals at up to 7,800 dpi and 35-mm slides at up to 4,800 dpi. Imacon claims that the FlexTight has a density range of 3.9 — quite good for a CCD-based device.

The scanner ships with a SCSI-2 interface and proprietary scanning software. A U.S. distributor had not been decided on at press time. Imacon can be reached by phone at 45-3-888-4050, by fax at 45-3-888-4052, and on the World Wide Web at http://www.imacon.dk.

Seán J. Safreed

AOL Users Find Home on the Web

EVERYONE CAN BE A WEB PUBLISHER, now that users of America Online can create Web pages and put them online, courtesy of AOL's new My Home Page service.

Each account is given a quota of 2 MB of disk space per screen name, meaning that an account with five screen names can offer 10 MB of data on a set of interlinked Web pages. You can upload files via FTP from within AOL by connecting to users.aol.com. You can find AOL users' pages by connecting to http://users.aol.com/ [screen name].

800-827-6364. / Jason Snell

HOT ON THE HEELS of Specular's recent update to Infini-D 3.1 comes version 2.0 of TextureScape and LogoMotion. TextureScape offers a raft of new controls, in a revamped interface that can produce a greater variety of textures. LogoMotion's interface, which has also been enhanced, should appeal to novices, with drag-and-drop features to make setting up logo animation easier.

TextureScape 2.0. The big addition to TextureScape is a new dialog box containing Adobe Illustrator-like controls for creating and editing Bézier shapes used to create textures. As with the previous version, you can import EPS graphics from Illustrator and Macromedia FreeHand, but the new drawing tools should simplify the creation of basic shapes.

Shape editing is just the first step in creating textures. TextureScape 2.0 offers new controls for randomizing almost any attribute, making it possible to employ a single layer for effects that used to take multiple shapes and layers. For interesting animated effects, random features can be applied to textures over time. $199; upgrade, $59.

LogoMotion 2.0. A new button bar combines the rich controls of LogoMotion into a drag-and-drop interface. This includes the ability to drag textures or bevel styles onto objects. You can also drag stagehands — premade animations — directly into a scene or create your own stagehands to share with other LogoMotion users.

Rendering is also improved in version 2.0. The Phong renderer makes it possible to have shadows as well as objects with applied textures, such as sphere with a map of the earth on it, for extra realism. $199; upgrade, $59. 800-433-7732 or 413-253-3100. / JS
Layered Layouts
Compositing images in Adobe Photoshop is a common task. For those with page-layout skills, there is an easier way. Meet Collage.

THE WORD COLLAGE may imply creating images by cutting and pasting pictures from magazines or photos. But with powerful digital-compositing software, making collages on your Mac can become anything from the simple combination of several images to sophisticated special-effects work.

That's where Collage 2.01 ($279), from Specular (413-253-3100), comes in. Collage is a compositing application designed to complement paint and image-editing programs such as Fractal Design Painter and Adobe Photoshop. Using Collage's page-design metaphor, you can quickly and easily create compositions of several images. Collage has two main benefits over an image-editing program: speed and lower RAM requirements. Let's take a closer look at Collage to see how it fits in with your work flow.

Editing by Proxy
Collage does not include any tools for retouching or painting, but placing, moving, rotating, and blending images is Collage's forte. It can perform these operations much faster than a program such as Photoshop or Painter, even though these programs also have image-layering capabilities.

To speed up compositing, Collage makes a proxy of each of the large files in your composition. Typical bitmap-editing programs give you control of each and every pixel in your image, which makes them great for creating artwork. But editing large, high-resolution images can tax even the fastest Macintosh.

Collage eases this processing burden by creating screen-resolution (72 dpi) proxy files of all your images. When you import a file into Collage, a proxy is saved to disk on-the-fly. Instead of working with, say, a 300-dpi file, you're working with a 72-dpi file, which has enough detail for most compositing work. When you've finished creating your composition, Collage returns to the original full-resolution files to render a completed image at the size and resolution you specify.

In addition to speeding up editing with its proxy approach, Collage eases the compositing process by keeping each image in its own layer. The obvious question is, Photoshop 3 also provides layering controls, so why use Collage? Aside from having superior speed (particularly when working with many high-resolution layers), Collage offers a true object-oriented approach to layering. Working with layers in Collage is more akin to working in a draw program such as Adobe Illustrator than it is to working with Photoshop's layering features.

In Collage, each layer has a set of properties that can be changed at any time. Photoshop applies filters one at a time to each pixel, and once the image or layer is changed it cannot be undone. Collage applies the filter to the proxy but leaves the actual filter processing to the final rendering phase, meaning you can undo any property applied to any layer. This approach means that rapid changes are much easier to execute than in Photoshop and that you can undo any operation quickly.

RAM Tough
For users with limited RAM (24 MB or less), Collage can be most useful simply for getting multiple images into one document. If

figure 1 / For this CD cover, the author created a Collage document and imported two high-resolution scans and a 3-D rendering. Collage made easy work of combining and scaling the images.
you add several large, 300-dpi images to a Photoshop document, you will find that Photoshop wants lots of RAM simply to position them, never mind performing more-complicated operations such as rotating and scaling. If Photoshop runs out of RAM, it creates the necessary space — called virtual memory — on your hard disk. Because data access is slower with hard drives than with RAM, even a speedy Power Mac seems to crawl.

Using Collage is the perfect solution to this problem. No matter how large your images, you'll be able to easily place and move them in Collage, with as little as 8 MB of RAM.

You'll also find advantages to Collage's pasteboard. Like Adobe PageMaker and Illustrator documents, Collage documents sit on a large canvas. This pasteboard makes it possible to deal with elements that are much larger than your document. A large image can be brought in and easily scaled down to the desired size or made to bleed off the edge of the page. To do the same thing in Photoshop, you must create a document big enough to contain the largest images in your composition, but doing so often requires more memory than you have.

With your images in place, Collage can render your document as one large image or as a Photoshop 3.0 file with all layering information intact.

**Who Was That Masked Program?**

Good compositing depends on the ability to create masks — often called alpha channels — which define how separate layers blend together. Masks are akin to stencils in the real world but with the added benefit of being partially transparent. An alpha-channel mask fades two images smoothly together by using the mask image to specify which areas are clearly visible and which are completely transparent.

Masks are necessary for combining just the parts of an image you want in your composition, but unlike Photoshop or Painter, which have a complete selection of tools for creating masks, Collage has no such built-in masking features. Collage does, however, provide the necessary tools — including transfer modes for adding special effects and filters such as Add Noise and Unsharp Mask — for combining images by employing alpha-channel information.

If your masking needs are simple — removing a background or creating a dissolve from one side of an image to another, for example — you can probably create all of your masks ahead of time in an image-editing program. Collage provides controls for changing the transparency of an element, so you don't need to create masks for this simple effect. With your masks created, launch Collage, import your images, and turn their masks on — and you're ready to start compositing.

There are times when you won't know what type of masks you need until you begin placing your images together. You may not realize, for example, that one part of an image needs to be masked until you start creating your collage. You can approach the composition in one of two ways, depending on the amount of RAM in your machine.

If you have enough RAM, give Photoshop and Collage a partition of 10 to 15 MB each and launch them both. Place your images in Collage, and then move back to Photoshop to create masks, using any of Photoshop's masking and selection tools. Collage automatically updates placed images when the original files change, which has the benefit of making the editing process interactive. This is the faster method, provided all the images you are working on are small, about 3 to 5 megabytes.

Users with less RAM may want to position all their images in Collage (as described above) and then render the images as layered Photoshop 3.0 files. The resulting documents can be opened in Photoshop, and masks can be created by using Photoshop's Layer Mask feature. Even if your machine doesn't have enough RAM for moving or placing large images, it probably has enough for editing masks.

**Day of Rendering**

With your image complete, you're ready to render, a time-consuming process when you're outputting a high-resolution image. Rendering a 10-x-5-inch image in Collage at 300 dpi on our Power Mac 7100/66 took 48 minutes. Nevertheless, the time we saved during the composition process was more than worth the time it took to render the final image.

Even after rendering, you'll probably find a few uses for your image editor. No matter how carefully you select and mix your images or how meticulously you create your masks, there will still probably be rough spots in your final image, areas you'll want to retouch in Photoshop.

Because Collage doesn't offer any color-correction tools, you may want to use your image editor to adjust the colors of your final image. Because Collage supports Photoshop layers, it's as easy to do this on a layer-by-layer basis as on the final image.

As users' needs become more complicated and software becomes more specialized, using several applications in tandem can overcome processing and storage limitations. Although other applications — most notably HSC Software's Live Picture — exist for putting together sophisticated compositions, Photoshop users will find using Specular's Collage to be a natural extension of their normal work process.

Ben Long is a San Francisco-based writer who creates collage artwork, both analog and digital, and likes clarinets.
Spic-and-Span Scans
Photoshop provides the right tools for turning old art into sharp illustrations.

CAPTURING COPYRIGHT-FREE vintage artwork with a scanner can be a great way to start an illustration. Scans, however, require some preparation before you can turn them into a final piece of PostScript art, especially if you plan to add color to various parts of the illustration. You will need to break the image up into separate shapes in Photoshop before autotracing in Adobe Streamline or another tracing program, to make the final illustration in Adobe Illustrator or Macromedia FreeHand easier to edit and print. Most old engravings and woodcuts contain problem areas—small black or white spots, clogged areas, or superfine lines—that require a bit of pixel editing. This example shows you simple techniques for cleaning up these scans so your final illustration can look its best.

Janet Ashford is the coauthor, with John Odum, of Start with a Scan: A Guide to Transforming Scanned Photos, Drawings and Objects into High-Quality Art (forthcoming from Peachpit Press).

1. Scanning the original. The first step is to scan your image in Photoshop, at a resolution that's high enough to give you the detail you want without taxing your system or hindering Adobe Streamline during the tracing process. I scanned—at 400 dpi—a picture of a pianist from the copyright-free source Music: A Pictorial Archive of Woodcuts & Engravings (Dover, 1980).

2. Cleaning things up. To simplify the image, I circled the background shapes and filled them with a white background color by pressing the Delete key. I then used the brush tool, with either black or white paint, to brush out small dots and spots, such as those in the hands of the pianist, and to open up areas that were clogged, such as the areas of white in the dress.

3. Breaking up the shapes. I knew I wanted the dress and the piano to be different colors in the final PostScript art, so to lay the groundwork for this, I converted the scan to RGB mode (Mode: RGB) and filled the dress areas with red, using the paint-bucket tool. Then I could see where breaks between shapes should occur. To separate black areas from each other, I drew breaks between the shapes, using the airbrush tool and a white color.

4. Separate with color. To check my progress, I dumped different colors into black areas until there was no unwanted filling of adjacent shapes. Painting white breaks meant that solid-black borders could not be maintained around white shapes, such as the face, that should remain separate. I dealt with these areas by later drawing the shapes in Illustrator. Before autotracing, I converted the image back to black-and-white, by using the Replace Color command (Image: Adjust: Replace Color) to reduce the saturation of the colored areas to zero.
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CIRCLE 88 ON READER SERVICE CARD
Data, Data Everywhere

Publishing in the digital world means creating and storing lots of data. Making use of all those bits requires smart data-management tools.

WE'RE DROWNING in a sea of data, and we need life preservers to keep us from going under. In the publishing environment, that's what database and work-flow managers are for. But what's available today is a cross between a bit bucket into which we haphazardly throw data and an electronic version of the magnetic whiteboard on which we scrawl to-do lists. This approach may be acceptable for the near term, but as work-flow management in a digital-publishing environment evolves, it will lead to more rounds of reconfiguring our databases — throwing out the data babies with the digital bathwater. As we publishers amass more data, we need to find better ways to make more-productive use of and add some much needed longevity to it.

For example, look at how we store content with an eye toward repurposing it for other media. With most image databases, you first decide what an image looks like and then you assign it a corresponding keyword or two. Next, you store it in the database by file type. Now you can find it again and reuse it. This method of image management is great as long as the format works in an evolving publishing environment and as long as you don't mind using the same images again.

Some image-database vendors have put on their X-ray specs and are talking about the data bits rather than the file types. In this scenario, it doesn't matter whether or not the database manager recognizes the file type — the bits just get passed through the publishing process intact.

However, even this approach doesn't go far enough if the data is to feel fresh. What's required is a way to create "molecules" of data — subcomponents that can be recombinated in innovative ways. Without recombinability, images are destined to become stale faster than they might otherwise. Think of the process as the content equivalent of using a raster-image processor (RIP). RIPping works for output because PostScript turns content — text, graphics, and images — into the common language of math. The RIP turns the math into marks on paper without regard to what created those content elements in the first place. What we need is a content processor to make it easy for publishers to reuse content.

Keeping afloat in this sea of data also requires that work-flow management go far beyond scheduling. For example, people who are good at making choices when the proper decision points are presented to them are often not as well versed in deciding what the proper decision points should be. If databases could store more than just content, we could, for example, include decision trees — work-flow decision templates, to be exact — in our databases. When a job was entered into the work-flow manager, not only could appropriate decisions be presented to production personnel but some decisions could be automatically initiated from the work-flow manager's database. For example, an image would not just be retrieved but would also be automatically resampled and resized before it was presented for page placement.

Here's the real point: Instead of using databases as passive collection entities, we can make them active partners in the production process. Customer-service representatives could define the work flows that drive the production decisions, which in turn would be automated by work-flow management modules. Designers could pay more attention to design than production. The entire production process would be optimized.

While you're waiting for this change to occur, is there anything you can do? Start thinking about your data as subparts. For example, instead of thinking of a digital image as a bitmap, think of the elements and operations that went into creating it — masks, layers, and other image components. Then think about how you can reuse these image elements. And start banging the drum with software developers. After all, they build what they think you will buy.

Such smart database- and work-flow-management tools may sound far-fetched, but they're not. The concepts aren't really new, but desktop computer systems are finally powerful and cheap enough to implement these ideas. It behooves us to stop asking developers to create stopgap database life preservers for us when what we really want is to learn to swim.

Bob Schaffel is emerging-technologies consultant for R. R. Donnelley & Sons. Chuck Weger is a consultant and conference chair for CONCEPTS 96.
Many of the masterpieces created on a Macintosh have one very powerful ingredient in common: Kingston memory. As software becomes more and more complex, memory demands go up. Of course, it's not only the amount of memory that matters, it's the quality. Nobody understands that better than Kingston. We test 100% of our modules. In fact, we test every cell on every chip on every module.

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These Days, It Takes A Lot More Memory To Be Your Best.
PC Card Lets You E-Mail on the Go

CONVENIENT, LIGHTWEIGHT WIRELESS communication is the traveling computer user's Holy Grail — and the goal of a new PC Card from Megahertz (800-527-8677 or 801-320-7000) that connects to messaging services in order to bring wireless e-mail, fax, and file transfer to PowerBook and Newton users.

The Megahertz AllPoints Wireless PC Card carries its own battery and antenna in a PCMCIA Type II card. The $499 price includes WyndMail and RadioMail software, each of which runs on Macs, PCs, and Newtons as well as other PDAs. With either the WyndMail or the RadioMail service, which is charged on a per-message basis, the package allows e-mail, fax, and data communication via the radio-based RAM Mobile Data Network, available throughout the U.S. and several foreign countries.

Megahertz is not the first to bring wireless communication to the Mac, but the AllPoints card is notable for providing all you need in a compact form. Other schemes require brick-sized radio modems for connection to wireless networks.

The WyndMail and RadioMail services provide users with an Internet e-mail account that can forward messages either directly to the AllPoints card or to any designated e-mail address. Users can send and receive e-mail with the card or can simply receive notification of waiting messages. The software can also filter messages.

The WyndMail service (800-549-6000 or 805-547-6460) costs $49 to activate and $49 per month, with 50 free 1,000-character messages included in the monthly fee. Additional messages cost 29 cents each, and dial-in mail retrieval costs 19 cents per 1,000-character message. The RadioMail service (800-597-6245 or 415-286-7800) costs $99 to activate (fee waived with a two-year contract) and $39 per month with 100,000 characters' worth of messages included in the monthly fee; additional messages cost 32 cents each. News and stock quotes are also available from RadioMail. Both services can send faxes via the wireless network. / Nathan Garcia

NEW COLLABORATION FEATURES and a new look highlight version 2.0 of the Timbuktu Pro screen-sharing software, from Farallon (510-814-5100). Road warriors will also find dialing up their desktop Macs a bit easier.

Timbuktu Pro for Networks, Macintosh Edition, as the product is now dubbed, looks a lot more like a Microsoft Windows application than past versions. That's no accident, since Farallon hopes to expand Timbuktu's reach into the cross-platform world. Mac and Windows versions of Timbuktu (the company released a new Windows version last July) now support connections over IPX, in addition to connections over AppleTalk and TCP/IP, which have been available in previous versions. Version 2.0 of the Mac product also supports Apple's Open Transport.

Taking note of Timbuktu's usefulness to PowerBook and remote-office users, Farallon has licensed ARA (Apple Remote Access) client software from Apple and includes it with version 2.0. As with previous versions, ARA users are able to open connections to a Mac network automatically through Timbuktu documents, if they have ARA installed.

Timbuktu's file-transfer features are significantly enhanced in the new version. The software supports drag-and-drop transfers between machines that are being controlled remotely. In addition, users can send files to multiple people — rather than to one user at a time, as with previous versions — whether the recipients are using the Mac or the Windows version of Timbuktu. A messaging system called FlashNotes allows users to add a note to a file being transferred.

The simplicity of group file transfers owes much to Timbuktu's new user interface, which includes an address book and other features designed to help users find others on a large AppleTalk or IPX network. Users can save names and groups in the address book and search both the address book and the network for other users.

Prices for Timbuktu range from $42 per user ($4199 for a 100-pack) to $100 per user ($199 for a twin-pack) — slightly higher prices than the firm charges for the Windows version. / Shelly Brisbin

NETBYTES

Hello Out There

FREE CONNECTIVITY for PowerTalk users is now available from Apple, which is distributing gateways that provide a bridge between the messaging software and other mail-system software. Apple will distribute the Mail*Link gateways, which it acquired from StarNine Technologies, via the World Wide Web (at http://www.info.apple.com/dev/evangelism/powertalk/gateways.html) and as part of future system-software releases. With the gateways, PowerTalk users can receive mail from the Internet, StarNine Mail (formerly Microsoft Mail), and CE Software's QuickMail. If free-mail gateways can't tempt you to use PowerTalk, how about an all-purpose communications application? JABRA (800-327-2230 or 619-622-0764) has released DOC*TEL, an e-mail, fax, and telephony package that manages messages and documents and with a GeoPort and the JABRA EarPHONE — lets you use the Mac as a hands-free telephone. DOC*TEL Personal sells for $99 or for $49 if you upgrade the Lite version that comes with the EarPHONE. A multiuser version is planned for early 1996. / SB
Making the Standard Pitch

Apple is once again striving to create a cross-platform standard. Will OpenDoc be another QuickTime or a boondoggle?

IT SEEMED LIKE MAGIC at the time. I stood at a trade-show booth in 1987, staring in disbelief. The application that was then the raison d'être for the Mac — PageMaker — was running smoothly under the clunky new Microsoft Windows 1.03. PageMaker was one of the first Mac applications to make its way to the other side of the fence. The Windows port gained Aldus new customers, but it also helped the company keep its Mac customers, by establishing the product as a cross-platform standard.

The importance of standards for the success of the Mac has only grown with time. Some of Apple's cross-platform products, notably QuickTime, have captured the market, whereas others have failed. In the afterglow of the Windows 95 hoopla, OpenDoc presents an important opportunity to bring a Mac standard to the industry — if Apple can show that it has learned from its past successes and failures.

Multimedia Savvy

Realizing that its QuickTime technology would be a welcome addition to the PC environment, Apple was quick to port the multimedia software to Windows. QuickTime enabled PCs to run multimedia software without the costly add-in boards and additional RAM required by Intel-promoted technologies. But Microsoft soon picked up on the idea and released Video for Windows, which instantly became a major competitor. Apple fought back with QuickTime for Windows 2.0. QuickTime is faster than Video for Windows, is easier to develop for, and yields better-quality video.

Yet QuickTime couldn't succeed with superior technology alone. It needed the endorsements of major PC companies, and it got them. Last year Apple agreed to include Intel's video-compression algorithm, Indeo, in QuickTime for Windows and the Mac. A few months later, Netscape agreed to incorporate QuickTime and QuickTime VR into future releases of Netscape Navigator for the Mac and Windows, to enable people to use multimedia over the Internet.

QuickTime for Windows has prevailed, because Apple stayed ahead of the technological curve and because it made crucial licensing deals. QuickTime for Windows is widely used in PC multimedia products, gets good reviews in the PC press, and lets the Mac remain an important platform in the production of CD-ROMs and multimedia titles for Macs as well as for PCs.

Windows Vaporware

Apple has not always taken the lessons of QuickTime to heart. The company's GeoPort was supposed to become a general-purpose, low-cost communications standard for analog and digital lines. IBM and AT&T announced support for the GeoPort standard but have never produced a product that implemented it. In fact, Apple itself underutilizes the GeoPort, which has the capability to transmit ISDN but can currently operate only at 14.4 kbps on the Mac.

With 28.8-kbps modems available for $200, there's little reason for a Mac user, let alone a PC vendor, to adopt the GeoPort.

Another of Apple's failed cross-platform standards is DAL (Data Access Language), client/server database middleware. DAL actually made it to a PC version. In fact, you can still buy DAL Client for DOS/Windows ($149) and DAL server software for UNIX machines, from AGE Logic (508-898-3300). However, DAL failed to become anything like a standard in the face of Microsoft's ability to sign up developers and create a de facto standard with its own ODBC. Apple eventually made the Mac and PC DAL client software compatible with Microsoft's ODBC APIs, but this tactic didn't work. Apple surrendered the battle, stopped shipping DAL with the Mac OS, and sold DAL to Independence Technologies (800-605-9010 or 510-438-2034).

Apple has occasionally attempted to enter the cross-platform world by bringing others' technology to the Mac. NetWare for PowerPC, a joint project with Novell, was possibly Apple's biggest cross-platform mistake ever. As I described in my December '95 column (page 143), Apple was planning to bundle a PowerPC port of the NetWare network operating system with an Apple Workgroup Server. The decision to kill the project was an expensive one. NetWare for PowerPC was already in beta and was scheduled to ship in February 1996.

Why did Apple and Novell kill NetWare for PowerPC? Apple told me that customers didn't really want NetWare for PowerPC after all and that it had decided to focus on AppleShare software. Unfortunately, the company took too long to come to this conclusion, which cost it money and produced an embarrassing retreat from what would
have been a high-profile product.

Sticking to AppleShare does make some sense, now that Apple Workgroup Servers include AppleShare Client for Windows at no extra charge. (It's also available separately for $199 for an unlimited number of networked PCs.) Although it's not intended to compete with NetWare or Microsoft Windows NT Server, AppleShare Client for Windows makes Workgroup Servers viable solutions for Mac-centric networks that have a few PCs.

OpenDoc: Another QuickTime?

Despite a string of failures, Apple does have a chance of repeating QuickTime's success. OpenDoc technology will let users link and customize their applications (see Mac to PC, March '95, page 119). Just as QuickTime brought multimedia to PCs, without requiring a lot of extra hardware, OpenDoc promises to bring powerful applications to users' machines, without the need for massive amounts of hard-disk space and RAM. OpenDoc makes features of applications available as small pieces of software, called parts, that you can choose to install and mix and match at your own whim. OpenDoc may ultimately allow you to simply remove the features you don't need from OpenDoc-based applications, although early versions are unlikely to include this capability.

Like QuickTime, OpenDoc is technically superior to Microsoft's alternative, OLE (Object Linking and Embedding), which still relies on huge, monolithic applications. OpenDoc is easier to use than OLE, easier to develop for, and more flexible. Apple has also been able to articulate these advantages to cross-platform developers and to get them interested — something it succeeded in doing for QuickTime but failed to do with DAL and NetWare for PowerPC. Apple created an industry alliance, Component Integration Labs, to foster OpenDoc development. CI Labs now controls Apple's OpenDoc technology and boasts members that include IBM, Novell, and Adobe.

Unfortunately for OpenDoc proponents, OLE is already shipping, with OpenDoc expected to become available to developers only this quarter. The OpenDoc alliance will need a massive marketing effort to overcome OLE's lead. Fortunately, the alliance has more resources for this effort than Apple would have by itself.

With OpenDoc, Apple seems to have the right technology and the right alliances. OpenDoc will be a central part of Apple's Copland operating system, and IBM — whose new ownership of Lotus Development makes it a very important software vendor — has stated its intention to use OpenDoc widely. Novell's commitment at this point is less clear.

One thing is certain: The cross-platform success of OpenDoc is crucial for Apple. The company can no longer afford to create great Mac-only technology. By propagating innovative cross-platform technology, Apple can help the Mac remain relevant in a Windows-dominated world.

Contributing editor John Rizzo is the author of several books, including How Macs Work.
NOW, ALMOST ANY MAC user can take advantage of printing features that used to be available only to those who braved QuickDraw GX. The main attraction? Desktop printers, icons that sit on your Mac's desktop and enable drag-and-drop printing. It's easy enough to get desktop printers onto your own Mac; the printing software is available on all the major online services (see the "Icon Class" sidebar for information on obtaining the software). The problem is that you're likely to get documentation that's skimpy at best. Here's a catch-up on the basic features, insider tips, and troubleshooting aids to help you reap the benefits of desktop printers.

**What You Get**

Using desktop-printer software is easier than the old printing method, because it saves you steps and gives you more control.

**Step Saver.** You can still print the old-fashioned way, by selecting Print from an application's File menu, but desktop printers give you another choice: Just drag and drop a document's icon onto a desktop-printer icon. This opens the document and the Print dialog box, saving you a step. Drag-and-drop printing really comes in handy when you need to print several documents or want to print to more than one printer. Simply drag your documents to your selection of printers, and the desktop-printer software sorts everything out. No more need to go to the Chooser to switch printers.

**The Signs of Change.** Checking the progress of a print job is also easier with the new printing software. With the old software, you had to open PrintMonitor. Now, all you have to do is glance at the desktop-printer icon you're using. Whenever a print job is in progress, the icon changes to include a piece of paper. If any trouble occurs, a triangular yellow alert symbol appears (along with an error message...
in the Finder). If you halt the queue, you'll see a stop sign on the icon.

A Clean Window. One of the most important changes you get with this new software is more control over background printing. Unlike previous printer software, desktop-printer software lets you rearrange the order of documents in the print queue without having to delete any print jobs, and you can delay the printing of one job while allowing the others to continue on their march to the printer.

To assert this control, start by double-clicking on a desktop printer. That opens a window containing a list of current jobs in the printer's queue. To delay printing of only one document, select its name and click on Hold. Rearranging the order in which documents print is also simple — just drag a document's name up or down in the queue (or even out of the window if you want to delay its printing until you move it back).

Cease All Activity. If you want to halt all your print jobs for a given printer, you need to access the desktop printer's menu rather than the print queue. Click on a desktop printer to make a new menu — Printing — appear in the Finder's menu bar. Then select Stop Print Queue. This not only stops current print jobs but also stacks up subsequent jobs you send to the printer. When you want to start printing again, select Start Print Queue.

One caution about delaying printing: Don't do it needlessly if you're tight on memory. Whenever you leave documents in the queue, the desktop-printer software soaks up an additional 160K of RAM.

The Bold Ones. A bold line around a desktop printer means it's the default — the one your documents print to if you print from within an application rather than using drag-and-drop. To select a different printer as the default, highlight it and choose Set Default Printer from the Printing menu.

What's Missing

You may find desktop printers are missing some important features. Here are a couple you can add yourself:

Alert Handling. Since the desktop-printer software handles background printing, the old PrintMonitor doesn't show up anymore.
However, the old PrintMonitor had at least one useful feature that desktop printers don't have: the option to disable manual-feed alerts (so that you don't get an alert that holds up printing to tell you what you already know—you need to insert paper into the printer's manual-feed tray). All you have to do is turn off the old PrintMonitor is disable the desktop-printer extensions. You can do this either by restarting with extensions off (by holding down the Shift key during startup) or by using a utility such as Apple's Extensions Manager.

Mobile Icons. One other potential frustration is that desktop printers won't budge from the desktop, but don't let that limit you. Although you can't move a desktop-printer icon into the folder of your choice, you can create an alias and put it wherever you want. An alias works just like the original.

Fix What's Wrong

Desktop printers are reliable, but problems can and do arise. Here's a sampler of what to watch out for:

Lost in Desktop Space. A desktop printer is actually a folder, which means it shows up in the list of folders and files in the Save dialog boxes. The problem is that if you save a document to a desktop printer, that document will disappear from the Finder and you won't be able to access it from the desktop anymore. To retrieve the file, start up with extensions off and drag the file out of the desktop-printer folder.

XXX. If your desktop-printer icons have Xs over them, it means the printing extensions are disabled (typically because you started up with the Shift key held down). You can still print, but you don't have access to any of the special features of desktop printers. Restart with extensions back on, and all will return to normal.

Memory Lapse. Memory management is improved in this latest incarnation of Apple's printing software, but that doesn't mean your Mac is immune to low-memory alerts. If you're getting them, the cause is likely to be one of the following problems:

• You haven't allocated enough memory to the Desktop PrintMonitor. This is the likely problem if you have more than four desktop printers on a Power Mac or more than eight on a non-Power Mac. To allocate more memory, highlight Desktop PrintMonitor (in the Extensions folder) and increase the preferred memory size in its Get Info window. You don't need more than a small increase. If you have a Power Mac, increase the memory 10K for every printer beyond four. For instance, if you have six printers, increase the memory by 20K. For non-Power Macs, increase memory 10K for each printer beyond eight.

• A specific desktop printer doesn't have enough memory allocated to it. Suspect this problem when the message asks if you want to temporarily adjust the memory size of the desktop printer in use. The fix: Increase that specific desktop printer's memory (as opposed to the Desktop PrintMonitor's memory) by 100K to 200K.

Crash and Crash Again. Occasionally a printing problem may cause the Mac to crash, forcing you to restart. If so, the Mac may crash again near the end of the startup, as it automatically tries to print the problem file again. Stop this nonsense by first restarting with extensions off. Then double-click on the desktop printer, even though it has an X over it. It will open like a folder, with the waiting print jobs visible as ordinary-looking documents. Drag the document icons to the Trash, and restart.

Crashes on PCI Macs. If you have a PCI Power Mac and are experiencing problems such as freezes and crashes, make sure that you have the latest version of the desktop-printer extensions and that you install the 7.5.2 Printing Fix extension. These files are all available online from Apple.

No Signs of Life. It's unlikely, but it can happen—you drag a document to a desktop printer, and you get no response, not even an alert message. This means the application you're printing from is probably incompatible with the drag-and-drop feature. Unfortunately, there's nothing you can do but hope that the next update of the application is compatible.

Print Job Complete

Desktop printers make managing your printing easier and more convenient, especially if you use more than one printer. Now that they're available to QuickDraw GX as well as non-GX users, what are you waiting for?

Ted Landau is a MacUser contributing editor and author of books on Macintosh troubleshooting.
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Wrap It Up. At many shops, the first thing you do is grab a cart. It may be called a shopping bag or a shopping list. Netscape's General Store, at http://merchant.netscape.com/netstore/index.html, calls it a basket. Book Stacks Unlimited (http://www.books.com/), which has 300,000 titles on its virtual shelves, calls it a BookBag. Whatever it's called, the idea is the same: You click on items to put them in your cart, and when you're ready to check out, the store tallies up the prices of the items in your cart and presents you with a bill.

Is It Safe? The first stores to take orders over the Net experimented with various payment schemes, including asking you to send your credit-card number via e-mail, over unsecured connections. Many sites now use software that keeps your credit-card number or your entire transaction private, via public-key encryption. Although this technology itself is very secure, not all implementations are created equal. Last fall, Netscape discovered that its public-key encryption scheme was flawed, taking advantage of only a fraction of the security the technology offered. That problem has been fixed, but questions still remain about the security and privacy of Internet transactions.

Even if the details of your transaction are protected, other information — the fact that you're shopping at a certain store, for instance, or your preferences for certain types of products — might not be. Online shopping makes it easy for a merchant to create a profile of your shopping habits, which can be used to advertise more merchandise or be sold to other companies, without your permission.

Trust in a merchant's staying power and service may suffer when buying is done electronically. The relatively low cost of setting up a Net business opens the door to more firms that may abscond with people's money or go bankrupt. And even if you're pretty sure that BigStore isn't going to skip town, how sure are you that it's really the BigStore Web site and not an imitator you've linked to? The record so far is that shopping on the Net is as safe as shopping anywhere else. But you should know the risks.

Ecash Is Here. You may soon see online shopping sites sporting a "we accept ecash" sign. Ecash is something quite new: real digital money. Cash has benefits credit cards lack, one of the most interesting being that paying cash preserves your anonymity. Ecash has some of these same benefits. You get it from a bank by using your computer as an ATM. It's stored as "digital coins" (encrypted files) on your hard disk. You spend it by transferring the coins when you make a purchase. The Mark Twain Bank (http://www.marktwain.com/) recently became the first bank to offer ecash accounts, and vendors may be accepting digital money by the time you read this. You can get more information on ecash in general from the DigiCash page, at http://www.digicash.com/.

Tip of the Month

Some say the greatest strength of the Internet is its ability to connect people to one another and that it may be able to rebuild what the automobile destroyed: community. As in small towns of yesteryear, there are lots of places to barter online: BarterNet (http://www.teleport.com/~dtpdx/bnhome.htm), NetTrader (http://www.sentex.net/nettrader/), and WebBarter (http://www.ultranet.com/~bellville/webbarter.html) are just a few of them.

Don't Know Ecash from Cache? MacUser maintains a list of frequently asked questions (FAQs) about the Internet, MacUser itself, and this column specifically. Send mail to faq@macuser.com. MacUser's address on the World Wide Web is http://www.zdnet.com/-macuser/. You can reach me at traveler@macuser.com.
A MESSAGE TO THOSE WHO'VE BEEN

DYING

FOR DOOM TO COME TO THE MAC:

YOU KNOW NOTHING ABOUT DYING.

YET.
Help Folder

Why PowerPC upgrades may be a waste of money, how to make sure you don’t miss system updates, and ways to speed up backups.

Stepping on the Accelerator

**Q.** I’d like to upgrade my Performa 637CD to a PowerPC. Unfortunately, the only upgrade I’ve seen for it is the PowerCard 601, from DayStar, which runs at 66 MHz. I’d like faster speed.

Should I purchase the 601 or wait and see if DayStar comes out with a 604-based upgrade?

**Brandon A. Duhamel**
Woodside, NY

**CHRIS:** At around $650, the PowerCard 601 is tempting—you get low-end Power Mac performance for half the price of the real thing. Or for about $100 more, you can go with the faster upgrade Apple predicted would be out at the beginning of ’96—the 100-MHz 5300/6300 Logic Board Upgrade. It uses a 603e chip. Or wait for a 604-based upgrade (no word on when one may be available, if ever). I’m going to suggest another and—oddly enough for me—more expensive alternative: Buy a new Mac.

Even though I was a happy DayStar customer in my 680x0 days, I wouldn’t dream of jumping a 680x0 Mac to a Power Mac through acceleration now, unless:

1. I had a decorative lunch box full of money invested in RAM for my current machine that I couldn’t reuse in a Power Mac.

2. I owned a slew of NuBus cards that weren’t supported by the new Power Macs.

3. I absolutely needed a Power Mac to play Marathon 2: Durandal and was so short of funds that I couldn’t justify the expense of a new machine.

I’m not knocking DayStar. The company goes to the ends of the earth to make its accelerators compatible with current software and hardware. But there are just too many cool things on current Power Macs that an accelerator doesn’t provide—GeoPort, Fast SCSI-2, and PCI, for instance. And although DayStar has a generous upgrade policy, the daughterboards in some of the latest Power Macs will make upgrading significantly easier—and presumably less expensive—than in the past.

Recycling Floppies

**Q.** The fate of the planet is in our hands. Please tell me where I can send my floppies for recycling.

**Jim Hoffman**
Herndon, KS

**BOB:** If the floppies aren’t damaged, donate them to your favorite user groups, which are always in need of disks for their libraries and BBSs (bulletin-board systems). You can get a list of user groups from Apple (800-538-9696, ext. 500). Or donate them to any place that uses floppies, such as a school, copy shop, or computer-rental store.

However, if you’ve thrown those floppies into boxes because they’ve failed at one time or another, donating them to charity may be more cruel than donating. They’re bound to fail again soon. Instead, drop the floppies off at a recycling—you know, where you take glass bottles and soda cans. I found several in the Yellow Pages that accept floppy disks.

**CHRIS:** Wait. Before you let a recycler have at them, think about all the handy uses for floppies around the home. For instance, they make great coasters, can be used in lieu of matchbooks to prop up uneven table legs, and look just dandy when arrayed on a mobile. Perhaps the best use is to tack sharp pieces of tin to the corners and use them as Ninja death stars.

Get with the System Updates

**Q.** Software publishers always tell you when a software upgrade becomes available. Why doesn’t Apple? I hear that the System 7.5.1 upgrade, with its bug fixes and enhancements, has been out for a while now. Where do I get it, and how can I make sure I don’t miss out on future upgrades?

**Dirk Mockingbird**
Carmel, CA

**BOB:** Apple will be happy to notify you of software upgrades and updates as long as you have an e-mail address. All you have to do is subscribe to the Apple Software Updates mailing list, by sending an e-mail message to swupdates@thing2.info.apple.com. In the body of the message, type subscribe and your name; for example, I’d type subscribe Bob LeVitus.

You know you’ve been added to the list when you receive an automated reply. From then on, whenever Apple issues an update or an upgrade, you can expect to receive a cheerful little e-mail message telling you so. If you don’t have e-mail, you can call Apple (800-769-2775) to get the software on disk.
for only the cost of shipping — about $10.

**CHRIS:** Of course, because we’re typing these words some months before they actually appear in print, an update to this update may now be available. That’s why it’s important to get on the updates mailing list.

Speaking of helpful mailing lists, Apple produces a ton of them — by subscribing, you can get items ranging from press releases to the fact-packed Information Alley (a newsletter of Mac tips). In order to get the Apple Mailing Lists list, send e-mail to info@thing2.info.apple.com and type listinfo in the subject of the message.

**Breakneck Backups**

**Q:** To my surprise and complete joy, when I got a SyQuest 88 last spring I also got a new feature called Smart Replace. I don’t know where it came from, but it made backing up much faster by copying only files that I had modified since my last backup.

Unfortunately, since installing System 7.5, I’ve lost that feature. Where did it go, and how do I get it back?

**Kenneth R. Anderson**

**Hilton Head Island, SC**

**BOB:** I’m not sure where it went, but I know how you can get back that capability. This type of feature is available in components of at least two commercial products. For instance, you’ll find it in the Speed Copy component of Connectix’s Speed Doubler; it’s called Speed Replace. The CopyDoubler component of Symantec’s Norton Disk Doubler Pro has something similar, but it’s called Fast Replace (see figure 1).

Both Fast Replace and Speed Replace do just what you’ve been missing — selective backups, copying only those files you’ve modified. But if I were forced to choose between one and the other, I’d go with CopyDoubler, because it has a feature I couldn’t do without — it backs up folders automatically several times a day. I would not discount Speed Doubler, however, if your highest priority were speeding up your PowerPC machine. (Disclaimer: I installed it only a couple weeks ago, but so far so good.)

**CHRIS:** I also think Speed Doubler is the bee’s knees for goofying my PowerPC speed, but for copying, I would go with CopyDoubler or take a look at Desktop SpeedBoost, a component of Aladdin’s Desktop Tools. Desktop SpeedBoost doesn’t perform scheduled copies, as CopyDoubler does, but in most other ways, the two products are comparable. Plus Desktop SpeedBoost comes with Desktop Viewer, an intensely swingin’ utility that allows you to view — and sometimes edit — a variety of files. Why endure Photoshop’s long startup process when you just want to peek at a TIFF file?

**Virtual Receptionist**

**Q:** Is there a way of setting up a Performa 475 or a Power Mac 6100 to receive faxes and modem communications, unsupervised, over the same telephone line? I can set my Global Village TelePort Gold fax modem to receive either faxes or modem communications, but not both.

**Howard Smithline**

**Somers, CT**

**BOB:** It is possible to get fax and modem transmissions on the same line, but not with the modem you’re using. The only way to get what you’re asking for is to shell out some dough on new hardware. For instance, you can buy a Global Village TelePort Platinum modem, which comes with software that can discriminate between voice and fax and between fax and ARA.

Another option is to get a ComShare 750 (available from APS for around $120). It automatically routes not only fax and modem calls to the proper devices but also forwards calls to an answering machine and lets you use your phone, all on the same line. Unfortunately, this device requires that your phone, answering machine, fax, and modem be separate devices, which you plug into jacks on the ComShare 750 (see figure 2).

**CHRIS:** My suggestions also involve spending some money:

- You’ve got two computers? Buy another modem for the computer lacking same, install another phone line, and use one number for a dedicated fax line and the other for data.
- Or pick up an Apple GeoPort Telecom Adapter (estimated street price, $130), and attach it to your Power Mac. The GeoPort adapter supports a feature called intelligent answering — the software attempts to detect the kind of call coming in (voice, fax, or data) and route it to the proper application. Your TelePort Gold supports only the “moron answering standard,” which requires that you choose in advance which type of calls your modem will accept.
- If the GeoPort software can make out a fax or data tone, it routes the call to an appropriate application (one you’ve set to auto-answer). If the software can’t identify the call, it routes it to the type of application you’ve set for unidentified calls — a telephone application such as Cypress Research’s MegaPhone, for example, which is bundled with the GeoPort adapter.

**Captured by QuickTime**

**Q:** I’ve heard that the best full-screen capture rates you can get when you copy a movie from videotape to your Mac are around 15 to 20 frames per second (as opposed to 30 fps when you play a videotape on a VCR).

If that’s true, then how are the makers of movies such as Addams Family Values using Macs to create special effects? Obviously they’ve found a way to get the full 30 fps into
the Mac. What’s their secret? What kind of hardware, software, and processor would I need?

Chris McSorley
Converse, TX

BOB: This subject could fill an entire bookshelf. Here’s the short answer: You need at least $20,000 worth of software and hardware to get broadcast-quality Mac video. For hardware, you need a Quadra 800 or a faster machine; at least 32 MB of RAM; several gigabytes of hard-disk space; and a high-end video-digitizing system, such as one from Truevision, Radius, or Data Translation. State-of-the-art equipment lets you import and export video at rates of up to 30 fps.

The lower numbers you’ve been hearing — 15 to 20 fps (and that’s not full-screen, by the way) — are what you get by using an Apple AV card or a low-priced video digitizer such as the Radius Spigot 2 Tape (estimated street price, $600) and a midrange Mac — say, a Quadra 630.

CHRIS: No one is suggesting, of course, that you buy this equipment yourself. We’re in the multimedia age now, and video service bureaus are starting to pop up across the land like mushrooms on a cow pie.

If you intend to go the service-bureau route — and yes, it is expensive (to the tune of $70 to $100 per minute of video) — simply edit your QuickTime movies at home by using a program such as Adobe Premiere, generate an Edit Decision List (this EDL contains a list of all the cuts and transitions in your movie), and pass the whole mess off to the pros.

In a matter of days, you’ll have not only a beautiful movie that plays just as fast as your Mac will allow but also a substantial hole in your bank account.

Your Saving Grace

Q. With alarming frequency, I continue to make the same mistake — I modify a document and then inadvertently hit Command-S when what I meant to do was a Save As. Naturally this wipes out my original document. Is there any way I can recover the original?

Bob Ralston
Granada Hills, CA

CHRIS: I’ve done the same thing more often than I care to admit, so I can well imagine the muttered expletives waiting across your work space. For your benefit and mine, I’ve searched high and low for a utility that creates a recoverable buffer file for old documents, and I’ve come up with zilch. (But gee, what a swell idea for some enterprising shareware author.) Therefore, we must move from recovery to prophylaxis.

The first and easier solution is to save your documents as stationery files whenever you close them. When you open them, a copy of the file appears, ready for work, while your original remains tucked safely away. Of course, not all applications support stationery files, which is why I’ve devised a dual-purpose QuicKey: (1) It offers you a chance to back out of hasty decisions, and (2) it’s so annoying that after a week of use, you’ll never make the mistake again. If you install this QuicKey, whenever you press Command-S, a pesky dialog box will pop up and warn you that you may be doing a bad thing (see figure 3).

BOB: I’d just use Copy Doubler’s automatic copy feature to back up important folders every few hours.

CHRIS: I’ve tossed a copy of the QuicKey — Safety Net — onto ZD Net/Mac (see end of article) and MacUser’s Web site (http://www.zdnet.com/-macuser/).
Until now, the on-ramps to the Internet have been under construction.

Introducing the Apple Internet Connection Kit.

Getting hooked up to the Internet can be a messy process. That is unless you've got exactly the right tools. Presenting the Apple® Internet Connection Kit. It's everything you need to get on and get around the Internet quickly, easily and with a minimum of frustration. Here's what you receive: Netscape Navigator®, Claris Emailer® Lite, Progressive Networks RealAudio, NewsWatcher, Fetch, the Apple Internet Dialer, Quicktime® VR Player and more. Plus, if you come across anything you don't understand, Apple Guide on-line help is there to assist you right away.

Just think, 30 minutes after opening the box, you could be participating in discussion groups, E-mailing Aunt Helga in Denmark, visiting the Louvre, the Library of Congress or maybe even the local chicken joint. (Seems like everybody's got a Web site nowadays.) Visit your Apple reseller, or order direct by calling 1-800-950-5382 ext. 784. And when you do get on the Net, check out our Web site at http://www.apple.com.

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Uncork Your Mac

A glass of wine, a CD-ROM, and an Internet connection — that’s all you need to educate your palate without leaving your Mac.

BY PAMELA PFIFFNER

I’M NO WINE SNOB, but I must admit I’ve developed a taste for finer vintages since graduating from the screw-top jugs of my college years. Yet when my boss invited my husband and me to a comparative wine tasting of California Cabernet Sauvignons and French Bordeaux, I panicked. Living in San Francisco allows me frequent access to California’s wine country, so choosing a Cabernet wasn’t going to be a problem. But I’m baffled by Bordeaux.

Off I ran to my local wine store and begged for advice. The merchant steered me toward the right section of the store and I bought some wine, wishing I knew a better way to handle such situations. Then I discovered the wealth of wine information available on CD-ROMs, online services, and the Internet.

Silicon Sommelier

Wine tasting is a perfect subject for interactive CD-ROMs. If you forget a technique (is it swirl, sniff, sip, spit?), just fire up the disc and check. And instead of quaffing several bottles to find the right match for pasta puttanesca, you can ask your silicon sommelier for an expert opinion. That way, the disc is loaded instead of you.

All wine-appreciation CD-ROMs seem to include the same basic ingredients: a video lesson in wine tasting, information about particular grape varieties and growing regions, advice on matching wine with food, and an encyclopedia with tasting notes on wines from around the world. Each of the three discs I sampled also has a designated expert to guide you.

I started out with Food & Wine’s Wine Tasting (★★☆☆☆, $30), from Times Mirror Multimedia (201-307-8866). This disc aims to educate your palate, not list thousands of wines. Filling out a tasting questionnaire evaluates your personal wine style — it accurately assessed my preference for big, full-bodied reds. The wine-tasting component consists of only 48 wines, but with each wine is a detailed list of descriptive phrases pertaining to its appearance, bouquet, and palate — including such evocative comparisons as acacia blossoms and wet dog. After stepping through your own tasting, you can elect to see the notes of this disc’s wine expert, Steve Olson. I tired of this disc’s inconsistent graphics and text-heavy screens — but I had fun using it. But like a late harvest Riesling, it’s not something I’d open often.

I’d more often turn to the information-packed Wines of the World 2.0 (★★★½, $50), from Multicom Publishing (800-850-7272 or 206-622-5530); for an extra ten bucks, you can get it bundled with a hardcover copy of Kevin Zraly’s Windows on the World Complete Wine Course. An exhaustive hodgepodge of text, graphics, videos, and maps (taken from widely and wildly varying sources), the disc consists of three tutorial sections encompassing the three Vs — viticulture, vinification, and vinosity. Its strengths include explorations of such far-flung growing regions as China as well as information on how to judge wine color and read bottle labels. But the interface is clunky, and navigation is hampered by the vanishing of the button bar after each selection.

At the heart of Wines of the World is the Wine Browser, which lets you search through 28,000 wines culled from The Wine Connoisseur’s Companion and the Restaurant Wines newsletter by Ronn Wiegand, literally the disc’s talking head (although his absence from the wine-tasting video clip undercuts his authority). You can also add wines from your personal cellar. Search criteria include country; vintner; varietal; vintage; price; overall value; and rating, which is the wine’s average score based on published evaluations. Searching through such a large database on CD-ROM is slow, however, and tasting notes often refuse to display.

Stomping the competition is the Microsoft Wine Guide (★★★½, $35), from the Ernest & Julio Gallo of the software market — Microsoft (800-426-9400 or 206-882-8080). This well-thought-out disc has an elegant, easy-to-navigate interface and a long finish. If the other discs are a bit thin on video clips, the Microsoft Wine Guide more than makes up for it. Videos of wine expert Oz Clarke, an Australian given to breathless hyperbole and enthusiastic spitting, pop up everywhere. Clarke tastes 18 varietals, telling you what to look for and what to avoid. A grab-bag section called All About Wine
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A Virtual Tasting Room

The problem with CD-ROMs is that they don't age well. If you want information that's more up-to-the-minute, head for the cybrewinery. On the Internet and commercial online services, you'll find scores of places where wine is discussed and, in many cases, sold.

I'd start with Cyber Wine (http://www.winebiz.com/wines/index.htm) and its One-Stop Mother of All Wine Links. This wine-related Web site lists all other wine-related Web sites—and rates them too.

Commercial Web sites from individual wineries are sprouting like grafted rootstock in stock. They provide an easy way to find out about smaller wineries around the world. If your interest is focused on Napa Valley wines, check out the attractive Napa Valley Virtual Visit (http://www.napavalley.com/). It has news about Napa Valley wineries, restaurants, and sights; during the 1995 harvest, for example, the Rutherford Hill winery posted daily reports on the grape crush. And then there are sites, such as The Grapevine (http://wine/inery.com/) and Virtual Vineyards (http://www.virtualwine.com/), that serve as wine shops that let you buy represented wines over the Net.

The Internet also serves as the people's tasting room, a place where you can find notes from kindred souls such as the reviewers of Wine Net News (http://cs.Berkeley.edu/~sethg/Wine/). Wine Net News gives you an exhaustive list of reviews contributed from around the world and arranged according to country, varietal, and winery. The Wine Page (http://augustus.csscr .washington.edu/personal/bigstar-mosaic/wine.html) not only has plenty of ratings for wines from Washington state and the world but also has links to The Croatian Wine Page and other sites. Let's think onophilies lack humor, check out this site's Rate Robert Parker! feature ▼, in which the rest of us can get back at America's foremost wine critic. The Bargain Wine Page (http://www.iglou.com/wine/ why wine.html) specializes in inexpensive wines—all tasted by Robin Garr, a Louisville wine columnist. Garr conveniently includes notes on such topics as matching wines with vegetarian and ethnic dishes.

Garr is also associate sysop of CompuServe's Bacchus Wine Forum (GO WINE), one of many wine forums on commercial online services. The Bacchanalians conduct a monthly real-time event, in which agreed-upon wines are sampled and notes compared online. If I logged onto Bacchus the night of my boss's dinner party, I would have found just what I needed: a thread pertaining to California Cabernet versus French Bordeaux. Next time, I'll be smart and use the Mac to meet my grape expectations.
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WE TAKE TO THE SKY this month, with three challenging flight simulators. Out of the Sun lets you fly vintage aircraft in three famous WWII battles. F/A-18 Hornet puts you behind the yoke of a modern-day F-18 jet fighter in the Middle East. And A-10 Attack! has you looking for trouble over Germany in an A-10 Warthog, the world’s toughest and ugliest airborne assault vehicle.

Out of the Sun
Rosie Would Be Riveted

FLIGHT SIMS ARE DIFFICULT to learn, with their myriad instruments to control and maps to navigate. Out of the Sun, like all other flight sims, is challenging, but it has features that simplify simulated flying.

First of all, the flight controls of this game have a slow response. (Domark, maker of Out of the Sun, claims that the slow response is intended to mimic the feel of WWII aircraft.) Thus, the controls are more forgiving than those of most other sims — once you’ve tamed your tendency to overcompensate.

You’ll also find that there isn’t an overwhelming number of controls. It’s old-time open-cockpit flying — you hunt down an enemy by using only a map, a compass, and your wits and eyeballs.

The controls may be simplified, but there’s plenty of variety in the game. You can choose from 17 U.S. and foreign aircraft. You also have three historically accurate WWII battles to try out, and you can opt to fly in the “arena” mode, in which you fight your choice of enemy aircraft. You can fight your battles in any of four skill levels. This combination of features makes each battle unique. It’s an excellent introduction to the art and craft of flight simulation (as long as you have a Quadra or a faster Mac; it won’t run on anything else).

F/A-18 Hornet
Stimulating Simulator

HERE’S A “KILLER” SIM that takes you to battle in the Middle East. Fast and fluid on most modern Macs (all you need is a Mac with a 68020 processor or better), it is, in a word, a blast.

F/A-18’s instrumentation is realistic in almost every detail. Like it or not, you oversee dozens of controls and a great variety of weapons and guidance systems, including heat-seeking, radar-guided, and TV-guided missiles. Given such complexity, you’ll be grateful for its helpful command-reference card.

With F/A-18, you’re guaranteed variety. It has six training missions, difficulty settings that are almost infinitely adjustable, optional tutorial voice commands, and the most-comprehensive documentation of the three flight sims in this review.

If you’re willing to scale its steep learning curve, your reward is hours of intriguing play in one of the best Mac flight sims yet.

A-10 Attack!
It Soars Above the Rest

IF F/A-18 ISN’T the best flight sim around, A-10 Attack! is. Although the locations of their missions are different (A-10 takes you to the skies over Germany in one version and to Guantanamo Bay in another), the two games have many similarities. They’re both challenging and realistic; you must use almost every key on the keyboard; they provide training missions, adjustable difficulty levels, and quick-reference cards to make the learning curve more manageable; both offer multiple views of the action; and, finally, they support up to three monitors at once.

However, A-10 has an edge in the weaponry department, stocking a greater number and diversity of weapons systems. The weapons range from bombs, for air-to-ground destruction, to a brutal cannon capable of firing 67 depleted-uranium shells per second, for air-to-air annihilation.

Additionally, A-10 gives you more control over your battles, by letting you tweak the flight paths of all friendly aircraft. Its biggest downfall is that its documentation is the weakest of the three flight sims in this review. As a result, I found this one the most difficult to master.

Bob Levitus is a MacUser contributing editor and Power Computing’s director of evangelism.
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<td>6 Year</td>
<td></td>
</tr>
<tr>
<td>2.5 GB</td>
<td>Barracuda 2</td>
<td>7200</td>
<td>1024K</td>
<td>5 Year</td>
</tr>
<tr>
<td>4.3 GB</td>
<td>Barracuda 4</td>
<td>7200</td>
<td>1024K</td>
<td>5 Year</td>
</tr>
<tr>
<td>2.5 GB</td>
<td>Fast &amp; Wide Barracuda</td>
<td>7200</td>
<td>1024K</td>
<td>5 Year</td>
</tr>
<tr>
<td>4.3 GB</td>
<td>Fast &amp; Wide Barracuda</td>
<td>7200</td>
<td>1024K</td>
<td>5 Year</td>
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<tr>
<td>9.0 GB</td>
<td>Elite</td>
<td>7200</td>
<td>1024K</td>
<td>5 Year</td>
</tr>
<tr>
<td>9.0 GB</td>
<td>Elite Fast &amp; Wide</td>
<td>7200</td>
<td>1024K</td>
<td>5 Year</td>
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**FUJITSU**

<table>
<thead>
<tr>
<th>Model</th>
<th>Capacity</th>
<th>RPM</th>
<th>Buffer</th>
<th>Warranty</th>
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<tbody>
<tr>
<td>530 MB</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>1.2 GB</td>
<td></td>
<td></td>
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<tr>
<td>4.2 GB</td>
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**IBM**

<table>
<thead>
<tr>
<th>Model</th>
<th>Capacity</th>
<th>RPM</th>
<th>Buffer</th>
<th>Warranty</th>
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</thead>
<tbody>
<tr>
<td>540 MB Deskstar</td>
<td>128K</td>
<td>6 Year</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.4x Pioneer CD ROM</td>
<td>$195</td>
<td></td>
<td></td>
<td></td>
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</table>

**CD ROM & CD WRITERS**

- **Pinnacle Micro**
  - Pinnacle RCD 5020 650 MB CD Writer: $255
  - Pinnacle Apex 4.6GB: $1579

Digital Tape Backup

- **HP HEWLETT PACKARD**
  - Digital Tape Backup
  - 2.0 GB
  - 3.5 GB
  - 4.10 GB
  - 24-60 GB

Quantum DLT

- **LaserJet 1100/2200**
  - 2.5MB/sec
  - DLT4000 4MB/sec

**SCSI HARD DRIVE CABINETS**

- **PowerStor**
  - Express PCI: $325
  - Express SCSI: $325

- **Silicon Express 2**
  - 80MB

- **Remus RAID Software**
  - $99

- **Pinnacle Micro**
  - Pinnacle RCD 5020 650 MB CD Writer: $255
  - Pinnacle Apex 4.6GB: $1579

- **Pinnacle Express PCI**
  - $325

- **Silicon Express 2**
  - 80MB

- **Remus RAID Software**
  - $99

All prices are subject to change without notice. Additional taxes are subject to local and state regulations. All prices quoted are in U.S. dollars. Shipping charges are not included. To receive the best price, call or visit our web site at MacUser.com.
## MEMORY

<table>
<thead>
<tr>
<th>Product</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>8MB 60NS 72PIN</td>
<td>$139</td>
</tr>
<tr>
<td>16MB 60NS 72PIN</td>
<td>$219</td>
</tr>
<tr>
<td>32MB 60NS 72PIN</td>
<td>$355</td>
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<tr>
<td>64MB 60NS 72PIN</td>
<td>$529</td>
</tr>
<tr>
<td>128MB 68PIN 72PIN</td>
<td>$999</td>
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## DRIVES

<table>
<thead>
<tr>
<th>Product</th>
<th>Price</th>
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</thead>
<tbody>
<tr>
<td>P85300 1190 SERIES</td>
<td>$455</td>
</tr>
<tr>
<td>PowerCard 601</td>
<td>$599</td>
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## MODEMS

<table>
<thead>
<tr>
<th>Product</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>PowerPort SXX Mercury for 500</td>
<td>$459</td>
</tr>
<tr>
<td>PowerCard SXX Platinum</td>
<td>$599</td>
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</table>

## ACCELERATORS

<table>
<thead>
<tr>
<th>Product</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>PowerPort SXX Mercury for 500</td>
<td>$459</td>
</tr>
<tr>
<td>PowerCard SXX Platinum</td>
<td>$599</td>
</tr>
</tbody>
</table>

## SCANNERS/PRINTERS

<table>
<thead>
<tr>
<th>Product</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Epson LQ 850 printer</td>
<td>$799</td>
</tr>
<tr>
<td>Epson Stylus Pro</td>
<td>$799</td>
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<tr>
<td>Epson Stylus Pro</td>
<td>$799</td>
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</table>

## ACCESSORIES

<table>
<thead>
<tr>
<th>Product</th>
<th>Price</th>
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<td>VLSAM</td>
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<tr>
<td>325K 60NS VIDEO RAM</td>
<td>$30</td>
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<tr>
<td>1MB 70NS FX MEMORY UPGRADE</td>
<td>$24</td>
</tr>
<tr>
<td>8MB 70NS 72PIN MEMORY UPGRADE</td>
<td>$52</td>
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<tr>
<td>PowerBook Memory Deck</td>
<td>$129</td>
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<tr>
<td>8MB 60NS 72PIN RAM UPGRADE</td>
<td>$135</td>
</tr>
<tr>
<td>16MB 70NS 43X2 72PIN MEMORY UPGRADE</td>
<td>$99 handler</td>
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</table>
### MEDIA

#### SONY Magneto Optical Disks

<table>
<thead>
<tr>
<th>5.25&quot; MO</th>
<th>1.3GB</th>
<th>1024k bis</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.25&quot; MO</td>
<td>1.2GB</td>
<td>512k bis</td>
</tr>
<tr>
<td>5.25&quot; MO</td>
<td>650MB</td>
<td>1024k bis</td>
</tr>
<tr>
<td>5.25&quot; MO</td>
<td>594MB</td>
<td>512k bis</td>
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#### 3.5" MO

<table>
<thead>
<tr>
<th>230MB/Mac Formatted</th>
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</thead>
<tbody>
<tr>
<td>230MB</td>
</tr>
<tr>
<td>126MB</td>
</tr>
<tr>
<td>128MB Mac Formatted</td>
</tr>
</tbody>
</table>

#### SONY CD-Recordable

<table>
<thead>
<tr>
<th>74 Min</th>
<th>4x 650MB · 10 Pack</th>
</tr>
</thead>
</table>

#### Verbatim Data Re-Read Mem Data Cartridges

- 8mm, DL 113 Min, 2.95GB
- 4mm, DL 50 Min, DDS-4 MRS, 1.35GB
- 4mm, DL 90 Min, DDS-3, 2.0GB

#### CD-ROm

<table>
<thead>
<tr>
<th>OVER 2,000 TITLES!</th>
</tr>
</thead>
</table>

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- **INNOVATORS IN POWER AND PERFORMANCE**

- **PC Card**
  - Drives, Flash memory, modems, and EtherTech

- **Mac SIMMS & DIMMS**
  - for all models of Mac and Power Mac.

- **Power MacCache**
  - 256K Power Mac Cache Memory.

- **SCSI MicroDock**
  - PowerBook Duo Mini Docking Bar.

- **Meteor Accelerator**
  - 50MHz 68040 accelerator with 128K Cache.

- **PowerBook Memory**
  - 2MB to 32MB Memory Modules.

- **Mac Clip & Power Clip**
  - CPU accelerator for Centris, Quadra and Power Mac.

#### FOR ALL YOUR QUALITY NEWER TECHNOLOGY PRODUCTS CALL THE NEWER HABITAT

<table>
<thead>
<tr>
<th>1.800.840.2212</th>
</tr>
</thead>
</table>

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Stay ahead of the competition with $0 down business leasing from Image Solutions!

Remember the Macintosh Quadra 800? A $15,000 Quadra 800 system in 1993 is worth less than $4,000 today—if you can find someone who wants to buy it. Some companies wait forever to buy, because they know prices will fall tomorrow. Waiting is not the answer. Putting off needed improvements in equipment costs your business money in many ways. It slows your business down, increases your labor costs and reduces competitiveness.

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- If you pay cash, you lose all of the investment opportunities your company might have had with that cash, investments that could bring you a return on your money instead of a loss.
- Because it doesn’t negatively affect your balance sheet when you lease, you can still qualify for other forms of financing in the future.
- Lease payments are 100% tax deductible.
- Bank loans take weeks to process. With leasing, your business is approved in 15 minutes and you can have your equipment immediately.

Power Macintosh 9500/132 Ultimate Graphics Workstation

Get the power you need to meet the toughest design deadlines with the PowerPC 9500/132—the fastest Macintosh ever made! This system has the speed, the RAM and the hard drive space to blast through Photoshop filters in nothing flat.

$15,390!

Macintosh Quadra 800 System

<table>
<thead>
<tr>
<th>Model</th>
<th>1993 (New)</th>
<th>1995 (Used)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quadra 800 (CPU only)</td>
<td>$3499</td>
<td>$600</td>
</tr>
<tr>
<td>Quantum 210MB drive</td>
<td>$299</td>
<td>$100</td>
</tr>
<tr>
<td>4MB SIMMS</td>
<td>$199</td>
<td>$60</td>
</tr>
<tr>
<td>Radius 20&quot; monitor</td>
<td>$2999</td>
<td>$350</td>
</tr>
<tr>
<td>Radius 24-bit video card</td>
<td>$2699</td>
<td>$750</td>
</tr>
<tr>
<td>SyQuest 88 drive</td>
<td>$599</td>
<td>$150</td>
</tr>
<tr>
<td>Toshiba 2x CD-Rom</td>
<td>$599</td>
<td>$145</td>
</tr>
<tr>
<td>650MB rich Optical</td>
<td>$1999</td>
<td>$550</td>
</tr>
<tr>
<td>Microtek Scanmaker II</td>
<td>$1199</td>
<td>$250</td>
</tr>
<tr>
<td>Sony 2GB tape drive</td>
<td>$1299</td>
<td>$450</td>
</tr>
<tr>
<td>Total</td>
<td>$15,390</td>
<td>$3,925</td>
</tr>
</tbody>
</table>

0 Down! $649 per month $21.33 per day!

Image Solutions is the source for trouble-free data storage.

Seagate 2GB Drive

$779!

All Image Solutions drives include...

- 24 hour replacement of damaged drives
- Plug & Play—your drive is formatted, tested and ready to use
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- Active terminator
- 25/50 SCSI System cable
- 50/50 SCSI Peripheral cable
- FWB Hard Disk Tool Kit

Includes drive, case, 25/50 cable, 50/50 cable, active terminator, FWB Hard Disk Tool Kit and free 24 hour replacement.

Sony 1.3GB Optical Cartridge

- High 2.0MB p/s transfer rate
- Economical storage of large color images and digital audio/video data

$1499!

Sony 650MB Optical Drive

- Fast, on-line storage
- The latest data storage available—cartridges last for up to 30 years!

$999!
Extended Services come with every Image Solutions lease!

Image Solutions’ Extended Services guarantees trouble free performance from your leased equipment. You’ll save time, money and frustration with Image Solutions!

Free Quark with every system lease!

- No hassle return policy
- 24 hour equipment replacement protects your business from expensive down time
- All systems tested, assembled and burned in for 24 hours, providing trouble-free setup
- Custom system configurations are our specialty
- We sell only the highest quality new equipment
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- Pre-installed application software
- We know networking and Mac/PC connectivity
- Nationwide on-site installation available
- AT&T leasing experts

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310-782-5969 x125 International

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8500/120 Design Station

The new, higher speed 8500/120 Power Macintosh is a cost effective solution for designers. It’s fast, affordable and has all the Power Macintosh features you need to blast through production work.

PowerPC 8500/120MHz
- Internal CD-ROM
- 48MB RAM
- 1GB hard drive
- Extended keyboard
- Sony 20” Trinitron monitor
- Twin Turbo 128, 4MB 1600x1200 video card
- Microtek ScanMaker 9HR, w/Photoshop
- GCC XL 600, 600 dpi, 11” x 17”, 12 ppm printer w/ two AppleTalk connectors
- ArtZ II Graphics Tablet
- Image Solutions Extended Services

$0 Down! $349 per month $11.47 a day!

9500/120 Color Publishing Workstation

The Color Publishing Workstation is based on the high performance PowerPC 9500/120 Macintosh. Included are all the tools you need for accurate scanning, image processing and color printing right from the desktop.

PowerPC 9500/120MHz
- 90MB RAM
- 2GB internal hard drive
- Extended keyboard
- Radius ThunderColor 30/115Z video card
- Ultra PowerLook, 1500 dpi, 36-bit color w/ Transparency
- Primera Pictura 310 Color, 300 dpi, 12"x18" color printer w/PostScript Level II software and two AppleTalk connectors
- Internal SDT-5000 DAT tape drive w/one FREE tape
- Image Solutions Extended Services

$0 Down! $499 per month $16.53 a day!

9500/100 DTP Solution

If you're looking for a high speed desktop publishing solution at a super low price, this is it. The 7500/100 DTP Solution is ideal for data entry, word processing or as use as a spare workstation.

PowerPC 7500/100MHz
- Internal CD-ROM
- 24MB RAM
- 4MB Video RAM
- 1GB internal hard drive
- Extended keyboard
- External SyQuest 88c w/one cartridge
- Radius PrecisionView 17” monitor
- TI Pro 600, 600 dpi, 5 ppm printer w/two AppleTalk connectors
- Image Solutions Extended Services

$0 Down! $179 per month $5.89 a day!

9500/132 Digital Video Station

With the Digital Video Station you can grab video in real time and store it on a disk array for later digital processing, so it's fast you won't miss an instant of video. Guaranteed!

PowerPC 9600/132MHz
- Internal CD-ROM
- 257MB RAM
- 2GB internal hard drive
- Extended keyboard
- Sony 20” Trinitron monitor
- Twin Turbo 128, 4MB 1600x1200 video card
- TrueVision Targa 2000 PCI digital video
- FWB JackHammer SCSI-3 Fast&Wide PCI controller w/FWB RAID Toolkit
- 8GB Seagate Barracuda 4V SCI-S Fast&Wide striped disk array
- Internal SDT-5000 DAT drive w/one FREE tape
- Image Solutions Extended Services

$0 Down! $749 per month $24.69 a day!

Multifunctional Drives

<table>
<thead>
<tr>
<th>200MB CARTRIDGES</th>
<th>$70!</th>
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<tbody>
<tr>
<td>200MB Drives</td>
<td>$56</td>
</tr>
<tr>
<td>200MB</td>
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<td>88MB</td>
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<td>44MB</td>
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</tr>
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<td>64MB</td>
<td>$45</td>
</tr>
<tr>
<td>44MB</td>
<td>$39</td>
</tr>
</tbody>
</table>

Image Solutions’ Multifunctional Drives

Booster: Nikon Coolscan 35mm/1.35 Optical
Scanner
- Up to 6 devices in the same enclosure
- Costs less than individual drives
- Quick setup. Only one cable!
- Promotes data security. Just lock it away after hours.

Includes multiple drives, 2556 cable, 50/50 cable, active terminator, FWB Hard Disk Toolkit and free 24 hour replacement. Tape drive includes Retrospect.

$2599

Image Transporter: Sony 650MB Optical SyQuest 200
Portable File Server: 1.3GB Sony Optical 4GB hard drive

$2399

Image Solutions’ Tape Drive

$1039!

DAT Tape
- Built in data compression
- 16GB per 120 meter tape

DAT 90m $12
DAT 120m $24

INTEGRATION

$569!

TWIN TURBO 128M

$1899!

21”

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• Wolfenstein 3D
• Sensory Overload
• Crystal Caliburn Pinball
• U-Boat
• Marathon

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Power Computing's Power 120 features a super-fast PowerPC 601+ RISC processor, integrated floating-point processors and tons of expansion possibilities. Plus you get $900 worth of FREE preloaded software so you can run both Macintosh® and Windows® applications. And Power Computing offers lifetime toll-free technical support and guaranteed 100% Mac® compatibility. Check the specs below. Then call us to order and try one out for 30 days risk-free.

### Power 120

**Power 120**

<table>
<thead>
<tr>
<th>Power 120</th>
<th>Power 120</th>
</tr>
</thead>
<tbody>
<tr>
<td>Processor option</td>
<td>Integrated floating point co-processor</td>
</tr>
<tr>
<td>Cache</td>
<td>256k cache</td>
</tr>
<tr>
<td>Secondary Cache</td>
<td>256 level 2 cache</td>
</tr>
<tr>
<td>Graphics</td>
<td>optional</td>
</tr>
<tr>
<td>Floppy Drive</td>
<td>3.5&quot; floppy drive supports Mac®, Windows®, MS-DOS®, OS/2® and ProDOS® disks</td>
</tr>
<tr>
<td>Expansion Bays</td>
<td>4 expansion bays</td>
</tr>
<tr>
<td>Networking</td>
<td>2 high speed serial ports</td>
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<tr>
<td>Expansion Option</td>
<td>Three internal Bifloppy® slots</td>
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<td>Keyboard</td>
<td>105 ADB keyboard</td>
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<td>Mouse</td>
<td>Ergonomic mouse</td>
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<td>Hard Drive</td>
<td>optional</td>
</tr>
<tr>
<td>CD-ROM Drive</td>
<td>optional</td>
</tr>
<tr>
<td>New Low Price</td>
<td>$1399</td>
</tr>
</tbody>
</table>

*Must be purchased with either a hard drive or a CD-ROM drive*
Fixed Disk Performance with
All the Removability Advantages

The 540 MB MCD Diskettes have been conceived in order to respond to all your storage requirements:

- Back-up your hard drive
- Mail, move, transfer and share large files
- Exchange files with other users
- Use one diskette per project, account or client
- Travel easily with all your data
- Free up space on your hard disk
- Store and run all your applications and entire multimedia presentations
- Save large scanned or downloaded graphics, sound and video files from networks
- Store one MCD Diskette endless floppy libraries
- Transfer everyday files from slower devices
- Space and security copies for your kids' games and personal files
- CD mastering
- Read CD files at lightning speed

MCD: the most reliable, the most practical, the fastest and the most economical storage solution.

The New 3.5" MCD 540 MB Diskette

<table>
<thead>
<tr>
<th>Interface Transfer Rate</th>
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<th>Sustained</th>
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<tr>
<td></td>
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<td>8.8 MB/sec</td>
</tr>
<tr>
<td></td>
<td>4.1 MB/sec</td>
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</tbody>
</table>

Interface:

- SCSI2

Seek Time:

- Track to Track: 2 msec
- Average: 10 msec
- Cache size: 512k bytes

THE MEMORY OF THE FUTURE

We're open to take your order anytime, 24 hours a day, seven days a week.

Order toll free: 1-800-222-2808
**PowerBook 190/5300**

<table>
<thead>
<tr>
<th>Memory...Call</th>
<th>1MB 30 pin</th>
<th>4MB 72pin</th>
<th>8MB 72pin</th>
<th>16MB 72pin</th>
<th>32MB 72pin</th>
<th>8MB DIMMs...</th>
<th>New Powerbooks!...</th>
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<tbody>
<tr>
<td></td>
<td>25</td>
<td>135</td>
<td>269</td>
<td>499</td>
<td>979</td>
<td>299</td>
<td>...Call</td>
</tr>
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</table>

**Teleport Platinum**

<table>
<thead>
<tr>
<th>Platinum $192</th>
<th>Call</th>
<th>1MB 30 pin</th>
<th>4MB 72pin</th>
<th>8MB 72pin</th>
<th>16MB 72pin</th>
<th>32MB 72pin</th>
<th>8MB DIMMs...</th>
<th>New Powerbooks!...</th>
</tr>
</thead>
<tbody>
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<td>269</td>
<td>499</td>
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<td>...Call</td>
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**PowerPort Gold**

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<th>8MB DIMMs...</th>
<th>New Powerbooks!...</th>
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**PowerPort Platinum**

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<td>...Call</td>
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**Teleport Platinum**

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<th>4MB 72pin</th>
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<td>269</td>
<td>499</td>
<td>979</td>
<td>299</td>
<td>...Call</td>
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**Connectix Software**

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<th>$79 Bundle</th>
<th>Speed Doubler...</th>
<th>RAM Doubler...</th>
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<th>Disk Doubler...</th>
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**Wacom**

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**Magic Memory**

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**Hard Drives**

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<th>Seagate 9GB...</th>
<th>Hawk 4.2...</th>
<th>Hawk 2.1...</th>
<th>Barracuda 4.2...</th>
<th>Barracuda 2.1...</th>
<th>Barracuda 1.7...</th>
<th>Capella 2.2...</th>
<th>Corner 2.1...</th>
<th>Deskstar 3.1...</th>
<th>Fireball 1...</th>
<th>Trailblazer 850...</th>
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**Removable Media Blowout**

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<th>256mb cart...</th>
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**PCl Video Card**

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<th>$10 off!</th>
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**Magic High-Performance RAID for Video and Retouching**

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<tr>
<th>RAID Drive Mechanisms</th>
<th>Drive...</th>
<th>18gb RAID...</th>
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<th>2 Barracuda 2.1...</th>
<th>4.2gb RAID...</th>
<th>2 Barracuda 1.7...</th>
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<th>2 Capella 2.2...</th>
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<td>4.5ms...</td>
<td>5.0ms...</td>
<td>7.5ms...</td>
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<td>9.0ms...</td>
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**NuBus/PCI SCSI II Cards**

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<th>NuBus/PCI SCSI II Cards</th>
<th>Drive...</th>
<th>2/95 Silicon...</th>
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<td>4398</td>
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**VRAM/Cache**

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<tr>
<th>VRAM/Cache</th>
<th>256K/512K VRAM...</th>
<th>PCI VRAM 1mb...</th>
<th>PCI Cache...</th>
<th>512K Cache...</th>
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<tr>
<td></td>
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<td>269</td>
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**Connectix Software**

<table>
<thead>
<tr>
<th>PowerMac...</th>
<th>PowerMac 6100/64MHz...</th>
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<th>PowerMac 8100/133MHz...</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>59</td>
<td>69</td>
<td>79</td>
</tr>
</tbody>
</table>

**Best Way to Speed Up Your Mac!**

<table>
<thead>
<tr>
<th>PowerMac...</th>
<th>PowerMac 6100/64MHz...</th>
<th>PowerMac 7100/64MHz...</th>
<th>PowerMac 8100/133MHz...</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>59</td>
<td>69</td>
<td>79</td>
</tr>
</tbody>
</table>

**Certified**

- PowerMac 6100/64MHz
- PowerMac 7100/64MHz
- PowerMac 8100/133MHz
- PowerMac 9600/133MHz
- PowerMac 9600/200MHz
- PowerMac 10000/200MHz
- PowerMac 10000/300MHz
- PowerMac 10000/400MHz
- PowerMac 10000/500MHz
- PowerMac 10000/600MHz
- PowerMac 10000/700MHz

**Service Awards**

- Magic 5.3GB 11/95
- Magic SyQuest 270 2/95
- Magic SyQuest 200 2/95
- Magic 2GB 7/95
- Magic 500MB 7/95
- Magic 4GB RAID 12/95

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- 30 DAY MONEY BACK GUARANTEE
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Includes transparency adapter and full Photoshop

Apple PowerMac 7200
8/500/CD
$1499

4GB RAID
$1384

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$399

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$469

Apple 15" Monitor
$469

Magic Syquest 270MB Drive
$299

Magic Syquest EZ135 Media
from $19

Magic Syquest 270MB Drive
$399

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<table>
<thead>
<tr>
<th>Item Description</th>
<th>Price</th>
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<tr>
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<td>8MB 80ns SIMM #06257</td>
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<td>8MB 60ns SIMM #06351</td>
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<td>8MB 100ns SIMM #06452</td>
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<td>16MB 70ns SIMM #06552</td>
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<td>1GB 100ns SIMM #06359</td>
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**DEDICATED AGING & SOFTWARE ACCESSORIES**

- **ArtPad II (ADB)**
  - With/Erasing UltraPen
  - **Only $134**
- **DISCOUNT CPU'S ARE HERE!**
  - **Only $1099**
- **WHY PAY MORE... when you can get a better price from MAC BARGAINS?**
  - Call Now!
**BEST VALUES!**

<table>
<thead>
<tr>
<th>APS Q 840</th>
<th>Quantum</th>
<th><strong>$219.95</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Great for multimedia applications</td>
<td>Over 800MB to store your files</td>
<td>3-year warranty</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>APS Q 1080</th>
<th>Quantum</th>
<th><strong>$269.95</strong></th>
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</thead>
<tbody>
<tr>
<td>PRML technology delivers more storage to powerful CPUs</td>
<td>Well suited for home and office use</td>
<td>Embedded servo, great for AV and non-AV applications</td>
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<table>
<thead>
<tr>
<th>APS Q 2210</th>
<th>Quantum</th>
<th><strong>$629.95</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Perfect for AV and non-AV applications</td>
<td>Ideal choice for desktop publishing systems</td>
<td>Over 2GB of formatted capacity</td>
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<table>
<thead>
<tr>
<th>APS ST 4200</th>
<th>Seagate</th>
<th><strong>$949.95</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Excellent combination of capacity, reliability and value</td>
<td>Terrific with page layout and graphics files</td>
<td>Over 4GB of formatted capacity</td>
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**BEETTER-PERFORMANCE DRIVES**

<table>
<thead>
<tr>
<th>Model</th>
<th>Capacity</th>
<th>Awards</th>
<th>Internal</th>
<th>SR2000</th>
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<tbody>
<tr>
<td>APS MS 2.0</td>
<td>1955MB</td>
<td>Quantum Atlas XP2150</td>
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<tr>
<td>APS Q 2.0</td>
<td>2050MB</td>
<td>Quantum Atlas XP2150</td>
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<td>APS ST 2.0</td>
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**APPS DESKTOP DRIVES**

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**APPS MS 4.0**

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<td>APS MS 4.0</td>
<td>Quantum 2050MB</td>
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<td>Fast ATA</td>
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<td>High Performance</td>
<td>Fast ATA</td>
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<td>APS ST 5.0</td>
<td>Seagate 2047MB</td>
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<td>Fast ATA</td>
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**APPS MS 9.0**

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<tbody>
<tr>
<td>APS MS 9.0</td>
<td>Quantum 2050MB</td>
<td>High Performance</td>
<td>Fast ATA</td>
<td>$949.95</td>
</tr>
<tr>
<td>APS ST 9.0</td>
<td>Seagate 2047MB</td>
<td>High Performance</td>
<td>Fast ATA</td>
<td>$949.95</td>
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**ADAPTER & ACCELERATOR CARDS**

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<th>Model</th>
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<td>QLogic FastSCSI Mac PCI-IV HD 50-pin</td>
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<td>Silicon Express II</td>
<td>$499.95</td>
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<td>Silicon Express IV HD 68-pin</td>
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**SCSI SENTRY**

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<tr>
<td>APS J.2</td>
<td>IBM Travel Star</td>
<td>$699.95</td>
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<tr>
<td>Silicon Express II</td>
<td>Fast ATA</td>
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**SCSI CONDUIT**

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<tr>
<th>Model</th>
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<tbody>
<tr>
<td>APS J.2</td>
<td>IBM Travel Star</td>
<td>$699.95</td>
</tr>
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APS SYQUEST DRIVES
<table>
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<th>Capacity</th>
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<td>194MB</td>
<td>$339</td>
<td>$389</td>
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</tr>
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</table>

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<td>$599</td>
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<tr>
<th>Model</th>
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<tr>
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<td>NEC XVS90</td>
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**CMOS B/W**

| XVS140 B/W     | 14"   | $342.15 |
| XVS135 B/W     | 13.5" | $374.54 |
| XVS120 B/W     | 12"   | $474.77 |
| XVS110 B/W     | 11"   | $547.26 |

**CPD-4125**

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<td>14&quot;</td>
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**Mullvax 12"**

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### Power Technology

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<td>Radius</td>
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<td>SuperMatch 17&quot;</td>
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<td>SuperMatch 21&quot;</td>
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<tr>
<td>UltraPort 21&quot;</td>
<td>$198.34</td>
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<td>Platinum Ultra</td>
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**Graphics Video Boards**

<table>
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<tr>
<th>Model</th>
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<td>ATI XGC 4MB</td>
<td>$399.91</td>
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<tr>
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**Farallon**

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**ATI**

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### Communications/Modems

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**Supera**

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**Radios**

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### PowerCllp clock accelerator

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### PowerCllp clock accelerator

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### FastMac

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<td>$179.99*</td>
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### Lifestyle 28.8

Motorola brings the world to your fingertips with the Lifestyle 28.8 Data/Fax Modem.

- **Data:** V.34 (28.8K bps), backward compatible to 9600 bps
- **Fax:** 14.4K bps send and receive
- **V.42bis/VP5 data compression**

**Special Offer:**

- $20 Reboat* V.34
- $194.73 CDW 52875

**ONLY**

- $179.99* CDW 54592

**FastMac**

### 28.8 V.34 Fax/Data Modem

- **Data:** V.34 (28.8K bps) **Fax:** 14.4K bps send and receive
- **V.42bis/VP5 data compression**

**ONLY**

- **$137.98** CDW 57414

**radius**

### SuperMatch 17 XL

- **17" color monitor**

**ONLY**

- **$729.04** CDW 41912

**Sony**

### Multiscan 15sf II

The next generation Sony 15" monitor

**ONLY**

- **$499.97** CDW 61891

### Memory

**Single Technology memory upgrades**

- Power Mac 5100
- Power Mac 6100
- Power Mac 7100
- Power Mac 7100/90
- Power Mac 9100
- Power Mac 9100/90
- Power Mac 9500
- Power Mac 9500/90

**NEW!**

- Highend QD Centris 610 Performa 550/660 16MB
- Power PC 610/620
- Power Mac 7100
- Power Mac 9100
- Power Mac 9500
- Power Mac 9500/90

**NEW!**

- LaserJet 4 plus
- LaserJet 4M Plus
- LaserJet 4M Plus

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**CDW - Your Complete Solution Source for Computers & Peripherals**
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650 MB rewritable optical disk and 4X CD-ROM drive. Includes drive software for PCs and Macintosh computers.

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VISIONEER PaperPort Vx Scanner
Getting paper into your computer is easy with the new PaperPort Vx! Simply feed a piece of paper and it does the rest automatically.

**$359**

MONITORS

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PRINTERs

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<td>Hewlett-Packard DeskWriter 600 Printer</td>
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<tr>
<td>Hewlett-Packard LaserJet 1100 Printer</td>
<td>$1039</td>
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<td>Hewlett-Packard DeskJet 1200CP Printer</td>
<td>$1625</td>
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<td>Hewlett-Packard DeskJet 340 Printer</td>
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SCANNERS

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<tr>
<th>Model</th>
<th>Price</th>
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<tr>
<td>Polaroid SprintScan® 25 Slide Scanner</td>
<td>$1569</td>
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<tr>
<td>UMAX BiColor 2010 Color Scanner</td>
<td>$225</td>
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<tr>
<td>UMAX PowerLook 2010 Color Scanner</td>
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SOFTWARE

<table>
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<tr>
<th>Model</th>
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<tr>
<td>Adobe Illustrator*</td>
<td>$369</td>
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<tr>
<td>Adobe Photoshop® 3.0.1</td>
<td>$559</td>
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<tr>
<td>Apple Internet Connection Kit</td>
<td>$45</td>
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<td>Connectix RAM Doubler</td>
<td>$55</td>
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<tr>
<td>Connectix Speed Doubler</td>
<td>$53</td>
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<tr>
<td>Claris HomePage 4.6</td>
<td>$65*</td>
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<tr>
<td>Claris Emailer</td>
<td>$59</td>
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<tr>
<td>CD Adventure Pack</td>
<td>$35</td>
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<tr>
<td>Denbea Carrera v.3.5</td>
<td>$255</td>
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<tr>
<td>Geemix Encyclopedia</td>
<td>$29</td>
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<tr>
<td>Ingunts SoftWindows® 2.0</td>
<td>$147</td>
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<tr>
<td>MySt</td>
<td>$449</td>
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<tr>
<td>Microsoft Office 4.21</td>
<td>$449</td>
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<td>MacShareware</td>
<td>$19</td>
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<td>From</td>
<td>$1999</td>
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<tr>
<td>Radius SuperMatch 21 TXL</td>
<td>$1999*</td>
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<td>Radius PrecisionView 21</td>
<td>$CALL</td>
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<tr>
<td>SuperMac PressView 21 “Editors Choice”</td>
<td>$1999*</td>
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<td>Radius PrecisionColor Display 21</td>
<td>$1499*</td>
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<tr>
<td>Radius 21 inch Grayscale Display</td>
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<td>RasterOps 20 inch Multimode</td>
<td>$999*</td>
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<td>From</td>
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<td>SuperMatch 17T</td>
<td>$799*</td>
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<td>PrecisionColor Display 17</td>
<td>from $899</td>
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<tr>
<td>PrecisionView 17</td>
<td>$CALL</td>
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<td>Radius PressView 17sr</td>
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<th>PIVOT DISPLAYS</th>
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<td>Radius Color Pivot LE</td>
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<td>From</td>
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<td>Precision Color Pivot</td>
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<td>Grayscale Pivot</td>
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<td>Radius Full Page Display</td>
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<td>Portrait Display Labs 1700</td>
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<tr>
<td>1600x1200 PCI/NUBUS</td>
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<tr>
<td>Radius ThunderColor 30/1152 &amp; 1600</td>
<td>$CALL</td>
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<tr>
<td>IMS Twin Turbo 128M</td>
<td>$CALL</td>
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<tr>
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<td>$1999</td>
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<tr>
<td>EASYcolor 1600/16</td>
<td>$CALL</td>
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<tr>
<td>Radius Thunder II/Thunder IVs from</td>
<td>$1999</td>
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<tr>
<td>Radius Thunder 24/6T</td>
<td>$499</td>
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<tr>
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<tr>
<td>Radius PrecisionColor Pro 24X</td>
<td>$699</td>
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<tr>
<td>Thunder 6 “Fastest 9 bit card ever”</td>
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<td>RasterOps Horizon 24</td>
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<td>RasterOps 24XLTV</td>
<td>$1999</td>
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<tr>
<td>RasterOps PaintBoard/Prism GT</td>
<td>$499</td>
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<tr>
<td>Radius PrecisionColor 8XJ</td>
<td>*DOS Available</td>
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<td>SuperMac Spectrum 24 Series V</td>
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<td>Radius PrecisionColor Pro 24XK</td>
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<td>SuperMac Futura MX</td>
<td>$499</td>
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<td>RasterOps PaintBoard Lightning</td>
<td>$CALL</td>
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<td>SuperMac Spectrum 8</td>
<td>$199</td>
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<td>PowerView/SuperView from Powerbooks</td>
<td>$199/299</td>
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<td>Radius PrecisionColor Pro 24XP</td>
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<tr>
<td>SuperMac Futura SX</td>
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<td>SuperMac Futura II SX w/Ethernet</td>
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<tr>
<td>Spigot II Tape</td>
<td>$499!</td>
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<td>VideoSpigot Cards NuBus/LC/Itsi</td>
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<tr>
<td>VideoVision Studio and Array</td>
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<td>TrueVision Targa 2000 PCI</td>
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<tr>
<td>Simply TV for output from LC/PDS slots $399</td>
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<td>*With purchase of Adobe Premiere</td>
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Micropolis 2050MB 8.5ms 512K 512K 512K 512K
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<td>LC550 4/160/CD new</td>
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<td>Centris 650 4/0</td>
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<td>Performa 637 8/350/CD</td>
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### System 7.5

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### Video Cards

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<tr>
<td>Apple 14” AudioVision</td>
<td>$349</td>
</tr>
<tr>
<td>Apple 15” Multiscan</td>
<td>$349</td>
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<td>Apple Color Plus 14”</td>
<td>$209</td>
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<td>Apple 16” Trinitron</td>
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<td>Apple PerHot Display</td>
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<tr>
<td>E-Machines T16-8</td>
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<tr>
<td>Hewlett-Fordcast 17” with card</td>
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<td>Hewlett-Fordcast 20” with card</td>
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<td>Radial Color Pivot</td>
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<td>Radial TPD 19” mono</td>
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<td>Radial TPD 21” mono</td>
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<td>RasterOps Sweet16</td>
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<td>RasterOps GDM-1920 20” color</td>
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<td>RasterOps 17” Hiachi grayscale</td>
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### Printers

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<td>Apple LaserWriter II</td>
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<td>Apple Personal LaserWriter 300</td>
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<td>Apple Personal LaserWriter 400</td>
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<td>Apple LaserWriter 300</td>
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<td>Apple LaserWriter 400</td>
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<td>Apple LaserWriter 800</td>
<td>$299</td>
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<td>Apple LaserWriter Pro 810 new</td>
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<td>Apple Color Printer new</td>
<td>$299</td>
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<td>Hewlett-Packard DeskWriter C</td>
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### PowerBooks

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<td>PowerBook 520 4/240</td>
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<td>PowerBook 520c 4/160</td>
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<td>PowerBook 170 8/40</td>
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<td>PowerBook 165c 4/80</td>
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<td>PowerBook 140 4/40</td>
<td>$899</td>
</tr>
<tr>
<td>DuoDock Type I</td>
<td>$599</td>
</tr>
</tbody>
</table>
**QUADRA BLOWOUT!**

**COMPUTERS**

**QUADRA 605/LC 475 4/0**

- 50/256MHz 68LC040 Processing Power
- Ready for PowerPC Upgrade
- Built-in video supports color monitors up to 21"
- 4MB RAM, (expandable to 36MB)
- 1-year Warranty
- Supports Stereo Sound
- Multimedia Ready—Just plug in CD-ROM

**VALUE BUNDLES**

Value Starter Kit **$999!**

- Multi-Media Kit **$999!**
- Apple Design Keyboard
- Stereo-Powered Multimedia Speakers!
- Microphones!
- Three Hot multimedia CD-ROM titles!
- External Double Speed CD-ROM Drive!

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when you purchase the QGDS or LC475 and Starter Kit...while supplies last! (a $149 Value!)

**MORE MAC DEALS**

CPUs Bought/Sold, New & Used, Trade-ins Accepted!

<table>
<thead>
<tr>
<th>Model</th>
<th>Price</th>
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<tbody>
<tr>
<td>MAC Plus, upgraded &amp; tested</td>
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<td>Mac 6/80</td>
<td>$499</td>
</tr>
<tr>
<td>Mac 8/50</td>
<td>$599</td>
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</table>

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**MULTI-MEDIA KIT**

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- Stereo-Powered Multimedia Speakers!
- Microphones!
- Three Hot multimedia CD-ROM titles!
- External Double Speed CD-ROM Drive!

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**MONO PRINTERS**

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**NEW MAC BUNDLES**

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  - G3 All Inclusive Starter Kit

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International Sales 817-784-2130

300 South 13th St., Waco, TX 76701

**416 MacUser / FEBRUARY 1996**
## Power Macintosh

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## Apple Printers

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## Memory

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## Workgroup Servers

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## Apple Monitors

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## Accessory

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## Phaseo Color Printers

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<td>Dye Sublimation, Solid Ink, Liquid Inkjet, Thermal Transfer, Continuous Toner Laser</td>
<td>$999</td>
</tr>
</tbody>
</table>
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MASales@aol.com

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**POWERMacs**

<table>
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<th>Model</th>
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**Powerbooks**

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**APPLE MONITOR**

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**HEWLETT PACKARD**

<table>
<thead>
<tr>
<th>Model</th>
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<tbody>
<tr>
<td>HP 1200C/PS</td>
<td>1500</td>
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<tr>
<td>HP 5MP</td>
<td>1030</td>
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<tr>
<td>HP DeskWriter 600C</td>
<td>470</td>
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<tr>
<td>HP-4M Plus</td>
<td>1850</td>
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<td>HP DeskJet 450</td>
<td>2695</td>
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**PERFORMA**

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<tr>
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<tbody>
<tr>
<td>610/6CD</td>
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<tr>
<td>620/6</td>
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<td>6220/16</td>
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**POWERBOOKS**

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<tr>
<td>540CE</td>
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**APPLE PRINTERS**

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<td>335</td>
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<td>LaserWriter 16/600</td>
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<td>Laser Select 360</td>
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<tr>
<td>Color Laser 12/600</td>
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<tr>
<td>Laser 4/600</td>
<td>795</td>
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**WORKGROUP SERVER**

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<tr>
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**DEMO MAC'S**

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<td>1595</td>
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<tr>
<td>HP DeskJet 800</td>
<td>2895</td>
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**Powerbooks**

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<tr>
<td>9500/120/1600</td>
<td>3699</td>
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<tr>
<th>Package</th>
<th>Lowest Price</th>
<th>Highest Price</th>
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<tr>
<td>QuarkXpress 3.31</td>
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<tr>
<td>Strata Studio Pro</td>
<td>$469</td>
<td>$1.75</td>
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<td>Director 4.04</td>
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<tr>
<td>Freehand 5.5</td>
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<tr>
<td>Fractal Painter3.1</td>
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<tr>
<td>MiniCAD +6</td>
<td>$319</td>
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| Act! 2.0        | $140         |               |
| ArchiCAD 4.55   | $495         |               |
| Astound 2.0     | $125         |               |
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| CodeX Calibre   | $249         |               |

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<tr>
<td>Up to $2,000</td>
<td>$49</td>
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<tr>
<td>11,001 - 14,000</td>
<td>129</td>
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“SO WHAT’S THE BEST SOFTWARE IN THE world?” That’s the kind of question people like me (overweight, fond of Jerry Lewis LPs) get hit with all the time, and after swallowing my mouthful of dinner, I don’t need to fumble for an answer. “Oh, Apple’s MacsBug debugger, definitely.”

After all, in the American office, you have but one goal: to look like a Big Shot at your coworkers’ expense. That’s why you bought a computer in the first place. But unfortunately, thanks to the Mac, there are now many best-selling word processors that can be (and are) operated by specially bred terriers. Getting a friendly and accessible computer to do what you expect is about as impressive as landing a 757 safely. No, to score real Mac Jedi fear-and-loathing points against your competition, you gotta show you can land that monster with three engines on fire and eight women giving birth simultaneously. And that’s where MacsBug — free for the downloading from any of Apple’s online tendrils — shines. It is indeed The Best Software in the World:

It features an inscrutable text-based user interface, but some of its cryptic commands are nonetheless easy to master. Topping all of this off is the fact that there is nothing to tip the observer off about how the program works. When one of your competitors clicks that your watch-cursor hasn’t moved for 20 minutes, your mouse is frozen, and — oh, dear — it looks like you’re going to have to do a manual reset and lose allllllll of your data in allllllll of your open applications, you can merely bark in a scornful fashion. Hit the programmers’ switch, and give MacsBug the handy, straightforward command ES, which signifies, “Drop whatever you’re doing, and return to the Finder.” Your craven competitors will then see you calmly saving all of your work, quitting your apps, and restarting manually, and they will be left with balloonlike question marks hovering overhead, just like in the cartoons.

Sometimes, just sometimes, it helps you pull off an utter miracle. You want to become feared and respected as a total Mac Jedi? Some sort of god? Picture this: There is a scream from next door, and Ed begs you over the phone to jTable away your data in a text file as you go. “Drop whatever you’re doing, and return to the Finder.” Your craven competitors will then see you calmly saving all of your work, quitting your apps, and restarting manually, and they will be left with balloonlike question marks hovering overhead, just like in the cartoons.

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With the facial expression of a James Bond who knows that the gun-wielding henchman guarding him has finally strolled into the range of his A-9 Tactical Field Cummerbund, you pull Ed’s keyboard closer. “Aw, it’s probably still floating around in memory somewhere. Give me a few ticks.” And assuming that you had secretly installed MacsBug on his machine a while back, you would hit the programmers’ switch. Type log Eddie$Text so that MacsBug will copy all of your efforts to a text file as you go along. “You were writing about Lambada-Ware’s market share, right?” you ask, as you type F 0 FFFFFFFF "LambadaWare". If the text is still in memory, MacsBug will respond with an eight-digit memory address followed by a dump of its contents. Type DM [address], and the text will come spooling out in a narrow column.

The grin of cata­tonic delight upon Ed’s face is rapid­ly going to be re­placed by a look of utter penitence. “[readname], as you know, our office has no volcanoes and precious few virgins,” he’ll stammer, plucking a brightly colored object off a nearby shelf. “But I hope you’ll accept this Batman PEZ dispenser and the big document shredder on the third floor as a proper demonstration of my cowering fealty to you, my new and powerful god.” Which brings us to my last reason why MacsBug has won such a special place in my heart:

Its complexity is multilayered. Because if Ed proceeds to read this column and decides he can become every bit the Big Shot you are, you’ll still have your trump card. “Very nice,” you allow, after Ed finishes his little MacsBug demo. “Hey, take a screen shot of that for me, will you? I’d like a hard copy.” And as you stroll off, watch the airspace above his cubicle for wisps of yellow smoke coming out of his ears. Being a Mac Jedi is like being a member of a popular fraternity: Half of the work and the fun is in keeping other people from joining.
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