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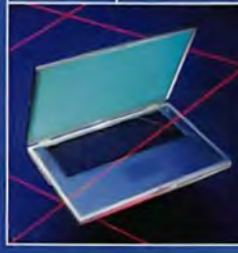

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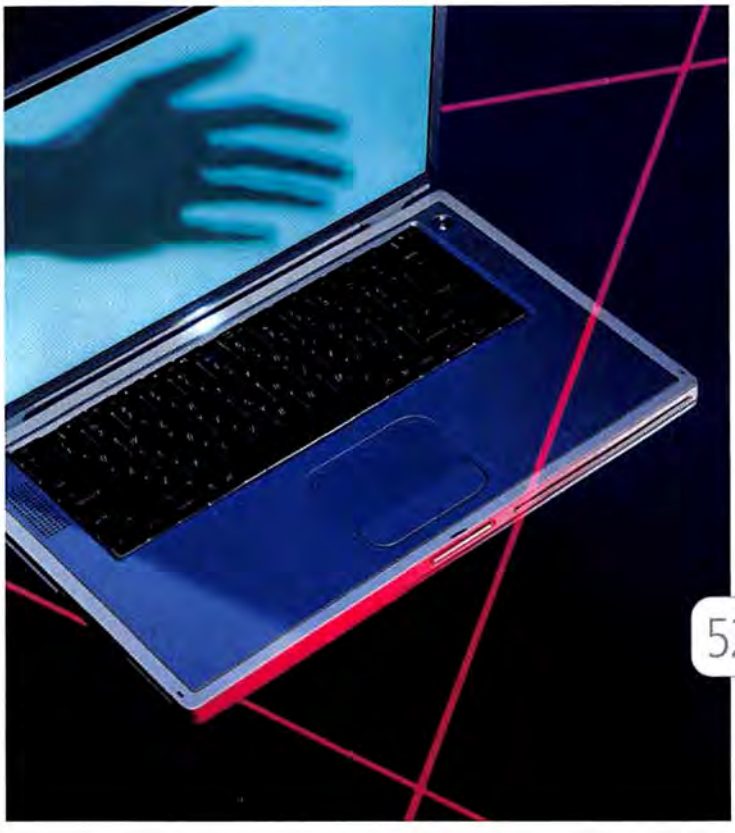

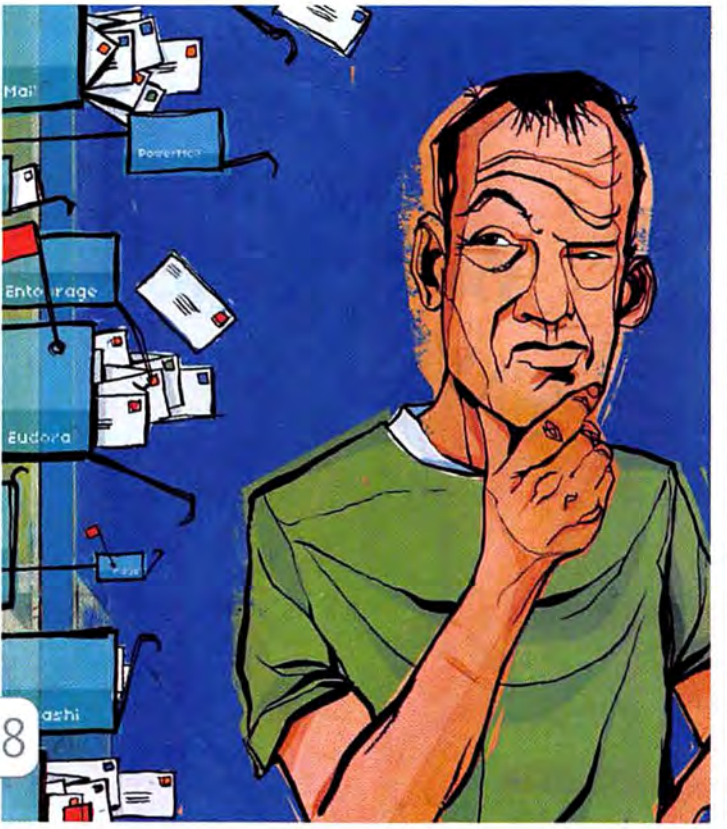

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BY RICK LEPAGE

Who Should Fund Mac OS X Development?

Paying the Piper

LAST MONTH, I WROTE ABOUT APPLE'S MOVE AWAY FROM iTools to the fee-based .Mac service. I didn't have the space to discuss the other Macworld Conference & Expo announcement that stirred up controversy: the $129 upgrade price for Jaguar—also known as Mac OS X 10.2.

Right after the show, I wrote an editorial, for our weekly e-mail newsletter, about the huge amount of negative feedback I'd received regarding Jaguar's price. Folks were unhappy that they would have to pay the full price if they wanted an upgrade, and they felt that there should be some sort of a break for current OS X users and recent Mac buyers.

Apple's Take

When I talked to Apple Senior Vice President Phil Schiller about the furor, he said that Apple had been very consistent in terms of delivering and charging for updates to Mac OS. Every 12 to 15 months, the company ships a major version of Mac OS that's largely a feature update—and all users have to pay to get it. There's one price (currently $129) that covers it all—there's no tiered pricing structure for different types of buyers. Between the major releases, the company ships minor updates that include bug fixes, security improvements, and incremental feature enhancements.

Mac users have two primary concerns about this strategy: new Macs and bugs. People who have bought new Macs in the past six months or so are understandably upset; they think there should be a grace period in which they'd be entitled to any major update. If I were in Apple's shoes, I'd be inclined to broaden the terms of the $20 Mac OS Up-to-Date program to include those people. I understand that Apple is a business fighting to make money in a tight economy, but I think it must also cater to its best customers—the ones who keep investing in the platform by buying new Macs.

Current OS X users feel that Jaguar should be free or discounted because it fixes lingering bugs in OS X 10.1. But Apple says that Jaguar is a feature update, not a bug fix. And while I know there are still a few bugs kicking around in version 10.1.5, features *are*, for the most part, what Jaguar is all about. Schiller pointed out that Apple's last major OS X update, version 10.1, was free—and rightly so, since everyone (including Apple) agreed that 10.1 was the first version of OS X that was truly usable on a daily basis. Since then, the company has also shipped five free updates that have fixed major problems and made 10.1 even better.

The big problem here is that Apple hasn't really made its strategy clear enough. Had Steve Jobs rolled out Jaguar's pricing structure with the clarity of Schiller's explanation to me, a lot of the confusion and anger could have been diffused. Would people still be angry? Absolutely. But Apple would at least have made how its Mac OS upgrade policies work, and why they're structured the way they are, crystal clear.

The issue of charging for Mac OS upgrades (a practice that didn't exist before System 7.1, as many Mac veterans will recall) points out a perception problem Apple must deal with as a company that makes both computer hardware and operating systems. But our situation really isn't much different from PC users': we just pay one company (Apple) twice, instead of paying two companies (Microsoft and a PC maker such as Dell or Gateway).

> There are two primary concerns about Apple's upgrade strategy: new Macs and bugs.

Most people will look at OS X 10.2's new features, eye the price, and ask themselves whether iChat, Sherlock 3, Rendezvous, spring-loaded folders, a better-threaded Finder, and more are worth $129. Some will say yes. Others will wait until they have a more compelling need—or until they buy their next Mac.

Productivity Doubler

As we were wrapping up this issue, Apple introduced a new line of desktop Macs. These machines (detailed in this month's *Mac Beat*) aren't based on a simple processor boost or case enhancement. Instead, Apple decided to *double* everything—except the prices.

As with the recently released Xserve, Apple has added a lot of things pros have been screaming for: faster system and storage buses, dual processors across the line, twin full-height drive bays, speedy DDR RAM, and more. These are entirely new Power Macs, and we're ready for them. Look for more in-depth coverage (and Macworld Lab testing) in the coming months. □

Let me know what you think about upgrade fees, *Macworld*, or anything else related to the Mac. Drop me an e-mail (rick_lepage@macworld.com) or join the discussions in our forums (www.macworld.com). To receive our weekly e-mail newsletter, click on the Newsletters tab on our home page to sign up.

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Ron Okamoto, Vice President
Worldwide Developer Relations, Apple

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FEEDBACK

Attention, Macworld Shoppers

Everyone's looking for bargains these days, especially Mac users. Whether it's a low-cost desktop offering such as the eMac—made available to consumers right after our July 2002 issue went to press—or the 60 dirt-cheap Mac applications we featured in the same issue, our readers clearly want more bang for their buck. Meanwhile, the Jaguar update has stirred up the usual debate between the Mac users who think OS X is worth every penny and those who believe that Apple is making a costly mistake. We've got plenty of opinions in stock this month—priced to move.

Grading the eMac

JASON BRABANDER

In "Head of the Class" (*Mac Beat*, July 2002), you state that the eMac isn't a behemoth, but you go on to say that the machine weighs 50 pounds. I'd certainly call a 50-pound computer a modern-day behemoth. And without the traditional handle, I'm very likely to drop that 50-pound beast. To Apple I say, "Drop the CRT!" Surely, Apple could figure out a way to mount the lightweight, flat-panel LCD into the iMac teardrop shape. You would end up with a much smaller, much lighter computer. It amazes me that while computer parts are continually shrinking in size, the computer on which I type this letter is the same size as the machine I used 20 years ago.

MARK NEWSTETTER

My first thought upon seeing the new G4 iMac was that it wouldn't work in grade-school classrooms. Even if it could withstand the violent tugging kids would inflict on it, just having a pivoting monitor would be a bad idea in a classroom where several kids might end up arguing over where to position the screen. Clearly, Apple is responding to teachers' needs by offering the eMac, which has the same all-in-one format as the original iMac.

Trouble in Store?

DAVID GREEN

I was very surprised and disappointed to see your review of the QPS Que M3 FireWire drive (★★★★; "Room to Grow," July 2002). QPS's Web site states clearly that the drive is not supported in OS X. Since purchasing one of these drives nearly a year ago, I have had nothing but trouble running it in OS X. It formats and runs great—for a while. Then it freezes, and the data becomes inaccessible. I have to then reformat the drive before using it again. My solution has been to use it only when booted into OS 9.2. QPS has ignored repeated e-mails requesting tech support.

MIKE MILLER

I have had one of the QPS M3 drives since fall 2001. It works great in OS 9. Since it's a FireWire drive, it's usable in OS X, to a point. Just don't use it too hard. I find that copying large files from the M3 to my iMac's internal hard drive will invariably lock up the system. Only 15 minutes into importing a CD into iTunes, the M3 drive locked up my system so hard that, after a reset, it booted up in OS 9 instead of OS X 10.1.5. I was hoping that either QPS or Apple would provide an update to fix this, but after half a year, I'm still waiting.

When I was reviewing the drive, QPS told me that while its Anubis software didn't work with OS X, the drive should work when reformatted with OS X's Disk Utility. This put QPS in the same boat as the other vendors, none of which supplied software that worked natively in OS X. QPS also assured me that it would help customers who called technical support with an OS X issue. I have seen the various message boards complaining about QPS's technical support, but I had heard that in the past few months the company had fixed these problems. Thank you for the heads-up—apparently, QPS has some work to do.—Kristina De Nike

More Than We Bargained For

MARK BURFORD

Thanks for the (almost) complete description of the many cool apps and utilities available for OS X ("Mac Software Bargains," July 2002). In the "System Utilities and Finder Enhancements" section, however, you missed two apps worth mentioning. DockSwap, from PiDog Software (www.pidog.com), lets you use the Dock icon menu to create and switch between multiple dock configurations on-the-fly. I have mine added to my log-in items and set to hide so I can use the menu without seeing the little DockSwap window. Xgadgets, by Jupiter Multimedia (www.xgadgets.com), makes Classic? V2, a dockling that allows full control of the Classic environment. I love OS X and rarely have to launch Classic, so this useful tool shows Classic's start-up progress in the Dock icon and allows me to shut down or force-quit Classic from the Dock.

Catching Up with Jaguar

DAVID ALEXANDER

It seems that Apple has released Jaguar details ("Mac OS X Leaps Forward," *Mac Beat*, July 2002) that will make the majority of Mac outsiders sit up and listen: integrated chat, faster performance, lush graphics, built-in searching, and spring-loaded folders. Hopefully, though, Apple has included all the goodies true Mac fans have been crying out for—labels, a decent start-up screen, and collapsing windows.

DAN CIPOLLA

No Quartz Extreme on my iMac? Granted, I won't give two hoots if Jaguar runs fast, but it's a disappointment all the same. The integrated search function is great—I've been waiting since System 7.5 for the ability to locate a file without launching a second app. I'm also glad to see spring-loaded folders return. I hope Jaguar has more enhancements than the ones listed on

Apple's Web site. I mean features that benefit every Mac user—not just Internet tools such as iChat or specialized features such as Inkwell or acceleration. I need stuff I can use—basic features that enhance Mac OS.

Asset Essentials

KEITH SOEHN

You reviewed Canto Software's Cumulus 5.5 and Extensis's Portfolio 6 (*Reviews*, July 2002), but you relegated a third asset manager, iView Multimedia's iView MediaPro, to the "Mac Software Bargains" feature. I, too, initially thought there were only two serious contenders, so I purchased Cumulus. After working with it for a few weeks, though, I became disappointed in the extensive menus and the fact that it didn't give me a browsable view I wanted. I downloaded the iView demo and found this program more than capable, with an intuitive, straightforward interface and a list view. I also liked the price—half as much as the other two—so I bought iView and shelved Cumulus.

CHARLES FREDMAN

The "uncanny similarities" between Cumulus and Portfolio that Bruce Fraser mentions can be seen only if you look at the programs out of the corner of your eye. Portfolio 6 is vastly superior to Cumulus 5.5 in terms of usability, as well as many of its other features. Cumulus does beat Portfolio in a few areas, but Portfolio's benefits far outweigh its weaknesses. Fraser is simply wrong on two points. Portfolio offers an abundance of ways to assign keywords to assets, from the Paths As Keywords feature to the ability to drag and drop selected text onto a selected asset or group of assets. Portfolio does have extensive metadata support, including support for IPTC and EXIF metadata. And Portfolio allows single users to connect to and share a catalog on a network without having to purchase the server software. With Cumulus, if you want to share a catalog, you must purchase the Workgroup Edition and Server.

It's true that Portfolio offers many ways to add keywords to assets. The point I was trying to make was that Portfolio relies much more heavily on keywords than Cumulus does. Portfolio does support IPTC and EXIF metadata, but compared with Cumulus, it extracts a great deal less information from the assets themselves. The catalog-sharing ability of Portfolio is an important one that goes a long way toward justifying its higher price, and I regret the omission.—Bruce Fraser

In Sync

MARK TOTTY

Although HotSyncing between OS 9 and OS X is officially unsupported, I have found that the OS 9 and OS X versions of Palm Desktop 4.0 (*Reviews*, July 2002) can indeed share and HotSync to the same data file. This is how I did it on my dual-boot system with Palm Desktop installed on the OS 9 and OS X partitions: Install both versions of Palm Desktop 4.0. Boot into OS 9 and HotSync your Palm. In the OS X Users folder, go to *personal user folder:* Documents: Palm (not the Palm folder in the OS X Applications folder), and drag it to the Trash. Drag an alias of the Palm folder that resides in your OS 9 Documents folder into OS X Users: *personal user folder:* Documents. Essentially, you have just replaced your OS X Palm data folder with an alias of your OS 9 Palm data folder. The next time you boot into OS X and launch Palm Desktop, you will have tricked the application into reading and writing to the same data file you use in OS 9.

Broader Coverage

ROB LEWIS

Your review of wireless broadband routers (*Reviews*, July 2002) had helpful information and one glaring omission: I really wanted to know whether any of these access points would work with an existing AirPort Base Station in a roaming network (one that hands off a portable device to different access points as you move around a large area).

Embrace Your Inner Geek

HAL COHEN

Whereas David Pogue spoke to *Macworld* readers and Mac users of every level, Andy Ihnatko speaks only to an elitist niche of Mac geeks who can translate his monthly ramblings into something coherent. Surely there is an audience for Andy within the pages of *Macworld*, but I believe the back of the magazine should be reserved for the more general readership and have a Pogue-like air that everyone can relate to.

JAMES HUGHES

I have always found Andy's columns humorous and sometimes even thoughtful. They're not necessarily intended to be helpful; they're more editorial.

Three Cheers for OS X . . .

GAVIN BANTOCK

I'm still using OS 9.2, but I've switched over to OS X several times, setting it up bit by bit. I'm gradually teaching myself how to use it. Each time I venture into OS X, it's like a voyage of discovery, and I get deeper and deeper into this marvelous new continent. I say that people who are still hesitating to make the switch should give it a try. By gradually increasing my OS X know-how, I acquire confidence, and before long, I'll make OS X my main start-up choice.

. . . Or Not

ANDREW PAYNE

Clearly, if OS X fails, Apple will be in dire straits and *Macworld* will go down with the ship. Sadly, your views about OS X's superiority are so obstinate that you have lost objectivity. I couldn't switch to OS X even if I wanted to. I have waited a year now for all the apps I use daily to do my job to be brought to OS X. I'm still waiting. OS X is clumsy, counterintuitive, and slow. All the niceties of OS 9, all those years of refinement, have been trashed. If we don't start facing how bad OS X is and how much better it could be, who will tell Apple? It's time to realize that we have a new operating system that's just not ready. Apple needs to get on the stick and clean this mess up.

Post comments on our forums (www.macworld.com); send them by mail, to Letters, *Macworld*, 501 Second Street, 5th Floor, San Francisco, CA 94107; or send them by e-mail, to letters@macworld.com. Include a return address and daytime phone number. Due to the high volume of mail received, we can't respond personally to each letter. We reserve the right to edit all letters and posts. All published letters and forum comments become the property of *Macworld*.

APPLE'S NEWEST POWER MACS SPORT A NEW LOOK—AND THEY'RE BUILT FOR SPEED

Power Mac: Twice As Nice

PHOTOS COURTESY OF APPLE

>> When Apple has revised its desktop offerings lately, the most talked-about changes seem to occur on the surface. The new iMacs introduced last January, for example, may now include G4 processors, but it's the flat-panel display and domed casing that immediately capture the eye. Mention the newly released eMac, and the first thing you're likely to hear about is its bright 17-inch flat-screen CRT monitor.

The same holds true for the newly redesigned Power Mac G4s, to a point. Like their consumer-friendly counterparts, Apple's pro-level Power Macs have a noticeable new look—in this case, redesigned front and rear panels that distinguish the newer models from previous Power Mac generations.

But with this desktop update, Apple has radically redesigned the *inside* of the Power Mac. The company figures that the new machines—coupled with an improved operating system (these Power Macs come with OS X 10.2)—will be able to handle whatever processing-intensive task pro users can throw at it.

What's Inside

The reason for Apple's confidence? It starts with the Power Mac's processor—or both of them.

G4 Times Two Every Power Mac now comes with two processors, from the 867MHz base model to the top-of-the-line 1.25GHz configuration. A few years ago, that news would have mattered only to graphics and video pros with software capable of using the second processor. With OS X's built-in support for symmetric multiprocessing, the new Power Macs can take full advantage of both processors.

Faster Chips While the number of processors has doubled, the increase in chip speed is slightly more modest. The fastest processor in the Power Mac line features a 25 percent jump in clock speed from the previous top model, powered by two 1GHz G4 chips.

Bus Boost In terms of overall speed boosts, perhaps the most significant change in these new Power Macs is a faster system bus. Apple has replaced the 133MHz bus featured in recent Power Mac generations with a 167MHz version (available only in the dual-1GHz and -1.25GHz configurations). The system bus connects a Mac's processor to its various components; the faster a bus operates, the more efficiently a Mac's processor can work.

Xserve Inspired Other changes to the Power Mac's architecture are clearly inspired by another Apple hardware offering. The Xserve rack-mounted server Apple introduced earlier this year includes several features designed to maximize performance, and Apple has rolled those

Desktop Dollars

$799

iMac
- 600MHz G3
- 128MB RAM
- CD-ROM

$1,099

eMac
- 700MHz G4
- 128MB RAM
- Combo Drive

$1,299

15-Inch Flat-Panel iMac
- 700MHz G4
- 128MB RAM
- CD-RW

$1,499

15-Inch Flat-Panel iMac
- 700MHz G4
- 256MB RAM
- Combo Drive

$1,499

eMac
- 800MHz G4
- 256MB RAM
- SuperDrive

features over into these new Power Macs. Like the Xserve, the top-of-the-line Power Mac now has 2MB of L3 cache for each of its G4 processors (the dual-867MHz and -1GHz configurations have 1MB of L3 cache) to feed data directly to the CPU at high speeds.

Double-Time RAM The new Power Macs will be the first to ship with high-speed Double Data Rate (DDR) RAM (256MB in the 867MHz and 1GHz models, and 512MB in the high-end configuration) for system memory. DDR RAM transmits data on both the rise and fall of the clock signal; the PC133 RAM in previous Power Macs sent data only on the rise. According to Apple, having DDR RAM in the Power Mac effectively doubles the bandwidth of the system.

ATA/100 The Power Macs also follow the Xserve's lead by featuring an ATA/100 bus for attaching internal hard drives. Allowing data bursts at rates as fast as 100MB per second, ATA/100 provides a faster connection to internal hard drives than the ATA/66 technology in previous Power Macs. The new Power Mac G4's stock internal drive is attached to the ATA/100 bus by default; the systems come with additional connectors for adding a second drive to the ATA/100 bus, as well as two drives to the ATA/66 bus.

Video Power With these Power Macs, you've got several options when it comes to video cards. Previously available only in high-end Power Macs, the Nvidia GeForce4 MX with 32MB of DDR SDRAM now ships with the dual-867MHz configuration. The other two Power Mac models feature ATI's Radeon 9000 Pro with 64MB of DDR SDRAM. An even more powerful graphics card, the Nvidia GeForce4 Ti, is available as a build-to-order option. All cards support OS X 10.2's Quartz Extreme, which lets a Mac's video hardware take control of screen drawing, freeing the G4 processors for other work.

More impressive is these cards' native ability to connect two digital flat-panel monitors. Each has an ADC connector, the format supported by Apple's displays. A second DVI connector is more versatile: it can connect to third-party flat-panel monitors directly, to CRT monitors via an included DVI-to-VGA adapter, and even to Apple-made displays via a $149 DVI-to-ADC adapter.

Room to Expand The Power Mac remains the most expandable of Apple's desktop products, retaining the four PCI slots and one AGP 4× slot found in previous versions. There are enough RAM slots to boost system memory to 2GB. The redesigned Power Mac also features space for a second optical-drive bay. The eject button on the keyboard still opens one of the optical drives (a DVD-burning SuperDrive on the 1.25GHz and 1GHz versions, and a CD-RW/DVD-ROM Combo drive on the base model); option-eject opens the other.

Best Face Forward

Those tray-based optical drives reside behind a reflective metal strip on the Power Mac's redesigned front panel. The recessed speaker, introduced with the 2001 Quicksilver models, has moved to the top of the panel; four vents replace it on the bottom. On top of the optical drive, next to the power button, is a headphone jack, saving users from having to awkwardly reach around to the back of the machine whenever they need to unplug.

The ports on the Power Mac's back are unchanged, save for one returning feature that audiophiles will welcome—the Power Mac once again has an audio line-in port. They join two USB and two FireWire ports, a built-in 56K modem jack, a gigabit Ethernet connector, an Apple speaker jack, and ADC and DVI connectors for monitors.

These changes come with a cost. The base model is priced at $1,699, $100 more than the previous least expensive configuration. Of course, that $100 gets you a faster G4 chip, a second processor, L3 cache, a 20GB increase in hard-drive capacity, and a Combo drive. The dual-1GHz Power Mac G4 is priced at $2,499; the dual-1.25GHz Power Mac G4 costs $3,299.

The Last Word

Power Macs still lag behind their Pentium-powered rivals in terms of raw processor speed. But with the substantial changes to the system architecture of these new Macs, from dual processors to bus speed to fast RAM, Apple is proving its commitment to boosting Power Mac speed everywhere it can.—PHILIP MICHAELS

Apple's Dual-Processor Power Macs

COMPUTER	PRICE	MEMORY	HARD DRIVE	OPTICAL DRIVE	VIDEO CARD	BUS SPEED	BACKSIDE CACHE
Power Mac G4/867 DP	$1,699	256MB DDR RAM	60GB	CD-RW/DVD-ROM Combo	Nvidia GeForce4 MX/32MB	133MHz	1MB L3 cache per processor
Power Mac G4/1GHz DP	$2,499	256MB DDR RAM	80GB	SuperDrive	ATI Radeon 9600/64MB	167MHz	1MB L3 cache per processor
Power Mac G4/1.25GHz DP	$3,299	512MB DDR RAM	120GB	SuperDrive	ATI Radeon 9600/64MB	167MHz	2MB L3 cache per processor

WHAT'S NEXT

Looking for OS X answers? Publisher O'Reilly & Associates hosts a conference focusing on the operating system in Santa Clara, California, from September 30 through October 3.

$1,699	$1,799	$1,999	$2,499	$3,299
Power Mac • Dual-867MHz G4 • 256MB RAM • Combo Drive	15-Inch Flat-Panel iMac • 800MHz G4 • 256MB RAM • SuperDrive	17-Inch Flat-Panel iMac • 800MHz G4 • 256MB RAM • SuperDrive	Power Mac • Dual-1GHz G4 • 256MB RAM • SuperDrive	Power Mac • Dual-1.25GHz G4 • 512MB RAM • SuperDrive

IS APPLE EYEING A WIRELESS SUCCESSOR TO 802.11B?

AirPort's Next Arrival

When Apple first launched AirPort in July 1999, it pioneered a revolutionary way to connect computers to one another and to the Internet. Based on an existing IEEE (Institute of Electrical and Electronics Engineers) wireless standard, 802.11b, AirPort liberated mobile users of Ethernet or telephone wires and made building small wireless networks easy.

In the years since, AirPort has undergone minor tweaks; Apple added a built-in firewall, AOL compatibility, and 128-bit encryption in late 2001 (see "A New AirPort Opens," *Mac Beat*, February 2002). But at its core, AirPort remains an 802.11b technology, with its 11-Mbps maximum data rate and 150-foot range.

Recently, though, competing wireless technologies (802.11a and 802.11g, specifically) have emerged, boasting much higher data rates. While 11 Mbps may satisfy a casual home user, higher data rates become important in corporate settings where many users share the same AirPort signal. "If you have ten people attached, you're now down to 1.1 Mbps per user," says Dave Russell, Apple's director of wireless product marketing.

Are you likely to see either wireless standard emerge as the successor to 802.11b? Apple isn't saying, though the company seems hesitant to adopt 802.11a.

"We acknowledge that 802.11a has a much higher throughput than 802.11b, at 54 Mbps versus 11 Mbps," Russell explains. "But the customers Apple caters to don't seem to be a good fit for 802.11a. It has a much shorter range than 802.11b, and its data rate declines rapidly as you move away from the access point."

What's more, the two technologies aren't compatible. AirPort and related 802.11b technologies operate in the 2.4GHz spectrum; 802.11a operates at a wavelength of 5GHz. An AirPort-equipped iBook would be unable to see an 802.11a signal. So customers would have to buy all new equipment—a costly move for organizations such as schools that already have invested in 802.11b technology.

"Also, 802.11a, because it operates at a higher frequency, draws a lot more power—about two to two and a half times the power—and that impacts a notebook computer," Russell adds. "So 802.11a doesn't seem to make a lot of sense to us."

In contrast, 802.11g offers all the benefits of 802.11a—including higher throughput—with none of the drawbacks, Russell says. "802.11b and 802.11g both operate at 2.4GHz, so they can see one another," he adds. "An iBook with an existing AirPort card would theoretically be able to connect to [an] 802.11g base station or access point [but at 11 Mbps, not 802.11g's 54 Mbps]. We think the 802.11g standard holds a lot of promise."

Russell notes that companies are waiting for 802.11g to be approved before building products for it. The IEEE should OK it by mid-2003; the question is whether Apple will follow suit.—ANTON LINECKER

Wireless Nation

Say you're poolside at a Maui hotel, sipping a Mai Tai and wondering if your business plan has received the green light. There's no need to leave your serene setting. You can log on to the Internet and check e-mail via AirPort as you soak up the sun—provided you're at one of the thousands of locations across the country that are equipped with 802.11b high-speed wireless technology.

Hawthorn Suites is a typical example of the hotel chains that are adding wireless networks to lure business travelers. Nearly half of its hotels now offer StayOnline's high-speed wireless service; the rest should have the service installed by year's end. "It came out of a need of our main customers to emulate what they have at home or at the office," says Steve Hymans, vice president of brand marketing at Hawthorn Suites.—ADELIA CELLINI

THE READERS SPEAK

Mac Users Sound Off on Jaguar Update, .Mac Services

If a sampling of *Macworld*'s Reader Panel is any indication, OS X 10.2 should be a success for Apple. But the future of .Mac, Apple's fee-based online services, looks decidedly less rosy.

Those were the opinions of 466 *Macworld* panelists selected at random by Karlin Associates. One week after July's Macworld Conference & Expo in New York, the market-research firm contacted the panelists to gauge their reactions to the new products Apple announced during the biannual trade show.—PHILIP MICHAELS

Are you likely to upgrade to OS X 10.2 in the next six months?

Very likely	41%
Somewhat likely	22%
Neither likely nor unlikely	8%
Not very likely	17%
Not at all likely	9%
Don't know/No opinion	3%
Total respondents	466

Do you currently have an iTools account?

Yes	68%
No	32%
Total respondents	466

How likely are you to subscribe to .Mac?

	Total	iTools users
Very likely	10%	14%
Somewhat likely	14%	16%
Neither likely nor unlikely	9%	8%
Not very likely	29%	28%
Not at all likely	33%	31%
Don't know/No opinion	5%	3%
Total Respondents	466	315

More Info:

www.macworld.com/2002/10/macbeat/poll.html
Read the complete survey results at Macworld.com.

PRO FILE | Q&A WITH STEVE WOZNIAK

APPLE'S SEEDS

Mention the name "Woz," and most Mac users know exactly who you are talking about. Steve Wozniak spends most of his time these days focusing on Wheels of Zeus, a company he helped form to develop wireless consumer electronic products, but he still keeps an eye on the company he cofounded 26 years ago. As part of this spring's MacMania cruise, Wozniak spoke to former *Macworld* editor-in-chief Andrew Gore about Apple's early days and Wheels of Zeus.—MACWORLD STAFF

AT A GLANCE

STEVE WOZNIAK
CEO, Wheels of Zeus; cofounder, Apple Computer
MAC: 800MHz Power Mac G4
SOFTWARE: Qualcomm Eudora, Stickies

On Apple's Success

I'm not really an expert on this, but I see two things that make Apple successful now where others aren't. They're a hardware monopoly, and there's no hardware monopoly on the other side. So that gives them some advantages in control and in pricing to have profits. A company isn't going to be a good company and really develop better and better things if it can barely squeak by and doesn't have good profits. Apple can have the profits that it needs to make these great, exciting products that are steps forward, instead of just kind of sitting in the competitive consumer throwaway-product category where everyone else is. I also think Apple has a [way] of looking at the world, not that it's a computer but that it's an element of your life and a beauty in your home, that whole feeling of the product and you. It's that relationship that makes it not so much technology. It's pretty much like the early starting ideas of Apple—of the computer as just a tool a person uses to do something.

On Mac OS X

I love OS X from a feeling point of view. But from capability and readiness, I still don't rate it ready for me, I'm sorry to say. The experimental side of me is losing out because I don't have as much time with my start-up company.

On Wheels of Zeus

Wheels of Zeus is a start-up. When you've had such a great time at Apple and you used to build your own little inventions, you kind of want this new "Let's build something new. Let's invent something and build it." I did a start-up once before to make a remote control, and it was just such a wonderful, wonderful time in my life. And I kind of got hung up with a life that had a whole bunch of things in it, including teaching in schools. Good things. But I [wasn't] anywhere near technology.

More Info:

www.macworld.com/2002/10/macbeat/woz.html
Andrew Gore talks to Steve Wozniak about the inspiration for the Apple I, on Macworld.com.

DEVICE OFFERS MISSING LINK BETWEEN MACS, STEREO SYSTEMS

Bring Out the Noise

On most Macs, the built-in speakers (or, in some cases, speaker) offer acceptable audio, but nothing that's going to make you forget about your home stereo. So why forget about it? Instead of relying on the often tinny output that can come from your Mac or buying new multimedia speakers, you can use the stereo-system equipment you already have, with the help of the HiFi-Link, from Xitel (512/331-5799, www.xitel.com). This $50 device—which is compatible with Mac OS 9.0.4 and higher, including OS X—provides the bridge you need to send line-level digital audio out of your Mac and into a stereo receiver. Plug the HiFi-Link into one of your Mac's USB ports, and the device's 20-bit digital-to-analog converter (DAC) does the rest, delivering high-quality audio to your amp via RCA-type input plugs. The results are much better than running a cable from your Mac's built-in sound processor. Even if your computer and stereo live in different rooms, the song remains the same—the HiFi-Link comes with a 30-foot, gold-tipped audio cable, shielded and matched to work with the HiFi-Link without losing signal strength or quality. After all, a digital hub should be able to expand its reach beyond a single room.—JONATHAN SEFF

SONNET'S LATEST OFFERINGS BRING OLDER MACHINES UP-TO-SPEED

Old Mac, New Chips

Apple's latest crop of Macs is impressively powerful and reasonably priced—but what if you're not looking for a new computer? A series of new products from Sonnet Technologies (949/587-3500, www.sonettech.com) promises to give older Macs a new lease on life.

Encore G4s Owners of first-generation AGP-graphics Power Mac G4s may feel behind the times, what with the latest generation of fast G4 chips. But Sonnet's Encore G4 upgrade can boost those Power Macs to as much as 800MHz or 1GHz, for $500 and $700, respectively. And if you're brave enough (or know a trained Mac dealer), you can even upgrade a Power Mac G4 Cube via a $30 installation kit.

The Sonnet Crescendo/WS

Crescendo/WS The first all-black PowerBook G3 was a big hit with users, but in recent years, they've aged into obsolescence. You can bring them back to life with the $400 Crescendo/WS, which adds a 500MHz G4 processor to first-generation Wall Street PowerBook G3s.

Other Upgrades Sonnet's other announcements include a 500MHz G3 upgrade for the Power Mac 7200 family, 800MHz G4 upgrade cards for processor-slot Macs (including most early PCI Power Macs and several clone systems), and the Tempo HD, a 20GB, 30GB, or 40GB hard drive on a PCI card designed for easy plug-and-play installation.—JASON SNELL

WHAT A SPATE OF SOFTWARE PURCHASES MEANS FOR APPLE

Apple's Pro Push

New hardware and OS X grab the headlines. But without much fanfare, Apple has been adding to its arsenal of apps aimed at high-end multimedia pros, thanks to a spate of recent acquisitions that include a who's who of the film and video post-production business.

Following last year's purchase of DVD-authoring–software giant Spruce and of Focal Point Systems and its FilmLogic software, Apple bought Nothing Real and its flagship compositing product, Shake, in February of this year. It added compositing software company Silicon Grail and India Titler Pro maker Prismo Graphics in June, followed by the July purchase of Emagic and its Logic audio software.

"It seems to be rounding out quite well," says Rami Katrib, the president of Los Angeles–based post-production service provider Digital Film Tree, who views the purchases with interest. "Audio has always been a missing element, and clearly the Emagic purchase has addressed this to some level."

Apple isn't confining its interest to Mac software. Many of the technologies it has bought have been for Windows or Unix. But OS X's Unix base will make porting an app such as Shake to the Mac platform a lot easier. And while Apple says Shake will continue to be available for the PC and IRIX, it has cut the OS X version's price in half to lure more users to the Mac.

Put all this software together with Apple's latest hardware offering, says Digital Film Tree chief technological officer Tim Serta, and Apple offers pros a rather compelling package. "In a post environment, the Xserve is going to play a key role in render farms," he adds.

"When you step back and look at it, [Steve Jobs] runs a computer company but he also runs an animation studio," Serta adds. "So he thinks like a studio head and he knows the tools that are needed to get the job done."—ANTON LINECKER

MACCENTRAL.COM READERS RAISE MONEY FOR CHARITY

Image Consciousness

A mosaic project developed entirely by forum members of Macworld.com's sister Web site MacCentral.com was auctioned off at July's Macworld Conference & Expo in New York, to help raise money for United Cerebral Palsy. The 28-by-20-inch MacCentral Mosaic is composed of 35 4-by-4-inch tiles, each produced by a MacCentral.com forum member. At press time, the project had raised more than $3,000 for charity. For more on the project—including companies that donated to the effort and information about the artists and the software they used to create their tiles—visit the MacCentral Mosaic Web site at http://mosaic.maccentral.com.—MACWORLD STAFF

PRODUCT WATCH

OCTOBER 2002

Quicken on Demand

When updating Quicken last year, Intuit (800/952-2558, www.intuit.com) introduced a one-step update feature that let users of the personal-finance software access multiple online financial accounts in a single click. With the newest version of Quicken, now available on retailers' shelves, Intuit has expanded the application's money-management bag of tricks by giving users the ability to control *when* the program goes online to retrieve financial data.

Quicken 2003 for the Mac adds a Scheduled Updates tool that lets users select when they want to download transactions, stock prices, and other financial information from online accounts at more than 1,200 participating banks, credit card companies, and brokerages. Users will be able to set different download times for different accounts—retrieving stock information every day, for example, while downloading bank transactions on a weekly basis. That's a stark contrast to the Windows version of Quicken, which offers only a global scheduling feature.

OS X compatibility, introduced in last year's version, remains in Quicken 2003. But the update sports a more Aqua-like interface with photo-realistic buttons.

Downloaded bank, credit card, and investment transactions are displayed in a single window for more convenient review. Quicken 2003 lets users track written checks and deposits made from a brokerage account, eliminating the need for a separate link. And the program includes support for more-advanced investment actions: tracking stock splits, mergers, and spin-offs, for example.

Quicken 2003 sells for $60; registered users of previous versions receive a $20 rebate if they upgrade. In addition to running on OS X 10.1.4 and higher, the program runs on OS 9.2.2.—PHILIP MICHAELS

Hardware

Printers

Four photo printers from Hewlett-Packard (800/752-0900, www.hp.com): The **HP Photosmart 7550** ($399), **7350** ($249), and **7150** ($179) all feature 4,800-by-1,200-dpi resolution and a new print technology that, when used with HP's Premium Plus Photo papers, aims to match the photo quality and permanence of traditional processed prints. The 7550 features a 1.5-inch LCD display. The **HP Photosmart 130** ($179) is a portable printer that produces 4-by-6-inch prints at a resolution as high as 4,800 by 1,200 dpi.

Input Devices

A remote control from Keyspan (510/222-0131, www.keyspan.com): The **Presentation Remote** ($79) features a 900MHz radio-frequency signal with a range as long as 40 feet. The remote, which is designed for presentation software, also offers full cursor control and a laser pointer.

Storage Devices

A line of FireWire pocket drives from WiebeTech (316/744-8722, www.wiebetech.com): The **NanoGB** uses the Oxford Semiconductor OXFW911 FireWire bridge and measures 0.5 by 2.9 by 5.6 inches. It comes in 20GB ($218), 30GB ($260), and 40GB ($300) capacities at 4,200 rpm. A 40GB, 5,400-rpm model ($420) is also available. USB 2.0 versions of the NanoGB are also available in 20GB ($200), 30GB ($240), and 40GB ($280) capacities.

System Hardware

CPU-upgrade cards from Other World Computing (800/275-4576, www.macsales.com): **The Mercury G3/533MHz ZIF** ($200) and **Mercury G4/550MHz ZIF** ($270) upgrade cards are aimed at beige Power Mac G3, blue-and-white G3, and G4 Yikes models.

The missing piece of the Mac OS X puzzle

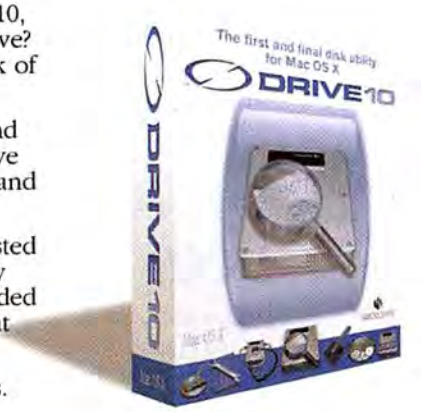
Introducing Drive 10 version 1.1.
Optimizes and defragments your Mac OS X drives and much more.

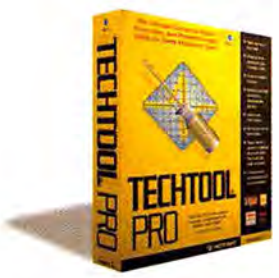
For Apple's next-generation operating system, you'll need a next-generation disk utility. That's why Micromat has introduced Drive 10, the first and final disk utility for Mac OS X. Problems with your drive? Drive 10 can repair almost any drive problem with one simple click of your mouse. All within Mac OS X's native environment.

And with the introduction of version 1.1, you can now optimize and defragment your Mac OS X drive from within Mac OS X. Plus, we've added a whole host of new repair routines that allows you to find and correct drives problems that other utilities would simply abandon.

Drive 10 is a world-class diagnostic and repair utility. Using time-tested routines developed exclusively for Mac OS X, Drive 10 offers many tools for checking and repairing any drive on your system. The included Drive 10 CD-ROM will boot your machine to repair hard drives that won't even appear on the desktop.

Don't entrust your Mac OS X drive to ancient and outdated utilities. Protect your data and drive safely with Drive 10.





From the makers of TECHTOOL PRO

Micromat Inc. 800-829-6227 707-566-3831 info@micromat.com www.micromat.com

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WHAT'S HOT

A Quick Look at the World of Tech

1. **Macromedia and Adobe resolve their patent-infringement disputes.** *Under the settlement, future conflicts between the two companies will be settled by three-legged races, pie-eating contests.*

2. **Mac users react angrily to $100-per-year subscription rate for .Mac accounts.** *To appease users who don't want to pay for a @mac.com e-mail address, Apple is mulling over a free @macdeadbeats.com option.*

3. **Apple expects the number of OS X users to double to 5 million by the end of 2002.** *Coincidentally, experts predict that the number of people asking, "When's the OS X-native version of QuarkXPress coming out?" will also double around that time.*

4. **More Apple Stores open around the country, including one in New York City.** *Things got off to a bumpy start, though, when Mac Geniuses at the New York store kept answering tech-support questions with "You talkin' to me?"*

CPU-upgrade cards from PowerLogix (512/401-9902, www.powerlogix.com): The **700MHZ PowerForce G4 Series 100** is for Power Mac G4s and G4 Cube systems that originally came with 350MHz to 500MHz processors. The **733MHz PowerForce G4 Series 133** is aimed at Power Macs that shipped with 466MHz to 667MHz CPUs (prices range from $449 to $799).

Software

Graphic Software

Maya 4.5, from Alias|Wavefront (800/447-2542, www.aliaswavefront.com): The 3-D–animation software utilizes new modeling tools, integrated 3-D Paint, and multiprocessor support for rendering. The latest version synchronizes Maya for Mac OS X with the versions of Maya available for other platforms ($1,999; upgrade, $699).

Internet Software

AOL for Mac OS X, from America Online (888/285-8007, www.aol.com): The Mac client for the online service runs natively in OS X. It features full HTML mail, improved integration between e-mail and the address book, and enhanced search features (pricing varies).

Productivity Software

DayLite Group Edition, from Marketcircle (888/287-9186, www.marketcircle.com): The contact and customer-relationship management application for OS X lets users share contacts, projects, and sales-opportunity management at a company-wide level.

Mariner Write 3.0, from Mariner Software (614/775-0051, www.marinersoftware.com): The word-processing software adds OS X compatibility, the ability to read Microsoft Word documents, mail-merge functionality, document sharing by saving as a PDF, and on-the-fly spelling-checker capabilities ($80; upgrade, $25).

Utility Software

Drive 10 1.1, from Micromat (800/829-6227, www.micromat.com): The diagnostic and repair utility now allows users to optimize and defragment OS X drives from within OS X ($70; upgrade, $40).

Move2Mac, from Detto Technologies (425/746-0110, www.detto.com): The migration utility enables PC users to move application preferences, files, folders, and other personal information from a Windows PC to a Mac. Move2Mac is expected to ship in September ($60).

Announced

Settlement

A settlement between Adobe (800/833-6687, www.adobe.com) and Macromedia (800/470-7211, www.macromedia.com): Adobe and Macromedia both won patent-infringement lawsuits against each other earlier this year. Terms of the settlement were not disclosed. Both companies said customers would not be affected by the settlement.

Relaunch

The return of a Mac-compatible version of **QuickBooks,** by Intuit (800/952-2558, www.intuit.com): In early 2003, the company expects to release an updated version of the small-business finance program that will run on OS 9 and OS X. Intuit last updated QuickBooks in 1998.—COMPILED BY PHILIP MICHAELS

DOUBLE LCD MONITOR SPORTS 3-D LOOK

Deep View

Take a pair of LCD monitors, lay them on top of each other, and you've got the idea behind the innovative Multi-Layer display, from Deep Video Imaging (860/224-8900, www.actualdepth.com). But this isn't a simple case of double vision—the hardware turns white pixels on the front panel transparent, letting the deeper LCD show through. Since the panels are physically separated by as much as 1.5 inches, objects on the near screen appear to float above the background. And unlike other 3-D monitors, the Multi-Layer display doesn't require that you wear special glasses. Deep Video Imaging says its product has drawn interest from application developers for fields ranging from air-traffic control to medical imaging. The Mac-compatible Multi-Layer requires either two video cards or a single card with dual-display support. While the monitors are still too pricey for gaming and other home use—they cost between $3,000 and $6,000—think of them as ushering in a new dimension of display technology.—FRANKLIN N. TESSLER

Mac OS X Updates

powered by versiontracker.com

Apple iDisk Utility 1.0
Opens other users' public folders, manages iDisk

Apple QuickTime 6 MPEG-2 Playback 1.0
Imports and plays MPEG-2 files in QuickTime 6

Apple Xserve Update 1.0
Updates server

Audion 3.0
Audio player/encoder for CDs, MP3s, and streaming net audio

BitVice MPEG2 Encoder 1.2 SR
Software MPEG-2 encoder

Carbon Copy Cloner 1.3.1
Copies OS X installs to another drive or partition

Deneba Canvas 8.0.4
Vector, bitmap, text media illustration software

ExecutiveSync 1.0
File synchronization utility

Extensis Portfolio Server 6.1
Server for media-management system

File Buddy 7.2
Desktop and file/folder editing and task tool

FolderSynchronizer 3.0
Tool to sync and backup files and folders

Freeway 3.5.5
WYSIWYG HTML editor

Helios 1.2
OpenGL screen saver

iTunes Tool 2.0
Floating iTunes controller

Logitech Control Center 1.0
OS X support for USB mice and keyboard drivers

Marine Aquarium 1.1
Aquarium screen saver

Microsoft Handheld Sync for Entourage X 1.0
Palm sync/transfer tool

Microsoft Remote Desktop Connection 1.0
Client to connect to PCs

Nikon Capture 3.0
Software for D1, D100, Coolpix 5700 series cameras

PHP 4.2.2
Web scripting language

Project Timer 1.1.1
Project time-tracking software

Timbuktu 6.0.2
Connection menu of remote control tool now an OS X system menu

TwilightBrush 2.5
Photo-editing and paint application

Virtix Spectra 1.1
20 color correction filters for iMovie

VirtualLab 1.1.1
Recovers deleted files and drives with partition problems

X-Tunes 1.0
Remote control for iTunes 3.0

For these and other current updates, visit:
www.macworld.com/subject/updates

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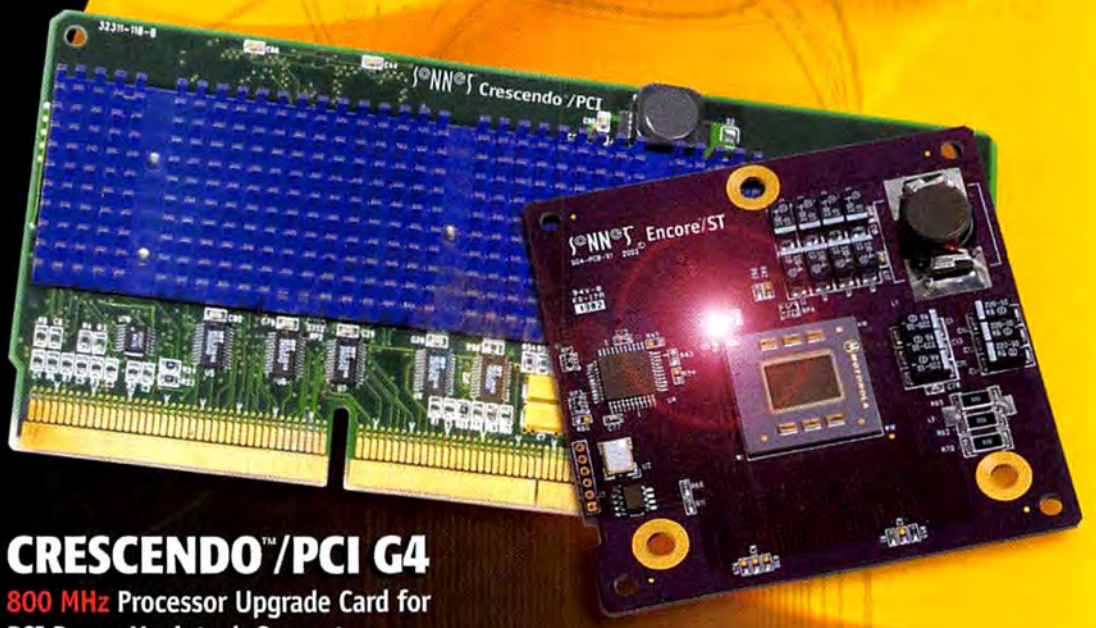

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* Cube requires additional installation kit, and professional installation is highly recommended.

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DREAMWEAVER MX

Well-Established Web-Design Software Embraces Up-and-Coming Technologies

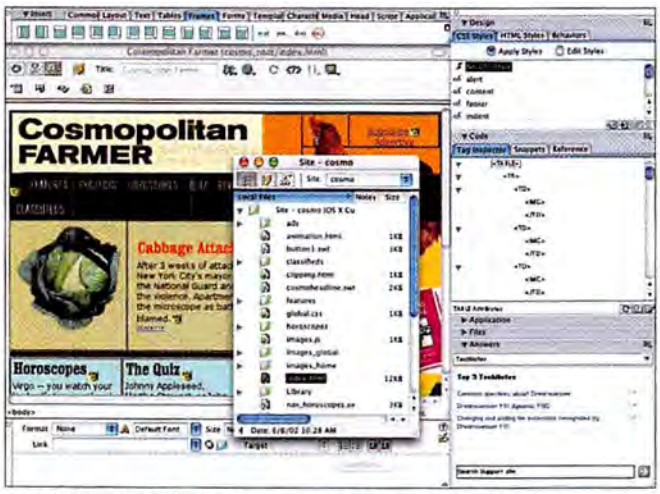
BY DAVID McFARLAND

With its sophisticated visual editing environment, adherence to good coding practices, and powerful site-management tools, Macromedia's Dreamweaver has time and again proved itself the best tool for professional Web development. But the Web's ever-changing technology, and competition from the much improved Adobe GoLive 6.0 (*Reviews*, June 2002), has recently left Dreamweaver 4 showing its age.

The newest Dreamweaver incarnation, Dreamweaver MX, is an ambitious attempt to reach a wide audience of developers, from novices to experienced Java programmers, and to embrace a wide range of technologies, from static Web sites to complex server-side technologies such as PHP and ASP.Net. Most Web developers will find more than they'll need in this package, and at times the everything-plus-the-kitchen-sink feature set feels a little rough and unfinished. But this OS X–native application is a significant update that adds powerful text-editing features, as well as expanded database and server-side integration. Furthermore, it embraces standards such as XHTML and XML.

Aah, Aqua

Dreamweaver MX's Aqua interface is a thing of beauty. But beyond superficial appearances, Dreamweaver MX presents a nicely designed, integrated interface that's a big improvement over Dreamweaver 4's sometimes cluttered and overlapping floating windows (see "A Well-Organized Whole"). As in Dreamweaver 4, palettes appear in related groups, but now you can move and resize all the palette groups as a single window. In addition, if you use other Macromedia software—such as Fireworks MX and Flash MX—you'll be pleased by the consistent interface they share.



A Well-Organized Whole Dreamweaver MX's reworked interface is clean and Aquafied, with most windows organized on the right side of the screen.

Dreamweaver MX also runs comfortably in OS 9 and exhibits the same (but non-Aquafied) interface improvements.

Speaking Many Languages

Dreamweaver MX understands that a vanilla HTML file is only one of the many different file types Web developers now have to contend with. When you're creating a document, Dreamweaver MX lets you select from more than 30 different file types, including Cascading Style Sheet (CSS), JavaScript, XML, and even Flash ActionScript files. Dreamweaver MX can now create XHTML files—an XML-compliant form of HTML promoted by the W3C. You can make an XHTML file when creating a new file, and you can even convert a standard Web page to XHTML. Although this feature is great, the product misses the mark by not providing a batch option for converting an entire site to XHTML.

Many of the enhancements in Dreamweaver MX are aimed at bolstering its hand-coding features. The new Code Hints feature, for example, provides access to contextual menus with relevant tag attributes, boosting productivity tremendously. This is a nifty feature you won't find even in the Mac text-editing mainstay, Bare Bones Software's BBEdit.

The new Snippets panel lets you store frequently used HTML code—such as common table designs or JavaScript programs—for later reuse. When you need to create the same table design for the hundredth time, you'll be glad that the Snippets panel is just a click away.

If you're a stickler for standards, a built-in validation function lets you check an individual Web page (or an entire site) for compliance with a variety of standards such as HTML 4.0 and XHTML 1.0 (strict or transitional). Dreamweaver MX can even check XML files for proper syntax, though it would be helpful if Dreamweaver could validate them against a DTD (document type definition).

The Dynamic Edge

Dreamweaver MX includes all the dynamic Web-site tools of Dreamweaver UltraDev—and then some. It works with seven different server models (combinations of application server software and programming languages that allow database connections and provide server-side programming features), including ASP.Net and PHP, which are new to the program and highlight Macromedia's efforts to keep current with new and successful Web technologies.

The new Databases panel lets you view the structure of a database, including its tables and rows, as well as view data straight out of any table in the database. New form controls also let you quickly create dynamic radio buttons, pull-down menus, and other form elements that draw their values from a database. But unfortunately, you won't find the same feature sets for all the different server models. PHP developers will be disappointed by the lack of some basic features that have been offered in other server models since UltraDev: the more notable omissions are PHP server behaviors—for controlling access to a site with login pages—and a Master/Detail application object.

Back to Basics

With a few notable exceptions, the basic Web-page–building and site-management tools have remained the same. Only one new behavior—a nifty dynamic HTML pop-up menu tool—has been added (though you'll find a much more powerful version of it

28 Web-design software
Dreamweaver MX

29 Document-authoring program
Adobe FrameMaker 7.0

31 Web-graphics software
Fireworks MX

32 Compact projectors
BenQ SL705X, Boxlight Cinema 17SF, Canon LV-X1, Epson PowerLite 720c, ViewSonic PJ550

34 Two-track audio editor
Spark XL 2.5

35 Photo ink-jet printer
Epson Stylus Photo 2200

36 Business-software suite
ThinkFree Office 2.0

37 Optical character recognition app
Readiris Pro 7

37 Digital voice recorder
Olympus DS-330

38 Disk-maintenance package
Norton Utilities 7.0

39 iMovie 2 plug-ins
16×9 Converter, eZeScreen 1.0.1, Pan & Scan, Zoom 1.1

40 Systems-management software
NetOctopus 4.0

42 VR panorama hardware
Kaidan 360 One VR, Sunpak SurroundPhoto

43 Professional video-editing software
Cinema Tools 1.0

44 Reviews in Brief
CookWare 7.9, Computer Cuisine Deluxe 3.1, Dave 3.1.1, Ex-tend-it VGA to ADC, FileMaker Mobile 2, Apple 700MHz iBook (12.1- and 14.1-inch models), and Lightwave 3D 7.5

47 The Game Room
Bejeweled, Alchemy, Heretic II, OS X game controllers

OUTSTANDING: ●●●●● VERY GOOD: ●●●● GOOD: ●●● FLAWED: ●● UNACCEPTABLE: ●

in Fireworks MX). You'll also approach many of the old tasks, such as building table-based layouts, in the same way.

However, the implementation of CSS is much improved. The reworked CSS Styles panel makes applying and editing styles more intuitive. In addition, Dreamweaver MX is better at displaying CSS properties when you're working in its Design view, so you'll take fewer trips to a Web browser to check your designs.

In addition, the reworked Template feature gives you advanced template-building controls that allow much greater flexibility than you had in previous versions of the program. Nested templates let you create templates based on a master template. Best of all, a new export feature lets you strip the Dreamweaver MX–specific template code and export the cleaned-up site into a new folder.

Opening Access

Dreamweaver MX not only provides tools for making your Web pages more accessible to users with visual impairments, but also includes an electronic accessibility reference and a reporting tool that lets you check an entire site for potential Section 508–compliance problems. Unfortunately, though, the program doesn't provide much guidance for those who are unfamiliar with the many intricacies of accessibility. For example, the reporting tool flags accessibility problems, but it doesn't provide advice on how to fix the sometimes cryptic errors.

Perhaps more impressively, Dreamweaver MX itself is designed to work with screen-reading software, opening up the process of Web authoring to people with visual impairments.

The OS X Advantage

OS X users can now welcome Dreamweaver, as well as Flash and Fireworks, with open arms. When running natively in OS X, Dreamweaver MX also sports a new FTP engine, rewritten specifically for OS X, that more efficiently transfers files to and from a Web server.

There's even better news for OS X users venturing into database-driven Web sites. Dreamweaver MX adds support for PHP and MySQL; you can now set up a complete development environment on your Mac with free, open-source software that builds on OS X's Unix foundation. Imagine designing, building, and testing e-commerce or other types of dynamic, database-driven Web sites without ever having to network to a PC or transfer files to a Unix Web server.

Macworld's Buying Advice

Dreamweaver MX is a significant update to the Dreamweaver line. It's a sophisticated visual HTML editor with powerful site-management features. If you want to move toward database work, if you're a hand-coding junkie, or if you just want to take advantage of Dreamweaver MX's support for XHTML and other Web standards, this is the Dreamweaver version for you. □

RATING: ●●●●

PROS: OS X native; support for PHP and MySQL; advanced templating features; improved CSS creation and display; expanded database-integration features; helpful hand-coding tools.

CONS: Incomplete offerings for PHP; lacks accessibility-design help; no support for batch-conversion of an entire site to XHTML.

PRICE: $349; upgrade from previous versions of Dreamweaver or Dreamweaver UltraDev, $179

OS COMPATIBILITY: Mac OS 9, Mac OS X

COMPANY: Macromedia, 415/252-2000, www.macromedia.com

ADOBE FRAMEMAKER 7.0

Industrial-Strength Document Application Eases Publishing to Expanded Formats

BY BILL BRIGGS

For years now, Adobe FrameMaker has had a dedicated following, thanks to its unique feature set. Best described as a cross between a very powerful word-processing application, a structured authoring environment, and a book-building program, FrameMaker provides a lot of functionality for people and organizations that produce complex, structured, or long documents. The new release, FrameMaker 7.0, is no exception. With the ability to maintain multiple indexes and cross-references, and to export to an astounding number of formats, FrameMaker is definitely *not* the average word processor.

Two Become One

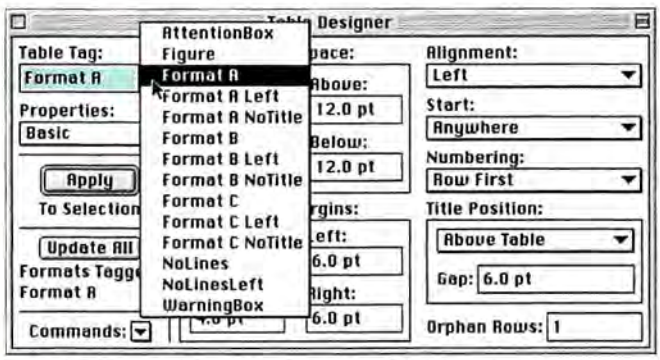
FrameMaker 7.0 consists of what was previously two products: FrameMaker (also known as plain-vanilla FrameMaker), and FrameMaker+SGML, the structured-document–authoring version. FrameMaker 7.0's main attraction is its ability to both import and export valid XML (Extensible Markup Language) for repurposing documents, a boon to publishers who must deliver an array of formats from a single source document.

FrameMaker's complex nature means that it takes a fair amount of time to master. And it isn't OS X native, so it has to run in OS 9 or in OS X's Classic mode; however, it performs quickly and reliably in either environment. (At press time, Adobe had not announced plans to bring FrameMaker to OS X.)

The Power of XML

FrameMaker is already commonly used to publish technical documentation, for which support for cross-references, automatic numbering, and the like are essential, but now that it lets you use a WYSIWYG editor to create XML, it will certainly gain broader use in other publishing arenas.

The ability to author, edit, import, and export XML and SGML; support for Unicode; and the variety of output formats it can deliver make FrameMaker



Beyond Tables Using FrameMaker's superb table function, you can store your most-used table formats in a catalog for easy access.

7.0 a publishing tool without peer on the Mac. This extremely powerful package can deliver output to print, PDF, HTML, XML, SGML, eBook, Palm Reader, and MS Reader while retaining the integrity of the original document. Given this range of formats, it's possible to repurpose FrameMaker documents for a variety of distribution methods, such as Web sites, database applications, and basically any program that can make good use of XML.

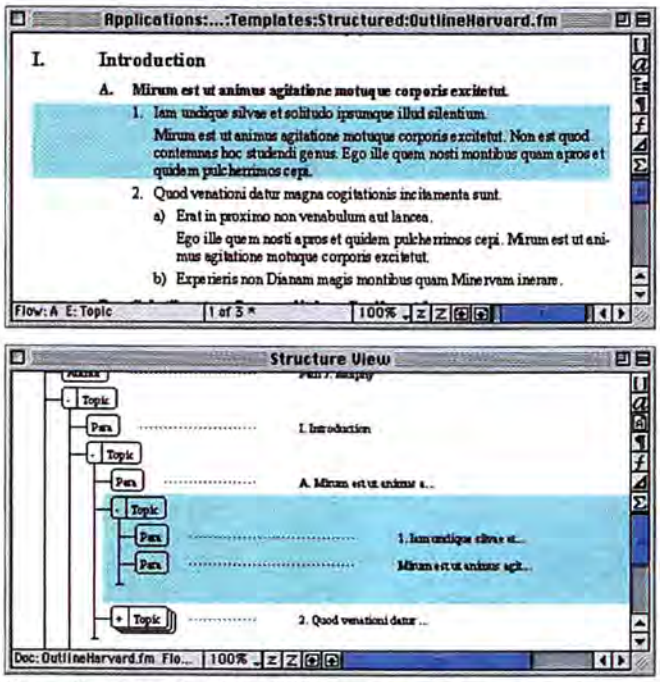
FrameMaker retains its Save As HTML option, and it's customizable through mapping tables, but to give greater control over HTML export, Adobe has bundled WebWorks Publisher Standard Edition 7.0, instead of the Lite version it included with previous versions of FrameMaker. (If your HTML needs are very complex, the Standard Edition may not suit you; you may need to step up to WebWorks Publisher Pro.)

On the import side, FrameMaker can display most popular raster-image formats, EPS, text insets, native Adobe Illustrator 10 files, PDFs, and now SVG (Scalable Vector Graphics). You can even import a QuickTime movie into a document; however, if you then choose to output the document to PDF, the movie won't survive the trip.

These import and export capabilities are bolstered by FrameMaker's new support for workgroups. Version 7.0 includes some basic document-management tools that let users define shared servers or folders and check files in and out as needed. And like many other Adobe products, it includes support for WebDAV (Web Distributed Authoring and Versioning), which allows for easy identification of the various iterations of a document.

Next on the Wish List

Even though FrameMaker 7.0 has some small but significant improvements, there are still a few items on our wish list. You can't drag and drop text blocks, and long footnotes still don't break over multiple pages. And the program can't create automatic endnotes, though you can construct them manually with relatively little effort.



Choose Your View FrameMaker 7.0 lets you view your document in either a WYSIWYG unstructured mode (top), which allows easy creation and editing of structured documents, or a structured mode (bottom), which validates your document's structure and lets you move elements by dragging and dropping them.

Among FrameMaker's new features is the ability to select unstructured or structured mode, and you can also determine which mode launches when you start the program (see "Choose Your View"). The program can also automatically assign a particular master page layout to a body page based on the latter's contents. And the number of allowed automatic running headers and footers has been increased from 4 to 12.

Speed and Performance

In our tests with documents of 1,000 pages and larger, FrameMaker 7.0 was stable, reliable, and surprisingly fast, even on one of our older test machines, a 250MHz Wall Street PowerBook G3. We didn't encounter any bloat-induced sluggishness, even with the inclusion of the new tools. FrameMaker also ran just fine in OS X's Classic mode.

Our one performance-related complaint is that screen redrawing is dodgy, with occasional lingering text artifacts. You can update the display via a key command, but with the processor power available in modern Macs, there's no good reason for this glitch. A more irritating display issue sullies FrameMaker's otherwise superb table function: in table cells that have a color fill, selecting the cells doesn't reverse the color around the text, so you can't see what text you've highlighted.

Learning FrameMaker

FrameMaker gains much of its productivity and efficiency through the use of properly designed templates. Given a template, the average user can learn to work with FrameMaker in a relatively short time. (FrameMaker comes with several sample templates, and more are available through the FrameMaker user community, which you can find on Adobe's Web site and other FrameMaker sites.) Becoming a template developer takes much longer, but the intrepid developer can, without too much difficulty, learn to build templates for creating unstructured documents. But if you intend to develop structured documents, you'll probably want to hire outside expertise. If you plan to write your own DTDs (Document Type Definitions) and EDDs (Element Definition Documents) for XML publishing, you'll likely need some specialized training.

FrameMaker's user guide is shorter than earlier versions' but serves as a decent reference manual, with a new design and a good index. The FrameMaker installation includes more than a dozen online PDFs that cover various topics in more depth. FrameMaker Help is easy to navigate and addresses many common questions reasonably well.

Macworld's Buying Advice

FrameMaker is overkill if all you need is a simple word processor or page-layout application. But if you maintain documents that are both long and long-living, such as books or technical manuals you want to repurpose, you owe it to yourself to check out FrameMaker 7.0, and for authoring structured documents, it's the only game in town.

FrameMaker 7.0 is powerful and well behaved. The strength of its tool set and the efficiency with which it handles long, complex documents and multiple delivery formats more than compensate for its few irritating flaws. With its variety and depth of useful features, it will no doubt pay for itself in very short order. □

RATING: ♦♦♦♦

PROS: XML import and export; WYSIWYG XML editor expands program's uses; superb table function; stable and fast; many output formats.

CONS: No OS X support; takes a long time to master; lacks support for multipage footnotes; some screen-redrawing bugs.

PRICE: $799; upgrade from previous versions, $349

OS COMPATIBILITY: Mac OS 9

COMPANY: Adobe Systems, 800/833-6687, www.adobe.com

FIREWORKS MX

Web-Graphics Program Provides Refined Features and Added Versatility

BY SANDEE COHEN

With the latest updates to its line of Web-site and graphics-creation programs, Macromedia has united Fireworks, Dreamweaver, and Flash under the MX label. For Fireworks—which has consistently been the image editor of choice for design pros—the name change has brought with it better integration with other Macromedia tools, an improved interface, and OS X compatibility.

But the latest version of Fireworks, which runs in OS 9 as well, also includes user-friendly improvements to old features, lets you use Flash to create custom commands, and eliminates specified modes for bitmap and vector editing. Add all this to the existing Find and Replace, Symbols, and automation tools for batch processing, and Fireworks MX has enough features to merit a paid upgrade or first look, from anyone who has to produce and maintain the hundreds of graphics found in a typical Web site.

Multiple Apps Cooperate

With MX, Macromedia has unified its Fireworks, Dreamweaver, and Flash interfaces (see our Dreamweaver MX review, elsewhere in this section), making it easier for someone who knows one program to pick up another. (Though existing users may need to get accustomed to the interface changes, they'll start to appreciate them in no time.) For Fireworks MX, the biggest interface change is the combination of the Fill, Stroke, Effect, Info, Options, and Object panels into a single, context-sensitive Property Inspector panel, similar to the one in Dreamweaver. The reduction in clutter is an improvement, but you can't vertically orient the Property Inspector, and it takes up a lot of screen real estate.

All the Aqua interface elements are now incorporated into Fireworks MX as well; however, the program felt a bit sluggish when we styled objects and optimized graphics in OS X, compared with performance in OS 9.

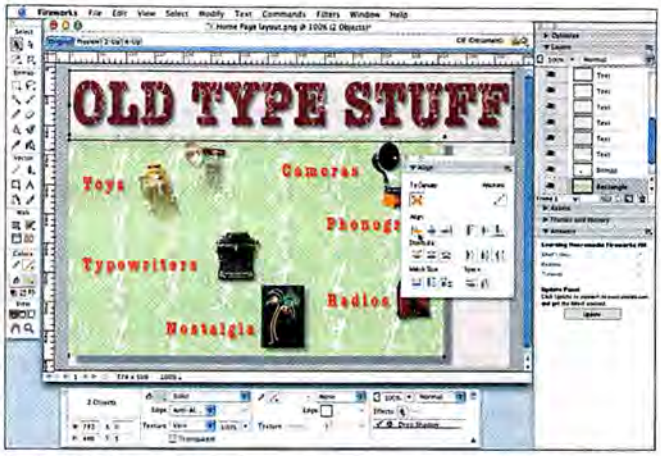
There's also improved integration between Macromedia applications. You could use Fireworks 4 (★★★★½; *Reviews*, April 2001) to export graphics and HTML code to and from Dreamweaver, but doing so involved clicking through a confusing array of menus and dialog boxes. The new Quick Export menu lets you launch Dreamweaver or other Macromedia apps right from the document window.

Flash in Fireworks' Interface

Fireworks MX gives users the revolutionary ability to create custom Fireworks features with Flash. Among these Flash-generated features are the new Align, Add Arrowheads, Twist And Fade, and Fade Image panels. Earlier versions of Fireworks used JavaScript commands to modify graphics and automate tasks, but these JavaScripts were limited to a primitive interface that didn't allow for on-screen panels. Now Flash SWF movies work within the Fireworks application environment. So instead of creating only simple JavaScript commands, developers can create JavaScript and ActionScript commands that use a Flash SWF panel as an on-screen interface.

Even better, if you go to the Macromedia Exchange Web site for Dreamweaver, at www.macromedia.com/exchange, you can download additional commands—new Fireworks MX features by third-party developers.

Fireworks MX's Data-Driven Graphics Wizard, created by author Joe Lowery, is a good example of just how powerful these commands can be. This Flash/JavaScript wizard uses XML variable data such as database information and different product images to quickly build multiple versions of Web pages and ad banners. Using this capability is similar to running a word-processing mail merge, but with both text and graphics automatically changed in each iteration.



Well-Apportioned Panels The new Property Inspector panel (bottom) reduces clutter, and other new panels, such as Align (center right), offer additional features.

No Worries about the Mode

Macromedia has also made significant improvements to the way Fireworks works with bitmap images and vector objects. Instead of making you switch between bitmap and vector mode and juggle the tools for each, as in previous versions, Fireworks MX automatically switches to the proper mode for the tool you choose, and tools are organized by function. Rather than forcing you to figure out which tools work in which modes, pixel-retouching tools such as the Vector Brush tool always work in the bitmap mode. Path-creation tools, including the Vector brush, automatically switch to the vector mode. Also new are retouching tools for bitmap editing, such as Blur, Sharpen, Dodge, and Burn.

Despite Fireworks' strengths for developing Web graphics, Web designers will still need Adobe Photoshop, for its exclusive imaging and drawing features. For instance, Photoshop 7 contains 22 blend modes; Fireworks MX, 13. In addition, the new Healing brush and filters such as Dust & Scratches are unavailable in Fireworks.

Features Get Better with Age

In Fireworks MX, you'll find refinements to existing features. You can now design pop-up menus laid out either horizontally or vertically, instead of being limited to the latter. And rather than working with a cumbersome Text Editor, you can edit and format text directly on a page, via the options in the Property Inspector panel. And there's even a spelling checker for text.

Macworld's Buying Advice

Fireworks MX's seamless integration with other Macromedia Web-development apps makes it a worthwhile upgrade if you build Web sites and applications with Dreamweaver MX—and especially if you've moved to OS X. If you're a designer who creates large volumes of Web graphics, you'll appreciate Fireworks' automation features. But if you create just a few Web graphics or if you want to generate sophisticated imaging effects, you may want to stay with Photoshop's simpler Web features and imaging tools. □

RATING: ★★★★½

PROS: New interface and seamless integration with other Macromedia Web-design software; reduced panel clutter; additional JavaScript and ActionScript extensibility commands available from third-party developers.

CONS: Slow OS X performance when styling objects and optimizing graphics; existing users may need to adjust to new interface.

PRICE: $299; upgrade from Fireworks 4, $149

OS COMPATIBILITY: Mac OS 9, Mac OS X

COMPANY: Macromedia, 415/252-2000, www.macromedia.com

COMPACT PROJECTORS

Bright, Light Projectors Illuminate Business or Home

BY JEFF PITTELKAU

Compact projectors are playing new roles on the road and in the home. Easy to tote, the latest models weigh about the same as or less than your PowerBook, and they're around the same size as the lunch box you may have carried when you were a kid. But don't think their diminutive size and weight mean compromised image quality. The models we tested project bright, sharp, colorful images. And each projector has an array of inputs that allow it to play well with Macs, PCs, gaming consoles, and home-theater setups (in standard analog or digital HDTV).

Macworld Lab tested five models that range in price from $2,295 to $4,599 and weigh in at 3.8 to 6.4 pounds. All are based on 1,024-by-768-pixel imaging systems that scale to display other resolutions. Three models use LCD (liquid-crystal display) technology: the Canon LV-X1, Epson PowerLite 720c, and ViewSonic PJ550. The other two employ Texas Instruments' DLP (Digital Light Processing) technology: the BenQ SL705X and the Boxlight Cinema 17SF. In past reviews, LCD-based models have fared better in our tests; however, the DLP-based Cinema 17SF impressed us with its stunning contrast and color quality. (For our last projector roundup, see *Reviews*, June 2001).

Hooking Up

Each projector comes with all the inputs you'll need to connect to your Mac—and nearly anything else that generates a video signal. All come with the connections you'd expect: analog VGA, to hook up to your Mac or other computers, as well as composite video, S-Video, and component video for home-theater and gaming setups. Only the Cinema 17SF projector also includes a DVI connection—the emerging standard for digital-video connection—which is used on the latest Titanium PowerBook G4s and Power Mac G4s.

Each projector connected without a hitch to our Titanium PowerBook G4's VGA port. (The latest PowerBook models ship with a DVI port but include a VGA adapter.) Fortunately, we already knew how to change our PowerBook's video resolution to exactly match each projector's 1,024-by-768-pixel imaging system. We also knew how to enable video mirroring so that the projected image would be identical to the PowerBook's. But if you're not armed with this knowledge, you may not have it so easy: the PowerLite 720c is the only projector in this roundup that features detailed setup instructions for *both* OS 9 and OS X in its instruction manual—a small but appreciated touch for Mac owners.

Shining Stars

Macworld LAB TEST	Brightness	Contrast	Color	Text	DVD Video
BenQ SL705X	●●	●●	●●	●●	●●
Boxlight Cinema 17SF	●●	●●●	●●●	●●●	●●
Canon LV-X1	●●	●●	●●●	●●●	●●
Epson PowerLite 720c	●●●	●●	●●●	●●●	●●
ViewSonic PJ550	●●	●●	●●●	●●●	●●

●●● EXCELLENT ●● ACCEPTABLE ● POOR

A jury of experts evaluated each projector and rated quality as excellent, acceptable, or poor. Our test images included color and gray-scale Photoshop 7.0 files and Microsoft X, Excel X, and PowerPoint X files. All tests were performed using a Titanium PowerBook G4 running Mac OS X, with screen resolution set to 1,024 by 768 pixels and video mirroring enabled. DVD video tests were performed using the PowerBook's built-in DVD player. Each projector was connected with its supplied VGA cable to the PowerBook's video-out port.—MACWORLD LAB TESTING BY JAMES GALBRAITH

The Boxlight Cinema 17SF

Welcome Extras

Another plus of the PowerLite 720c is its ability to store any image—via any of its video-in ports—as the splash screen that comes up when you turn on the projector. This can be an important detail for an image-conscious business that wants its own logo—instead of that of a projector company's—to come up when an employee turns on the projector. This feature could also be used to provide internal technical-support contact information if the projector is shared by many employees.

Remote controls come standard with each projector, allowing you to turn the projector on and off and operate all of its menu-driven adjustments. The SL705X, LV-X1, PowerLite 720c, and PJ550 come with small, thin remotes. The Cinema 17SF's remote was larger, but it was also the only one with backlit buttons, which are useful if you're fumbling to operate your projector in a dark room. The PowerLite 720c and LV-X1 remotes do double duty as rudimentary pointing and clicking devices, sending signals to the projector, which has a USB port. BenQ bundles a laser pointer with a remote scroll wheel—but it's not Mac-compatible.

Four of these models come with a padded carrying case, but if you want Boxlight's case for the Cinema 17SF, it'll cost you an extra $50.

How They Look

Much like slide or movie projectors, digital projectors use a high-intensity light source and lens system to project images onto a screen. One of two techniques is employed to make a picture. LCD projectors rely on an assembly of beam-splitting mirrors that channel red, green, and blue light through three separate LCD modules, one for each color channel. Prisms reassemble the light beams into one, which is then projected onto the screen by the lens.

DLP projectors, on the other hand, use a digital micromirror device (DMD) chip, which has microscopic cells that rotate ever so slightly to send light through or away from the projector's lens. Varying shades are created by pixels that switch on and off thousands of times a second. Because a DMD chip can't create color on its own, portable DLP projectors employ a rotating color wheel to filter light into repeating pulses of red, green, and blue; the DMD chip displays subframes of color information precisely in sync with each colored light pulse.

We connected our PowerBook G4 and ran our standard suite of projector tests. First, we displayed Excel charts and text with the room's overhead lights turned on. We were impressed by the superbright PowerLite 720c, which featured an ample 1,500 ANSI lumens, compared with the 1,000 to 1,200 ANSI lumens of the other models in this roundup. (ANSI lumens are a standard measurement published by projector manufacturers for comparison of brightness among models.) This extra brightness will come in handy should you need to project a large image an audience will view from many feet away.

All of the projectors clearly replicated the text in our documents, though there were slight differences. On the SL705X, the small text in our Excel spreadsheet was slightly smeared, and a small amount of jitter was noticeable up close; however, from a normal viewing distance of six feet or more, even the smallest text was clear and readable. The

Cinema 17SF, LV-X1, PowerLite 720c, and PJ550 displayed sharp text with no jitter—even when viewed up close.

We switched off the overhead lights to evaluate each projector's ability to display black-and-white and color photographs, which were used to assess each projector's contrast and color capabilities. In these tests, only one projector—the Cinema 17SF—displayed believable blacks. This isn't surprising, considering its factory spec for contrast ratio—1,000:1, which is much higher than any other model we tested. But the other projectors' contrast was quite acceptable, and they're likely to perform well in conditions in which there's a lot of background light.

In our color test, we had to tweak some models a bit to yield the best results. These projectors offer many welcome controls—beyond brightness, contrast, and tint—for adjusting color balance. With the exception of the SL705X, which projected too-dark reds and undersaturated greens, the models we tested displayed excellent color, which makes them ideal as a projection source for digital photographs. Overall, we liked the Cinema 17SF the best, because it displayed very accurate color without needing any adjustments.

The Cinema 17SF's excellent color quality and contrast made a repeat performance in our DVD video test. The others performed well enough to use for your next Super Bowl party, but the Cinema 17SF is the only model we'd consider for permanent installation in a home theater or other setting where its primary function would be playing DVD movies. (For more on using these projectors in the home, see "Tips for Home Use".)

As we'd expected, we did see the occasional red-green-blue pulses of light following fast-moving objects in our test DVD movie, *X-Men*, on both the Cinema 17SF and SL705X, owing to their single-DMD designs. The LCD-based projectors fared significantly better with motion, although they had their own visible artifacts—the mask between each pixel was visible and made it seem as if we were watching our videos through a window screen. This problem also occurred on the DLP-based models, but it was more prominent on the LCD projectors.

A projector's optics produce a perfectly rectangular image when the projector is positioned at an ideal height, not at the height of the projection screen or wall on which the image is being displayed. This ideal height is almost impossible to reach, so most projectors display a form of projected-image distortion known as *keystoning*, in which the top of the projected image is larger than the bottom, or vice-versa. Thankfully, each projector comes with a digital keystone control, which predistorts the projected image so that it looks perfect on the screen. The PowerLite 720c is the only model with a sensor that automatically enables keystone correction. This sensor did a pretty good job and will come in handy if you're not a perfectionist.

These projectors are designed for years of trouble-free service, but there's one long-term operating cost you should consider. Each projector uses a metal-halide arc lamp, which has a fairly long life—on the order of 1,000 to 2,000 hours, depending on the projector model. Arc lamps lack a filament, so they won't be damaged by the vibration and jostling that occurs when you tote the projector around. Also, instead of burning out all at once, these lamps get gradually dimmer as they age, giving you some idea of when you'll be stuck without a lamp. Eventually, the projector's built-in lamp-life timer will tell you it's time to replace the lamp, which—take a deep breath—typically costs $350 to $500.

Tiny Equals Tinny

All the projectors produced tinny sound quality from their built-in speakers, but that's not surprising, considering both the speakers' and projectors' small size. These projectors include only a small speaker, which results in low-fidelity sound. That isn't adequate for a conference room, classroom, or auditorium. In these cases, you'll want to hook the projector up to amplified speakers or a room's public-address system.

Another sound detail worth mentioning is fan noise. Each projector is rated well under 40 decibels, which means that fan noise is noticeable when you're seated close to the projector. The Cinema 17SF had the quietest fan, rated at 32 decibels—we had to sit right next to the projector to hear its fan. The quiet fan is intentional, as is the Cinema 17SF's off-white color, which is intended to blend into surroundings when it's mounted on the ceiling in a home or office. The other projectors are some combination of black, silver, and blue, which looks just fine on a tabletop—and all but the SL705X can be mounted on the ceiling as well.

Macworld's Buying Advice

One projector won't do the trick for all intended uses. Though it wasn't as bright as the others, our favorite was the DLP-based Boxlight Cinema 17SF; its impressive color and contrast, built-in DVI connector, quiet fan, and decor-friendly casing make it the best choice for a permanent home or office installation where multimedia and movies are a must. If you're not in the market for a $4,599 projector, we recommend the $3,499 LCD-based Epson PowerLite 720c, which has enough lumens to overcome ambient light and project onto very large screens. □

Tips for Home Use

Whether you plan to use a compact projector in your home only occasionally or install one as part of a permanent home-theater setup, here are a few ways to maximize your enjoyment.

Location There are several places you can set up your compact projector. The easiest—but also the most intrusive—place is on a coffee table between your seating and the projection screen or wall. To reduce the distraction of the projector's fan noise, you may want to put the projector on a shelf behind the seating area or, if your projector allows, mount it to your ceiling with an optional ceiling mount.

For the best contrast and color quality, you'll want to use your projector in a very dark room. If your viewing room has a lot of windows, you may want to invest in room-darkening shades or drapes.

Screen You can project an image directly onto a wall, as long as your wall is painted white or a near-white shade. But you'll get the best results if you purchase a projection screen, particularly one with a coating that maximizes the amount of light reflected into the viewing area.

Cables Even if you plan to use a compact projector only occasionally, you'll want to run appropriate video cables to where your projector will be located. The simplest approach is to run them under a carpet or rug. For a permanent installation, however, you'll want to run cable in the floor, ceiling, or walls.

Sound Projectors can manage only stereo, not surround sound. And long cable runs will degrade sound quality. For these reasons, we recommend that you use your home-theater receiver to switch audio signals. And for the best sound experience, you'll want to position your speakers around your viewing screen or on your wall.

Compact Projectors Compared

COMPANY	PRODUCT	MOUSE RATING	PRICE	CONTACT	BRIGHTNESS (IN ANSI LUMENS)	IMAGING TECHNOLOGY	WEIGHT (IN POUNDS)
BenQ	SL705X	●●●½	$2,995	866/700-2367, www.benq.com	1,100	DLP	3.8
Boxlight	Cinema 17SF	●●●●½	$4,599	800/884-6464, www.boxlight.com	1,000	DLP	6.4
Canon	LV-X1	●●●	$3,499	800/652-2666, www.canon.com	1,100	LCD	6.2
Epson	PowerLite 720c	●●●●½	$3,499	800/463-7766, www.epson.com	1,500	LCD	4.3
ViewSonic	PJ550	●●●●	$2,295	800/888-8583, www.viewsonic.com	1,200	LCD	5.3

SPARK XL 2.5

Elegant Audio Editor Restores Sound Beautifully

BY JIM HEID

What image-editing software is to a graphic artist, an audio-editing program is to audio and video producers and musicians: an essential tool for fixing flaws, refining raw material, creating special effects, and much more.

Audio pros who use Macs have two stand-alone audio editors from which to choose: Bias's Peak 3 and, now, TC Works' Spark 2.5. We liked Peak 3's potent mix of features and its Mac OS X support, but we lamented its crude user interface, lack of printed documentation, occasional crashes, and that many of its effects plug-ins are not yet OS X native (see *Reviews*, July 2002).

Spark 2.5 is an appealing alternative. Like Peak, Spark is a two-track audio editor, and as with Peak, not all of its plug-ins work in OS X. But Spark is a much more polished program that has the edge when it comes to interface design, speed, and stability.

Many Uses

Spark can handle any two-track audio-editing task, whether for video soundtracks or audio alone. Video producers can use it to fine-tune QuickTime movie soundtracks—like other audio editors, Spark can open a QuickTime movie and display its video as the soundtrack plays back. And musicians can use Spark to prepare sound loops and transfer them to music-sampling instruments. If the majority of your work consists of fine-tuning music loops, however, Peak's slick LoopSurfer technology will serve you better: Spark has no equivalent feature.

Audio pros and musicians can use Spark to assemble audio files and portions of files into playlists for subsequent CD mastering. Indeed, Spark excels at this, thanks to its clever three-pane window.

A Master at Mastering

Spark is available in two versions. We tested the $749 Spark XL 2.5, which includes 21 audio-processing plug-ins in the popular VST format, as well as audio-restoration plug-ins and the superb TC Works' TC Native Bundle, a collection of plug-ins that handle equalization, reverb, and audio compression. (Unfortunately for OS X users, TC Native Bundle runs in OS 9 only. TC Works is developing an OS X version, however, and it will be a free upgrade for registered Spark XL users.) The $499 Spark 2.5 is essentially the same product, but does not include the TC Native Bundle or the audio-restoration features. If you're only dabbling in audio-editing for now, also check out the limited and free versions of Spark (LE and ME, respectively).

Spark XL also works with Digidesign's Pro Tools audio hardware, and can make use of plug-ins written in Digidesign's TDM format. Digidesign has yet to update its Pro Tools systems for OS X, so for now at least, this is another OS 9–specific capability.

Plugging In

Spark XL includes two audio-restoration plug-ins: DeClick removes clicks and pops, while DeNoise removes continuous background noise, such as the low rumble of a turntable or the hiss of old shellac records. We applied these plug-ins to a digitized version of a used and abused vinyl album, and the results were astonishing. DeClick deftly removed the clicks and pops without affecting the music, while DeNoise made turntable rumble a distant memory.

Spark and Spark XL even let you apply up to two plug-ins at recording time: you can clean up an old record as you digitize it, or turn your Mac into a real-time effects unit that modifies a vocal or musical instrument as you sing or play. This is a huge time-saver and a lot of fun.

With Spark's FX Machine window, you can combine plug-ins in myriad ways, routing the output of one effect into another to create exactly the sound you want. Peak 3 has a similar feature, but we found Spark's more versatile. For example, FX Machine has 20 preset "machines"—collections of plug-in routings and settings—that produce special effects, sweeten vocal tracks, and more.

Spark's batch-processing features enable you to apply its audio-manipulation talents to a series of files. The Batch Converter feature works well, though it doesn't offer as much flexibility as its counterpart in Peak does.

Spark Sparkles

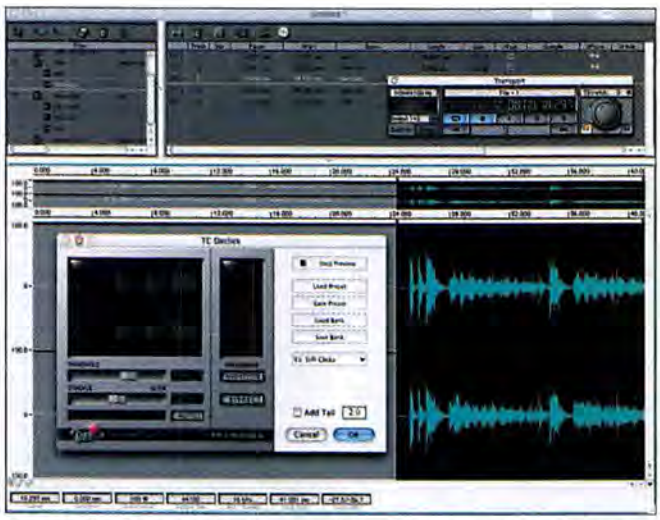
Spark's uncluttered and thoughtfully designed interface is one of its key strengths. The main window lets you see audio files and regions, playlists, and the current waveform for easy organization of the many files that constitute a CD project, for example. Spark also includes thorough printed documentation; Peak includes electronic documentation only.

Previous versions of Spark often ran slowly, but Spark 2.5 felt spry. Indeed, it was faster than Peak in some of our tests. In a particularly surprising case, normalizing a lengthy audio file took about eight minutes in Peak 3.01 and less than a second in Spark XL 2.5. The differences weren't nearly so dramatic in other areas, but the bottom line is that Spark's sluggishness is a thing of the past.

Peak does have the edge in some areas. As mentioned previously, its sample-looping features are superior to Spark's. Peak also has a wider range of audio-processing features, although many are geared toward creating special effects and may be of limited practical value for some users.

Macworld's Buying Advice

Elegantly designed and responsive, Spark 2.5 and Spark XL 2.5 have claimed the top spot among Mac audio editors. If you don't need audio-restoration features or TDM support, you're best bet is Spark 2.5. If you're on a tight budget, investigate the Spark LE family, which costs just $20 to $50. And if you want to test the sparkling waters, download the free Spark ME and give it a spin before taking the plunge. □



Manage the Music Spark's three-pane window helps you manage a large project. Also shown here is Spark's DeClick plug-in (lower left).

RATING: ♦♦♦♦

PROS: Elegant design; fast; superb audio-processing plug-ins.

CONS: Some plug-ins and features work only in Mac OS 9.

PRICE: $749

OS COMPATIBILITY: Mac OS 9, Mac OS X

COMPANY: TC Works, 805/373-1828, www.tcworks.de

EPSON STYLUS PHOTO 2200

Photo Ink-Jet Printer Offers a Wider Color Gamut and Pro Features

BY BRUCE FRASER

Epson's pioneering efforts in photo ink-jet printing make any new offering from the company worth a look. This time around, it has hit a home run, with the $699 Stylus Photo 2200, which replaces the Stylus Photo 2000P in Epson's product line. Ideal for photographers at either the professional or the consumer level, the Stylus Photo 2200 offers a range of new features (including a much wider color gamut and increased resolution), as well as some features previously reserved for Epson's Stylus Pro line—all for $200 less than its predecessor.

But there's a catch. If Apple wants graphics pros to take OS X seriously, it needs to remove the current crippling limitations on OS X printer drivers; as it stands, Epson's OS X driver can't support several of the features that make the 2200 so appealing. We hope the release of OS X 10.2 will change this, but Apple has not confirmed that it will.

The Proof Is in the Pigment

The Stylus Photo 2200's new UltraChrome pigmented inks almost eliminate the green shift that plagued the previous pigmented inks when they were viewed in daylight. The inks also have an estimated print life of 80 years—comparable with the longest-lived traditional color photographic materials.

The 2200's UltraChrome ink set includes eight inks: cyan, light cyan, magenta, light magenta, yellow, light black (which greatly improves grayscale printing), and two interchangeable black inks—Photo Black and Matte Black, each in its own cartridge (so you need to replace only the ink that runs out). The Photo Black ink works well on all paper types, but it's optimized for glossy and semigloss papers. The Matte Black ink yields a higher dynamic range on matte papers such as Epson's Enhanced Matte, Radiant White Watercolor, and Velvet Fine Art papers, producing a noticeably denser black than the Photo Black ink. Unfortunately, the OS X driver doesn't support swappable black cartridges and is limited to Photo Black.

The UltraChrome inks also offer a much wider color gamut than the previous pigmented inks, on any paper stock. On Epson Premium Photo Glossy Paper, the UltraChrome gamut is almost indistinguishable from Epson's dye-based inks on the same paper, but UltraChrome has the benefit of greater longevity. On matte paper, the UltraChrome reds are slightly weaker than those of Epson's dye-based inks, and the Matte Black ink produces a stronger black than the dye-based inks ever did.

The addition of a light-black ink also makes the 2200 a contender for black-and-white photo printing, which was problematic in previous generations of Epson ink-jets. The black inks by themselves yielded a warm black tone, but using the full-color inks generated a range of blacks from warm to cool, without any of the color crossovers—parts of the tonal range wandering from warm to cool on the same photo—that plagued previous generations of Epson inks.

Handling, Output, and Speed

Roll-paper holders, an autocutter, and a catch basket, features once found only in Epson's Pro line, are included as standard equipment—this printer's ability to spit out one borderless 4-by-6-inch print per minute is impressive. Using roll-fed paper also allows you to print panoramas as large as 13 by 44 inches. The printer also accepts single sheets as large as 13 by 19 inches, and it offers a straight-through manual-feed path for heavy stocks as thick as 1.3mm.

The Stylus Photo 2200 promises a maximum resolution of 2,880 by 1,440 dpi, double that of the 2000P. We generally take ink-jet resolution specs with a grain of salt—dot size is at least as important as resolution—but this printer's output looked slightly sharper than its predecessor's on matte papers when we examined it through a loupe, and it was visibly sharper on glossy papers, though we had to look carefully.

In OS 9, the Stylus Photo 2200 is an amazingly versatile printer that can function as a virtual minilab. But in OS X, roll-fed printing, custom paper sizes (and hence, panoramas), and borderless printing are unavailable from the driver (however, it still prints beautifully on single sheets).

One of the big complaints about the 2000P was its speed, or rather its lack thereof. Again, Epson has delivered: the 2200, at its highest-quality setting on Premium Glossy Photo Paper (which is the worst-case speed scenario), prints an 8-by-10-inch image in around 10 minutes. Lower resolutions or lower-quality settings can slash that time—an 8-by-10-inch, 720-dpi image prints in around two and a half minutes—and still produce acceptable results.

Virtual Minilab
The Epson Stylus Photo 2200 incorporates several features of Epson's Pro line.

Macworld's Buying Advice

Even with the limitations OS X places on the print driver, the Stylus Photo 2200 is quite simply the best photo ink-jet printer Epson has produced. It's a real breakthrough in desktop imaging, and it should interest anyone who wants the highest-quality photographic prints the digital darkroom can produce. If you've been frustrated by previous generations' shortcomings and have been waiting for a stable, long-lasting, large-gamut ink set, your wait is over. □

RATING: 4½

PROS: Improved speed and resolution; new pigmented inks offer wider gamut and stabler appearance than previous pigmented inks; advanced paper-handling features.

CONS: Severe limits in the OS X printer driver.

PRICE: $699

OS COMPATIBILITY: Mac OS 9, Mac OS X

COMPANY: Epson, 800/463-7766, www.epson.com

THINKFREE OFFICE 2.0

Java-Based App Offers Affordable and Easy Access to Microsoft Office Documents

BY JEFFERY BATTERSBY

Let's face it: not everybody needs to have the full version of Microsoft Office. Sure, from time to time you may need to read or update a Word document, juggle numbers in an Excel spreadsheet, or spruce up a PowerPoint presentation. But thanks to ThinkFree's self-titled ThinkFree Office 2.0, you don't have to fork over $450 to perform the occasional tweak. This OS-X native, Java-based application gives you access to Office's most-used features in a package that won't leave you wishing you'd spent more money.

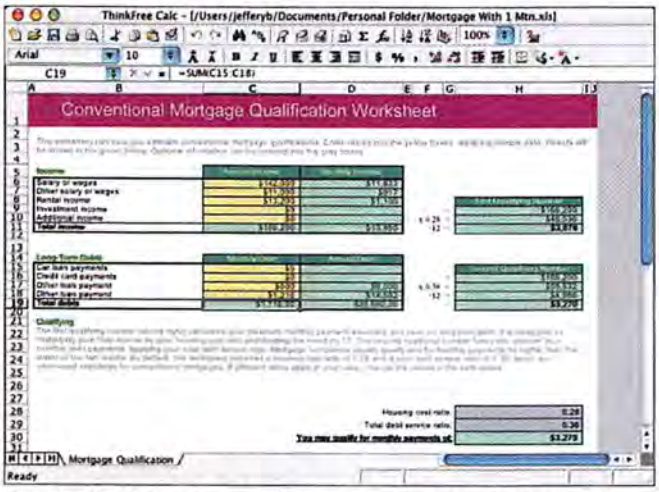
Java Won't Slow You Down

If you've ever used a Java-based application, there's one question you're sure to ask: Just how slow *is* this program? And here's where you'll encounter ThinkFree's most surprising feature: it's pretty zippy, and we don't mean "for a Java application." We tested the program on two systems: an 800MHz Titanium PowerBook G4 with 512MB of RAM, running Mac OS X; and a 366MHz graphite iBook with 128MB of RAM, running OS 9.1. In both cases, ThinkFree was quite responsive, never lagging behind when we typed, added images, and opened or saved files. The only slowdown we noticed was when the application loaded, especially on the iBook, where it took about 30 seconds to open.

No Tricks, No Gimmicks

ThinkFree Office doesn't pretend to compete with Microsoft Office or even AppleWorks—by the company's own admission, ThinkFree contains about 50 to 60 percent of Office's features. Instead, it's designed to be a "helper" application for users who don't have immediate access to Office or who can't justify Office's hefty price for the occasional work they do with the four-program suite. ThinkFree's true competitors are programs such as Panergy's icWord and icExcel, which allow you to read, but not edit or create, Word and Excel files.

ThinkFree consists of three applications, all of which are accessed from ThinkFree's Taskbar: ThinkFree Write for word processing, ThinkFree Calc for spreadsheets, and ThinkFree Show for presentations. The $50 price includes access to a 20MB Cyberdrive—an optional, expandable iDisk-like storage area on the Web; after the first year, paying a $30 annual subscription fee will entitle you to any ThinkFree updates and continued access to the Cyberdrive, should you choose to renew.



Great by Any Calculation ThinkFree Calc's Excel-like look-and-feel makes the program instantly familiar—you can handle complicated Excel documents without a hitch.

ThinkFree Write

All three ThinkFree applications have a look-and-feel similar to that of Microsoft Office 2001, and they all use the Microsoft Office format for creating and saving files. By default, ThinkFree Write uses the Microsoft Word format, although the program can also save documents in RTF, HTML, text, and ThinkFree's proprietary format.

The program easily opened our existing Word documents, maintaining formatting—as long as it wasn't complex. ThinkFree Write had difficulty with Word documents that had the Track Changes option turned on. While the changes we made in ThinkFree Write appeared when we opened the document again in Word, they weren't highlighted or editable via the Accept Or Reject Changes option in the Track Changes menu. (But ThinkFree always lets you know what formatting you may lose if you save your changes.)

ThinkFree Write lacks support for Word templates, which limits its usefulness for anyone who uses Word regularly, but it does offer a number of other frequently used features including multiple undos, find and replace, bulleting, numbering, and tables, as well as standard paragraph formatting features such as line spacing and paragraph indentation. ThinkFree Write allows you to edit any document as an HTML source file, which you can then publish directly to the Web.

ThinkFree Calc

ThinkFree Calc's resemblance to Excel makes it easy to move between the two programs. Calc offers more than 300 predefined functions—enough for most serious Excel users—and it had no trouble opening a variety of Excel spreadsheets that included complicated calculations and formatting.

When it comes to graphs, Calc is strictly two-dimensional. But fortunately, if your original Excel document has 3-D graphs in it, Calc lets you maintain their 3-D look. However, if you've added transparency to any graphs in Excel, the transparency will be lost if you save changes in Calc. Also, like Write and its inability to use Word templates, Calc cannot open Excel templates.

ThinkFree Show

ThinkFree Show is the only program in the ThinkFree suite that lets you use templates, but Show works best when you're creating or editing very basic PowerPoint presentations that don't make use of sounds, unusual transitions, or some text animations, such as those that include Microsoft's WordArt. Like the other two ThinkFree programs, Show doesn't support three-dimensional objects. This was especially true of text created using WordArt; this text became a two-dimensional square on every slide where it was placed. Other 3-D quirks included text that appeared upside down and drop shadows that were missing altogether.

Macworld's Buying Advice

If you use Microsoft Office regularly and you need most or all of its features, then skip ThinkFree and pony up the money for the real deal. But if you're simply looking for a program with more features than icWord or icExcel, ThinkFree is a best-of-breed program that will exceed your expectations. □

RATING: ♦♦♦♦

PROS: Inexpensive; opens and edits all Microsoft Office files; fast.

CONS: Some formatting lost upon saving; doesn't support Word or Excel templates.

PRICE: $50; optional annual subscription, $30

OS COMPATIBILITY: Mac OS 9, Mac OS X

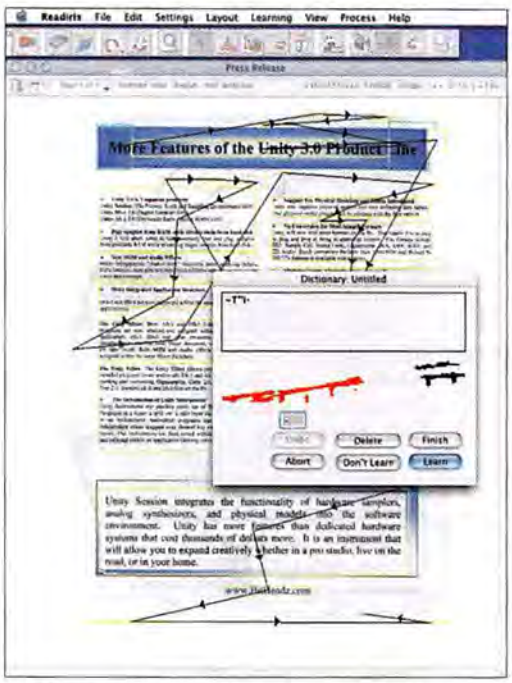
COMPANY: ThinkFree, 408/861-9494, www.thinkfree.com

READIRIS PRO 7

Inexpensive and Inaccurate OCR Application Fails to Make the Grade

BY CHRISTOPHER BREEN

A good optical character recognition (OCR) application is fast and easy to use, but more important is its ability to accurately recognize text. Although IRIS's Readiris Pro 7 is both sprightly and a breeze to use, it has a long way to go before it's as accurate as the Mac's current OCR leader, ScanSoft's OmniPage Pro X.



Misidentification Readiris Pro 7 often mistakes background graphics for text characters and attempts to check their spelling.

Comparatively Speaking

Like OmniPage Pro X, Readiris Pro runs natively in both OS 9 and OS X; is compatible with TWAIN-compliant scanners; attempts to maintain the original document's layout; lets you manually draw text, graphic, and table zones; recognizes a host of languages; and can export files in text, RTF, HTML, and PDF formats. But unlike OmniPage, Readiris can't import PDF files, has difficulty filtering out background artifacts such as a graph's bars and screened-back images, and sports an overactive spelling checker.

We tested Readiris Pro 7 the same way we tested its competitors, OmniPage Pro X and Abbyy's FineReader Pro 5 (see *Reviews*, June 2002). Readiris's relative weaknesses were readily apparent after we processed a press release, which contained a light, swirling pattern in the background, through both Readiris Pro and OmniPage. OmniPage questioned 30 characters, 4 of which required correction. Readiris questioned 261 characters, 69 of which needed to be corrected. (Fifty of these errors seemed to be generated by the background pattern.) Invoking Readiris's despeckling feature—which filters out artifacts—didn't help. An option similar to one found in FineReader Pro 5, which lets you instruct the spelling checker to be less vigilant, would be welcome in Readiris.

More annoying still is that it's difficult to tell how much progress Readiris's spelling checker has made in a document. Although the Dictionary window displays the text surrounding a questionable character, it gives no clue as to how much more text needs to be checked. OmniPage highlights the area it's checking in an overview of the document.

Formatting Woes

Readiris didn't fare much better when processing a *Macworld* page that contained a colored table. Where OmniPage was able to pull most of the text from the table and ignore the colored data bars, Readiris questioned each bar as if it were a character. To work around this problem, you could designate the table as a graphic by manually drawing a graphics box around it, but then the table isn't editable when you export it to other formats.

But Readiris isn't a complete washout. In our magazine-page test, it correctly identified the graphic, text, and table zones. And when processing a straightforward press release that contained no background images, the program easily recognized the text and accurately exported it as an RTF file.

Macworld's Buying Advice

Fast and easy as Readiris Pro 7 may be, it falls flat when asked to perform its most important function: *recognition*. Only users with very meager OCR requirements will be satisfied by this program's work. For a more accomplished OCR application, look to either of its current competitors. □

RATING: ♦♦
PROS: Reasonably fast performance; easy to use.
CONS: Poor recognition; overactive spelling checker.
PRICE: $99
OS COMPATIBILITY: Mac OS 9, Mac OS X
COMPANY: IRIS, 561/395 7831, www.irislink.com

OLYMPUS DS-330

Digital Voice Recorder Transfers Ideas from Your Mind to Your Mac

BY FRANKLIN N. TESSLER

For keeping track of ideas while on the road, handheld tape recorders are hard to beat—until you misplace the cassette you used to dictate your prizewinning novel. Olympus's palm-size DS-330 digital voice recorder eliminates tapes by storing sounds in flash memory, and uploading recordings to your Mac is far less cumbersome than it is with an analog voice recorder.

The DS-330 works in OS 9 and OS X, and it lasts about ten hours on two AAA batteries. The side-mounted rewind, fast-forward, and record buttons are readily accessible, but the stop and play buttons on the front are harder to operate. The recessed volume control at the top is also tough to turn.

The DS-330's 16MB memory can handle as much as two-and-a-half hours of speech at the Standard Playback quality setting. Sound fidelity rivals that of compact analog recorders, even in Long Playback mode, which increases the recording time to more than five hours.

The DS-330 includes software that lets you download sound files in Olympus's DSS (Digital Speech Standard) format from the recorder and listen to them on any USB-equipped Mac. But you can't control playback speed while you're working in another application, so transcription can be tricky. When it's connected to the computer, the recorder doubles as a microphone and speaker, but only in OS X. (Olympus claims that this is a limitation of OS 9.)

Macworld's Buying Advice

Though the DS-330 does have some limitations, you can stop cataloging cassettes and start transferring audio files to your Mac with ease. For taking voice notes and light dictation, it's an excellent choice. □

RATING: ♦♦♦½
PROS: Good sound quality; compact; serves as a USB speaker and microphone; makes it easy to transfer recordings to your Mac.
CONS: Some controls are hard to operate; can't control playback from other applications.
PRICE: $149
OS COMPATIBILITY: Mac OS 9, Mac OS X
COMPANY: Olympus, 800/622-6372, www.olympus.com

NORTON UTILITIES 7.0

Veteran Disk-Tools Suite Gains OS X Support but Not Speed

BY STEPHAN SOMOGYI

Data loss is not something that happens only to other people. Misadventure will cause you, too, to lose files, folders, or even entire disks—if it hasn't already. A package such as Norton Utilities 7.0.1 for Macintosh—Symantec's OS X–only update to its well-known set of tools for file and disk recovery and maintenance—can save your day.

Norton Disk Doctor, the suite's main application, checks for a variety of problems on your disk and its files, and in most cases, it offers to fix them. You select the volumes you want to check, and the program shows its progress in the main window. It can also optionally perform a media scan to see whether your disk has any bad blocks. This check, as well as more-elaborate repairs, can't be performed on the current startup disk, so you have to boot into OS 9 from the Norton Utilities 7.0 CD and run the OS 9 version of Norton Utilities, also on the CD. The only thing new in this version is that it runs in OS X and checks for some new, OS X–specific errors. No single trial can verify the efficacy of Norton Disk Doctor's catalog-repair abilities, but the repairs it performs are appropriate and wide ranging.

Norton Utilities 7.0's Speed Disk, the Mac's most capable and configurable disk optimizer and defragmenter, is also fundamentally unchanged, with one exception: it now includes an optimization profile—a collection of rules for distributing a disk's files to maximize performance—specifically for OS X. While Speed Disk can perform simple defragmentation on the current startup disk, you will have to boot from another volume if you want to perform a full optimization.

To test UnErase, which aims to recover accidentally deleted files, we deleted a large image file made with OS X's Disk Copy utility, and we restored it to another disk. Since Disk Copy verifies the integrity of its files, we were able to make sure that the file was recovered with its contents intact. However, this positive outcome is the direct result of our not having changed any files on the disk; the longer you wait after deleting the file and then trying to recover it, the less likely you are to unerase a file successfully.

Looking for Trouble Norton Disk Doctor's main window shows its progress through the different phases of verifying a disk and its contents.

Norton Disk Doctor, Speed Disk, and UnErase performed as expected, but Norton Disk Doctor and Speed Disk were much slower than their OS 9–only predecessor, version 6.0.3, running on the same machine.

Finally, we are concerned about the three kernel extensions (kexts) that Norton Utilities installs; without them, Norton Disk Doctor won't even verify non-startup disks. Kexts are the OS X equivalent of OS 9's Extensions (or INITs), and as such, they should be installed only in rare cases. While it's entirely possible that some of Norton Utilities' advanced features require something as invasive as a kext, it should be possible to verify a non-startup volume without installing them.

Macworld's Buying Advice

Norton Utilities 7.0.1 is a worthwhile addition to any conscientious OS X user's tool chest; however, if you're looking for a bargain, we recommend purchasing Norton SystemWorks 2.0, which includes Norton Utilities 7, the OS X–native Norton AntiVirus 8.0, a recovery-only version of DiskWarrior, and several other tools, for $30 more. □

RATING: 3½

PROS: Can check and fix problems on a startup disk; Norton Disk Doctor and Speed Disk have feature parity with previous versions.

CONS: Noticeably slower than Norton Utilities 6.0 on OS 9; installs kernel extensions, which may provoke conflicts.

PRICE: $100; upgrade from previous version, $50

OS COMPATIBILITY: Mac OS X

COMPANY: Symantec, 408/517-8000, www.symantec.com

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Mac

iMOVIE 2 PLUG-INS

Additions to Apple's Video Software Boost Your Movies

BY JEFF CARLSON

Shortly after Apple's iMovie 2 debuted, over two years ago, only a couple of plug-in packages were available to extend the flexibility of the digital-video–editing program: the free iMovie 2 Plug-in Pack and the first two volumes of GeeThree's Slick Transitions and Effects (see "Mac Software Bargains," July 2002), which added even more transitions and visual effects. But suddenly, more iMovie plug-in packages have appeared, including some that patch a couple of obvious functional holes in iMovie and add effects capabilities you'd expect in costlier professional video editors. We took a look at four iMovie plug-ins: Zoom 1.1, Pan & Scan, and 16×9 Converter, from Virtix; and eZeScreen 1.0.1, from eZedia.

Squeeze It In Virtix's 16×9 Converter lets you convert footage shot in the 4:3 aspect ratio to the 16:9, or letterbox, ratio. You can also use 16×9 Converter to import and edit 16:9 footage.

Virtix Zoom 1.1 and Virtix Pan & Scan

iMovie leaves a lot to be desired if you want to incorporate still images into your movies.

Virtix's Zoom 1.1 and Pan & Scan packages let you express your inner Ken Burns. The Zoom effects replicate your camcorder's telephoto and wide-angle controls, letting you zoom in on or away from (or both) a specific area of an image. The Pan & Scan effects move the camera's viewpoint from one area of an image to another. *Panning* usually refers to moving the camera horizontally, as in panning a landscape, but using Pan & Scan, you can set any beginning and end points for a pan. These effects can also be applied to video footage, though a pan or zoom applied to a clip already in motion can make your audience queasy.

It can take some trial and error to learn how the panning controls work (and the minimal documentation isn't much help). Virtix uses iMovie's Preview pane as a proxy for the main monitor: click and drag to place a rectangle representing the pan's beginning point; then use the End X and End Y sliders below the effects list to position another rectangle representing the end point.

Pan & Scan includes Pan Gently, which adjusts the panning speed to ease into and out of the camera movement, and Pan Swish, which creates a fast pan with motion blur applied. Each variation also includes a Photo option, designed to work with still photographs. The Zoom effects ended up somewhat blurry and pixelated—not surprising, considering that you're asking iMovie to interpolate an already low-resolution image. The results were akin to using the digital zoom feature on a digital camcorder.

Virtix 16×9 Converter

Virtix's 16×9 Converter is a one-trick solution that makes up for a surprising iMovie omission. This tool lets you shoot in 16:9, import that footage into iMovie, and work with it in letterbox format. It also lets you take 4:3 footage and convert it to 16:9, with black bars on the left and right edges of the full image, or cropped to fill the entire screen. Although at $25 16×9 Converter is slightly more expensive than the more complex Zoom or Pan & Scan filters, it's straightforward and works extremely well.

eZedia eZeScreen

eZedia's eZeScreen 1.0.1 lets you add blue-screen effects to your movies; shooting an object in front of a blue screen allows you to later superimpose the object over other footage (think Superman flying through the sky, or nearly every scene in the latest *Star Wars* installment).

The idea is to shoot an actor or object in front of a solid color—you don't have to use blue, as long as the color doesn't match any color that you want visible in the final scene—and export that footage as a QuickTime movie file. Then, in iMovie, use eZeScreen to specify the file as your screened clip. A simple eyedropper tool lets you choose which color to knock out of the scene, and two sliders, Tolerance and Smoothing, control how many shades of the color are rendered invisible. You can also resize the QuickTime clip to give your scene the right scale and proportion, so it doesn't look as if it came from *Attack of the 50 Foot Woman*. All changes are previewed accurately as you adjust the sliders.

In our testing, animated artwork created in Adobe LiveMotion (where we could ensure that the background was a single solid color) worked much better than video footage shot against a makeshift screen (a piece of bright orange poster board). In fact, at full strength, the tolerance consistently picked up white areas, creating too much transparency. The LiveMotion animation, exported as a QuickTime movie, afforded more control.

Macworld's Buying Advice

It's inspiring to see developers add new functionality to an already solid application such as iMovie. Each of the plug-ins we looked at sells for a reasonable price and delivers effects that previously required much more expensive software packages. If you're looking to push iMovie's features to accommodate your ambition, they are all worth a look. □

iMovie Plug-ins Compared

COMPANY	PRODUCT	MOUSE RATING	PRICE	OS COMPATIBILITY	CONTACT	PROS	CONS
eZedia	eZeScreen 1.0.1	2½	$39	Mac OS X	877/408-0195, www.ezedia.com	Intuitive controls.	Tolerance setting lacks precision; can be difficult to mask out backgrounds.
Virtix	16×9 Converter	4	$25	Mac OS 9, Mac OS X	603/893-1682, www.virtix.com	Allows movies to render in letterbox or wide-screen format.	None significant.
Virtix	Pan & Scan	3	$20	Mac OS X	603/893-1682, www.virtix.com	Very useful when incorporating still photos into iMovie; smooth motion in rendered clips.	Controls are not intuitive; documentation isn't helpful.
Virtix	Zoom 1.1	3½	$20	Mac OS 9, Mac OS X	603/893-1682, www.virtix.com	Smooth motion; multiple quality-level options.	Zoomed images can look blurry, due to interpolation and low original resolution.

NETOCTOPUS 4.0

Systems-Management Tool Offers Administrators a Comprehensive, Cross-Platform Solution

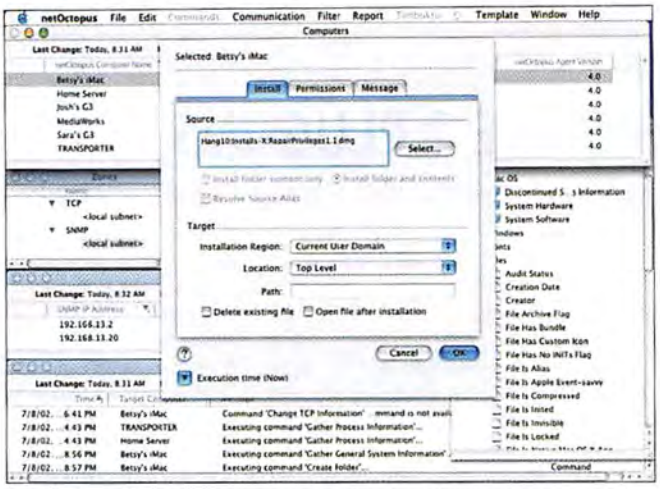
BY JONATHAN A. OSKI

Whether you're planning a company-wide upgrade to Mac OS X, considering an application upgrade, or ensuring that all workstations have the latest security patches installed, surveying the Mac and Windows systems on a network without a systems-management tool can be daunting. Netopia's recently updated NetOctopus can help. NetOctopus 4.0 provides complete cross-platform functionality, flexibility, and scalability—great for anyone managing ten or more systems with dynamic configuration requirements.

For this release, Netopia rewrote the NetOctopus Administrator application; it now takes advantage of the multithreading, enhanced security, and networking features in OS X; new features range from support for back-end SQL databases to persistence of queued commands.

The Secrets of Scalability

NetOctopus consists of two applications: NetOctopus Administrator and NetOctopus Agent, which is the client software you must install on all of your machines. Agent acts as a proxy for Administrator information-retrieval commands and system changes such as installations, file management, and local system settings. (You can manage any system from wherever Administrator is installed.) You can use the program's Snapshot feature to quickly compare a system's settings or file system saved at different times, helping you identify changes that may be the root of a recently reported problem, for example.



Installations from Afar To run any Apple installer script or package on multiple workstations, just drag it into the Source box (center) and specify an execution time.

One of NetOctopus's strongest points is its ability to delegate management privileges at a very granular level. For example, to distribute the triage functions your help desk needs to perform, you can grant departmental support personnel the ability to execute a limited set of NetOctopus commands on the systems within their department, while granting centralized support personnel broader access.

Mac system managers who like to shoot first and ask questions later won't be as successful with NetOctopus 4.0; you need to allocate sufficient time to plan your deployment strategy, configure your installation, and perform systemwide baseline-data collection. While NetOctopus's manual is extensive (730 pages), it

DiskWarrior® has
than

1999 Macworld Editors' Choice Awards
Winner, Utility Software. "DiskWarrior is an excellent ax to add to your disk-repair and -maintenance arsenal. DiskWarrior's ease of use, speed, and new method of fixing disk problems make it a powerful disk-maintenance product."

1999 MacUser Awards
Best Utility/Enabling Software. "For providing a new, easier to use, safer, and often more successful alternative to more bloated recovery applications, the judges felt DiskWarrior deserved top billing..."

1999 Apple Design Awards
Most Innovative Product, Runner-up Best New Product

5 Out Of 5 Stars
"Every Mac on the planet can benefit from DiskWarrior!"

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won't quickly guide you through optimal deployment scenarios. Instead, Netopia support engineers help you with configuration planning over the phone.

Keep It Moving

Once NetOctopus is installed and configured, administrators can collect database information and use it to effectively manage systems by automating tasks. The commands you can issue with NetOctopus to one or more systems are too numerous to list here; they run the gamut from managing the file system (including running installer scripts or packages) to changing settings (such as TCP/IP network and file sharing). And if you've shut down while queued tasks are running, those incomplete tasks will resume the next time you launch the Administrator application. Version 4.0 also has extensive AppleScript support, so NetOctopus can replicate any task you can perform with AppleScript.

Managing software-license compliance is a breeze with NetOctopus. Two built-in reports let you quickly see how many licenses for a specified list of applications are in use at any given time. There's also a more comprehensive software audit that compares all installed software with your licenses so you can quickly ascertain adherence.

However, before you can use these reports, you must create a delimited text file that lists the type, creator codes, and license quantities for all the applications you wish to monitor.

Centralizing Your Data

Deciding where to store your data is another key step in determining how you'll implement NetOctopus in your office. You can keep information locally in a NetOctopus database on each administrator's desktop—a less efficient approach in a large organization with a multilevel administration. Or you can use a relational database—including administrative accounts and privileges—in a central location.

The program supports many database platforms, including IBM's DB2, Oracle, Microsoft SQL Server, and the open-source database MySQL. By using a back-end SQL database, you can manage systems from any workstation on your network; you're no longer limited to workstations on which you've replicated the NetOctopus database and configured access security.

What You'll Need

Licenses for version 4.0 are not platform specific, and this heterogeneity applies to both Administrator and Agent. The Mac version of NetOctopus Administrator works on any Power Mac G3 (or better) system with 128MB of RAM running OS X version 10.1.3 or later (only 64MB is required for OS 9.1), and the NetOctopus Agent software works on almost any Mac running System 7.1 through OS X 10.2. To use the Windows version of NetOctopus Administrator, you'll need a PC with 64MB of RAM running anything from Windows 98 through XP, and Agent runs on Windows 95 through XP.

Macworld's Buying Advice

Despite the frustrations of trial-and-error planning and lengthy documentation, NetOctopus 4.0 is handy. For troubleshooting or network upgrades, it's a must for today's understaffed and oversubscribed support teams. □

RATING: ♦♦♦♦

PROS: Cross-platform compatibility; extensive AppleScript support; back-end database configuration provides great flexibility.

CONS: Getting started requires careful planning; manual is disorganized.

PRICE: 10-user license, $650; 50-user license, $3,050

OS COMPATIBILITY: Mac OS 9, Mac OS X

COMPANY: Netopia, 510/814-5100, www.netopia.com.

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any disk utility ever.

mac today EDITORS' CHOICE '98
Mac Today 1998 Editors' Choice Awards
Outstanding Disk Rescue Product. "DiskWarrior belongs in the arsenal of every Mac owner!"

MacHome MACnificent Award
MacHome - Five Apples, MACnificent Award
"DiskWarrior is a deceivingly simple yet incredibly powerful disk repair utility, which is able to fix your disk problems with zero effort."

Macworld 2000 Finalist
"DiskWarrior comes to the rescue..."

2000 Home Choice Awards MacHome Journal
MacHome 8th Annual Home Choice Awards
Best Utility. "Got lots of votes for repairing and preventing damage to hard disks so well. DiskWarrior 2.0 is a quick solution to faster, more stable hard drives."

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ONE-SHOT VR PANORAMA SYSTEMS

360 One VR and SurroundPhoto Use Innovative Shooting Methods

BY BEN LONG

The VR technology built into Apple's QuickTime software makes it possible for anyone to create, view, and navigate 360-degree panoramic images. Shooting such images, though, usually involves wide-angle lenses, special tripod mounts, and a time-consuming setup and shooting procedure. But two new camera lens attachments, Kaidan's 360 One VR and Sunpak's SurroundPhoto, let you create full 360-degree panoramas with a single shot.

Both lens attachments work the same way. A parabolic mirror attaches to the lens threads on your digital camera. To shoot a panorama, you point the camera straight up in the air or toward the ceiling—the mirror design reflects the 360-degree view into the camera—and take a picture. After transferring the resulting, very warped image to your computer, you open the picture in the included dewarping software. This software does the necessary calculations to dewarp the image, which it then turns into a QuickTime VR movie.

You're Warped The 360 One VR's PhotoWarp software transforms this strange image into a 360-degree panorama.

The 360 One VR and SurroundPhoto have different designs and software, but each is useful in its own way.

Kaidan 360 One VR

Kaidan's 360 One VR attachment is the larger, pricier package, but its excellent hardware and software design, as well as its output quality, makes it the better choice for users who are serious about creating excellent VR panoramas.

To use the 360 One VR, you must first attach a metal mounting plate to your camera's lens thread. From the mounting plate, a cylindrical array extends straight out from the camera's lens and provides support for the odd-shaped mirror at the top of the unit. Unfortunately, as of press time, Kaidan provided an adapter only for mounting the unit on a Nikon Coolpix 990 or 995. (Although the company doesn't have other adapters planned, you can purchase step-up rings that should do the trick.)

The 360 One VR is not small—the metal mounting plate is roughly 5 inches in diameter, and the entire assembly extends about 8 inches from the camera's lens. Kaidan includes what looks like a large, clear, plastic mayonnaise jar to protect the assembly during transport, and the whole thing adds a good deal of weight and bulk to your camera. However, it's far less bulky than a tripod and professional-quality panoramic head.

Shooting with the 360 One VR is very easy. After manually focusing the camera to 7 inches, you use aperture priority or manual controls to select a small aperture. You probably won't need a tripod; you can simply hold the camera straight above your head while you shoot. Exposure calculation is usually a concern when shooting a multishot panorama, but with these devices, you can trust your camera's automatic metering instead, making shooting a breeze.

Kaidan's PhotoWarp software could not be easier to use. The OS 9– and OS X–compatible program opens your image and provides a simple, circular cropping tool that allows you to select the area of your image where the mirror's reflection is. A click of the DeWarp button automatically dewarps the image and creates your output file. From the Format dialog you can choose to output a flat, dewarped image or a QuickTime VR movie. PhotoWarp can even automatically output an HTML file containing your movie or image.

The only thing conspicuously absent from the program is an image-adjustment tool. We'd like to see the addition of brightness and contrast commands, and a levels control would be ideal. In the meantime, you can perform these types of corrections by generating a flat image, touching it up in an image editor, and then converting it to a VR movie.

Sunpak SurroundPhoto

Though the SurroundPhoto is similar in concept to the 360 One VR, its design is much simpler, and its price is much lower. An

extension tube attaches to the front of your camera; Sunpak sells step-up rings for various camera models. A thin metal tube connects to a clear plastic plate at the end of the first tube, and the Surround Photo mirror screws on to the end of that second tube; it doesn't feel as sturdy as the 360 One VR, but the SurroundPhoto fits into a small pouch that can be easily carried in a pocket, making it ideal for the panoramic photographer on the move.

The SurroundPhoto's software is like Kaidan's PhotoWarp application, in that it dewarps the resulting distorted image, but it includes brightness and contrast sliders, and it runs only in OS 9. (A Sunpak representative says the company is planning to release OS X–compatible software in the near future.)

The $249 SurroundPhoto system has a much lower initial cost than the 360 One VR, but the dewarping software watermarks all of your images with an intrusive SurroundPhoto logo. To remove the logo, you must buy a $7-per-image license from Sunpak. The watermarked images are perfectly usable for prototyping or for showing to clients, but that pricing structure may not appeal to everyone.

Overall, we found the 360 One VR's output to be slightly superior. The optic device seems to capture a larger area and generally delivers slightly better image quality.

Macworld's Buying Advice

If you regularly shoot VR images, you'll want to check out this new technology. The 360 One VR is worth its price both for its image quality and its unlimited license. But if you need portability, or don't want to pay $999 up front, the SurroundPhoto is a fine choice. □

360 ONE VR

RATING: ●●●●

PROS: Very good image quality; easy to use; sturdy design; works with OS X.

CONS: Large and bulky; software lacks image-adjustment features; much higher up-front price than SurroundPhoto.

PRICE: $999

OS COMPATIBILITY: Mac OS 9, Mac OS X

COMPANY: Kaidan, 215/364-1778, www.kaidan.com

SURROUNDPHOTO

RATING: ●●●●

PROS: Easy to use; small and portable; software includes basic image-adjustment tools.

CONS: Image quality not quite as good as the 360 One VR's; per-image processing fee can interfere with a smooth workflow.

PRICE: $249

OS COMPATIBILITY: Mac OS 9

COMPANY: Sunpak, 888/848-1908, www.vri.ca

CINEMA TOOLS 1.0

24-Frame Editing and High-Definition Support Come to Final Cut Pro

BY ANTON LINECKER

Apple's Cinema Tools 1.0 brings 24-frame-film–editing capabilities and high-definition (HD) support to Final Cut Pro, providing filmmakers with a different set of editing tools. This companion program has two parts: a stand-alone database application that handles a film project's keykode and timecode relationships, and a set of Final Cut Pro plug-ins for outputting cut lists and handling 24-frame edit-decision lists (EDLs). Together, Cinema Tools and Final Cut Pro offer filmmakers postproduction editing power at an affordable price.

Making the Cut Cinema Tools 1.0's database makes it easy to keep track of your project's keykode and timecode relationships.

Working with the Tools

To edit film-based projects, you begin by importing the keykode and timecode data associated with the video media from telecine logs into Cinema Tools' database. The program can import all of the industry-standard telecine logs, such as Flex, ALE, and Aaton, and it can handle both 16mm and 35mm film formats. Using this data, Cinema Tools can then export a batch-capture list that Final Cut Pro uses for digitization.

Once you've captured the clips in Final Cut Pro, Cinema Tools links the video media to its database. At this point, you have two editing methods to choose from: matchback and 24-frame. In both methods, Cinema Tools checks for duplicate shots, opticals, and missing elements. It can also track audio timecode information and output audio EDLs.

With the matchback method, you edit at the standard video rate of 29.97 fps, and your negative-conform list will be accurate within one film frame. In the 24-frame method, Cinema Tools converts all the footage back to its original 24-frame state through a process called *reverse telecine*. (Avid's Xpress DV with the matchback-only FilmScribe option lacks this ability.) After conversion, you can edit the media in Final Cut Pro at 24 fps and produce an exact negative-cut list.

The program's dual-pronged approach makes working with Cinema Tools a little complicated. The user manual and online white paper do little to clarify the workflow, glossing over tricky audio issues, particularly OMF (Open Media Framework) export and Lok-Box cassette creation (a tool for properly conforming the negative back to film). Cinema Tools is an OS X version of Focal Point Systems' FilmLogic app (Apple acquired Focal Point in 2001), but Cinema Tools' editing process is just as disjointed, and it's still only peripherally integrated with Final Cut.

High-Definition Option

Cinema Tools also adds support for editing offline HD projects. You can edit with down-converted HD footage in Final Cut Pro at 29.97 fps and then have Cinema Tools convert the EDL to 23.98 fps for the HD online option. Alternatively, you can handle the down-converted HD material as you would a film project, by using the reverse telecine process on the footage and editing at 23.98 fps.

For Final Cut Pro users with high-definition capture cards, Cinema Tools offers a Final Cut Pro plug-in that makes possible the import of 23.98-fps EDLs for online work. Users of CinéWave HD cards, however, will have to wait for OS X drivers before they can take advantage of this expanded HD support.

Macworld's Buying Advice

Although the Cinema Tools–Final Cut Pro combination may take some time to master, it's time well spent, given Cinema Tools' features and price. We hope future versions of Cinema Tools are better integrated with Final Cut Pro and more intuitive to use. □

RATING: ●●●●

PROS: Reverse telecine feature allows conversion of footage back to 24 frames; program offers 24-frame EDL support for high-definition editing.

CONS: User manual is vague; two-pronged workflow can be confusing; no OS 9 support.

PRICE: $999

OS COMPATIBILITY: Mac OS X

COMPANY: Apple Computer, 800/692-7753, www.apple.com

REVIEWS IN BRIEF

LIGHTWAVE 3D 7.5 9X

♦♦♦½; NewTek, 210/370-8000, www.newtek.com; $395; upgrade from version 7b, free

In our review of NewTek's Lightwave 3D 7b (♦♦♦½; *Reviews*, April 2002), we noted that one of the 3-D–animation system's major shortcomings was poor integration between layout and animation modules. Although version 7.5 doesn't address this problem, it does offer worthwhile enhancements.

The revised Motion Mixer, which blends multiple animations into a single choreographed piece, is easier to use and offers better control over the weighting and blending of motion sequences. An X-ray mode allows you to display objects with semitransparent shading, making it easier to work with skeletal deformations.

Rendering is also enhanced: We liked the new version of the Virtual Darkroom, which allows rendering that resembles images on photographic film, and the multiple-bounce radiosity solutions, which improve the quality of what was already one of the most realistic renderers available. Support for matte objects and alpha properties allow quick rendering of scenes in multiple passes—useful for postproduction and compositing tasks. Even better, you can save multipass renderings as Adobe Photoshop layers, so storing and working with multiple frame sequences is a cinch.—SEAN WAGSTAFF

700MHZ iBOOK

12.1-inch model: ♦♦♦♦; $1,499;
14.1-inch model: ♦♦♦½; $1,799;
Apple Computer, 800/692-7753, www.apple.com

Introduced in May 2001 with a 500MHz G3 processor, the all-white second-generation iBook keeps improving on the inside while remaining unchanged on the outside. Powered by a 100MHz bus and a 700MHz processor, the latest iBook is the fastest yet.

The 700MHz iBook scored 128 on our Speedmark tests, placing it a hair behind a 667MHz PowerBook G4 in overall speed, although it lagged behind G4 systems when it came to data-intensive Adobe Photoshop and Apple iMovie and iTunes tests. The iBook excelled only in our Quake III test, thanks to its built-in Mobility Radeon graphics accelerator. The bottom line is, the appeal of the iBook remains its size—especially the 12.1-inch version's—and price.—JASON SNELL

EX-TEND-IT VGA TO ADC

♦♦½; Gefen, 800/545-6900, www.gefen.com; $399

Gefen's Ex-tend-it VGA-to-ADC conversion box enables owners of Titanium PowerBook G4s to extend, but not mirror, their desktops on Apple's LCD displays. The latest PowerBooks are equipped with DVI connectors, so there are other options that, because they don't require analog-to-digital conversion, are less expensive. Connecting an Apple ADC display to a computer's VGA graphics port is no easy task, as is evidenced by the amount of hardware required—a converter box, a large power supply, and four cables.

Our 17-inch Apple Studio Display could not display multiple resolution modes when connected to the VGA-to-ADC converter; it would operate only at its native resolution of 1,280 by 1,024 pixels at 60Hz. This inflexibility and the lack of adequate documentation can make the initial setup tricky. We were able to use the monitor in OS 9 and, with the help of Gefen's tech-support staff, OS X.

Given these limitations, unless you're a die-hard fan of Apple's display designs, you may prefer to apply the converter's $399 price to a larger analog display.—JAMES GALBRAITH

DAVE 3.1.1 9X

♦♦♦♦½; Thursby Software, 817/478-5070, www.thursby.com; $149; upgrade from version 3.1, free

Dave 3.1, the first OS X version of the program that lets you share files and printers on mixed Mac and PC networks (♦♦♦♦½; *Reviews*, April 2002), left out one important feature: support for OS X access to PostScript printers on PC networks. Version 3.1.1 remedies this omission and adds support for PC servers (including Samba servers) that require clear text passwords. Dave 3.1.1 also adds support for LMHOST files. But as useful as the PC printer-sharing feature is, the PDF documentation supplied with the update doesn't mention it (Dave's online help has instructions). While getting the feature to work is straightforward if you're familiar with the program, this omission may confuse new users.—SHELLY BRISBIN

COOKWARE 7.9 9X

♦♦♦♦½; Digital Fried Chicken, www.digitalfriedchicken.com; $20

COMPUTER CUISINE DELUXE 3.1 9X

♦♦♦½; Inaka Software, http://home.pacbell.net/inaka; $20

Two of the programs we mentioned when we showed you how to use your old Mac to help with your cooking tasks, CookWare and Computer Cuisine Deluxe, have since grown up to include OS X support (see "Old Mac, New Tricks: Kitchen Assistant," www.macworld.com/2001/05/14/howto/kitchen.html). Both let you search, print, and e-mail your recipes, as well as convert measurements, and both come with recipes, so you can get started right away. But Computer Cuisine Deluxe's interface needs improvement before it can become our recipe-organizing software of choice.

CookWare 7.9's interface is right at home in the Aqua environment, with large, clearly marked buttons for quick navigation. It also has a field for entering a rating after you've tried a recipe. You can search any field, and a new spelling checker ensures accuracy for easier searching. Extra recipes are available via Digital Fried Chicken's Web site, at an additional cost.

Computer Cuisine Deluxe 3.1 lets you catalog recipes with ease, but it's not quite a joy to use. The program's recipe cards are larger now, which improves readability. However, the interface is difficult to navigate, the default font is tough to read, and the e-mail feature works only with Qualcomm's Eudora.

Neither program automatically adjusts your recipe's serving sizes and measurements to the number of people you're feeding, features we hope to see in upcoming releases. For our $20, though, we'd go with CookWare 7.9.—JENNIFER BERGER

FILEMAKER MOBILE 2 9X

♦♦♦½; FileMaker, 800/325-2747, www.filemaker.com; $49; upgrade from version 1.0, free

FileMaker Mobile's potential is quite tough to live up to: the idea of synchronizing a database with your Palm handheld calls to mind myriad possibilities. The first version of the program, released last December, was a bit disappointing: it included no value lists or menus, it offered a mere handful of fields, and synchronization worked only with single-user databases.

Thankfully, version 2 is here. It delivers a far more functional List View, as well as interface niceties such as pop-up menus and check boxes, which FileMaker fans will appreciate. It also includes OS X support and can handle up to 50 fields.

The feature most desired by developers has been multiuser support. It's there, but only for local files, meaning that you need to sync on the host machine. The program simply synchronizes the found set from a desktop database with the Palm.

The average businessperson will still find plenty to work with—FileMaker's ease of use makes it entirely possible to set up a database on your Palm. However, developers looking to deploy an extensive system of offline, "in-the-field" databases may find this upgrade wanting.—SCOTT LOVE

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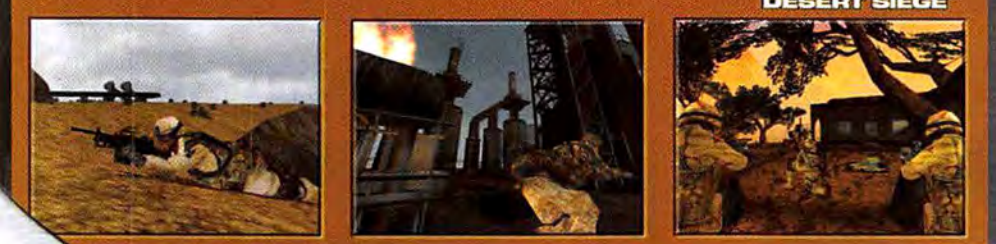

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BY PETER COHEN

Games with Small Price Tags Can Provide Big Fun

Cheap Thrills

THERE HAVE ALWAYS BEEN A LOT OF FUN, INEXPENSIVE games available on the Mac, thanks mostly to the efforts of the countless authors of Mac shareware games. Shareware has always been a good place for Mac game players to find fun without having to spend a lot of money. But now more games for people on tight budgets are coming from a surprising source: publishers of commercial games. Leading the way is MacPlay, with its new Value Series line of games priced at or below $20.

It's Elementary You can turn lead into gold in Alchemy, a clever puzzle game that won't break the bank.

Inexpensive, Not Cheap

Early this year, MacPlay announced its plans to release more than a dozen games in 2002—and some game experts scratched their heads. With other Mac publishers struggling to release fewer than half that number every year, how could MacPlay manage? The answer is beguilingly simple: the MacPlay Value Series, a line of games priced at $20 or less. Some are strictly casual games that you play to pass the time, and others are older titles that MacPlay has decided to give one final go-round.

One $20 package, Bejeweled and Alchemy, combines two arcade-style puzzle games on a single disc. Similar to Giles Williams's JewelToy (♦♦♦♦; *The Game Room*, September 2002), Bejeweled assigns you the task of making variously shaped gems vanish by grouping them into trios. Other gems then replace the ones that disappeared, over and over again. Easy to learn but hard to master, Bejeweled is addictive and fun.

Alchemy plays on the medieval concept of turning lead into gold. It provides a game grid and a series of elemental symbols in different colors. To transmute lead into gold, you must match either the symbol or the color to its adjacent squares; once you've completed the entire grid, the level is done. Sure, it sounds easy, but it gets hard when you have conflicting symbols or clashing colors on neighboring squares.

Both of these games are available for free play online at PopCap Games' Web site (www.popcap.com), but the CD versions have been enhanced with new sound effects, graphics, and play modes you won't get online.

Of the two games, I prefer Bejeweled. Both are challenging and fun, but Bejeweled is the more polished. An online version-checking system hampers Alchemy, and it seems to take an interminable amount of time to load.

The Bottom Line Both Bejeweled and Alchemy offer some casual gaming fun for Mac users in search of something other than the standard shoot-'em-up or arcade-style action game.

BEJEWELED AND ALCHEMY

RATING: ♦♦♦

PROS: Great for a quick pickup game; challenging and addictive.

CONS: Similar games are free online. Alchemy online-update mechanism doesn't work.

PRICE: $20

OS COMPATIBILITY: Mac OS 9, Mac OS X

COMPANY: MacPlay, 214/855-5955, www.macplay.com

Old Doesn't Mean Bad

The casual game market is only one aspect of MacPlay's Value Series strategy. Another part is to convert older games—which don't cost a huge amount to license—to the Mac and then sell them for small change. That's what the company has done with Heretic II, a ridiculously fun 3-D action game that will appeal to fans of Tomb Raider heroine Lara Croft.

Heretic II—first released for the PC a staggering five years ago—is built on the Quake II engine, used primarily for first-person shooter games. But MacPlay has adapted the engine for a third-person action game—meaning the game-play view hovers behind and over the shoulder of the protagonist you control.

Here's the scenario: Corvus the Heretic has returned to his homeland after banishment, only to find that a horrifying and maddening plague has overcome his >>

Lizard Men As Corvus the Heretic, you battle foes in the oldie-but-goodie action game Heretic II.

people. He soon discovers that he is the key to their continued survival and must go in search of a cure.

To that end, Corvus searches far and wide across the land, encountering many other beings along the way, defusing traps, and making sense of brain-twisting puzzles. There's nothing new here—but the game's execution is quite sharp, featuring terrific character animation and challenging levels.

Like most third-person action games, Heretic II suffers from weird and awkward camera control—it's not hard to back Corvus into a situation that makes it nearly impossible to view what's going on without moving him. When he's dangling from a precarious height or squared off against a ferocious monster, that can be a problem.

The Bottom Line Heretic II reminds us that a fun game is a fun game, no matter what its age. It's sure to attract 3-D–action fans looking for something new to try. For new iBook, iMac, and eMac owners in search of cheap fun, this OS X–native game is a great option.

HERETIC II

RATING: ♦♦♦♦

PROS: Great character animation; challenging levels.

CONS: Dated; some awkward camera angles.

PRICE: $20

OS COMPATIBILITY: Mac OS 9, Mac OS X

COMPANY: MacPlay, 214/855-5955, www.macplay.com

OS X Controllers: Where Are They?

Since Mac OS X's initial release, gamers have been waiting for OS X support for game controllers such as game pads and joysticks. While such amenities are largely superfluous for the first-person action games and strategy games that make up the bulk of commercial A-list game releases—the vast majority of users who play those games rely on keyboards and mice—they can be an important addition for many arcade-style action games, not to mention flight simulators.

Unfortunately, developer support for the technology that enables OS X to support game controllers transparently has been slow to come. That technology is called HID Manager, and it's been in OS X since the summer of 2001.

InputSprocket (HID Manager's equivalent in OS 9) provided game developers with an easy way to tack on controller support without having to program an individual user interface that let gamers customize a game controller's button assignments and controls. HID Manager isn't as user friendly: it doesn't provide a user interface for programmers, forcing them to make their own input screens to handle controllers.

That's not to say HID Manager doesn't have any support. More and more games support the new OS X technology. Developers are patching commercial and shareware games to support HID Manager, and new games are beginning to support it as well.

If you're impatient to use your controller to play a favorite game that hasn't yet been updated to support HID Manager, fear not: there are solutions—as long as you're willing to shell out a shareware fee. By the time you read this, the $20 USB Overdrive (www.usboverdrive.com) will, hopefully, have been updated to support game controllers (at press time the maker of USB Overdrive, Alessandro Levi Montalcini, had promised but not yet delivered support). CarvWare's $15 GamePad Companion (www.carvware.com) is another alternative. This software works just fine with OS X, and it's compatible with a growing number of USB joysticks and game pads. In both cases, you can download and try these apps before you buy, so give them a shot and decide for yourself which is best for you.

Both programs come in particularly handy for older software that is no longer being updated. But should you have to spend extra money for game-controller support in your new games? Generally, no—at least if the game has been in development since mid-2001, when Apple added HID Manager to the list of working OS X technologies. Check with the publisher of any game that interests you to see if the game supports controllers, and demand support if it's not already there.

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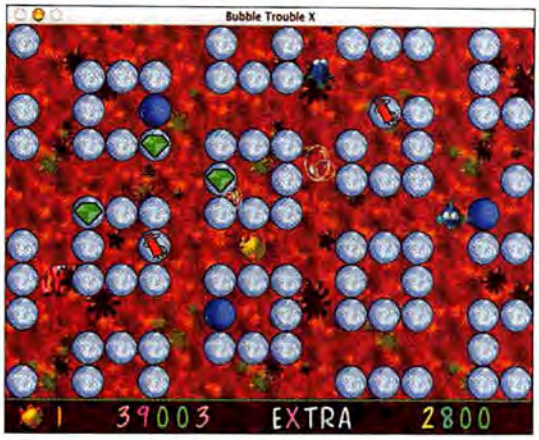

Break Out the Bubbly A classic Mac game, Bubble Trouble can now be played in OS X.

Time to Clean the Aquarium

"Squish the fish" is the slogan of Bubble Trouble, an addictive and challenging arcade game from the folks at Ambrosia Software. Do you feel a sense of déjà vu? That's probably because Bubble Trouble isn't new—in fact, it's been around since the mid-1990s. But now Bubble Trouble has a new lease on life, thanks to the OS X–native version. And it's still fun to play, even all these years after it first showed up on the scene.

In Bubble Trouble, you are Blinky, a little yellow fish in a lot of trouble. Chombert the Piranha, Remington Eel, Normal the Shark, and Haarrfish the Starfish are all hungry for some fresh sushi, and guess who's on the menu? But you're not totally without defenses: your oceanic hideaway is a maze of air bubbles, which you (as well as your fishy foes) can pop or push around—these bubbles can either help you make a quick getaway or be used as effective weapons.

Bubble Trouble draws its inspiration from classic coin-op video games of the 1980s. A 2-D arcade-style action game chock-full of cartoonish and colorful graphics, Bubble Trouble is nonviolent and fun but still quite challenging, especially at the higher levels. In short, it's suitable for the whole family. And if you get bored with the myriad levels that are included with Bubble Trouble, you can even use the included BT Editor application to make your own.

The Bottom Line Now that Bubble Trouble has been updated to run natively in OS X, a whole new generation of Mac gamers can become addicted to this entertaining arcade classic.

BUBBLE TROUBLE

RATING: ♦♦♦♦

PROS: Family-friendly fun; cute animation and sound effects.

CONS: Will seem dated to fans of older Mac games.

PRICE: $15

OS COMPATIBILITY: Mac OS 9, Mac OS X

COMPANY: Ambrosia Software, 716/325-1910, www.ambrosiasw.com

A Poke in the i

If your card-game tastes tend to stray to higher-stakes fare than the ubiquitous solitaire, you might be interested in Scenario Software's iPoker 2.0, a significant update to the company's impressive poker game.

Ace in the Hole In iPoker 2.0, you study the faces of human-looking opponents, not cartoon characters.

iPoker features 11 built-in *shills*—computer-controlled players with unique playing styles and psychologies. To add to the realism, each shill is animated via thumbnail QuickTime videos, so you can watch real humans react to the hands they're dealt and the pots they win or lose.

With more than 80 game variations, you'll stay busy for a long time in iPoker. The game sports impressive customizability: you can tweak just about every aspect of game play, from the specific playing styles of your opponents, to the stakes, to the game rules themselves—you can even craft your own variations. You can also select from different card designs and tabletop patterns and colors to suit >>

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iPOKER 2.0
RATING: ♦♦♦½
PROS: More variations of poker than you can shake a stick at; customizable; realistic animation of computer opponents.
CONS: No online or multiplayer support.
PRICE: $25
OS COMPATIBILITY: Mac OS X
COMPANY: Scenario Software, www.ouzts.net/ipoker

your mood. Fortunately, if you mess things up to the point of unplayability, you can reset almost every option in the game to its default value.

iPoker makes use of digitized and synthesized speech, so you can even get a play-by-play account from the dealer's perspective. The game also sports a tutorial mode and can help you choose which cards to discard if you wish.

iPoker is great at what it does; the one thing missing is online play. Poker is at its essence a social game, and although the QuickTime-animated computer players help simulate the feeling of sitting around a real poker table, they're no substitute for the real thing.

The Bottom Line iPoker is an admirable OS X–native version of one of the most popular casino card games around. With multiplayer support, it would be even better. Hopefully, Scenario Software will ante up for online play soon.

Fly the Friendly Skies

Air travel is fascinating for kids, so it's fitting that Knowledge Adventure should team up with Fisher Price to produce Little People Discovery Airport, a new game based on the popular line of toys for toddlers and preschoolers.

The game features animated Little People who populate a make-believe airport full of fun activities for youngsters. There are five separate activity areas, each staffed by a different character and emphasizing a different skill-building activity.

You can help Michael paint, build, and decorate airplanes, which you then get to see fly around. Pilots Paula and Maggie fly to vacation spots that you choose—each representing one of the four seasons—navigating a maze of clouds on the way. In the Control Tower, Eddie needs your help to figure out which plane is ready to take off next—it's an exercise in pattern recognition. Sonya Lee teaches number recognition and counting by getting pets ready to go on a trip and feeding them before the flight. And Sarah Lynn needs help getting bags to the correct planes; this area of the game emphasizes shapes and colors.

Ready for Takeoff Kids can design and fly their own bright airplanes in Discovery Airport.

Knowledge Adventure says this software is compatible with OS X 10.1.2 or later, but the company adds that compatibility comes only via Classic mode. Though the game runs fine in Classic, the publisher's claim of OS X support is misleading.

The Bottom Line If you don't mind running a Classic app on your OS X system, you'll find a delightful and fun game for toddlers and preschoolers. Don't count on capturing the attention of kids who already know shapes, colors, and numbers, but it's a fun diversion for young children. □

FISHER PRICE LITTLE PEOPLE DISCOVERY AIRPORT
RATING: ♦♦♦
PROS: Lots of skill-building exercises in a fun package that's sure to capture the imagination of preschoolers.
CONS: Misleading packaging doesn't note that it's a Classic application.
PRICE: $20
OS COMPATIBILITY: Mac OS 9
COMPANY: Knowledge Adventure, 877/268-6197, www.knowledgeadventure.com

MacCentral.com Senior Editor PETER COHEN guiltily admits to occasionally playing with his younger son's airplane toys and making "vroom vroom" sounds when no one is looking.

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BY | GLENN FLEISHMAN

Protect Your Mac

Keep Your Secrets Safe with Our Tips

Say you're in a coffee shop with AirPort wireless access to the Internet. You use your PowerBook to check your e-mail, upload a few files to your Web server, and read some Web pages, and then you put the machine to sleep. That's when you notice someone looking at your laptop with a suspicious gleam in his eye, so you decide to leave.

The next time you use that laptop, you see, on your OS X desktop, a text file you didn't create: it's a friendly note from that guy in the coffee shop—and it contains your e-mail and FTP user names and passwords, along with a list of the URLs you surfed while sipping.

While this may seem like an uncommon occurrence, all Mac users—office dwellers, home users, and business travelers alike—would be wise to pay more attention to security. I'll explain how the open nature of OS X's Unix base and AirPort's transparent data transmission can make you vulnerable. Then I'll tell you how to protect yourself from attack.

Internet Insecurity Mac users have long been nearly invulnerable to viruses, worms, and Trojan horses—all of which affect input and output tasks such as reading and writing files. And while OS X also resists viruses and their kin, OS X users aren't necessarily home free.

For example, you can be attacked through Web and FTP servers, which are included with OS X and updated and repaired by open-source groups, such as the Apache Software Foundation. Apple has tried to limit the potential for damage coming through Web and FTP servers: by default, almost no Internet-based servers are activated in OS X; you must turn them on manually.

Also by default, the regular system installation of OS X shuts down most ports, meaning that the computer doesn't even respond to requests at those ports (see "Ports in a Storm"). Finally, Apple regularly releases repaired versions of these third-party Web and FTP products when holes are patched (which is another reason it's important to use Software Update, OS X's auto-update feature). These protections are good, but they're not always enough.

Wireless Worries The second recent major development affecting Mac users' security is the increasing use of AirPort wireless networking. AirPort, commonly known outside the Mac community as Wi-Fi (or, more technically, as IEEE 802.11b), sends data back and forth without securing the connection between a wireless client and an AirPort Base Station or similar hub.

User names and passwords for e-mail accounts, FTP servers, and insecure Web sites are transmitted as plain text, so any other user on the same wireless network can detect this information, along with the plain text of any e-mail message you send or receive and any file you transmit or download.

AirPort's built-in encryption system doesn't protect you from other users on the same network, and the encryption itself has major flaws. When you use public wireless networks such as Wayport, Surf and Sip, or T-Mobile in airports, hotels, and coffee shops, the built-in encryption doesn't even come into play: your data is always unencoded.

PHOTOGRAPHY BY KEVIN CANDLAND

Stop 'em Before They Start

Now that you know the risks, you can decide how to protect yourself. The first way involves using Network Address Translation (NAT) or firewalls to defend your Macs against network-based attacks.

NAT: Make Your Computers Disappear

The easiest and least expensive way to protect one or more machines from direct outside attacks is to use a NAT network gateway, which assigns private Internet addresses to machines on a local network. These private addresses aren't reachable—technically, they're *nonroutable*—from any machine not on the same local, private network. Because these machines are masked from the rest of the Internet, they're less vulnerable to network attacks. NAT also allows multiple machines to share a single address.

NAT acts as an intermediary between internal, private addresses and the rest of the Internet. A NAT gateway intercepts individual packets of data as they travel from a networked computer to the Internet, and it rewrites them so they appear to be coming from the NAT gateway's address. Likewise, return data hits the NAT gateway, which rewrites and directs information to the appropriate machine on the network.

NAT often works hand in hand with Dynamic Host Configuration Protocol (DHCP), a service that automatically assigns IP addresses when a computer asks for them. DHCP assigns you an address if the Configure pull-down menu under your Network System Preferences TCP/IP tab is set to Using DHCP.

Add It to Your Armory NAT and DHCP are built into the Apple AirPort Base Station software. To enable NAT, launch the AirPort Admin Utility, click on the Network tab, select Distribute IP Addresses, and then select the Share A Single IP Address (Using DHCP And NAT) option. To allow your wired computers to use AirPort's NAT gateway, select both Enable DHCP Server On Ethernet and Enable AirPort To Ethernet Bridging.

You can also add NAT to a network through a hardware gateway, such as Proxim's $117 Netline Broadband Gateway (800/411-8106, www.proxim.com), or via the natd and dhcpd daemons that run in OS X. Fortunately, natd comes with OS X, and you can download a free copy of dhcpd for OS X at www.faisal.com/software. Note that installing and configuring natd and dhcpd require some system-level expertise.

Who Needs NAT? Any Internet-connected computer not running servers that need to be reached from outside the local network.

Pros: Easy to use; server software built into OS X, AirPort, and all dedicated home-networking gateways.

Cons: Some kinds of Internet software work poorly with NAT or require special configuration; can be difficult to make specific servers available while protecting the rest of your machines; doesn't protect as well as a firewall.

Firewalls: Fend Off Foes

A substantial leap beyond NAT is an active firewall, which prevents hostile forces (or bad data) on the outside from reaching the protected area. Firewalls can run on individual machines or on dedicated network hardware.

Firewalls monitor each packet entering, and sometimes leaving, a network and apply rules that allow or reject all data—depending on the packet's data type (such as Web, FTP, and DNS), its origin, and its destination, but rarely depending on its contents.

By blocking access to every port except the ones actively offering a service (such as allowing AppleShare file-server connections), and every IP address except the ones that need access, firewalls eliminate almost all potential for attack. Many automated network-attack tools scan well-known server ports and then automatically try to attack via security holes. Blocking ports deters these attempts.

Add It to Your Armory OS X users can choose from several personal firewall applications, which are intended primarily to protect a single machine on a network. These include Intego's $60 NetBarrier (305/868-7920, www.intego.com); Norton Personal Firewall, from Symantec, which costs $70 by itself and is available as part of the $100 Norton Internet Security bundle (800/441-7234, www.symantec.com); and the $35 trialware program FireWalk X, from Pliris (www.pliris-soft.com).

NetBarrier is the only OS X software that detects patterns of attacks and locks out abusive visitors. All the applications let you set rules that allow and deny access by port or IP address.

OS X 10.2 includes a simple set of firewall controls that allow you to clamp down on all services except the ones you specify, or lock out access to specified services and allow all other connections. For personal machines, this new built-in firewall offers plenty of protection.

Several inexpensive hardware firewalls, such as the previously mentioned Netline Broadband Gateway, cost between $50 and $100 and can protect an entire DSL- or cable-connected network, replacing several individual copies of personal firewall software. (Net-

Ports in a Storm

Internet servers are always expected at the same location on a machine; these locations are called ports. Just as an office building might have a mail room in suite 25 and a public observation deck in suite 80, e-mail software always expects that outgoing mail servers are at port 25, and Web browsers seek Web servers at port 80.

works with heavier traffic need corporate-size hardware.) These gateways act as always-on DHCP and NAT servers with firewall features. They typically have multiple Ethernet ports to physically and logically separate your less secure Internet connection from your more secure Ethernet or wireless network.

Who Needs a Firewall? AirPort users in an office or on the road; offices with a mix of wired and wireless networks with static IP addresses; wired users on networks with unknown users—for example, academic and Internet-café networks.

Pros: Eliminates potential and real network attackers by bouncing access; deters bandwidth- and CPU-wasting probes.

Cons: Overkill for casual users with default OS X installation; can require complex configuration for specialized Internet software, such as Timbuktu Pro.

Protect Yourself from Snoops

No matter how sturdy your doors are or how advanced your home security system is, you must eventually leave the house and face dangers in the wider world. Similarly, your data is susceptible to danger when it travels away from home.

Data bound for other machines on the Internet leaves your Mac and takes many hops over long distances—whether you're on a local network where you can trust everyone who has access, or roaming and using unfamiliar wired or wireless connections.

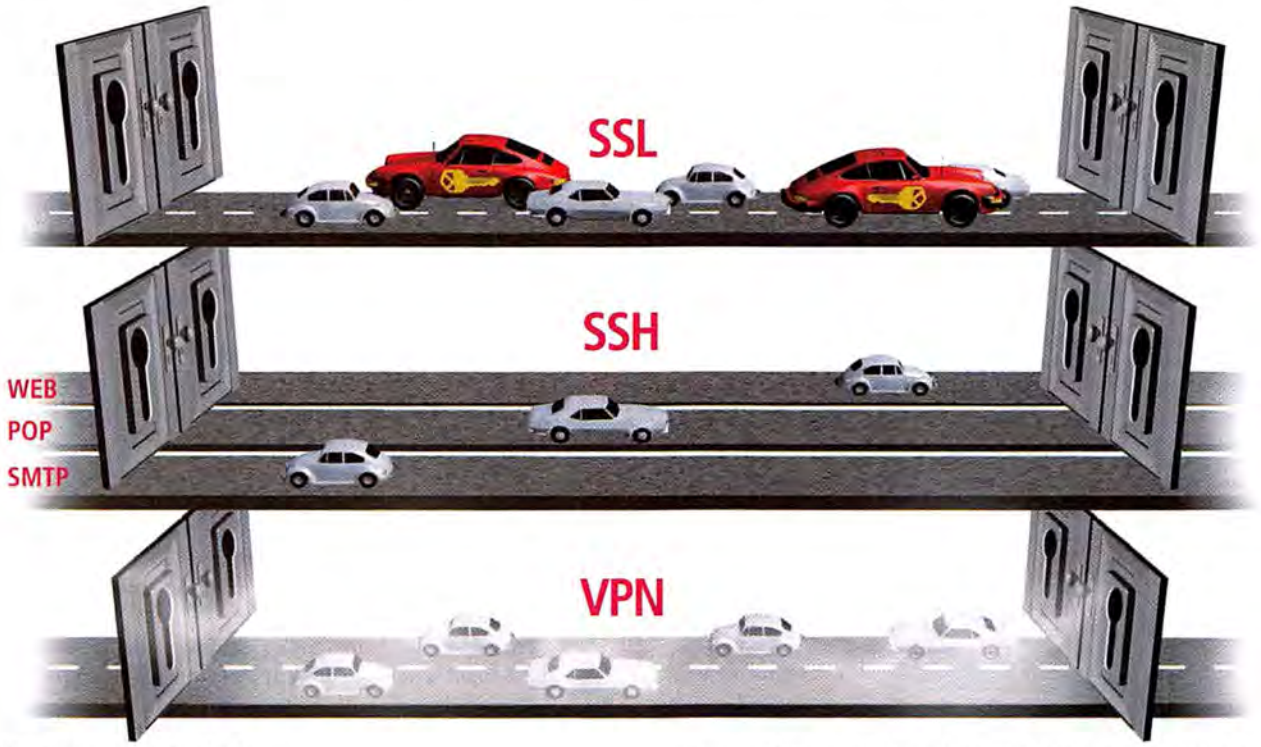
Someone could record all the plain text your machine sends on wireless networks outside your control, especially in public places. That's why it's a >>

Partners against Crime

Security and encryption are integrated partners. Encryption scrambles data algorithmically, so data that's intercepted or stolen is indecipherable without a key. Keys can be typed in, stored in a protected file that a passphrase provides access to, or created for a one-time exchange of information.

Typical uses of encryption include protected local virtual disks, locked stores of information (such as your passwords in Apple's Keychain), and secure transactions (for example, buying an item from an online store using an HTTPS or SSL transaction).

Using OS X's Disk Copy utility, you can create an encrypted disk that can, for instance, store your e-mail files; you would manually mount this virtual disk every time you started up your machine. From the Image menu in Disk Copy, select New Blank Image. From the Encryption menu, select AES-128 (Recommended) after choosing all of your other settings. When the disk is created, Disk Copy prompts you to enter a password or passphrase that you will need in order to access the disk in the future; it can also be stored in Keychain.



Three Encryption Methods

SSL, SSH, and VPN are three ways to encrypt data as it travels between a client, such as your Mac, and a server. In this illustration, the blue automobiles represent data packets travelling between a client (behind the locked doors on the left) and server (behind the locked doors on the right).

SSL For SSL, the red cars with keys represent a public key exchange. That key lets two parties who don't know each other decide secretly on a session key for subsequent transactions. Someone without this session key can see a car—or data—as it's in transit but can't see who's driving or the objects inside the car.

SSH Each SSH road is for a type of traffic: one for a POP client and server, one for a Web client, and one for an e-commerce site (SMTP). Observers can see which road cars are on, but they can't see into the cars.

VPN The cars on the VPN highway travel on a single road and carry different kinds of loads, but this method takes away an observer's ability to determine even the make or model of the car, much less what's inside.

INFOGRAPHIC BY ROB KELLY

good idea to always have some level of encryption scrambling your packets when you're working wirelessly. If you have a wireless network that's connected to a wired network, you've effectively made AirPort your weakest link, and machines on the wired network are at just as much risk as the AirPort-connected computers. Encrypting certain kinds of connections—even in trusted, wired offices and homes—is worthwhile.

There are several layers of protection that you can wrap your data in; they range from simple password protection to full, encrypted sessions in which all information passing from your Mac to a destination server is unreadable. (For a few encryption basics, see "Partners against Crime.")

The three most widespread kinds of in-transit encryption are Secure Sockets Layer (SSL), Secure Shell (SSH), and Virtual Private Network (VPN). VPN is a catchall name for several protocols that have equivalent functions.

Whether you're using SSH, SSL, or VPN, you're probably protecting just three kinds of client-server interactions: sending and receiving e-mail messages (POP for receiving and SMTP for sending), Web browsing, and transferring files via FTP.

Protection Selection

PUBLIC IP ADDRESSES	WIRED NETWORK, NO WIRELESS BASE STATIONS	WIRELESS NETWORK
Home network	**Firewall:** Yes. **Encryption:** No. **Note:** Unless someone breaks in, the data is safe in transit.	**Firewall:** Yes. **Encryption:** WEP. **Note:** A home user can use WEP and gain real protection against casual passersby.
Small-business network	**Firewall:** Yes. **Encryption:** No.	**Firewall:** Yes. **Encryption:** SSH. **Note:** Using an office server that supports SSH or an ISP allows safe, continuous protection and doesn't require that you constantly create new tunnels.
Corporate network	**Firewall:** Yes. **Encryption:** Maybe. **Note:** If visitors have access to the network, SSL may be appropriate for internal e-mail connections.	**Firewall:** Yes. **Encryption:** SSH and/or VPN. **Note:** Corporations need to locate wireless outside their firewalls to prevent people sitting in the parking lot from having access to network resources.
Unknown or public network	**Firewall:** Yes. **Encryption:** SSL, SSH, or VPN. **Note:** You need at least SSL encryption, but use SSH or VPN to access other resources.	**Firewall:** Yes. **Encryption:** SSL, SSH, or VPN. **Note:** You need at least SSL encryption, but use SSH or VPN to access other resources.
PRIVATE IP ADDRESSES	**WIRED NETWORK, NO WIRELESS BASE STATIONS**	**WIRELESS NETWORK**
Home network	**Firewall:** No. **Encryption:** No. **Note:** The network is essentially untouchable.	**Firewall:** Yes. **Encryption:** WEP. **Note:** Even with NAT, the same vulnerabilities exist with wireless networks, unless you're off in the woods with no one around.
Small-business network	**Firewall:** Maybe. **Encryption:** No. **Note:** A firewall would control inbound and outbound traffic, and this could alert a system administrator to user abuse or other network problems, especially in a mixed network of Macs and other platforms.	**Firewall:** Yes. **Encryption:** SSH.
Corporate network	**Firewall:** Yes. **Encryption:** Maybe.	**Firewall:** Yes. **Encryption:** SSH and/or VPN.
Unknown or public network	**Firewall:** Yes. **Encryption:** SSL, SSH, or VPN. **Note:** You need at least SSL encryption, but use SSH or VPN to access other resources.	**Firewall:** Yes. **Encryption:** SSL, SSH, or VPN. **Note:** You need at least SSL encryption, but use SSH or VPN to access other resources.

SSL: Not Just for Credit Cards

SSL is a common way to keep credit cards and private information secure when a form is submitted to a Web server. In other situations, it's often known as SSL/TLS (Transport Level Security).

With SSL/TLS e-mail, each time you connect to a mail server to send mail, your e-mail client talks to the mail server to create a private encryption key that securely locks the transaction. When the transaction ends, the key is forgotten.

But there are many different mail servers and clients; finding the right combination can be difficult. You may have to work with a system administrator to reconfigure a POP or SMTP mail server so it works correctly with your e-mail client.

Add It to Your Armory System administrators can install and enable SSL/TLS with the free Unix Sendmail program, which comes with OS X (www.sendmail.org); Qualcomm's free Qpopper POP mail server (www.eudora.com/qpopper); or Microsoft Exchange Server 5.0, 5.5, and 2000 (check Microsoft's Web site for version 2000 pricing information; 800/426-9400, www.microsoft.com).

You can enable several e-mail clients to use SSL/TLS. In Apple's Mail (which requires OS X 10.1.3 or later), select Mail: Preferences, click on Accounts, select an account, click on Edit, click on the Account Options tab, and then select the Use SSL option. In Microsoft Entourage X, select Tools: Accounts, select an account, click on Edit, and then click on Click Here For Advanced Receiving Options (under Receiving Mail). Select This POP Service Requires A Secure Connection (SSL). Then click on Click Here For Advanced Sending Options under Sending Mail and repeat this process; select SMTP Service Requires Secure Connection (SSL). Neither Eudora 5.1.1 nor MailSmith 1.5.3 supports SSL in OS X.

Who Needs SSL? Users, especially those in unfamiliar locations, who make intermittent connections for particular purposes, such as sending and receiving e-mail messages.

Pros: Worldwide method of securing e-mail passwords and e-mail messages, with little fuss (once it's set up).

Cons: Difficult to get the right e-mail client-server combination; configuration is obscure and frustrating.

SSH: Tunnel to Freedom

SSH is a more comprehensive solution than SSL. SSH encrypts traffic from a specific kind of service as it leaves your computer or the server you're communicating with. This is called *SSH tunneling*. Task-oriented transactions, such as sending e-mail, can run inside SSH tunnels.

SSH lets you use the Internet to pass sensitive data without fear of interception; it's much like transporting a reclusive movie star over public highways in an armored car with heavily tinted windows. Unlike SSL, SSH lets you keep connections open for as long as you want, but whenever you shut down your computer, put it to sleep, or change networks, you must reestablish the SSH connections.

Add It to Your Armory To create tunneled connections, OS X users can rely on the built-in SSH client and server software. You can enable SSH server access in OS X by selecting the Sharing system preference, clicking on the Application tab, and then selecting Allow Remote Login. If you're also using a firewall, you may have to specifically enable access to port 22—the port for incoming SSH connections.

Many Unix systems can also act as SSH servers, and a number of ISPs support SSH access. If you don't have access to SSH servers and can't configure your own OS X system to act as one, Anonymizer.com (888/270-0141) lets you conduct most routine activities through their servers for $100 a year. To use their POP mail service, you must forward your e-mail (or at least send copies to) an address they provide for your account.

If you're comfortable with root access and the command line, see "SSH Away from Home" for more information.

Who Needs SSH? Users encrypting e-mail, FTP, Web, or other continuous exchanges between their computer and a server.

Pros: Built into OS X and OS X Server; easy for administrators to set up and use with the right combination of software; compatible across many platforms.

Cons: Need access to server running SSH; may have to forward e-mail from one non-SSH server to another with SSH to retrieve it securely; must reset SSH each time Mac sleeps or switches networks.

VPN: The Big Guns

A VPN connection is similar to a giant SSH tunnel: it sucks all the data entering and leaving Macs and servers into its maw, and it encrypts everything. A VPN lets off-site employees access their company's network without compromising security.

A VPN server capable of processing requests from just a few dozen users at the same time can cost between $2,000 and $5,000. A VPN server has to perform a large number of calculations to handle the encryption and decryption, and it often has dedicated chips to perform this task. VPN clients, by contrast, have a lot less work to do and can run on relatively slower machines.

Most companies that run VPNs combine them with strong firewalls and put their wireless networks outside the firewall. This allows users with wireless cards to connect via the VPN, which repels anyone who manages to join the wireless network.

Add It to Your Armory Support in Mac OS for the most powerful and popular VPN protocol—IPsec—has had a poor to nonexistent history, and tools for the other major protocol, Microsoft's PPTP (Point-to-Point Tunneling Protocol), are sketchy as well.

However, OS X 10.2 includes the core support needed for the building of IPsec clients, and better software should follow. For instance, Earthlink founder Sky Dayton's latest company, Boingo, offers Windows-only software that includes a VPN client when connecting to its partner network of wireless ISPs. The company has promised a Mac version, and it may have been waiting for this VPN support. In addition, OS X 10.2 supports PPTP out of the box.

Who Needs VPN? Offices with corporate users who work in remote locations.

Pros: Powerful; protects all data; easy user configuration; works for remote users.

Cons: Expensive hardware; sophisticated system administration; Mac support traditionally not strong.

The Last Word

Some Mac users will never have their data attacked or intercepted. But it takes only one stolen password or credit card number to turn your life into a long-term nightmare. Protecting yourself is worth the time and effort it takes. □

SSH Away from Home

To ensure that my POP and SMTP traffic go unread on the various untrustworthy public wireless networks, I use SSH on the road to secure my connections back to my mail server. (Don't try this yourself unless you're comfortable with the command line—it's easy to wreak havoc on your Mac if something goes wrong.)

In OS X's Terminal program, I run a script that connects to my office mail service, which is running Red Hat Linux 7.3. This works equally well with OS X or OS X Server set up as a POP and SMTP server.

This script requires the developer's software to be installed or a separate Perl scripting-language installation.

Install this script in your home directory as "tunnel." Replace ***hostname*** with the name of the machine on which your POP and SMTP servers are running, and replace ***username*** with the name of your account on that machine. (The first part of the script makes sure to kill off any lingering SSH connections that may be inactive but didn't die on their own before making the new ones.)

```
#!/usr/bin/perl
open (PS, "ps auxw | grep \'ssh -L\' | grep -v grep | awk '{ print \$2 }' |");
while (<PS>) { chop; system ("sudo kill -9 $_"); }
system ("sudo ssh -L 25: hostname:25 -L 110: hostname:110 -l username
-N hostname -f");
```

In the command line, type **chmod u+x tunnel** to execute the script.

Change the setting in your mail client so that instead of directly connecting to your mail server for POP and SMTP, you connect to 127.0.0.1, which is a permanent alias for your local computer.

Now type **./tunnel**. OS X first prompts you for your local password for an administrator account, and then once for the shell password for the e-mail server, which is almost always the same as your e-mail account's password.

Each time you put your computer to sleep or change networks, you need to run this script again, but that's a small price to pay for this level of security.

GLENN FLEISHMAN writes the *Practical Mac* column, which appears every other week in the *Seattle Times*, and contributes regularly to *Macworld*, the *New York Times*, and O'Reilly Networks.

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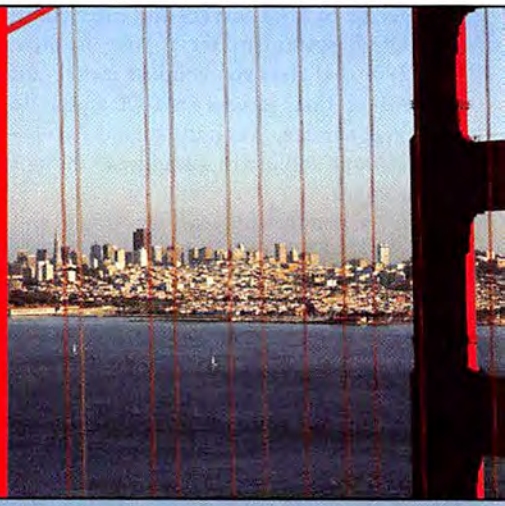

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BY JASON SNELL

The Cat's Out of the Bag

Should You Jump to Jaguar? Read Our Review.

The Mac OS X beta was a preview for hard-core fanatics. OS X 10.0 was not for the faint of heart. And OS X 10.1 was the first version of Apple's new operating system that was ready for everyday use. So what should we make of OS X 10.2—also known as Jaguar—now that it has arrived?

With OS X 10.2's scores of new features and many tweaks to existing features, even OS X's harshest critics have to admit that Apple has sanded off most its new operating system's rough edges. But is OS X 10.2 worth $129? We reviewed a final version to help you gauge its appeal, whether you're an OS X 10.1 user or an OS 9 stalwart.

Refined, Familiar Interface

Each time Apple updates Mac OS, even minor interface changes are readily apparent—and they often improve your computing experience more than the promised productivity improvements. So while it's fair to say that none of the interface changes in this update are revolutionary, Apple has made several important, though almost imperceptible, refinements.

Drop-down menus, while still slightly transparent, are much more opaque, making them more readable. A pop-up menu in the General preference pane lists four antialiasing algorithms, so you can choose the method of smoothing text that best fits your monitor and, even more important, that is easiest on your eyes. We found that the new LCD-optimized antialiasing settings made text more readable than the single setting offered by previous versions.

Apple's interface designers have toned down the pulsating blue default button in dialog boxes, making its effect subtler. All the Aqua buttons have a flatter appearance, and drop shadows are lighter—a small but noticeable improvement.

Another minor tweak is equally welcome: an Apply To All option makes copying large numbers of files in the Finder easier. It lets you quickly tell the

Finder whether you want to overwrite files or leave them alone; in previous versions, you needed to click on the Replace button once for each file that matched the name of an existing file.

And throughout the operating system, you can more easily access the interface with your keyboard (instead of your mouse). Open and Save dialog boxes can now be sensibly navigated with arrow keys, eliminating one major frustration of previous versions; however, you still can't type a letter to automatically move to a file whose name begins with that character (a feature we used every day in OS 9).

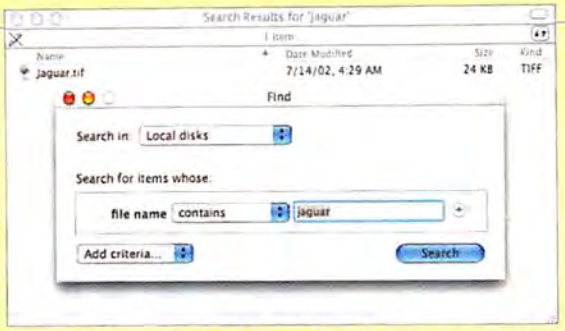
But there are some additions that will no doubt cause a few interface critics to complain—while regular users simply wonder what the fuss is all about. The arrow cursor now casts a slight drop shadow (fortunately, none of the other cursors do—imagine trying to do Adobe Photoshop work while casting shadows on your workspace!), folders open slightly when you drag items over them, and the spinning beach ball cursor you see when your Mac is overtaxed with tasks has turned into a shiny lollipop.

The most ballyhooed interface addition in OS X 10.2 is an old standby from OS 9: spring-loaded folders. While some people never took advantage of this one-drag approach to moving files in the Finder, those who did grew to rely on it and will be grateful for its return.

Tangible Improvements

Beyond the interface niceties, OS X 10.2 offers improvements in functionality and speed.

Quartz Extreme One of OS X 10.2's key features is Quartz Extreme, a concept that can be difficult to understand and even harder to see when you're running the OS. Essentially, Quartz Extreme is a technology that off-loads most of the burden of displaying your Mac's interface to the Mac's dedicated video processor and video RAM. However, this technology works only on systems with an Nvidia GeForce2 MX, GeForce3, GeForce4 Titanium, or GeForce4 MX card (AGP version, not PCI), or ATI AGP Radeon card, with at least 16MB of VRAM. This means that Quartz Extreme will work with all current Mac models, as well as most Macs released in the past year or so.



Faster Finds Finding files is fast and easy with the Finder's new searching capabilities, which allow your search parameters to be as complicated or as simple as you need them to be.

It's hard to know whether Quartz Extreme is running on your Mac, but you can find out by popping in a DVD movie and then adjusting the volume or pulling down a menu. If you can see through the transparent object to the movie playing behind, your Mac is using Quartz Extreme. Granted, seeing through menus into DVDs isn't much of a feature—but that's not why Quartz Extreme is important. By using your video subsystem to composite all the different objects on your Mac's screen, the technology allows your Mac's main processor and memory to concentrate on other tasks. The result is a system that feels more responsive, especially when it's busy with other tasks. When we had lots of applications open in the background, there were far fewer spinning cursors in OS X 10.2 than there were in OS X 10.1.

Classic Mode Let's be honest: Apple would prefer that there were no such thing as Classic. But the reality is, OS 9 will be with us for some time, running applications that will never be updated to take advantage of OS X. Apple certainly hasn't made any improvements to OS 9 as part of OS X 10.2—after all, Steve Jobs theatrically declared OS 9 development dead, casket and all, at Apple's Worldwide Developers' Conference in May.

In fact, you won't even find an OS 9 CD in OS X 10.2's box, but Apple says that OS 9 will be available separately, for users who upgrade from OS 8.X and require Classic-mode application support. (Of course, if you upgrade, your existing OS 9 system folder will continue to work just fine with OS X 10.2.)

But Apple has made some improvements in Classic. We found that Classic launched noticeably faster in OS X 10.2 than in 10.1—roughly 70 percent faster, in fact. And in case you hesitate to click on a document for fear you'll inadvertently start Classic, a handy new preference option displays a warning dialog box before

10 Reasons to Upgrade

1. IMPROVED PRINTING ARCHITECTURE means faster printing, easy printer sharing, and improved compatibility.
2. NATIVE WINDOWS NETWORKING SUPPORT means that you can easily share files with Windows users.
3. The NEW FINDER-BASED FIND COMMAND lets you search your system faster—and more easily—than you could with Sherlock.
4. There are SPEED BOOSTS THROUGHOUT OS X—they will be especially apparent in busy systems that use Quartz Extreme to off-load work to the video card.
5. CLASSIC MODE STARTS UP FASTER, and new preferences let you monitor and control it better than ever before.
6. There are BETTER FILTER AND SEARCH FEATURES in Mail, which now supports intelligent spam filtering, so you can train it to catch most of your junk mail.
7. SCANNER SUPPORT IN IMAGE CAPTURE AND TWAIN DRIVER SUPPORT make scanning in OS X more user friendly (although it still has some kinks).
8. SPRING-LOADED FOLDERS and other small changes improve productivity in the Finder.
9. BUILT-IN INSTANT MESSAGING VIA iCHAT can dramatically change the way you work, especially with remote coworkers and customers.
10. NEW APPLE APPLICATIONS, such as iSync and iCal, will be available only to OS X 10.2 users.

Image-Conscious Cat

Pretty Kitty Jaguar brings better printing and scanning to OS X.

Printing and scanning have been troublesome in OS X, though Apple has steadily improved printing as the operating system has evolved. But the many Mac users with complaints should be assuaged by the release of OS X 10.2. We won't all see the complete benefits and fixes the moment we install the update, but many of the holes seem to be well on their way to being filled.

Apple has overhauled OS X's print architecture from top to the bottom. On the surface, the Print dialog box is better organized, with a few new printing features, and the Print Center application is a lot more useful. And Apple has also significantly improved OS X's underlying print engine.

Shares with Others Another important addition is printer sharing, which lets your networked Mac dynamically sense any printers shared by other OS X 10.2 Macs on the same network; it then automatically adds those printers to your printer list. OS 9 had printer sharing, but it was limited to a set of USB-connected printers; OS X 10.2's implementation includes FireWire-connected and networked printers. The latter is especially helpful for AirPort users who might not want to install printers on networks they rarely visit. We used AirPort to connect a laptop to a desktop Power Mac and automatically gained access to a USB printer attached to the desktop Mac.

Organized Interface The main Print Center window now incorporates a customizable toolbar and columns that show useful information—such as location and type—about each installed printer. A Get Info window is now available for each printer, so you can do simple things such as assign a new name or custom page-description file to the printer.

The Print Center's interface isn't perfect. When you have a network printer installed and someone else on the network turns on printer sharing, you'll see the printer twice (or more, if others are sharing as well). Although the OS does shade shared printers to distinguish them from unshared printers, it would be nice if the OS could recognize a printer you'd already set up for your network and list it only once.

The big change to the Print dialog box is the capability to save multiple print settings (earlier versions let you save only one custom setting). Apple has also moved the Save As PDF option from a pop-up menu to a button at the bottom of the Print dialog box. Another welcome addition is custom paper sizes, which are especially helpful for people who want to fit many images on a piece of costly photo paper.

CUPS Revs the Print Engine Under the hood, OS X's printing capabilities are built on a new engine that's based on the open-source Common Unix Printing System (CUPS). Originally designed to provide high-quality PostScript and raster printing for a wide variety of printers in Unix environments, Apple's adoption of CUPS should mean that printer companies can build and port drivers more quickly and efficiently than was possible in previous versions of OS X.

Apple says that CUPS improves overall print performance. In limited testing with personal USB printers from Epson and Canon, we saw decent, but not huge, speed gains. With networked PostScript printers, however, the speed boosts were significant—pages on an older HP Color LaserJet and a GCC laser printer printed almost instantaneously, something that didn't happen with OS X 10.1.

CUPS will ultimately bring better performance and support for a broader array of printers, including wide-format printers and proofers, which have been among the stumbling blocks for Apple's pro customers. (An Epson representative told us that the company expects to ship OS X drivers for its professional printers late this year.)

Scanning Support Problematic scanning has been a major disappointment in OS X. Out of the box, few scanners have worked in OS X; some scanners worked in Classic mode, while others refused to work at all. This situation has been slowly improving. Epson has beta drivers for many of its scanners available on its Web site, and Canon is also getting closer to releasing OS X–native scanner drivers. Many scanner owners have availed themselves of Hamrick Software's VueScan (www.hamrick.com) or LaserSoft's SilverFast (www.silverfast.com), both of which are OS X native and work with a wide variety of scanners. But we don't think anyone who bought a scanner after OS X initially shipped should have to buy additional software to get it to work.

OS X 10.2 should make things better. It includes the latest version of the TWAIN scanning architecture, which will ease the driver transition for many vendors.

Apple has gone one step further with TWAIN, adding scanner support to Image Capture. In theory, Image Capture should now recognize nearly any scanner that is TWAIN compliant (most are), although it failed to recognize the four scanners we tested. At press time, Apple supported 10 scanners from Epson: in the Perfection series, the 1640, 1650, 1660, 2400, and 2450; in the GT series, the 8200, 8300, 8700, 9300, and 9700. We expect this list to grow over time, with interim OS X updates. The problem isn't entirely licked, but a solution is in sight.

If you want to scan in OS X but aren't ready to move to OS X 10.2, don't despair: the beta TWAIN plug-ins from Epson and Canon that we saw worked with OS X 10.1.—RICK LEPAGE

Classic starts up. And the ability to use different OS 9 Preferences folders for different OS X users will be handy for people who share their Mac with others who use Classic.

Working with Windows Out of the box, OS X 10.2 is interoperable with Windows to a remarkable degree. Via the Sharing preference pane, you can share your Mac's files via SMB/CIFS (the standard format for Windows file sharing) and by tried-and-true Mac OS file-sharing methods. And you can now search for and connect to Windows file servers from the Finder, just as you could for Mac file servers in previous versions of OS X. You can also connect to FTP servers from the Finder; the remote servers mount on the desktop like any other remote volume, but access is relatively slow, and you can only read, not write to, mounted FTP volumes. >>

For years, connecting to external ODBC databases has also been a problem on the Mac; finally, with OS X 10.2, Apple has provided a standard method for developers to use when connecting Macs to high-powered network databases.

Printing and Scanning For many professionals (and a few others), OS X printer support has been less than stellar, and for nearly everyone, scanner support has been even worse. Both have gotten a big boost in OS X 10.2, which has a revamped printing engine and expanded TWAIN support. But it will still take a while for third-party vendors to catch up (see "Image-Conscious Cat").

Name Game OS X 10.2's Address Book application is a little bit like an iceberg—what you can see is only a small fraction of what's there. Beneath the surface, this relatively straightforward contact manager has an entirely new Mac OS infrastructure: a shared database that tracks information about people you know. In fact, you may never use the Address Book application, especially once other programs are modified to support the shared database. But the database itself has the potential to eliminate redundant and out-of-date information across your Mac.

Leading the way, Apple has integrated the shared database with its new iChat application and the update to its e-mail program, Mail. iChat uses the database to map real names to AOL and mac.com screen names, so you'll know that the incoming message from pixie95370 is actually from your friend Joe (see "Chat Session"). It's a good idea that will only get better as developers update their programs to support the new system.

Sharing Services In addition to Quartz Extreme, the other OS X 10.2–related technology innovation being promoted by Apple is Rendezvous, a networking standard that allows devices on a network to dynamically recognize one another. Like Address Book, this is a technology that will require support from software developers to truly blossom. But Apple has thrown a few touches into OS X 10.2 that hint at Rendezvous's potential, most particularly in the iChat application, which doesn't require any special registration with AOL or Apple to allow chatting among people connected to a local network—instead, everything's handled via Rendezvous.

Chat Session By integrating instant messaging into Mac OS, iChat will change the communication habits of many Mac users.

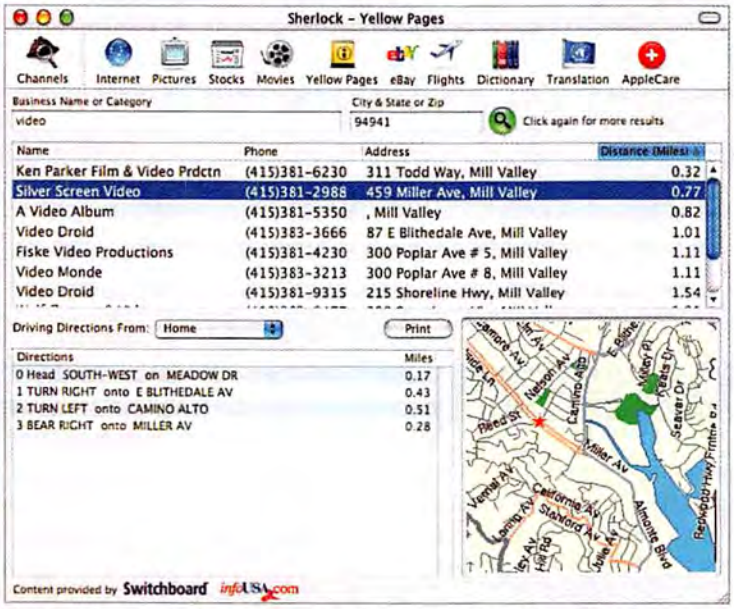
Ink without Paper When you connect a graphics tablet to your Mac, OS X 10.2 activates its Ink handwriting-recognition technology and places an Ink item in your System Preferences. Ink lets you handwrite text directly into any application with an active insertion point. As you write, a sheet of virtual paper displays your handwritten characters, and when you pause, Ink automatically converts your letters to text and inserts them in your document as if you had typed them.

Unlike many handheld devices, which require you to master a special alphabet, Ink recognizes your handwriting. In our tests, it rarely flubbed a word, though it often capitalized letters incorrectly. Ink is clearly not meant to be used as a replacement for the keyboard—instead, it gives Apple a feature that will be required in any keyboard optional "tablet Mac," should the company decide to compete with tablet-based PCs.

Devil in the Details

OS X 10.2 contains many small improvements. Any combination of them may be enough to make you decide that it's worth its price, but different features will beckon to each user. Here are some of OS X 10.2's most interesting improvements that we haven't previously reported (see "What Else Is in Jaguar" and our related online coverage for more details).

AppleScript Support Apple's useful AppleScript language is better supported in OS X 10.2; a systemwide Scripts menu, previously downloadable from Apple's Web site, is now included when you install the updated OS. Folder Actions—the OS 9 feature that allows



The Searcher In OS X 10.2, Sherlock has been remade as a Web-searching utility that parses Web pages and Internet databases to provide easy access to information, such as the addresses and locations of nearby video stores.

Migrate to Jaguar with a Clean Install

Before you can enjoy the benefits of OS X 10.2, you first need to install it—which may not be as easy as it sounds. Although you can update your existing OS X system to 10.2, you may encounter several problems (including crashing applications) after doing so.

To avoid these problems, we suggest using the installer's new Archive And Install option, which installs a complete version of 10.2 and saves everything from your previous OS X system. (Once you've chosen your destination volume for installation, click on the Options button, select Archive And Install, and then select Preserve Users And Network Settings.) The best part is, this option moves your Users folder—retaining your accounts and settings—and the contents of your Applications folder to the new system. There is still work to be done to get everything back to the way it was; however, we're here to help with the manual labor.

After installation, you'll find the following files and folders left over from your old system in the Previous Systems folder: Applications, etc, Library, mach, mach.sym, System, Users, var, and (possibly) Developer. Even though you'll eventually throw many of these files away, you may want to transfer some to their corresponding locations in OS X 10.2. We'll cover the basics here, which will be enough for most users; for more detailed instructions visit www.macworld.com/2002/10/features/jaguar.html.

During this process, if you attempt to move something and get an error message saying that you don't have the right privileges, you can use the Finder's Show Info command to change them.

Library The Library is the most complex folder to deal with, because of the mix of older Apple-installed files that you don't want to transfer over and newer user- or application-installed files that you do want to move. The OS X 10.2 installer moves the Application Support, iTunes, and PreferencePanes folders, as well as the contents of the Preferences directory, into OS X 10.2's Library folder, so you don't need to worry about those.

However, many applications install other support files in this folder, and other files, such as Contextual Menu plug-ins, browser plug-ins, and Services are installed here for system-wide use. If you don't want to manually reinstall applications, support files, and third-party add-ons from scratch, going through this folder is your only option. Note that because of privilege issues, when you drag files from the archived Library folder to OS X 10.2's Library folder, some files will be copied while others will be moved—this is normal.

The first step is to look for any folders that exist in the archived Library folder but don't exist in the new OS X 10.2 Library folder—you can drag all of these over. Dealing with the rest of the folder is a bit more tedious. You'll need to open the new OS X 10.2 Library folder and the archived Library folder side by side and compare the contents of each subfolder. Folders that exist in the old Library but don't exist in the new one can be moved over—such as Fonts and Internet Plug-Ins. But don't replace files or folders that already exist in the OS X 10.2 folder without first checking the version number and/or creation date of each (use the Finder's Get Info command). A few folders warrant special consideration:

- Don't transfer the contents of the Library: Caches folder from the archived Library to OS X 10.2's Library. OS X 10.2 will recreate these files as needed.
- The contents of the Library: ColorSync: Scripts folder in your archived Library are located in the Library: Scripts: ColorSync folder in OS X 10.2's Library.
- Before you transfer any files from the Library: Printers folder, try setting up your printer in OS X 10.2—there's a good chance that support for your printer already exists. An exception is if you've previously installed Faxstf, in which case you should transfer over the Library: Printers: SmithMicro folder.
- In the Library: Receipts archive, copy over only receipts that were clearly installed by third-party software (for example, Faxstf, IEUpdate, MacallyMouse, and WindowsMediaPlayer). If you're unsure about an item, leave it—they aren't vital.
- If you were previously running a Web server off your Mac but using the System's Web directory rather than your user-level Web directory, be sure to transfer any custom contents of Library: WebServer: Documents.

Applications All of your previously installed applications and utilities have been moved by the installer from this folder to the new Applications folder at the root level of your hard drive (except for older versions of Apple software). The lone exception is if you already moved files or folders inside the AppleScript folder in OS X10.1; if you did, they will still be inside the archived AppleScript folder, and you will need to manually move them to the new Applications folder.

Users Although the OS X 10.2 installer kindly moves user folders from the archived Users folder to its own Users directory, for some reason the Shared user folder does not get transferred. If you've placed files in the Shared user folder, you'll need to manually move them from the archived Shared folder to the Shared user folder in your new Users directory. (Make sure you copy the *contents* and not the Shared folder.)

Last Steps When you're done, log out and then log back in. You'll need to set up your printer(s) again, but apart from that, there should be minimal additional setup necessary. It's also possible that some of the software you used in OS X 10.1.5 or earlier won't be compatible with OS X 10.2. If one of these applications was previously set up as a login item, it will launch at login just as it did before, which can cause problems. To fix this, you can press the shift key just after the login or start-up screen, and hold it down until the Finder has loaded—this will prevent all login items from loading. You can disable the offending login item and then log out and log back in.

Once your Mac has been running smoothly for a few days, you can delete the Previous Systems folder and its contents.—DAN FRAKES

AppleScripts to run when items are added, removed, or changed in particular folders on your system—is now in OS X 10.2. The interface for Folder Actions is a bit clunky—you must attach the actions via a submenu in the aforementioned Scripts menu, rather than via a contextual menu in the Finder. But when it comes to functionality, Folder Actions are much improved: you don't need to leave a folder open in the Finder for its Folder Action scripts to function, as you did in OS 9.

Stronger Security Apple has made several security improvements. User names and passwords can now be more than eight characters long—especially useful when you're trying to generate secure but memorable passwords. A new Keychain menu item lets you lock and unlock not only your Keychain but also your entire system: choose Lock Screen, and your Mac will instantly jump to a password-protected screen saver. Likewise, if you're using encrypted disk images created by Apple's Disk Copy utility to store sensitive information on a laptop, when you wake that laptop up, you'll be forced to reenter the secure volume's password. >>

Smarter Sherlock Apple revamped Sherlock for OS X 10.2. File-finding features have been transplanted—with excellent results—to the Finder itself, so Sherlock has been transformed into an Internet utility (see "The Searcher"). The new Sherlock can search for Web pages, pictures, stock data, movie information, business addresses, and more. It puts a pleasing interface on information sources available on the Internet, but it's almost a carbon copy of Karelia Software's $29 Watson utility, which offers twice as many search channels, including many services not available in Sherlock. Still, if you're already planning to buy OS X 10.2 for other reasons, this fast, free utility is a dramatic improvement on the older Sherlock, which was sluggish and not nearly as useful as this edition.

Slicker System Preferences One area that has been cleaned up nicely is System Preferences; Apple has consolidated and tamed the multitude of preference panes. For instance, the Sharing pane is now more useful, offering the right selection of options for sharing your Mac's components, as well as a a simple interface to the basic firewall built into the OS (and it's smart enough to know when you have another utility interacting with your firewall).

Compatibility Issues

We ran a slew of OS X–native applications after our switch to OS X 10.2, and for the most part, they worked without a hitch. But we ran into some problems with utilities (including StuffIt Magic Menu, WeatherPop, MacReporter, and MaxMenus) that placed icons in the menu bar or Dock; however, we expect most of the utilities to operate well after they've had minor updates.

We installed OS X 10.2 in two ways: over existing 10.1 systems and as a clean installation. In most cases, simply installing 10.2 over 10.1 worked—but on a few systems, we had numerous problems, especially with applications that simply would not launch. To be on the safe side, we'd recommend that upgrading users back up their systems and take advantage of OS X 10.2's new installation option, which archives your previous installation and then installs OS X 10.2. (For tips on migrating to OS X 10.2, see "Migrate to Jaguar with a Clean Install.")

Macworld's Buying Advice

OS X 10.2 is no minor OS enhancement; from a feature and performance standpoint, this update to OS X is as significant as OS 9 was to OS 8.

There's nothing wrong with OS X 10.1.5, and users who don't want to pay $129 for OS X 10.2 will be able to function just fine without it. But for most users, there are a lot of important improvements in this upgrade: performance boosts, improved printing, and interface enhancements will be immediate benefits. And over time, OS X 10.2's new technologies (including Quartz Extreme and Rendezvous) will make the update even more valuable—a necessity for users who want to adopt the latest innovations from Apple and other Mac developers.

If you haven't yet switched to OS X, there's never been a better time—OS X 10.2 addresses most of the complaints OS 9 users have about OS X. We recommend that you run it on a Mac with a G4 processor, and you'll want as much RAM as your system can take, but OS X 10.2 is refined *and* powerful—and it's worth the move. □

Editor JASON SNELL runs Mac OS X 10.2. He is quite fond of cats both large and small.

What Else Is in Jaguar

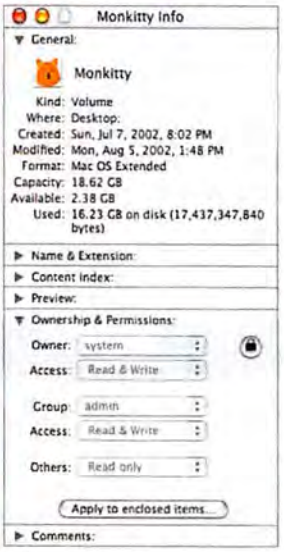
There are many more new features in OS X 10.2. While we can't cover them all here, we did discuss a prerelease version of Jaguar in "Mac OS X Evolves" (August 2002). You can read an updated version of that article at www.macworld.com/2002/08/features/osx.html. In the meantime, here's a quick summary of new and improved features we didn't cover in this article. And because our earlier analysis of OS X 10.2 was based on a developer's beta, several features we reported on did not end up in the shipping version—some of them are listed under the "Changes That Weren't" heading.

Interface Changes

• Minimized items in the Dock have a small "badge" indicating which application they belong to. • The Get Info window features a new one-window interface and allows you to set permissions and ownership of files and folders. • Finder windows swoosh in and out when you open and close them.

New Preferences

• There are new Login Items and My Account preference panes for easier customization of your workspace. • The Universal Access preference makes the Mac compliant with the U.S. government's Section 508 standards for people with special needs. Among the new features are the ability to zoom in and out at will, invert the screen, see a visual cue instead of hear a system beep, and have the Mac read text to you as you move your mouse over the screen. • The Sharing pane lets you turn on services easily, protect yourself with a firewall, and share an Internet connection.



Information, Please The new Get Info window is a big improvement, giving you more information and the ability to modify file permissions with ease.

Networking and Security

• Virtual Private Network connections are available via PPTP. • Simple Finder and application restrictions are suitable for classroom and other restrictive environments.

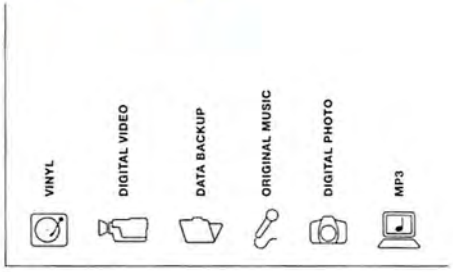
Changes That Weren't

• You still cannot minimize windows in place, as small floating icon buttons, or drag minimized icons out of the Dock. • There is no Digital Hub category in System Preferences; a new CDs & DVDs preference item allows you to choose what your Mac does when you insert blank optical media. Control of other devices has been either omitted or moved into more device-specific applications, such as Image Capture and iTunes.

room to burn

Get organized, and take your files with you wherever you go. Burn all your data, video, photography, MP3s, vinyl, cassettes and whatever else you've got to CD with Toast® 5 Titanium, from Roxio. The best selling CD burning software in the world for the Mac.® You can even create your own personalized jewel cases for each disc. Hit roxio.com to find out how.

Built for Mac OS X.



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BY ADAM C. ENGST

MAC OS X E-MAIL GUIDE

Which Option Is Right for You?

From hard-core managers who sort through hundreds of messages a day to grandparents who get three messages a week from their kids, everyone uses e-mail, albeit in radically different ways. The various ways people use e-mail have given rise to a surprisingly large number of e-mail programs. A dozen, from companies big and small, now run natively in Mac OS X, and all offer varying combinations of ease of use, flexibility, and power.

We looked at Apple's Mail 1.1 (which comes with OS X), Bare Bones Software's $99 Mailsmith 1.5.3, CE Software's $35 QuickMail Pro 3.1, CTM Development's $49 PowerMail 3.1, Cyrusoft International's $36 Mulberry 3.0a3 (still in beta at press time), MAKI Enterprise's $50 Magellan 3.3, Microsoft Entourage X 10.1 (available only with the $499 Office suite), the free Netscape 6.2 (essentially the same program as the open-source Mozilla 1.0), the $30 Nisus Email 1.6.1, Qualcomm's free or $40 Eudora 5.1.1, Sono Software's $25 Musashi 3.4, and Sugiura's $28 SweetMail. (See "12 E-mail Programs Compared" for details.)

We'll help you figure out which of these apps fits the way you work. To see our top contenders go head-to-head, check out "E-mail Grudge Match: Entourage versus Eudora."

TRANSFERRING MAIL

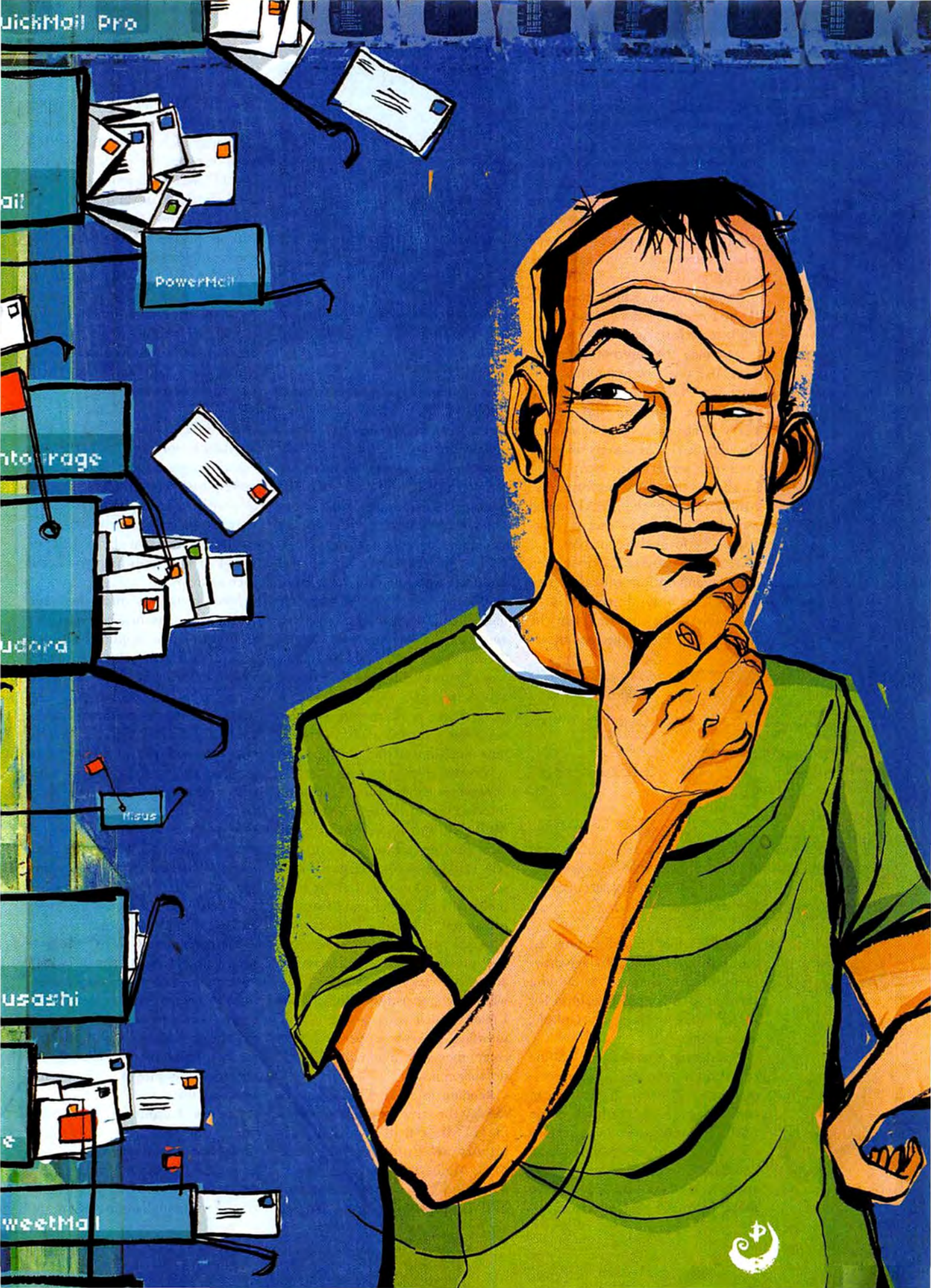
All e-mail programs face two basic tasks: receiving and sending mail. So what's the point of trying an e-mail program that isn't compatible with your Internet service provider (ISP)?

A good e-mail program must handle multiple accounts and support common e-mail standards. Support for receiving mail via IMAP is essential for some people, and for those using POP, support for APOP helps protect passwords sent over wireless networks that aren't secure. (Adrift in acronyms? See "E-mail Lingo" for help.)

The Basics All of these programs handle multiple accounts, receive mail via POP, and send mail with SMTP authentication (required by some ISPs). Only Netscape and Nisus Email lack APOP support.

If you use a modem, think twice before choosing PowerMail, Nisus Email, Musashi, or SweetMail, since

ILLUSTRATION BY PJ LOUGHRAN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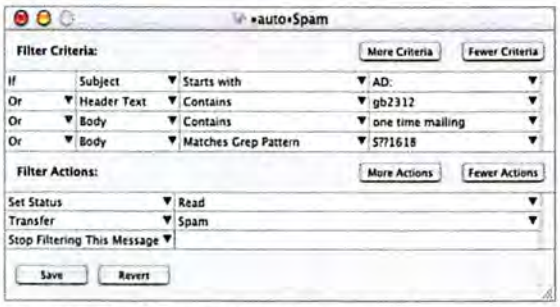
they can't skip messages larger than a certain size. This ability is helpful if you don't want to get stalled every time someone sends you a big attachment. (The next version of PowerMail, due out by the time you read this, should have this ability.) All the programs performed well when retrieving mail, with one exception: if you receive a lot of mail, avoid Nisus Email. It doesn't let you read downloaded messages while it *slowly* retrieves new ones.

IMAPping the Internet Support for IMAP is less common than support for POP, appearing only in Entourage, Eudora, Mail, Mulberry, Netscape, and PowerMail. By default, IMAP keeps all your mail on a server, with a copy kept locally to improve performance. Mulberry took the IMAP speed award; the others—except Netscape—performed acceptably.

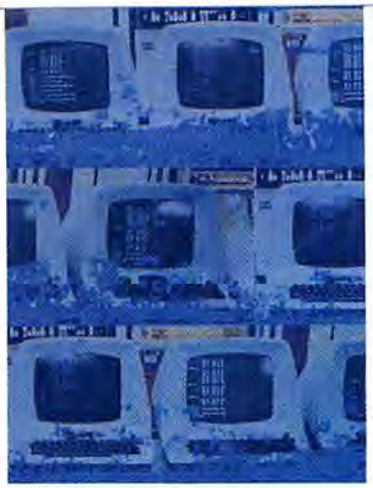
Mulberry offers IMAP-related features and options the other programs can only dream about—although these options can be hard to find in its cluttered inter-



Filter Fanatic Mailsmith's filtering is among the best, thanks to the program's clean interface, extensive selection of filter criteria and actions, and support for grep pattern matching.

face. They include a disconnected mode that automatically synchronizes offline changes when you reconnect to your ISP, helpful for IMAP users working on a plane, for example.

Proprietary Alternatives Some programs let you sign in to proprietary mail systems. Netscape can connect to AOL without using AOL's software, so you can receive your e-mail in your regular mailbox. Likewise, Entourage provides direct access to Hotmail, so you don't have to use Hotmail's Web interface.



READING MAIL

The right e-mail program is one that displays mail, and lets you navigate through it, the way *you* like. Some people can't imagine using an e-mail program that doesn't let them use the keyboard to switch between messages, for example, while someone who prefers the mouse doesn't care about key commands.

Most programs rely on a paned interface, with one pane for a list of mailboxes or folders, another for messages inside the current mailbox, and a third displaying a preview of the message. You should be able to move between messages in only one action, and you shouldn't have to close, delete, or file the current message and then manually open the next one. Beyond that, no approach is necessarily *better* than another.

Window Panes The three-pane interfaces in Entourage, Mailsmith, Mulberry, and PowerMail are the most flexible and fluid. All can display mail in two or three panes or in separate windows, and all provide multiple ways to navigate through messages. Though Eudora and Musashi provide only message-list and preview panes, each was fast and easy to use, as was SweetMail, which eschews panes entirely. Nisus Email, which uses a single-pane interface, makes you open and close each message manually and is notably clumsy.

Reading in Style The ability to display the styled text and graphics in HTML e-mail is increasingly important. Entourage, Eudora, Mail, Mulberry, Netscape, PowerMail, and QuickMail Pro support HTML display; the rest make you open HTML messages in your Web browser.

Thanks to its integration with a Web browser, Netscape offers the best HTML rendering by far, with Mail, PowerMail, and Entourage not far behind. Eudora does fine with simple HTML but has trouble with complex HTML.

Mulberry's HTML support is poor, and it can't display graphics. None of the remaining programs can display graphics either, with the exception of SweetMail and Mailsmith; the latter can display them only in separate windows.

WRITING MAIL

Reading is only half the battle—an e-mail program must provide solid writing tools as well. Have you ever labored over an important message, only to see an embarrassing misspelling just as you click on Send? Good writing tools help you avoid such mishaps.

Most programs offer the basic text-editing options you'd expect to find in a Mac application, such as the ability to select words by double-clicking on them. But your e-mail program is often your primary writing environment. Additional formatting tools, a spelling checker, and the ability to add graphics can save you a lot of time. Also important is how successfully the program sends attached files; this depends on the attachment-encoding formats it supports. And since all messages must go to *someone*, an e-mail program must let you easily address new messages and use its address book.

Sharpening the Quill All the programs except Nisus Email (which anticipates that you'll create messages in a word processor) cover the basics: entering and editing text via the keyboard. Mailsmith and Eudora offer the most keyboard shortcuts for moving around and selecting text.

Eudora, Entourage, Mailsmith, and SweetMail offer additional tools for common e-mail tasks, such as quoting (marking parts of the original message when replying to it) and wrapping (adding or remov-

12 E-mail Programs Compared

COMPANY	PRODUCT	MOUSE RATING	PRICE	CONTACT	IMPORTS FROM	PROS	CONS
Apple	Mail 1.1	●●½	$129 [A]	800/692-7753, www.apple.com	Entourage, Outlook Express, Claris Emailer 2.0v3, Netscape, Eudora	Easy to use; bundled with OS X; inline spelling checker.	Poor searching; lousy integration with OS X Address Book; no control over attachment formats.
Bare Bones Software	Mailsmith 1.5.3	●●●½ [B]	$99	781/687-0700, www.barebones.com	Anything in mbox format, including Eudora, Mail, Entourage or Outlook Express exported mailbox, Netscape	Clean interface; powerful text-editing tools; powerful searching and filtering; Sherlock-style searching; extensive AppleScript support.	Expensive; no HTML support; no IMAP support; no inline spelling checker; no inline graphics.
CE Software	QuickMail Pro 3.1	●●●	$35	800/523-7638, www.cesoft.com	None	Multiple user features with QuickMail Pro Server.	No IMAP support; mediocre filters.
CTM Development	PowerMail 3.1	●●●½	$49	www.ctmdev.com	Outlook Express 4.X, Entourage exported mailbox, Eudora, Netscape Communicator, Unix mailbox, Mail, AppleShare IP, PowerMail	Attractive interface; good attachment-encoding interface; Sherlock-style searching; many import formats.	No traditional searching; no inline spelling checker.
Cyrusoft International	Mulberry 3.0a3	N/A [C]	$36	412/605-0499, www.cyrusoft.com	Anything in mbox format, including Eudora, Mail, Entourage or Outlook Express exported mailbox, Netscape (must be done manually or via a utility program)	Excellent IMAP support; good performance; lots of options.	Cluttered and confusing interface; no inline spelling checker; poor HTML support; can't display graphics.
MAKI Enterprise	Magellan 3.3	●●½	$50	www.makienterprise.com	Eudora, Netscape, Outlook Express, SweetMail, Arena, Musashi (via utility program)	Innovative views for managing mail; multilingual support.	No HTML; no graphics; poorly translated documentation.
Microsoft	Entourage X 10.1	●●●●	$499 [D]	800/426-9400, www.microsoft.com/mac	Entourage 2001, Outlook Express 5, Eudora, Netscape Communicator, Claris Emailer 2.0v3	Full-featured; good interface; good HTML support; good text-handling tools; integrated PIM; inline spelling checker; flexible searching and filtering.	Poor searching and mail-view performance; available only as part of expensive Office suite.
Netscape	Netscape 6.2	●●●	Free	http://wp.netscape.com/computing/download/	Eudora	Free; great HTML rendering; integrated Web browser; instant messaging; Usenet news reader; Web-page authoring; records incoming e-mail addresses automatically.	Poor performance; un-Mac-like interface; no APOP support; many features offer little power; no control over attachment formats; poor searching.
Nisus Software	Nisus Email 1.6.1	●½	$30	800/890-3030, www.nisus.com	None	Easy sending from any word processor.	Awkward interface; no APOP support; poor performance; no text-editing tools; no HTML support; no spelling checker; poor searching; poor filters.
Qualcomm	Eudora 5.1.1	●●●●	Free or $40 [E]	800/238-3672, www.eudora.com	Claris Emailer, Outlook Express	Full-featured; fast searching; inline spelling checker; good text tools; extreme flexibility for power users; unique workgroup file-sharing capability; available in free configurations.	Ugly interface; mediocre filters; poor HTML rendering.
Sono Software	Musashi 3.4	●●½	$25	www.sonosoft.com	Eudora	Built-in support for multiple users.	No HTML; no graphics; no spelling checker; poorly translated documentation; limited searching and filtering.
Sugiura	SweetMail	●●½	$28	www2.ttcn.ne.jp/~sweet/mail/	Eudora, Netscape, Entourage or Outlook Express exported mailbox	Message-size indicators for sending to cell phones; easy to use; can display graphics.	Poor filters; shallow feature set.

[A] Included with Mac OS X; new version should be available by the time you read this. [B] See *Reviews*, August 2002. [C] N/A=not applicable. Only a beta version was available at press time. [D] Available only as part of the Microsoft Office suite, which includes Entourage, Word, Excel, and PowerPoint. [E] There are three versions available: a free "sponsored mode" with advertisements, a free "light mode" with no ads but fewer features, and a $40 "paid mode" with all the features and no ads.

ing return characters at the end of lines). Mailsmith again stood out, thanks to its text engine, inherited from Bare Bones Software's powerful text editor, BBEdit.

All the programs except Nisus Email have (or can work with) spelling checkers, but Entourage, Eudora, and Mail win high marks for their inline spelling checkers, which underline misspelled words as you type instead of displaying misspelled words in a dialog box when you select the spelling-checker command. Entourage and Eudora (with the addition of the free TidBits AutoCorrect Dictionary, available at http://db.tidbits.com/getbits.acgi?tbart=06103) can also correct common mistakes automatically as you type.

Customized Paper Clips To send a file such as a Microsoft Word document as an attachment, your e-mail program must *encode* the file—encoding can be likened to using an envelope to send a newspaper clipping to a friend, rather than scrawling his address on the clipping itself and hoping it arrives.

Widespread support for the AppleDouble encoding format has significantly reduced the severity of problems caused by attachments sent between Macs and PCs, and most e-mail programs now default to AppleDouble. (For details, see "Make Peace with PCs," *Secrets*, September 2002.) However, it's still occasionally useful to switch back to BinHex (Mac) or UUencode (Unix or Windows) when you send attachments to people using older e-mail programs.

Mail, Netscape, and Nisus Email lose points for providing few encoding-format choices (or none at all), whereas Entourage and PowerMail deserve kudos for clear, helpful interfaces, and for allowing you to compress attachments auto-

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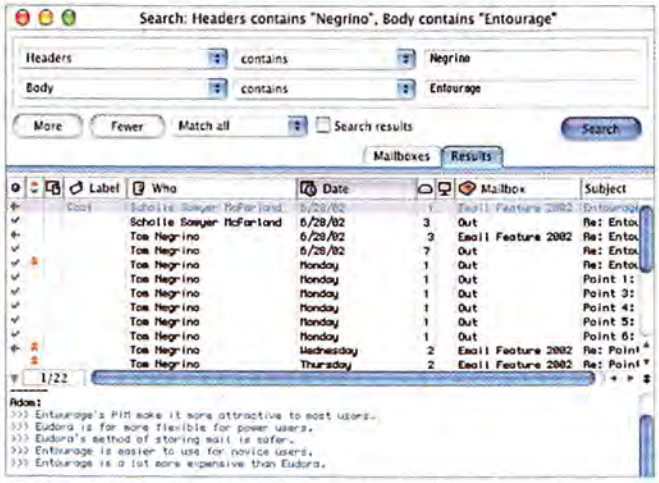
matically before sending them, if you have Aladdin's $30 DropStuff or $80 StuffIt Deluxe (888/245-1723, www.stuffit.com).

Little Black Books As our friends and relatives, not to mention the businesses and government offices we must all deal with, start using e-mail, we acquire more electronic pen pals daily. A good e-mail program makes it easy to collect and use addresses.

Entourage's address book is by far the most complete. It lets you store postal addresses, birthdays, pictures, and more; categorize and search for contacts; and synchronize address-book data (and calendar events, though not e-mail) with Palm OS handhelds. (Pick up the new Palm conduit at www.microsoft.com/mac/download.) But this information can't be shared—QuickMail Pro, when coupled with a QuickMail Pro Server, does offer this feature, helpful to businesses that need employees to use a common address book. To save time, Entourage also automatically completes address-book entries as you type—as do Eudora, Mail, Mailsmith, Netscape, PowerMail, and QuickMail Pro.



Finding That Needle With the best combination of speed and pinpoint accuracy, Eudora's Search window lets you find what you're looking for.

The remaining programs offer simple but effective address books, with the exception of Mulberry and Nisus Email. Mulberry's address book suffers from unnecessary complexity, and Nisus Email's overly simple interface works only with a small number of contacts.

MANAGING MAIL

Stored e-mail can be an important record of your business and personal life. Unless you're concerned about a Justice Department subpoena, it's best to file everything away for later reference. You never know when an e-mail may come in handy.

Filing Boxes When it comes to creating, renaming, and rearranging folders, four programs stand out. Magellan avoids the concept of folders almost entirely. Instead, it uses "views" to organize potentially overlapping sets of messages that match certain criteria (such as having the same sender). It also provides "folders," views to which you can manually add messages. This is a good approach if you often find yourself wanting to file messages in multiple places, since more than one view can include the same message.

Entourage's custom views are essentially saved searches, a feature also offered by Eudora and Mulberry. Unfortunately, Entourage searches too slowly for views to be useful, and although Eudora and Mulberry are faster, their saved-search features are hard to find. Nisus Email's folder handling and interface are feature-poor and difficult to use.

Seek and Hope to Find These programs find messages in different ways. One welcome feature in Entourage, Mail, PowerMail, QuickMail Pro, and SweetMail lets you limit the list of displayed messages by entering a search term in an ever-present search field.

Mulberry offers a similar feature, via a window that provides numerous canned criteria, such as date ranges or messages from the current message's sender. Eudora's approach is faster—option-click on part of a message-list item to select and group similar messages, such as those from the same person or with the same subject line (see "Finding That Needle").

You'll find the best search tools in Eudora. Its fast search tool includes numerous search criteria and a results window that works exactly like a normal mailbox. Entourage and Mailsmith both offer excellent search capabilities, but they could be faster, and they don't let you search in a nonconsecutive set of folders. Bringing up the back of the pack are Mail, Netscape, and Nisus Email, with slow and clumsy search tools.

What if you want to find messages related to a project you did with several people? For more-ambiguous searches, you might want Sherlock-style searching with relevance ranking. PowerMail has long boasted Sherlock-style searching (at the expense of traditional search tools). The most recent version of Mailsmith has this feature as well.

E-MAIL LINGO

APOP A POP command, APOP stands for Authenticated POP. When you use APOP, your password is encrypted so it can't be easily captured, particularly beneficial if you use a wireless network in a public place.

HTML Messages sent as HTML (Hypertext Markup Language) mail can contain different fonts, styles, sizes, and colors, as well as inline graphics, much like Web pages.

IMAP IMAP (Internet Message Access Protocol) is a method of retrieving e-mail; it stores all of your messages on an IMAP server. You read and respond to temporary copies of messages downloaded to your Mac.

POP POP (Post Office Protocol) is a common method of retrieving Internet e-mail. By default, it downloads all your messages from a POP server to your Mac for reading and storage.

SMTP SMTP (Simple Mail Transfer Protocol) is the standard protocol for sending all Internet e-mail, both from your e-mail program to your mail server and between mail servers. Some mail servers require that your e-mail program send your user name and password—SMTP authentication—before you can send e-mail.

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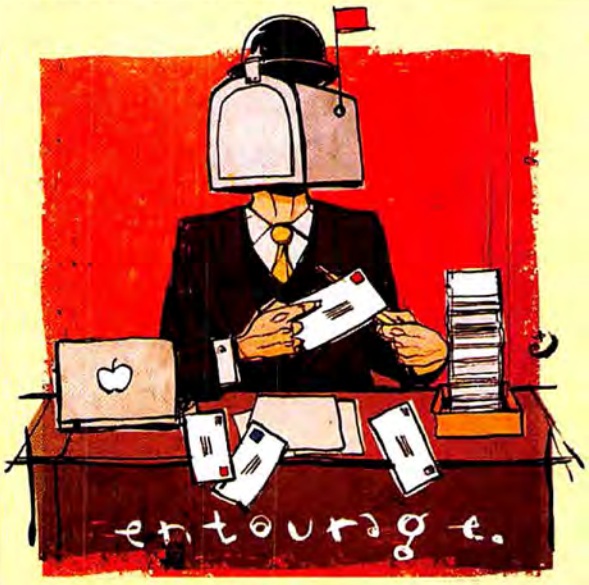


E-MAIL GRUDGE MATCH: ENTOURAGE VERSUS EUDORA

Can't decide between our two top-rated programs, Microsoft Entourage and Qualcomm's Eudora? Each one has strong supporters. Macworld *contributing editors Adam C. Engst, author of* Eudora 4.2 for Windows and Macintosh: Visual QuickStart Guide *(Peachpit Press, 1999), and Tom Negrino, author of* Microsoft Office v. X Inside Out *(Microsoft Press, 2002), debate common perceptions about the popular programs.*

CLAIM #1 ENTOURAGE IS BETTER FOR NOVICES.

Tom: This one's easy. Like any good Macintosh citizen, Entourage doesn't take a lot of effort to learn or use. For example, when I get paper mail, I file it in folders—Entourage does the same with e-mail. And because it's part of Office, Entourage shares keyboard commands and menu items with the other programs in the suite. On the other hand, you have to *learn* how to use Eudora, often by slogging through the manual.

Eudora appears to never have seen the touch of a graphic designer. Look at that button labeled, in minuscule type, Blah Blah Blah. Yeah, I know that it displays the headers of a message, but "Macintosh 101" says that buttons and other interface elements should convey their meaning. All too often, Eudora fails that test.

Adam: Entourage's interface may be prettier, but it wastes valuable screen real estate. The Blah Blah Blah button's purpose may not be obvious until you click on it once, but it's no worse than some of Entourage's buttons. And it's not as though Entourage's approach to viewing headers were good—you can't choose to see them unless you open the message in its own window.

I've set up lots of novices with Eudora, and they don't have trouble with the interface, because Eudora focuses only on e-mail. With Entourage, the novice user can get lost in the additional address book, calendar, task manager, note-taking utility, and Usenet news reader. Talk about needing to slog through the manual. Oh wait! I forgot—Microsoft doesn't provide one!

CLAIM #2 EUDORA IS MORE FLEXIBLE FOR POWER USERS.

Adam: Eudora is the most accommodating e-mail program on the planet for power users or anyone who needs something a little unusual. Need to send e-mail at a future date and time? Need to change the default headers? Want to set Eudora to autosave every two minutes? Eudora can do all that and more.

Casting Nets A filtering feature brings together mail organization and searching. Most filters just transfer specific messages—such as those from a mailing list—into a particular mailbox. A good set of filters can also help you get rid of spam (see "Stop Spam!" *Secrets*, August 2002).

All of the programs we looked at can move mail into specific mailboxes. (The exception is Magellan—since its views stand in for filters as well as folders, it does the same job a different way.) But some go beyond that basic functionality. Entourage and Mailsmith take top honors here, with PowerMail close behind. All three offer a wide range of filtering criteria and actions.

Entourage also offers a Mailing List Manager feature, which helps create filters for mailing lists. It would be nice, however, if it helped you change your address, unsubscribe, and search list archives—as QuickMail Pro does. And Entourage's Junk Mail filter can identify some spam, though it often catches legitimate messages as well. Magellan also offers a spam filter, as will the next version of Mail.

Mailsmith offers an approach called "distributed filtering," which lets individual mailboxes grab the messages they want. Because these filters attach to mailboxes, they can be more efficient and easier to manage. For instance, if you want to keep track of all the e-mail messages you've received about AppleScript—regardless of which mailing list they came from—one distributed filter could collect them all in one place, while another filter made sure the individual messages also ended up in mailboxes specific to each list. Plus, Mailsmith supports advanced grep pattern matching in filters, so it can identify messages via patterns of text (see "Filter Fanatic").

WILD-CARD FEATURES

Although we've focused on commonalities, some of these programs sport distinctive features.

A Large Retinue Entourage is the most unusual of these programs, thanks to its integration with a full-featured calendar and contact database, its ability to read Usenet news, and the fact that you can get it only with Microsoft Office. True to its name, Entourage wants to do everything for you. Netscape is similar: it also provides a browser, a Usenet news reader, a Web-page–authoring component, and instant messaging—and it's free.

The Workhorse Eudora deals well with large volumes of mail and providing the ultimate in access to occasionally necessary settings. Its unusual features include the unique Eudora Sharing Protocol (ESP), which helps groups keep a shared folder of documents synchronized,

Although Eudora lets users change almost every program behavior, it doesn't clutter the interface with obscure options. Instead, it makes them available via custom x-eudora-setting URLs that let knowledgeable users help those in need by sending a URL that the recipient can click on to twiddle a setting. (Send an e-mail to x-eudora-settings@tidbits.com to receive the full list, with descriptions and instructions.)

Tom: Yes, Eudora is an e-mail geek's dream, but it lacks some simpler features. For example, being able to filter mail based on whether the sender is in your address book or in an address group is very useful; you can't do that in Eudora. In fact, Eudora's mail filters are desperately in need of improvement. The problem with Eudora is that much of its power is buried so deep that only the few, the proud, and the darned geeky will ever see it.

CLAIM #3 ENTOURAGE MAKES IT EASIER TO FILTER OUT JUNK MAIL.

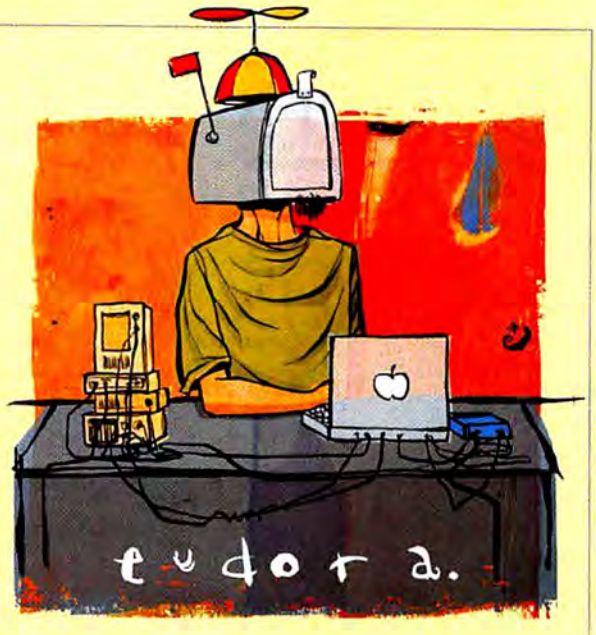
Tom: Junk mail is an annoying problem, and Entourage shines when dealing with it. The built-in, adjustable Junk Mail Filter does a pretty good job of flagging junk messages. It's not perfect, but it's about an 80 percent solution. In addition, Entourage's rules are some of the best in the business; they allow you to filter mail by multiple criteria and perform multiple actions on the messages that meet those criteria.

Adam: The problem with Entourage's Junk Mail Filter is that the user has no way of knowing why some messages have been marked as spam. That wouldn't be a big deal, except Entourage often incorrectly identifies legitimate mail as spam. I prefer creating my own filters. Though Eudora's aren't as flexible as Entourage's, Eudora can show when each filter was last hit and identify which were applied to any given message (press the shift key when choosing Filters from the Window menu). It's a little more work, but the added accuracy is worth it.

CLAIM #4 EUDORA WORKS FASTER WHEN SEARCHING FOR OLD MESSAGES.

Adam: Game over, man. Eudora stores your e-mail in text files, one for each mailbox, instead of in a monolithic database, as Entourage does. But despite this, Eudora blows the doors off Entourage in searching speed. In a quick test, searching the same mailbox took 17 seconds in Entourage and 2 in Eudora. This speed is especially useful if you need to search through all your mail. Plus, Eudora lets you select precisely which mailboxes you want to search.

Tom: It's nice to get what you want fast, but search speed is hardly a critical feature—unless the program is too slow to use or prevents you from working while the search is on. On the rare occasions that I want to search all my mail, I start the search and continue working. When Entourage is done, I click back and get the results. Yes, it's slower, but it's fast enough for most people. Most of the time, though, I skip searching and just use the filter box above the message list. It's not as flexible, but it's quick.



entirely via behind-the-scenes e-mail messages. It also offers e-mail–usage statistics and a configurable toolbar.

Not to be missed is Mood Watch, an optional setting that attempts to identify extreme language—known as *flaming*—in incoming mail and as you type. A warning gives you a chance to chill out before sending a message that may offend. Eudora can also read your e-mail aloud, a feature shared only with Mulberry.

A Little Help from Its Friends

QuickMail Pro works fine with any standard POP server, but if you pair it with a QuickMail Pro Server, you get additional features such as shared address books, shared folders, and server-side filters that filter mail before you download it.

MACWORLD'S BUYING ADVICE

Our top picks are Eudora and Entourage, with Mailsmith and PowerMail close behind. Eudora rules for people who need to manage a lot of mail—nothing else compares to its combination of high-end features and performance. And it's available in three configurations—a free version with ads, a free "light" version, and a $40 full-featured version with no ads—to fit different needs and budgets. For people who spend their days in Microsoft Office and appreciate Microsoft's efforts at integration, Entourage combines an excellent set of features with an attractive interface. It's included with Office, making it a good value if you're already an Office user and an expensive ($499) option if you're not.

That's not to imply that the rest of the field is just chaff. Mailsmith will appeal to gearheads who aren't into Eudora—its text-handling and filtering tools are superb—though at more than twice the cost of Eudora, it's pricey. PowerMail, though it doesn't stand out in any particular way, is the perfect upgrade for the Mail user who needs just a bit more power. IMAP users should look hard at Mulberry, and QuickMail Pro, when paired with a QuickMail Pro Server, offers some compelling features for small offices. The path of least resistance for new users is Apple's free, and basic, Mail. A new version with some welcome features should be out by the time you read this.

Whether you receive a few messages a day or a few hundred, there's an OS X–compatible e-mail program out there that will serve you well. □

Contributing Editor Adam C. Engst is the publisher of TidBits (www.tidbits.com) and author of many books including *iPhoto 1.1 for Mac OS X: Visual QuickStart Guide* (Peachpit Press, 2002).

OS X 10.1 Base Station

Among the new features in Mac OS X 10.2 is the ability to use your Mac, in conjunction with AirPort, to share an Internet connection with several Macs. But you don't have to upgrade to OS X 10.2 to get this great feature—we'll show you how to do it in OS X 10.1 with the $25 shareware utility BrickHouse.

Just as the Software Base Station feature worked in OS 9, a similar feature in OS X 10.2 lets users set up an AirPort-capable computer to replace Apple's $300 Base Station or other wireless router for sharing an Internet connection with other Macs (and PCs)—and also supports local file-sharing and printing (see *Reviews*, July 2002 for a roundup of seven wireless broadband routers). Before OS X 10.2, owners of multiple AirPort-equipped Macs had to either buy a wireless router or leave one computer in OS 9 to do the routing for them.

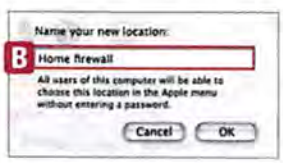
But creating an AirPort Software Base Station is possible in OS X 10.1. In fact, with a little help, you can easily set it up yourself—Apple simply hadn't written a program that brought the pieces together until OS X 10.2. Though you could share your Internet connection by inputting a complex sequence of Unix commands, we'll show you an easier way that won't require even opening the Terminal window. All you need are two or more AirPort-equipped Macs, an Internet connection, and the shareware firewall utility BrickHouse (http://personalpages.tds.net/~brian_hill/brickhouse.html). And since BrickHouse adds a nice graphical user interface to OS X's built-in firewall, you get a nice bonus: easy control of your OS X 10.1 firewall. □

ANTON LINECKER is a writer based in Los Angeles, where he likes to stay connected without wires.

1 Set Up the Network

Among your Network settings is a drop-down menu called Location. You can use it to quickly create different network settings for your home, your office, or when you're on the road—but you can also create separate locations for various networking scenarios in the same geographic location.

Open the Network system preference; then choose New Location from the Location menu A and name the new network configuration. In our example, we named the location "Home firewall" B. Creating a new location preserves your network settings—you don't want to play with IP settings and then find out that you can't access the Internet anymore. If you encounter a problem, you can easily switch back to the previous network settings.

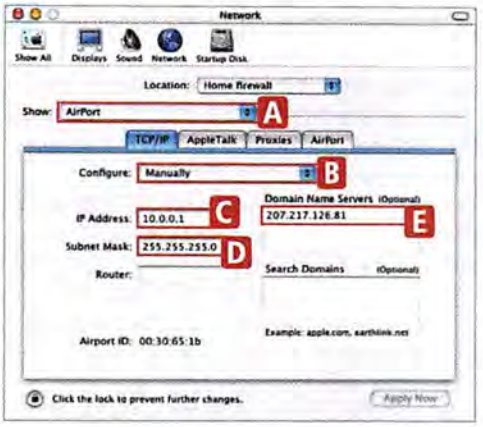


Make sure the ports you need are available by selecting Active Network Ports from the Show drop-down menu C. If you use DSL or cable for Internet access, make sure Built-in Ethernet and AirPort are selected D. If you use a dial-up modem, select Internal Modem and AirPort. Then enter the Internet connection information provided by your ISP.

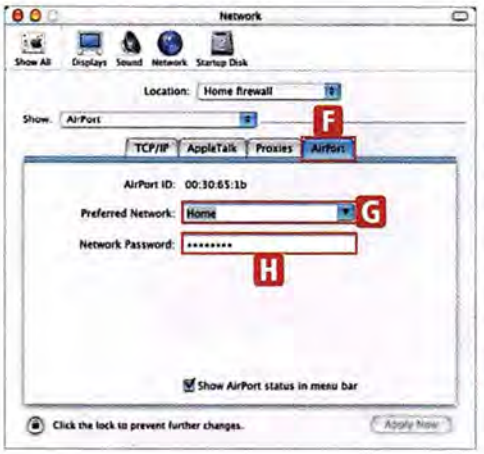
2 Set Up the Base Station

Now that you've set up your base-station computer to access the Internet, it's time to address the needs of the AirPort network. In this method, your Internet connection will be shared across a computer-to-computer network—a slightly different setup from what you'd get using Apple software. Also, your client computer will show a computer-to-computer network icon rather than AirPort signal strength in the menu bar. (If you don't see the AirPort icon in the menu bar, you

can turn it on by selecting the Show AirPort Status In Menu Bar option under the AirPort tab of the Network panel.) In this step, we'll lay the groundwork for this local AirPort network.



Choose AirPort from the Show drop-down menu A. Under the TCP/IP tab, choose Manually from the Configure drop-down menu B. For the IP Address field, pick an IP set that works for local networks. Number sequences that work include 10.0.0.1 and 192.168.1.1. In this example, we chose 10.0.0.1 as the IP address C. This address will become the router address for all other computers on the AirPort network. Set Subnet Mask to 255.255.255.0 D. You can set Domain Name Servers if you have your ISP's DNS address handy E; it's optional on the base-station computer.



Now click on the AirPort tab F next to the Proxies tab and create your preferred AirPort network. Name the network (in this case, "Home") G and type a password H.

3 Create the AirPort Network

In this step, you'll create the AirPort computer-to-computer network. Since this network is terminated when you power off the base-station computer, you need to repeat this step each time you want to start Software Base Station. And with this method, you can also swap files between computers, just as you can in OS X 10.2.

Turn on the AirPort network if it isn't on already. Choose Create Network from the AirPort drop-down menu. Enter the same name and password information you used in the Preferred Network fields (in step 2) A.

4 Set Up BrickHouse

BrickHouse is actually an interface that manipulates OS X's built-in firewall. It also handles the IP sharing necessary to create your Software Base Station—allowing all network users to share a single Internet connection by sharing a valid IP address with the base.

Launch BrickHouse on your base-station computer—the first time you run BrickHouse, a setup assistant will open automatically to guide you through configuration. The assistant will prompt you for your OS X password before you can make changes (you need to be logged in as an administrator).

The first screen lets you configure the Internet settings—set these according to the way you access the Internet. The next two screens deal with firewall settings. Use the default settings for now—you can always make changes later if you need to open up or block certain ports. On the fourth page of the BrickHouse Setup Assistant, click on all three settings: Apply Configuration, Install Startup Script, and Setup IP Sharing.

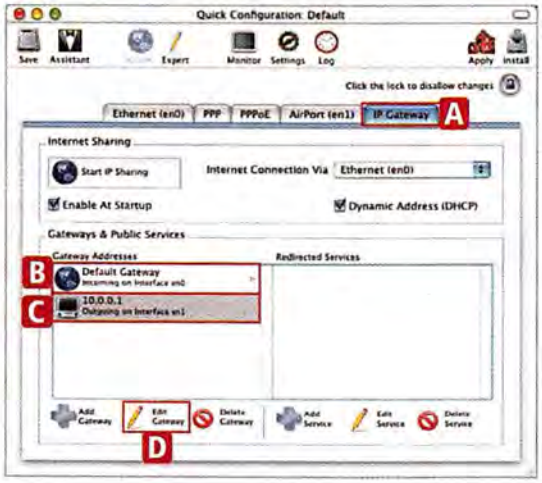
After clicking on Setup IP Sharing, choose AirPort or Second Ethernet Card (en1) for the local network connection A and set the gateway IP address to the one you set in step 2: (in our example, 10.0.0.1 B). Click on Continue C, and in the next screen, click on Done.

On the last page of the setup assistant, choose Enable Gateway At Startup D. This way, your settings will take effect immediately when you start your base-station computer. Click on Done E. (Modem users who frequently jump on and off the Internet may not want to use this option—because a different IP address is assigned by your ISP each time you log on, you're better off starting up IP sharing only when you need it.)

5 Start IP Sharing

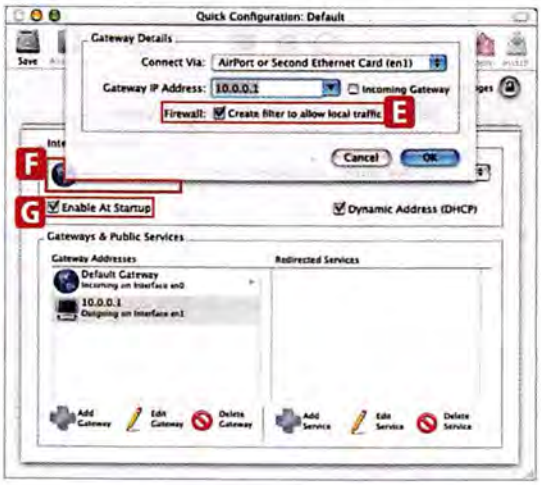
IP sharing is what Software Base Station is all about. All that's left to do is finalize a few settings in BrickHouse; then the base-station computer will be ready.

Select the IP Gateway tab in BrickHouse A. You should see two objects in the Gateway Addresses column: Default Gateway, which defines how you are connecting to the Internet B, and the outgoing gateway (10.0.0.1), which should point to Interface en1 (this stands for AirPort) C. Select the outgoing computer's icon and then select Edit Gateway D.



In the Gateway Details window, select Create Filter To Allow Local Traffic E next to Firewall; then click on OK.

Finally, select Start IP Sharing F. The Enable At Startup option should be selected below it G. The base station is up and running now. (If you're a modem user, you should verify that you're still connected to the Internet.)



6 Set Up the Client Computer(s)

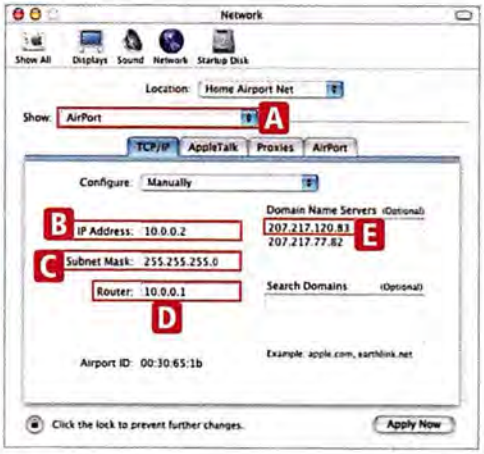
Now you need to configure your client(s). Since the IP sharing is coming through a computer-to-computer network, you should set up your receiving Macs accordingly, with both TCP/IP and AirPort settings for each client.

Open the client computer's Network preferences. As in step 1, create a new location and name it descriptively (here, "Home Airport Net"). You don't need to make Ethernet or the modem active in this configuration.

Choose AirPort from the Show drop-down menu A. Under the TCP/IP tab, set the Configure menu to Manually. If your base-station computer has an address of 10.0.0.1, then your satellite can have an IP address of 10.0.0.*X*, where *X* is a number from 2 to 254. We chose 10.0.0.2 in the example B. If you had a third computer on the network, it would be 10.0.0.3. Set Subnet Mask to 255.255.255.0 C.

The router is your base-station computer, so the Router number should match that system's IP address, 10.0.0.1 D. Enter the DNS address in the Domain Name Servers field E. (If you don't know the DNS address, you can find it by using the Network Utility app found in your Utilities folder on your base-station computer.)

Now choose the AirPort tab. Type the name and password for your preferred network. Click on Apply Now and make sure the AirPort software is on, and you're done.



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Macworld
THE MAC PRODUCT EXPERTS

Fine Type in InDesign

If Adobe InDesign unseats rival QuarkXPress in the page-layout arena, the most crushing blow will be InDesign's type features. From its composition engine to its support for OpenType, InDesign can do things with type that no other page-layout application can. These tips for setting type beautifully in InDesign 2.0 will help you take advantage of InDesign's features.

The Composition Engine

One of InDesign's great strengths is its composition engine, which optimizes the position of text on each line after considering an entire paragraph's word spacing, letterspacing, glyph scaling, and hyphenation characteristics.

Of course, you don't have to accept InDesign's default composition if you don't like how it sets type or if you need to copyfit text within specific parameters. To control the appearance of type, select the H&J Violations option in the Composition Preferences dialog box (Edit: Preferences: Composition in OS 9, and InDesign: Preferences: Composition in OS X). This instructs InDesign to highlight poorly spaced lines. The more severe the problem, the brighter the shade of yellow highlighting (see "Cautionary Yellow").

ILLUSTRATION BY MARK DANIELSON

You can begin to optimize type composition by moving the hyphenation slider, which is located in the Hyphenation dialog box (choose Hyphenation from the Paragraph palette's pop-up menu). You drag this slider back and forth to choose either better spacing or fewer hyphens (on ragged or justified text). Keep an eye on the Preview box to see the results of your selections.

Like the composition engine, the hyphenation slider works at the paragraph level; to apply a setting consistently throughout a document, you can save it as part of a paragraph style. Use the slider in conjunction with discretionary hyphens and nonbreaking spaces, as well as kerning and tracking adjustments, to make those yellow flags disappear.

Optical Margin Alignment

InDesign's optical margin alignment is an improvement on a feature that some other page-layout applications call *hanging punctuation*. Optical margin alignment studies characters at the beginning and end of all lines in a column and subtly adjusts the characters' positions. It might extend the edges of a serif character or a punctuation mark, such as an em dash, beyond the margin; it might move some characters further inside the column. The result is a more visually balanced column edge.

You can turn on optical margin alignment in the Story palette (Type: Story). For the best results, specify the point size of your body text in the Story palette's Base Size field; the alignment algorithm uses this value to determine where to place characters and punctuation.

Optical margin alignment has one drawback: it applies to an entire story. If you want the effect on only selected paragraphs, such as pull quotes, turn off optical alignment and then apply left and right indents to every paragraph you *don't* want to appear optically aligned. The paragraphs you haven't indented, such as the pull quotes, will appear to hang outside the margin.

Using Styles

InDesign offers two types of styles: paragraph and character. Both streamline the tedious task of formatting text, but figuring out how to use them synergistically can be a real challenge. For example, you can specify the parameters of drop caps as part of a paragraph style, but they must be in the same typeface as the rest of the paragraph's text. To style your drop caps in a different typeface, you need to create a character style for them.

Open the Paragraph Styles palette and choose New Style from the pop-up menu. In the New Paragraph Style dialog box, enter all the information for the style, including the typeface. Then click on the Drop Caps And Composer panel. Specify the num-

ber of lines you want the drop cap to fill and the number of characters it will contain. When you're finished, click on OK.

Apply the style to an appropriate paragraph; then select the drop cap and create a character style for it by clicking on the Character Styles palette and selecting New Style from the pop-up menu. In the Basic and Advanced Character Formats panels, specify a different typeface and enter the other parameters—style, kerning, tracking, and so on. When you're done, click on OK. From here on out, apply the paragraph style first, and then select and apply the character style to the drop cap.

Avoiding Format Conflicts

When you start tinkering with type formatting and styles, be they character or paragraph styles, or even when you simply apply local formatting to previously styled text, things can get messy. Say, for example, you apply a paragraph style to some text and then locally change one of its words to an italic font. If you then change the paragraph style, you may run into trouble: for example, you might change to a typeface that doesn't have an italic style. InDesign flags missing fonts by highlighting the text in pink.

One way to avoid conflicting formatting, unwanted surprises, and the dreaded pink text box is to make sure to apply "clean" paragraph styles—that is, erase local formatting and character styles when you apply a paragraph style by pressing the option key when you click on the style name; similarly, press the option key when you click on No Paragraph Style to visually remove an applied style from selected text. (If you don't press the option key, you simply break the link between the text and the style; you don't remove the formatting.) Then use character styles to consistently and easily control local formatting of selected text.

Wrapping Text around Objects

InDesign provides a number of ways to wrap text around objects. One of the more common is to wrap around an imported object's clipping path by choosing Wrap Around Object Shape in the Text Wrap palette. But when you use inline frames to wrap text around a graphic—so that the graphic will be anchored to a particular paragraph and will travel with it—the Text Wrap palette options aren't available. The way to wrap text around an inline frame or graphic is to tell InDesign to treat the inline graphic as a drop cap.

Position the cursor at the beginning of the paragraph where you want to place the inline graphic, and choose File: Place. InDesign will position the graphic so that the text follows it, leaving an ugly white gap to the graphic's right. To wrap the text, go to the Paragraph palette and specify enough lines in the Drop Cap field to accommodate the graphic; make sure that the drop cap contains only one character. Use the Direct Selection tool to finesse the inline graphic's vertical position, and then select the graphic with the Text tool and adjust its tracking in the Character palette to offset the wrapped text slightly from the inline frame.

"Gerda kissed his cheeks, and they grew quite blooming; she kissed his eyes, and they shone like her own; she kissed his hands and feet, and he was again well and merry. The Snow Queen might come back as soon as she liked; there stood his discharge written in resplendent masses of ice."
—from *The Snow Queen*, by Hans Christian Andersen

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Cautionary Yellow
InDesign alerts you to poorly spaced text by highlighting it in yellow. The text on the left uses the single-line composer and no optical margin alignment. The text on the right, with optical margin alignment, has better spacing.

Selecting Special Characters

Regardless of a font's format, you can select commonly used special characters, such as bullets and em spaces, from the Type: Insert Special Character submenu, saving you the trouble of using Key Caps. But InDesign's unique Glyphs palette is an even better tool for sorting through and selecting from the vast array of special characters available in some OpenType fonts—including typographically correct fractions, old-style figures, ligatures, ornaments, and swash characters.

Open the Glyphs palette (Type: Insert Glyphs). By default, this palette provides a scrolling display of all alternative characters for that typeface. To narrow the options, select a category such as Case-Sensitive Forms from the Show pop-up menu, or highlight a particular character in your text and choose Alternates For Selection. To see alternate glyphs for another typeface, choose it from the pop-up list at the bottom of the palette. Double-click on a glyph to place it in your story at the cursor's position.

Hold the mouse over any special character for a moment, and InDesign displays its Unicode value. When you're exporting tagged pages, it can be helpful to know the Unicode values of extended characters you use frequently.

Flexibility Is the Key

We've seen only the tip of the iceberg in this feature, but InDesign's many type features add up to one thing: beautiful text. Part of the reason for this is the program's flexibility. If the paragraph composer doesn't provide the results you need, use the single-line composer instead. Don't like optical margin alignment? Turn it off. At every step in the process, accurate on-screen previews will aid you in your decisions—and you can adjust even these in Preferences. □

ANITA DENNIS is the author of *Real World PDF with Adobe Acrobat 5.0* (Adobe/Peachpit Press, 2002) and is a regular contributor to Creativepro.com (www.creativepro.com).

Inside File Extensions

What's in a name? For years, we've taken file names for granted. Double-click on a file, and the correct application typically opens—no matter the file's name. It's a different story in Mac OS X. The application that opens when you double-click can depend on a document's extension—the suffix added to the file name. The wrong extension can make your document behave in strange and unexpected ways.

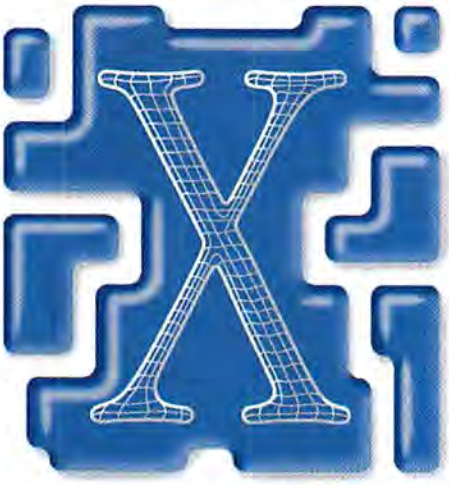


ILLUSTRATION BY CHRISTOPH NIEMANN

Extension Hide-and-Seek

The first trick to understanding OS X's extensions is *finding* them. OS X's simple word processor, TextEdit, is a model for how Apple would like all applications to handle extensions. When you save a new document in TextEdit, the program adds an extension to the file's name. But the extension may not be visible. For example, if you name a file "sample" and then check out the document's icon in the Finder, it will probably just say "sample," with no extension in sight.

But take a closer look. Click on the icon and press ⌘-I to open its Info window. From the pop-up menu, select Name & Extension. The text box that appears reveals the file's true name: sample.rtf (see "Invisible Extensions"). RTF is an abbreviation for *rich text format*, the default document type for TextEdit. The extension isn't displayed in the Finder because the Info window's Hide Extension option is enabled. Deselect the option, and the extension appears.

Why does Apple play this game of hide-and-seek? First, the company figured that most longtime Mac users would prefer not to see file extensions. Second, it's harder to unintentionally modify a hidden extension, and doing that can cause trouble, as we'll discuss.

But sometimes it's useful to know what a file's extension is. Together with a file's icon, it can help identify what type of file you have (a JPEG versus a TIFF graphic, for example). Seeing the extension is also helpful when you want to change it.

You don't have to go to the Info window every time you want to make an extension visible. There are a couple of ways to do so when you save a file: Click on the disclosure triangle in the Save dialog box; in many applications, this reveals a Hide Extension check box. You can also type the extension yourself when you name the file. OS X turns off the Hide Extension option when you do this.

If you prefer to always have extensions visible (perhaps because you'll be editing file names and want to be certain what the true names are), go to the Finder's Preferences window and enable the Always Show File Extensions option.

Changing a Document's Extension

Why would you want to change a document's extension? If you do, you can make the document open in a different application—that is, as long as the file doesn't have a creator code (see "Where'd the Type and Creator Go?").

For example, suppose you have a plain text (*.txt*) document that contains HTML code, and you want it to launch in Internet Explorer. Unless the file's extension is *.html* (or something similar, such as *.shtml*), the file won't open in Explorer after a double-click. To remedy this, you could simply change the file's extension to *.html;* doing so changes the file's icon as well as its name.

But beware: changing an extension may prevent a file from opening at all. For example, if you change *sample.rtf* to *sample.cwk*, AppleWorks will launch when you double-click on that file. Since the file isn't really an AppleWorks document, the program will claim the file is damaged and refuse to open it. Similarly, changing the extension of a TIFF file

If you're boggled by an extension name, go to www.webopedia.com/quick_ref/fileextensionsfull.asp for a comprehensive list of extensions, from *.au* to *.zip*, and the applications they're associated with.

(*.tif*) to *.jpg* does not really change the file itself into a JPEG graphic.

In some cases, the operating system or application software will prevent you from making bad extension changes. For example, in TextEdit's Save dialog box, if you try to replace the *.rtf* extension with an extension TextEdit doesn't use, such as *.cwk* (AppleWorks' extension), TextEdit won't allow it. Instead, it forces you to keep just *.rtf* or to add the second extension before *.rtf* (for example, *sample.cwk.rtf*), which makes the *.cwk* part meaningless.

But where TextEdit prohibits these changes, the Finder lets you do what you want. You should make extension changes in the Name & Extension pane of the file's Info window. Doing so in a Finder window may only hide the extension from view. (Here's one TextEdit shortcut: Select Make Plain Text from the Format menu to convert a rich text file to a plain text [*.txt*] file. TextEdit changes the extension for you.)

When Things Get Tricky If you paste a graphic into a TextEdit document, TextEdit will change the document's extension to *.rtfd* when you save the file. Avoid the temptation to change the extension name back to what it was before.

An RTFD file is not a file at all. It's an OS X *package* (also referred to as a "bundle"). Packages behave like files but are really folders in disguise. To view the contents of any package, control-click on its icon to access a contextual menu and then select Show Package Contents. Use this command to peek inside an RTFD file, and you'll see an RTF document (which contains the file's text) and an additional file for each pasted graphic.

If you change the extension of an RTFD file to anything other than *.rtfd*, the item will reveal its true colors and appear as an ordinary folder in the Finder—it also won't open correctly.

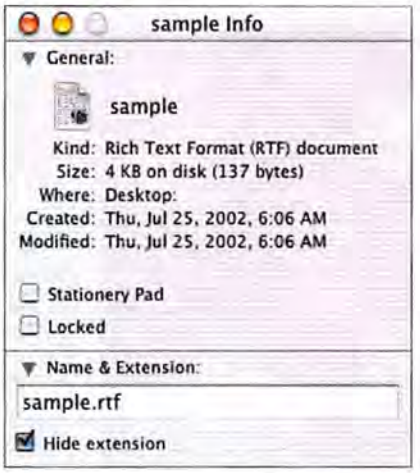
Many OS X applications are also packages, identified as such via the *.app* file-name extension. However, OS X does not reveal this *.app* extension in Finder windows, even if you've enabled the Always Show File Extensions option in the Finder's preferences. But that doesn't mean you have to stay in the dark. You can see the full name via the file's Info window Name & Extension listing. To see this in action, check out any of the applications installed by OS X in the Applications folder.

New Openings

What if, despite all these extension manipulations, your document doesn't open in the desired application? OS X provides a backup plan. Go to the file's Show Info window and select Open With Application from the pop-up menu.

Once you do so, you'll see the icon of the default application that launches when you double-click on the document. To select a different default, click and hold the triangle in the corner of the icon. Make your application selection from the list that appears. (Select Other if the application you want isn't listed.)

After you select a new application, the Change All option at the bottom of the window is enabled. If you click on it, the selected application becomes the new default—that is, all documents of the same type as the current document will now open with the new application. Do this to avoid making repeated trips to the Show Info window. For example, if you'd prefer PDF documents open in Acrobat Reader instead of Preview, make the change here. Do the same if you'd rather your GIF files open in Macromedia FreeHand instead of Adobe Photoshop. None of these changes affect your ability to open a document from an application's Open command—or to open a document by dragging it onto the application's Finder icon. The changes affect only what happens when you double-click on a document.



Invisible Extensions If a document's extension (in this case, *.rtf*) isn't visible in the Finder, find it by looking in the Info window.

Taking Control

It's true that how files behave when you double-click on them can be more confusing in OS X than in OS 9. But with some knowledge of how extensions work, you can have control of the way OS X makes these decisions, rather than the other way around. □

Contributing Editor TED LANDAU explores file-name extensions and numerous other mysteries of OS X in his new book *Mac OS X Disaster Relief* (Peachpit Press, 2002). Check out his Web site at www.macfixit.com.

WHERE'D THE TYPE AND CREATOR GO?

Mac OS 9 links documents and applications by using Type and Creator, a pair of four character codes embedded in each file. The Type code identifies, for example, whether a graphic is in JPEG or GIF format. The Creator indicates the default application (say, Adobe Photoshop or Macromedia Fireworks) your Mac will use to open the document.

Believe it or not, Mac OS X uses these codes too. In fact, if a file-name extension and a Creator code *both* are present, OS X gives the Creator code priority. That's why most documents created in OS 9, as well as many documents created by OS X applications that observe the Type and Creator standard, are immune to changes in the file-name extension.

This means that if a file isn't responding to your extension change, it may include a stubborn Creator code. You can remove it by using a utility such as Rainer Brockerhoff's XRay ($10; www.brockerhoff.net/xray/) or Gideon Softworks' FileXaminer ($10; www.gideonsoftworks.com). Conversely, you can use these utilities to add Creator codes to documents that have none.

You may be asking yourself: "Why did Apple switch to these file-name extensions? Type and Creator codes work just fine!" Apple says the change was important to facilitate transferring files to PCs (which use extensions but can't use Type and Creator codes). (See "Make Peace with PCs," *Secrets*, September 2002, for details.) Whether or not you agree with Apple's rationale, file-name extensions are here to stay. It pays to learn how they work.

Parts Is Parts

Like a London broil hauled before a passel of peckish pumas, Mac OS X has recently received the lion's share of Mac users' attention. But one must occasionally put aside permissions and preemptive multitasking, to ponder parts and ports. This month's *Mac 911* looks at hardware—from salvaging an old Mac's components, to adding a second internal media drive, to finding a cost-effective alternative to expensive ink-jet cartridges.

Salvage Job

I have an older Power Mac that I recently replaced with a Power Mac G4. What parts can I move from the old Mac to the new one?

Paul French, *Macworld.com forums*

ILLUSTRATION BY LEO ESPINOSA

Unless your "old" Power Mac is of fairly recent vintage, moving RAM from old Mac to new isn't an option. Power Mac models beginning with the Power Mac G4 (Digital Audio) use PC133 RAM (RAM designed for a 133MHz system bus) and won't function properly with the PC100 RAM found in earlier Power Mac models, starting with the original G3 (though you can use PC133 RAM in Macs designed to use PC100 RAM).

If the old Mac has an IDE drive, you can move that drive to one of the free drive slots in your Power Mac. (Just be sure to change the drive's jumper settings from master to slave if the old drive will serve as a second drive rather than a replacement for the new Mac's original drive.) If you've already filled your Mac's IDE bus (which accommodates two IDE devices), you can place that IDE drive in a FireWire enclosure and use it as an external FireWire drive.

If you've added any PCI adapter cards to your old Mac—a SCSI adapter card or a PCI audio card, for example—you may be able to move them to your new Mac. Before doing so, however, check their OS X compatibility. A number of SCSI cards require updated drivers to perform reliably in OS X. (If the SCSI card does work, you can also salvage SCSI drives from your old Mac.) Other PCI cards, such as Creative Labs' SoundBlaster Live for Macintosh, may never work with OS X.

And don't forget external peripherals such as your monitor and your old ADB keyboard and mouse, which will work with your new Mac—with the help of Griffin Technology's (615/399-7000, www.griffintechnology.com) $39 iMate USB-to-ADB adapter. Current Power Mac G4s support two monitors—one using Apple's ADC and the other bearing a standard VGA connection.

Massive Modification

I have the SuperDrive in the upper bay of my Power Mac G4 and would like to install a faster CD-RW drive in the bay normally reserved for Zip drives. Is this possible?

Frank Jewell, *Macworld.com forums*

Before I explain what's involved in such an undertaking, may I direct your attention to the FireWire ports on the back of your Mac? One of these ports, when used in conjunction with an external CD-RW drive, will provide you with all the disc-burning goodness you desire. A fast FireWire CD-RW drive costs around $200 and offers the advantages of convenience and compatibility.

I invoke these particular qualities for good reason. To place a 5.25-inch drive in the spot reserved for a 3.25-inch Zip drive, you must take hacksaw in hand and severely modify your Mac's case—a process that will certainly void your warranty and, if you're not careful, destroy the look (if not the functionality) of your Mac.

Then there's the compatibility issue. Don't expect just any old IDE CD-RW drive to work with your Mac. Not all drives are compatible. If you persist in your plans to place such a drive inside your computer, make sure it works *before* you start hacking away at the Mac's case. You can do this by opening

the Mac's case (with the power off, please), detaching the power and data cables from the media drive currently in your Mac, attaching them to the new drive (which you've placed on the floor next to the Mac), firing up your systems, and seeing if you can read and write to media inserted in the drive.

If you still want to try this project, learn more from Quinn MacDonald, who's performed this kind of surgery on a Power Mac G4 (Quicksilver). You'll find the mighty Quinn's instructions at www.quinnmacdonald.com/pages/g4_mod.html.

Alternative Audio Jack

The headphone jack on my iMac has died. I hate to take my system into the shop for such a little thing. Is there some other way I can continue to use headphones with my computer?

Dan Burnett, *Rochester, New York*

With the help of a USB audio adapter such as Griffin Technology's $35 iMic, you can get sound into *and* out of your iMac. The iMic has an input jack you can switch between line level and mike level, as well as an output jack you can use with headphones or a set of powered computer speakers.

To use the iMic with OS X, plug it into a free USB port on your iMac or a powered USB hub (rather than the USB port on the keyboard), open the Sound system preference, click on the Output tab, and select the iMic USB from the list of available audio-output devices. In OS 9, open the Sound control panel, click on the Output tab, and select USB Audio from the list of available devices.

Battery Swap

How do you replace the internal battery of a slot-loading iMac DV?

"iMac Daddy," *Macworld.com forums*

If you flip your iMac onto its face (on a soft surface and with the power off), remove the door that covers the RAM and AirPort slots, and tilt the iMac up, you'll spy the battery on the upper left area of the motherboard. Regrettably, you can't get at it (nor should you try to with implements such as long pliers or chopsticks). To remove the battery, you must first take off the iMac's bottom plastic case and internal metal shield. Thankfully, performing these chores is not difficult.

First, unplug all cables except the power cord. Open the door that covers the slots and remove the AirPort card (if it's present). Then pry off the plastic cover, located just above the RAM slot, that covers the VGA port; touch the metal shield beneath this cover to discharge any static electricity you might be harboring. Unplug the power cord.

Remove the two Phillips screws on the side of the VGA port (those farthest away from the port—they hold the plastic cover in place) and the two screws next to the iMac's kickstand. Starting at the top, pull the cover off. You'll hear a snap when the cover finally comes loose from the bottom of the iMac—this is normal.

Six screws secure the inner shield—two at the top, two at the bottom close to either side of the iMac, and two at the bottom of the shield. Remove these screws and pull the shield away.

With the shield gone, the 3.6V LiIon battery is exposed. Remove the battery and take it to a well-stocked electronics or camera shop for replacement. For more details on how to crack open an iMac, see "Upgrade an iMac" (www.macworld.com/2001/10/howto/imac.html).

A Sound Solution
The Griffin Technology iMic features audio input and output for USB-equipped Macs.

Unending Ink

I love my old Epson Stylus Photo 1200 printer (even though Epson has failed to create OS X drivers for it), but my local retailer doesn't carry the ink cartridges for it. Is there an alternative to purchasing these cartridges from Epson?

Kevin Cook, *Cincinnati, Ohio*

You, my friend (and, I suspect, many other ink-jet–printer owners), may be a prime candidate for a Continuous Inking System (CIS). This apparatus places dummy ink cartridges inside a printer and then feeds them, via a series of tubes, from ink-filled bottles stationed at the side of the printer. The printer believes it's carrying a regulation ink cartridge and goes about its job.

Advantages? Price, mainly—the initial investment of $120 to $200 for the equipment and ink may seem steep, but consider that Epson charges around $50 for the two ink cartridges (one with colored inks and one with black ink) for your printer. The 4-ounce bottles of ink that come with many of these systems are equivalent to 12 ink cartridges.

Disadvantages? I'd paint too rosy a picture if I suggested that installing and maintaining a CIS >>

TIP OF THE MONTH

In the June 2002 *Mac 911* column, you discussed ways to kill pop-up windows. I have another solution: Fight JavaScript with JavaScript!

In Internet Explorer, I created a new favorite in my Toolbar Favorites folder, named it Disable Respawns, and entered this JavaScript in the address field:

javascript:void(window.onunload=null);for(i=0;i<frames.length;i++)void(frames[i].onunload=null)

When I come across a site that creates a new pop-up window after I try to close one, I click on this favorite, which puts an end to any subsequent pop-up or pop-under windows generated by another pop-up.

Richard Samul, *Macworld.com Forums*

UNSOLICITED ADVICE

Every so often, a reader asks me about multisession CD-R discs—CDs you can write to several times (but not erase).

To begin with, Apple Disc Burner can't create multisession discs. Rather, it produces discs formatted in the hybrid HFS+/ISO 9660 format that both Macs and PCs can read, in the ISO 9660 format (used for writing MP3 files to disc), and in the Red Book audio-CD format. Disc Burner can write to these discs once and once only.

With the help of James Sentman's $17 CD Session Burner (www.sentman.com/burner), a Mac running OS X 10.1.4 or later, and a Disc Burner–compatible CD burner, you can create multisession CDs in HFS+ format. Each session will appear as a separate volume on your Mac's desktop. PCs can't read discs produced by CD Session Burner.

Roxio's $90 Toast Titanium (408/367-3100, www.roxio.com) can create a variety of multisession discs, including those in HFS+, HFS+/ISO 9660, and ISO 9660. On a Mac, sessions on discs formatted as HFS+ or HFS+/ISO 9660 appear as separate volumes. A multisession disc formatted as ISO 9660 appears as a single volume containing folders that represent each session. Both HFS+/ISO 9660 and ISO 9660 multisession discs appear as a single volume on a PC.

is as simple as flinging a new ink cartridge into your printer. The setup time isn't terrible—the companies that sell these systems say they take around 30 minutes to install. However, the troubleshooting and maintenance material posted on the Web indicates that maintaining them can be a bother. It's no small matter to put things right should you accidentally introduce air into one of these systems—something that can happen if an inkwell runs dry or if you leave your printer idle for too many days.

Companies selling CISs include MIS Associates (800/445-8296, www.inksupply.com) and Worldwide Imaging Supplies (800/559-3465, www.weink.com). These outfits offer CIS equipment for a variety of printers, including those whose ink cartridges make it more difficult to use nonstandard printer cartridges.

Tray Tricks

When I start up my Power Mac G4, the CD tray opens automatically. Why is this?

Mike Nettleton, *Portland, Oregon*

Be assured that this action is in no way an editorial comment: your Mac isn't sticking out its tongue at you. Rather, any number of things may be compelling it to eject its drawer. Among those causes are firmware that needs updating, a jammed eject button on the media drive, third-party keyboards, and a misbehaving USB device.

To fix the firmware, launch Apple's Software Update and seek a firmware update for your Mac. If one's available, install it.

To discover whether your eject button is awry, peel back the bezel that covers the media drive and check the button on the face of the drive. If it appears to be stuck in the pushed-in position, jiggle it in an attempt to make it pop out. Should you find tape covering this button, remove the tape.

To find out whether the keyboard is the culprit, switch off the Mac, unplug the keyboard, and restart your Mac. If the tray stays in place, you might consider using your Mac's original keyboard or finding a different keyboard that doesn't cause this problem. (Apple keyboards with faulty eject buttons can also cause this problem.)

If none of the above works, unplug any USB devices attached to your Mac (except for the keyboard and mouse) and restart. If the drawer stays in place, plug in one USB device and restart. Continue this plug-and-restart business for each USB device attached to your Mac. If the problem recurs, remove all USB devices except the one you plugged in last, and restart. If the tray again shoots out, check the Web for updated drivers for the problem USB device.

Additional AirPort Access

I have a PowerBook G3 (Wall Street) that I'd like to use with AirPort. I've heard there are third-party PC cards that let you join a wireless network. Do they really work?

Paul Suszynski, *Savannah, Georgia*

In OS 9, yes. In OS X, for the most part, yes.

For the past couple of years, I've used an Orinoco PC Card Silver (now sold by Agere, 866/674-6626, www.orinocowireless.com) with my Wall Street PowerBook in OS 9, and it works beautifully. The AirPort software recognizes it just as if it were a bona fide AirPort card. Just shove the card into the PowerBook's PC card slot, open the AppleTalk and TCP/IP control panels, select AirPort PC Card as your connection method, and join an AirPort network as you normally would.

Although Agere hasn't released OS X drivers for the Orinoco cards, there's an open-source driver at http://wirelessdriver.sourceforge.net. But it's not perfect. After upgrading my PowerBook to OS X 10.1.5, I've found it difficult to use the Orinoco card to log on to my AirPort network if WEP encryption is enabled. Users visiting SourceForge.net's forums indicate that this isn't an isolated problem. My hope is that by the time you read this, the driver will be updated to work better with the most recent version of OS X. This driver also works with PC wireless cards from Proxim (which has purchased Farallon and its SkyLine cards) and D-Link. □

Contributing Editor CHRISTOPHER BREEN does his part to enlighten current and potential iPod owners in *Secrets of the iPod* (Peachpit Press, 2002).

Share tips and discuss Mac problems with other Mac users in the Mac 911 forum (www.macworld.com/subject/mac911). Also send tips by e-mail to mac911@macworld.com. We pay $50 for tips selected for publication in *Macworld*. All published submissions become the sole property of *Macworld*. Shareware and freeware mentioned in *Mac 911* are available at www.versiontracker.com.

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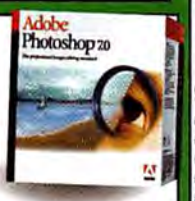

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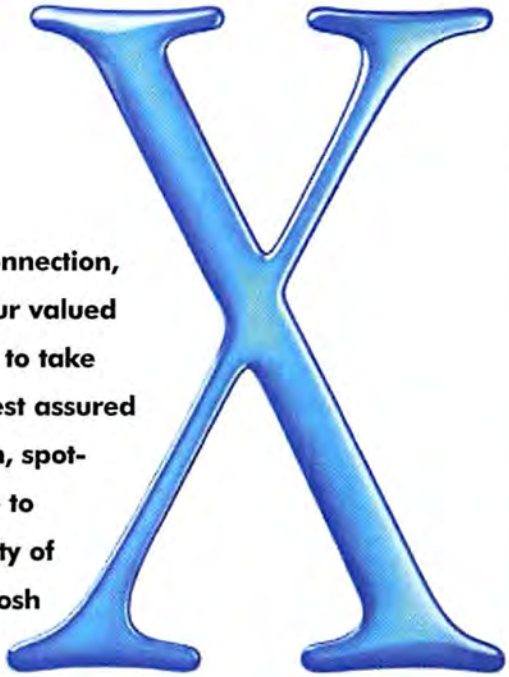

Macworld magazine, in conjunction with the Apple Developer Connection, built this very special Mac OS X Showcase section to keep you, our valued reader, apprised of the hottest products built especially to take advantage of Apple's new operating system. You can rest assured that this new section will grow with each passing month, spotlighting the coolest new products for Mac OS X. Be sure to check the Mac OS X Showcase monthly for a wide variety of new and innovative solutions that will make your Macintosh and Mac OS X experience as enjoyable as possible.

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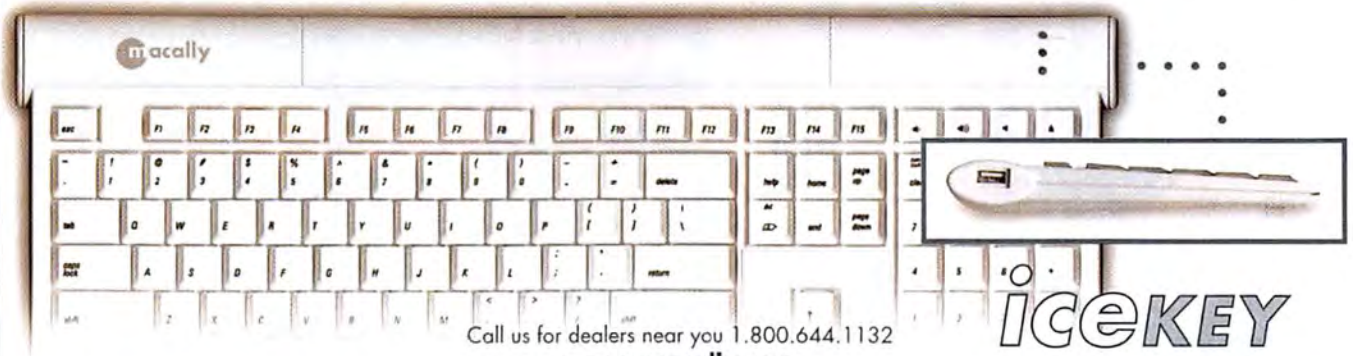

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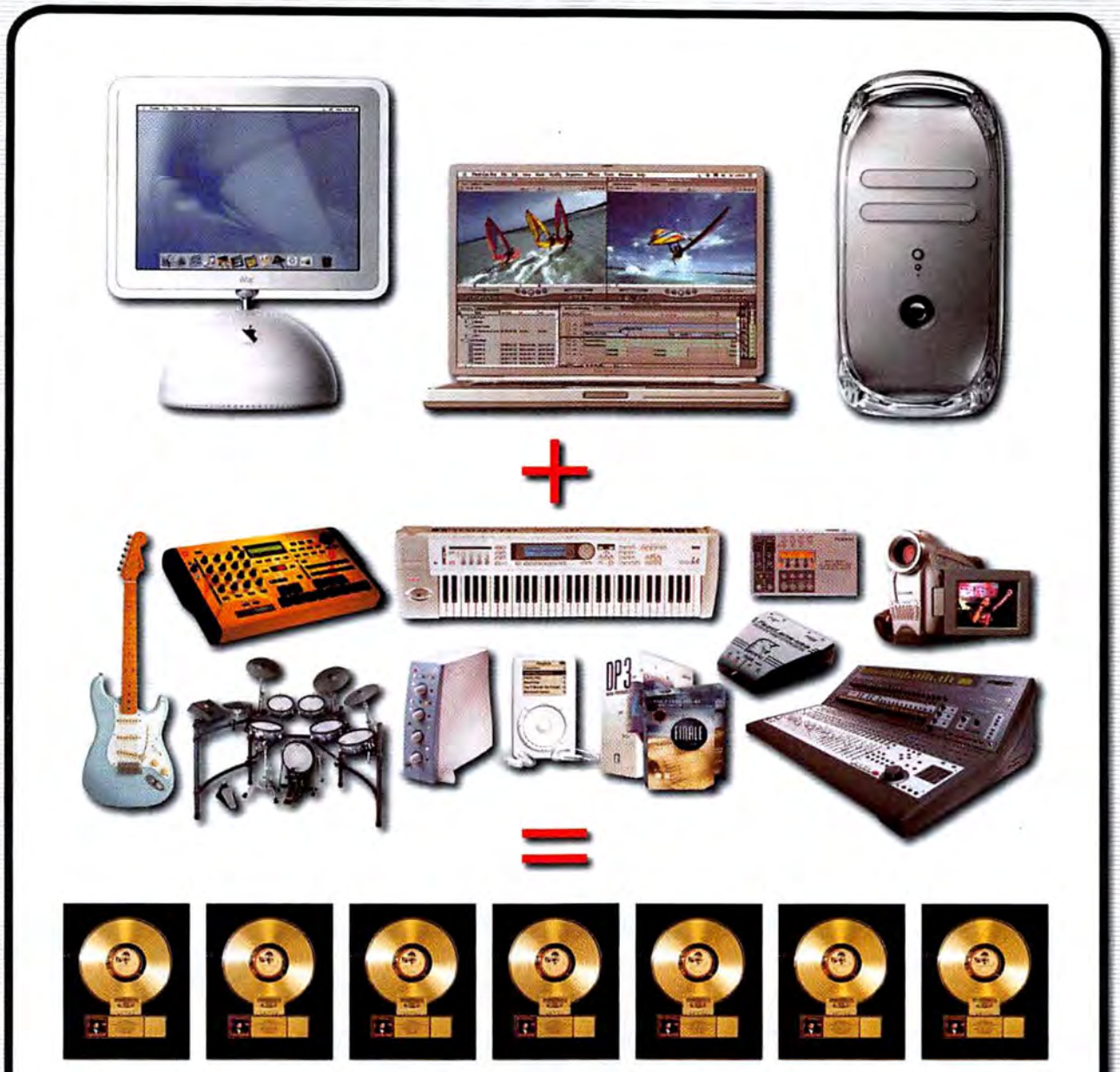

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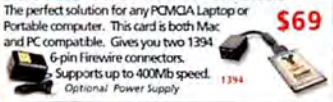

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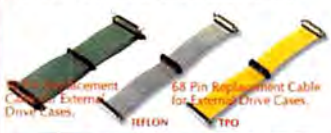

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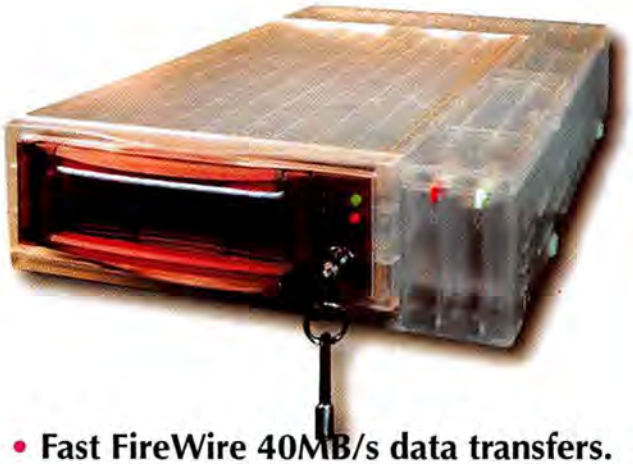

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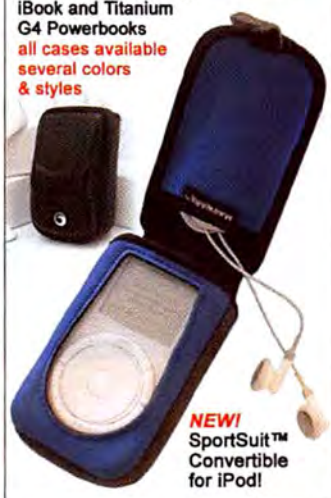

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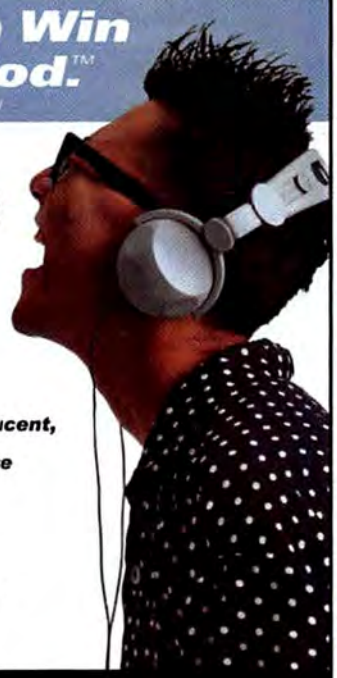

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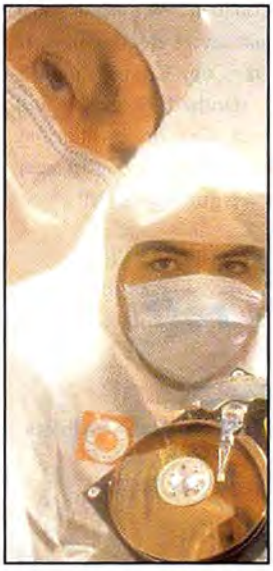

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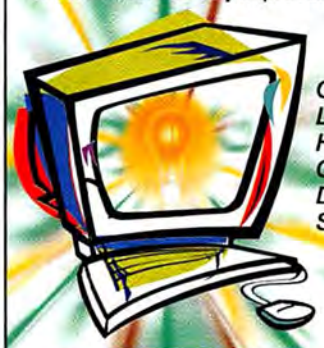

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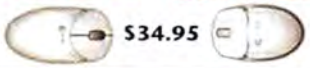

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begins, people are working on hacks to show off. Among humans, the term *hack* popularly (and incorrectly) means doing something frisky to the traffic-control computers so that the president's motorcade gets rerouted to an Ozzy Osbourne concert. But at MacHack, the term applies to any ambitiously and aggressively cool (and, ideally, ambitiously and aggressively unmarketable) new piece of code or hardware.

The classic hack is something like Stan Shebs's Process Doom. When Internet Explorer locks up and sucks down CPU cycles, you can easily force quit to kill the process—but there's something unsatisfying about simply clicking on an OK button to dispatch a wayward program. So Stan wired this functionality into the classic first-person shooter game Doom. When an app needs to be terminated with extreme prejudice, you click into Doom, pick up your gun, hunt the software down like the rabid dog it is, and then watch it explode in a cloud of carnage.

This year, Mike Nell wrote a level editor for the iPod's secret Breakout game. Mac Murrett and Philippe Hausler's Load Minimizer was a crafty way to balance demand on a CPU: the busier the processor gets, the smaller the screen gets, with the result that your computer behaves much like the CIA—the more it's doing, the less it's willing to show you.

> How can I use the knowledge that there's a JavaScript engine inside the iPod's shiny case?

The popular favorite this year was Douglas and Nigel Clarke's Clarus All Over (this and the rest of the hacks are available on CD from www.machack.com). This hack added Clarus the Dogcow to every Dock item in excessively cool ways—and even cooler, its authors were student programmers (or "yoots," in MacHack lingo).

MacHack is all about giving hard-core geeks a chance to interact and learn, and it doesn't discriminate based on age. This year's show attracted, for example, a first grader who wrote his very first line of AppleScript one afternoon, and 12-year-old Adam Atlas, who showed off his XML/RPC hack and apologized because he thought the built-in Web browser he wrote for it wasn't really very good.

That's one of the things that keeps me coming back to MacHack. We geeks constitute a legitimate and unique subculture, like Midwesterners or registered voters, and MacHack is a chance for us to see that our culture will survive for at least another generation. It's also nice to see that some of today's teens aren't getting any more action on Friday nights than I did. □

Contributing Editor ANDY IHNATKO's own MacHack entry—a collection of cheap products bought at a Dearborn, Michigan, hardware store, each of them inspired by another hack—won a special discretionary prize from MacHack judges.

ANDY IHNATKO

Programmers of All Kinds Make MacHack Shine

Hack Attack

"THIS IS OUR PET DOGCOW, AND WE'VE TAUGHT HER TO do a few tricks." It's about 1:30 a.m., and I'm sitting with about 300 other Mac geeks in a ballroom in a Dearborn, Michigan, Holiday Inn. On the dais are developers John Shafer, Jörg Brown, and Sean Parent, though I take this on faith as the lights are down and all attention is focused on the video projectors on either side of the stage. An Internet Explorer window is open, showing a small collection of buttons, as well as the familiar and beloved cartoon image of Clarus, the animal who is to Mac developers what Lassie is to hopelessly accident-prone little boys.

"As you can see," John continues, "I can make Clarus look to the *left*." He clicks on a button in the Web page. The image of Clarus looks to the left and then back again. "She can bow her head, too. Bow to the people, Clarus!" It is made so. "And the cool thing is that this is all being done over the network—any Web browser *anywhere in the world* can give Clarus commands!"

The crowd seems underwhelmed—but why? I got a sneak preview of what these guys were building yesterday at around 3 a.m. I do try to limit the number of times I employ the rejoinder "Duuude!" in conversation, but here I felt that its application was wholly justified.

I crane my neck. Aha! Mystery solved: Jörg is blocking the view. "Down in freakin' front!" I yell, because I enjoy helping people.

Jörg takes a few steps to the left, and then everyone can finally see it: a motorized G4 iMac whose screen can swivel and bob around all by itself, just like the animated one in Apple's TV commercials. The 300 attendees of 2002's MacHack conference respond with one voice: "Duuude."

Life Optional

MacHack is 17 years old. If it were a human, it'd be drinking illegally by now. Actually, it wouldn't—MacHack wouldn't get invited to those sorts of parties. It's an annual conference for hard-core geeks who, as teenagers, were likely spending their Friday nights in chat rooms, arguing that Captain Picard should just rip out the Holodeck entirely, since it kept tossing the *Enterprise* into jeopardy every week.

We may not have had lives, but we learned a lot about computers and stuff—and managed to avoid the alcohol- and sex-related mishaps that can sidetrack people from successful careers in technology. Now we work for Apple and Adobe and Microsoft and hundreds of lesser-known companies that create the code and hardware that people use every single day, and every June we come to Michigan to hang out in a hotel atrium, universally preferring the warm, snuggly cocoon of AirPort access to the fiery tyranny of the Giant Day-Ball outside. For three days, the place becomes like a really bad TechTV version of *Big Brother.*

MacHack's organizers understand their audience. The opening keynote, for example, takes place at 12:01 a.m. That's right: one minute past midnight—a sensible hour when everyone is naturally alert and attentive. I mean, I *like* Macworld Expo; it's a fine Expo, always kind to its mother and all that, but who's awake at 9 a.m.? I have little doubt that the impact of Steve Jobs's keynotes has always been blunted by the fact that his audience consists mostly of farmers and the undead.

This year's MacHack keynotes were delivered by technology-book publisher Tim O'Reilly and SlashDot .org publisher Rob "CmdrTaco" Malda. O'Reilly made a great point in his talk: "The big, hairy, audacious goal for my company is to enable change by capturing and disseminating the knowledge of innovators." That's OK by me; I'm all in favor of people making money while decreasing the overall level of ignorance in the universe.

MacHack is rife with conference sessions. But although the session on realizing the promise of code reuse *sounded* good, I prefer to focus on more-basic topics. Keith Stattenfield's talk was about the future of OS 9, and it featured about 92 PowerPoint slides containing variations on the phrase "It's deader than a very dead thing that just died." Another impromptu consisted of stories and tidbits from some of the folks who had built (and were continuing to improve) the iPod. It seems that they're just as surprised by the dearth of outside iPod hacks as I am. And now I'm wondering what I can do with the knowledge that there's a JavaScript engine lurking inside that shiny steel case.

> We geeks are a legitimate and unique subculture, like Midwesterners or registered voters.

Hack as Hacks Can

The focal point of MacHack, though, is the Friday night Hack Show. From the moment MacHack

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