



**iPOD PHOTO: SEEING IS BELIEVING**

**APPLE'S MUSIC PLAYER NOW DOES DIGITAL PHOTOGRAPHY—TAKE YOUR FIRST LOOK, p. 16**

**Macworld**  
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## DIGITAL CAMERA SUPERGUIDE

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That Will Last**

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PLUS:

**9 New  
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**FROM TAPE TO CD**

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*"5-out-of-5 rating. Simple, stunning all-in-one design. With the iMac G5, Apple has given Mac fans yet another reason to stay in the fold. And its unparalleled execution should attract would-be Windows PC buyers as well."*

– **Joel Santo Domingo**, PC Magazine

*"The new G5 iMac is the finest personal computer I've ever used, hands down. Nothing comes close. If you have ever thought of switching from a Windows-based PC to a Mac, this is the deal-clincher. It is simply a stunning machine both to look at and to use."*

– **Mike Wendland**, Detroit Free Press

*"I'm writing these words on the most elegant desktop computer I've ever used, a computer that is not only uncommonly beautiful but fast and powerful, virus-free and surprisingly affordable."*

– **Walt Mossberg**, The Wall Street Journal





# Macworld

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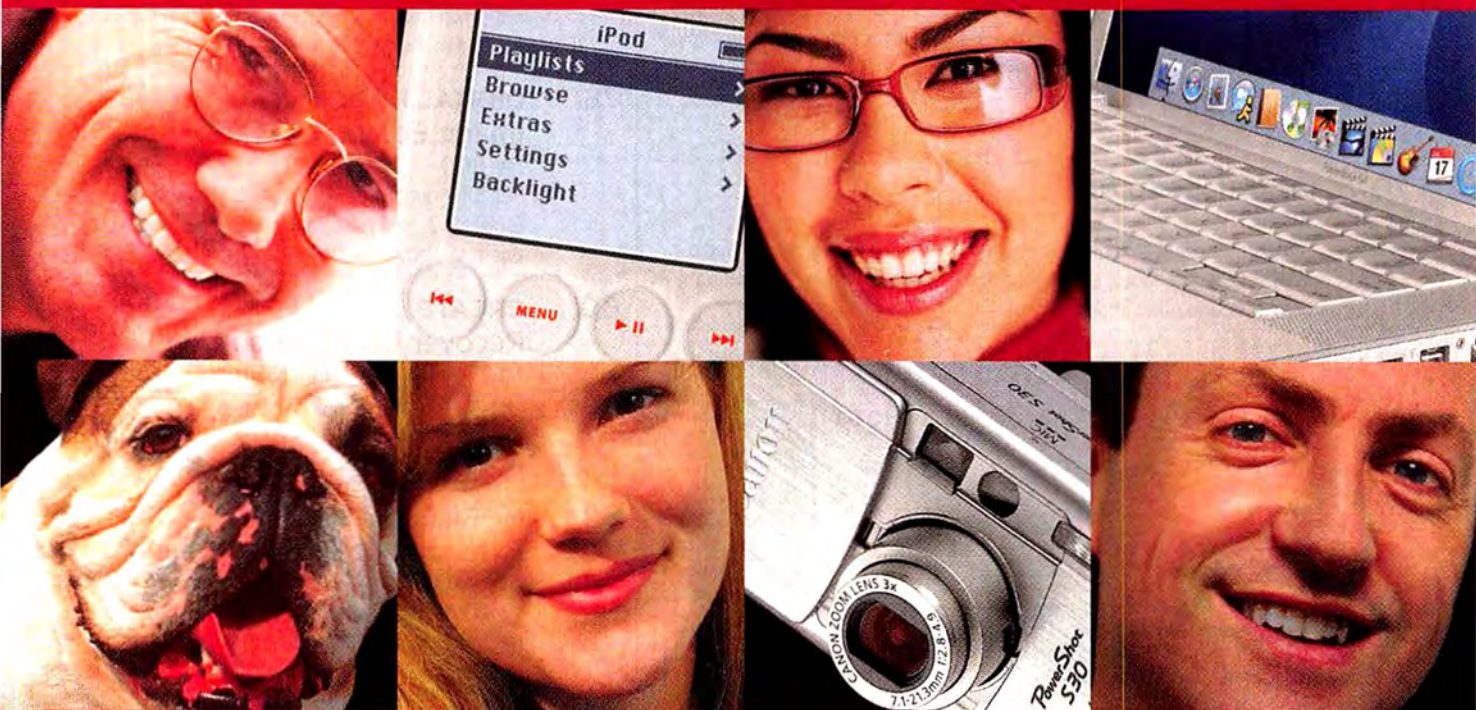
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Check out our editors' favorite developments of the month.



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# Ready or Not?

Steve Jobs once famously said that his life's goal was to change the world, not just to sell products. But changing the world with technology is a tricky business: yes, you need the engineering know-how to make a product so impressive that it alters people's lives. But changing the world is not simply a matter of building a better mousetrap. It's about releasing the right product at exactly the right time.

## Timing Is Everything

An obvious example of a good technology arriving at the wrong time is the Newton. A few years after the Newton's demise, as the battle between the Palm and the Pocket PC heated up, it was clear that the Newton's technology was excellent—but that its timing stunk.

In contrast, the iPod's timing was perfect. There were plenty of digital music players out there before the iPod, but they were consistently disappointing. Time and technology advanced, and in late 2001 Apple introduced its small, hard-drive-based player . . . and changed the world.

Not long after the iPod arrived on the scene, people began speculating about how Apple would follow it up. Over the past couple of years, the buzz about a video iPod has grown more intense, finally culminating in Apple's release of an iPod with a color screen in late October.

There's just one catch. It's the iPod *photo*, not the iPod *video*. And it's another example of Apple's excellent timing.

## The Rise of the Digital Photo

For years, magazines like *Macworld* have been promoting digital photography. And in the past few years, the times have caught up with the technology. Digital photography couldn't be more mainstream. Everyone has a digital camera.

That's why Apple decided to release the iPod photo (see page 16)—and why we decided to devote this month's cover story to digital cameras (see page 60).

By adding a color screen and photo-display capabilities to the iPod, Apple has cleverly combined the two hottest technologies today: digital music and digital photography. I might quibble about some of the iPod photo's specs (here's hoping that Apple adds on-the-fly photo albums, direct importing of digital-camera media, and support for direct printing); however, I have no doubt that Apple has made the right call in focusing on photos rather than video.

But when Steve Jobs introduced the iPod photo, he had to explain first what it *wasn't*—namely, a video player. Jobs made lots of excuses about why Apple hadn't done a video player—video players were too

big, and the screens weren't good enough. I don't buy that—I'm sure that Apple could come up with a perfectly nice iPod-size video player if it wanted to.

## The iPod Video Problem

The big problem is something else Jobs mentioned—a complete lack of content to put on such a video player. You can fill your iPod with music downloaded from online music stores or ripped from CDs you own, and anyone with a digital camera has a ready supply of photos. But where do you get videos? You can't legally download them from the Internet or, under the Digital Millennium Copyright Act, transfer the contents of a DVD onto your Mac's hard drive.

I ran into this problem while I played with the Archos Gmini 400, a small iPod-like device with a bright color screen. It's exactly the sort of product that people have been demanding from Apple. But getting video onto it was next to impossible. Even when I had downloaded the software to illegally extract video files from my DVDs, or downloaded TV shows from underground file-sharing sites, it was nearly impossible to encode them into a video format supported by the Gmini. When I finally got it to work, it took me hours to encode one 30-minute TV show. No thanks. (And no, selling a video player and telling the people who bought it to go find video files illegally on the Internet is *not* an acceptable option.)

There will be a right time for handheld video players. But Apple has made the right call: that time isn't here yet. Until a company with credibility in both the technology and entertainment industries can get movie studios and TV networks to try the equivalent of the iTunes Music Store for video, there's no point in creating a video iPod.

What company will finally break through and make video downloads popular? There's no way to know, but with its iPod success and Steve Jobs's Hollywood ties, I sure wouldn't bet against Apple. But only when the time is right. □

What do you think? Is the iPod photo the right product at the right time? Should Apple do a portable video player? Let me know at [jason\\_snell@macworld.com](mailto:jason_snell@macworld.com) or at [www.macworld.com/forums](http://www.macworld.com/forums).



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# FEEDBACK

## Reply to All

We put two of Apple's hottest new products—the AirPort Express and the Click Wheel iPod—on the cover, and what do readers want to talk about? E-mail clients, of course. *Macworld* readers exhibit the same loyalty to their e-mail clients (as well as their browsers, their word processors, and pretty much every other piece of hardware and software they own) that other folks reserve for football teams and presidential candidates—and woe betide the editor who questions that devotion. □

## Mail about E-mail

ANDREW LAURENCE

The “E-mail Survival Guide” neglects to mention a critical point in Eudora’s favor: manual filters, executed by a key command. While automatic filters can cause mail to slip your attention, manual filters are perfect for quickly dealing with messages that must be read.

BILL GANON (VICE PRESIDENT, EUDORA PRODUCTS GROUP, QUALCOMM)

Your decision to exclude Eudora from your list of alternative e-mail clients (“E-mail Survival Guide,” October 2004), because of what you saw as deficiencies, is troubling—especially when you consider the long history of favorable reviews Eudora has earned from *Macworld*.

I’d like to respond to a few of your specific criticisms. In terms of displaying HTML messages, we plan on giving users much better HTML handling in Eudora 6.3 for Mac, scheduled for release in spring 2005. As for Eudora’s “limited filtering options,” we’ve found that the vast majority of users create filters with only one condition. And while AppleScript support is important to some, it is unknown to the vast majority of Mac users.

Finally, you recommend Mailsmith for power users, but I’d question that recommendation, given that program’s lack of IMAP or LDAP support—something our power users have been demanding. To that point, IMAP improvements have already been made in Eudora 6.2, and more are on the way.

PARRISH S. KNIGHT

I enjoyed your “E-mail Survival Guide.” A comment about Apple Mail and spam: Once you’ve got the Junk Mail filter well trained, you may not have to turn off the

“Display images and embedded objects in HTML” messages. If a message is flagged as spam, Mail refuses to load images in that message unless you tell it to do so—therefore, unless spam manages to get past the filter, bugs are automatically defeated. My false negatives are now low enough that I leave “Display images” on.

K. THORNE

For a variety of technical reasons, Apple’s Mail program doesn’t work for me. Eudora does, but I find it unfriendly and old-fashioned looking. In Canada, Microsoft Entourage is available only as part of the Office suite, and I don’t need Word, Excel, and so on. Finally, I found GyazMail ([www.gyazsquare.com/gyazmail/](http://www.gyazsquare.com/gyazmail/)). It looks like Mail, works with Apple’s Address Book, solves my ISP compatibility issues, is infinitely customizable and inexpensive (\$18), and seamlessly integrates with SpamSieve. You also get fast, helpful responses from the author; in fact, I e-mailed the author about a couple of things I wanted to see in the program, and he implemented some of them in the next release. What other app would offer that kind of service?

## Konfabulations

SEAN ROSE

In “Developer Two-Step” (*Mac Beat*, October 2004), the author points out—correctly, I think—that many OS features (such as a TCP/IP stack) are natural evolutions; they become part of the OS out of necessity. But the article failed to mention another important issue: Why didn’t Apple just buy Konfabulator? (Or Watson?) It could have stopped the Windows port and would have enjoyed a positive PR spin. Whatever the cost would have been, I’m sure it would’ve been less than the negative impact Dashboard has had on OS X developers.

ED FOCHLER

Regarding the controversy about Konfabulator: While I admit that Apple could be a better citizen by either buying competing technology or giving credit to those fine developers for having the right idea, if you’re charging extra for what Apple gives away for free, you aren’t benefiting users. If you give your product away for free but Apple decides to supersede you with a free product of its own, then users benefit and you don’t have to maintain your product. In short, the cheese has moved. Move after it. If you choose to whine after your cheese, that’s up to you, but keep it to yourself.

## Acrobat, Begone!

LYNN JENKINS

I have one thing to say about your tip for banishing Acrobat from Microsoft Office (“7 PDF Power Moves,” *Working Mac*, October 2004): *Yahoo!* I spent an hour one day trying to figure out how to get rid of that irritating (and useless) feature, without success. Thank you for the answer.

ED VOLCHOK

In “7 PDF Power Moves,” your advice in tip 5 (for removing the Acrobat PDF toolbar from Office apps) doesn’t work. I’ve trashed PDFMaker.dot, PDFMaker.xla,

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and PDFMaker.ppa, and the toolbars disappear. But when I reboot the computer and launch Word, Excel, or PowerPoint, the toolbars are back. How do you drive a stake into the heart of these toolbars? I use Office 2004 and OS X 10.3.5.

*Unfortunately, this tip applies only to Office v. X, not to Office 2004. You might try renaming the Startup folder in your Microsoft Office: Office folder—but this isn't an ideal solution. Doing so will disable all Office startup items, not just PDFMaker.—Ed.*

## Sharp-Eyed Readers

BILL WILCOX

You did a nice job with the October cover photo. There it is in all its glory, an Apple iPod playing "Revolution" by the Beatles. Given the litigious relationship between Apple Computer and Apple Records, was this your way of giving Apple Records a digital poke in the eye? Who knows, maybe one day Apple Records will get in touch with digital reality and settle the "music thing" with Apple Computer.

*We intended no poke in the eye. "Revolution" is simply an appropriately titled song by a well-loved band.—Ed.*

NADRELL EVANS

I'd like to know where I can buy the tables shown in "Macworld's \$6,000 Challenge" (August 2004), the ones holding the products that Adam C. Engst and Christopher Breen chose. Both tables appear to be wall mounted, but the pictures could be deceiving.

*You're right about one thing: pictures can be deceiving. As realistic as those tables look, they're illustrations (created by John Kocon).—Ed.*

## FileMaker's Flaw

MICHAEL YOUNG

FileMaker Pro 7 (★★★★; Reviews, October 2004) continues the long line of good FileMaker Pro products, but it's still missing one simple feature that users have been requesting for years, something William Porter even mentions in his review: "FileMaker Pro still can't trigger a script auto-

matically when the user exits a field." I should not have to buy a third-party plug-in to implement this feature, which competing products have had for many years.

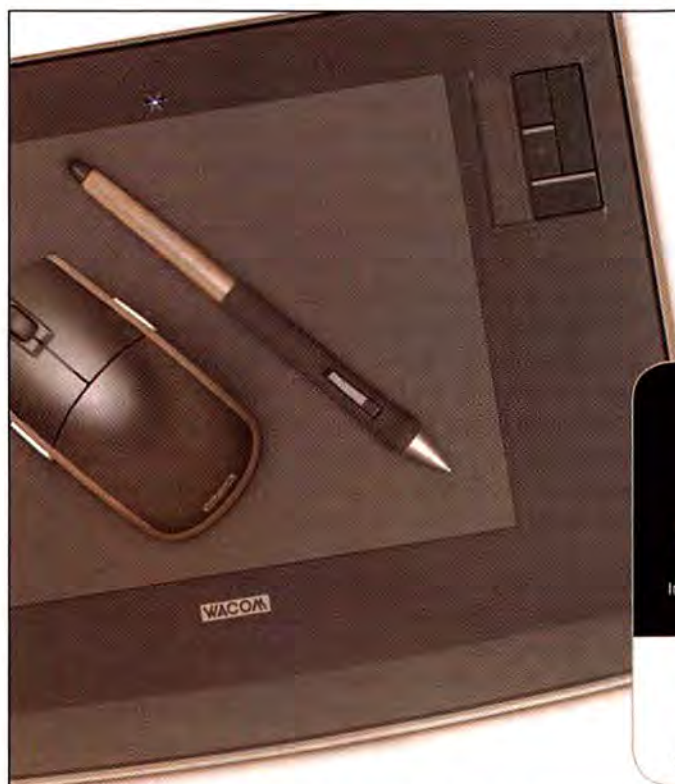
## CORRECTIONS

In our review of Apple's Xserve RAID (October 2004), we incorrectly reported the drives it uses. It uses high-capacity Ultra ATA drives.

In our review of digital camcorders (November 2004), we incorrectly described a lighting feature of the JVC GR-DCX97. It uses a built-in LED for low-light shooting. (Our rating stands.)

In "Laptop Battery Smarts" (Mobile Mac, November 2004), we misstated Apple's laptop-battery-replacement policy. Apple replaces batteries only if they fail because of defects, not if they fail because of normal use.

Our review of new Power Mac G5s (December 2004) contained misstatements about the systems' graphics cards. The Nvidia GeForce FX 5200 Ultra, ATI Radeon 9600 XT, and ATI Radeon 9800 XT have an ADC port and a DVI port. The Nvidia GeForce 6800 Ultra DDL has two DVI connectors and no ADC port.



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# Creative Drive

*FileMaker fires on all cylinders for creative professionals*



Ask creative professionals the one thing they'd like to have more of, and the answer will likely be "more time to be creative." They want to be liberated from administrative chores and overhead, like tracking their hours and fussing with schedules. They want information organized so they can get at it quickly and easily, and they want to share that information with colleagues, because the creative world is often a collaborative world.

For more than 100,000 creative professionals, the solution of choice to accomplish all these invaluable tasks—and then some—is FileMaker Pro. With its legendary ease of use and with the power that enables the customization creative professionals want and need, FileMaker Pro is fast becoming a de facto standard in the creative world. And the ability of this flexible database solution to handle rich data sources—such as video, audio, and images—makes it even more valuable to this demanding user base.

Consider the case of EastWest Creative, whose clients include food giants Kraft and Nabisco. The creative teams at EastWest in New York have produced some of the most familiar advertising icons known. With a range of high-powered clients with individual needs, EastWest must deliver world-class results under tight deadlines, so managing the workflow of projects is essential.

## Workflow wonder

At EastWest, maintaining a competitive edge in a hyper-competitive market requires an unbeatable workflow strategy. That strategy is built around FileMaker, which has been deployed at EastWest for a decade now.

"We have evaluated other solutions from time to time, but we find that FileMaker pretty much takes care of everything we need," notes Linda Ziembo, Director of IT at EastWest for the past five years. "It is our first choice. It's the easiest solution for us, but it is also powerful when we need it to be powerful. We're always looking for the best solution, and we always come around to FileMaker."

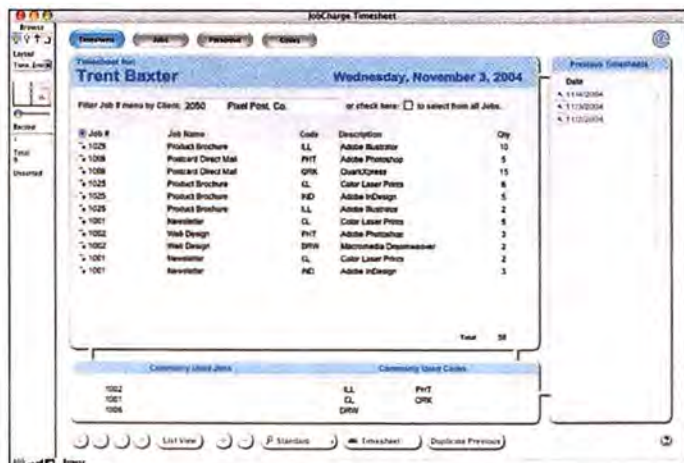
For the creative environment in particular, Ziembo says that FileMaker offers many attributes, features, and functions that dovetail perfectly with the pace and flow of work. EastWest is a multi-service promotional agency where teams develop specific ideas, followed by even more collaboration with other teams. This means there is lots of data flowing from group to group. Hours must be carefully tracked for billing and costing purposes. And everyone associated with this creative value chain must be able to access the data they need quickly and easily, without dialing the help desk every ten minutes.

"The interface with FileMaker is very friendly, as is the total ease of development," Ziembo says. "We listen to what the users want and need, and then we can develop and deploy a solution really quickly without any long lead times. FileMaker is so flexible that we can deploy, listen for early feedback, make tweaks and modifications, and do it all while people are busily working and being productive using it."

## Flexibility and ease of use

By contrast, Ziembo notes that other solutions she has looked at are far more rigid, requiring the IT team to "get it right the first time." By deploying user-driven solutions more quickly than with any other solution, FileMaker helps EastWest better manage the time of its creative staff. "FileMaker lets us build

Creative professionals appreciate the tremendous ease of use that FileMaker brings to the important task of tracking time spent on various projects, actually freeing up time for their creative pursuits.





truly organic systems and solutions that conform to our business, rather than making our business conform to the solutions," Ziembko says. "It helps us corral people's work habits because it automates so many mundane tasks, such as doing time sheets. And then it integrates really well with other applications and systems, such as back-office accounting systems."

Ziembko also applauds FileMaker's scripting capabilities, in particular her department's ability to run Apple scripts from FileMaker. This advance scripting capability helps EastWest in the general workflow process, where it automates mundane administrative tasks, and also in the creative process itself, by automatically generating design templates and layouts in standard formats. This allows new workers or freelance people to become productive much more quickly than if they had to generate such things on their own.

"We find FileMaker to be as flexible as we want, and users don't need the help of programmers to get what they need from it," Ziembko states. "I think we push it to the limits here and it responds well every time."

### Unique solutions for unique clients

As with EastWest Creative, the client list at Lowe Worldwide includes some of the biggest brands in the world—Johnson & Johnson, Saab, and GMC, among others. Each client is unique, and servicing them all means developing flexible, unique workflows to manage costs, smooth bumps in the creative process, and facilitate collaboration so that everyone gets the data and information they need when they need it.

To make sure the creative minds are focused on hot ideas and concepts and not burdened by administrative overhead, Kevin Brucato, Director of Creative Services, works with FileMaker. He's been doing this since 1995; the first application he pressed into service involved eliminating a hand-written project logbook and replacing it with a FileMaker application for project tracking and management.

"Since then, we've evolved to higher and higher levels of functionality and use with FileMaker, mainly because it is so customizable for our needs and the unique needs of each client," Brucato says. "We looked at other solutions, but they just aren't user-friendly like FileMaker, and they don't give us the customization that our clients demand."

### Saves on training costs

Brucato also cites FileMaker's ease of use as a major attribute in creative environments such as the 50-person team he heads. "A new employee with little or no knowledge of database technology can come in and almost immediately be generating custom reports, design layouts, and other important work," he says. "This saves us training costs and IT involvement, and generally means our creative people are more productive."

Brucato also lauds the cross-platform personality of FileMaker, which makes it easy, for example, to move data back and forth from FileMaker to back-end accounting systems. He



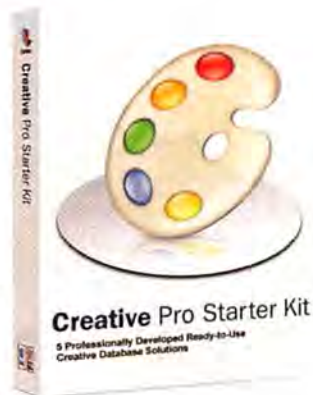
With FileMaker, creative professionals can track any type of information, including text, numbers, pictures, movies, sounds, and more, and with a database that is virtually unlimited in size.

and his staff also appreciate that FileMaker is fully Web-enabled, allowing them to publish designs and sketches to the Web for review with a simple click of the mouse.

"Don't think that because it is so easy to use, FileMaker isn't powerful," Brucato adds. "It is simple when we need it to be simple, and it is easy to use, but it can perform look-ups and replacements and a wide variety of complex tasks if we want it to. We get all the level of detail we need from FileMaker. With built-in scripting, we can move data around very easily, compress it, and then write it to a CD. It's a great tool for us."

To help creative professionals, FileMaker has recently released the FileMaker Creative Pro Starter Kit, which is a free download when you download a 30-day trial of FileMaker Pro 7. This ready-to-use kit comes with pre-programmed, customizable solutions designed specifically for the creative market—help with managing contact details for clients and vendors, tracking job status from proposal through delivery, creating digital libraries that store images, sounds, and video clips, printing invoices, labels, and reports, and more.

To download the free FileMaker Creative Pro Starter Kit, and to find out more about what FileMaker can do to drive productivity for creative professionals, click now on [www.filemakertrial.com/macworld/](http://www.filemakertrial.com/macworld/).





# macbeat

WHAT'S NEW

WHAT'S IN THE PIPELINE

WHAT'S HOT

COMPANIES SWITCHING TO OS X-ONLY DEVELOPMENT

## So Long, OS 9

With the release of Mac OS X 10.4—the fifth major incarnation of Apple's Unix-based OS—on the horizon, it's safe to say that OS X's time has long since arrived. But despite Apple's best efforts to move users to its modern operating system, hard-core OS 9 loyalists have held on strong. (To be fair, early users were hesitant to jump to a new operating system while it was still finding its legs and while high-profile OS X-native software was scarce.) Now that all major apps have made the transition to OS X, and now that no new Mac can boot into OS 9 (Apple phased out the last dual-boot Macs with little fanfare in the middle of 2004), new development for OS 9 may be a thing of the past. For most developers, dropping OS 9 is a good thing—and that's good news for you.

Bare Bones Software ([www.barebones.com](http://www.barebones.com)) released the first commercially available OS X application, BBEdit 6.1, which also ran in OS 9. The company decided to drop OS 9 support with the introduction of version 8 in August 2004, because supporting two platforms simultaneously means a big increase in workload.

"At a certain point the platforms do diverge, and the considerations run far beyond software engineering," says Rich Siegel, the president of Bare Bones Software. "It requires additional effort

and resources to write features that degrade gracefully on Mac OS 9, and to test products on multiple versions of Mac OS 9 and Mac OS X."

In addition, providing technical support and keeping a consistent feature set for the two widely divergent versions of the OS was a challenge for the company.



ILLUSTRATION BY JACK GALLAGHER



"When we chose to develop exclusively for Mac OS X, our customers immediately reaped the benefits of shorter product-development cycles, more-focused and less-complicated products, and the resulting increase in product quality," says Siegel.

This is a view echoed by Glen Turpin, Quark's director of communications ([www.quark.com](http://www.quark.com)). "Every time you add a platform for development, it adds a tremendous amount of time to the development cycle," says Turpin. "You have to do quality control at each step for each platform." When Quark released version 6 of its flagship product in June 2003—the first version to run in OS X—it was only for OS X.

"OS 9 has been on the back burner for a while with most key applications in OS X," says Forrester Research principal analyst Frank E. Gillett. "The issue has been overspecialized applications for mostly the publishing and education industries. Usually, these two industries take their sweet time to upgrade hardware and eventually software. Now it seems even these last

But the benefits of OS X are clear after the changeover. Turpin says that Quark's adoption on OS X gives users access to features not available in OS 9: "The stability of the OS is great and the user interface is marvelous. We also get access to the lower levels of the system, which enables us to provide a quicker application."

Similarly, Qualcomm's Eudora 6.2 e-mail software ([www.qualcomm.com](http://www.qualcomm.com)), released in November 2004, runs exclusively on OS X. Eudora project manager Matt Dudziak says that the timing is based on the fact that the new version of Eudora is better integrated with OS X's Address Book, and even supports the Spotlight feature of Apple's upcoming Tiger OS.

"Most of our customer base now uses OS X," Dudziak says. "At some point, we had to move on."

At Bare Bones, Siegel says that consumers have benefited from a number of improvements since the company began developing exclusively for OS X. There are certainly features in the OS

that were never available in OS 9, and the company

has been able to take advantage of those capabilities to build a richer

product experience for customers—for example, live previews in BBEdit using Web Kit technology, and running Unix scripts and filters directly from within BBEdit. Also available are some of the leading-edge new features in BBEdit 8.0, such as the Documents Drawer, support for previewing through the built-in Apache server, solid multiprocessing support to accelerate searching multiple files, and Text Factories.

Siegel says that Bare Bones surveyed the market to test the waters. "We've always paid close attention to our customers' needs, and when we observed that roughly 98 percent of a representative sampling of our customer base was using Mac OS X," says Siegel, "we knew that the time was right to stop investing in development for Mac OS 9." —ADELIA CELLINI

Over the past several years, Adobe's Portable Document Format—also known as PDF—has taken off on the Web, in professional printing, and in business. PDF has even become the native file format of OS X. Although there are other applications for creating and viewing PDF files, Adobe Acrobat ([www.adobe.com](http://www.adobe.com)) is still the gold standard. With the announcement of version 7.0 of its Acrobat software family—Reader, Standard, and Professional—Adobe has added features that help creative professionals and companies who rely on Acrobat share information and comment on documents.



Acrobat Professional has several changes in its pre-flight tools. A redesigned interface gives you the power to convert colors from RGB to CMYK and alter stroke weights; other improvements include the ability to flatten transparency, add printer marks,

and change page sizes.

Taking its cue from Adobe Photoshop's File Browser, Acrobat Professional adds an Organizer you can use to find and sort PDFs and the metadata embedded in files. You can sort by terms such as file name, keywords, and number of pages.

Since PDF files preserve the look of a document, users often rely on PDFs for circulating information more complicated than a basic word processing document. With this in mind, Acrobat made the communication two-way by including commenting and reviews tools in version 4.0. However, only Windows users could take advantage of simultaneous Web-based reviews. With version 7.0, Mac users can finally join in (only using Safari, however). In fact, now even Reader users can make comments on PDF files (previously you had to own Professional or Standard to do so).

One major complaint about earlier versions of Acrobat was its slow performance. Adobe says that users of all version 7.0 apps should find launching and opening files noticeably quicker (our experience with the prerelease software confirms that).

The new versions of Acrobat Professional (\$449), Acrobat Standard (\$299), and Adobe Reader (free) should be available before the end of 2004. —TERRI STONE



holdouts have finally started tumbling." Quark took a lot of heat for showing up so late to the OS X party, but Turpin says the timing was appropriate. It was a direct result of increasing customer demand and Apple's phasing out OS 9 bootable computers. "There are longer production cycles in publishing," says Turpin. "We eventually got an overwhelming demand from users to move to OS X."

In the education sector, too, economics played a big part. Schools often use custom software that, until recently, was available only in OS 9. And hardware at schools is usually years out of date and unable to run newer operating systems as soon as they are rolled out. So when schools buy new computers, they usually purchase those that run on the existing OS. As a result of these factors, the education arena was not an early adopter of OS X.



APPLE INTRODUCES NEW COLOR, U2 IPODS

# Splashy Sound

Apple took the wraps off of its color-screen iPod photo at a special music event featuring U2's Bono and Edge. What was half of U2 doing there? Apple also introduced the iPod U2 Special Edition, a version of Apple's 20GB player clad in black plastic and equipped with a red Click Wheel.

The iPod photo, which comes in 40GB and 60GB models, looks nearly identical to the previous generation of full-size iPods. The big difference is its 220-by-176-pixel screen, capable of displaying photos in 65,536 colors. The new model can display 25 color photo thumbnails at a time, as well as slide shows set to your music, and it lets you scroll through your photos the same way you scroll through music playlists. (Apple promises battery life of up to 15 hours for music, or 5 hours of continuous slide shows.) The iPod photo can also display the album art that's embedded in each song purchased from the iTunes Music Store (or in tracks to which you've added art yourself). An included AV cable lets you connect the iPod photo to a TV or a video projector for display, either directly or via the dock.



Apple has extended support for iTunes' Auto-Sync technology, which syncs music on the iPod and on your Mac, to iPhoto (photo syncing requires iTunes 4.7 or higher).

The iPod U2 Special Edition celebrates Apple's promotional partnership with the legendary Irish rock band. The 20GB iPod U2 stands out with its black and red case, and it has signatures of all four band members laser-engraved on the back. And Apple will offer a digital box set—a first in the online music industry. *The Complete U2* will feature every U2 album (including the new *How to Dismantle an Atomic Bomb*), plus more than 25 rare and unreleased tracks (more than 400 tracks in all), for \$149. People who buy the iPod U2 Special Edition will get an iTunes Music Store coupon for \$50 off the box set. Both the iPod and the box set should be available by the time you read this.

Apple also announced that it would open the doors of new iTunes Music Stores to users in Canada, as well as those in the EU nations of Austria, Belgium, Finland, Greece, Italy, Luxembourg, the Netherlands, Portugal, and Spain.—PETER COHEN

## HALF A DOZEN 'PODS

MODEL	PRICE	CAPACITY	MORE INFORMATION
iPod	\$299	20GB	<a href="http://find.macworld.com/0155">find.macworld.com/0155</a>
iPod	\$399	40GB	<a href="http://find.macworld.com/0153">find.macworld.com/0153</a>
iPod mini	\$249	5GB	<a href="http://find.macworld.com/0154">find.macworld.com/0154</a>
iPod photo	\$499	40GB	<a href="http://find.macworld.com/0175">find.macworld.com/0175</a>
iPod photo	\$599	60GB	<a href="http://find.macworld.com/0176">find.macworld.com/0176</a>
iPod U2 Special Edition	\$299	20GB	<a href="http://find.macworld.com/0182">find.macworld.com/0182</a>



## New Jam Packs Hit the Shelves

At the same time Apple released GarageBand as part of iLife '04, the company came out with Jam Pack, which provided additional loops, instruments, presets, and guitar amps for use with GarageBand. Now, a year later, Apple has added two new collections, Jam Pack 2: Remix Tools and Jam Pack 3: Rhythm Section.

**Jam Pack 2: Remix Tools** offers more than 2,000 loops, 20 new beat kits (including Techno, R&B, House, and Trance), new instruments, and classic drum machines from Roland such as the TR-909 and the CR-78.

**Jam Pack 3: Rhythm Section** also has more than 2,000 loops, as well as more than 50 new instruments—including new drums (such as Jazz Brushes and Indie Rock), basses (such as Motown, Liverpool, and Unplugged), and guitars (such as Bluegrass Banjo, Bluesy Acoustic, and Heavy Metal Electric).—PETER COHEN



## PRODUCTIVITY BEAT



**MouseAnywhere**, from MacSpeech ([www.macspeech.com](http://www.macspeech.com)): ScriptPak for iListen voice-recognition software lets users control many Mac functions with verbal commands (\$20).

**AccountEdge 2005**, from MYOB ([www.myob.com/us](http://www.myob.com/us)): Small-business accounting software adds MYOB Payroll Forms Service for printing and e-filing forms, Process Payroll Assistant for preparing payroll runs, and the ability to create and schedule recurring transactions from a single location (\$299; upgrade, \$139; Network Edition, \$399; upgrade, \$249).

**Print It 2.0**, from MacEase ([www.macease.com](http://www.macease.com)): Printing utility adds autoscaling guide and the ability to create keyboard shortcuts (\$30).

**QuickBooks: Pro 2005**, from Intuit (<http://quickbooks.intuit.com>): Small-business accounting software adds iCal and .Mac integration, improved file-sharing with the Windows version, and the ability to add PDF backgrounds to forms (\$300; upgrade, \$200 after \$100 rebate).—COMPILED BY PHILIP MICHAELS

## EDUCATION BEAT



**eReference**, from Houghton Mifflin ([www.houghtonmifflinbooks.com](http://www.houghtonmifflinbooks.com)): Interactive dictionary and thesaurus features full text of the *American Heritage Dictionary of the English Language*, fourth edition, and *Roget's II: The New Thesaurus* (\$35).

**Kurzweil 3000 Version 3**, from Kurzweil Education Systems ([www.kurzweilededu.com](http://www.kurzweilededu.com)): Reading and writing software adds a new network edition for accessing content across a local area network (contact Kurzweil for pricing).

**Sysquake 3**, from Calerga ([www.calerga.com](http://www.calerga.com)): Scientific computational software features a rewritten interface for running applications and developing them with a new Applications Builder (single license, \$2,028; educational license, \$811).—COMPILED BY PHILIP MICHAELS



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## LOOKING BACK ON THE MAC IN 2024

## 20 More Years

The Mac has come a long way, baby. In 20 years, we've seen speeds soar from 8MHz to 2.5GHz, the invention of FireWire, the transition to OS X, and much more. But what does the future hold? Let's look ahead 20 years and see what we might be reflecting on when the 40th anniversary is upon us.—JOHN MOLTZ



- The Mac's market share soared to 35 percent in 2010, when OS X 12.0 allowed pets (via their own user accounts) to communicate with their owners. As Mac users learned that cats do indeed think they're superior to all other living creatures, Microsoft announced that Longhorn would ship "very soon."
- Critics bemoaned the Anti-Gravity Mac, released in 2012, which floated six inches above the user's desk. It might have proved successful if it had come with more than a paltry 256 petabytes of RAM and four outdated 2.5 terahertz G15 processors—fine for e-mail and Web browsing, but nowhere near enough for telekinetic gaming or robot-assisted graphics.
- 2019's 420-inch iMac sported a series of flying buttresses to keep the unit from tipping over and crushing family members.
- The Power Mac G20, released in 2023, was an impenetrable black obelisk that fascinated primates and aided in humanity's evolution. It also came with really cool speakers.
- Steve Jobs, still CEO of Apple and Pixar in 2024, was also named to the top posts at Disney in 2008 and Sony in 2019. Jobs now has quite a busy schedule for a 69-year-old man, especially when you consider that he personally listens to each of the 7 billion songs available from the iTunes Music Store.

## SERVICE PACK SQUASHES SOME BUGS, CREATES OTHERS

## Office 2004 Moves Ahead?



In October, Microsoft released an update to the Office 2004 suite. This update addressed many glitches, and it has earned positive feedback from most users. Unfortunately, it also seems to have introduced a few problems, and it doesn't address PowerPoint's primary flaw. Here's what to look out for.—ROB GRIFFITHS

## PowerPoint's Mixed Bag

This update specifically targets two PowerPoint issues: a problem that caused



dragged objects to jump to seemingly arbitrary locations, and performance trouble when playing embedded QuickTime movies. Microsoft has fixed the first issue.

Movie playback, on the other hand, is better but still unacceptably poor.

## Acrobat Problem Appears

The update causes a problem that affects Office users who have Adobe Acrobat Professional. When they quit an Office app, they see the message "Compile error in hidden module: AutoExec." This problem stems from Adobe's PDFMaker files. The error isn't fatal, but if the message bothers you, you can remove PDFMaker (for instructions and more details on the Service Pack update, go to [find.macworld.com/0137](http://find.macworld.com/0137)).

## Comment Conundrum

A new glitch has cropped up in Word's Page Layout view when you're adding comments to a document with a wide right margin. If you're viewing the comments in balloons, they may appear very far to the right of the text area.



## CREATIVE BEAT



**Carrara 4**, from Eovia ([www.eovia.com](http://www.eovia.com)): 3-D-rendering, -modeling, and -animation tool features new terrain and sky modules, texture and lighting controls, and improved rendering (Standard, \$299; upgrade, \$199; Pro, \$579; upgrade, \$189).

**Instant PDF 3**, from Enfocust ([www.enfocust.com](http://www.enfocust.com)): PDF tool now lets you create certified PDFs in Adobe InDesign and QuarkXPress (\$199; upgrades, free for users who bought version 2 after May 6, 2004, and \$49 for all others).

**PDF2Office 2.0**, from Recosoft ([www.recosoft.com](http://www.recosoft.com)): PDF conversion tool adds the ability to open PDFs in Microsoft Word, a forms-processing mode, and support for Adobe Acrobat 6 documents (\$129; upgrade, \$59).

**Portraits & Prints 2.0**, from Econ Technologies ([www.econtech-nologies.com](http://www.econtech-nologies.com)): Photo-studio software enables photo printing away from your Mac, and a new professional version lets you create custom templates, rotate images, alter opacity and color, and add shadows or masks to pictures (\$30; upgrade, free; pro version, \$50).—COMPILED BY PHILIP MICHAELS

## INTERNET BEAT



**Captain FTP 3.5**, from Xnet Communications (<http://captainftp.xdsnet.de>): File Transfer Protocol client features enhanced AppleScript support and an overhauled Transfer Manager interface (\$25; upgrade, free from version 3.X).

**eyeBeam**, from Xten ([www.xten.com](http://www.xten.com)): Session Initiation Protocol (SIP) application lets users communicate with voice and video over IP-based networks (contact Xten for pricing).

**Lasso Professional 8**, from OmniPilot Software ([www.omni-pilot.com](http://www.omni-pilot.com)): Web-application server software adds multisite features that allow each site on a server to be isolated, on-demand tag loading, and POP e-mail support, and improves SMTP support (\$649; upgrade, \$349).—COMPILED BY PHILIP MICHAELS





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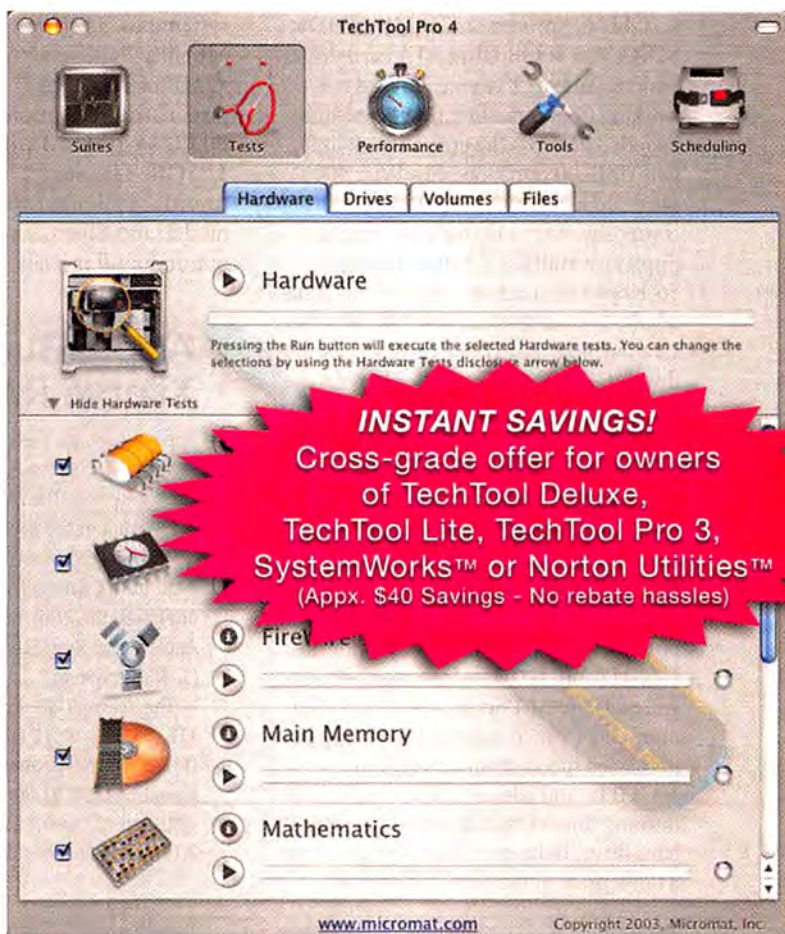
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UPDATED PORTABLES SEE SPEED BUMPS, OTHER IMPROVEMENTS

# Apple Introduces New iBooks

While Mac users anxiously await news of a G5 PowerBook, Apple made some improvements to its *other* line of portables. The consumer-level iBooks got faster processors and built-in AirPort Extreme wireless networking, as well as a price drop at the entry level (see "iBooks March On" for details on the new models).

The new 12-inch model comes with a 1.2GHz G4 processor; 256MB of DDR SDRAM; a 30GB Ultra ATA hard drive; built-in AirPort Extreme wireless networking (this is the first time Apple has included it across the entire iBook line); two USB 2.0 ports; one FireWire 400 port; support for VGA, S-Video, and composite video out (for mirroring the display); a 100Base-T Ethernet port; a 56-Kbps v.92 modem; a headphone jack; a built-in microphone; and a slot-loading, CD-burning, and DVD-reading Combo drive. The \$999 12-inch iBook replaces the AirPort-optional \$1,099 1GHz model (all other specs remain the same).

The low-end 14-inch model offers a 1.33GHz G4 processor, a 60GB Ultra ATA hard drive, and built-in AirPort Extreme (all other specs are the same as for the 12-inch model) for \$1,299; it replaces its predecessor at the same price point but boosts the processor from 1.2GHz and the hard drive from 40GB, and adds the AirPort Extreme card. The high-end 14-inch model gets a bump in processor speed, from 1.2GHz to 1.33GHz, and adds a 4x CD- and DVD-burning SuperDrive. It retains the 60GB hard drive, built-in AirPort Extreme, and \$1,499 price of the previous edition.



All the iBooks still have a 133MHz system bus, 512K of L2 cache, an ATI Mobility Radeon 9200 graphics chip with 32MB of DDR RAM, 1,024-by-768-pixel native resolution, and 256MB of DDR266 SDRAM with a maximum of 1.25GB. The SuperDrive is still a built-to-order option for the low-end 14-inch model, and Bluetooth remains a \$49 option for all models.—JIM DALRYMPLE

## Apple Bulks Up Xserve RAID

Apple also made several announcements regarding its high-speed Xserve RAID storage system. The company increased the maximum capacity from 3.5TB to 5.6TB, received certification for the Xserve RAID from Cisco and SUSE Linux, and optimized the RAID system to work with Apple's own Xsan Storage Area Network (SAN) file system.

The Xserve RAID is now available in 1TB (\$5,999), 2.8TB (\$8,499), and 5.6TB (\$12,999) configurations. The 5.6TB configuration costs \$2,000 more than the previous top-of-the-line model but includes 2.1TB of additional storage.—PETER COHEN

## Single-Processor Power Mac G5 Returns

In an interesting turn, Apple added a single-processor 1.8GHz Power Mac G5 back into its desktop computer arsenal. The company is offering the \$1,499 system in an otherwise dual-processor lineup of 1.8GHz, 2GHz, and 2.5GHz systems.

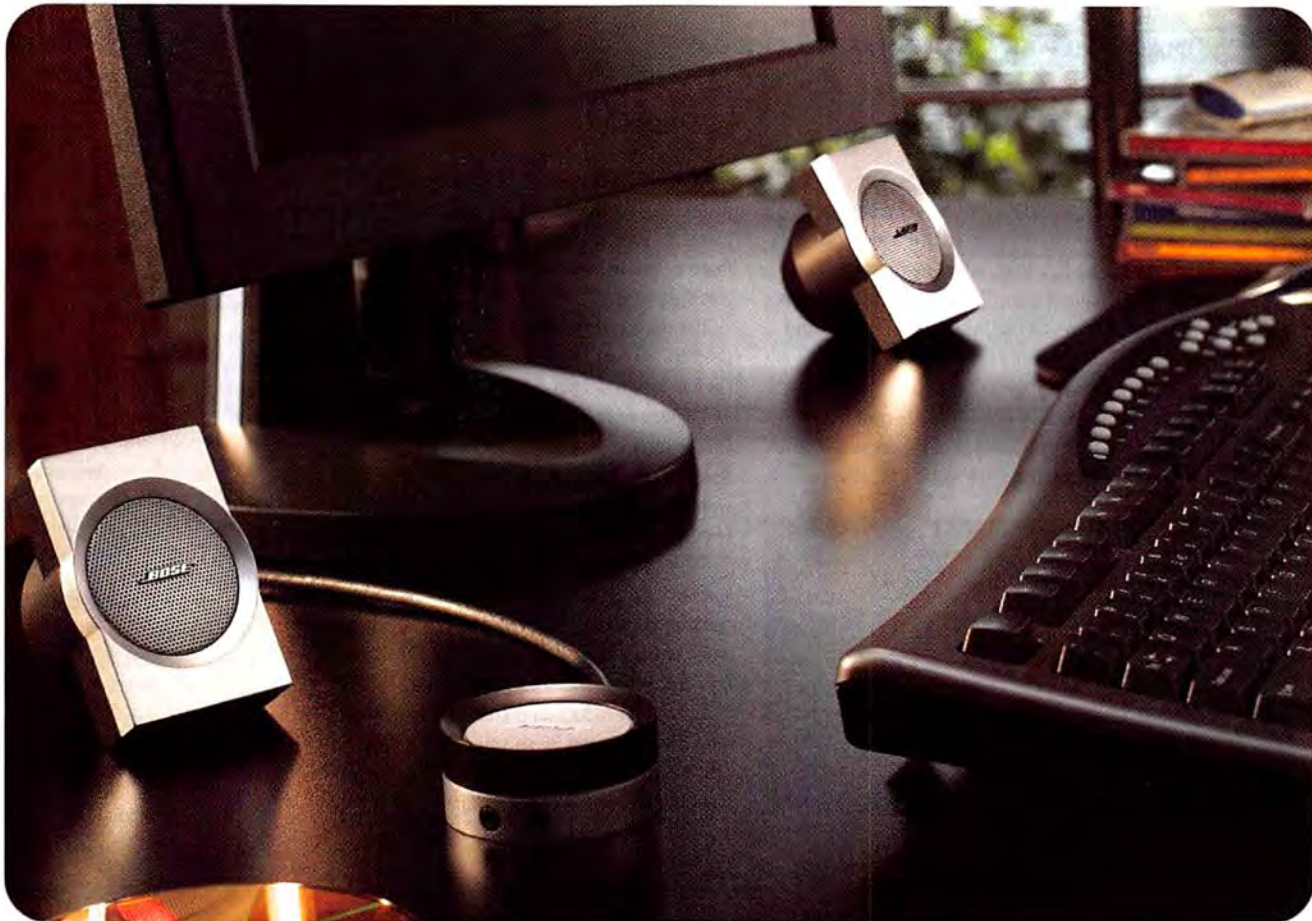
Like the dual-1.8GHz model, Apple's new single-processor 1.8GHz Power Mac features an Nvidia GeForce FX 5200 Ultra graphics card in an 8x AGP slot, 256MB of DDR400 SDRAM (with a 4GB maximum), an 8x SuperDrive, an 80GB Serial ATA (SATA) hard drive, three 33MHz 64-bit PCI slots, an AirPort Extreme slot, two FireWire 400 ports, one FireWire 800 port, and three USB 2.0 ports. The big difference is that the single-processor computer features a slower frontside bus than the dual-processor—clocking in at 600MHz instead of 900MHz. The original Power Mac G5 lineup (announced in June 2003) included a \$2,399 single-processor 1.8GHz system with twice the amount of included RAM (512MB), twice the hard-drive space (160GB), a faster 900MHz system bus, and a slower 4x SuperDrive.—PETER COHEN

## iBOOKS MARCH ON

SIZE	PRICE	PROCESSOR	RAM (MAXIMUM)	BUS SPEED	GRAPHICS	HARD DRIVE	NATIVE RESOLUTION	OPTICAL DRIVE	MORE INFORMATION
12-inch	\$999	1.2GHz G4	256MB DDR266 (1.25GB)	133MHz	ATI Mobility Radeon 9200 with 32MB DDR RAM	30GB	1,024 × 768	Combo drive	<a href="http://find.macworld.com/0178">find.macworld.com/0178</a>
14-inch	\$1,299	1.33GHz G4	256MB DDR266 (1.25GB)	133MHz	ATI Mobility Radeon 9200 with 32MB DDR RAM	60GB	1,024 × 768	Combo drive	<a href="http://find.macworld.com/0179">find.macworld.com/0179</a>
14-inch	\$1,499	1.33GHz G4	256MB DDR266 (1.25GB)	133MHz	ATI Mobility Radeon 9200 with 32MB DDR RAM	60GB	1,024 × 768	SuperDrive	<a href="http://find.macworld.com/0180">find.macworld.com/0180</a>



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WORK

MACS HELP SKY CAPTAIN SAVE THE DAY

## World of Today

When visual-effects artist Darin Hollings—a veteran in the film industry with over a decade of experience using Unix-based SGI and Linux-based PC workstations—first met director Kerry Conran, Hollings says, “he handed me a 15-inch PowerBook as soon as I walked in the door and told me, ‘You’re going to learn OS X.’”

After spending several years using nothing but a Mac to painstakingly create a six-minute short, Hollings had the beginnings of Paramount Pictures’ *Sky Captain and the World of Tomorrow*.



Then, PowerBook in hand, Hollings assisted as the actors worked on a bluescreen set. The entire environment would be added later, so Hollings was there to ensure that every shot lined up the way it was supposed to.

The shots were recorded to HD tape and digitized on a Power Mac equipped with a Kona card. On the postproduction end, Hollings’s team started with Power Mac G4s but moved to Power Mac G5s as soon as they became available. Three Xserves fed the digital artists their footage as they worked on it in Adobe After Effects, replacing bluescreens with shots of New York and the Himalayas.

The compositing team worked on more than 1,100 shots, using the same workstation to render completed shots and work on new ones. “That’s when I realized the Mac could be a pretty hardcore production machine,” says Hollings.

Now that production is completed, Hollings admits his Mac and PC sit side-by-side in his office. “And I don’t go anywhere without my PowerBook,” he adds.—BRAD COOK

ADDITIONAL THEMES MAKE PROJECTS LOOK BETTER

## Why Do It All Yourself?

Apple’s DVD Studio Pro, iDVD, and Keynote come with templates—or themes—that make assembling a professional-looking movie or presentation much easier. But if you use those themes all the time, all your work will start looking the same—boring, and just like everybody else’s. So a bunch of third-party vendors have popped up with themes of their own. Here’s a sample.—DAN MILLER

## VARIATIONS ON A THEME

COMPANY	PRODUCT	PRICE	CONTACT	PROVIDES	COMPATIBILITY
DVDThemePAK	Theme Paks 1–6	\$29–\$49 per pack	<a href="http://www.dvdthemepak.com">www.dvdthemepak.com</a>	6 motion and 2 still themes, or 4 motion and 4 still themes	iDVD 3 and 4
	Button Paks 1–2	\$49 per pack (\$39 download)	<a href="http://www.dvdthemepak.com">www.dvdthemepak.com</a>	21 buttons	iDVD 3 and 4
	Theme Paks 1–6	\$79–\$89 per pack	<a href="http://www.dvdthemepak.com">www.dvdthemepak.com</a>	19–29 templates, 8–15 backgrounds, 20–38 shapes	DVD Studio Pro 2 and 3
iDVD Themes	Volume 1	\$25	<a href="http://www.idvdthemes.com">www.idvdthemes.com</a>	12 themes	iDVD 2 and 3
	Holiday Volume	\$13	<a href="http://www.idvdthemes.com">www.idvdthemes.com</a>	4 themes	iDVD 2 and 3
Jumsoft	Keynote Themes 3.5	\$35	<a href="http://www.jumsoft.com">www.jumsoft.com</a>	22 themes	Keynote
KeynotePro.com	Art History, Duet, Field Journal, MetroBlue, and more	\$20 each, \$50 three-pack	<a href="http://www.keynotepro.com">www.keynotepro.com</a>	main theme, supplemental slides	Keynote
	PhotoGrafik Pro, PitchBoards: Pro	\$29 each	<a href="http://www.keynotepro.com">www.keynotepro.com</a>	main theme, supplemental slides, additional masters	Keynote
	Proof (+) and (–) for iDVD	\$20	<a href="http://www.keynotepro.com">www.keynotepro.com</a>	8 themes	iDVD 4

MULTIMEDIA  
BEAT

Digital Performer 4.5, from MOTU ([www.motu.com](http://www.motu.com)): Upgrade to audio-editing software features Beat Detection engine, plug-in latency compensation, and the MasterWorks EQ plug-in (contact MOTU for pricing; upgrades start at \$149).

MegaSeg 3.0, from Fidelity Media ([www.megaseg.com](http://www.megaseg.com)): DJ and radio automation software features an updated live-mixing interface, improved iTunes and iPod integration, and a new search engine (\$199; upgrade, \$59).

O2, from M-Audio ([www.m-audio.com](http://www.m-audio.com)): MIDI USB keyboard features 25 full-size, half-action, velocity-sensitive keys; eight assignable knobs; eight assignable buttons; and mod and pitch bend (\$179).

Slick 7 and Slick 8, from Gee-Three.com ([www.geethree.com](http://www.geethree.com)): iMovie plug-in packs offer 70 OpenGL-based 3-D transitions and 11 editing tools, respectively (Slick 7, \$50; Slick 8, \$70).—COMPILED BY PHILIP MICHAELS

STORAGE  
BEAT

Fast DVD Copy 3, from Velan Software ([www.fastdvdcopy.com](http://www.fastdvdcopy.com)): Archival software for copying DVD videos to blank DVD-RW discs adds support for PlayStation 2 discs (\$100; upgrade, free).

LaCie Ethernet Disk, from LaCie ([www.lacie.com](http://www.lacie.com)): Web-administrable Network Attached Storage system uses Windows XP Embedded operating system to provide network-based file storage for Mac, Windows, Linux, and Unix computers in 160GB, 250GB, 500GB, and 800GB capacities (\$599 to \$1,499, depending on storage capacity).

P-2000 Multimedia Storage Viewer, from Epson ([www.epson.com](http://www.epson.com)): Portable 40GB device for storing and displaying digital photos features a 3.8-inch color LCD screen and a memory-card slot (\$499).—COMPILED BY PHILIP MICHAELS





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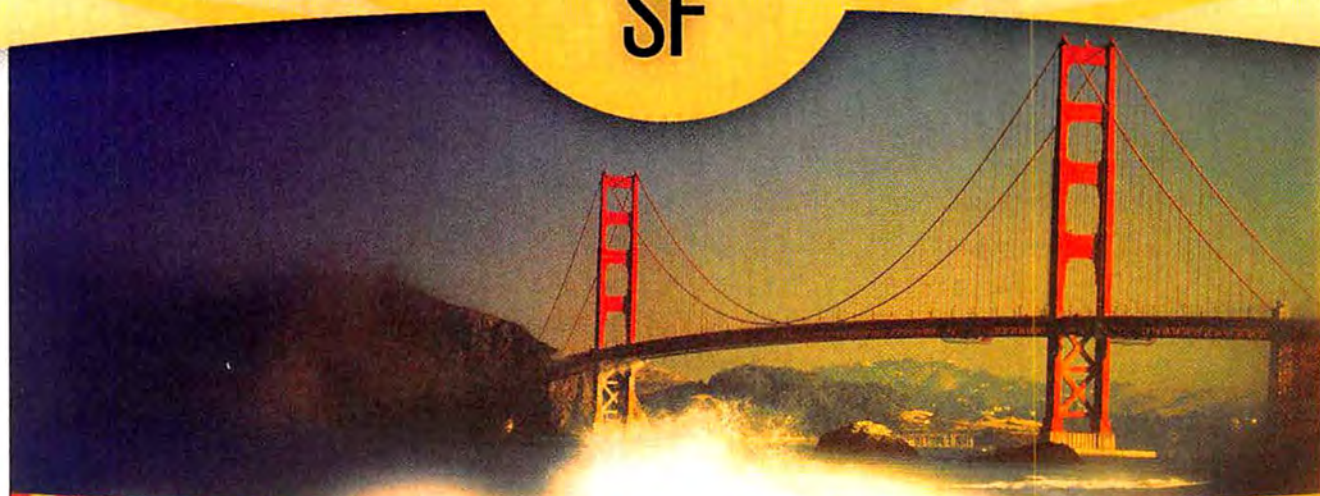
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Reviews you can trust: Macworld rates only final shipping products, not prototypes. What we review is what you can actually buy.

## 6- and 7-Megapixel Digital Cameras

### Big Pictures Emerge from Small Packages

BY ROBERT ELLIS

Between the burgeoning field of sub-5-megapixel pocket cameras and the ranks of 8-megapixel-plus prosumer models is a growing group of 6- and 7-megapixel cameras that don't seem to know what they want to be. Some pose as compact point-and-shoots, and some act as faux digital SLRs.

We tested six 6-megapixel cameras: the Casio Exilim EX-P600, the Fujifilm FinePix E550 and FinePix S7000, the Kodak EasyShare DX7630, the Konica Minolta Dimage G600, and the Olympus Camedia C-60. We also looked at three 7-megapixel cameras: two from Canon, the PowerShot G6 and PowerShot S70, and one from Sony, the Cyber-shot DSC-P150. And we found a few surprises.

A few of these models are pricey compacts with little more to offer than a million or two extra pixels that most users won't appreciate, but a couple of them offer excellent value and picture quality. The Canons and the Sony are the standouts of the bunch.

### Some Big Shots

Some of these cameras—the Sony, for instance—are so small that they can sit comfortably on your palm. But despite their small size, the 7-megapixel models take pictures as large as 3,072 by 2,304 pixels. Fujifilm claims that the 6.3-megapixel FinePix E550 and FinePix S7000 can record 12.3 million pixels, yielding a 4,048-by-3,040-pixel image, but we found that these images looked no better than enlargements achieved by upsampling in Photoshop.

A panel of Macworld experts judged a test photo (on screen and printed out) from each camera, rating the image's color and clarity (see the benchmark chart).

The Canon G6 and the Casio captured the most-accurate color. The Fujifilm E550's images had a slight greenish tint, and the Fujifilm S7000 captured reds that looked almost orange. The Kodak's images had a similar problem and appeared undersaturated.

The Canon G6 also captured the sharpest pictures, with very little noise. The Fujifilm

cameras' images had noticeable noise and purple fringing (a purple glow that can appear around high-contrast edges in a picture). Images from the Canon S70, the Kodak, and the Konica also showed a small amount of purple fringing. The Casio's pictures seemed slightly soft throughout.

When we used automatic white-balance settings and our tungsten lights, the Casio, the Canon S70, and the Konica produced images with an orange cast (the Casio was the worst offender).

These cameras feature a wide range of video quality. The Casio, Kodak, Konica,

**The Lineup** Clockwise from top left: Canon's PowerShot S70, Fujifilm's FinePix E550, Sony's Cyber-shot DSC-P150, Kodak's EasyShare DX7630, Fujifilm's FinePix S7000, Konica Minolta's Dimage G600, Casio's Exilim EX-P600, and Olympus's Camedia C-60; pictured above: Canon's PowerShot G6.



and Olympus models capture video at 320 by 240 pixels. The Canons can capture video at 640 by 480 pixels, but only at a disappointing 10 fps (frames per second), and clips are limited to 30 seconds.

The Fujifilms and the Sony capture video continuously at 640 by 480 and 30 fps (duration is limited only by memory capacity). The quality of the video captured by the Fujifilm cameras was good, but the audio had some distracting static. The Sony's video was a bit grainy and dark, but the audio was stronger. The Sony requires a Memory Stick Pro (not included) to capture video at 30 fps (it captures at 16 fps with the provided standard Memory Stick).

### Your Best Shot

Of these cameras, the Fujifilm S7000 has the longest optical zoom, at 6×—equivalent to a 35mm–210mm lens on a 35mm camera. The Canon S70 has the widest lens; a 3.6× zoom with a 28mm–100mm focal range. The Canon G6, Casio, and Fujifilm E550 offer 4× optical zooms; the remaining cameras have 3×. The Fujifilm S7000 can focus to 0.4 inches in its Super Macro mode. The Olympus can focus to 1.6 inches. The Casio has the longest focal range in macro mode: 3.94 inches. For added flexibility, optional lens converters are available for all but the Canon S70, the Konica, and the Olympus. The Fujifilm S7000 has a focus/zoom ring on its lens, which gives you more control than the buttons or levers that control zooming on the other models.

With a maximum aperture of f2.0, the Canon G6 has the fastest lens (the maxi-

PHOTOGRAPHY BY PETER BELANGER



## 26 Point-and-shoot digital cameras

Canon PowerShot G6  
Canon PowerShot S70  
Casio Exilim EX-P600  
Fujifilm FinePix E550  
Fujifilm FinePix S7000  
Kodak EasyShare DX7630  
Konica Minolta Dimage G600  
Olympus Camedia C-60  
Sony Cyber-shot DSC-P150

## 29 Motion-graphics package

Motion 1.0  
30 Network music players  
Roku SoundBridge M1000  
Roku SoundBridge M2000  
32 Windows-emulation program  
Virtual PC 7  
34 Multimedia software  
MovieWorks Deluxe 6.0.2

36 3-D modeler  
Silo 1.3  
36 3-D-storyboard software  
FrameForge 3D Studio  
38 Backup utility  
BounceBack Professional  
40 Audio package  
Live 4  
42 Business-card scanner  
IRIS Business Card Reader II

43 Graphics tablet  
Wacom Intuos3  
44 Photo printer  
Epson Stylus Photo R800  
48 Top Products  
50 The Game Room  
Enemy Engaged: Comanche Versus  
Hokum, Myst IV: Revelation, the  
Revolution 5.1 audio card, and The  
2004 Game Hall of Fame inductees

56 Mac Gems  
Backdrop, DownloadComment,  
MacTracker, PhotoReviewer

lum for the others is f2.8), which is important for shallow depth of field. The Fujifilm S7000 has shutter speeds of up to  $\frac{1}{10,000}$  of a second—ideal for freezing action—but most people probably won't need more than the  $\frac{1}{1,000}$  or  $\frac{1}{2,000}$  of a second offered by the others.

Most of the cameras are light sensitive to 400 ISO. The Fujifilms are the most sensitive, with ISO equivalents of 80 to 640 (the E550) and 160 to 800 (the S7000) in automatic mode (in manual mode, the E550 can go as low as 80, while the S7000's lowest ISO is 200). If you take many low-light pictures, that'll sound reassuring, but a higher ISO means more noise, and an ISO of 200 in manual mode is high. Also, an ISO of 800 is available only at up to 3 megapixels. The Canons, the Casio, and the Konica can go as low as 50 ISO in manual mode.

All offer automatic white balance, several presets, and custom modes, except for the Kodak, the Konica, and the Sony, which

lack manual white balance. And all of these cameras have built-in flash and red-eye-reduction modes. The Canon G6 and the Fujifilm S7000 have hot-shoes for attaching an external flash.

The Olympus, the Casio, and the Canon G6 include wireless remotes, but the Olympus remote lets you control only the shutter. The Casio and Canon G6 remotes let you release the shutter, control the zoom, and operate menus.

Both the Canons and the Fujifilms offer RAW capability, letting you save uncompressed images without any processing in the camera. Serious photographers will appreciate this, since adjusting an image in Photoshop gives you more control than in-camera processing.

## On the Menu

We found that the information displays and menus on most of these cameras were easy to navigate and decipher. The Olympus and

Konica menus are the least intuitive. The best is the Casio menu, which offers the unique Ex Finder, an information overlay that looks like a fighter jet's heads-up display. Crosshairs help you align your shot; you can view numerous settings at a glance and quickly adjust them. Manual Assist menus show you the effect of manual adjustments, making it easier to set aperture and shutter settings. There's also a live histogram, which displays tonal range and warns you of lost detail in shadows or highlights as you compose your shot.

The Canons, the Fujifilm S7000, the Olympus, and the Sony also offer live histograms, and the Canon G6 displays an overexposure warning for clipped areas, but only in preview mode. The Fujifilm E550 can display a histogram in preview mode. The Kodak and the Konica have no histogram display.

The Kodak has the largest LCD monitor, at 2.2 inches. The Canon G6 and the

continues

# 6- AND 7-MEGAPIXEL DIGITAL CAMERAS COMPARED

COMPANY	MODEL	MOUSE RATING	PRICE	CONTACT	RESOLUTION <sup>A</sup>	ZOOM (35MM EQUIVALENT)	APERTURE	PROS	CONS
Canon	PowerShot G6 *	★★★★	\$699	www.canon.com	7.1	4.0x (35mm–140mm)	f2.0–f3.0	Best pictures; RAW format; easy menus; live histogram; audio notes; flip-out LCD; hot-shoe; overexposure warning; remote.	Video only at 10 fps and limited to 30 seconds; flimsy lens cap.
Canon	PowerShot S70	★★★★	\$599	www.canon.com	7.1	3.6x (28mm–100mm)	f2.8–f5.3	Very good color quality; sharp pictures; RAW format; easy menus; live histogram; audio notes.	Video only at 10 fps and limited to 30 seconds; no optional lenses.
Casio	Exilim EX-P600	★★★★	\$599	www.casio.com	6.0	4.0x (33mm–132mm)	f2.8–f4.0	Built-in flash memory; innovative Ex Finder; most presets; live histogram; remote.	Pictures are soft; poor video quality; paltry 9MB flash memory; no printed manual.
Fujifilm	FinePix E550	★★★★	\$449	www.fujifilm.com	6.3	4.0x (32.5mm–130mm)	f2.8–f5.6	RAW format; easy menus; good video quality.	Pictures had slight green tint, noise, and purple fringing.
Fujifilm	FinePix S7000	★★★★	\$699	www.fujifilm.com	6.3	6.0x (35mm–210mm)	f2.8	Super Macro mode; fastest shutter; RAW format; electronic viewfinder; hot-shoe; live histogram; easy menus; good video quality.	Reds looked almost orange; pictures were noisy.
Kodak	EasyShare DX7630	★★★★	\$399	www.kodak.com	6.1	3.0x (39mm–117 mm)	f2.8–f4.8	2.2-inch LCD; 32MB built-in flash memory; easy menus; lowest price in the group.	Reds looked almost orange; colors appeared understated; no custom white balance; no histogram; no audio notes; flimsy lens cap; poor video quality.
Konica Minolta <sup>B</sup>	Dimage G600	★★★★	\$429	www.konica-minolta.com	6.0	3.0x (39mm–117 mm)	f2.8–f4.9	Very good image quality; reasonable price.	Poor video quality; smallest LCD (1.5-inches); confusing menus; no custom white balance; no histogram; no optional lenses; no AV cable.
Olympus	Camedia C-60	★★★★	\$449	www.olympus-america.com	6.1	3.0x (38mm–114mm)	f2.8–f4.8	Live histogram; remote; very good image quality.	Poor video quality; confusing menus; no optional lenses.
Sony <sup>B</sup>	Cyber-shot DSC-P150	★★★★	\$499	www.sony-style.com	7.2	3.0x (38mm–114mm)	f2.8–f5.4	Fast startup; very responsive; easy menus; live histogram; AC adapter; least-expensive 7-megapixel camera in the group; most compact.	No custom white balance; no audio notes.

\* = Editors' Choice. <sup>A</sup>In megapixels. <sup>B</sup>The Konica Minolta and the Sony had to be retested with replacement units after anomalies were found in the images.



Casio have 2-inch LCDs; the others' LCDs are 1.8 inches, except for the Konica's, which is the smallest at 1.5 inches. Bigger is better, and 1.8 inches is about the minimum for good visibility. The Canon G6 is the only one with an adjustable, flip-out LCD, which lets you fine-tune your viewing position (handy for shooting at odd angles, such as over your head). The Fujifilm S7000 has an electronic viewfinder, perfect for sunny days when LCDs can be difficult to see.

All digital cameras capture EXIF (Exchangeable Image File Format) data such as aperture settings and shutter speed. In this group, all but the Kodak and the Sony also let you attach audio notes (such as a subject's name or a shot's location) to a picture; maximum lengths range from a few seconds to one minute. The Canons let you add the longest audio notes, and the quality is surprisingly good.

#### Out of the Box

All of these cameras are quick to start up, so you won't be likely to miss a shot. Most menu operations feel responsive. The Casio and the Olympus felt a bit sluggish while saving images to memory and during play-

Macworld TESTING	COLOR QUALITY	CLARITY
Canon PowerShot G6	Excellent	Excellent
Canon PowerShot S70	Very Good	Very Good
Casio Exilim EX-P600	Excellent	Good
Fujifilm FinePix E550	Good	Good
Fujifilm FinePix S7000	Good	Good
Kodak EasyShare DX7630	Good	Very Good
Konica Minolta DiMAGE G600	Very Good	Very Good
Olympus Camedia C-60	Very Good	Very Good
Sony Cyber-shot DSC-P150	Very Good	Very Good

**BEST RESULTS IN BOLD.**

We took a photo of a standard test scene with each camera under controlled conditions, with the flash turned off, and with the white-point setting at tungsten. All other settings were at automatic. A panel of experts looked at our test image, both on screen and printed by an Epson Stylus Photo 2200, and rated color quality and clarity as Excellent, Very Good, Good, Flawed, or Unacceptable.—MACWORLD LAB TESTING BY ROBERT ELLIS AND JAMES GABRAITH

back. The Sony felt the most responsive in typical use.

All the cameras feel solid. The Canon G6 and the Fujifilm S7000 are too bulky to call compact. The Fujifilm S7000, at 17.6 ounces, is heftier, and it looks and feels more like an SLR than a compact. At 5.4 ounces, the Sony is the lightest. It's also the smallest—you can even call it a pocket camera. It's a bit weighty for a shirt pocket, but it does fit comfortably in a jeans pocket, as does the 6.9-ounce Konica. The Olympus is a bit bulkier but still compact.

With the exception of the Kodak, the Canon G6, and the Fujifilm S7000, all of these cameras have built-in sliding lens barriers to protect the lenses. The lens cap on the Fujifilm S7000 is to be expected; this camera has a larger lens, in keeping with its faux-SLR form factor. But lens caps on two other models are puzzling. The Kodak lens cap clips on, while the Canon G6 lens cap merely fits snugly. Both fall off easily, putting the lenses at risk of damage.

#### In the Box

In these cameras' boxes, you'll find everything you need to get started with shooting.

All of these cameras include interface cables for transferring files to your Mac, and all but the Konica include AV cables so you can plug your camera into a TV for easy viewing. All but the Fujifilm S7000 include rechargeable batteries and chargers (it takes 4 AA alkaline batteries or optional rechargeable AA NiMH batteries). The Casio doesn't come with a printed manual, even though it's tricked out with a multitude of impressive features (it does come with a 247-page PDF manual).

None of these cameras come with a reasonably sized memory card, considering their resolutions. The Canons, the Olympus, and the Sony come with 32MB memory cards, while the Fujifilms and the Konica come with 16MB cards. The Casio and the Kodak come with built-in flash memory, but the Casio's is a paltry 9MB (not enough to take even one TIFF at the highest resolution). The Kodak offers a more generous 32MB (both also take SD and MMC memory cards).

You'll also find software in the boxes, although no bundled application is likely to replace iPhoto, and Casio's works only in OS 9—Casio recommends iPhoto for all OS X users. The Canon and Olympus applications offer more capabilities than the others do. You'll need the software included with the Canons and the Fujifilms for converting RAW files if you don't have Photoshop or another RAW-capable application.

#### Macworld's Buying Advice

If size is a factor, the Sony Cyber-shot DSC-P150—with its compact form, light weight, and 7-megapixel pictures—should fit your needs the best. We really liked the Casio Exilim EX-P600's striking and innovative Ex Finder, but for the same price, we prefer the Canon PowerShot S70's pictures and RAW capability. The Fujifilm FinePix S7000 has an impressive 6× zoom, but its pictures don't compare with those of the Canon PowerShot G6. Ultimately, image quality counts, and the PowerShot G6 is a winner. □



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# Motion 1.0

Long-Awaited Newcomer Combines Simple Interface with Nearly Real-Time Performance

BY BEN LONG

With its promise of real-time compositing, color correction, and a drag-and-drop interface—not to mention its \$299 price—few programs have been as eagerly anticipated as Apple's Motion 1.0. Video editors and motion-graphics pros wondered if Apple's new product would provide an alternative to their current compositing application, be it Adobe After Effects 6.5 (★★★★; November 2004), Discreet's Combustion 3 (★★★★; September 2004), or Apple's own Shake. The answer is no—the program is not an outright replacement for those far more expensive tools. But after using Motion for just a few days, you may be surprised at how much of your compositing and graphics workload you will choose to move to this excellent new contender.

While Motion doesn't provide any features that the competition doesn't already handle, its combination of nearly real-time performance and a simple interface will cause animators, titlers, and compositors to take a serious look at its capabilities. The program is so tightly integrated with Final Cut Pro HD that video editors who have been looking for a more powerful titling tool than the one built into Final Cut will find an excellent solution in Motion.

## Interface in Motion

Motion's interface derives elements from many different Apple apps, but with its tabbed file browser and pop-up menu panes, it most closely resembles DVD Studio Pro 3. It offers several ways to perform most operations: you can drag and drop items to windows or interface elements, click on toolbar buttons, select menu options, or tweak parameters in Motion's comprehensive Inspector window. You can perform the same complex masking operations in Motion with a simple drag and drop that would require a lot of configuration in other compositing applications.

Though Motion provides a typical timeline-based interface for layering and animating elements in a composite, its interface is more compelling because of the addition of behaviors. Say you want to animate an object to make it fly across the screen. Instead of

setting separate start and end points on the timeline, you can simply drop a Throw behavior onto the object from the Behavior library. A semiopaque pop-up Dashboard lets you control the Throw behavior's direction and speed.

Behaviors are not a replacement for traditional keyframe-based animation; they're simply a very powerful shortcut. At any time, you can transform an applied behavior into a set of keyframes that you can easily edit and customize using Motion's timeline.

Motion includes a robust set of behaviors, including physics-based behaviors such as Gravity, Collision Detection, and Wind effects. Most behaviors include dozens of editable parameters that allow you to customize, combine, and transform simple behaviors into complex actions.

## Compositing in Real Time

The big attraction of Motion's interface is that you perform all your operations while your video is playing. You can adjust the

effect, to synchronize settings on multiple layers, or to adjust your composite to fit a voice-over.

Motion includes a sophisticated particle system that allows you to create smoke and fire effects, rain, or simple cascades of visual elements. Motion's particles are easier to use than those of any other competing particle system. The added advantage is that you can configure them in real time.

## Dollars in Motion

If the prospect of real-time motion graphics for \$299 has you drooling, bear in mind that it requires a certain level of hardware. We tested Motion on both dual-2GHz and dual-2.5GHz Power Mac G5s, with varying RAM configurations and video cards. Though RAM and processor speed did make a difference, our tests showed that the video card had more to do with Motion's performance than any other factor.

With an Nvidia GeForce FX 5200, playback stuttered frustratingly on a complex composite. Upgrading to an ATI Radeon 9800XT smoothed out playback right away. So Motion's price might be a little higher when you factor in the need for a fast video card.

Though Motion has just about everything you need for most compositing tasks, it still lacks some key elements. It provides only 2-D compositing and it has no painting capabilities, so you won't want to use it for serious rotoscoping. And because it lacks a motion tracker, you won't be able to perform any image stabilization. In addition, though its color-correction filters are very good, Motion uses only 8-bit color, so it's not appropriate for high-end color correction.

## Macworld's Buying Advice

Apple's Motion 1.0 is going to improve a lot of motion-graphics workflows. It not only offers an excellent interface with nearly real-time, interactive playback; it's also fun to use. Give it a try. If you do lots of motion graphics or compositing, you'll probably find yourself moving toward Motion. □

**RATING:** ★★★★★

**PROS:** Excellent interface; interactive playback; great particle system; extremely powerful behavior mechanism; great price.

**CONS:** No motion tracker; no painting tools; only 8-bit color support; 2-D only.

**PRICE:** \$299

**COMPANY:** Apple Computer, [www.apple.com](http://www.apple.com)



**Good Behavior** Motion provides a conventional timeline interface, but its real power comes from complex drag-and-drop behaviors and an advanced particle system.

response of a behavior, tweak the settings of a filter, or change any parameter of any layer—or any operation at all—and the video playback will immediately update to show your new result. Motion's workflow is completely smooth and interactive in comparison with the traditional, tedious motion-graphics workflow. The combination of real-time performance and a behavior-based interface lets you have a lot more fun experimenting in Motion than in any other compositing app.

Motion can't always muster a full 30 frames per second, but even if playback drops to half that speed, it's still good enough to judge the overall impact of an



# Roku SoundBridge M1000 and M2000

Stylish Digital Music Players, Large and Small

BY JASON SNELL

Music fans who've converted an audio library into digital files for use on an iPod or a computer may also be searching for a way to replace the CD player in their home stereo systems. Bridging the gap between a hard drive and a stereo, music players such as Roku's SoundBridge give you iPod-like control over your music from the comfort of your easy chair.

The SoundBridge doesn't offer music storage. Instead, it streams music data over your home network from Macs or PCs running iTunes. Just select the Share My Music option in iTunes' Sharing preference pane.

There are two SoundBridge models: the \$500 M2000 is 17 inches wide and features a 512-by-32-pixel dot matrix display; the \$200 (or \$250 with a Wi-Fi card) M1000 is 10 inches wide and has a 280-by-16-pixel dot matrix display. The M1000's display is identical to the display on Slim Devices' upgraded Squeezebox (April 2004—see "Squeezebox versus SoundBridge"). The dot matrix screen lets the SoundBridge display waveform graphics while it's playing music. It also has a simple remote control.

## Sound Design

Both SoundBridge models have the same interesting design—they're anodized metallic tubes with black plastic caps on each end. You pop off the right-hand cap to attach the SoundBridge's power cord and RCA, coax-

ial, or optical audio cables. Behind the left cap are networking options: an Ethernet port and a CompactFlash slot.

Those plastic caps make it inconvenient to attach or detach a cable, but once you plug everything in, the SoundBridge has an undeniably clean design. (A small rubber stand keeps it from rolling away; Roku sells a wall-

mounting kit for \$30.) It's hard to read the text on the smaller model from a distance, but the M2000's display is readable from across a room.

## Limited Server Software

The SoundBridge can play only a few music formats natively: MP3, unprotected AAC, and uncompressed AIFF and WAV. (iTunes Music Store files won't play on the SoundBridge, just as they won't play on any hardware device other than the iPod and the AirPort Express; a forthcoming software update will bring support for WMA files and Windows-based music servers from Microsoft and Musicmatch.) However, the SoundBridge can play additional formats when it uses its competitor's software. The SoundBridge can connect to a computer running Slim Devices' free SlimServer. Once the SoundBridge connects

to SlimServer, its menu system changes to match the menu on the Squeezebox and its predecessor, the SlimMP3. SlimServer can translate file formats such as FLAC, Apple Lossless, and Ogg Vorbis into a format the SoundBridge can understand. And it provides several other good features, including a Web-browser interface, a clock, and support for browsing for Internet radio streams. (Natively, the SoundBridge can play Internet radio stations only if they have been added to an iTunes playlist.) The SoundBridge's software also doesn't properly order songs or artists whose names begin with *the*—our Beatles tracks were filed under *T* (Roku says this will be fixed in its forthcoming update).

Although its onboard software may lack polish today, the SoundBridge is a network-connected device, so it can connect to the mothership at Roku and download software updates. This feature works well.

## Macworld's Buying Advice

If you want to listen to your digital music in a computer-free location, you should seriously consider a networked music player. With a uniquely clean design and built-in iTunes support, a readable display, a simple infrared remote control, and a reasonable price, Roku's SoundBridge M1000 will fit well in your home stereo system. □

### SOUNDBRIDGE M1000

**RATING:** ★★★

**PROS:** Support for compressed and uncompressed audio; digital and analog ports; easy to set up; reasonably priced.

**CONS:** Software has some rough edges; text is not readable from a distance; no support for encrypted iTunes Music Store files.

**PRICE:** \$200; with Wi-Fi card, \$250

**COMPANY:** Roku, [www.rokulabs.com](http://www.rokulabs.com)

### SOUNDBRIDGE M2000

**RATING:** ★★★

**PROS:** Support for compressed and uncompressed audio; digital and analog ports; easy to set up; text is very readable.

**CONS:** Expensive; software has some rough edges; no support for encrypted iTunes Music Store files.

**PRICE:** \$500

**COMPANY:** Roku, [www.rokulabs.com](http://www.rokulabs.com)

## Squeezebox versus SoundBridge



When Roku announced the SoundBridge last January, the music player had one feature that Slim Devices' new Squeezebox couldn't match: a 280-by-16-pixel dot matrix screen. Hampered by an old-style character-based screen, the Squeezebox couldn't display graphical visualizers, offer multiple fonts, or generate truly readable large type. But just before the

first SoundBridges shipped, Slim Devices updated the Squeezebox (\$199; with built-in wireless networking, \$279; [www.slimdevices.com](http://www.slimdevices.com)) with a 280-by-16-pixel dot matrix display. The Squeezebox is now much easier to read than either its previous iteration or the SoundBridges because the Squeezebox software supports a variety of easily readable display typefaces. (Users of the character-based Squeezebox can swap out the old display for \$69.)

So which player is better? It all depends on your priorities. I lean toward the Squeezebox, which has the superior SlimServer software and more file-format options. But the SoundBridge has several unique traits, including direct iTunes support and that distinctive metallic-tube design. Still can't decide? Both companies offer a 30-day money-back guarantee, so you can try both devices out.



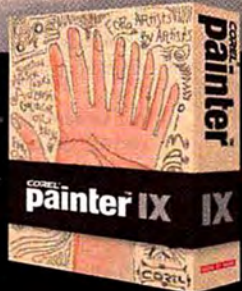
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# Virtual PC 7

Underwhelming Upgrade Is Perkier and Friendlier

BY ROBERT ELLIS

When Microsoft took over development of Virtual PC, after buying Connectix at the beginning of 2003, it promised Mac users a reason to celebrate. With Microsoft's intimate knowledge of Windows, the company suggested, we could expect a better, faster Windows emulator. After several delays, version 7 with Windows XP Professional—the first full Microsoft release—is here. Unlike version 6, it'll run on your G5, and it includes some improvements. But we're not ready to pop the champagne corks.

## Alter Ego or Evil Twin?

Virtual PC creates a virtual Windows machine inside your Mac. You can copy and paste—and even drag and drop—files from Windows to your Mac, and vice versa. You can display a Windows Start menu, as well as the icons of your running Windows applications, in your OS X Dock.

If you need to run Windows programs on your Mac, Virtual PC is a godsend. But once you get past Windows XP's garish,



**Ready to Play** Virtual PC 7 doesn't have 3-D support, but that won't keep you from playing 2-D games such as Fritz, a popular Windows-only chess program.

Dr. Seuss-like colors, you have to adjust to the sleepy pace. Microsoft describes Virtual PC as your Mac's alter ego, but sometimes it can feel like the Mac's evil twin. Microsoft hasn't eliminated the main complaint that has dogged Virtual PC since it was first introduced seven years ago—slow performance.

## Virtual Performance

Is Virtual PC 7 faster than previous versions? The answer is an unequivocal yes—I think so . . . maybe.

To assess performance, I ran a battery of tests using two popular Windows utilities—Fresh Diagnose and Dr. Hardware—after continues on page 47

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# MovieWorks Deluxe 6.0

Multifaceted Multimedia-Authoring Package Makes You an Interactive Auteur—without Blowing Away Your Budget

BY GALEN FOTT

Thomas Edison gazes stoically from the front of Interactive Solutions' MovieWorks Deluxe 6.0.2 software box. Although the great inventor wasn't known for writing code, he would probably have approved of this multimedia-authoring package. MovieWorks is a powerful, versatile tool for creating Web movies, slide shows, and interactive presentations. Factor in its attractive price, and MovieWorks is worthy of a hearty "Eureka!" from creative beginners who want to release their inner Edison.

## Supporting Cast

The MovieWorks Deluxe package can import most graphic, audio, animation, and video file formats. It encompasses six separate applications; four of these—Paint, Sound, Video, and Animator—help you prepare media for use in Author, the master application. The sixth application, Player, lets you view MovieWorks' interactive projects; it's freely distributed for the Mac and Windows.

The most full-featured of the helper applications, Paint gives you a variety of tools for creating graphics. Its large toolbox can be daunting, but the helpful Tool Tips palette identifies each tool as you pass your cursor over it and gives you usage suggestions. Strangely, painting is Paint's weakest function; brushstrokes made with its Brush tool aren't antialiased, resulting in blocky edges, and there's no easy way to make small adjustments in brush size. Paint would also benefit from tools for enhancing imported photos, such as sharpening and gamma control.

The Sound application can record audio from your computer's built-in microphone or audio-input port, and it can import tracks from CDs. You can apply effects such as Echo and Flange, shift pitch, and adjust overall volume. There's also a waveform editor that lets you zoom in to make minute edits to the audio waveform; unfortunately, you can't resize the small application window horizontally, so you can't see much of the waveform at any one time.

The Video application can capture video from a DV camcorder. While the capturing function works fine, its editing capability is very crude; you'll be better off if you do your

DV digitizing and editing in iMovie and then import the result into MovieWorks.

Animator is the least impressive of the bunch. The program is useful mainly for assembling existing frames so that you can import them as a whole animation into MovieWorks. A robust application that creates animated GIFs, such as Adobe Photoshop Elements 2.0 (★★★★; December 2002), is a necessary adjunct to Animator (and Ele-

mentary fill the gaps between markers with video clips, creating a sequence of exciting, rhythmic jump cuts.

For animating elements on screen, Author offers a fairly sophisticated path-based system complete with naturalistic eases in and out of motion. It's even possible to animate the stacking order of elements, letting an object appear first in front of and then behind another object. Unfortunately, Author's white-keying system usually leaves a white fringe around the edges of irregularly shaped objects; something like a tolerance slider or alpha-channel support would be a welcome improvement. The scrolling-text feature makes it easy to animate rolling credits, and you can either type your text into

Author or import it from an outside document; it stays editable either way.

You can distribute interactive projects viewable with Player on CD, on DVD (data or DVD-ROM), or online, while you can export linear scenes to QuickTime and AVI formats or out to your DV camcorder.

MovieWorks comes with a printed tutorial booklet to get you started. While this is helpful, the thorough and well-written 80-page PDF reference guide included on the CD is required reading if you really want to master the program. A printed version of this PDF would be nice.

## Macworld's Buying Advice

Despite the lackluster performance of its supporting applications, MovieWorks Deluxe is an excellent tool for creating interactive audiovisual

presentations on a limited budget. At \$100, the main application's powerful, easy-to-use animation and interactivity features would be a bargain even without the helper applications. Professionals with larger budgets will want to look to programs such as Macromedia Director, but MovieWorks is an ideal choice for schools and for casual users who are looking for an economical introduction to the multitasking world of multimedia authoring. □

**RATING:** ★★★★★

**PROS:** Excellent value; accepts a wide range of file formats; easy drag-and-drop workflow; good path-animation system; editable text.

**CONS:** Weak companion applications; unsophisticated white-keying system.

**PRICE:** \$100; upgrade, \$40

**COMPANY:** Interactive Solutions,  
www.movieworks.com



**No Programming Required** You can use Author's easy menu system to create clickable navigation buttons for your interactive presentation.

ments' excellent image-enhancing and painting tools could give Paint a boost, too; a review of Elements 3 will appear in a forthcoming issue).

## Leading Player

While the supporting cast may have limited talents, the Author application is a virtuoso. The interface consists of a project window, where you visually position graphic elements in space, and the Sequencer window, a timeline for working out the duration and sequence of your media clips. This interface makes creating a slide show of photos a painless process: just drag and drop a folder of pictures into the project window, select all of them, click on the Auto-Sequence button in the Sequencer, and choose a transition style, and you're done. Even niftier, Author offers a slick editing trick: you can lay down markers from the keyboard in real time as you listen to an audio track, and then you can



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# FrameForge 3D Studio

3-D Application Creates Elegant Video and Film Storyboards

BY BEN LONG

FrameForge 3D Studio is an affordable, easy way to create and manage high-quality storyboards—an essential part of any video or film project. While using 3-D software for storyboarding and previsualization is becoming standard practice, the only tools for such projects in the past have been complex 3-D-modeling and -animation programs such as Alias's Maya Complete 6 (★★★★; December 2004) and Maxon Computer's Cinema 4D R8 Core (★★★★; May 2003).

FrameForge offers a simpler approach to storyboarding, providing features tailor-made for previsualization artists, such as a library of set-building shapes and props. Because FrameForge lacks many of the complex features of its more powerful 3-D competition, it's also easier to learn.

## Virtual Set

You organize a FrameForge project just as you would a real shoot, with a virtual set for each of your real sets and locations.

You can toggle the main FrameForge window between a top-down schematic view and a through-the-camera view from any of the virtual cameras on your set.

To build a set, simply drag objects—walls, ceilings, furniture, props, and fully posable actors—into your virtual set from a list of objects. You can stretch and rotate walls, and you can easily position all objects by dragging them around within the top-down schematic view. Unfortunately, the program does not have precise dimension and sizing controls, so it's difficult to create accurate scale models of your real location.

Because FrameForge was designed for storyboarding, it features a good amount of built-in intelligence. For example, if you want to place a lamp prop on a table, the program automatically detects the collision of the two objects, so you can't pass the lamp through the table, as you could in a regular 3-D program. Similarly, actors know how to sit in a chair and strike any number of other poses. These shortcuts make building complex scenes much easier than doing so with a conventional 3-D program, but FrameForge's interface needs work. The object library is clunky, and finding an object requires too much scrolling.

Surprisingly, you can't import 3-D objects from other programs. Although you might already have built complex sets or models for a special-effects shot, there's no way to use them in FrameForge's storyboard layouts.



**Quiet on the Set** With FrameForge 3D Studio, you can build virtual sets and position virtual cameras to produce your storyboards.

If you're hoping to create *animations*, or animated video storyboards, you'll have to stick with a dedicated 3-D program. FrameForge offers no animation capabilities for its models or cameras.

## Worth a Thousand Words

There is no rendering in FrameForge 3D Studio. The program is designed to display your scene in real time using full-color shaded polygonal rendering. You can specify custom textures for your objects, so you can use photos of your actual set to texture a room.

You can export your storyboards as a series of JPEG files, as HTML pages complete with navigation, or as a Macromedia Flash movie. If you use a screenwriting app such as Final Draft 7.0.0.52 (★★★★; December 2004), FrameForge can automatically generate set lists from your script, and it can provide simultaneous script and storyboard views.

Unfortunately, FrameForge does not include any sketch-rendering capability, so your storyboards won't look like traditional hand-drawn storyboards. In fact, they might look a little too finished—a potential problem if you're working with neophyte clients.

## Macworld's Buying Advice

FrameForge 3D Studio is definitely a first version. Among the things we'd like to see added to the program are improved object browsing and importing, animation capabilities, and—most important—a sketch renderer. Nonetheless, the program is fast, well thought out, and easy to use, and it gives you a good way to previsualize your video, film or animation project. □

**RATING:** ★★★★★

**PROS:** Good scene-building interface; large selection of included objects; fast; many useful storyboard-specific features.

**CONS:** No sketch rendering; can't import 3-D objects; some interface clumsiness; no animation capabilities.

**PRICE:** \$349

**COMPANY:** Innoventive Software, [www.frameforge.com](http://www.frameforge.com)

# Silo 1.3

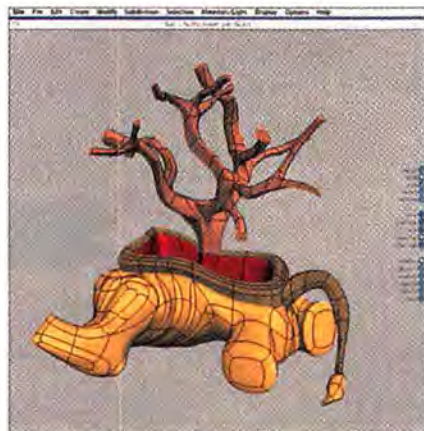
Impressive, Low-Cost 3-D Modeler Hits the Scene

BY SEAN WAGSTAFF

Nevercenter's Silo 1.3 is the latest subdivision-surface (sub-d) modeler to come to OS X, and at \$109, it's one of the best 3-D-software bargains in years.

Sub-d modeling allows artists to model complex, smoothly blended surfaces. The classic example is a human head: by manipulating relatively simple polygonal shapes in Silo, you can define the complicated geometry where the nose meets the upper lip, creating perfect, smooth blends. Silo has a powerful package of polygon-editing tools, but added control over the weighting of creases isn't available, and there's no UV-mapping control.

Silo's interface is fast, efficient, and highly customizable. Its smart tools let you work on half-models with symmetric mirroring; you



**Grown from a Single Cube** Silo's subdivision-surface modeling lets you sculpt any shape from simple polygons.

can quickly join faces on separate objects and blend shapes seamlessly into single surfaces. Silo 1.3 lets you draw directly on sub-d surfaces to create new geometry—a capability we've yet to see in more-expensive 3-D suites.

Silo is exclusively a modeler: if you want to render, you can choose an export format and render it in another program.

## Macworld's Buying Advice

As an add-on to a capable 3-D environment, Silo 1.3 is a work of art. □

**RATING:** ★★★★★

**PROS:** Makes perfect organic surfaces; clean, efficient interface; derives geometry from existing surfaces.

**CONS:** UV mapping is automatic; lacks crease-weighting control.

**PRICE:** \$109

**COMPANY:** Nevercenter, [www.nevercenter.com](http://www.nevercenter.com)





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## REVIEWS

# BounceBack Professional

Automatically Make Regular Backups of Your Mac

BY KIRK McELHEARN

If you want to make regular backups of your entire computer, and want a program that'll take care of it for you, BounceBack Professional might be exactly what you need. It's designed to make full, automatic backups of your entire hard disk to an external disk or a second internal disk.

After you install BounceBack Professional and restart your Mac, the program opens and asks you to choose a backup disk. Each time you connect the selected disk, BounceBack Professional will start backing up your startup disk automatically. If you forget to connect your backup disk for more than a few days, the program will remind you to do so. You can then connect the disk and start backing up, or just ignore the reminder.

No matter what medium you use, your first backup will take some time: on a test system with a minimal installation of Panther (about 6GB), BounceBack Professional took 45 minutes to perform its initial backup. If you have a lot of files, especially music files, photos, and videos—which take up a lot of disk space—expect your first backup to take longer. Subsequent backups are much faster, though, because the program copies only files that have changed since the previous session.

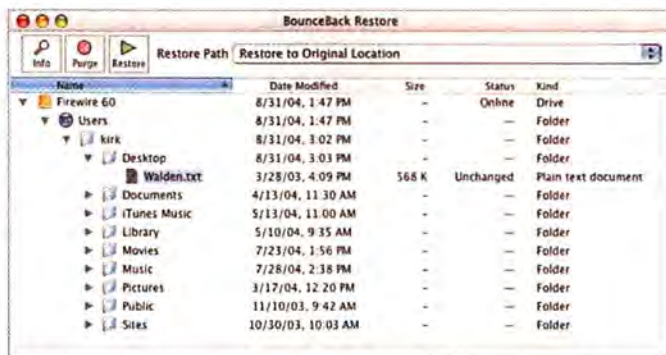
With BounceBack Professional, you're not limited to backing up your entire startup volume. You can also create custom backup sets from single or multiple sources, and then run these backups manually or automatically. Unfortunately, the program's manual offers only sketchy instructions on how to set up custom backups; some users will find the process complicated.

If you've had disk problems and can't boot from your startup volume, you can start up your Mac from the backup. The BounceBack Restore subprogram can recopy all your files from the backup disk to your Mac if necessary, so you'll be able to start up your Mac normally without having to reinstall anything.

You can access individual files in your backup in several ways. BounceBack Professional copies files in their original format, retaining all permissions, so you can simply mount your external hard drive and navi-

gate to the file you need. You can also use the BounceBack Restore program, in which case you select the files you want to restore, and then click on Restore to copy them back to your startup volume, either in their original location or in a different folder.

Although using BounceBack Professional to make a bootable backup is relatively easy, other operations can be complicated. The software itself is confusing, with a total of seven subprograms—including BounceBack Restore, BounceBack Settings, and BounceBack Backup. Each is responsible for a specific task. It would be nicer to have all these



**Do Over** You can restore files individually using the BounceBack Restore subprogram.

functions behind a single interface—especially since you'll never use some of them in normal operation.

Another weakness is that BounceBack Professional works only with the user account that installed the software. If you have multiple user accounts, the administrator will generally handle full backups of the startup volume, but other users cannot run custom backups—which they should be able to do—unless you reinstall the software under their accounts.

### Macworld's Buying Advice

The best use for BounceBack Professional is to back up an entire startup volume automatically. Its other backup functions, although they're powerful and flexible, are not easy to use and may confuse many users. And setting up BounceBack Professional in multiuser installations is unnecessarily complicated.

**RATING:** ★★★

**PROS:** Automatically makes a bootable backup of your startup volume.

**CONS:** Powerful features are hidden and poorly documented; program requires separate installation for each user who wants to run it.

**PRICE:** \$79; download, \$69

**COMPANY:** CMS Products, [www.cmsproducts.com](http://www.cmsproducts.com)





*storage area network* reinvented



**Macworld**  
1/2  
December 2004

### **MicroNet Introduces SANCube800™**

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# Live 4

Leading Real-Time Music Environment Adds Long-Awaited MIDI Support, Virtual Instruments, and Production Enhancements

BY PETER KIRN

When it comes to real-time music creation, Ableton's Live is in a category all its own. Live performs many of the functions of digital audio workstations such as Apple's Logic and Digidesign's Pro Tools—but in real time. Instead of recording in layers (stopping between takes to make adjustments or render audio changes) you can click on Record in a studio or begin a performance and construct entire songs without ever hitting the Stop button. Musicians and DJs have made Live their tool of choice because of its simplicity, its powerful beat-matching and looping tools, and the fact that you can use all its functions without interrupting audio output—this makes it ideal for live gigs and improvisation. With the addition of MIDI and virtual instruments, Ableton addresses a primary shortcoming of previous versions of the program (see our review of version 2: [★★★★](#); July 2003).

## MIDI and Virtual Instruments

Earlier versions of Live focused entirely on audio loops; without MIDI support, recording and editing individual note data was impossible. Some Live devotees were wary when they heard that Ableton was adding MIDI and virtual-instrument support to this version: Was Live departing from its signature simplicity, trying to be something it was not? Their fears were unfounded—Live 4 does for MIDI what the original Live did for audio loops. Live's clip-and-slot paradigm, in which individual clips can be looped, edited, time-stretched, and triggered individually or in groups called "scenes" for instant arrangements, now applies to MIDI note values as well. You can sketch MIDI patterns with the pencil tool in the program's Clip view, record them from a MIDI device, or even jam on your Mac's QWERTY keyboard. You can also drag in saved MIDI clips from Live's Browser, and Ableton includes a healthy supply of dance music-oriented clips to get you started.

MIDI on its own won't make any sound, so Live 4 adds support for any VSTi and Audio Units (OS X only) plug-in instrument, including the AU plug-in version of Glaresoft's

iDrum ([www.glaresoft.com](http://www.glaresoft.com)) or the many free-ware and shareware VST plug-ins available at Web sites such as K-v-R ([www.kvr-vst.com](http://www.kvr-vst.com)). Live 4 ships with two basic instruments: Impulse is an eight-slot drum kit, and Simpler is a sample-playback instrument. The simplicity of these instruments is part of their appeal. You can instantly drag in audio from slots in the Session view to create quick instruments



**Now with MIDI** Live 4 brings its real-time audio flexibility to MIDI, elegantly integrating MIDI clips and virtual instruments into the classic Live interface.

on-the-fly: drag eight audio clips onto Impulse for an instant drum kit, or drag an audio clip onto Simpler and trigger transposed versions of the clip with your MIDI keyboard. Live 4 also bundles several real-time MIDI effects, including the Scale and Chord effects, which constrain notes to a scale and harmonize them, respectively.

In previous versions, some VST plug-ins didn't work properly, but support is much more consistent in this release. We tested a variety of audio and instrument plug-ins, from Native Instruments' plug-ins to Green Oak's freeware synth Crystal, without a hitch.

## Arrangement and Routing

MIDI support may be the big draw, but Live 4 offers many other noteworthy improvements and added features. Whereas arrangements created with previous versions could be dry and repetitive, Live 4 has new arrangement features, called *follow actions*, that allow for more variety. Instead of each clip looping endlessly, each clip can trigger any other clip—once it has finished playing

or at a location you specify—so you can create orderly or random chains of events. Live 4's scenes are more dynamic, too: they can now store tempos and advance automatically. Routing and monitoring have also been reworked. Additional sends and returns per session make effects routing more flexible. And you can now route audio between tracks, resampling audio, creating sophisticated sub-mixes, or layering multiple instruments. The addition of new monitoring settings provides both automatic track monitoring and the ability to monitor tracks individually. Complex routing can be confusing in any software, but Live 4's new implementation is surprisingly intuitive, with helpful input

monitors throughout the interface that show audio and MIDI signals at a glance. Live's signal routing is labeled in plain English; you can simply select From or To to send audio where you want it to go.

Live does all its time-stretching in real time, so computer speed is important if you're using many tracks at once. Our 1GHz PowerBook G4 with 512MB of RAM was more than sufficient. Because Live must record and play back from the hard drive in real time, we recommend a fast external drive for laptop use; a 7,200-rpm FireWire 800 drive from WiebeTech easily outperformed the PowerBook's internal 4,200-rpm drive for audio reliability.

## Macworld's Buying Advice

Live 4 may not replace traditional digital audio workstations such as Logic for extensive studio editing, but that's beside the point. True to its name, Live remains the best tool available for on-the-fly remixing, composing, arranging, and performing. With the long-awaited addition of MIDI and virtual instruments, more-powerful arrangement features such as follow actions, and expanded routing capabilities, this version delivers. If you've been waiting to buy or upgrade Live, now is the time. □

### RATING: ★★★★★

**PROS:** Addictive real-time features are ideal for playing live and DJing; uncluttered, clear interface focuses on improvisation and performance; new MIDI, virtual-instrument, routing, monitoring, and arrangement features.

**CONS:** None significant.

**PRICE:** \$499; upgrade, \$149 (boxed) or \$119 (download); upgrade for users who purchased Live after May 15, 2004, \$79 (boxed) or \$49 (download)

**COMPANY:** Ableton, [www.ableton.com](http://www.ableton.com)





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# IRIS Business Card Reader II

Pint-Size Scanner Deals With Your Cards

BY JEFFY K. MILSTEAD

Flipping through stacks of business cards to find a phone number can get boring fast. The obvious solution isn't terribly attractive: tedious typing of information into your address book or contact manager. The IRIS Business Card Reader II spares you most of this drudgery by quickly scanning individual business cards, using OCR (optical character recognition) technology to extract their data, and transforming that data into contact files compatible with popular e-mail programs and contact managers.

The card reader's diminutive, eyeglass-case size allows it to nestle unobtrusively among other items on your desk, with a single USB cable providing both power and a connection to your Mac. After you load the

Cardiris 3.0 software and connect the scanner, Cardiris does a one-time calibration using an included calibration sheet.

Each card takes about 18 seconds to pass through the scanner; the software then takes another few seconds (depending on the speed of your Mac) to perform character recognition. Cardiris displays both full-size images and color thumbnails of the scan, along with the text it was able to interpret. Any mistakes can be corrected at this point. Business cards with traditional layouts and typography will cause fewer errors.

Cardiris is compatible with the latest versions of Microsoft Entourage, AppleWorks, Apple Address Book, and Now Contact (part of Now Up-to-Date & Contact). If you have one of these applications, you can set up Cardiris to launch it and automatically export the data. You can also export the card information to HTML, vCard, or plain text.



The current model far outpaces its predecessor in stability and performance (\*\*\*; December 2002) when used with OS X 10.3.5—not surprisingly, as it's optimized for Panther. I did experience a crash on an OS X 10.2.8 test system after 20 cards were scanned in and awaiting export. Since Cardiris doesn't maintain a cache of previous scans, I had to start over from scratch.

## Macworld's Buying Advice

If you're drowning in a sea of business cards or simply want to keep your electronic Rolodex updated with new contacts, the IRIS Business Card Reader II will do the job. If you also want to scan the occasional photo or use an OCR app for full-size documents, you can spend the same amount of money on a decent desktop scanner—several models even include business-card OCR software. ☐

PHOTOGRAPH BY PETER BELANGER

### RATING: \*\*\*

**PROS:** Compact; easy to use; USB powered.

**CONS:** Scans only business cards.

**PRICE:** \$150; with carrying case, \$190

**COMPANY:** IRIS, [www.irislink.com](http://www.irislink.com)

# THE CONQUEST

## DiskWarrior is Now OS X Native

It's the indispensable utility that repairs problems such as disks that won't mount, files you can't trash, and folders that have disappeared. MacUser magazine said, "It's the fastest and safest data recovery utility you can buy."

Macworld magazine said, "DiskWarrior is by far the best disk utility available for the Mac; it can repair virtually any disk problem you may

encounter...and it is likely to become the only tool you'll want to keep with you at all times."

David Coursey, ZDNet AnchorDesk, agrees in an article comparing disk utilities. He used it to fix a disk that no other utility could. "DiskWarrior is a great product, not just because it fixed a pretty serious screw-up, but because it showed me what it planned to do in minute detail before doing it."

But disk damage isn't the only threat to your data. As hard drives get older, the drive mechanisms

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# Wacom Intuos3

New Tablet Interface Helps You Operate without a Keyboard

BY BEN LONG

Whether you're a painter, a digital photographer, or just a computer user who needs a mouse alternative, a pressure-sensitive drawing tablet can be an indispensable tool. Wacom has long been the market leader in such devices, thanks to its superior batteryless, cordless pen technology. Despite its dominance, the company continues to add innovations to its tablet line—an impressive feat, considering that a drawing tablet is a pretty basic accessory.

The Intuos3 (which comes in three sizes: 4 by 5 inches, 6 by 8 inches, and 9 by 12 inches) represents the latest release in Wacom's flagship tablet line. (I tested the 6-by-8-inch unit for this review.) In contrast to the more economical Graphire line, Intuos tablets sport higher resolutions for greater pen-tracking accuracy, and offer more-advanced features such as tilt and pressure sensitivity. The Intuos3 builds on these features with the inclusion of innovative ExpressKeys and Touch Strips.

While tablets often include macro buttons for triggering an event, the Intuos3's new ExpressKeys buttons are far more useful.

These eight flat buttons, located near the top of the tablet, can easily be programmed to act just like keys on your keyboard. So, for example, if you're an Adobe Photoshop user, you might set one key to represent the Brush tool, another to represent the Clone Stamp tool, and a third to represent the option key (for use with the Clone Stamp tool).

For convenient scrolling, the new Touch Strips sit next to the ExpressKeys; they look like very narrow PowerBook trackpads. The practical upshot of these controls is that if you configure them properly, you can perform the bulk of your painting and document navigation from your tablet, without having to reach over to your keyboard. What's more,

you can define different configurations for different applications, and the Wacom software will automatically switch between them when you change apps.

The Intuos3 ships with Wacom's latest Grip Pen, a large-barreled device that has a very comfortable, rubberized surface. The pen also includes three different nibs, each of which provides a different level of friction. My only complaints with Wacom's newest tablet are that I wish there were more ExpressKeys, and that I wish it were possible to label them so I wouldn't have to remember how I'd assigned them. Paper inserts under a clear plastic top might help.

## Macworld's Buying Advice

With its new ExpressKeys and Touch Strips, The Intuos3 is Wacom's best innovation in years. It streamlines tablet use and provides a very comfortable pen. I highly recommend it for all types of tablet users. □

**RATING:** ★★★★★

**PROS:** Excellent new ExpressKeys and Touch Strips; comfortable pen; ExpressKeys can be programmed for specific applications.

**CONS:** No way to label ExpressKeys.

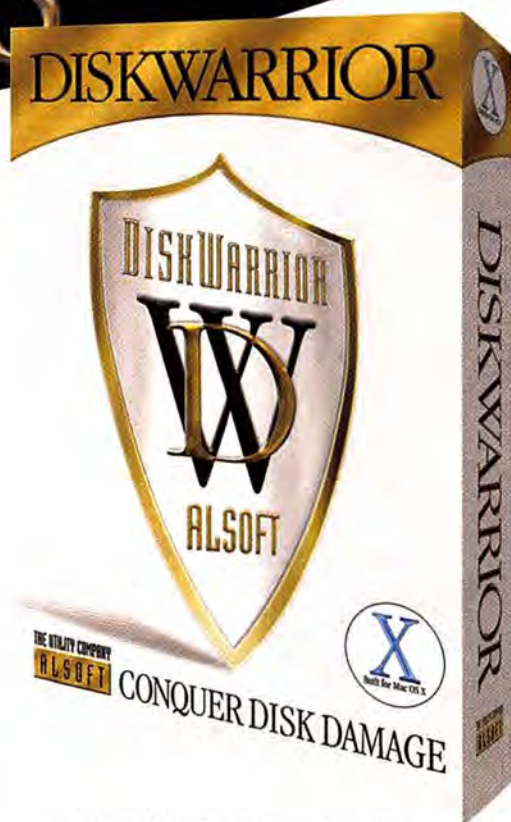
**PRICE:** 4-by-5-inch unit, \$220; 6-by-8 inch-unit, \$330; 9-by-12-inch unit, \$450

**COMPANY:** Wacom, [www.wacom.com](http://www.wacom.com)

# CONTINUES

begin to malfunction. Eventually, the malfunctions become so severe that the drive simply stops working. DiskWarrior can automatically test for hardware malfunctions, giving you the chance to back up your data before it's too late.

Be prepared. Don't wait until after you have a disk disaster to buy your copy of DiskWarrior. Bob LeVitus, aka Dr. Mac, said, "I feel naked without DiskWarrior." You can believe MacHome magazine when they said, "DiskWarrior is a quick, one-click solution to faster, more stable hard drives."



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# Epson Stylus Photo R800

A New Twist on Epson's Ultra-Chrome Ink

BY JEFF DORGAY

Epson's Stylus Photo R800 ink-jet printer features a new version of the company's popular UltraChrome ink, which uses red and blue in place of light magenta and light cyan to increase the *gamut*, or range, of color that it can reproduce.

Test prints from the R800 had brighter primary colors than prints from my \$699 Stylus Photo 2200 (●●●●●; October 2002) and \$1,795 Stylus Pro 4000 (●●●●●; June 2004) printers.

The R800 uses a minuscule 1.5-picoliter print head. This allows a much smaller drop of ink to be placed on the paper, giving the prints a smoother look than previous models could achieve.

**RATING:** ●●●●●

**PROS:** Outstanding print quality; extended color gamut; extremely quiet; quick.

**CONS:** None significant.

**PRICE:** \$399

**COMPANY:** Epson, [www.epson.com](http://www.epson.com)

Epson refers to the R800 as a six-color, eight-channel printer because in addition to five color cartridges, there are also a matte-black ink, a photo-black ink, and a gloss enhancer that you can switch on or off via the print driver. The paper profile you select will determine whether the R800 chooses the photo-black or the matte-black ink. The gloss enhancer, which you can choose in the Print dialog box, imparts a dull-varnish-like appearance to your final print; it provides extra protection but requires a few extra minutes to dry.

An 8.5-by-11 image took three minutes to print in the highest-quality Photo RPM (Resolution Performance Management) mode, which is best reserved for your highest-resolution photos. Photo, the second-best quality mode, gives away little in print quality but requires only about a minute to print the same 8.5-by-11 image using a USB 2.0 port. The R800 can print 17 pages per minute in text-only mode with nearly laser-printer quality.

You can achieve the maximum print speed using the FireWire port, which will print about 15 percent faster than the USB 2.0 port. And the R800 is whisper quiet.

Test prints made at the maximum resolution (5,760 by 1,440 dpi) revealed almost no



dot pattern even when viewed with a 10x loupe. Test prints made on the R800 were brighter and more saturated than prints from the Stylus Photo 2200, and the gray-scale reproduction was neutral. This excellent output was easy to achieve; with Epson paper and profiles, my first test print was perfect.

## Macworld's Buying Advice

The Epson Stylus Photo R800 could be the only photo printer you'll ever need. It's fast and quiet and produces beautiful, dot-free prints. It even prints on recordable CDs and DVDs. I wish they made a large-format model. □



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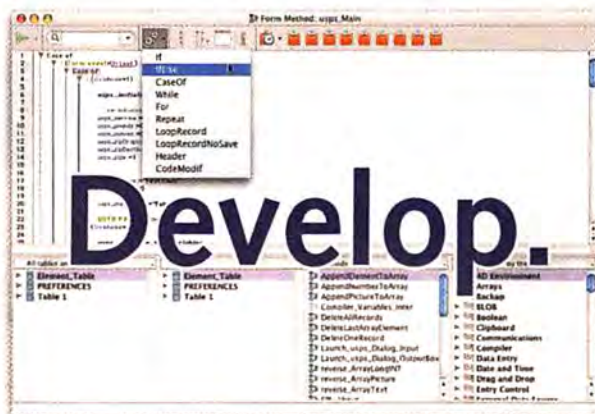


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# Virtual PC 7

continued from page 32

allocating 32MB, 256MB, and then 512MB of RAM to Virtual PC. My results showed no improvement in processor speed, about a 5 percent improvement in multimedia performance, and the biggest boost (as high as about 50 percent) in some graphics tests. But I soon found that benchmarks aren't the most valid indicators of a virtual computer's performance, for various technical reasons (for example, OS X's background activity influences the virtual machine's performance). So I also used a handful of Windows-only applications and 2-D games such as Fritz, a popular chess program (Virtual PC does not support 3-D graphics), as a typical user would.

You're not getting a faster virtual computer with this version; you won't notice any difference in the performance of computational tasks. But screen redraws are a little smoother. Launching is a bit quicker; application switching, a tad perkier. This isn't a huge improvement. I'll put it this way: If you're on the freeway crawling along at 10 mph, accelerating to 11, 13, or even 15 mph isn't very exciting. You might get home a few minutes earlier, but your commute won't feel much faster.

## Getting Friendlier

The performance boosts may be disappointing, but Microsoft has introduced a number of user-friendly improvements.

Installation is easier, requiring fewer steps and less configuration. There's a foldout Installation Overview to get you started and a slender Getting Started manual that explains the ins and outs of virtual machines. The program's Help has also been expanded.

Virtual PC's preferences are more flexible, and changing settings is easier—as is printing. If you're running OS X 10.3 (Panther), you can print directly to your Mac printer (or to a network printer) without installing Windows printer drivers.

And now you don't have to decide whether to save state, shut down, or turn off your computer. With Fast Save, all

you have to do is click on the red Close button—or quit Virtual PC—to save all open files, put your virtual computer to sleep, and exit the application. When you relaunch, Virtual PC puts everything neatly back where it was before you saved.

## Bucking the System

If you're thinking about upgrading, note that Microsoft has increased the system requirements for Virtual PC 7, from a 500MHz or faster G3 or G4 processor to a 700MHz or faster G3, G4, or G5. Physical RAM requirements have increased from 256MB to 512MB. While version 6.1 ran on OS 9, you can use only OS X 10.2.8 or later to run version 7. And as with previous versions, there's no support for upgrade cards or accelerators.

In general, I found that Virtual PC 7 was stable. The program did occasionally hang after I changed settings and rebooted, but this bug seems to be fixed in the recently released version 7.0.1.

## Macworld's Buying Advice

If you're an experienced Windows user who succumbed to Apple's Switch campaign, you'll feel right at home in Virtual PC. If you're a die-hard Mac user who has to run Windows programs to make peace with the masses, Virtual PC is less expensive (and smaller) than a second machine under your desk. Getting used to Windows will be a chore, but finding your way around Virtual PC has gotten easier. And if you're a Virtual PC 6.1 user, you should upgrade only if you need G5 compatibility or every ounce of performance you can get. □

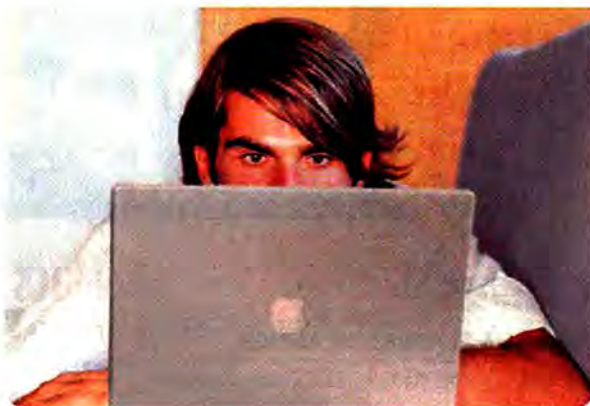
### RATING: ★★★★★

**PROS:** G5 compatibility; modest speed boost; easier installation; easier printing; quick shutdown and restore (Fast Save).

**CONS:** Still slow.

**PRICE:** With Windows XP Professional or Windows 2000 Professional, \$249; with Windows XP Home Edition, \$219; without OS, \$129; upgrade from previous versions (without OS), \$99

**COMPANY:** Microsoft, [www.microsoft.com](http://www.microsoft.com)



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# Top Products

## Scanners

### MIDRANGE FLATBED SCANNER

★★★★ CanoScan 9900F (\$400), from Canon ([www.canon.com](http://www.canon.com))

Inexpensive for its class, this flatbed scanner has 3,200-ppi optical resolution, produces all-around good image quality, and includes hassle-free software (August 2004). [find.macworld.com/0089](http://find.macworld.com/0089)



## Digital Cameras

### 8-MEGAPIXEL DIGITAL CAMERA

★★★★ C-8080 Wide Zoom (\$999), from Olympus ([www.olympusamerica.com](http://www.olympusamerica.com))

Good photo quality, durable design, and in-camera image editing, among other nice traits, make this camera an excellent choice if you need to make very large prints of digital photos (September 2004). [find.macworld.com/0091](http://find.macworld.com/0091)

## Printers

### COLOR LASER PRINTER, \$1,000 RANGE

★★★★ C510n (\$1,019), from Lexmark ([www.lexmark.com](http://www.lexmark.com))



The Lexmark C510n provides very good image quality at a low cost per page. Generous RAM and preinstalled toner just add to the package (June 2004). [find.macworld.com/0084](http://find.macworld.com/0084)

## Macs

### PORTABLE FOR GENERAL CONSUMERS

★★★★ 12-inch iBook G4/1GHz (\$1,099), from Apple Computer ([www.apple.com](http://www.apple.com))

This diminutive Mac's combination of performance, features, and affordability makes it a winner. You can pack it with up to 1.25GB of RAM and add an AirPort Extreme card (September 2004). [find.macworld.com/0087](http://find.macworld.com/0087)



### PORTABLE MAC FOR PROS

★★★★ 12-inch PowerBook G4/1.33GHz with SuperDrive (\$1,799), from Apple Computer ([www.apple.com](http://www.apple.com))

Our favorite out of the four we reviewed, the 12-inch PowerBook G4 packs a lot of power into a compact and elegant case (July 2004). [find.macworld.com/0088](http://find.macworld.com/0088)

## Camcorders

### MINIDV CAMCORDER

★★★★ Optura 40 (\$999), from Canon ([www.canon.com](http://www.canon.com))

The Optura 40 produces excellent video and respectable stills, sports professional features such as a true 16:9 mode, smooths the effects of a shaky grip, and is easy to use (November 2004). [find.macworld.com/0130](http://find.macworld.com/0130)



## IN THE MACWORLD LAB

### Hardware Products We Tested This Month

★★★★ CanoScan 8400F (\$150), from Canon ([www.canonusa.com](http://www.canonusa.com))

The 8400F has limited film and transparency support but is a great all-around scanner with some high-end features and a low-end price. [find.macworld.com/0187](http://find.macworld.com/0187)



★★★★ CanoScan 9950F (\$400), from Canon ([www.canonusa.com](http://www.canonusa.com))

This CanoScan raises the bar for midrange scanners by offering high optical resolution, improved scan quality, and more-intuitive software controls. [find.macworld.com/0188](http://find.macworld.com/0188)



★★★★ VP912b (\$700), from Viewsonic ([www.viewsonic.com](http://www.viewsonic.com))

An eye-catching shiny screen, bright colors, and easy-to-read text make this 19-inch digital LCD a great all-around display. [find.macworld.com/0189](http://find.macworld.com/0189)



★★★★ LL-T19D1-H (\$649), from Sharp ([www.sharpsystems.com](http://www.sharpsystems.com))

It won't win any beauty contests, but this 19-inch digital LCD offers solid on-screen performance with legible text and accurate colors. [find.macworld.com/0190](http://find.macworld.com/0190)



## NEW: MACS

## CONSUMER DESKTOP

★★★★ 20-inch iMac G5/1.8GHz (\$1,899), from Apple ([www.apple.com](http://www.apple.com))

Elegant, all-in-one design melds a speedy G5-based system—complete with a 160MB hard drive and a SuperDrive—with a big, bright LCD screen. Our only complaint: Not enough RAM (December 2004). [find.macworld.com/0183](http://find.macworld.com/0183)



Top Products are those we recently reviewed in a comparison of like products. As new products become available, we will update the list. For longer reviews of these products and for other product recommendations, go to [www.macworld.com/reviews](http://www.macworld.com/reviews).





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> *Enemy Engaged: RAH-66 Comanche Versus KA-52 Hokum*  
> *Macworld's 2004 Game Hall of Fame*  
> *Revolution 5.1*

# The Game Room

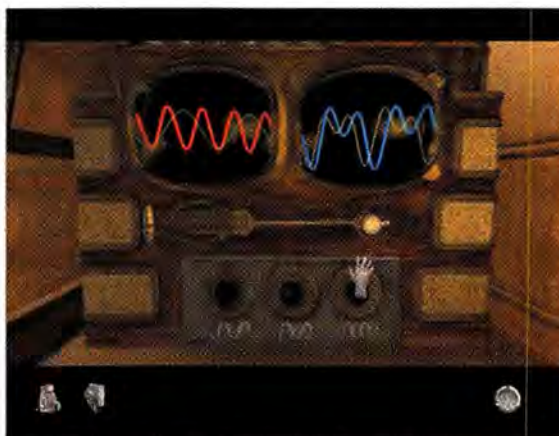
Cyan's *Myst* is a game that truly defined its genre. Laden with brain-busting puzzles and beautiful scenery, this graphical adventure was the best-selling game of its day. A decade later, the fourth installment of *Myst* has been released. Although it was created by a different developer (Ubisoft), *Myst IV: Revelation* retains much of what made the original game so remarkable, while adding some nice embellishments.

*Myst IV* builds upon the mythology of the previous games. Atrus is the master of a mystical art that transforms books into portals, allowing you to travel to different worlds. At the game's beginning you find yourself in Tomanha, the sanctuary world of Atrus; his beloved wife, Catherine; and their young daughter, Yeesha. You've been summoned to help Atrus solve a mystery. But after being knocked out in a sudden calamity, you awaken to discover that Yeesha is missing. Now you must set off to find her.

To do that, you'll have to travel between four different worlds, interacting with characters and picking up clues to solve the game's puzzles. Ultimately, you'll discover what became of Sirrus and Achenar after Atrus banished them to their respective prison ages in previous games.

The game's main attraction lies in its puzzles. And Ubisoft offers up plenty of challenge in this area. For example, one of the first puzzles you face requires that you channel a specific amount of power to a nearby power station. To do so, you have to juggle the existing power between different conduits.

In previous *Myst* games, it was sometimes difficult to know when you'd correctly solved a puzzle. Making changes in one spot might affect things somewhere outside of that area entirely. Although



**Match the Frequencies** This is the first of many brain-busting puzzles you'll need to solve in *Myst IV: Revelation*.

there's some of this in *Myst IV*, the designers have been careful to offer you enough clues to let you know when you've succeeded. They've also managed to string everything together in a logical and coherent manner.

If you get stuck along the way, the game offers a built-in help system complete with three layers of hints: the first layer offers a vague push in the right direction, the

second layer provides more detail, and the third layer spells out just what you need to do.

Navigating through *Myst IV* couldn't be easier—just click on where you want to go, and you'll move there. This node-based architecture lends itself to an economy of movement and an understanding that your environment isn't nearly as important as what's in it. But fans of first-person shooters may be frustrated at their inability to use the forward and back keys to walk through scenes.

This simplicity of movement belies the complexity of the game's graphics. Each point on the map is rendered in 360 degrees, so as you visit each location, you can look left, right, up, or down to get a better sense of what's around you. What's more, the game employs very advanced particle effects, animations, and 3-D graphics to create a sense of realism—everything from streaming rays of sunlight to falling leaves caught in the wind. The game has a startling level of detail that is, at times, painfully beautiful.

All of this graphic detail results in fairly steep system requirements. You'll need an ATI Radeon 7500 or Nvidia GeForce2 MX 3-D graphics card or better. However, Ubisoft disclaims full support for the laptop models of these cards. That seems preposterous

continues

## MYST IV: REVELATION

**RATING:** ★★★★★

**PROS:** Challenging puzzles with clear results; advanced graphic effects add realism; hybrid DVD.

**CONS:** Laptop graphics not fully supported.

**PRICE:** \$40

**COMPANY:** Ubisoft Entertainment, [www.ubisoft.com](http://www.ubisoft.com)

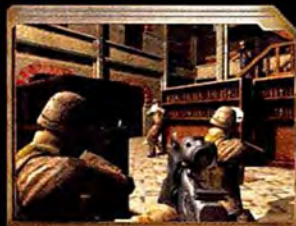


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given the huge popularity of mobile systems, especially on the Mac platform. The company suggests that it may support additional chip sets after the game's release. Let's hope so; otherwise, sales on the Mac are bound to suffer.

Ubisoft recommends having at least 128MB of memory. But anecdotal evidence suggests that this is woefully inadequate on OS X. For best performance, I recommend at least 1GB of RAM.

Ubisoft deserves kudos for developing and releasing *Myst IV* on Windows and the Mac simultaneously. It ships in one package for both platforms, so you don't have to worry about looking for it specifically in the Mac section of your local retailer. As a special bonus, *Myst IV*'s predecessor, *Myst III: Exile*, is also included in the pack. This underrated game was overlooked by many *Myst* loyalists. Personally, I thought it was the best of the bunch—until now—and I encourage you to check it out.

**The Bottom Line** With challenging puzzles and gorgeous graphics, *Myst IV: Revelation* builds on what has made past *Myst* games so good.

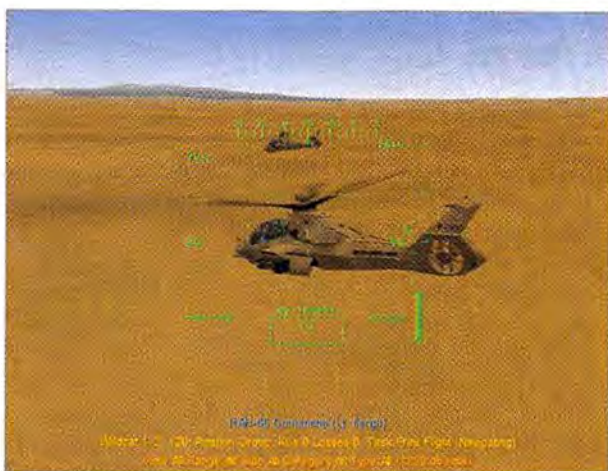
### Better Late Than Never

*Enemy Engaged: RAH-66 Comanche Versus KA-52 Hokum* by Feral Interactive is laughably late getting to the Mac. This combat-helicopter simulation first appeared on the PC four years ago. Still, it's a good game that holds up well. It's also fun to play.

*Enemy Engaged* puts you in the cockpits of the RAH-66 Comanche and the KA-52 Hokum, two versatile helicopter gunships developed by the American and Russian military forces, respectively.

The game is divided into three single-player campaigns that put you in plausible (albeit fictional) modern conflicts in Saudi Arabia, Lebanon, and Taiwan. Your missions vary dramatically—everything from performing reconnaissance to providing air support for friendly ground forces. There's enough here to keep you busy for days or weeks on end.

Each helicopter takes a crew of two to operate. You can choose either to pilot the aircraft or to control the weapons.



**Flight School** Put yourself behind the controls of a Comanche helicopter in *Enemy Engaged*.

### ENEMY ENGAGED: RAH-66 COMANCHE VERSUS KA-52 HOKUM

RATING: **4.0/5**

PROS: Dynamic campaign engine keeps action fresh.

CONS: Very late coming to the Mac.

PRICE: \$45

COMPANY: Feral Interactive,  
[www.feralinteractive.com](http://www.feralinteractive.com)

The computer can take care of the rest, or you can team up with other Mac players over the Internet or on a LAN. The game supports the GameRanger game-finding service.

One of *Enemy Engaged*'s most interesting features is its dynamic campaign system. This behavior-based system eschews scripted actions so that the game's events are different each time you play; this seriously amps up the challenge and adds life to the game.

Both helicopters are heavily laden with missiles, electronic countermeasures, and other complicated—and not entirely reliable—equipment. Learning how to control all of it isn't easy. The game starts out with a ground school that shows you the ins and outs of operating your helicopter. Just learning how to hover and move will occupy your first few hours with this simulator.

A foldout keyboard map in the back of the manual is indispensable as you learn how to operate your aircraft. Feral's excellent input-calibration utility will let you make sure that everything's operating as it should before you get started.

The game's graphics hold up well, despite having been built on a modified version of its 1998 graphics engine. Feral has added some nice modern touches, such as support for full-scene antialiasing,

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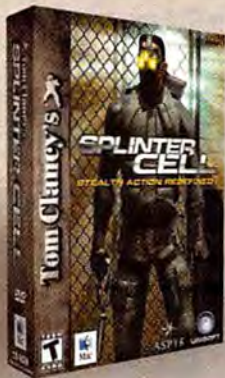
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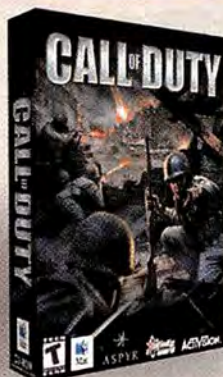




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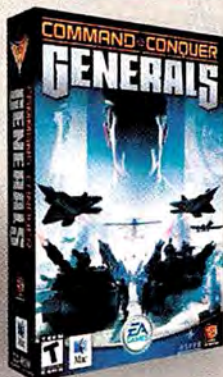
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## Macworld's 2004 Game Hall of Fame

The brass has been polished and the red carpet unfurled. That means it's time to unveil our annual Game Hall of Fame Awards for the best, brightest, and most unusual games of the year. Here's a quick look at this year's inductees. For complete details, go to [find.macworld.com/0150](http://find.macworld.com/0150).

### Most Worth the Wait

#### Halo: Combat Evolved

★★★★; MacSoft, [www.macsoftgames.com](http://www.macsoftgames.com); \$50

Although it was four years in the making, this fantastic first-person shooter offers a good story line and tons of challenging, butt-kicking action.

### Best Way to Get Silly

#### ToySight

★★★★; Freeverse Software,

[www.freeverse.com](http://www.freeverse.com); \$35

If you have an iSight, buy this game. ToySight lets you use hand motions to control the action on screen. It's great at a party.

### Best Use of the Force

#### Star Wars: Knights of the Old Republic

★★★★; Aspyr Media, [www.aspyr.com](http://www.aspyr.com); \$50

This role-playing game not only teaches you some cool mind tricks, but also lets you become a good Jedi or an evil Sith, depending on the choices you make along the way.

### Best Stealth-Learning Tool

#### Didi & Ditto Kindergarten

★★★★; Kutoka Interactive,

[www.kutoka.com](http://www.kutoka.com); \$20

This charming, well-rounded early-education game sports some of the cutest characters on the Mac. Your kids won't even realize they're learning to spell, count, group, and more.

### Best Use of Ancient Gods

#### Age of Mythology

★★★★; MacSoft, [www.macsoftgames.com](http://www.macsoftgames.com); \$50

This history-based empire-building game lets you call upon the powers of ancient gods and mythological beasts to give you a little extra muscle.

### Most Attractive Game

#### Homeworld 2

★★★★; Aspyr Media, [www.aspyr.com](http://www.aspyr.com); \$50

Homeworld 2 looks great—with beautiful 3-D effects and stunning backgrounds—and it's a first-rate real-time strategy game.

### Best New Twist

#### Starbase Defender

★★★★; Bigger Planet,

[www.biggerplanet.com](http://www.biggerplanet.com); \$20

This game borrows from arcade classics such as

Rip-Off and Missile Command to create something decidedly modern. Enjoy beautiful 3-D graphics and a rockin' soundtrack as you try to defend your star base.

### Best Use of a Steering Wheel

#### Total Immersion Racing

★★★★; Feral Interactive,

[www.feralinteractive.com](http://www.feralinteractive.com); \$45

With real-world cars and tracks, Total Immersion Racing captures the look and thrill of auto racing. The computer-controlled players even hold grudges against you between races.

### Best Role Reversal

#### Ghost Master

★★★★; Feral Interactive,

[www.feralinteractive.com](http://www.feralinteractive.com); \$50

This ghostly strategy game makes you the bad guy—albeit a deceased one—as you spook the heck out of hapless humans.

### Best Tension Reliever

#### Unreal Tournament 2004

★★★★; MacSoft, [www.macsoftgames.com](http://www.macsoftgames.com); \$40

For many of us, happiness is a good frag. And Unreal Tournament 2004 dishes it up in spades with new game-play modes, vehicles, and more.

### Best Use of Biofeedback

#### The Journey to Wild Divine

★★★★; The Wild Divine Project,

[www.wilddivine.com](http://www.wilddivine.com); \$160

In this sometimes over-the-top New Age adventure game, a special USB controller measures your pulse and your skin's galvanic response to help you better understand and control your body.

### Best Use of Steam Power

#### Railroad Tycoon 3

★★★★; MacSoft,

[www.macsoftgames.com](http://www.macsoftgames.com); \$50

Jump back in time and build your own railroad empire—while bankrupting your competition. This is one of the year's best strategy games.





which renders smoother graphics than the blocky engine can natively produce. The radio chatter and realistic sound effects will also help draw you into the action.

The benefit of using an older graphics engine is that it lowers the system requirements. You'll need just a 600MHz G3 and OpenGL graphics with 16MB of VRAM and OS X to run *Enemy Engaged*.

**The Bottom Line** Even though it's late, *Enemy Engaged: RAH-66 Comanche Versus KA-52 Hokum* offers a great challenge for flight-simulation fans looking to pilot a modern helicopter gunship.

### Revolutionary Sound

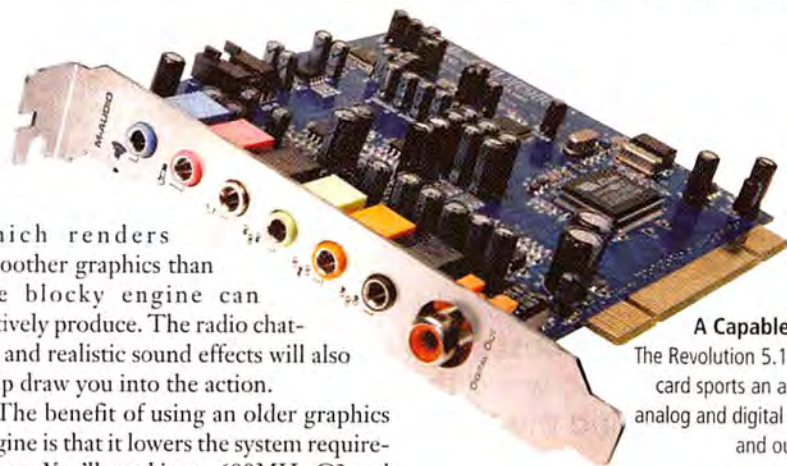
True positional 3-D audio has long been an elusive dream of Mac gamers. While almost all gaming PCs can separate left, right, rear, and center audio channels, only the G5 offers this ability on the Mac. But now that's changing, thanks to M-Audio's Revolution 5.1—a new audio card that lets your Mac output 5.1 surround sound.

Although the card is being marketed primarily to gamers, its benefits range beyond the gaming world. You can use the card to watch DVDs in surround sound with Panther's DVD Player, for example, or use it to record 5.1 audio.

But the card really shines in first-person shooters and other action games where 3-D audio cues can tell you when a bad guy is just around the corner or let you know from which direction you're being strafed. This can mean the difference between getting fragged and winning a round.

Currently, few games on the Mac take advantage of 5.1 audio. But thanks to OpenAL, an open technology standard that's gaining traction with PC and Mac game developers, more Mac games will be able to output positional 3-D audio to this card in the future. In fact, the card even comes with one such game—a modified version of Aspyr's *Wakeboarding Unleashed Featuring Shaun Murray*.

Setting up the card is simple—just insert it into any available PCI slot on a 733MHz G4 or better. Even G5 Power Macs, which already offer 5.1 output, can benefit from the Revolution, since it takes



### A Capable Card

The Revolution 5.1 audio card sports an array of analog and digital inputs and outputs.

### REVOLUTION 5.1

RATING: ★★★★★

**PROS:** Provides real 5.1 surround sound on the Mac; supports OpenAL games; offers digital audio output.

**CONS:** Pricey; potential stability problems.

**PRICE:** \$100

**COMPANY:** M-Audio, [www.m-audio.com](http://www.m-audio.com)

the burden of processing away from the Mac's CPU. The game technically supports both OS 9 and OS X systems. However, no OS 9 games currently support multichannel sound—or are likely to in the future—nor does the OS 9 version of Apple's DVD player. So the benefits to OS 9 users are limited.

Across the card's backplane are a series of 1/8-inch jacks for connecting an analog audio source such as a CD player, a microphone, a set of headphones, an amplified 5.1 surround speaker system, and a digital coaxial connector.

The OS X application that powers the card provides extensive control over how your audio sounds. You can set parameters for how your surround system is set up, turn off individual channels, and even apply digital surround effects to audio sources that aren't in true 3-D.

I've read reports of stability problems with this card. Some gamers have reported kernel panics and other issues after installing the card. However, I didn't have any of those problems in my 1GHz dual-processor G4.

**The Bottom Line** At \$100, the Revolution 5.1 costs a lot more than PC gamers are used to paying for the privilege of having surround sound (although you can pick up the card online for considerably less). But for Mac gamers, 5.1 sound is a novelty—hopefully one that will continue to grow in popularity. □

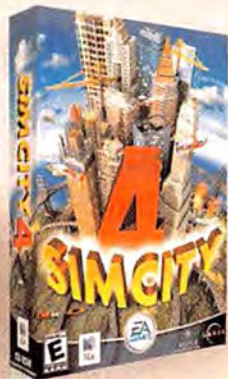
MacCentral.com Senior Editor PETER COHEN hopes someday to retire to a nice vacation spot like Tomanha.



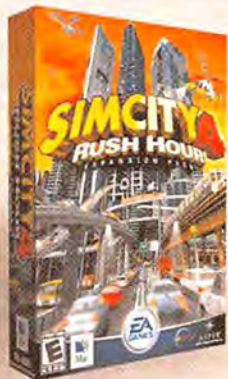
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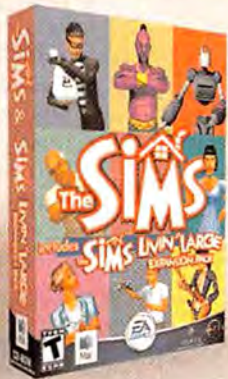
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# Mac Gems

Although the ability to take unlimited photos allows digital photographers to make sure they get the best shots possible, it also has a drawback: at some point, you have to weed through the 63 pictures of your niece's first dance recital to find the three or four worth keeping.

I used to import all my photos into iPhoto and then delete the ones I didn't like. I also tried using Image Capture to import photos—since it allows you to import images selectively—but it still required that I look at a bunch of photos in a window and ⌘-click on the ones I wanted to import. I tried a few other image-editing and -management utilities, but none of them really made the process any easier.

What I really wanted was an easy-to-use, fast way to review photos before they ever got into iPhoto. So when I spied Stick Software's \$10 **PhotoReviewer 1.4** (★★★★; [www.sticksoftware.com](http://www.sticksoftware.com)), my eyebrows raised in curious expectation. As it turns out, PhotoReviewer is just what I was looking for.

Although PhotoReviewer uses a standard slideshow mode for browsing photos, its real power is in letting you approve or veto images as you view them, and in making the process efficient. You approve or veto each image, one after another, as quickly as you can click on a button or press a key to pass judgment.

For each review session, you decide what happens to photos as you process them. You can leave approved images in place, copy them to a folder, or move them to a folder. Similarly, you can leave vetoed photos alone, delete them immediately, move them to the Trash, or move them to a specified folder. As you're viewing photos in PhotoReviewer, you can rotate or zoom in on them to get a better look. You can also use the arrow keys to skip an image and come back to it later. Once you get into an approve-or-veto groove, you'll fly through your images in no time at all.

Using PhotoReviewer in this way has turned out to be a major time-saver for me, and the software has a number of other useful features worth checking out if you're looking to streamline your photo-management process. (It even lets you play and review QuickTime movies.) If, like me, you spend a lot of time sifting through your pictures to figure out which ones are worth keeping, PhotoReviewer will pay for its paltry \$10 price in no time.



**Virtual Rug** Take better screenshots by sweeping your clutter under Backdrop.

## A Solid Background

Every once in a while, I come across a piece of software that's so simple but so useful that I can't believe no one has come up with it before. John Haney's free **Backdrop 1.2** (★★★★; [www.johnhaney.com/backdrop/](http://www.johnhaney.com/backdrop/)) is one of those apps.

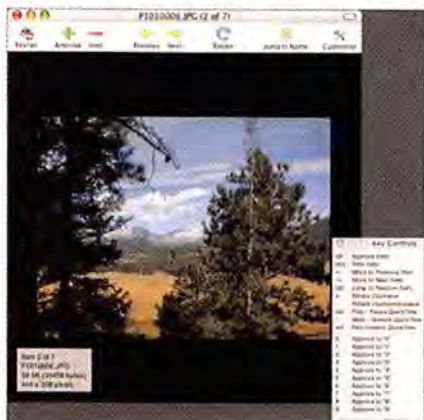
As a tech writer, I take a lot of screenshots, usually with the excellent Snapz Pro X 2 (★★★★; *Mac Gems*, May 2004). But since I usually have lots of applications and windows open, I have to move a bunch of stuff out of the way to keep it from cluttering the screenshot. And if I've got folders and files littering the desktop, I have to clean those up, too. (If you've ever taken screenshots for a book, an article, a training guide, a Web site, or a poster or flyer, you know the hassle of which I speak.)

With Backdrop, window cleanup is a thing of the past. Just launch Backdrop, and you'll see a solid background that fills your entire screen, leaving only the menu bar and the Dock visible. You then bring the desired app to the front and take your screenshot.

As simple as it sounds, Backdrop does offer a few useful options, including the ability to choose a color other than white for your background. You can even use an image file instead of a solid color—an easy way to watermark your screenshots. And although Backdrop's default behavior is to act as an application layer—meaning that it floats between

continues

**Photo Filter** PhotoReviewer makes it easy (and fast) to get rid of unwanted photos before they ever make it into iPhoto.







iTrip mini shown  
(actual size)

# Let me take you on a trip...

Quick, where do you most often listen to music? In your car, right? The easiest way to enjoy all of that music in your car is the Griffin iTrip. Snap iTrip on your iPod or iPod mini and suddenly your music is filling up your next road trip, daily commute or business trip - right through the built-in FM stereo of any car. Buy an iTrip for your iPod or iPod mini and your favorite song will always be on the radio.

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## iTalk Voice Recorder for iPod

\$39<sup>99</sup>

- Turn your iPod into a digital voice recorder with thousands of hours of recording time
- Automatic Gain Control assures the best possible signal level for recordings
- Features internal microphone and built-in laptop quality speaker for playback
- Connect an external microphone or even headphones to the built in pass-through mini jack connection on top



## iMic USB Audio Interface

\$39<sup>99</sup>

- Record your old records and tapes to play in iTunes, put on your iPod, or burn to CDs
- Connect any keyboard, guitar or microphone directly to GarageBand for high quality recording
- Use line level output to connect your Mac to a stereo or external powered speakers

Another great idea from **GRIFFIN**

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applications to provide a background that blocks everything behind it—it can also function as a temporary desktop background. This is helpful if you want a standard screenshot, icons and all, but with a different background than your day-to-day desktop image or color.

My one real complaint is that if you have multiple displays, Backdrop works only on your main screen. On the other hand, I tend to take screenshots on the main screen anyway, so I haven't found that to be a significant limitation. If, like me, you take a lot of screenshots, Backdrop is a must-have.

### Mac 411

In my line of work, people often ask me questions about particular Mac models, but despite my years of experience with Macs (and contrary to the misconceptions of my friends), I'm not a walking encyclopedia of Mac specs and information. When I need to look up information, I avoid browsing Apple's Knowledge Base or wading through Google search results. Instead, I turn to Ian Page's free (donations accepted) **Macracker 3.0b2** (★★★★; [www.macracker.ca](http://www.macracker.ca)).

Macracker is a browsable and searchable database of information on almost every Apple product ever made, from the 128K to the iMac G5; it even covers the ill-fated Mac clones from Motorola, PowerComputing, and Umax, and it includes Apple scanners, printers, and displays. Each entry in Macracker is chock-full of information, down to the most minute detail: processor type and speed, bus speed, drives, memory, graphics card, size, weight, supported OS versions, latest firmware update—you name it. Macracker can tell you what type of RAM you should buy to upgrade the original 12-inch PowerBook G4 (PC2100 DDR266 200-pin SO-DIMM), how much the LaserWriter 8500 weighed (70.4 pounds), when Apple released the Color OneScanner (1991—the company discontinued it in 1992), and how much power a dual-2.5GHz Power Mac G5 consumes (a maximum of 600 watts).

As a nice bonus, each product entry in Macracker features an image of the item, a brief description

pulled (with permission) from the Apple Museum or [www.apple-history.com](http://www.apple-history.com), and—for computers—an audio demo of the model's startup chime.

Suffice it to say that if you need information about an Apple product, Macracker will have it. It's a great resource for upgrading, and equally useful when you're buying or selling a Mac, since you'll have a complete set of tech specs for each model. Macracker is the most comprehensive and easy-to-use resource on Apple products I've seen. The fact that it's free is icing on the cake.

### Where Did I Get That?

Despite several impressive recent entries in the Mac OS X browser market, Safari remains my favorite. But it's still missing some features. For example, Microsoft Internet Explorer for OS 9 provided a very clever method for keeping track of where you found a particular item: it added the download URL to the file's Finder comments. When I wanted to find out where I got a file, I could simply use the Finder's Get Info command to view the download



**Return Address** DownloadComment reminds you where those Safari-downloaded files came from.

URL. As someone who is lucky enough to get paid to try new software, I'm downloading more stuff today than ever before, and—thanks to developers who don't adequately document their software—I'm often left wondering where I found a file or disk image. So I was quite pleased to discover Ecamm Network's free **DownloadComment 1.0** (★★★★; [www.ecamm.com](http://www.ecamm.com)). Install DownloadComment (it runs in the background as an OS X Input Manager), and Safari adds the download information to the Comments field of any file you download by clicking on a link in Safari. Déjà vu, indeed.

DownloadComment does have a couple of significant restrictions: it works only with Safari, and it doesn't currently work for files downloaded using Safari's Save Linked File As command. (The developer plans to remedy the latter shortcoming in a forthcoming update.) But even with these limitations, DownloadComment is a useful utility that fills one of the few gaps in the otherwise great browser that is Safari. □

Senior Writer DAN FRANKS ([www.danfrakes.com](http://www.danfrakes.com)) is the author of *Mac OS X Power Tools*, second edition (Sybex, 2004), and the reviews editor at [Playistmag.com](http://Playistmag.com). Send your thoughts on this column, or on things you'd like to see in future columns, to [macgems@macworld.com](mailto:macgems@macworld.com).



**Encyclopedia Mac** Macracker tells you anything you ever wanted to know about Apple products—and then some.

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The Mac Gems Weblog ( <a href="http://www.macworld.com/weblogs/macgems/">www.macworld.com/weblogs/macgems/</a> ) has longer versions of the reviews you see here, as well as some you won't find in this column. Check out this month's Web exclusives.			
PRODUCT	RATING	URL	DESCRIPTION
Clipboard-Sharing	★★★★	<a href="http://find.macworld.com/0191">find.macworld.com/0191</a>	Clipboard utility
discHub	★★★★	<a href="http://find.macworld.com/0133">find.macworld.com/0133</a>	CD- and DVD-storage product
Galerie	★★★★	<a href="http://find.macworld.com/0134">find.macworld.com/0134</a>	photo-gallery tool



# WHERE WERE YOU DURING THE ROMAN MISSILE CRISIS?

**LIFE STOOD STILL FOR 13 MINUTES.** History changes in an instant. Never more so than in *Rise of Nations*, a new real-time strategy game from Brian Reynolds, lead designer of *Civilization II*. Experience the depth of turn-based strategy games at an RTS pace through 6,000 years of history and 18 ancient nations. It's the most intense RTS of its kind. Think fast. Fight faster. Defend, defeat, bargain, befriend, plot and plunder. Do it all under the gun with zero margin for error. Nothing is historically impossible, and only the quick and the brazen survive.



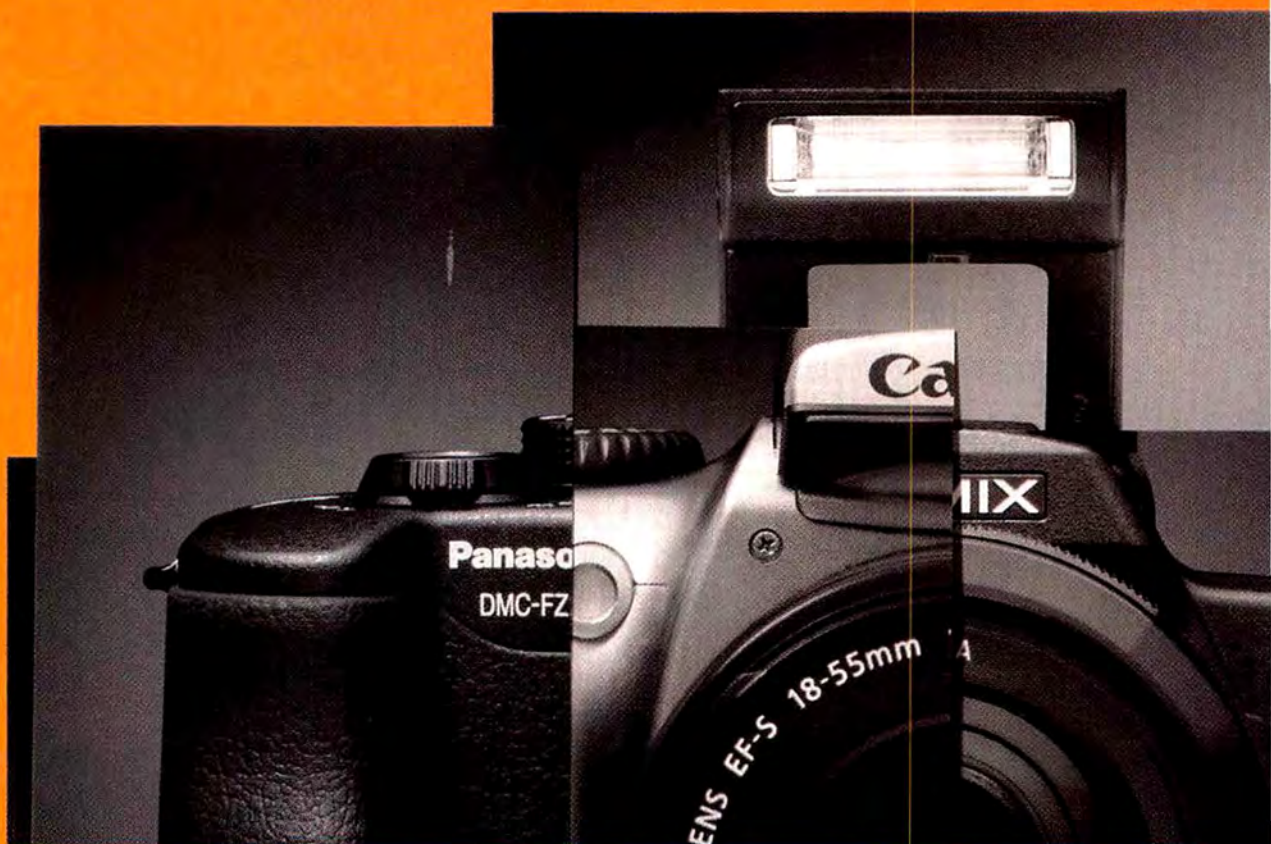
Blood and Gore  
Violence



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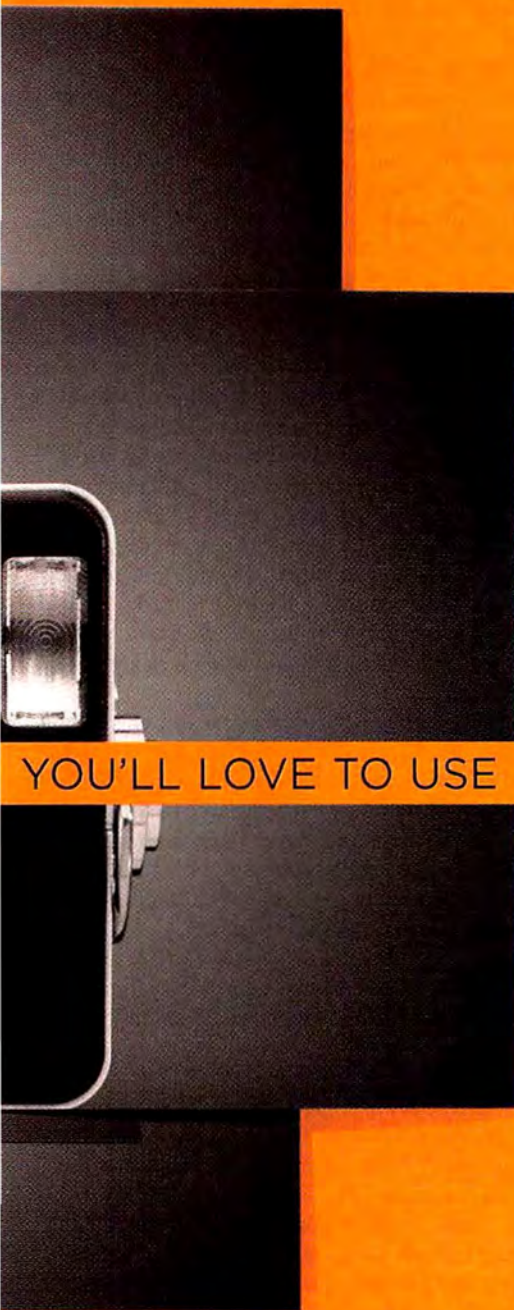
[www.macsoftgames.com](http://www.macsoftgames.com)





ZOOM IN ON THE FEATURES YOU NEED AND A MODEL





YOU'LL LOVE TO USE

# PICTURE YOUR PERFECT CAMERA

BY DERRICK STORY

PRODUCT PHOTOGRAPHY BY PETER BELANGER

**W**hen you bought your digital camera a couple of years ago, it was a marvel of engineering. Then the next generation came out. And the next. Now your revolutionary camera feels more like an antique. But with so many choices on the shelves, how do you choose the right replacement?

You might be tempted to base your buying decision on looks alone. Boy, would that be a mistake! Beneath those sleek exteriors are features and capabilities that will make the difference between having a camera that you love and having one that collects dust on a shelf.

The trick to finding your perfect match is knowing which features are most important to you before you step foot in the store. I'll show you what to look for when comparing cameras, and I'll explain which features are truly essential—and which are just hype.



## WHICH TYPE OF CAMERA DO YOU NEED?

The first step in narrowing the field of camera contenders is to decide which type of camera best suits you. Most digital cameras offer a tradeoff between size and flexibility. By deciding early on what your priorities are, you can quickly eliminate a large number of the models on the market. I typically divide digital cameras into three categories:

### COMPACT CAMERAS

If you need a good camera while on-the-go, I recommend looking at compact models. These lightweight cameras fit nicely into a pocket or a purse—so they're likelier to be on hand for unexpected photo opportunities. They're also relatively easy on the wallet; prices range from \$150 to \$500.

A compact camera typically has a resolution of 2 to 5 megapixels—enough for online photo galleries and most standard print sizes. However, they

don't usually offer the array of features and controls that larger models do. For example, you're often limited to using programmed exposure modes, so you may have trouble with tricky lighting or in situations with lots of action. Most compact cameras also have relatively limited zoom lenses—typically in the neighborhood of 3×.

### ADVANCED AMATEUR CAMERAS

Compact cameras are great for point-and-shoot photographers who want to immortalize life's surprises. But they don't offer a lot of flexibility. If you'd like more control over your photos, or if you want to explore some of the creative possibilities of digital photography, then advanced amateur cameras might be the ticket. Although one of these cameras probably won't fit in your shirt pocket, it won't put too much of a strain on your shoulder, either. And these cameras often include an impressive array of features that rival those of professional models, such as hot-shoes for external flashes, manual aperture and shutter-speed controls, and faster response times. Some even offer a 10× optical zoom. All of this can make a huge difference in photographing special events (such as weddings and birthdays), wildlife, and sports. Even if you're not ready to use all of these advanced features right now, they may come in handy as your skills improve—which means that you won't quickly outgrow your camera.

One downside to advanced amateur cameras (and compact cameras) is that they don't offer interchangeable lenses, so your optical options are somewhat limited. Although you may be able to add a few accessory lenses over the camera's existing optics, these add-ons can't really compete with the range of lenses available for professional cameras—for example, telephoto or fish-eye lenses.

Advanced amateur cameras typically offer resolutions of between 3 and 8 megapixels—plenty for most printing endeavors. Prices range from \$400 to \$900.

### PROFESSIONAL CAMERAS

For the greatest flexibility and creative control, most professional photographers rely on single-lens reflex (SLR) cameras. These cameras use the same lens for viewing and capturing a picture, giving you a greater sense of visual control. And the interchangeable lenses on SLRs let you quickly switch from a telephoto shot of a faraway bird to a wide-angle shot of a meadow. Resolutions on digital SLRs can range from 6 megapixels to 13 megapixels or more. And their internal electronics are often optimized to produce less image noise and faster response times. In the right hands, digital SLRs can capture stunning photos that would be all but impossible with other digital cameras.

Of course, all of this flexibility comes at a significant cost. Digital SLRs start at \$900 and can cost thousands of dollars. They're also considerably heavier than other digital cameras—especially if you're carrying around multiple lenses.

## MACWORLD FAVORITES: COMPACT CAMERAS



▶ The \$400, 4-megapixel **Canon PowerShot SD300 Digital Elph** ([www.usa.canon.com](http://www.usa.canon.com)) offers a 3× optical zoom, a 2-inch LCD, and full manual exposure controls. Even more impressive is the fact that it can take full-frame video at 30 fps.



▶ The sleek, lightweight **Pentax OptioX** ([www.pentaximaging.com](http://www.pentaximaging.com)) has a 2-inch LCD that swivels 360 degrees. This \$450, 5-megapixel camera records video and audio and has a 3× zoom. Its cradle recharges the battery, transfers data, and turns the camera into a Webcam.



▶ The 7.2-megapixel **Sony Cyber-shot DSC-P150** (★★★★; reviewed on page 26) proves that you don't have to sacrifice image size to get a compact design. This \$499 camera is very responsive and offers an impressive startup time.



## JPEG VERSUS RAW

One of the ongoing debates among advanced digital photographers is which format—JPEG or RAW—to use for recording images. Both formats can produce high-quality images. But when you shoot in JPEG mode, the camera processes the image for you—adjusting for white balance, applying sharpening, and so on.

When you shoot in RAW mode, the camera records only the raw image data—leaving you to make the proper adjustments when you're at your computer. This process is more like taking a negative into a dark-room and adjusting white balance and exposure until you get the perfect image. Sure, you can make the same adjustments in postproduction with JPEGs, but you're then fixing incorrectly applied effects. With RAW files, you're actually mapping the original bits of information.

For example, finding the right white balance can be difficult at the moment of exposure—especially under fluorescent or mixed lighting. When you shoot in JPEG mode, you have to make an immediate decision, and if you're wrong, you have to figure out how to correct it later. In RAW mode, it doesn't matter which white-balance setting you have when you shoot the picture. The camera records the raw data and lets you fill in the blanks later.

One downside to RAW files is their size. They're usually several times larger than a camera's best-quality JPEG files. And RAW mode often limits the speed at which you can take photos.

You'll need software that can interpret RAW data from your camera. Apple's iPhoto 4 can't upload RAW files. But most cameras that support RAW files include the appropriate software. Photoshop CS also lets you work with RAW files.

## HOW MANY PIXELS DO YOU NEED?

For many years digital photographers were consumed with the quest for megapixels. My 1.3-megapixel camera was the greatest thing in the world until the 2-megapixel models arrived. Now consumer cameras offer as many as 8 megapixels. But why are megapixels so important? You certainly don't want to plop down those extra dollars (and use up valuable hard-drive space) just for bragging rights.

Megapixels are important for two reasons. First, they determine what size your prints can be. Second, they determine how much of the image you can crop away and still produce a good print.

### MAKING PRINTS

A *megapixel* is a unit of measurement that describes how much information the camera's image sensor can record. A 3-megapixel camera, for example, can record around three million pixels worth of data. Alone, each pixel is just a tiny dot of color. Together, they create an entire image.

The quality of a photographic print is determined by how closely these pixels are packed together. If there are too few pixels per inch (ppi), photos look blocky and unattractive. To achieve the smooth gradation of tones we've come to expect from photographic prints, photos must be printed with at least 150 ppi. For a superior print, you must keep squishing all the way to 300 ppi.

Of course, as you pack pixels closer together, your image becomes much smaller. For example, a 3.2-megapixel photo shrinks to a mere 5 by 7 inches when you condense the resolution to 300 ppi. To print a high-quality 8-by-10-inch photo, you need at least 6.3 megapixels. (For a chart of maximum print sizes, see "Measuring Pixels.")

So to decide how many megapixels you need, you should first consider what you plan on doing with

your images. Compact cameras are great for printing 4-by-6-inch and 5-by-7-inch prints. But if you want to go bigger, you should consider investing in an advanced amateur or pro camera. I recommend at least 4 megapixels for casual shooters and a minimum of 6 megapixels for advanced amateurs.

### ROOM TO ZOOM

There is an advantage to having slightly more megapixels than you think you may need—doing so can compensate for a weak zoom by giving you room to crop. Say you use a 5-megapixel camera to take a picture of your daughter playing soccer. Although you've extended your camera's zoom to its fullest potential, she still seems far away in the photo.

Well, if you have a few megapixels to spare, you can actually "zoom in" even closer by cropping out unnecessary parts of the photo. A 5-megapixel camera can produce a high-quality 6-by-9-inch print at full frame. This means that you can crop out more than a third of the picture and still end up with a top-notch 5-by-7-inch print (see "Growing Closer").

### FILE SIZE

But before you go out and buy a 6-megapixel camera, take an honest look at your Mac setup. A 3.2-megapixel camera set at very high quality (the setting is typically called Super Fine) produces 1.5MB files. The images from a 6.3-megapixel camera at the same setting are larger than 3MB.

## MEASURING PIXELS

ESTIMATED PRINT SIZES BASED ON CAMERA RESOLUTION

Camera resolution (in megapixels)	2.0	3.2	4.0	5.0	6.3	8.0	11.1
Image size at 150 ppi (in inches) <sup>A</sup>	8 × 10	11 × 14	11 × 14	12 × 16	16 × 20	16 × 20	18 × 24
Image size at 300 ppi (in inches) <sup>A</sup>	4 × 5	5 × 7	5 × 7	6 × 9	8 × 10	8 × 10	11 × 14

<sup>A</sup> Dimensions are rounded to standard photo print sizes.



### TIP Secrets of Long Life

Digital cameras use either proprietary rechargeable batteries or traditional AAs. I recommend rechargeable cells. They tend to be more compact, easier to pack, and far less expensive in the long run. But make sure that the charger included with your camera is practical. Too often, chargers have thick cords that take up far more space than the camera itself. I prefer compact battery chargers that are separate from the camera (so I can charge a backup battery while I'm out taking pictures), and that plug directly into an electrical outlet without requiring a cord.



Uploading hundreds, if not thousands, of these images could bring an aging or already strapped computer to its knees. You can give yourself more room by adding an external FireWire hard drive. But if your Mac is more than three years old, buying a new 6-megapixel camera may mean that you have to upgrade your computer, too—it's something to keep in mind.



**Growing Closer** With a few megapixels to spare, you can crop wide shots for better compositions while preserving print quality.

## TIP Get a Better View

Not everything happens at eye level. If you like shooting from unusual perspectives, such as over your head or from knee level, I highly recommend getting a camera with a *vari-angle* LCD. On these cameras, the screen



swivels out, so you can easily compose shots from any height—perfect for photographing kids or pets. You can even point the screen back at yourself for self-portraits. However, if you want a *vari-angle* camera, you'll probably need to investigate advanced amateur models. Compact cameras and SLRs almost always have fixed-position LCDs.

## WHICH FEATURES DO YOU NEED?

Once you've settled on a type of camera and on the number of megapixels you need, you should have narrowed your search to a more manageable number of cameras. From this point on, you should base your decision on features and performance. Remember, if your camera is hard to navigate or doesn't have the controls you need, you probably won't use it.

I'll step you through the most-common digital camera features and explain what's really important—and what's just extra fluff.

### THE LCD

One of the joys of digital photography is instant gratification—you see your picture as soon as you've captured it. So you know you have the photo you want before it's too late to take a second shot. But all LCDs are not created equal. Here's what to look out for as you browse for your next camera.

**Image Quality** Since the LCD is such an important part of the digital camera, be sure to spend some time in the store comparing the LCDs on your leading contenders. The image should be sharp and saturated. As you pan the camera, make sure that the LCD's image is able to keep up with the

motion; it shouldn't be jerky or delayed. Check whether you can rotate the LCD so the screen faces the back of the camera when not in use. This will help protect it from scratches. Such screens can also be great for composing shots at unusual angles (see "Get a Better View").

Then try to test the camera in bright light—next to a window, for example. Many cameras present a good image in subdued light but become almost unreadable in bright sunshine. Others, such as the Kyocera Finecam SL400R ([www.kyoceraimaging.com](http://www.kyoceraimaging.com)), include special technology that improves the LCD image in bright light.

**Screen Size** Digital-camera LCD screens are generally between 1.5 inches and 2.5 inches across (measured diagonally). If you tend to rely on the LCD as your viewfinder, I recommend a camera with at least a 2-inch screen. Larger screens also make it easier to share your pictures with others without first uploading them to your computer.

**Magnification** Whatever screen size you choose, make sure the camera offers magnification controls that let you quickly zoom in on the pictures you've captured. It can be almost impossible to tell whether a full-screen image is slightly blurry. By taking a closer look at a photo while there's still time to try again, you'll prevent unpleasant surprises later. But be on the lookout for poor implementation. A good magnification tool is easily

## GET HELP



Megapixels determine only how large your image is—they don't guarantee its *quality*. Some cameras take beautiful, well-exposed pictures in almost any light. Others produce unsightly noise in low-light situations. Of course, you won't see these details on the box. Once you've decided on a couple of contenders, read reviews of each one to see how their images stack up. Here are some good online resources:

**Macworld.com** You can read all of our digital-camera reviews from the past year and find the best deals on the Web ([find.macworld.com/0135](http://find.macworld.com/0135)).

**Imaging Resource** In addition to offering news and reviews of digital cameras, this site lets you compare images from several different cameras ([www.imaging-resource.com](http://www.imaging-resource.com)).

**Digital Photography Review** This site offers a comprehensive look at the world of digital photography.

You'll find in-depth reviews of many of the latest digital cameras, as well as how-to information, side-by-side comparisons, news, a glossary, and discussion forums ([www.dpreview.com](http://www.dpreview.com)).

**Steve's Digicams** This site offers in-depth reviews of hundreds of cameras. Cameras are broken down into categories according to their megapixel ratings ([www.steves-digicams.com](http://www.steves-digicams.com)).



accessible and lets you quickly navigate to all areas of an image.

**Data Viewing** For hobbyists and professionals—or anyone who wants to learn more about photography—I recommend a camera that lets you view image data while looking at pictures in playback mode. This helps you quickly troubleshoot problematic photos by giving you access to the photo's settings—such as white balance, exposure, and ISO (light sensitivity). You should also make sure that you can easily hide this information when you don't need it.

## THE FLASH

Almost all cameras default to an automatic-flash mode, which triggers the flash in any low-light situation. Although this is useful for quick snapshots, it doesn't offer a lot of flexibility. In many situations, you'll get noticeably better photos by overriding the camera's automatic controls.

I think every good digital camera should include these three flash modes:

**Flash On** This is my favorite flash mode. Sometimes referred to as a fill flash, it forces the camera's flash to fire, regardless of how much light there is. This eliminates problems with backlighting and is the secret to taking beautiful outdoor portraits. The forced flash adds enough light to properly illuminate the subject and balances the exposure for the background.

**Flash Off** Sometimes the flash destroys the mood of a shot—for example, when the subject is next to a window with daylight streaming in. To capture moments like this, you need to be able to turn the flash off. This mode is also essential for taking photos in places that don't allow flash photography, such as museums, concerts, and delivery rooms.

**Slow-Synchro Flash** Ever notice that your flash tends to wipe out background detail in your photos? The slow-synchro setting (often referred to as night-time mode) solves this problem by telling your camera to use a slow shutter speed in combination with the flash. By doing this, you capture more background detail while making sure that your subject is properly lit. It's perfect for shooting portraits at twilight or in dimly lit places. I use this mode regularly and love it.



**Better Portraits** To preserve ambient lighting, make sure that your camera offers an easy way to turn the flash off.

## MACWORLD FAVORITES:

## ADVANCED AMATEUR CAMERAS



The 7.1-megapixel **Canon PowerShot G6** (★★★★; reviewed on page 26) excels at taking sharp, accurate photos. It's also packed with useful features, including a vari-angle LCD, a hot-shoe, a RAW mode, and support for 60-second voice annotations. Its retail price is \$699.



The 8-megapixel **Olympus C-8080 Wide Zoom** (★★★★; September 2004) offers good print quality, durable construction, fast and accurate autofocus, excellent manual controls, and long battery life. It also offers in-camera editing of RAW images—although you'll have to wait between shots in RAW and TIFF mode. Its retail price is \$999, but you can find it online for less than \$700.



The incredibly responsive 5-megapixel **Panasonic DMC-FZ20** ([www.panasonic.com](http://www.panasonic.com)) features a powerful 12× zoom and an optical image stabilizer to reduce jitter and ensure that your photos are sharp. It also comes with a full set of manual features—all for \$600.

**External Flash Options** If you want to greatly improve the quality of your flash photography—and if you're not concerned about the heft of your camera—take a hint from the pros and choose a camera with a hot-shoe—a bracket that lets you attach an external flash to the camera. External flashes throw light wider and farther than built-in flashes can, producing more-consistent light. They also raise the flash head above the lens, which helps reduce red-eye. (Forget about using a camera's red-eye mode for this—it'll be more annoying than useful.) Some external flashes even have rotating heads that let you bounce the light off of ceilings for a diffused, natural look. Finally, external flashes don't drain your camera's batteries. You should plan to spend between \$125 and \$350 for a good external flash designed for your camera.



## THE ZOOM

A powerful zoom that can get you close to your subject is always an asset in photography. But be careful when comparing cameras' zoom specifications. Many manufacturers list two different zoom types—optical and digital. The optical zoom magnifies the image by using actual glass elements; it's similar to a telescope. The digital zoom operates much differently. It emulates the telephoto effect by cropping out other portions of the image. In the process, you end up compromising image quality.

When shopping for cameras, don't be swayed by the digital-zoom rating. In fact, I recommend that you turn off the digital zoom and leave it off. If you're looking for a compact camera but are concerned that the typical 3× zoom (the equivalent

of a 35mm–105mm lens) won't be sufficient, consider investing in a camera with 5 megapixels or more so you'll have room to crop later. If you do a lot of nature or sports photography, you may want to look for a camera with a 7× or even 10× optical-zoom lens.

## SHOOTING MODES

Some shots are harder to capture than others—for example, the moment before your son blows out his birthday candles, or a closeup of a delicate flower. To get these shots, you'll want a camera with specialized shooting modes.

**Continuous Shooting** If you take photos of sporting events, kids, or any other fast, unpredictable subject, a continuous-shooting (or burst) mode will make a huge difference in your photography. This mode lets you hold down the shutter button to shoot multiple photos in rapid succession. The number of pictures you can record in one burst is determined by your camera's electronics—and in some cases by the type of memory card you have. You may need a more expensive high-speed memory card to take advantage of your camera's fastest shooting rate (see "Improve Your Memory"). If so, be sure to factor that cost into your decision. To be effective, a continuous-shooting mode should capture images at 2 fps (frames per second) or faster at the camera's highest resolution.

A burst mode can also help you compensate for shutter lag—that diabolical delay between the moment you press the shutter button and when the picture is actually recorded. This is a particular problem with compact cameras. By initiating the burst mode just before the action begins, you'll greatly increase your chances of capturing the right moment.

**Self-Timer or Remote Release** A camera's self-timer mode delays the shutter for a brief period—usually 10 seconds—so you have time to dash over and join your friends in the shot. It's also extremely useful for low-light photography that requires long shutter speeds, such as a night shot of the Golden Gate Bridge. By putting the camera on a tripod or

## MACWORLD FAVORITES: DIGITAL SLRs



▶ The 6.1-megapixel **Canon Digital Rebel** (★★★★; February 2004) is the most affordable digital SLR on the market. You can find one online for around \$800—lens included. The camera produces excellent photos, even in low light. Although it doesn't offer all the features of more-expensive SLRs, it's significantly lighter and accepts any Canon EF lenses.



▶ The 8.2-megapixel **Canon EOS 20D** builds upon the popularity of Canon's 10D camera. The 20D has a full array of professional controls, excellent image quality, and top-notch performance (it captures 5 fps for up to 23 frames). And at \$1,499, it's still within range of advanced hobbyists.



▶ A strong competitor to the Canon Rebel, the 6.1-megapixel **Nikon D70** (★★★★; find.macworld.com/0152) is impressive and has better flash-exposure compensation than the Rebel. It's also slightly more expensive—\$999 without a lens—and we found its photos to be slightly noisier at low ISO settings.



**Focus on Details** For close-up shots like this one, you'll need a good macro mode. Check the camera's setting to see how close you can get to your subjects.



## 5 THINGS TO CONSIDER WHEN YOU'RE IN THE STORE

**1 Size Matters** If your camera is too heavy or bulky, you'll be less likely to carry it with you. Make sure that the camera is comfortable when hanging from your shoulder or neck—with the battery installed (this can make a big difference).

**2 Check Ease of Use** You should be able to navigate to any option in your camera's menu within a few seconds. Check that menus are arranged intuitively and that you understand the terminology used. You may be instantly pleased with some menus and hate others.

**3 Look for Quick Access** You're likelier to use key features—such as flash controls, shooting modes, and ISO settings—if they're within reach during the heat of shooting. These features should be quickly accessible from a button or a dial on the camera body or from a top-level menu item.

**4 Get the Right Picture** If you enjoy fine-tuning photos in Photoshop, look for a camera that lets you capture images in RAW mode. You can spend less time worrying about details such as white balance and ISO while taking the photos and make all of your processing decisions later at the computer.

**5 Avoid Unexpected Costs** When buying a digital camera, you'll need more than what's in the box. You should also invest in an extra battery and an upgraded memory card. Make sure your budget accounts for these additional costs.



another steady surface, and then using the self-timer to trip the shutter, you're less likely to jar the camera and ruin the shot. If you do this type of photography often, look for a camera that includes a 2-second delay in addition to the more standard 10-second setting. That way, you'll waste less time waiting to make the exposure.

An even better option is to get a camera that includes a remote control, so you can fire the shutter from a distance—usually 15 feet or less—without having to set a timer. No more mad dashes.

**Macro Mode** If you prefer to get up close to your subject—for example, when shooting plants or bugs—pay close attention to the camera's macro-mode specifications. The macro mode allows the camera to focus on objects that are very near (see "Focus on Details"). Macro modes can vary widely from camera to camera. Nikon's cameras, for example, are well known for their ability to focus on subjects only inches away, while other brands require a foot or more of distance.

### WHITE-BALANCE SETTINGS

Different light sources produce light at different color temperatures. As a result, a color doesn't look quite the same under artificial light as it does outdoors. Your brain compensates for these variations in color, but cameras need a little help. When they get it wrong, photos can take on a bluish or

reddish cast (see "True Colors"). Your camera's white-balance setting lets you compensate for these problems by telling the camera what type of lighting you're in.

**Preset White Balances** In many cases, a camera's automatic white balance does a good job of adjusting to different lighting situations. But if it messes up, you need easy access to additional white-balance options. Almost all digital cameras include at least five essential white-balance settings—typically called Daylight, Cloudy, Tungsten (for standard light bulbs), Fluorescent (for fluorescent tubes), and Fluorescent H (for daylight fluorescent tubes). Ideally, you should be able to get to these settings from a button or a top-level menu item. You shouldn't have to scour your camera's menus each time the lighting changes.

**Manual White Balance** If you often shoot without a flash to better capture ambient light, you should also make sure that your camera offers a custom white-balance setting. With this mode, you simply point your camera at a white surface; the camera then measures the light and applies the appropriate color correction. This takes the guesswork out of choosing the correct color temperature.

If you find yourself in tricky lighting situations on a regular basis, look for a camera that shoots in RAW mode (see "JPEG versus RAW"). The RAW file format lets you delay your decision about white balance until you're working at the computer. This is very handy for advanced photographers who are picky about the colors in their images and who don't mind spending time in a photo editor to perfect each shot. Typically, only advanced amateur cameras and digital SLR cameras offer manual-white-balance and RAW modes.

### MANUAL EXPOSURE MODES

Most casual photographers don't want to think about details such as shutter speed and aperture. They just want to take the picture and go. When that's the case, the programmed exposure modes included with most digital cameras—such as Portrait, Landscape, and Auto—work just fine.

But if you want to stretch your shooting technique to capture creative, artistic photos, you'll need a camera with advanced exposure controls, such as Aperture Priority, Shutter Priority, and Manual. These are typically found on advanced amateur cameras and digital SLR cameras.

The Aperture Priority mode lets you control the camera's depth of field by setting its f-stop. (Higher numbers create greater depth of field.) This lets you determine how much of the photo is in focus.

The Shutter Priority mode controls the camera's shutter speed. Faster shutter speeds can stop fast-paced action in its tracks. Longer shutter speeds will capture the effect of motion over time—for example, to give flowing water a dreamlike quality.

Seasoned photography veterans who want complete control of their camera settings need a camera that offers a full Manual mode, which lets you set



### TIP Improve Your Memory

Think all memory cards are the same? Think again. High-performance memory cards can significantly speed up the process of saving image data—so you can take more photos in less time. For example, a standard SanDisk 512MB card inserted into a Canon EOS 10D will transfer at roughly 750 KBps. The high-performance SanDisk Extreme card can transfer the same data at about 1.3 MBps—almost twice as fast. High-performance cards are usually more durable, too—able to withstand the bumps and bruises that accompany on-the-go photography. To get the most from your digital camera, especially when shooting in continuous mode, make sure your memory card matches or exceeds your camera's maximum speed. (For more information, go to Rob Galbraith's memory-card database: [www.robgalbraith.com](http://www.robgalbraith.com)).



both the shutter speed and the f-stop. If you're thinking of taking up photography as a hobby, these three modes are must-haves for creating photos that really stand out.

### SPECIAL FEATURES

For adventurous photographers, there are some cameras that go beyond standard postcard-size pictures and offer video, panoramas, and more. These features aren't for everyone, but if you take advantage of

them, they can add significant value to your camera. Here are some of the most useful additions:

**Movie Mode** In addition to taking photos, some cameras can also capture short video clips. Since you're likelier to have a digital camera with you than a camcorder, this feature ensures that you capture life's memorable surprises—for example, a child's first steps or words.

For best results, look for a camera that records full-frame video (640 by 480 pixels) at 15 fps or faster. (If you use this feature a lot, investing in a camera that records 30 fps may be worthwhile.) Also make sure that your camera records audio with the video. And since video can quickly take up a lot of memory, you'll need a large-capacity memory card—512MB or more. Factor this cost into your budget.

**Panoramas** Ever been disappointed that your pictures didn't capture the full beauty and scope of the scene you were photographing? The solution is to take multiple, overlapping photos and then, using the accompanying software, stitch them together on your computer. Although you can do this with any camera, some cameras offer a panorama mode that makes the process much easier. This mode locks your camera settings so there aren't dramatic differences in exposure, and it may even help you gauge the correct amount of overlap while taking the pictures.

**Audio Annotations** Some photographers like to take notes as they shoot—to keep track of who's in each photo, for example. But rather than pulling out a notebook each time you need to write something down, why not buy a camera that lets you record audio notations? Some cameras let you attach an audio file to a photograph. Although managing this additional file information on your computer will require some extra work, the convenience might outweigh the postproduction hassle.

**Underwater Photography** Wouldn't it be nice to take a few underwater shots while snorkeling in Hawaii? Instead of buying a specialized camera, you may be able to use your existing digital camera—with an inexpensive but effective underwater housing. Companies such as Canon and Olympus offer waterproof housings that can be submerged to 130 feet—which is ample for most snorkeling adventures. Most housings are fitted to a specific camera model, so make sure your camera offers a compatible housing before you buy (see [www.underwaterphotography.com](http://www.underwaterphotography.com) for a good catalog). Housings for compact cameras tend to be much more affordable than the ones for digital SLRs. If you don't think you'll go snorkeling often enough to justify the extra expense, see if you can rent a housing at a local dive shop.

## YOU GOT THE PICTURE. NOW WHAT?

With all this talk about taking pictures, it's easy to miss the real point—*sharing* your pictures. In the days of film, you dropped off your film at the local drugstore or photo developer and picked up prints a few hours or days later. You can still do this with your digital prints—many drugstores and camera outlets let you drop off your memory card or use a self-serve photo-printing kiosk. However, you have many additional options.

**Do It Yourself** Today, even the most-economical printers do a reasonably good job of producing photo-quality prints. This option also gives you the greatest amount of control over your prints. The downside is that you'll probably end up spending a lot more time working with your photos—correcting color, cropping, sharpening, checking print settings, and so on. Some people enjoy touching up small details until they have a perfect print. Others think it's extremely tedious.

Of course, how much energy you put into this process is entirely up to you.

Many printers let you attach your camera right to a port on the front and start printing—forgoing the computer entirely. Some companies even offer portable printers, such as the HP Photosmart 375 (pictured; \$200; [www.hp.com](http://www.hp.com)), that print only 4-by-6-inch photos. It has a color LCD, media-card slots, and an optional internal battery so you don't need to be near an outlet. This is a great option if you want to print photos at a birthday party or a family reunion. But be aware of the hidden costs in printing. A sheet of 4-by-6 photo paper typically costs about 20 cents. Ink will run you another 5 to 10 cents per print. And be honest—how many times do you get the print right the first time?

**Delivery** If you can wait a few days for your prints, you may prefer to have an online printing service handle the details. You simply upload your images to the company's Web site, and they print your pictures on real photo paper and send them back to you in the mail. Typically, you'll pay about 23 cents to 29 cents per print for this service, plus a couple dollars for postage. Two of my favorite services are Shutterfly ([www.shutterfly.com](http://www.shutterfly.com)) and Ofoto ([www.ofoto.com](http://www.ofoto.com)). In addition to ordering prints, you can buy books and gifts featuring your images. If you use iPhoto, you can even order prints right from the program's interface.

**Carryout** In case you like the convenience of ordering prints from your Mac but don't want to bother with postage, some companies offer an additional option. In 2004, the CVS drugstore chain rolled out a service that lets you order prints online and then pick them up at a local retailer by 5 p.m. the next day. Prices range from 25 cents to 29 cents per print. Costco now offers a similar option.

**Save the Trees** But don't limit yourself to making prints if your ultimate goal is to share images with friends and family—especially if they own computers. Several wonderful online communities, such as Flickr ([www.flickr.com](http://www.flickr.com)) make it easy for you to upload pictures from your digital camera or camera phone and then publish them for others to view on the Web. If you have a .Mac account, you can upload Web galleries of your photos directly from iPhoto and send notifications to friends and family.



### GO TO WEB:

Shop smart! Go to [find.macworld.com/0151](http://find.macworld.com/0151) and download a shopping list that you can fill out and take with you to the store.





**True Colors** The correct white-balance setting (right) will create richer, more-accurate photos. Make sure your camera's white-balance settings are easily accessible.

## DO YOU NEED SOFTWARE?

Taking great photos isn't enough. You should also consider what you plan to *do* with those photos once they're on your Mac. After all, isn't sharing them the whole point? To do this, you're going to need the right software.

Most digital cameras come with software for managing and editing your photos. But in most cases, this bundled software is more trouble than it's worth—and it's rarely designed with the Mac user in mind. With a few exceptions (which I'll discuss in a moment) you're much better off ignoring the software that comes with your camera and instead either using Apple's software or purchasing software from a third-party developer who really understands what Mac users want.

## WORTHWHILE BUNDLES

Three bundled programs truly do add value to a digital camera: Adobe Photoshop Elements ([www.adobe.com](http://www.adobe.com)), Canon's Remote Capture ([www.usa.canon.com](http://www.usa.canon.com)), and Canon's PhotoStitch.

Photoshop Elements packs most of the tools from Adobe's professional image editor behind an easy-to-use interface—including many one-click solutions for common image problems. I highly recommend it for hobbyist photographers. You can also purchase it separately for \$90. (For a tutorial on Elements 3, see "Image Editing beyond iPhoto," *Digital Hub*, page 78.)

Canon's Remote Capture lets you do all sorts of nifty things with a connected camera. For example, you can control the camera from your Mac or set it to take shots at specified intervals for time-lapse photography. And Canon's PhotoStitch software is a great panorama editor. In fact, I prefer it to the one included with Adobe Photoshop and Photoshop Elements.

## ADDITIONAL SOFTWARE

Here are some other programs I recommend adding to your digital arsenal:

**Apple's iPhoto** This photo manager is included with every new Mac. It can also be purchased for \$49 as part of the iLife '04 suite—along with iMovie, iDVD, GarageBand, and iTunes ([www.apple.com/ilife](http://www.apple.com/ilife)). iPhoto is great for uploading, organizing, making minor adjustments to, and outputting digital pictures. For example, I use it along with .Mac to provide quick Web postings for my photography clients ([www.storyphoto.com](http://www.storyphoto.com)). Thanks to its seamless integration, I usually have images posted to the Web within hours after I leave a wedding reception.

**Adobe Photoshop** Beyond iPhoto, you should have a good image editor. Adobe Photoshop CS is at the top of the list. This program includes a powerful set of tools for correcting and manipulating your images. But it's also expensive (\$649). If you don't want to spend a lot of time fixing your images, I recommend picking up a copy of Adobe Photoshop Elements—if it's not included with your camera. Both programs include the Camera Raw plug-in for managing RAW files.

**GraphicConverter** For the budget-minded photographer, I also recommend Lemke Software's GraphicConverter ([www.lemkesoft.de](http://www.lemkesoft.de)). This shareware image editor runs on OS 9 and OS X. GraphicConverter also supports RAW formats from just about every major camera maker.

## THE LAST WORD

Whatever you do, resist impulse buying when shopping for a digital camera. Use the information in this article to build a checklist of the features you want. (You can download a printable checklist from [find.macworld.com/0151](http://find.macworld.com/0151) and take it with you to the store.)

My final word of advice: Get a camera that gives you room to grow. For instance, you might not take nature photos now because your camera has a weak zoom lens. But with a powerful telephoto lens—as with any advanced feature—you might discover a new hobby.

DERRICK STORY is the author of *Digital Photography Pocket Guide*, second edition (O'Reilly, 2003), and *Digital Photography Hacks* (O'Reilly, 2004). You can read his articles on digital imaging at [www.macdevcenter.com](http://www.macdevcenter.com).





By Jim Heid

Photography  
by Peter Belanger

# From Tape to CD

Bring Your  
Old Recordings  
into the  
Digital Future

You know those old cassette tapes you have lying around the house—compilations of favorite songs from a bygone era, family get-togethers recorded with a battery-powered portable, and audio letters swapped with a faraway friend? They aren't getting any younger. In fact, they're deteriorating as you read this. Over time, a tape's magnetic particles lose their charge, muffling the audio. If you've stored tapes improperly—in a car's glove box or in a hot attic, say—the particles may flake off entirely, peppering your audio with momentary silences.

It's time to get those magnetic memories into your Mac. Once you've digitized your old tapes, you can enhance the audio and remove noise, and then burn your efforts to CDs or transfer them to your iPod.



## STEP 1

### Set Up Your Equipment

To transfer audio from aging cassette tapes to your Mac, you'll need some basic audio hardware and recording software. Here's what I recommend:

**Cassette Deck** The first thing you'll need is a cassette deck that can play back your tapes. Any deck with audio-out jacks should work. However, if you have a large tape library and you don't want to commandeer the deck in your stereo indefinitely, consider purchasing a separate player that you can dedicate to the task. You can buy a good stereo cassette deck online for under \$100. If you originally recorded your tapes on high-quality gear, you should use a midrange or high-end deck that can do justice to your recordings. But keep in mind that even the best equipment won't significantly improve audio captured with a cheap battery-powered tape recorder.

**Audio-Input Hardware** Next, you need a way to connect the cassette deck to your Mac.

Most currently shipping Macs include a stereo audio-input minijack (marked with a hollow circle and two arrows pointing inward) that's perfect for the task. To connect the two, you'll need a minijack-to-RCA cable (see "Get Connected"). Simply plug the two RCA phono plugs into the line-out jacks on your cassette deck, and plug the 1/8-inch stereo miniplug into your Mac's audio input port.

If you have an older Mac that lacks an audio input, you'll need to buy one of the many third-party audio adapters that connect to the Mac's USB or FireWire ports. For people on a tight budget, Griffin Technology's \$40 iMic ([www.griffintech.com](http://www.griffintech.com)) is an inexpensive option that plugs into any USB-equipped Mac. However, you'll get much better results with a full-featured audio interface such as Griffin's \$100 PowerWave (★★★★; *Mac Gems*, June 2003) or M-Audio's \$180 MobilePre ([www.m-audio.com](http://www.m-audio.com)).

**Audio Software** There's no shortage of programs that can record and manipulate audio on the Mac. (For some of my favorites, see "Audio Software Options.")

## Should You Convert?

Converting old cassettes into digital files is a great way to preserve precious memories and rare musical recordings. However, not all tapes deserve the time and effort it will take to digitize them. If you own an old cassette of an album that's available on CD, you're probably better off just buying the CD or downloading it from iTunes. It will likely sound superior to anything you could create yourself.

If you're planning to transfer old bootlegs to CD, you may want to make sure someone else hasn't already done the work for you—from better-quality and lower-generation sources, no less. Before you press the record button, search <http://db.etree.org> to see whether your show already exists out there. You may save yourself quite a bit of time and effort—and other bootleggers will thank you for not adding inferior recordings to the trading pool.—JONATHAN SEFF

But for versatility and affordability, you can't go wrong with HairerSoft's \$30 Amadeus II. This general-purpose audio editor is well designed and loaded with features for editing out unwanted audio, creating fades, improving sound quality, and more.

Although I've based these instructions on Amadeus II, the steps should be similar in whatever recording software you choose.

**Storage** CD-quality stereo audio eats up about 10MB of space per minute. Before you begin, check to see if your Mac has enough room to hold all your audio. If not, you may need to invest in an external hard drive.



**Get Connected** To set up your recording studio, connect the two RCA plugs A into your tape deck's line-out jacks. Then connect the 1/8-inch miniplug B into your Mac's audio input port, or—if your Mac doesn't have one—into the minijack port on a Griffin PowerWave or another audio interface.

## STEP 2

### Prepare Your Tapes

While importing audio from old cassettes, you'll inevitably hear some tape hiss—a result of the tape's narrow track and slow playback speed. And a dirty deck or improperly handled tape can compound the problem. To get the best playback from your tapes and deck, take the time to do some basic housekeeping before you begin recording.

**Clean the Heads** Use cotton swabs and tape-head cleaner to clean your deck's playback head, as well as

## AUDIO SOFTWARE OPTIONS

COMPANY	MOUSE PRODUCT	RATING	PRICE	RECORDS CONTACT	AUDIO	PROS	CONS
Apple Computer	GarageBand 1.1	★★★★	\$49 <sup>B</sup>	<a href="http://www.apple.com">www.apple.com</a>	yes	Nondestructive filters and effects operate in real time, making experimentation easy.	Offers fewer editing features than a dedicated audio editor.
BIAS	SoundSoap 1.1 <sup>A</sup>	★★★★	\$99	<a href="http://www.bias-inc.com">www.bias-inc.com</a>	no	Great at cleaning up scratches, pops, and other noise.	Relatively expensive; no recording features.
Felt Tip Software	Sound Studio	★★★★	\$50 <sup>C</sup>	<a href="http://www.felttip.com">www.felttip.com</a>	yes	Straightforward interface.	Limited playback controls hamper precise editing.
HairerSoft	Amadeus II	★★★★	\$30	<a href="http://www.hairersoft.com">www.hairersoft.com</a>	yes	Versatile program for recording, editing, and optimizing audio; inexpensive.	Noise-reduction features are less effective than those in SoundSoap or CD Spin Doctor.
open source	Audacity 1.2	★★★★	Free	<a href="http://audacity.sourceforge.net">http://audacity.sourceforge.net</a>	yes	Free; large array of effects and optimizing filters.	Clumsy interface.
Roxio	CD Spin Doctor 2	★★★★	\$100 <sup>D</sup>	<a href="http://www.roxio.com">www.roxio.com</a>	yes	Great at cleaning up noise and optimizing audio.	No audio-editing features.

<sup>A</sup>Version 2.0 was announced as we went to press. <sup>B</sup>Included as part of the iLife '04 suite. <sup>C</sup>Bundled with current iBooks. <sup>D</sup>Included with Toast 6 Titanium and Toast with Jam 6.



# What about My LPs?

If you've been collecting music for a long time, you probably also have crates full of records collecting dust—and possibly warping—in the attic. Unlike tapes, many records have never been released on CD, so you can't just go out and replace them with digital copies. But you can bring your record collection into the digital age just as you can with cassettes—as long as you keep a few caveats in mind.

**The Right Connections** In many cases, you can't just connect a record player to your Mac and begin recording LPs. That's because most LPs use an RIAA curve—a mathematical formula that lowers the audio's bass levels and raises its treble to maximize recording space and counteract the noise made by the stylus touching the grooves. To hear your music as it was intended, you need something that can reverse the RIAA curve during playback—either a record player's built-in amplifier or, if it doesn't have one, an external piece of hardware called a preamp. If your record player doesn't offer a built-in amplifier, you can typically purchase a basic preamp—which can then output the audio signal to your Mac—for under \$100. Another option is to purchase Griffin Technology's iMic or PowerWave audio interfaces. These USB-based interfaces include Final Vinyl, recording software that can reverse the RIAA curve without requiring additional amplification hardware.

**Removing Noise** Another difference in the process of digitizing cassettes and records is the type of repairs they may need. The most common issue with cassettes is analog tape hiss. But with records, the stylus's physical tracing of the grooves often results in clicks and pops, which appear as tall, thin spikes on a waveform. These problems require an entirely different solution. Luckily, there are filters that can take care of clicks and pop as well. CD Spin Doctor, for example, is particularly good at tackling these audio flaws. It includes both De-Crackle and De-Hiss filters, specifically designed for transferring records.—JONATHAN SEFF



its capstan and pinch roller (the spinning pin and rubber roller that work together to grip the tape and move it across the heads). You can buy head-cleaning fluid at almost any electronics store. For a primer on cleaning your tape deck, see [www.homerecording.com/caring.html](http://www.homerecording.com/caring.html).

**Acclimate Your Tapes** If you have stored the tapes in a hot or cold place, let them sit for a few hours to acclimate to the temperature in your recording room. This will eliminate moisture condensation and other problems that could cause tape jams. Then promise to treat your tapes better in the future.

**Break the Tabs** If you haven't already done so, break off the plastic tabs on

the backs of the cassettes you plan to convert. This will prevent you from accidentally recording over your audio.

**Desperate Measures** When you play that old tape that used to live in your Firebird's glove compartment, you may hear an unpleasant mechanical squealing sound. This is the result of *binder ooze*, and it's likely the dying gasp of your cassette. Over time, the glue that holds the magnetic particles to the tape can migrate to the surface. The tape becomes just sticky enough to adhere to the tape deck's heads, emitting a squeal.

It's probably best to throw away a squealing tape. But if it contains priceless audio, try baking the tape for about 10 minutes at 125 to 150 degrees—preferably in a convection or electric oven. (A gas oven produces too much moisture.) This helps dry out the excess binder.

When the tape has completely cooled, replay it. If it's squeal free, digitize it immediately. Some experts say you can bake a tape a couple of times, but the heat takes a toll on the tape and the cassette mechanism. Consider the oven a last resort.

## STEP 3

### Fine-tune Your Settings

No two cassette recordings are exactly alike, so to get the best results, you'll want to adjust your tape deck and software settings to match the specific characteristics of each tape you convert.

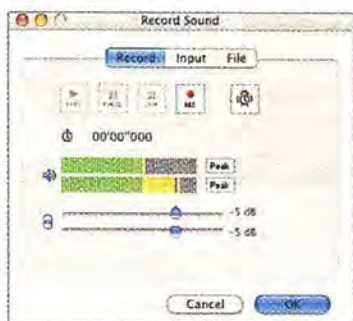
**Adjust Your Deck** Tapes come in several formulations—metal oxide, chromium dioxide, and so on. Newer cassette decks sense which type of tape you're using and adjust playback appropriately. But many older decks don't, and if you own one of these, you'll need to set its front-panel switches to correspond to the type of tape you're restoring. If the tape isn't labeled, play back a portion of the audio with each setting and use the one that sounds best.

Before you record, you should also experiment with your deck's Dolby noise-reduction setting. Dolby noise reduction can soften the noticeable hiss in a problematic tape. However, it also tends to mute high frequencies, making your audio less vibrant. To see which setting you like best, play a portion of the tape while switching Dolby off and on.

**Set Software Levels** Next, set your audio software's volume controls to accommodate the loudness of your tape. Proper volume is vital to getting good sound. Set the levels too low, and your audio will be too soft and prone to noise. Set them too high, and loud portions of the recording will sound horribly distorted.

To set the volume control, forward your tape to a particularly loud section. Fire up Amadeus II and begin playing your tape. As you listen, adjust the on-screen sliders in the Navigator window until you find the best balance between soft and loud tones (see "Finding the Sweet Spot").

**Check Recording Settings** Like all the programs I tested, Amadeus II is preset to record audio at standard CD quality: 44.1kHz sampling rate, 16 bits of resolution, and two tracks. You probably won't need to change these settings. However, if you're restoring a monophonic tape, you can halve the amount of disk space required by having Amadeus II record in mono. Go to Sound: Characteristics, and then choose Mono from the Number Of Channels pop-up menu.



**Finding the Sweet Spot** Adjust your software's levels so that the audio is loud without being distorted. The loudest portions of your tape should illuminate the yellow segments of the meters, but never the red ones.

#### GO TO WEB:

For more conversion tricks, check out our step-by-step guide for transferring movies on VHS tapes to DVD: [find.macworld.com/0092](http://find.macworld.com/0092).



## STEP 4 Record Your Tape

Once you've set your levels, rewind the tape. Click on your software's record button, and then press play on the cassette deck. Don't worry if you end up recording some silence at the beginning of the tape—you can always remove this later.

To make the recording process easier, record an entire side of a tape in one pass. If the tape contains discrete sections—for example, individual songs or acts of a school play—you can use Amadeus II to divide your recording into separate files once you're done.

When you've finished recording, save the file. Place the word *original* in the file name to identify it as your source material. Next, use the Save As command to create a copy of the recording, replacing the word *original* with *edited*. You'll perform your audio alterations on this copy. That way, you'll always have the original, unprocessed version to fall back on if something goes wrong—or if better restoration software appears in the future.

To ensure that nothing happens to your source files, you should burn them onto a CD and store it in a cool, dark place.

## STEP 5 Refine Your Recordings

Once you've captured the audio, you can take advantage of your software's editing tools to greatly enhance the quality of your recording. Here are several common polishing chores:

**Delete the Dreck** If your tape of a concert begins with a few minutes of audience murmuring, delete it.

Like most audio editors, Amadeus II displays your recording as a waveform—a visual representation of sound. (For an overview of the Amadeus II interface, see "Editing Audio in Amadeus II.") To delete part of the recording, simply drag your mouse across that section of the waveform and then press the delete key.

**Divvy It Up** If you've recorded a mix of songs, you might want to split your single recording into separate files. That way, you can make each song or section a separate track on an audio CD or on your iPod. This approach also gives you the freedom to optimize each section individually.

If silence separates the songs in your recording, Amadeus II can do the dividing for you. From the Selection menu, choose Generate Marks. In the resulting dialog box, activate the Search For Silences option, and then click on OK. The program will locate silent portions and create a marker at each one. If it misplaces a marker, click on that marker and choose Delete from the Mark dialog box. When you're satisfied, go to Selection: Split According To Marks, and then tell Amadeus II where to store the files. (I recommend creating a folder to hold all the files.)

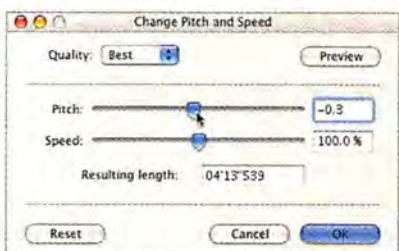
If your recording doesn't contain silent passages, you can create the markers by hand: position the

insertion point where you want a marker, and then press the M key. (You can also create markers on-the-fly by pressing M during playback.) Once you've positioned all the markers, use the Split According To Marks command to divvy up the file.

**Create Fades** If you've always kicked yourself for missing the first several seconds of that live concert, here's your chance to minimize the evidence—you can transform that jarring start into a gradual fade-in. Highlight several seconds of audio at the beginning of the file, and then choose Effects: Fading: Fade In. You can also fade out the audio by selecting the end of a song and choosing Effects: Fading: Fade Out.

**Change the Pitch** Perhaps you made a recording with a portable deck whose batteries were dying. As a result, the audio now sounds sped up—as if the announcer had just inhaled helium. Amadeus II makes it easy to fix such problems. The program lets you adjust pitch and playback speed independently. Just choose Effects: Change Pitch And Speed, and then lower the Pitch slider (see "Perfect Pitch").

**Remove Hiss** Tape hiss is a common problem with cassette recordings, and Amadeus II can help. Choose Effects: Denoising: Suppress White Noise. Click on



**Perfect Pitch** Does your audio sound like you recorded the Chipmunks? Try adjusting Amadeus's Pitch and Speed sliders.

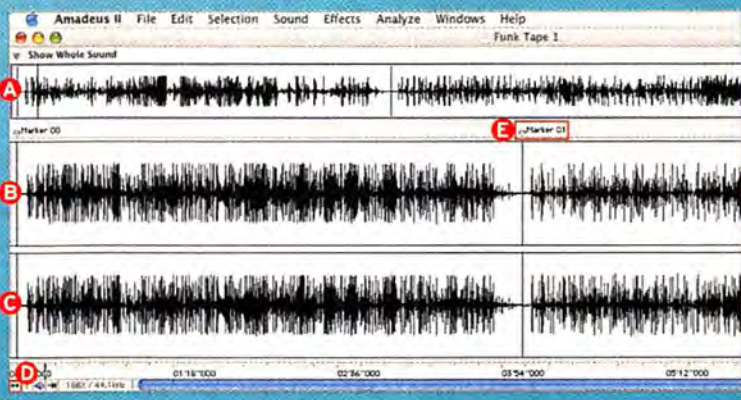
## Editing Audio in Amadeus II

You may not be able to turn back the hands of time, but with Amadeus II's diverse collection of editing tools, you can at least recapture some of your audio's youthful vigor.

In the main editing window, Amadeus II displays three waveforms for your audio. The top waveform **A** serves as a navigation guide and displays the entire recording. The center and bottom waveforms represent the left **B** and right **C** channels of a stereo recording.

To find the precise spot you want to edit, you may need to zoom in on the waveform. You can do this with the Zoom tool **D** in the lower left corner of the document window, or by pressing **⌘-G** to zoom in and **⌘-Shift-G** to zoom out. Another way to hone in on a waveform is to *scrub* the recording—slowly playing the audio backward and forward until you find the exact spot you desire. In Amadeus II, you can press the right and left arrows on your keyboard to play half-second chunks of audio. Pressing the down arrow during playback will slow the audio.

To divide a long recording into several smaller pieces, simply place a marker **E** between each segment and then go to Selection: Split According To Marks.





## Magnetic Makeovers

If you've put Amadeus II through its paces and your audio still sounds dull, you may need some more help. CD Spin Doctor, SoundSoap, and GarageBand all offer powerful audio filters that can pump new life into your old recordings.

One thing to keep in mind, though: don't overdo it. If you apply too much sonic sweetening, you'll end up with an artificial, overprocessed sound. When you're performing fine audio adjustments, it's a good idea to save multiple versions of the recording so you can compare results and choose the version that sounds best.

**CD Spin Doctor** To reduce unwanted noise and sweeten your sound, open the Filter drawer in CD Spin Doctor. Here you'll find sliders for removing clicks and hiss from your audio. The Exciter control boosts audio's high frequencies, while Sub-Bass boosts low frequencies. The Wideness setting simulates a broader left-right stereo field.

**SoundSoap** This software does an excellent job of scrubbing away the scratchiness from an old recording. Just click on Learn Noise, and SoundSoap detects and filters out the noise patterns in the recording. You can also use the program to reduce the hum and low-frequency rumble that can plague any recording.

**GarageBand** You can perform many audio-editing and -optimizing tasks using GarageBand. It applies filters nondestructively, which means it never changes the original audio file. This gives you the freedom to experiment without fear of messing up. Just double-click on the audio's track header, click on the Details triangle, and start playing around.

Try the Equalizer option for adjusting bass and treble, the Compressor for adding sonic punch, and the Gate for removing noise and hiss from quiet portions of the recording. And for a concert-hall effect, try adding some reverb.

the Preview button, and drag the slider to the right until the hiss begins to disappear. Be careful not to overdo it; too much hiss removal will muffle the audio.

Amadeus II has additional noise-reduction options that you can apply to problems such as hum and scratchy records; however, I find these tools cumbersome. If you need these kinds of repairs, I recommend using SoundSoap, from BIAS, or CD Spin Doctor, from Roxio (see "Magnetic Makeovers").

### STEP 6

#### Import Audio into iTunes

Once you've refined your recordings, add them to your iTunes music library so you can burn them to CDs, copy them to your iPod, or use them with the other iLife programs.

All the programs I've mentioned create uncompressed AIFF (Audio Interchange File Format) files. Although these files accurately preserve all the audio data, they're also relatively large, making them impractical for everyday use. To save disk space, you should create compressed versions of your final recordings in MP3, AAC, or Apple Lossless format before importing them into iTunes.

The AAC format is the most efficient of the three, but MP3 has the advantage of universal compatibility. Apple Lossless retains your audio's pristine quality but creates the largest files (for more details, see "iTunes Encoding Strategies," *Digital Hub*, September 2004.)

To convert the recordings, open your iTunes Importing preferences and choose the format you want to use. When you're done, hold down the option key and choose Convert To from the Advanced menu. In



**Importing Options** Before importing your files into iTunes, specify what format it should use to compress the audio. iTunes will create a new, smaller file while leaving the original untouched.

the dialog box that appears, double-click on the files you want to import. iTunes will create a compressed version of each file and import it into the library.

After you've imported your recordings, use the Song Info command (⌘-I) to enter details about the songs—song titles, performers, and so on.

If you'd like to create audio CDs from your restored audio, you should use the uncompressed AIFF versions. That way, you won't sacrifice any sound quality to audio compression.

### STEP 7

#### Archive Your Work

When you're finished, you'll end up with multiple copies of each recording: the original version that you imported, the version that you edited, and any compressed versions that you created in iTunes.

To free up some disk space, burn the original, unoptimized versions to audio or data CDs and delete them from your Mac. If you'll mainly be working with the compressed versions in iTunes, you should also consider archiving the uncompressed, edited versions—you may decide you want to encode them in a different format later.

To preserve your old tapes, rewind them and store them on their short edges (upright, as you would shelve a book). Keep them away from heat, excessive humidity, and, most important, magnetic fields.

### The Last Word

Just like old photos, movies, and videos, audio recordings bring back people and places from the past. They're worth preserving—and the sooner you turn them into bits and bytes, the sooner you'll halt their inevitable decay. □

Contributing Editor JIM HEID grew up in his dad's recording studio and is gradually restoring hundreds of old reel-to-reel and cassette tapes. He's the author of *The Macintosh iLife '04* (Peachpit Press/Avondale Media, 2004) and its companion Web site, [www.maclife.com](http://www.maclife.com).



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## 7 FileMaker Power Moves

FileMaker Pro 7 has quickly become a boon and a bane for FileMaker aficionados, users, and developers—a boon because of its hundreds of new features, and a bane because even the most-experienced developers are finding that they are once again novices.

Instead of spending hours slogging your way through white papers, tech briefs, user manuals, and complete reference handbooks to master the interesting new features in FileMaker Pro (\$299; [www.filemaker.com](http://www.filemaker.com)), here are seven powerful ways to take advantage of them right now.

### 1 Help Others Decipher Your Code

If you get run over by a VW Beetle—and let's hope you don't—and end up out of commission for a few months, you want your stand-in to be able to understand your code. FileMaker Pro 7 allows you to add comments that explain, in minute detail, how the database works.

While you have been able to add comments to scripts for some time, you can now add them to field definitions and calculation formulas as well. To add a comment to a field, simply write the comment in the

Comment box (below the Field Name box) when you define the field. You can view these comments by going to File: Define: Database, clicking on the Fields tab, and toggling the Options/Comments column until the comments are visible.

In calculation-field definitions, you can turn any line of code into a comment by typing // at its start. This is useful both for explaining how a calculation formula works and for turning off parts of the formula temporarily while testing it.

### 2 Manage Data with Container Fields

Container fields have always been handy places to add nontextual data—company logos, audio notes, and dancing-baby videos—to a database. Using nothing but FileMaker Pro containers, companies have built vast audio and visual archives, even entire online museums and product catalogs.

Now, with FileMaker Pro's new superpowered container fields, you can store almost *any* type of file in a container field. So you don't have to manage documents related to each customer in a separate folder on the network. You can simply drop those documents right into a record.

**TIP:** You can also store FileMaker layouts in container fields. Try it: Go into Layout mode, select and copy all layout objects, go back into Browse mode, and paste them into a container field. Then copy the contents of the container onto a new blank layout (one that references the same table occurrence). You can do this to share layout objects with other developers and users on your network. It's a great way to replicate layout objects rapidly.

### 3 Make Data Entry Goof-Proof

Getting users to enter data in the same way every time is no simple task. For instance, how many ways can you think of to type phone numbers (with hyphens, with brackets, with slashes, in different countries)?

Now you can standardize entries by creating a simple autoenter calculation, found in the Auto-Enter Options dialog box in a data-entry field's definition. (Don't forget to deselect the new Do Not Replace Existing Value Of Field [If Any] option. If it's



## BRAIN FOOD

### The Accessible Mac

If you—or someone you know—has a disability, the Mac can be a source of frustration or of freedom. Here's how to tip the scales in your favor:

> For general information about equipment and methods that may help you better use the computer, take a look at AbilityHub ([www.abilityhub.com](http://www.abilityhub.com)) and AbleData ([www.abledata.com](http://www.abledata.com)).

> For a wide selection of hard-to-find ergonomic products, check out RJ Cooper & Associates (<http://rjcooper.com>) and Solutions for Humans ([www.sforh.com](http://www.sforh.com)).

> For an overview of accessibility features built into your Mac, go to Apple's Accessibility in Education pages ([www.apple.com/education/accessibility/](http://www.apple.com/education/accessibility/)).—SCHOLLE SAWYER McFARLAND

**Hard-to-Find Hardware** Whether you need an alternative keyboard, such as the Kinesis Advantage (pictured), or a pointing device you can control with your head, start your search for special equipment in the right place.





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## Image Editing beyond iPhoto

Apple's iPhoto is great for organizing and sharing photos. But as a digital darkroom, it's seriously lacking. It can't bring out details hidden in shadows, for example, or remove the pole that seems to sprout from a friend's head. When you're ready to upgrade your photo-editing skills, consider supplementing iPhoto with an external image editor.

Adobe Photoshop Elements 3 (\$90; [www.adobe.com](http://www.adobe.com)) packs much of the power of a professional digital darkroom behind an easy-to-use interface. Its Quick Fix mode simplifies many common imaging chores—such as optimizing color and brightness—to a single click of the mouse. But Elements also gives you room to grow: it includes tools for more-advanced tasks, such as removing unsightly utility wires.

The best part is that you don't have to abandon iPhoto. The two programs work well together. You can use iPhoto to import, organize, and share photos, and Elements to enhance them.

I'll show you how to incorporate Photoshop Elements 3 into your iPhoto 4 workflow, and then I'll step you through a basic image-editing routine that will add immediate sparkle to your favorite photos.

### Accessing Elements from iPhoto

You have a couple of options for adding Elements to your iPhoto workflow.

**As a Replacement** If you plan to use Elements for all your editing chores, you can set iPhoto to hand off images to Elements whenever you double-click on a photo.

To set this up, open iPhoto's General preference pane and set the Double-Click Photo option to Opens Photo In. In the resulting dialog box, navigate

to Applications: Adobe Photoshop Elements 3, and double-click on the program's icon.

**As a Supplement** Perhaps you want to use Elements to beautify only your most precious photos, and would prefer to use iPhoto's built-in tools for the rest of your editing chores. In that case, follow the previous steps to set Elements as your external image editor. When you're done, return to the General preference pane. Change the Double-Click Photo setting to Changes To Edit View. This restores iPhoto's default settings while retaining Elements as your external editor. Now when you double-click on a photo in your library, it will open in Edit mode. When you want to open a photo in Elements for some advanced touch-ups, simply control-click on the photo and choose Edit In External Editor from the contextual menu.

### Editing with a Safety Net

Mistakes happen. When you edit an image in iPhoto or Elements, iPhoto first makes a backup of the original image. So even if you perform major surgery on an image, the original version is always just a mouse-click away. To undo your changes, simply click on the photo and choose Photos: Revert To Original.

For this safety net to work, however, you must not change the file name or file type during editing (most of the digital images you'll work with will be JPEGs). If you'd like to experiment with different editing styles, duplicate the file in iPhoto before opening it in Elements (choose Photos: Duplicate).

### The Fast Fix

iPhoto's Enhance button optimizes brightness, color balance, and contrast with a single click. Photoshop Elements 3 provides a similar—but much more effective—one-click solution called Auto Smart Fix. This feature analyzes your images for problems and then makes all of its corrections in one pass.

### Out of the Shadows

Adobe Photoshop Elements 3 makes it easy to brighten shadow detail—such as this baby's expression—without washing out the rest of the image.



### GO TO WEB:

Want to take Adobe Photoshop Elements 3 for a test run? You can download a trial version from Adobe's Web site ([find.macworld.com/0186](http://find.macworld.com/0186)).



To use Auto Smart Fix, choose Enhance: Auto Smart Fix, or switch to Quick Fix mode by clicking on the Quick Fix button in the upper right corner of the screen. Quick Fix mode combines the most-common image-correction tools with large before-and-after images, so you can easily gauge the success of your edits.

In Quick Fix mode, expand the General Fixes palette and click on the Auto button next to the Smart Fix heading. If you don't like the results, then choose Undo and try adjusting the Amount slider by hand.

### Develop a Routine

The Auto Smart Fix command may be all a particular image needs. If not, there's much more you can do to address specific problems.

**Fix Backlighting** When you photograph someone against a bright background, he or she often appears in silhouette. To bring your loved one out of the shadows and restore some of that lost detail, go to Enhance: Adjust Lighting: Shadows/Highlights. (Or use the Lighting Levels in Quick Fix mode.) To reveal shadow detail, drag the Lighten Shadows slider to the right. And if the sun or your camera's flash washed out the bright areas of your photo, drag the Darken Highlights slider to the right to recover some of the lost detail.

**Improve Overall Brightness** If your entire photo is too dark, or if it just looks dull and flat, you can give the image a boost by adjusting its levels. In Standard Edit mode, go to Enhance: Adjust Lighting: Levels and drag the black- and white-point sliders (the little triangles beneath the histogram graph) so they just touch the left and right edges of the graph. To reduce or increase the brightness of the image's midtones, drag the middle triangle to the left or right.

**Eliminate Color Casts** Generally, digital cameras do a good job of adjusting to different color conditions, such as incandescent or fluorescent light. But if your photo's color seems off, you can adjust it in several ways. Here are two of the best:

If the image has an area that *should* be gray, white, or black, choose Enhance: Adjust Color: Remove Color Cast. Then use the eyedropper tool to click on a spot that should be gray, white, or black. Elements remaps the image's colors accordingly.

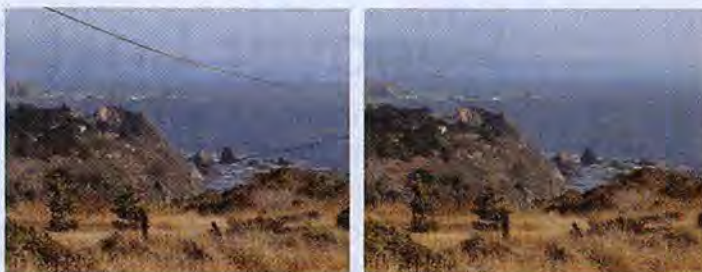
If the Remove Color Cast feature doesn't do the job, choose Undo (⌘-Z) and switch to Quick Fix mode. Expand the Color palette, and drag the Temperature and Tint sliders to the left or right until you've corrected the color balance.

### Sharpen Up

Almost all digital images benefit from a little sharpening before printing. Elements 3 provides several sharpening options. The most precise is the Unsharp Mask command (Filter: Sharpen: Unsharp Mask).

## Erase Photo Flaws

iPhoto's Retouch tool does a good job of removing blemishes and other minor flaws, but it's no plastic surgeon. When an image needs major reconstructive work, wheel it into the operating room of Adobe Photoshop Elements 3.



Before

After

In this photo, for example, a pair of utility wires slice across an otherwise scenic vista. But in Elements, I can remove this evidence of civilization in just a couple of minutes—thanks to the new Spot Healing brush and the Clone Stamp tool.

The Spot Healing brush does a great job of removing scratches and unsightly objects that appear against a relatively even-textured area, such as a blemish on a face or a wire cutting across the sky. As you brush over these flaws, Elements examines the surrounding pixels and uses them as a guide for filling in the area. For more-complicated areas—such as the offshore rocks and distant shoreline—the Clone Stamp tool lets you specify what part of the image should replace the flaw. Once you set a source point, the Clone Stamp picks up pixels from that area and uses them to fill in the area you paint over.

**Want to Give It a Try?** You can download this sample image and a step-by-step guide to painting away the wires from our Web site ([find.macworld.com/0138](http://find.macworld.com/0138)). Don't have Photoshop Elements 3? No worries—you can download a trial version from Adobe's Web site ([find.macworld.com/0186](http://find.macworld.com/0186)).

The perfect sharpening settings are largely a matter of personal preference. However, if you plan to print your photo on an ink-jet printer, you'll get the best results by oversharpening a bit.

Here's a good starting point for sharpening a digital photo: In the Unsharp Mask dialog box, set the Amount setting to between 250 and 300 and Radius to 0.7. If the image contains areas of consistent color, such as even skin tones or blue sky, set the Threshold setting to 2 or 3 to avoid sharpening these areas.

Adjust these settings as needed to improve definition. You'll know you've gone too far if you see *sharpening halos*—distorted colors that appear along edges and other details. To preview how your image will look when printed, zoom out to 50 percent.

### Save and Return to iPhoto

When you've finished refining your photo, choose the Save command (⌘-S). In the JPEG Options dialog box, set Quality to 12. This minimizes compression while maximizing image quality. Now when you return to iPhoto, it will update its thumbnail image to reflect the enhancements you made. □

Contributing Editor JIM HEID is the author of *The Macintosh iLife '04* (Peachpit Press/Avondale Media, 2004) and the companion Web site, [www.macilife.com](http://www.macilife.com).



## Recover Lost Photographs

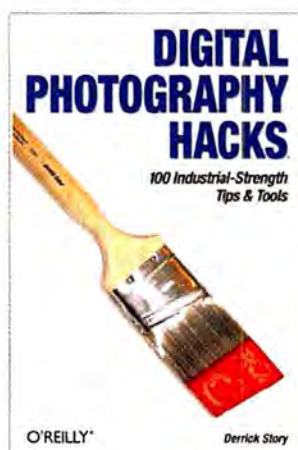
A few years ago, the mother of a buddy of mine was approaching her 100th birthday. She didn't get out much anymore, but she'd been to the hairdresser and had her hair Cool Whipped to perfection in preparation for her birthday party. I photographed the festivities and got a once-in-a-lifetime shot of mother and son.

The next morning, before any cup of anything could clear the cobwebs from my head, I deleted the shots from the memory card. But I was confident I could recover the data. I'd done it with floppies, so why not with a card? I spent the next few weeks trying every trick in the book to undelete the files on the card. But they were lost. I consoled myself with the thought that I'd get that portrait again one day, but the dear matriarch never lived to see her 101st birthday.

It's a sad story. But there's no reason it should ever happen again. All the little gotchas that defeated me years ago have themselves been defeated by modern utilities designed for just this sort of thing.

### The Secret to Unerasing

These utilities know a little secret: the data on the card isn't really lost until it's written over the next time you save information to its formerly protected



### By the Book

This article is an excerpt from *Digital Photography Hacks*, by Derrick Story (2004; reprinted by permission of O'Reilly).

sectors. An erase operation simply frees the file's disk space, overwriting the file name's first character in the card's directory with the Greek character sigma. It's faster than zeroing all the data and just as effective, if not as secure.

### To the Rescue

One of the best utilities for recovering images is DataRescue's PhotoRescue 2.1 ([www.datarescue.com](http://www.datarescue.com)). The basic version, PhotoRescue Wizard, costs \$29. The \$39 PhotoRescue Expert offers more measures to restore the past. PhotoRescue switches between as many as 12 data-recovery algorithms to apply a recovery strategy that's optimized for each image (see "Unerase Analysis"). It can also create a disk image of your card, a file on your hard disk that mirrors the data on your card. This means you can duplicate the card data any number of times to try different recovery strategies and diagnostics. When PhotoRescue finds all the files hiding on your memory card, it displays a thumbnail and the file name for each recovered item (see "Lost and Found").

### What Can and Can't Be Done

PhotoRescue has recovered every image I erased and every card I reformatted. But to be retrieved, the data has to reside on the card. And that isn't always the case. Let's look at what can and can't be done:



## BRAIN FOOD

### New Standard for Digital Negatives?

Serious digital photographers value the raw data their cameras capture because that data is akin to an undeveloped film negative—you can make more changes, and make them more easily, at this early stage in the development process.

That's why recent announcements by Adobe have created a buzz in the photography world. The company introduced a new standard, called the Digital Negative Specification (DNS), that could level the Tower of Babel created by the different types of raw files produced by competing camera manufacturers.

Almost every digital-camera maker has more than one version of its own raw format, and not every image editor can read every version. That's one reason why the idea of a standard raw format is welcome. Adobe hopes DNS will become that new standard.

Someday every camera maker may save raw files as DNS; until then, Adobe has created Digital Negative Converter, a free utility that converts raw files from more than 60 digital cameras to the Digital Negative (or DNG) format.

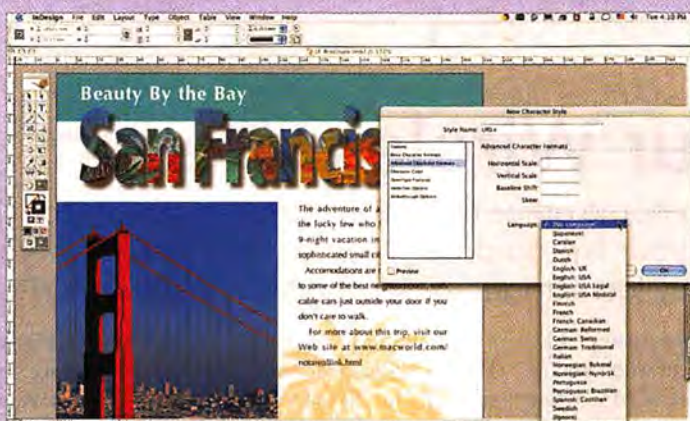
Adobe also updated the Photoshop CS Camera Raw plug-in so it can read DNG. You can download Camera Raw 2.3 for free from [www.adobe.com/cameraraw](http://www.adobe.com/cameraraw). The Digital Negative Converter is at [www.adobe.com/dng](http://www.adobe.com/dng).—TERRI STONE







## TRY THIS



## Ignore Spelling in InDesign CS

When the Story Editor debuted in Adobe InDesign CS, poor spellers cheered. But this basic text editor isn't perfect. It unnecessarily flags bits of text that aren't words—URLs, symbol-based keyboard shortcuts, and so on—in your InDesign CS documents as misspellings. But you can use character styles to make InDesign ignore that text. Define a character style, and, in the Advanced Character Formats pane, choose No Language from the Language pop-up menu. From now on, InDesign won't attempt to spell-check text with that character style. —ADAM C. ENGST

> If you simply erased files on your card from your camera, PhotoRescue can retrieve them by uncovering all the information that's lingering on the memory card. You can't see it, but it's still there.

> If you used the card to capture more images after erasing, you've overwritten whatever PhotoRescue might have been able to recover. Something might still be recoverable from the part of the card not yet reused.

> If your camera can't read your card, PhotoRescue might still be able to recover your images by reading the card in physical (rather than logical) mode.

> Using your camera or computer to reformat your card might make recovery impossible. According to DataRescue, "Nikon and Canon digicams usually do not fully erase cards. Olympus digicams may or may not fully erase cards during a format. Sony digicams always seem to do a complete wipe."

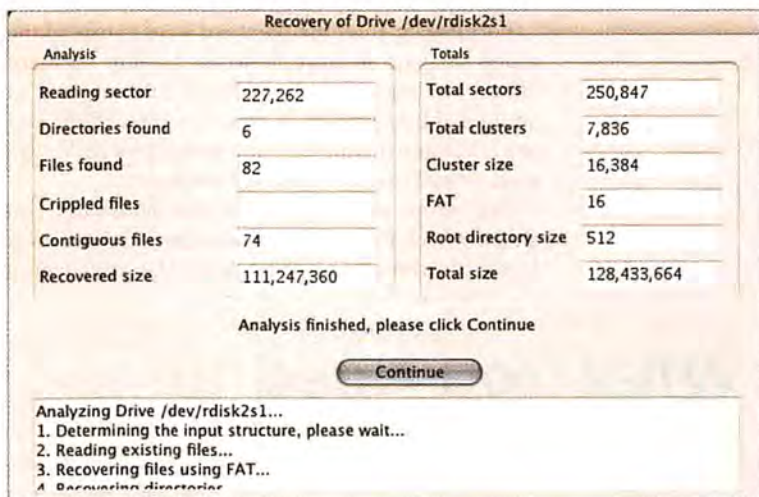
After an in-camera reformat of my card, PhotoRescue recovered exactly what I had recovered after merely erasing the card.

### Safe Practices

Naturally, the best approach is not to erase your card until you've copied your images. One copy is not



**Lost and Found** These files seemed to have disappeared permanently until PhotoRescue recovered them.



enough. Two copies on different media is the minimum. You might also want to keep the copies in different locations. If something goes wrong with one scheme, the other should not suffer the same fate.

Then use your camera, not your computer, to erase the images. If you make sure never to erase files or format your card on your computer, your camera will always be able to make sense of your card. If you use your computer, your camera might not. Cameras aren't as smart as computers.

### Don't Repeat My Mistake

Before you make a mistake like mine, get PhotoRescue or find a flash-card unerase utility you can live with. The next time you erase a card, use your utility to try to recover the images that were on it. Try it after a reformat, too. If you don't get them all back, try another utility. Rehearsing for disaster might seem silly, but I know that my buddy and I wish I had done it. Don't let a similar tragedy happen to you. ☐

### Unerase Analysis

PhotoRescue uses as many as 12 algorithms to recover image data.

This hack was contributed by MIKE PASINI for inclusion in DERRICK STORY's *Digital Photography Hacks* (O'Reilly, 2004).



## Extend Your Wireless Reach

With each step from your home office to your living room, you watch the signal-strength bars on your laptop drop. Then, as you step onto your deck, the signal is abruptly lost altogether. It's the heartbreak of AirPort.

Apple's AirPort technology has range issues. The official specs say it should reach 150 feet when you're sending data at 11 Mbps, and 50 feet at 54 Mbps. But in actual houses, with walls containing metal studs, lath, plaster, and other signal-reducing materials, that range can be dramatically reduced.

Fortunately, there are plenty of ways to extend the range of your AirPort network (or any standard Wi-Fi wireless setup). By adding a new antenna, an additional base station or two, or a HomePlug network adapter to your existing setup, you really can work or surf the Net wherever you want.

But before you buy any of that hardware, you should check first that your existing base station is located in the best place possible. Use your laptop

or a handheld Wi-Fi sniffer such as the Marware Wi-Fi Spy ([find.macworld.com/0139](http://find.macworld.com/0139)) to measure signal strength in the spots where you'll need coverage. Then move your base station around to find out where it produces the strongest signals. You'd be surprised how much improvement you can achieve just by moving your base station a couple of feet.

### Antenna Upgrades

A better antenna on your base station will receive signals from farther away and throw your data signals around with greater force. Two kinds of antennas are commonly used indoors: omnidirectional or "omni" antennas, which broadcast radio frequencies in all directions, and directional or sectorized antennas, which focus signals on a specific swath of space, such as an arc of 45 degrees.

But there are two problems with upgrading your AirPort base station with a new antenna. First, the Federal Communications Commission (FCC) says it's illegal to add a new antenna that wasn't specifically tested to work with your specific base station. The concern is that untested antennas could drown out neighborhood cordless phones and Wi-Fi networks, and possibly expose users to huge amounts of microwave radiation.

Only two antennas have been approved for use with the AirPort Extreme, and both are from Dr. Bott: the ExtendAir Omni (\$100; [★★★★](#)) and the ExtendAir Direct (\$150; [★★★★](#)). When we reviewed these units in our September 2003 issue ([find.macworld.com/0140](http://find.macworld.com/0140)), we found that the Omni increased range by as much as 50 percent in every direction, and the Direct doubled the range within the 70-degree arc that it covered.

The other hitch in adding a new antenna to an AirPort base station is that only two AirPort Extreme models—a modem-jack model and a Power over Ethernet model—have antenna jacks. You can't add antennas to other AirPort models without modifying the case.

Some folks are happy to try just that. Over the years, Constantin von Wentzel has documented warranty-voiding instructions for each AirPort base station model ([find.macworld.com/0141](http://find.macworld.com/0141)). MacWireless.com has less-detailed, downloadable PDFs of the process ([find.macworld.com/0142](http://find.macworld.com/0142)).

## What You Need to Know about WDS

Wireless Distribution System (WDS) is a technology for linking up multiple wireless base stations. WDS-enabled base stations can route data among computers connected to different base stations, or route data from the Internet to any base station that's part of a WDS network.

WDS is built into the AirPort Express and the AirPort Extreme but isn't available for the original AirPort Base Stations. It's a feature in other manufacturers' base stations, too, though it's often called "point-to-point" or "point-to-multipoint." Buffalo's WBR2-G54, for example, lets you link as many as six base stations, and it retails for around \$70 a pop.

WDS requires that each base station be on the same Wi-Fi channel. Unfortunately, this increases the chance of interference, which can reduce the amount of data you can send among base stations and connected computers. With two base stations, bandwidth could be cut in half; with three, by two-thirds; and so on. If you regularly exchange large files over a network or play demanding network games, you might think about using standard Ethernet instead.

Unfortunately, WDS doesn't seem to work very well among base stations from different makers, even if their underlying chips are the same. For instance, Apple and Buffalo both use chips from Broadcom for their 802.11g base stations, but I've had trouble getting their base stations to interoperate. Depending on the firmware in the base station, your mileage may vary.

Buffalo Technology's WDS-compatible WBR2-G54







Dr. Bott's ExtendAir Omni antenna

Upgrading the antenna is easier on non-Apple base stations. Linksys, Buffalo Technology, and D-Link all sell models with screw-on, removable antennas. HyperLink Technologies ([find.macworld.com/0143](http://find.macworld.com/0143)) offers a wide variety of antennas for these and other vendors' base stations; prices range from \$18 to \$70.

The FCC recently revised its antenna rules. Starting in July 2004, base-station makers are allowed to test their devices with generic antennas. But until Apple or other makers retest their gear or release new gateways, you'll still be a scofflaw of sorts if you try to add an unauthorized antenna.

## Multiple Base Stations

Even if you're willing to pull out a soldering iron or risk the wrath of the FCC, a new antenna may not be the answer. If the walls of your house are too thick or made of the wrong stuff, or if you need to send your signals even farther than an antenna can throw them, you have two other options.

The first is to add more base stations. Designate one base station as the gateway, which connects to your broadband modem. Then add "dumb" base stations—also called repeaters or extenders—which pass along the wireless signals from the main gateway and thus extend its reach.

You can connect such dumb stations in two ways: either through Ethernet or through something called Wireless Distribution System (WDS). WDS is built into the AirPort Extreme, the AirPort Express, and many of the later, 54-Mbps 802.11g Wi-Fi gateways from other manufacturers (see "What You Need to Know about WDS").

If you're sticking with Apple base stations, check out Apple's Designing AirPort Extreme Networks guide for details on how to set up multiple base stations ([find.macworld.com/0144](http://find.macworld.com/0144)).

If you're willing to go non-Apple, base stations from Asanté and newer models from Buffalo and Belkin should be compatible with AirPort and AirPort Extreme; they also support AppleTalk for older printers and servers. These third-party base stations usually cost between \$50 and \$100—they're much cheaper

than the similar AirPort Extreme Base Station, and they provide greater coverage than an AirPort Express.

But note that only the AirPort Express supports iTunes music streaming from iTunes, and only Apple offers USB printer sharing as a standard feature on all its base stations. And while almost all non-Apple Wi-Fi base stations can be configured with a Web browser, tasks such as upgrading firmware may require a Windows machine or a non-Safari browser.

## HomePlug

One problem with the multiple-base-station strategy is that it still depends on wireless signals traveling from station to station. In some houses, that may not work. If that's the case at your house, you could be a good candidate for HomePlug.

The HomePlug standard sends networked data over your home's electrical cables. The speed is limited to just 14 Mbps, but it's a simple way to bypass thick walls or other obstructions that defy wireless signals. Hook up your main base station to a HomePlug adapter, and then install more HomePlug adapters around the house, and you've got an expanded network.

You could install HomePlug adapters in every room where you want to compute, and then connect your laptop or desktop to the nearest adapter using Ethernet cable. But it's better to get a HomePlug adapter with a built-in Wi-Fi base station. Most of these HomePlug base-station adapters use the older, 11-Mbps AirPort or 802.11b standard; Netgear recently introduced an 802.11g option, the WGXB102 54 Mbps Wall-Plugged Wireless Range Extender Kit. For more on HomePlug, see "Get Connected," (July 2004; [find.macworld.com/0145](http://find.macworld.com/0145)).

So which of these range-extending strategies is right for you? Your choice will depend on your tolerance for cost and complexity. Adding a

Wi-Fi antenna is probably the cheapest option, but it may require an understanding of radio technology and soldering. Then there's that pesky little problem of its potential illegality.

Adding more base stations or installing a HomePlug network is comparatively simple and can offer the greatest coverage,

but both options can get expensive quickly.

Nevertheless, with all the money you've already spent on that home network, shouldn't you make sure that it actually networks your entire home? □



Netgear's WGXB102 54 Mbps Wall-Plugged Wireless Range Extender Kit





# Find Anything with Grep

It's fast, it's powerful, and its very name suggests that it does something technical: *grep*. With this workhorse of the command line, you can quickly find text hidden in your files. Understanding *grep* is the first step in joining the guild of command-line wizards.

## Why Not Use the Finder?

It's easy to find files with the Finder when you know their names. But the *grep* command is a time-saver when you're trying to find what's *inside* files. You can use *grep* easily from the command line to search for specific text, and you'll get results in seconds. (You can also use *grep* within certain text editors. See "Grep beyond Terminal," [find.macworld.com/0116](http://find.macworld.com/0116).)

The Finder offers a similar function: the Find By Content search. (Press  $\mathbb{C}$ -F in the Finder, select Content in the Search For Items Whose pop-up menu, and enter a search string in the text field.) But the Finder searches only inside files it has indexed, and it ignores hidden system files unless you expressly choose to search for visible and invisible files and add your System folder to the search.

The Finder also lacks *grep*'s flexibility: while it's good for searching for a specific word (for example, *Walden*), it becomes less useful when you want to find a longer string. Search for *Walden Pond*, and it returns all files that contain either *Walden* or *Pond*.

Using *grep* also gives you access to *regular expressions*. These combinations of letters, numbers, wild cards, and other special characters let you find much

more than mere words. You can search for just about any string of characters: IP addresses in log files; phone numbers in contact lists; or specific strings containing a series of numbers, letters, or other characters. Using regular expressions, you're limited only by your imagination.

## Get a Grip on Grep

The *grep* command looks inside one or several files for the string, or text, you specify. Its syntax is as follows: *grep options search\_string file . . .*

At its most basic, you tell *grep* what to look for and where: *grep AppleTalk /etc/services*, for example. Here, you tell *grep* to look for AppleTalk in the services file located in the /etc directory. (This useful file contains a list of network port numbers for commonly used services.) The command displays each line that contains your search string:

```
echo 4/ddp # AppleTalk Echo Protocol
at-rtmp 201/udp # AppleTalk Routing
Maintenance
at-rtmp 201/tcp # AppleTalk Routing
Maintenance
```

And so on. You can use the familiar asterisk (\*) wild card to have *grep* search a group of files in the current working directory, as in *grep Walden \**. This command searches all the files in the current directory for the word *Walden*, returning the following:

```
Binary file Walden.doc matches
pepys_diary.txt:that spoke ill of him,
and told me how basely Lionell Walden
Excursions.txt:veil over his experience.
All readers of "Walden" will remember his
Walden.txt:purpose in going to Walden
Pond was not to live cheaply nor to live
dearly
```

And so on. As the above example shows, the search returns several matches. The first, *Walden.doc*, is a Word file. The *grep* command calls such proprietary file types *binary files*. It can't display the contents of binary files, but it can search inside them and tell you if something matches. The next examples come from plain-text files, for which *grep* can display the results. You see the file name, followed by a match of the search string in its context.

## FINE-TUNE YOUR SEARCHES

The *grep* command has several options that let you fine-tune the way you search for text, as well as the kind of results *grep* returns. Get started with the helpful options listed below. (Note that you can also combine options—for instance, *grep -r1 Walden* searches subfolders and returns only a list of files containing the word *Walden*.)

TO FIND . . .	USE THIS OPTION	EXAMPLE
Text in subfolders	-r	<i>grep -r Walden ~/Documents/*</i> Finds <i>Walden</i> in any file in any subfolder of ~/Documents.
Whole words only	-w	<i>grep -w live</i> Finds only <i>live</i> ; does not find <i>liver</i> , <i>lives</i> , <i>lived</i> , and so on.
Case-insensitive text	-i	<i>grep -i pond</i> Finds <i>pond</i> , <i>POND</i> , or <i>Pond</i> .
File names only	-l	<i>grep -l Walden</i> Finds files containing <i>Walden</i> , but returns only a list of file names.
Number of occurrences only	-c	<i>grep -c Walden</i> Returns the names of files containing <i>Walden</i> and the number of hits in each file.





## GEEK FAVORITES

You can search for any multiword text string by enclosing the string in single quotes. For example, if you want to search for the phrase *Walden Pond*, you'd type `grep 'Walden Pond' *`.

Note that `grep` doesn't like Macintosh line breaks. It returns lines containing the search string, but it doesn't see Mac line breaks as anything other than characters. In such a case, the "line" it returns is the entire file; this can dump a lot of text into your Terminal window.

In the previous example, `grep` ran in a specific folder, checking all the files it contained. What if you want to run `grep` on a folder *and* its subfolders, or you want `grep` to look for the string regardless of case? You need to add *options*. For example, to search for *Walden* anywhere in a folder or its subfolders, use the `-r` (recursive) option: `grep -r Walden ~/Documents/*` (see "Fine-tune Your Searches" for more about options).

### Search for Multiple Strings

Using the pipe (`|`), a Unix redirection operator, you can tell `grep` to search for more than one string. Say you want to find files containing both *Walden* and *Pond* on the same line. You'd use this command: `grep Walden * | grep Pond`. The first part of the command looks for the word *Walden* in any files in the current directory, and the second runs another `grep` command on the results of the first command. Terminal displays only the final results of the two commands combined.

You could string together many `grep` commands, like this: `grep a /usr/share/dict/words | grep e | grep i | grep o | grep u`. This command looks in a special dictionary file for words containing the lowercase letter *a*. It then looks for words containing *e* in the results, and so on, finally returning only those words that contain all five vowels.

This function of `grep` is most useful when you're searching for specific strings in output from other commands. In this way you can whittle down long and complex output. For example, here's a common way to find the process ID of a program that's stuck so you can force-quit it from the command line: type `ps -ax | grep Finder`.

This command first gets a list of all processes running on your Mac, and then sifts through this list looking for lines containing the word *Finder*. For example, your results might be as follows:

```
390 ?? S 4:18.96 /System/Library/Core
Services/Finder.app/Contents/MacOS/Finder
2292 std R+ 0:00.00 grep Finder
```

The process ID is the first number on each line; here, the *Finder* is 390. (You'll notice the command also returns itself; since the word *Finder* is in the `grep` command, that gets listed as well.) So if the *Finder* is stuck, this gives you the information you need to force-quit it. Now you would type the com-

### DIY iCal

You don't need a .Mac account to publish an iCal calendar online. Use the free PHP iCalendar (<http://phpicalendar.net>) to publish your calendar, complete with support for printing, searching, and (best of all) RSS news feeds, on your own Web server.—SCHOLLE

SAWYER MCFARLAND



mand (where the process ID is the final argument) `kill -9 390`.

### Add Regular Expressions to the Mix

While you have seen some of the power of the `grep` command, you can go much further using *regular expressions*, special combinations of characters that act as wild cards. Here are a few examples.

If you're not sure how to spell the word *separate*, for example (is that an *a* or an *e*?), run this command to check the special dictionary file hidden in your Mac's entrails: `grep ^sep.r.te /usr/share/dict/words`. You'll get back a list of words that includes *separate*, *separately*, *separately*, *separateness*, and *separates*.

Note the two special characters in the command: the caret (^) and the dot (.). The caret tells `grep` to search for the string at the beginning of a line, so the results don't include words like *inseparate*. The dot matches any character except a new line.

What if you want to find all the phone numbers in a specific file? Try this command, which will find phone numbers in the 555-1234 format: `grep [0-9][0-9][0-9]-[0-9][0-9][0-9][0-9] phonebook.txt`. Each of the `[0-9]` wild cards matches any character in the range specified in brackets. You can use ranges such as `[1-3]` to limit your search to specific strings. This works for letters, too: `[a-n]` matches any lowercase character from *a* to *n*. You can build your own range with sets of characters—for example, `[aeiou]` will match only vowels.

You can learn more about regular expressions by typing `man grep` in Terminal, or by consulting Jeffrey Friedl's excellent book *Mastering Regular Expressions*, second edition (O'Reilly, 2002). With a bit of practice, you'll be using `grep` and regular expressions to find anything you want. □

KIRK MCELHEARN is the author of *The Mac OS X Command Line: Unix Under the Hood* (Sybex, 2004). His blog, Kirkville ([www.mcelhearn.com](http://www.mcelhearn.com)), has articles and tips on using the command line with Mac OS X.



## Mac OS X Hints

Check Web-page designs in browser windows of various sizes, move the Dock out of the way, avoid a destructive feature in the Find window, scroll through directories in Cocoa apps' file dialog boxes, colorize your Finder's sidebar, disable Personal File Sharing's guest access, and select multiple desktop photos in iPhoto.



### Unsupersize Me

A simple JavaScript bookmark can resize your browser window to any size you want, anytime. Now testing your latest Web-site design in a small browser window is just a click away.

### Check Web-Page Designs at Various Browser Widths

Are you a Web designer, or do you do design work that winds up on Web sites? If so, you might like this handy method of testing your work at various screen sizes. Launch Safari (or your favorite browser) and create a new bookmark. Most browsers will require that you bookmark a specific site. In Safari, open a site and then choose Bookmarks: Add Bookmark. Give the bookmark a name that will help you remember the screen size, such as 800x600 or 1024x768. Next, edit the address of the bookmark—in Safari, go to Bookmarks: Show All Bookmarks and navigate to your newly created bookmark. Change the Address portion of the bookmark to `javascript:self.moveTo(0,0);self.resizeTo(800,600);` (see “Unsupersize Me”).

Open any page in Safari and select the bookmark. You'll see that page in an 800-by-600-pixel browser window. You can then duplicate this bookmark and create other sizes as needed; just change the name and the relevant code. When you're done, move your new bookmarks to a convenient location; then click on them when you want to test your pages at different resolutions.

### Banish the Dock without Killing It

Are you one of the many people who think that one of the worst parts about OS X is the Dock? You can kill the Dock for good with relative ease, but if you do so, you'll lose a number of other services,

such as Exposé, the  $\mathbb{C}$ -tab application switcher, changeable desktop pictures, and Dock notification of new Mail messages.

A much better solution is to make the Dock basically invisible but keep it around. You can do this by positioning the Dock at the top of the screen (yes, the top) and then hiding it. But how do you move the Dock to the top, since the Dock pane lets you position it only on the left, bottom, or right? If you'd like to take the easy way, download a copy of the free TinkerTool ([www.bresink.de/osx/](http://www.bresink.de/osx/)), which can handle the task. Of course, you'd rather know how to do this using Terminal.

To start, make sure the Dock isn't hidden (Apple menu: Dock: Turn Hiding Off); then launch Terminal and type defaults write com.apple.Dock orientation -string top.

When you press enter, nothing *seems* to happen. Although you've changed a hidden preference setting, you need to restart the Dock in order to actually move it to its new home. To do so, open Activity Monitor (in Utilities) and click once on the Dock entry in the Process Name column. Click on the red Quit Process button, and then click on Quit in the resulting dialog box. When you do, you should see the Dock vanish and then reappear at the top of the screen (the Dock autorestarts when quit). The last step is to enable Dock hiding again via the Apple menu.

And that's it—you're done. The Dock is now “hiding” above your menu bar, and you'll find that it's nearly impossible to accidentally activate the Dock with the mouse. To do so, you have to hover in a very thin region just below the menu bar—or you can do it easily, by pressing  $\mathbb{C}$ -option-D to unhide the Dock. If you ever want the Dock back in one of its usual positions, just choose one from the Apple menu's Dock option—the Dock will return to the chosen location without requiring that you restart it.

### Avoid a Bug in the Finder's Find Window

Macs are known for consistency of design. Things just work as you expect them to, nearly all the time.





## UNIX TIP OF THE MONTH

Here's one case where they *don't* work as expected, and the results could be disastrous. If you use the Finder's Find window and search in Specific Places, you need to be aware of this gotcha.

Being the good Mac user that you are, you're probably quite accustomed to drag and drop. With Specific Places selected, you can drag items into the window to add them to the list. You may think this means you can also drag them out, but that doesn't appear to be the case—drag an item out and drop it on the Finder, and it just springs back into the box.

With a little work, you might discover that you can remove items by dragging and dropping them onto the Dock's Trash icon. "Perfect," you think—but not so fast. What you've just done is to drag your original folder (or disk volume) into the real, actual Trash. Empty it now, and you could be in real, actual trouble.

The moral of the story: Do not drag and drop items from the Specific Places search box to the Trash. Use the Remove button.

### Scroll through Directories in Cocoa Apps' File Dialog Boxes

If you're using a Cocoa application such as TextEdit or Mail, you can use this little trick to browse the available folders within a given folder: First, select either Open or Save As. Next, press  $\text{⌘-shift-G}$  to bring up the Go To The Folder drop-down menu. Type a path, such as `~/` for your Home directory, and then press option-escape. The Go To The Folder window will then populate with the first available folder within that directory. Each press of option-escape after that takes you to the next folder. To move backward through the list, press shift-option-escape (which is much easier to do if you press the shift key on the right side of the keyboard with your right hand).



**Color on the Side** Plain white sidebars are so boring—go ahead and colorize yours (as long as you're comfortable editing files and working in Terminal).

## Disable Guest Access to Your Mac

In the pre-OS X days, an easily accessible option let you disable guest access to your computer with Personal File Sharing running. With the advent of OS X, however, that easy option vanished—anyone can connect to your machine and see what's in your Public folder (even if it's just your Drop Box, where someone can secretly add a file to your computer). If you're extremely security conscious, you can disable guest access.

Open Terminal and type `cd /Library/Preferences`. You'll be editing a system-level preferences file, so it's a good idea to make a backup first by typing `sudo cp com.apple.AppleFileServer.plist com.apple.AppleFileServer.bak`.

Next, use a Unix text editor such as pico to edit the file. Open the file by typing `sudo pico com.apple.AppleFileServer.plist` and providing your password when asked. Press control-W to search, type `guest`, and press return. You should see these lines:

```
<key>guestAccess</key>
<true/>
```

Change `true` to `false`. Press control-O and then enter to save the file, and control-X to exit. To make your changes take effect, you need to restart Personal File Sharing. You could do this via the GUI, of course (in the Sharing preference pane), but since this is a Unix hint, here's the command-line solution: `sudo killall -HUP AppleFileServer`.

Now when someone tries to connect to your computer, the Guest option won't be available (see "No Guests Allowed").



**No Guests Allowed** Disabling Personal File Sharing's guest-access mode in Terminal will give visitors a grayed-out Guest button—letting them know that your Mac is reserved for registered users only.

### Colorize the Finder's Sidebar

The sidebar in OS X 10.3's Finder makes navigation quick and easy, and it always gives you a visual reference to exactly which volume or folder you're in. But it's also amazingly boring. It's white, and you can't jazz it up with pictures or color, as you can an icon-view folder. Or can you? Although you can't add an image, you can colorize the sidebar in OS X 10.3.5 or later—if, that is, you're willing to get your hands dirty under the Finder's hood (see "Color on the Side").

But before you go any further, keep in mind that this type of hacking has the potential to destroy your Finder. So proceed with caution, and follow these directions carefully.

Navigate to System: Library: CoreServices: Finder; then control-click on Finder and select Show Package Contents. In the new window that opens, drill down to Contents: MacOS. You'll find





## CHECK IT OUT

### Select Multiple Desktop or Screen-Saver Images in iPhoto

iPhoto lets you easily set your desktop to anything you'd like—just click on the desired desktop image and then click on the Desktop button. But do you know that there's some simple magic hiding just below iPhoto's interface?

Instead of selecting one picture, hold down  $\text{⌘}$  (to choose noncontiguous images) or shift (for contiguous images) to select more than one. Now click on the Desktop button. Open the Desktop & Screen Saver preference pane, and you'll find that your desktop is now set to rotate through the pictures in your iPhoto Selection (see "iPhoto Magic"). If you click on the Screen Saver tab, you'll also find that your screen saver is set to use the same iPhoto selection.

You can update your selection of images in iPhoto at any time; when you click on the Desktop button, the newly chosen photos will replace the existing set.



**iPhoto Magic** Selecting multiple pictures and clicking on iPhoto's Desktop button is an easy way to create a varied collection of desktop images without creating a special album.

just one file, called Finder. Option-drag the file to copy it to your desktop as a backup, and rename it Finder Backup to be sure you know what it is. Now option-drag the original Finder file again to create another copy. Name this one Finder Modified. Leave the original Finder package window open; you'll need it later.

For the next step, you'll need the free HexEdit (<http://hexedit.sourceforge.net>). Download and launch HexEdit and then open the Finder Modified file. Your screen will fill with what looks like a bunch of gobbledygook, but what you're actually looking at is the Finder's executable code. Select Find: Go To Address, enter 0029EB10, and then click on the Go button. Your screen will jump, and the cursor will start blinking just before a series of

six FF character sets. These six positions control the color of the Finder's sidebar, and six FF pairs indicate white.

Your next task is to find a color you like. The easiest way to do this is with the DigitalColor Meter (in Applications: Utilities). Set the pop-up menu to RGB As Hex Value, 16-Bit and start moving your mouse over icons, desktop pictures, or anything else with a color you might like (leaving DigitalColor Meter as the active application). When you see one you like, press  $\text{⌘}$ -shift-H to lock the color, and then write down the 12 characters that appear next to the R, G, and B letters. For instance, if you picked a light red as your color, you might see C2C2 next to R, E2E2 next to G, and E4E4 next to B.

Switch back to HexEdit and highlight all six of the FF pairs—but no more than that. Now just start typing your new color string; in this example, that would be C2 C2 E2 E2 E4 E4. Replace *only* those six pairs of FF letters. When you're done, save the file and quit HexEdit—and make sure you have a copy of Terminal in the Dock (I'll explain why in a minute).

The last step is the scariest. First, drag the original, unmodified Finder from its home in the Finder's MacOS folder to the Trash. Type your admin password when prompted. Next, rename your Finder Modified file as Finder, and then move the renamed file into the MacOS folder (select Authenticate if prompted; then enter your admin password again). That's it. To activate the changes, you can either log out and back in, or restart the Finder either by using Activity Viewer or by typing `sudo killall Finder` in Terminal.

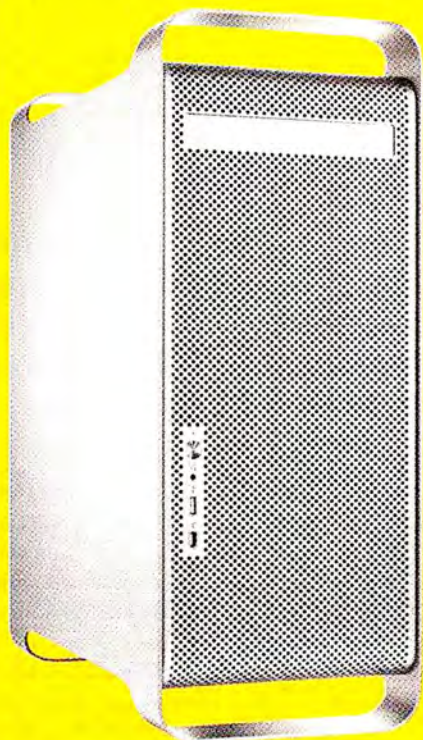
If all went well, the Finder will relaunch, and you will see your new, nicely colored sidebar. If things didn't go well, you probably don't have a Finder at all. But have no fear—just click on the Terminal icon in the Dock (without a Finder, you won't be able to open it any other way) and move to the folder containing the Finder Backup file you created (`cd Desktop`, since you put it on the desktop). Now type these two commands, pressing return after each:

```
sudo rm /System/Library/CoreServices/
Finder.app/Contents/MacOS/Finder
sudo cp "Finder Backup" /System/Library/
CoreServices/Finder.app/Contents/MacOS/
Finder
```

The first command will remove the bad Finder, and the second will copy the good original back to its proper spot. Click on the Finder icon in the Dock, and you should once again have a happy and healthy Finder. □

Contributing Editor ROB GRIFFITHS is the author of the recently released *Mac OS X Power Hound, Panther Edition* (O'Reilly, 2004). He also runs the Mac OS X Hints Web site ([www.macintoshhints.com](http://www.macintoshhints.com)).





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<sup>†</sup> Or faster CPU. Subject to availability at time of drawing.



## Mac 911

This month's *Mac 911* is missing—but not because I took a monthlong vacation. Instead, I answer questions regarding missing support for scroll wheels, missing iTunes playlists, the missing link between a Bluetooth phone and iSync, missing Metropolitan Opera broadcasts, and missing the mark when creating sonorous slide shows.

### Wheels within Wheels

I use a Logitech MX300 mouse, which has a scroll wheel. The scroll wheel doesn't work with all my applications. Do you know why, and whether there is a workaround?

Eric Drachman

The fault lies with your applications, not with the mouse. Not all applications include the code that would allow them to accept input from a mouse's scroll wheel. Adobe's Acrobat Reader 5, for example, doesn't respond to a scroll wheel, while version 6 does.

To work around this problem, download a copy of Alessandro Levi Montalcini's \$20 universal USB driver for mice and game pads, USB Overdrive ([www.usboverdrive.com](http://www.usboverdrive.com)). Although you don't need this utility's primary service—making an incompatible mouse work with a Mac—it will let you assign commands such as scroll up and scroll down to your mouse's scroll wheel (or at least page up and page down if the application refuses to respond to the scroll commands).

### Song Saving

When I recently opened an MP3 file in iTunes, all my music and playlists had disappeared. I found my music in the Documents folder and imported it back into iTunes, but all my playlists are still missing. How can I recover them?

Jeremy Hahn

It sounds as though you have a corrupted iTunes 4 Music Library file. To fix it, quit iTunes, open your iTunes folder (stored by default in your user folder's Music folder), and drag any iTunes Music Library files to the Trash. (You may have more than one of these files if you've used older versions of iTunes with this computer.)

Now drag the iTunes Music Library.xml file to the desktop. Launch iTunes and choose Import from the File menu. Navigate to the iTunes Music Library.xml file on the desktop and click on Choose. Importing this file should cause your playlists to appear in iTunes.

If you have an iPod that contains the playlists from your Mac, you can also use a utility such as Crisp-Softies' iPod.iTunes (30 euros [about \$37 at press time]; [www.crispsofties.com](http://www.crispsofties.com)). In addition to copying music files from an iPod to your Mac, iPod.iTunes will synchronize playlists between the two. If you've lost the playlists on your computer, iPod.iTunes should be able to restore them from the copy stored on your iPod.

### Phony Contacts

I have a new Motorola V600 Bluetooth-enabled phone. My PowerBook G4 can see the phone and pair to it using a Bluetooth adapter, but iSync won't recognize it. If Bluetooth can see the phone, isn't there some tweak to get iSync to see it as well?

Ricky P. Clay

Currently, no. But there are a couple of ways to move contacts to phones that don't have iSync support. The first is to use Antonio Ferraioli's \$10 OnSync ([find.macworld.com/0119](http://find.macworld.com/0119)). OnSync allows you to move contacts from OS X's Address Book, Microsoft Entourage, Qualcomm Eudora, and Now Contact (part of Now Up-to-Date & Contact) to the V600 and other phones. (However, OnSync doesn't support calendar events of any kind.)

Your other option is to use Address Book's Send These Cards command. Just pair your phone to your PowerBook; then, in Address Book, select the contacts you want to transfer to the phone, and choose Send These Cards from Address Book's Card menu (see "It's



## TIP OF THE MONTH

### Word Workaround

I received a password-protected Microsoft Word document that I needed to edit with Track Changes. I couldn't do so until I turned off protection, but I didn't know the password. Here's how to solve this dilemma.

Open the protected file in Word and save it as a Rich Text Format file. Close the file and open it again. Select Tools: Unprotect Document and notice that the password is no longer required and that the Track Changes commands are now available. Save the file once again as a Word document.

Gabriel Dorado





**It's in the Cards** Is your phone iSync-phobic? Address Book provides a way to move your contacts.

in the Cards"). In short order, your phone will ask you to accept the transfer. Do so and store your contacts.

### Nicer Webcast

I listen to broadcasts of the New York Metropolitan Opera using a Web browser and would like to play them through my AirPort Express. Is there a way to do this?

Joe Forbes

Yes—with a copy of Rogue Amoeba's \$40 Nicecast ([www.rogueamoeba.com](http://www.rogueamoeba.com)). Launch your Web browser and begin playing the broadcast. Launch Nicecast; in the Source pane, select your browser via the Select pop-up menu. Click on Nicecast's Start Broadcast button. To keep the broadcast from playing through both your Mac's speakers and your stereo, move Nicecast's volume slider all the way to the left.

Launch iTunes and select your AirPort Express from the AirPort Express pop-up menu at the bottom of the iTunes window. Select Open Stream from the Advanced menu; in the resulting Open Stream window, enter <http://127.0.0.1:8000> and click on OK. The audio from your browser should now stream to the AirPort Express and through your stereo.

### Playlists and Pictures

Can iPhoto play more than one song in a slide presentation?

Douglas W. Matheson

iPhoto will happily play multiple tunes when you create a slide show that plays within iPhoto. Just click on the Slideshow button, click on the Music tab in the resulting Slideshow window, and select a playlist from the Source pop-up menu. If you've left the Repeat Slideshow option under the Settings tab enabled, the slide show plays throughout the length of the playlist you've chosen.

Saving a slide show as a QuickTime movie is another matter. Exported slide shows will contain only one audio track. There's a way around this, but it's more than a bit tiresome. You must combine multiple audio tracks into a single track and then create a slide show whose length matches the duration of your soundtrack.

To do this, launch iMovie, create a new iMovie project, click on iMovie's Audio tab, and drag audio



## UNSOLICITED ADVICE

### Move from Old to New

Not long ago I devoted an entry in the Mac 911 Weblog ([find.macworld.com/0120](http://find.macworld.com/0120)) to moving data from an old Mac to a new one. The response was such that I thought revisiting the topic would be worthwhile.

If you're upgrading to a new Power Mac G5, you'll discover that one of the first things the new Mac's Setup Assistant does for you is offer to move data from your old Mac via FireWire. If your old Mac has a FireWire port, this is worth considering. Note, however, that the process won't copy over some preferences, and you'll have less trouble if you install your applications from their original discs or installers.

To duplicate your old Mac's hard drive exactly, use Mike Bombich's \$5 Carbon Copy Cloner ([find.macworld.com/0121](http://find.macworld.com/0121)) to place a copy of the old drive on the new one. For this to work, you'll also need to connect your Macs via a FireWire cable.

If your old Mac doesn't have a FireWire connection, extract the hard drive, place it in a FireWire enclosure, and connect it to your new Mac. You should be able to boot from this drive as well (unless the old Mac's system software is incompatible with the new Mac's).

Finally, you can link your new and old Mac together with an Ethernet cable, create a network between the two computers, and copy data from old to new over the network.

Note that it's a good idea to repair permissions on the old Mac before copying any data to the new one.

files from your iTunes library into the timeline. Then choose Share from the File menu, click on the QuickTime tab, and choose Expert Setting from the Compress Movie For pop-up menu. Click on Share. In the Save Exported File As dialog box, choose Sound To AIFF from the Export pop-up menu; then click on Save. Now drag the resulting file into iTunes.

Once in iTunes, make a note of the file's length. Return to iPhoto, select the album you'd like to export as a QuickTime movie slide show, and choose Export from the File menu. Click on the QuickTime tab and make sure the Add Currently Selected Music To Movie option is enabled.

Simple math would tell you that if your soundtrack is, for example, 6 minutes long (360 seconds) and you have 60 slides, you should enter 6 in the Display Image For X Seconds field (which appears in the same QuickTime tab) in order for your slide show and soundtrack to end at the same time. Nuh-uh. You have to account for the fade-in and -out effects at the beginning and end of your slide show and the dissolve effect between each slide. These effects add time. The fade-in effect adds 1 second, the dissolve between each slide adds an additional 1 second per dissolve, and the fade-out effect adds 2 seconds. So, for example, if you have 50 slides and you've configured iPhoto to show each slide for 2 seconds, the resulting movie will be 2 minutes and 32 seconds long (100 seconds for the slides plus 52 seconds for the effects). Break out your calculator and accordingly adjust the length of time each slide displays. □

When not assisting afflicted Mac users, CHRISTOPHER BREEN is the editor in chief of Playlistmag.com and the author of *Secrets of the iPod*, fifth edition (Peachpit Press, 2004).



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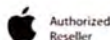
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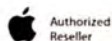
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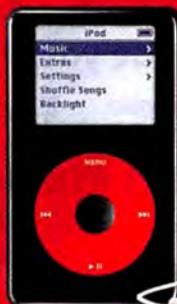
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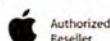
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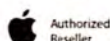
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\* FireWire 800 and USB 2.0 operation require Apple OS X 10.2.x or later.

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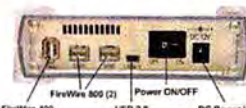
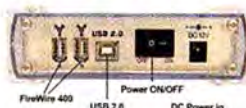
ShuttlePRO

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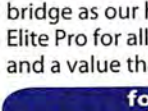
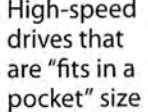
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## OWC FireWire & USB High performance plug & play



The sleek, compact solution that stands or stacks.



### Mercury Elite Pro

Size	Speed	Data Buffer	FireWire 400/USB	FW800/400*	FW800/400/USB
80GB	7200RPM	2MB	<b>\$129.99</b>	<b>\$159.99</b>	<b>\$179.99</b>
120GB	7200RPM	8MB	<b>\$169.99</b>	<b>\$189.99</b>	<b>\$209.99</b>
160GB	7200RPM	8MB	<b>\$179.99</b>	<b>\$199.99</b>	<b>\$219.99</b>
200GB	7200RPM	8MB	<b>\$209.99</b>	<b>\$239.99</b>	<b>\$249.99</b>
250GB	7200RPM	8MB	<b>\$239.99</b>	<b>\$259.99</b>	<b>\$279.99</b>
400GB	7200RPM	8MB	<b>\$449.99</b>	<b>\$479.99</b>	<b>\$499.99</b>

Call for other Available Models and Options!

\* Elite 800 Pro FW800/400 solution has same ports as pictured FW800/400 + USB model, without the USB 2.0 port.

All Mercury Elite Solutions are Apple HFS+ Preformatted Ready to go and include: Dantz Retrospect, Express Backup Utility (Mac/PC), Intech HD Speedtools (Mac), all cables, and a 2 Year OWC Warranty.

### Build your own Mercury Elite FW/USB drive

Case kits include all connecting cables and driving mounting screws. Use any 3.5" IDE/ATA hard drive up to 500GB!

Oxford911+ FireWire 400 Kit **\$65.99**

Oxford911 Combo FireWire 400/USB2 Kit **\$79.95**

Oxford912 FireWire 800/400 Kit **\$99.95**

Oxford922 FireWire Combo 800/400/USB2 **\$119.95**

### Mercury On-The-Go

Size	Speed	Data Buffer	FireWire 400	FW400 + USB 2.0/1.1
30GB	5400RPM	8MB	<b>\$139.97</b>	<b>\$149.99</b>
40GB	4200RPM	8MB	<b>\$149.97</b>	<b>\$159.99</b>
40GB	5400RPM	16MB	<b>\$159.97</b>	<b>\$169.99</b>
60GB	5400RPM	16MB	<b>\$189.97</b>	<b>\$199.99</b>
60GB	7200RPM	'Fastest Ever!'	<b>\$249.97</b>	<b>\$259.99</b>
80GB	4200RPM	'Highest Capacity'	<b>\$229.97</b>	<b>\$239.99</b>
80GB	5400RPM	8MB 'Fast-High Cap.'	<b>\$239.97</b>	<b>\$249.99</b>
100GB	4200RPM	8MB Data Buffer	<b>\$319.97</b>	<b>\$329.99</b>

Call/Visit [www.macsales.com](http://www.macsales.com) for other 20-100GB models.

All Mercury On-The-Gos are Apple HFS+ Preformatted and include Dantz Retrospect Express Backup Utility (Mac/PC), Intech HD Speedtools (Mac), all cables, AC Power Supply, and a 1 Year OWC Warranty.

### Build your own Mercury On-the-Go FW/USB drive

Case kits include all connecting cables and driving mounting screws.

Use any capacity 2.5" IDE/ATA drive

Oxford911 FireWire 400 Kit **\$67.99**

Oxford911 Combo FireWire 400/USB2 Kit **\$79.99**

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120GB	7200RPM	8MB	<b>\$139.99</b>
160GB	7200RPM	2MB	<b>\$139.99</b>
200GB	7200RPM	8MB	<b>\$179.99</b>
250GB	7200RPM	16MB	<b>\$199.99</b>

Call for other Available Models and Options!

Neptune FW Solutions include Dantz Retrospect Express backup software (Mac & PC), Intech Speedtools (Mac), all cables, 1 yr. OWC Warranty

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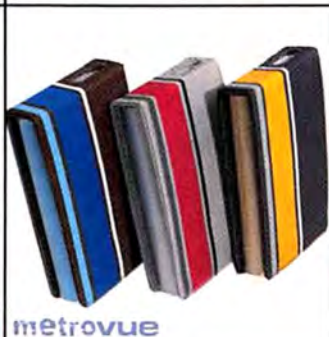
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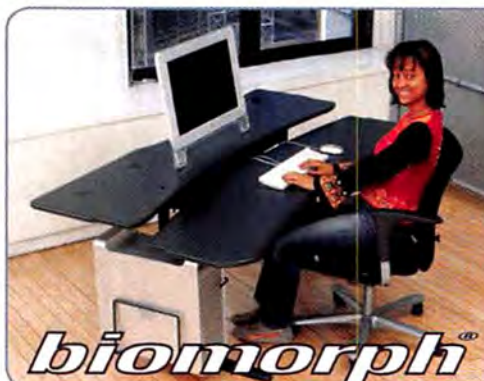
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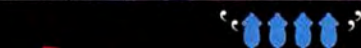
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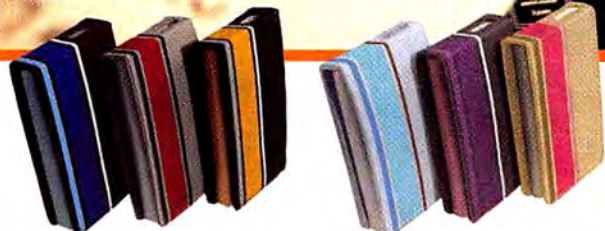
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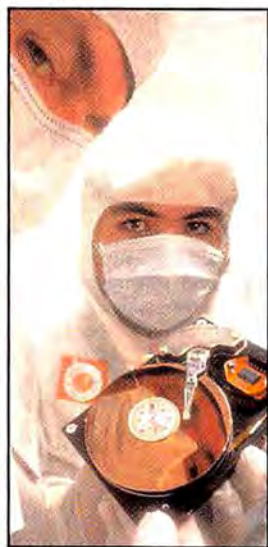
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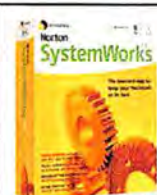
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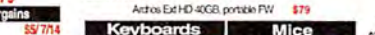
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# Hot Stuff

**Our Favorite  
New Stuff**

FROM THE EDITORS OF MACWORLD



## NETTUNES AND AIRTUNES

One of the best features of Apple's AirPort Express is its ability to stream music wirelessly to remote speakers using AirTunes. The one drawback? You can't control playback from your stereo as you can with products like Slim Devices' Squeezebox and Roku's SoundBridge. But combining AirTunes with Shirt Pocket's \$20 netTunes software lets you control iTunes on one Mac from another Mac, using iTunes' native interface. Just bring your PowerBook into the living room, and you can connect to your music-library Mac in the study—and you don't have to run into the other room to pick a new song ([www.shirt-pocket.com](http://www.shirt-pocket.com)).

## Flickr

Imagine a blog-friendly iPhoto with social-networking capabilities thrown in, and you've got Flickr, a free service that lets you easily store, organize, and share photos online. Upload photos from your Mac; organize, annotate, and add metadata tags to them; and then share your shots with the public and private groups



you belong to (the thriving Macintosh and I Love My Cat groups are our favorites). Flickr can export pictures or galleries of photos to your Weblog, and accounts cost nothing to set up, so friends and relatives can check out your photos for free—as long as they don't mind seeing a few ads, too ([www.flickr.com](http://www.flickr.com)).



## Pixma iP5000



When it comes to ink-jet printing, size is everything—drop size, that is. So Canon's \$200 Pixma iP5000 is a big deal. It's the industry's first ink-jet to put down 1-picoliter drops—half the size of what the competition offers. The microscopic drop size, combined with a 1,856-nozzle print head and 9,600-by-2,400-pixel resolution, produced images that, in our opinion, had amazing detail. The Pixma iP5000 also produces great text—so good, in fact, that you'd never know it came from an ink-jet ([www.usa.canon.com](http://www.usa.canon.com)).

Nowadays, iPod accessories may be more plentiful than spandex-clad hair bands were in the eighties, but the iDockCover, from Westshore Craftworks, may be the first add-on made just for the dock. Hand-crafted from flame maple, walnut, and African padauk woods, these \$35 covers for the docks of the 3G, 4G, and mini iPods add a touch of color and class to an otherwise sterile cradle. Each lacquered cover is a work of art—with a smell that will remind you of wood shop ( ).



## WHAT'S HOT

Brought to you by John Moltz of the Crazy Apple Rumors Site ([www.crazyapplumors.com](http://www.crazyapplumors.com))

- 1 Microsoft's Steve Ballmer says "The most common format of music on the iPod is 'stolen.'" Ballmer added, "Having lifted interface ideas from Apple for years, I know a thing or two about stealing."
- 2 Apple adds a single-processor Power Mac G5 back to its lineup. Rumors of a Power Mac featuring half a processor with a salad or a cup of soup appear to be unfounded.
- 3 Apple releases a U2 iPod, which comes with a coupon for \$50 off the band's collected works. Dell counters by releasing a Zamfir Digital Jukebox, which comes with \$50 off the works of the Master of the Pan Flute.
- 4 Apple finally announces an iTunes Music Store for long-suffering Canadians. Now if only Steve Jobs could do something about that NHL lockout.

## PODGOURMET VEGAN EDITION

Animal-loving foodies, take heart—add Enrique Quintero Design's \$5 PodGourmet Vegan Edition to your iPod, and you've got access to 277 animal-free dishes that'll give your cooking more "bam" than Emeril. The software includes recipes for tasty treats such as tandoori seitan, hemp pancakes, and a tofu Reuben sandwich. It uses the iPod's Notes feature, so anyone with a 3G, 4G, or mini iPod can get in on the culinary fun. If being vegan is good enough for Steve Jobs, maybe it's good enough for you, too ([www.enriquequinterodesign.com](http://www.enriquequinterodesign.com)).









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