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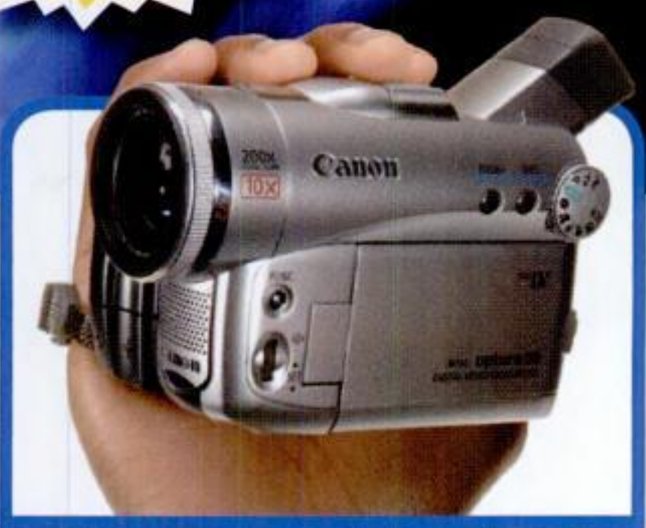
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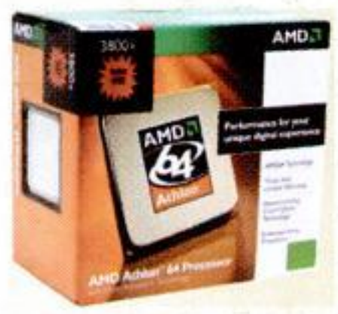
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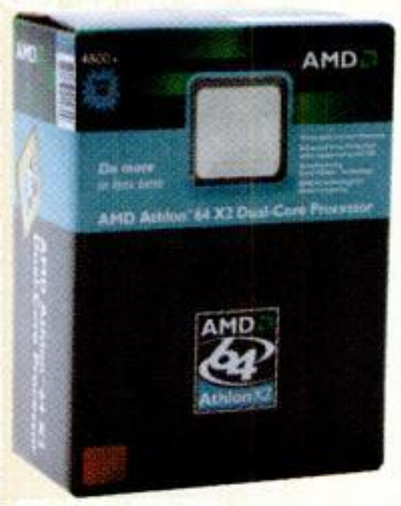
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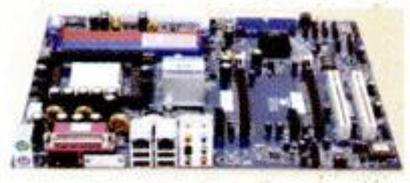
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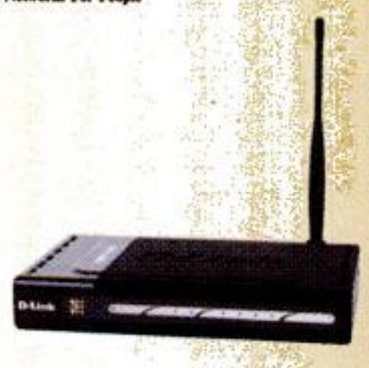
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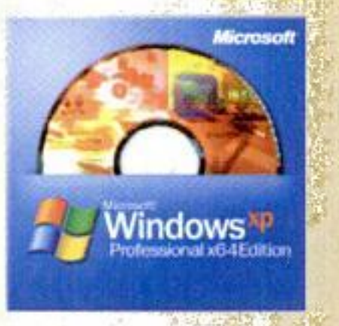
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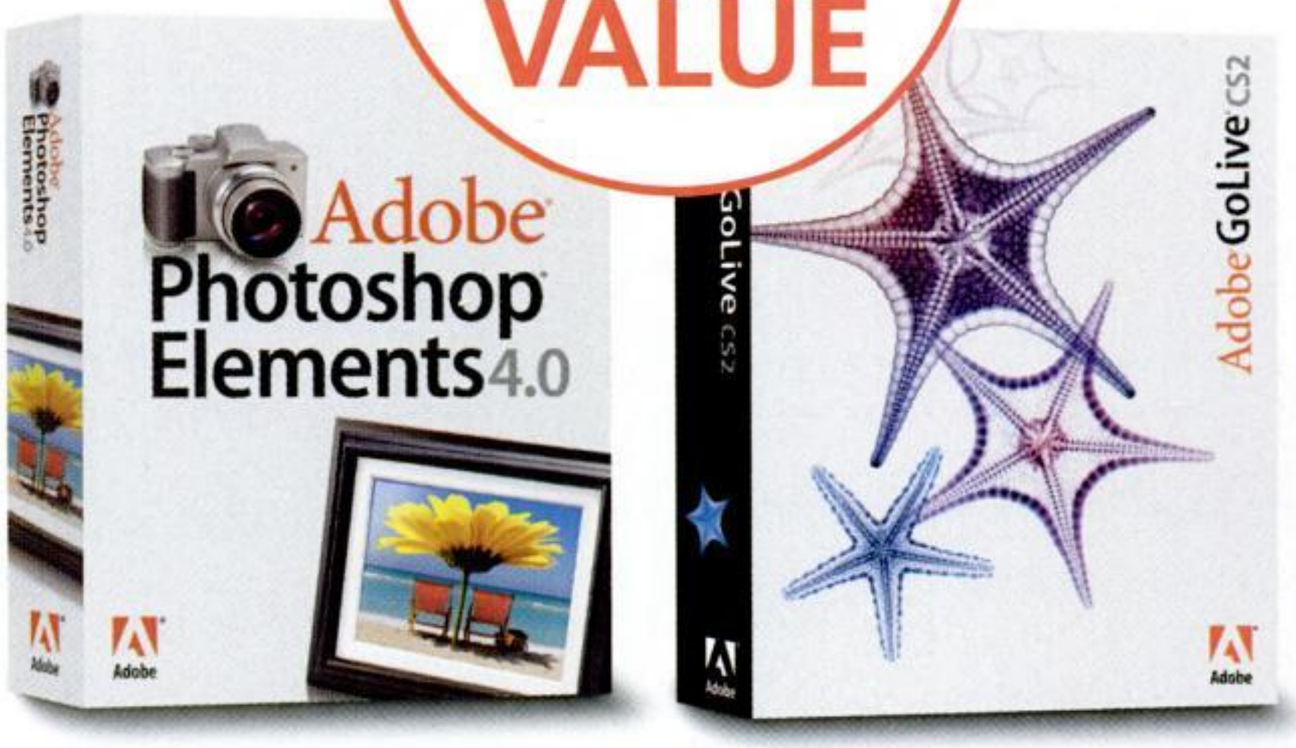
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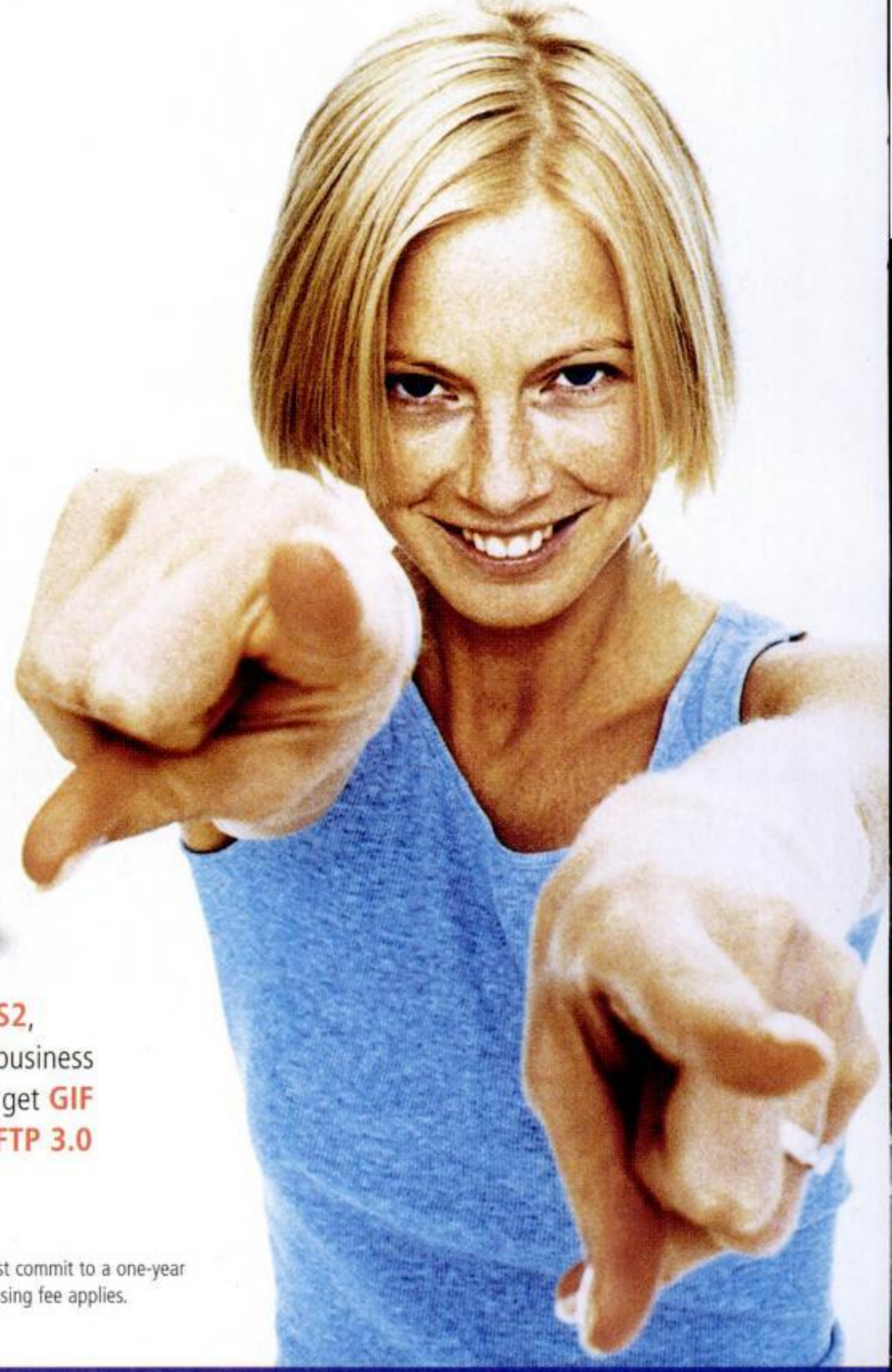
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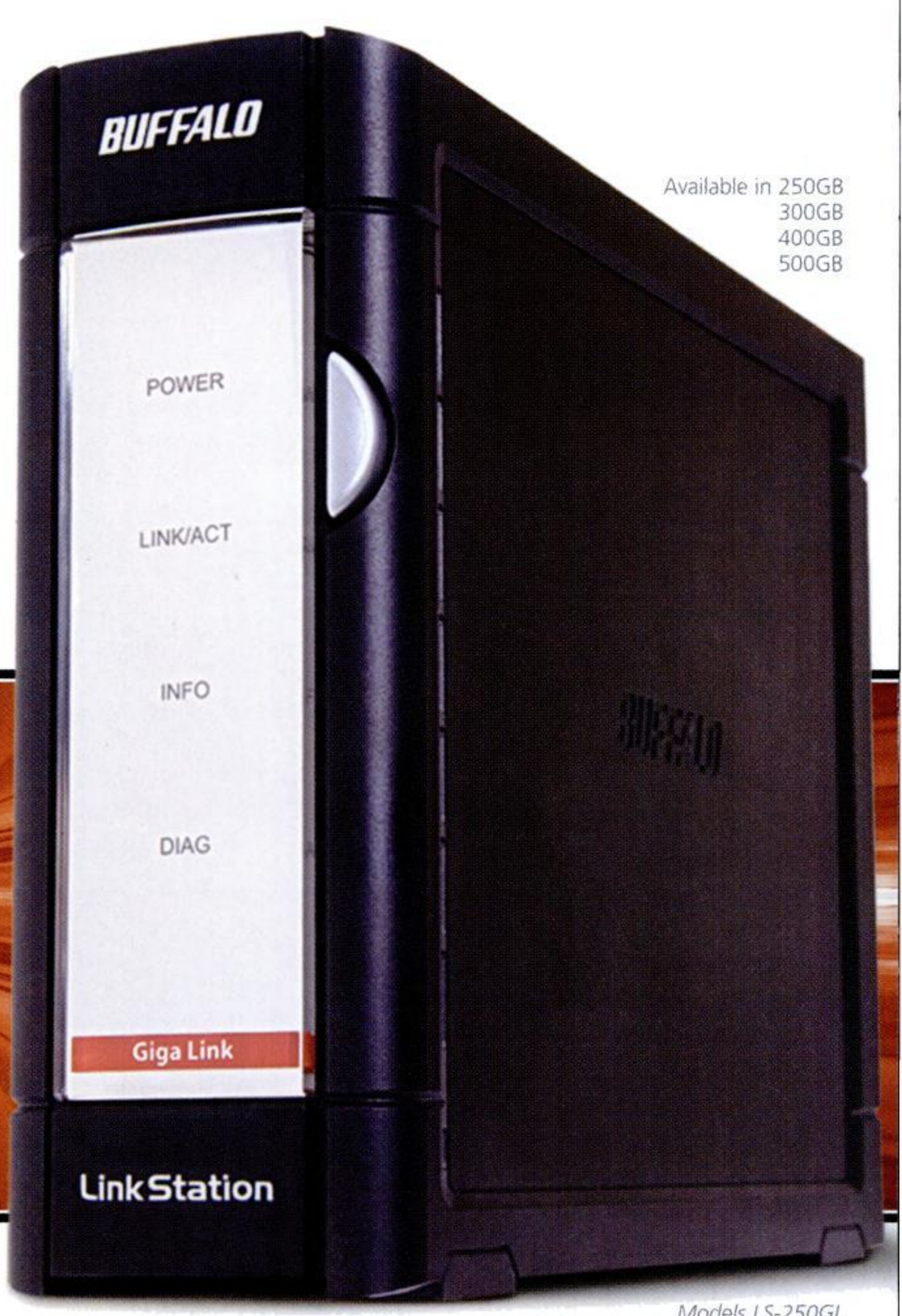
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Release Notes

The Digital Revolution

I still get cheesed when I recall my first experience buying music over the net. It was just a little over a year ago, and I was very much a digital neophyte—at least when it came to the fancy stuff, such as ripping MP3s and re-encoding DVDs and all that jazz.

A huge U2 fan, I downloaded the *Vertigo* single the day it was released, exclusively, on iTunes. I fired the song up on my PC, pulled down the shades, locked the door, and proceeded to "get silly." Once I got that out of my system, I went to load the tune on my music-streaming box, so I could play it on my home stereo in the living room. I just assumed I'd be able to do this—I mean I *bought* the damn song, so I should be able to play it on whatever device I want to, right?

Well, it turned out that Apple's encrypted AAC file format did not "play nice" with my particular brand of streaming box. Say what?!!! (Of course, the song would play fine with Apple-branded hardware...)

Incensed, I turned to the Internet for answers and discovered that if I burned the songs I purchased from iTunes to a CD, and then ripped them back into *iTunes* software or my music-streaming software as regular MP3s, I could use the files however I pleased. This seemed like one helluva hassle to do something as simple as stream a file to another place in my house, so I abandoned the effort out of principle. I have yet to purchase another song from iTunes, thank you very much.

It's our firm belief here at *Maximum PC* that if you pay for music or movies, you should be able to enjoy them however you like—on your MP3 player, streaming box, laptop, etc.—regardless of your brand of hardware. You also should be able to make backups of your DVDs, and re-encode your movies for use on your PC or portable media player.

You hold in your hands the bible to what we believe constitutes fair use, and all the nitty-gritty detail about what you legally *can* and *can not* do with your purchased media. We show you how to rip, copy, and burn *all* types of movies and music to any format you like, and we urge you to do so responsibly. We also urge you to let vendors know when their protection methods cross the line: write letters, send emails and—most importantly—don't buy a product that is protected by overly gnarly DRM schemes.

—Stephen Klett
sklett@maximumpc.com

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Digital Media Guide



RIP, BURN & PLAY!

10 Copy All Your Music & Movies!

Exactly what the title says: Copy all your media, including

- ✓ Downloaded music!
- ✓ Copy-protected DVDs!
- ✓ And more!

22 Organize Your Digital Music



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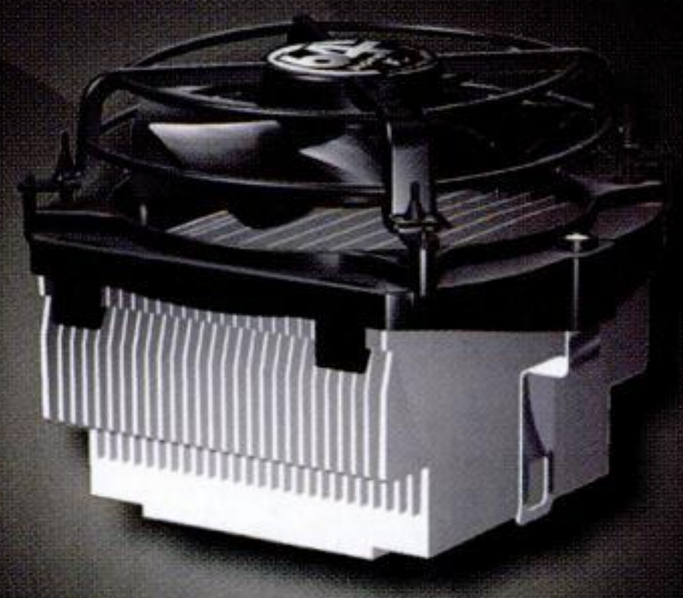
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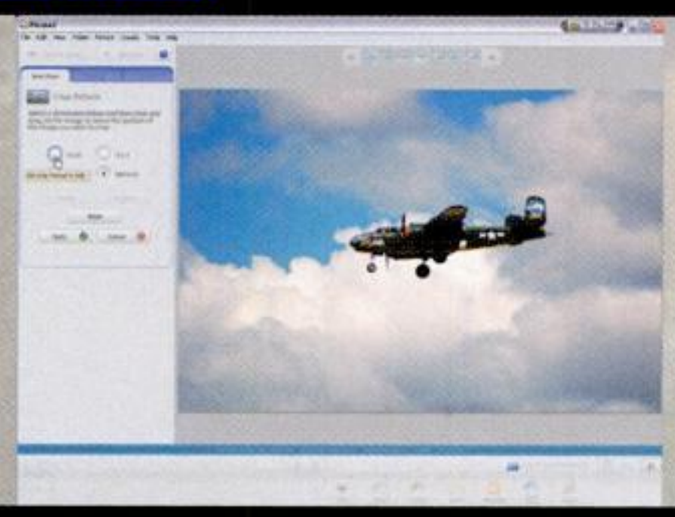
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BY MAXIMUM PC STAFF

Remember the good old days? You bought a CD at your local music store, came home, and listened to it on your PC. Then you ripped the files into MP3 format and put them on your portable music player for further enjoyment. It was a happy time, free of any anti-consumer, content-protection schemes that prevented us from using our purchased media as we liked.

Today things are different. Thanks to industry-wide digital-rights-management (DRM) schemes, the music you purchase can't be copied to your MP3 player or PDA. And that DVD

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you just bought? Don't even think about copying it to your laptop—unless you want to risk 10 years at Leavenworth with Romper Stomper and his cronies. We think the whole thing is bunk. The ridiculous limitations do nothing to protect content owners from piracy; they only inconvenience the people who actually pay for their products!

Luckily, it's a snap to de-DRM most modern media, and we'll tell you everything you need to know to do it yourself. We'll tell you what's legal, what's illegal, and how to thoroughly take control of your digital media! Let's get to it!

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Digital Media Q&A

WHY DO I NEED THIS GUIDE?

Whether you have kids who like to watch *The Little Mermaid* while eating peanut butter and jelly, or you just want to enjoy a Velvet Revolver track on your iPod, there are hundreds of legitimate reasons an honest consumer would want to copy or convert his movies and music. Unfortunately, because of a legal loophole, even innocent acts can be illegal. The problem is the Digital Millennium Copyright Act (DMCA), which Congress passed in 1998. This atrocious piece of legislation makes it illegal to circumvent encryption on copyrighted material. As just about all commercial DVDs, and a significant number of commercial CDs, are encrypted, it's thus illegal to convert a DVD movie to a format that works on your portable video player, remove DRM from a track you purchased at the iTunes Music store to play on your Creative Muvo, or even rip some CDs to MP3.

IS IT EVER LEGAL TO DE-DRM MY MEDIA?

If you have to bypass any kind of encryption scheme to copy your tracks, you're violating the law as set forth in the DMCA. However, as long as you don't take the de-DRM'd content and distribute it, it's extremely unlikely you'll actually be caught and prosecuted.

WHY ARE HARDWARE VENDORS ONBOARD WITH DRM?

It's simple: If you buy music from the iTunes Music Store, which only plays on Apple's iPods, are you going to buy a Microsoft-backed PlaysForSure music player, which can't play iTunes music, or an iPod, which can? By crippling your media with DRM, hardware vendors marry their consumers to one hardware platform—theirs.

WHAT IS DRM?

DRM stands for digital rights management, which is basically a fancy way for content producers to limit the way consumers can use different types of media even after it's purchased! Content providers argue that DRM helps prevent piracy, but we don't buy that. Because workarounds have been found for virtually every DRM technology out there, DRM doesn't slow piracy. All it does is make it difficult for you, the consumer, to exercise your fair-use right, by preventing you from ripping a CD, or converting a DVD for playback on your PSP.

WHAT IS 'FAIR USE'?

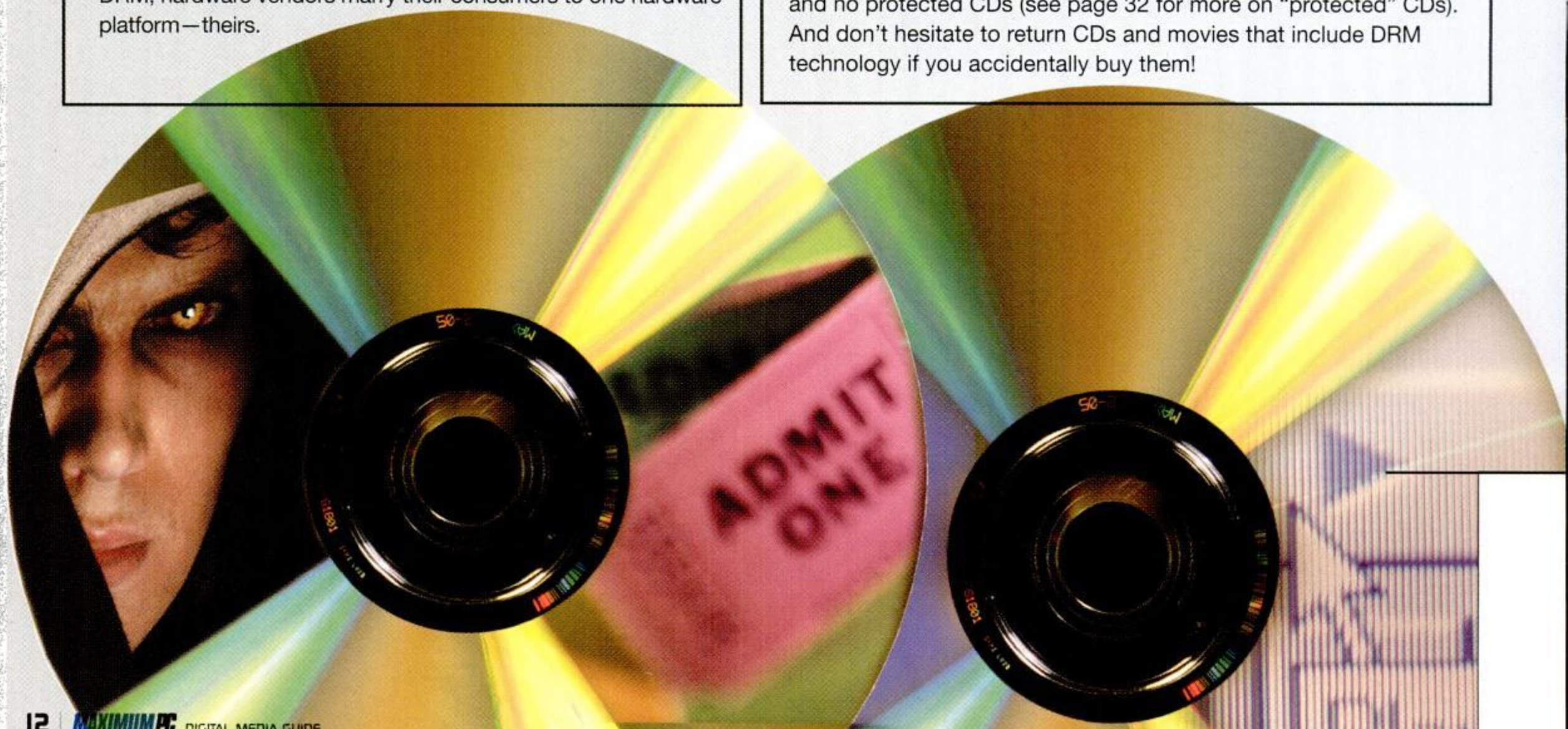
Fair use is an aspect of United States copyright law that allows people to copy and reuse copyrighted material for certain protected uses—including personal use. The doctrine of fair use basically allows you to make backup copies, or even transfer content from one medium to another, as long as it's for your own personal use.

Of course, there's a catch. If you have to bypass a protection scheme in order to exercise your fair-use rights, you'll be in violation of the DMCA. It's quite the gnarly loophole, isn't it?

WHAT CAN I DO?

It's relatively easy to bypass most current DRM technologies. You can either remove the encryption using a special utility, or if that doesn't work, record the unprotected analog output before it leaves your computer.

As for the larger picture, you need to write to your representatives in Congress and let them know that you don't take kindly to DRM technologies that prevent you from doing something you've been able to do in the past. Don't buy products that include crippling DRM—that means no downloadable music and no protected CDs (see page 32 for more on "protected" CDs). And don't hesitate to return CDs and movies that include DRM technology if you accidentally buy them!



material

Back Up Your DVDS

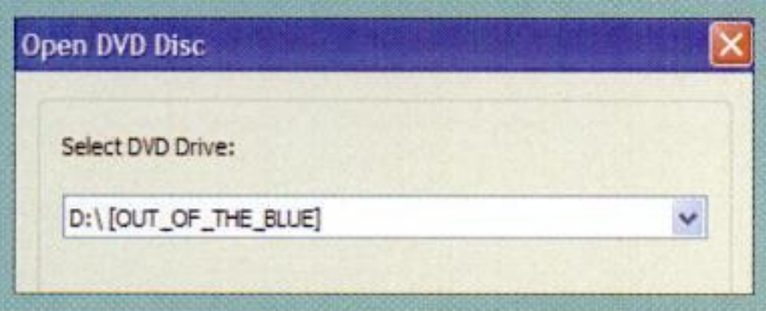
WHAT YOU'LL NEED

- DVD Shrink (free, www.dvdshrink.org)
- The DVD you want to copy
- A blank DVD disc

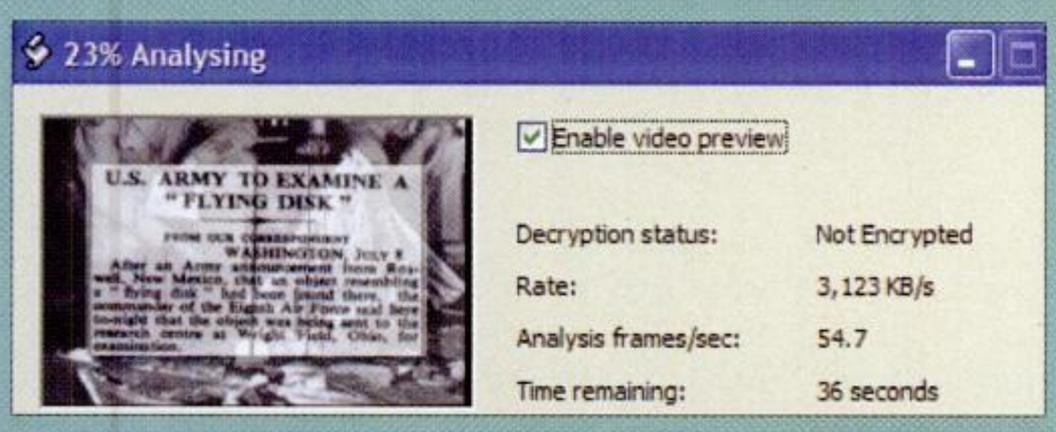
Kids and optical discs don't mix. For that matter, neither do adults and optical discs. Ever since we left a folder full of DVD discs in an airline seat pocket, we carry dupes of our DVDs on the plane, instead of the originals. The easiest way to back up a DVD is with *DVD Shrink.* Even though the application is still freely available (just search Google), it's no longer supported by its author. This freeware utility compresses a standard dual-layer DVD down to 4.35GB, allowing you to burn the contents to a single single-layer DVD disc. It will even decrypt encrypted DVDs for you.

STEP1 OPEN THE DISC

After inserting the disc and starting the application, click "Open Disc," and then OK.

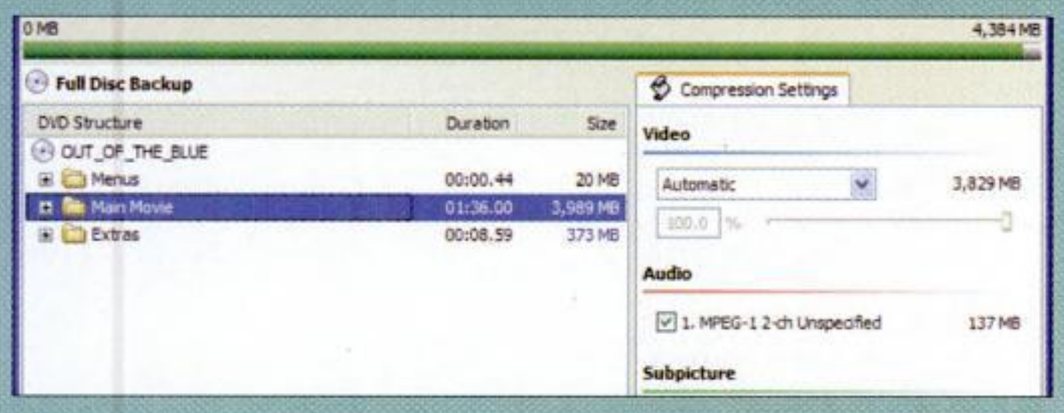


STEP2 ANALYZE THE DISC



In this phase, *DVD Shrink* analyzes the disc's contents to determine whether the movie is encrypted, and it catalogs the contents of the disc.

STEP3 EXAMINE YOUR OPTIONS



Once DVD Shrink finishes analyzing the disc, it will show you all of the audio and video streams present. You should uncheck any streams you won't need, such as French subtitles and the trailers for coming attractions. Our test disc is pretty bare-bones, so there's nothing we need to remove. Click "Backup" to continue.

STEP4 BACK IT UP



Now we need to tell *DVD Shrink* where to save the ripped DVD. Be sure to check "Create VIDEO_TS and AUDIO_TS subfolders" in order to make the burning process easier. Click "OK" to begin the backup process.

STEP5 LET 'ER RIP



Now *DVD Shrink* copies the contents of the DVD to your hard drive, and recompresses the video content so that it will fit on a single-layer disc. The time it takes to complete this phase boils down to two things: your optical drive's speed and your CPU's sheer processing power. Because *DVD Shrink* is multithreaded, it can take full advantage of dual-core processors and complete the transcode in half the time it takes a comparable single-core system.

STEP6 YOU'RE DONE



You're all done. The files have been copied to the predetermined destination. Now just fire up your DVD burning app, tell it you want to burn a DVD video disc, drag the "VIDEO_TS" folder into your burning utility, and fire away. Your DVD is now safe from the clutches of the unruliest infant.

WHAT OTHER SOFTWARE CAN I USE?

DVD Shrink is freeware, and as such, is quite limited. There are several utilities for purchase that offer a lot more flexibility and features, including: *Nero Recode, AnyDVD, Intervideo DVD Copy 4, DVD Decrypter,* and *#1 DVD Ripper.*

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WHAT YOU'LL NEED

- A DVD you want to rip
- DVD Copy 4 Gold ($50, www.intervideo.com)
- AnyDVD (optional, $40, www.slysoft.com)
- 1- to 2GB of hard-disk space per DVD

Rip and Compress DVDs

Copying DVDs is great, but we love to re-encode our DVDs, using much better compression so they're suitable for playback on computers, Media Centers, and even TVs equipped with a video-streaming box. What's better, once your video is in a standard format, it's a cinch to tweak it to play on a Video iPod, PSP, or portable video-player.

Ripping DVDs has always been pretty easy; there are dozens of freeware apps that will decrypt the disc and copy VOB files to your hard drive. However, actually doing anything with those mystical VOB files—like transcoding them to smaller Divx or WMV files—is often an insanely difficult, multi-step process.

Intervideo's *DVD Copy 4* will rip to every format we've ever needed, in three easy steps, but it won't rip any encrypted DVDs. For that, you'll need to pair *DVD Copy* 4 with *AnyDVD,* which removes the copy protection and region encoding from your DVDs on the fly.

STEP1 PREPARATION



We're going to assume that you've already installed the software—including *AnyDVD* if you're going to rip encrypted discs—and you're now wondering what you need to do to prepare for the rip. First, make sure you have enough free disk space on a drive formatted with NTFS. Each movie will absorb about 2GB at DVD-quality bitrates. Before you begin, defrag your drive, and you're ready to go.

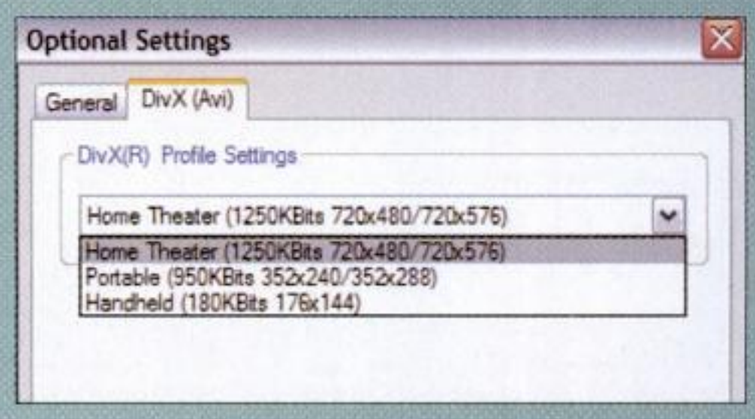
STEP2 CHOOSE YOUR SETTINGS



Open up *DVD Copy* and drop your DVD in the drive, if you haven't already. Make sure your source and target are set correctly in *DVD Copy:* Point the source at your DVD drive, and select a Target folder to save the ripped movie in.

In the "Copy As" field, you'll be able to choose from a variety of formats—including Divx, WMV, straight MPEG-4, and H.264 (if you shelled out for the Platinum Edition). We're going to use Divx(Avi), but check the sidebar below for more on the different formats.

STEP3 TWEAK THE CODEC



Click the little hammer icon on the right side of the screen to make a couple of small tweaks. You'll want to change the "Disc Label" to the name of the movie, and then you should click the Codec tab (it's Divx here) to change the resolution.

Although some codecs offer more options, Divx is minimal. For most DVD rips, you'll want to use the Home Theater profile. It will deliver a near-DVD quality file, at about a quarter of the space used on a commercial DVD.

STEP4 RIP IT

All that's left now is to select the content to rip. For movies, you can usually click Main Movie, which selects the longest video on the disc. If you're ripping a disc of TV shows, you might have to manually select the titles you want using the Customize button.

After you've chosen the Titles and Chapters to rip, all you have to do is press the Rip button in the lower-right corner of the screen and wait. Rip times will vary based on the speed of your optical drive and CPU. The encoders are all multithreaded, so dual-core processors are much faster than comparable single-core procs.

CODEC PRO AND CONS

There are reasons to use each of the available codecs—some work nearly everywhere, while some deliver exemplary compression and video quality. Here's a quick rundown on five options that *DVD Copy 4 Platinum* offers.

DIVX The new Divx 6 container format allows multiple audio streams, subtitles, and even multiple videos inside a single file. It's essentially a one-file DVD. However, it's not widely supported yet.

DIVX (AVI) The original MPEG-4-based Divx format. If you want a file that will play virtually anywhere, with decent quality and sound, this is it.

WMV The choice for owners of Windows Media Center machines. WMV offers better compression than Divx, but isn't as widely supported. It's the only format supported by Windows Media Center Extender streaming boxes.

MP4 The official MPEG-4 format is MP4. Many portable players support MP4, including the PSP and Video iPod.

H.264 A new addition to the MPEG-4 standard. H.264 allows for greatly improved image quality at even smaller sizes than standard MP4 files. Lacks wide compatibility with streaming boxes, but is supported on many portable players.

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Take Your Video on the Road

Now that you've managed to convert a DVD movie into a Divx file, the hard work is done. Converting from Divx to virtually any other format is a snap, if you have the right tools.

CONVERTING FOR THE PLAYSTATION PORTABLE



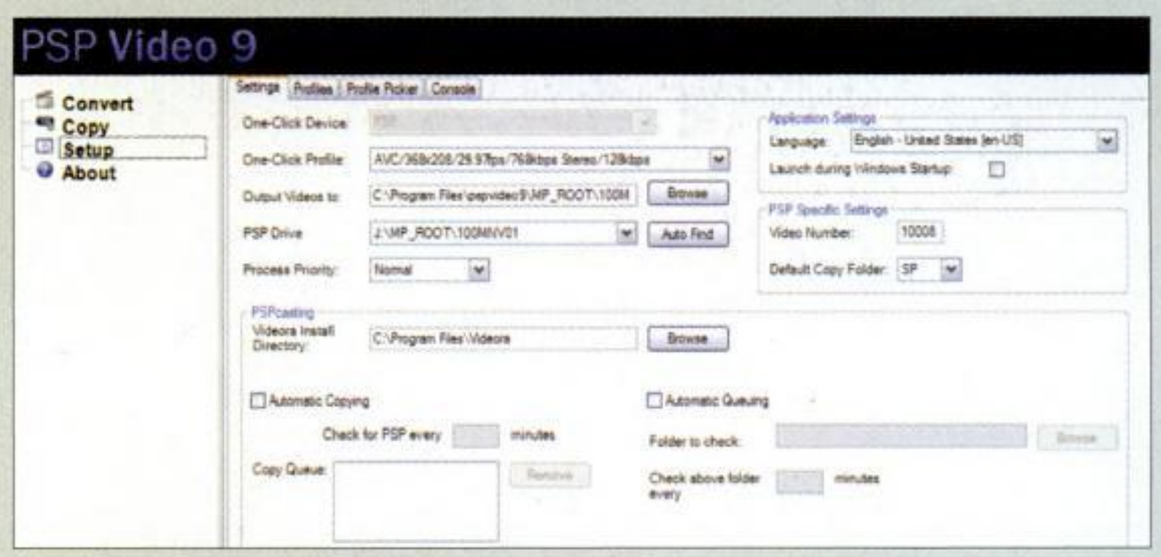
PSP Video 9 is an über-handy piece of software. Not only will it convert video files to play on your PSP, it will even manage large collections, helping you move movies on and off your PSP's storage card as you need space.

Download and install the app, and you're ready to get started. *PSP Video 9* includes tons of customization options, but it works pretty damn well out of the box. Click the Convert button, select One-Click Transcode, point the app to the movie you want to transcode, and come back in a few hours.

Once the transcode has completed, plug your PSP into the PC and set it to use the USB connection. Then go to *PSP Video 9's* Copy tab, select the videos you want to copy to your PSP, and click Copy Video to PSP.

WHAT YOU'LL NEED

- A Divx movie
- PSP Video 9 (donateware, www.pspvideo9.com
- A Memory Stick Pro Duo 512MB or larger



COVERTING FOR THE VIDEO IPOD

This one's pretty simple. Download and install *Videora iPod Converter*, then run the program. Click Setup, then point the "Output videos to" setting to someplace that will be easy to find: We recommend My Documents\My Videos\iPod Videos. Then click the Convert tab, select One-Click Transcode, and point *Videora* to the file you want to convert. When it's done, you can drag-and-drop the file into *iTunes*, and configure *iTunes* to sync the file manually.



WHAT YOU'LL NEED

- A Divx movie
- Videora's iPod Converter (donateware, www.videora.com)



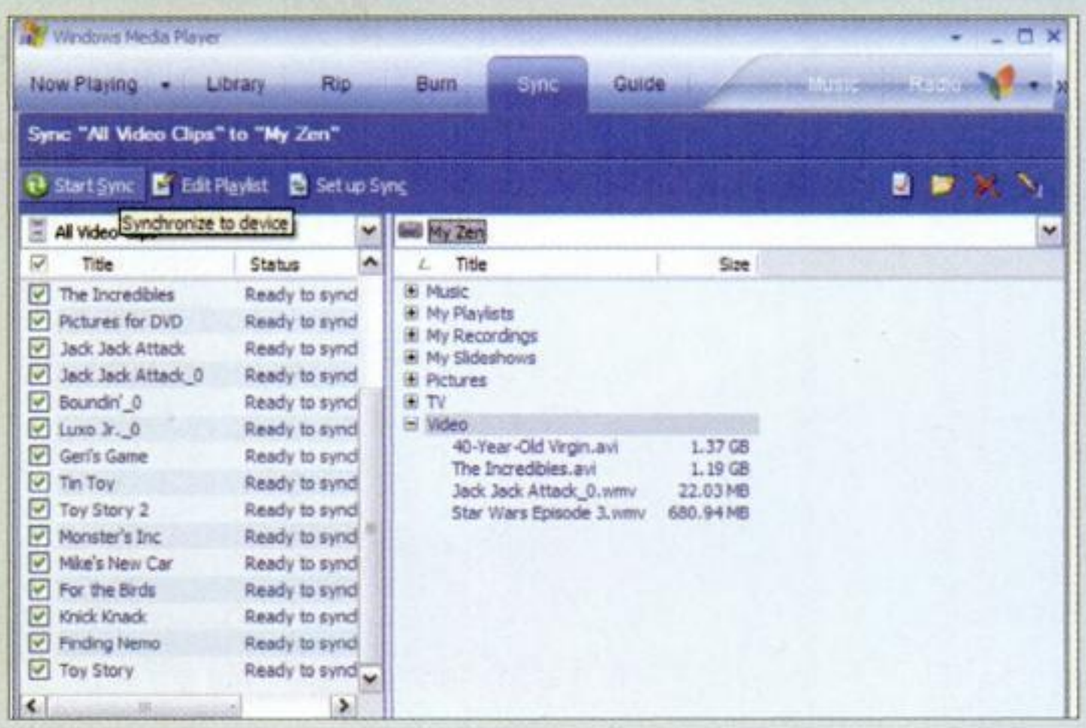
CONVERTING FOR PORTABLE MEDIA PLAYERS

Virtually all of the portable media players available today can be loaded using *Windows Media Player 10*. In fact, *Media Player* can even convert your movies to formats that your player supports. All you need to do is connect your player, open *Windows Media Player*, and go to the Sync tab. Click Edit Playlist and select the videos you want to add, or drag any movies you want to move to your player into the list window. When you're ready to start the sync and conversion process, press Start Sync. That's all there is to it!



WHAT YOU'LL NEED

- A Divx movie
- Windows Media Player 10 (free, www.microsoft.com)



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Rip Perfect MP3s

WHAT YOU'LL NEED

- An audio CD
- Exact Audio Copy (free, www.exactaudiocopy.de)
- LAME encoder (free, http://mitiok.cjb.net)

Do you listen to audio CDs in your CD-ROM drive, or carry a portable CD player while you jog? Of course not. You rip your audio CDs to MP3, and then transfer the files to your hard drive, your MP3 player, and your laptop. Because ripping audio files is quite pedestrian these days, you probably know how to do it. But do you know how to do it the *Maximum PC* way? Here's how to rip audio files so they'll sound as good as uncompressed WAV files.

STEP1 DOWNLOAD EAC AND LAME

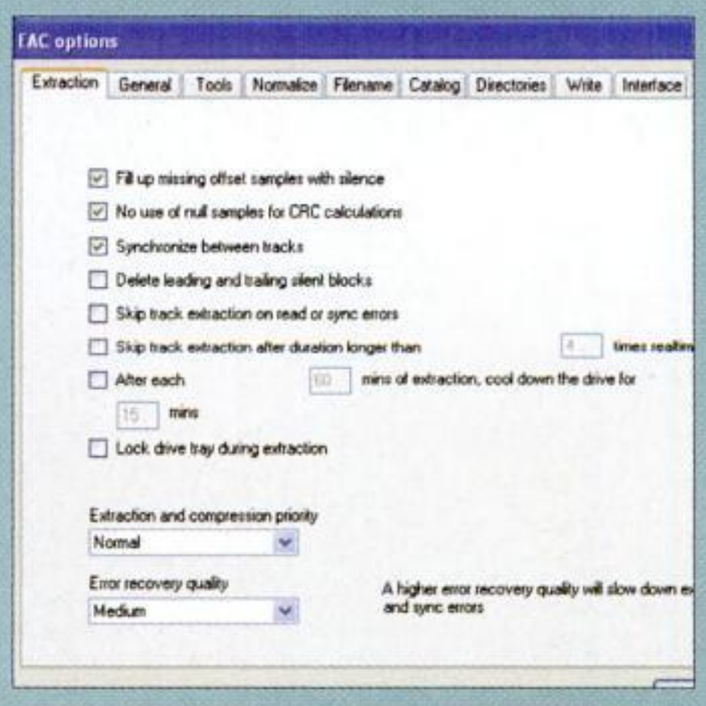
Exact Audio Copy is our favorite tool for ripping audio CDs because it's dead accurate, produces flawless rips, and warns you of the presence of potential problems—think skips, clicks, or pops. It's not the fastest solution, but we'll trade accuracy for speed every time. Download *EAC*. Next, download the open-source *LAME MP3* encoder, so you can encode your ripped files. Unzip both programs into the same folder on your hard drive.

STEP2 INSTALL EAC



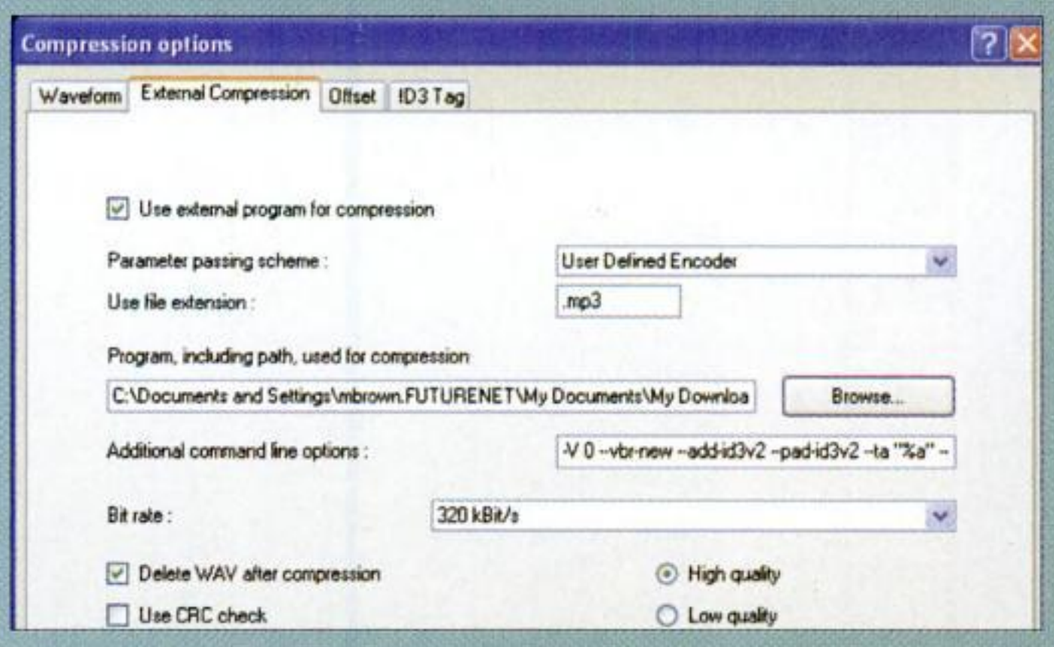
EAC's setup wizard will automatically start when you install the program. Choose the option "I prefer to have accurate results." Skip the step to install and configure *LAME* by removing the checkmark—we'll install it later. You have to enter an email address in the next screen to gain access to the Freedb CD database, which will automatically populate your MP3s with artist, album, and track-name info. Choose the option labeled "I'm an expert…" and click Finish.

STEP3 CONFIGURE EAC



Choose "EAC options" from the *EAC* menu. Deselect the option labeled "Lock drive tray…," so you can open the drive tray should *EAC* hang on a scratched CD. Leave the other options at their defaults. Click the Tools tab and place a checkmark next to "On extraction, start external compressors…" (*EAC* will read the next track while the compressor is working on the previous track, speeding up the ripping process). Click OK.

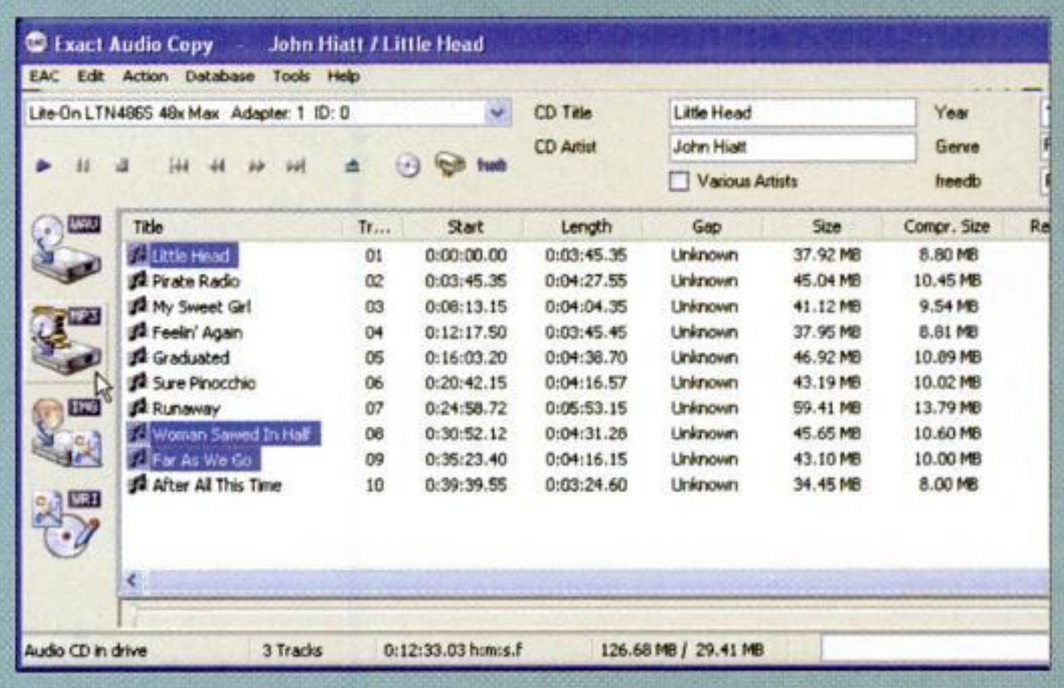
STEP4 COMPRESS AND ENCODE



Choose "Compression options" from the *EAC* menu and click the External Compression tab. Place a checkmark next to "Use external program for compression," choose "Use Defined Encoder" from the drop-down menu, browse to the folder where you downloaded *LAME*, and click lame.exe. We're going to encode our MP3s using variable bit rate (*VBR*), and we want *LAME* to write metadata (artist, track title, etc.) to the ID3 tags, so type this exact text into the "Additional command line options" field: `-V 2 --vbr-new --add-id3v2 --pad-id3v2 --ta "%a" --tt "%t" --tl "%g" --ty "%y" --tn "%n" %s %d` Ignore the rest of the options here, but click the ID3 Tag tab and remove any checkmarks. Click OK.

STEP5 RIP AWAY!

Now you're ready to start ripping. Drop a CD into your optical drive and give *EAC* a moment to download information about it from Freedb. In the main *EAC* window, choose the tracks you wish to rip and then click the MP3 icon in the vertical toolbar. Browse to the folder where you want the files stored and click Save.



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- Transmitter can then be set to broadcast iPod's music to any FM frequency from 88.1 to 107.9.



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- Compatible with iPod nano & 5th generation iPod
- Attaches directly to bottom of iPod using Dock Connector
- Easy to read backlit LCD screen makes setting its digital tuner easy and intuitive



iClear Clear case for iPod nano — $19.99

- Offers full screen protection without adding unnecessary bulk or weight
- Simply place iPod nano into the to casing, and slide the rear section securely in place.



iTrip® Auto FM Transmitter and Auto Charger for iPod — $59.99

- Brings with it all the innovations of its iTrip lineage, including selectable LX and DX modes for best-quality
- Designed specifically for use in the car, iTrip Auto's large, easy-to-read backlit LCD screen affords quick, precise station selection and easy status at a glance.



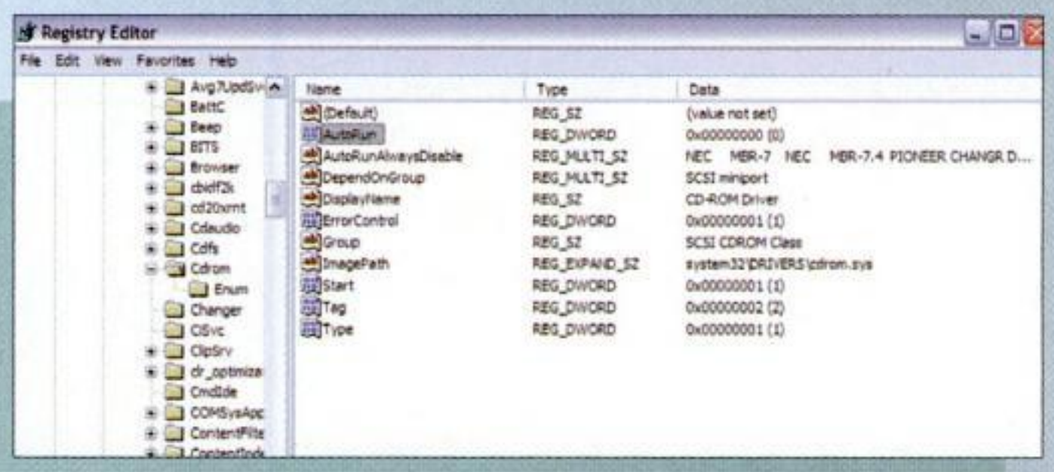
buy now at: **www.griffintechnology.com**

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Rip Copy-Protected CDs

Because the CD-ROM was designed more than 20 years ago, when encrypting the contents of a 700MB disc was impractical, the contents of music CDs must remain unencrypted and unencumbered by DRM, if the music industry expects new CDs to work in the billions of CD players sold in the last 20 years. That makes ripping "protected" CDs much easier than even ripping a DVD.



Disabling Autorun is the easiest way to ensure that you'll be able to convert your purchased CDs to MP3s.

Autorun is the Enemy

This might sound ridiculous, but the easiest way to make sure you can rip any CD is to disable autorun on your optical drive. Most commercial CD protection software relies on driver tricks or a resident application to confuzzle your music ripping app, but that software has to be installed somehow, right? Right. It's installed automatically—you insert a disc and the autorun file tells your PC to run the installer.

Disabling autorun is simple, but it will disable the functionality for all users of your machine, and for all discs. It means that no software installers will automatically start anymore. If that's not an acceptable option, then you can temporarily disable autorun anytime you insert a disc, by holding down the Shift key until the drive is fully spun up.

To permanently disable autorun, edit the Registry. The usual warnings apply: Failure to properly follow our instructions could result in a broken Windows install, computer instability.

Open regedit by going to Start, then Run, and typing regedit. Press Enter. Then browse down to HKEY_LOCAL_MACHINE/SYSTEM/CurrentControlSet/Services/Cdrom. Open the AutoRun value, and change it from 1 to 0. The next time you restart your computer, autorun will be disabled, and you'll be able to rip nearly anything you like.

If Disabling Autorun Doesn't Work

If you disable autorun, and you still can't rip a CD, or your ripped MP3s sound garbled or unclear, then you might have stumbled onto one of the newer protection schemes that won't work on a PC. If that's the case, you have three options. The easiest way to make a copy of the disc is to capture the analog output and encode that to MP3 yourself. The resultant sound quality should be pretty good, but you'll probably have to manually input the artist, album, and track info yourself. You can use an app like *Replay Music* (see next page) to accomplish this.

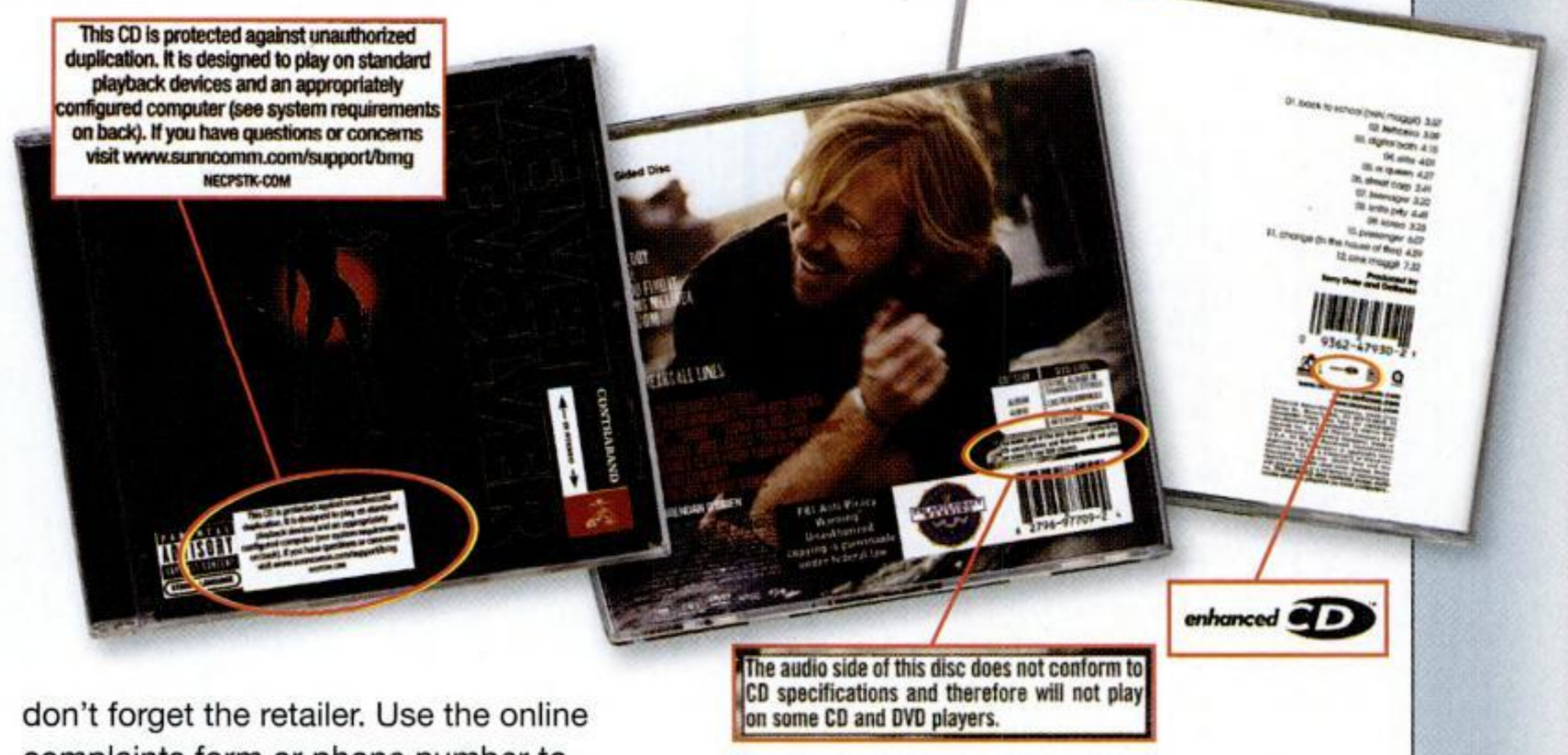
The other thing you can do is hit the Internet. Odds are that someone else has tried to copy this disc before you, and you should be able to find a solution. You may still end up having to rip the CD using the analog trick, but there may be an easy workaround. (One of our favorites required you to mark up the inside edge of the disc with a Sharpie.)

The third option is to try ripping it when *AnyDVD* is running. *AnyDVD* includes a feature that automatically corrects table of contents errors (one of the more common protection techniques) and prevents access to any data sessions on the disc, which should prevent the disc from loading any kind of nasty software.

WHO ARE THEY 'PROTECTING' THE MUSIC FROM, ANYWAY?

The easiest way to tell if you're buying a bona fide CD that you'll be able to rip at will is to check the label closely before you buy. If a CD's protection scheme means that its contents no longer follow the Red Book audio CD standard, the CD won't have the standard CD Audio label on it. It may be labeled with something similar, though.

Don't buy CDs that include copy-protection schemes. If you buy one that's protected, but unlabeled, return it, and tell the store you're returning it because you can't make it work with your MP3 player. If you'd like to buy an artist's album, but their discs are encumbered with copy-protection software, send the artist an email, or post to their online message board. Remember to be civil! Explain that you'd like to purchase their music, but you want to use it on your MP3 player, which their label doesn't allow. Finally, don't forget the retailer. Use the online complaints form or phone number to request copyable versions of a protected discs. The record labels might not listen to individual consumers, but they'll sure as hell listen to Best Buy.



When you're shopping for CDs, check closely for the Enhanced, DualDisc, or Protected labels. These discs include technology to prevent you from ripping.



WHAT YOU'LL NEED

- Replay Music ($30, www.replay-music.com)

How to Play Internet Music Anywhere

Nothing inspires unbridled rage like purchasing music from an online service, and then discovering you can't play the files on your MP3 player. Luckily, there's a simple detour around this PITA. We're going to show you how to rip the audio stream over the net and capture it to your hard drive, where you can do whatever you want with it.

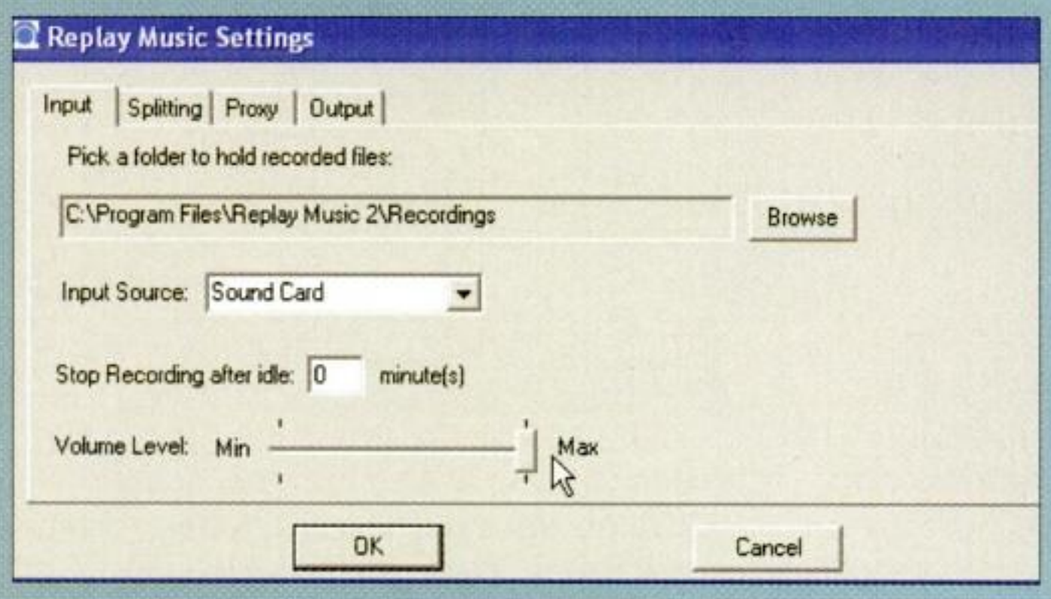
STEP1 DOWNLOAD AND INSTALL REPLAY MUSIC



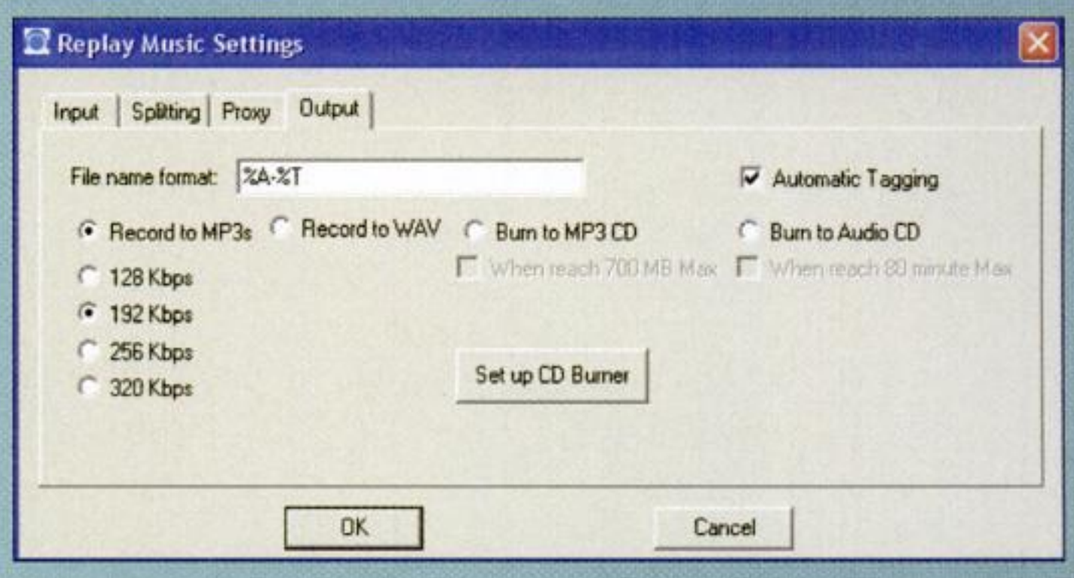
A lot of programs are capable of capturing audio streams and encoding them as MP3s, but Applian Technologies' *Replay Music* is the slickest of them all. It captures audio streaming from the Internet or from your hard drive, splits the stream into individual tracks, and automatically tags them with title, artist, album, and genre information. Once the songs are encoded as MP3s, you can play them on *any* PC or media player.

STEP2 USE YOUR SOUNDCARD AS A SOURCE

You'll need to launch *Replay Music* before you start your streaming service, and you'll need to configure it the first time you run it. Click the Settings button in the lower right-hand corner, and then click the Input tab. Choose Sound Card, and set the volume to max.



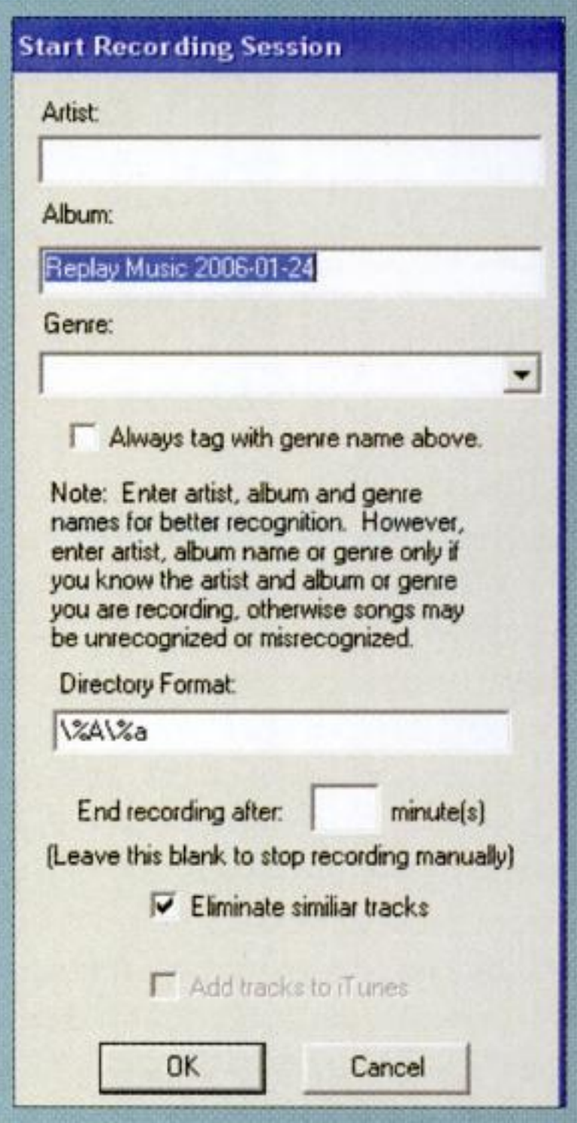
STEP3 FINISH CONFIGURING REPLAY MUSIC



Next, click the Splitting tab and make sure there's a checkmark next to Split Tracks. Last, click the Output tab and place a checkmark next to Automatic Tagging. Choose the option to record to MP3, and set the bit rate to your preference. We chose 192Kbps in this example because the subscription service we use streams WMA files at 160Kbps.

STEP4 RECORD YOUR MUSIC STREAM

Leave *Replay Music* running and start playing your protected music. Queue up the tracks you'd like to record and then click Start Recording in *Replay Music.* When the Start Recording Session window pops up, enter `\%A\%a` in the field labeled Directory Format. This will place the recorded tracks in a folder labeled with the artist's name, and in a subfolder labeled with the name of the album.



Click OK and begin streaming music from your subscription service. Note: Don't use your PC for anything else during this process, including instant-messaging. The simple act of resizing a window can create an audible glitch in your recording. When your recording session is finished, you can double-click any track to edit the information describing it. Wasn't that easy? MPC

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Organize Your **Digital Music**







It's high time to put the shine on your music library with proper MP3 tags and album art!

TIME 1:30 HOURS: MINUTES

When Mom wanted you to clean your room, she had a foolproof method of persuasion: Do it, or you'll never see daylight again. Because we can't use the same approach to convince you that keeping a tidy digital audio collection—one with proper ID3 tags and album art—is in your best interest, we'll try reason instead.

You might wonder why you should bother to take the time to clean up your library, given that you've survived this long without properly tagged tracks. But that library is only going to get bigger, and sooner or later it's going to become a major chore to find anything at all. What's more, without properly tagged tracks, you're missing out on the most advanced features of today's hardware and software media players. For example, if you recently got dumped, *iTunes* will gladly play, on your command, your most highly rated country/western tracks so that you may wallow to your broken heart's content. Or you can throw an impromptu nostalgia party by instructing *Windows Media Player* to randomly play tracks published in the 1980's in the Rock and New Wave genres.

You're getting the idea, right? You can enjoy your music in ways that simply weren't possible a decade ago, using extremely sophisticated media players that are available for free. But, of course, they rely on well-maintained tags to do their best work.

Finally, rehabilitating your music library is a much easier task than you might think, and software (that's also free) will do most of the dirty work for you. And that's just the way we like it.

BY LOGAN **DECKER**

Making a Fresh Start

An ID3 tag is a metadata container; that means that it contains descriptors for the primary data in a file. In this case, that's the compressed audio track, and the ID3 tag "metadata" includes information such as the artist, album, track title, year of release, and even lyrics! The ID3 standard has been through many revisions, but has essentially settled on version 2.4, which is supported by virtually all media players (hardware and software) made in the last few years. (We absolutely swear that's as technical as we're going to get in this How-to.)

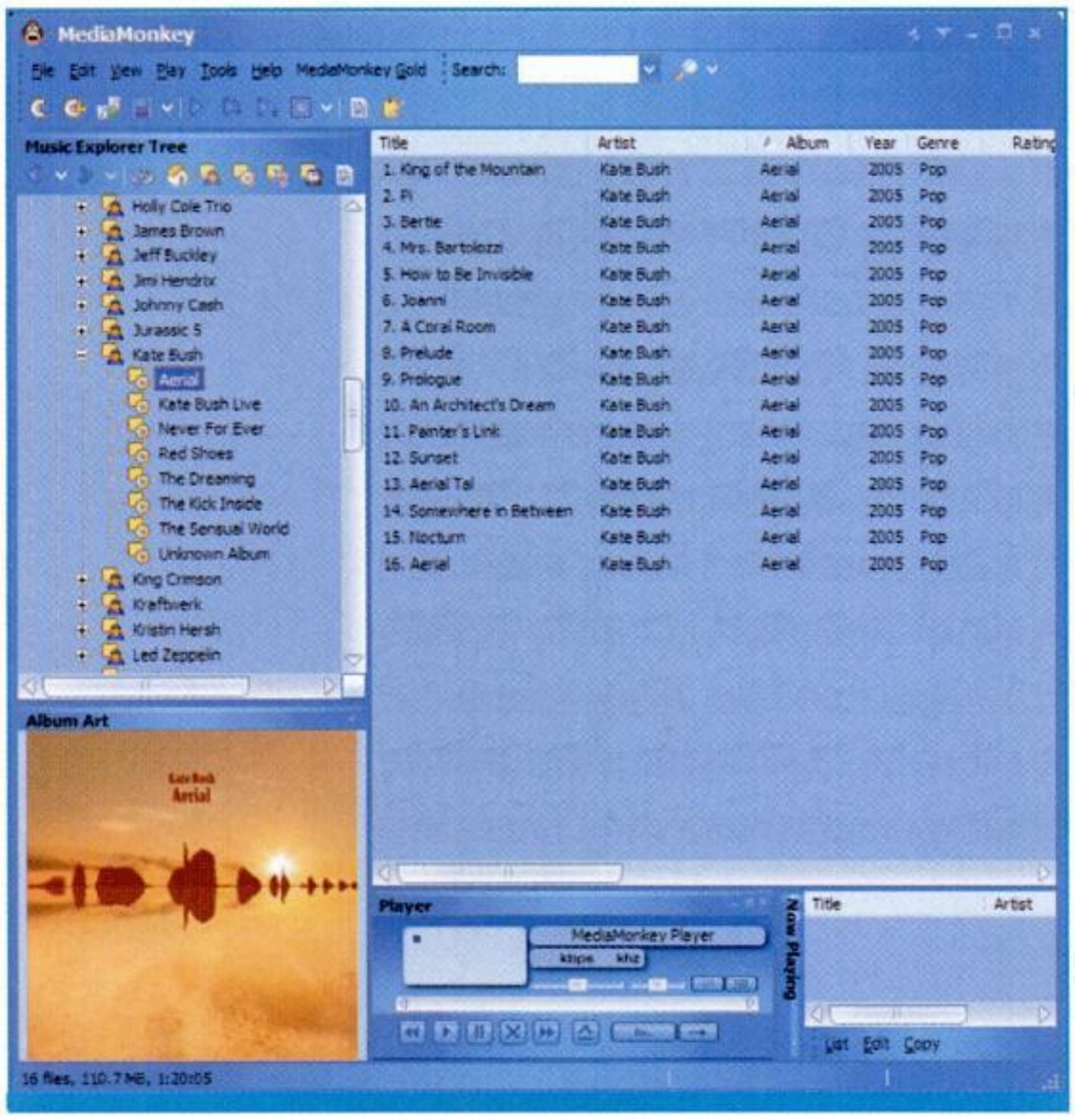
By virtue of it successfully rehabilitating the libraries of several die-hard digital slobs here at

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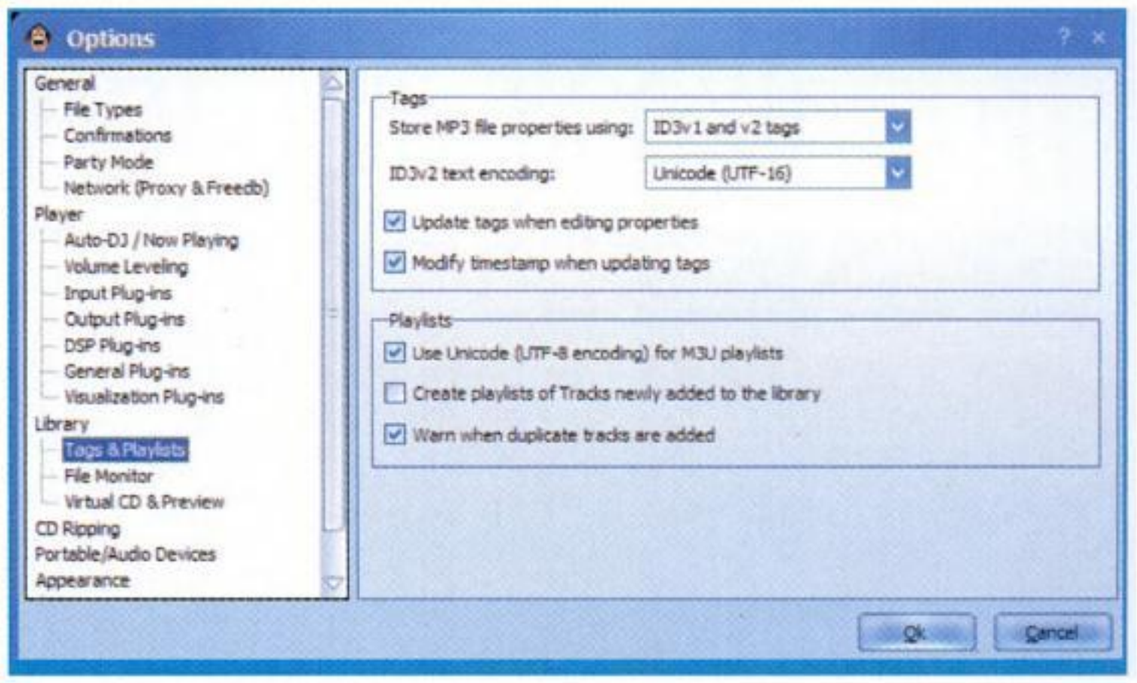
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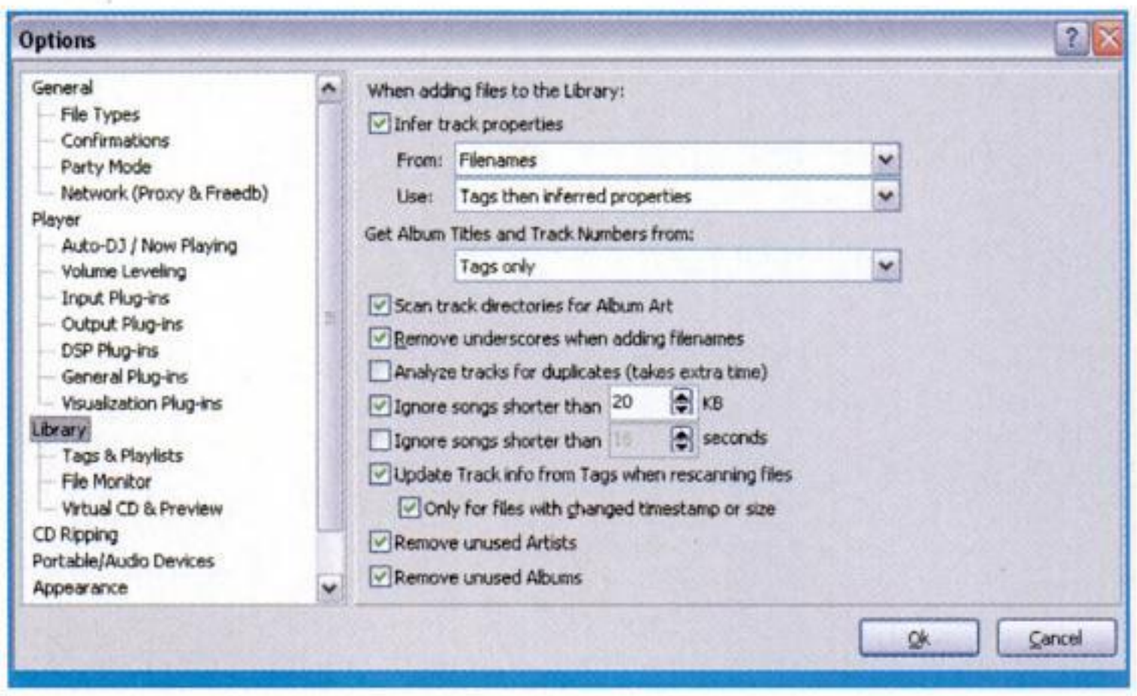
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MediaMonkey takes most of the agony out of cleaning up your music library's tags.



Don't freak. Nothing needs to be changed here at this time.



...but later on, you'll want to explore some of the extra features, such as creating tag data from folder names.

Maximum PC, we've particularly fond of *MediaMonkey* (from Ventis Media, Inc) which is now at version 2.5.2. Above and beyond being a very well-appointed media player, *MediaMonkey* does a bang-up job cleaning up your ID3 tags. And unlike stuffier applications, *MediaMonkey* is just as happy handling less common compressed-audio formats such as OGG and even the lossless FLAC codec. Download it at www.mediamonkey.com (or grab it off the disc that came with this issue). We're using the free version for this How-To, but for a measly twenty bucks you'll get an Easter basket of goodies like automatic library monitoring and updating, and *MediaMonkey* will even synchronize with your MP3 player (yup, even your iPod) and convert your tracks, on-the-fly, to the format your player supports.

Launch the *MediaMonkey* installer. The first option you'll see is which file formats to associate with the *MediaMonkey* application. If you don't intend to use *MediaMonkey* as your primary media player, uncheck all the boxes. If you're not sure, uncheck them all and try out the player first—you can always associate file types later from the Options menu. Click OK on the welcome screen, and you'll get a dialog box that allows you to select which drives and directories you want it search. At the bottom of this window, you can also tell it what kinds of files you want it to catalog (check the list before continuing to make sure *MediaMonkey* catalogs all your music files; we noted that WAV files aren't selected by default, for instance). Our advice is to select all the files types at the bottom of the window, but be judicious about which drives and directories you search. You don't want MediaMonkey, for example, to catalog hundreds of WAV or OGG files from game directories. We're telling *MediaMonkey* to catalog only those files in our My Music folder (*MediaMonkey* will automatically catalog all subfolders as well). If you click on the Options but-

Let's Get Real



As an auto-tagging application, *MediaMonkey* is not a panacea. No application is, free or commercial, and in fact you wouldn't want an application to act like one and do everything for you based on its own judgment. That's because the application will at some point have to do some guesswork, and it will likely guess wrong. As a result, AC/DC will make a surprise appearance in your Chopin playlist, or worse, mislabeled tracks will be forgotten about and never heard from again. Oy! We're outlining here what we think is the best approach, which is to let applications like *MediaMonkey* take care of the drudgery of handling your easily tagged tracks, and leave you to monitor the rest of the process more closely.

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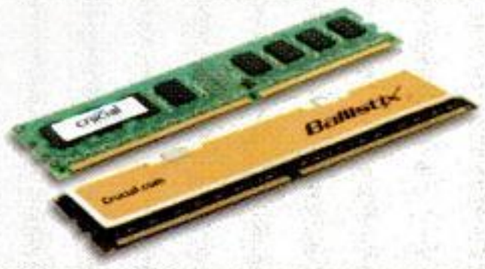
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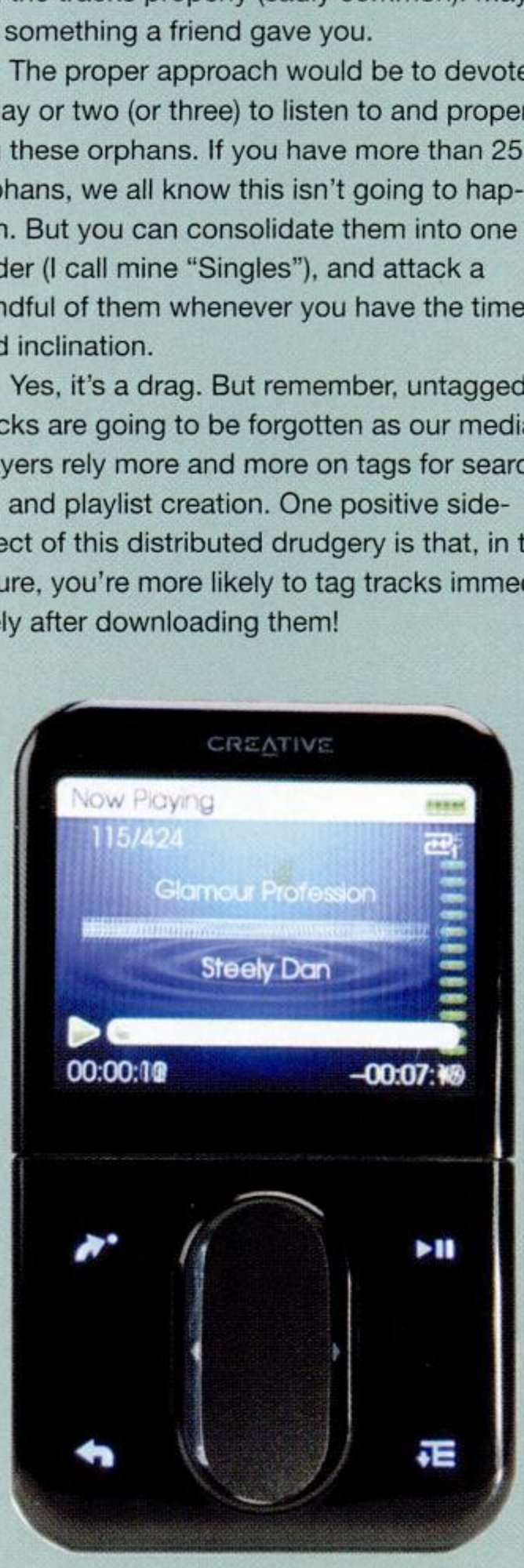
The Plight of Orphans



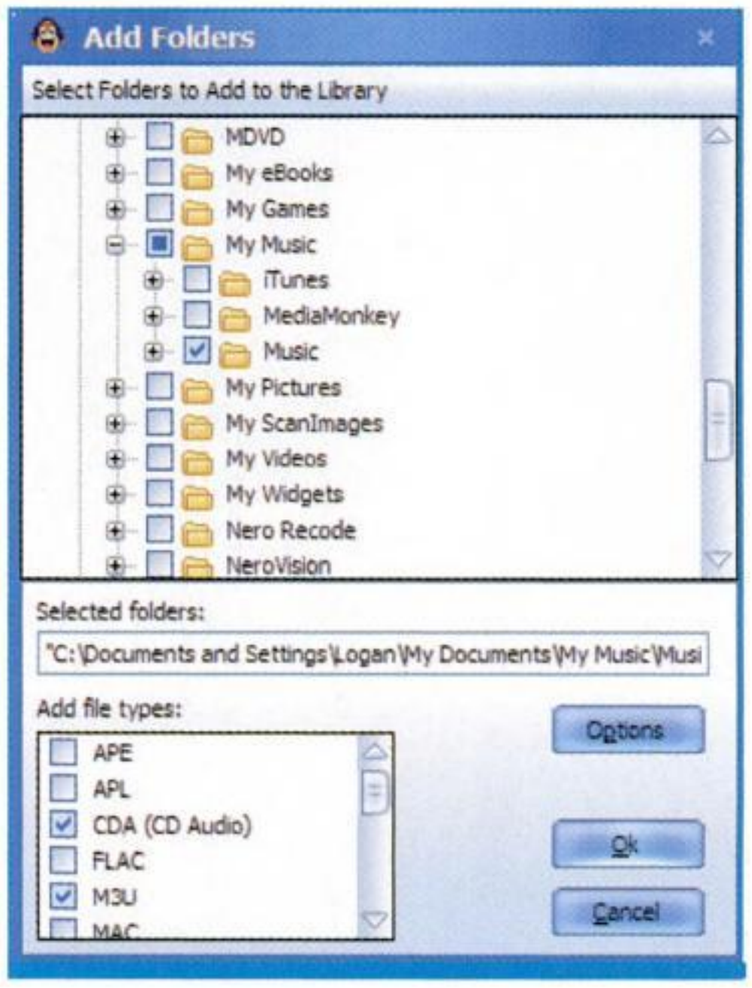
No matter what you do, there will always be orphaned tracks that might not have the artist's name in the filename, or worse, might just be called "Track 9." In technical terms, this is known as "life." Maybe you ripped a single track from your CD and didn't tag it. Maybe you downloaded these through a band's website that didn't have the savvy to tag the tracks properly (sadly common). Maybe it's something a friend gave you.

The proper approach would be to devote a day or two (or three) to listen to and properly tag these orphans. If you have more than 25 orphans, we all know this isn't going to happen. But you can consolidate them into one folder (I call mine "Singles"), and attack a handful of them whenever you have the time and inclination.

Yes, it's a drag. But remember, untagged tracks are going to be forgotten as our media players rely more and more on tags for searching and playlist creation. One positive side-effect of this distributed drudgery is that, in the future, you're more likely to tag tracks immediately after downloading them!



Give orphaned tracks a good home, your MP3 player will thank you for it.



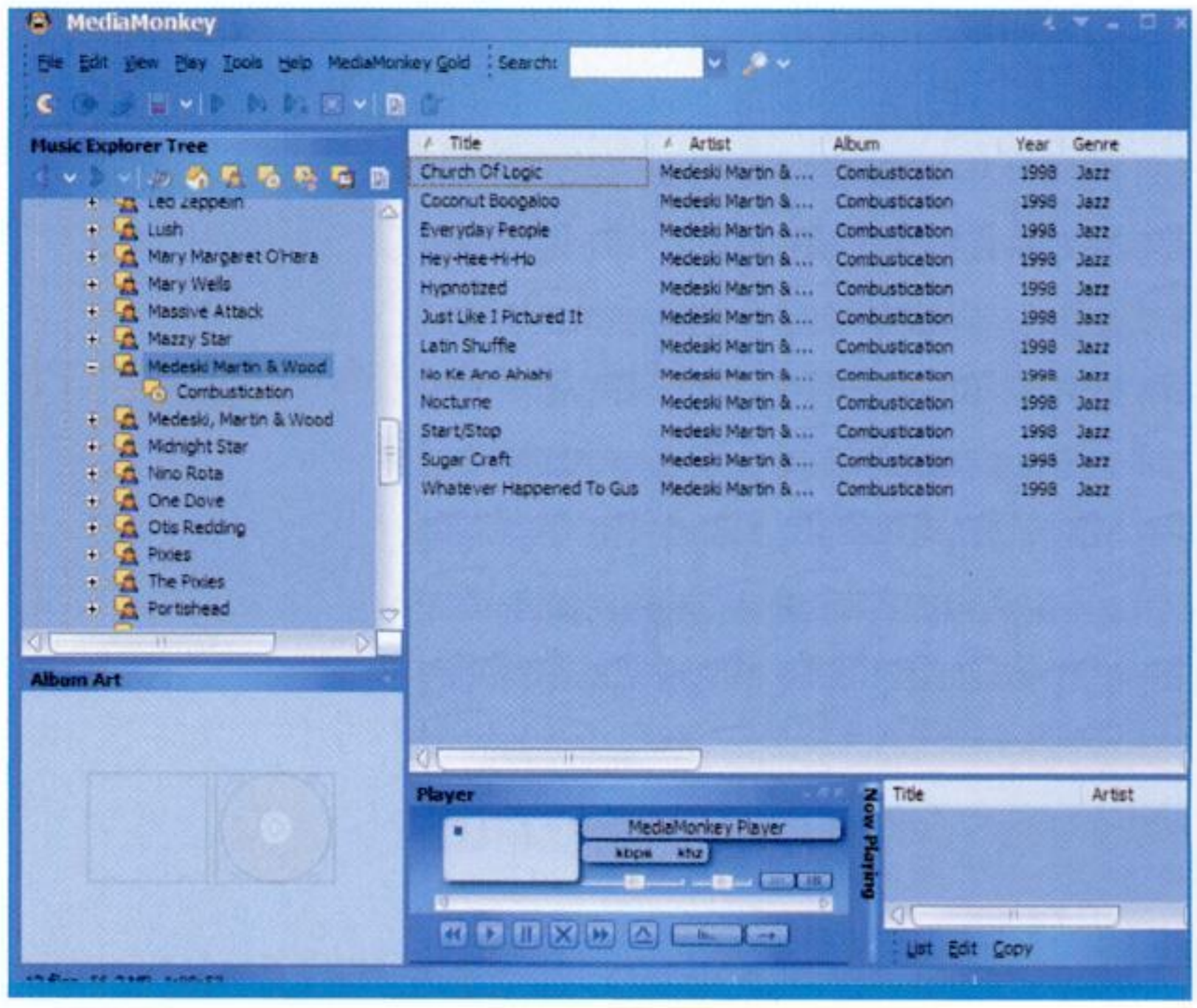
You can select any combination of directories for *MediaMonkey* to scour on its hunt for your audio files.

ton, you'll be offered a scary complement of them.

We recommend that you do not change anything at this stage. Close the Options screen if you opened it, and click on OK to initiate the scan.

Scanning will go faster than you think; it'll catalog a 10GB library of about 3,000 tracks in less than a minute, for instance. When it's finished, you'll be introduced to an extremely cool feature—*MediaMonkey* offers to import ratings and playback history data from *iTunes* and *Windows Media Player*. You may accept or decline.

OK, that's round one. Not so bad so far, eh?



The tags here could use a little fixing up, and some album art wouldn't hurt either.

Bag 'Em and Tag 'Em

Now that *MediaMonkey* has catalogued your tracks, it's time to start tagging. The bad news is that you'll have to tag each album one at a time. But as we mention in the "Let's Get Real" sidebar, doing a batch operation on your whole library will introduce errors that will be a colossal drag to find and fix.

How you want to approach this is up to you. You could, for instance, tag albums as you listen to them, or better yet, you could spend a little time each day going through your artists in alphabetical order and tagging each album. Here's how it's done in MediaMonkey.

Let's say you're tagging a

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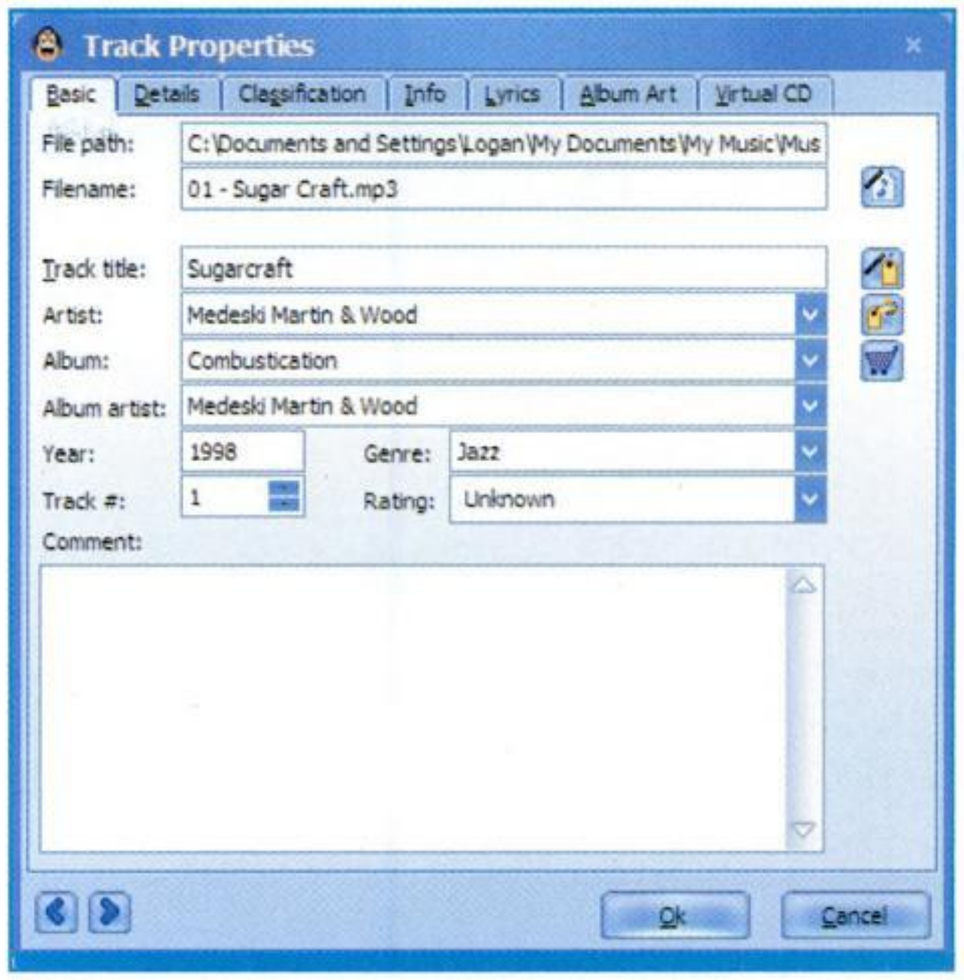
Not many formats support album art within the audio file itself, so avoid saving the album art in the track metadata.

record by Medeski, Martin & Wood called Combustication. What a coincidence—that's the one we're looking at here! Now let's make *MediaMonkey* do the bulk of the tagging for us. Click on the album so that its tracks are displayed in the right-hand pane. The tags as displayed in this pane don't seem to be in horrible shape, but the year tags are inconsistent (weird), and we're not buying that this is a hip-hop record. Pull down the Tools menu and click on "Auto-Tag from Amazon". That's right, *MediaMonkey* hits up Amazon.com not only for tag information, but album art as well! If the Auto-Tag menu item is grayed out, make sure that your record is highlighted dark blue in the left-hand pane and try again. If *MediaMonkey* made the correct match, you'll see the album listing from Amazon.com and the album art (you may have to select the proper title if multiple hits were received among similar titles). Now click the Auto-Tag button at the bottom of the window.

MediaMonkey will ask you where you want to save the album art. You have the option to save it within the track metadata, which sounds awfully convenient. Unfortunately, few compressed audio formats support this feature, so it's rather pointless. We recommend saving the album art in the album directory (as shown), but you can also choose to save all your album art in a single directory.

Amazon.com's database corrected the year in our tags, but left the genre as hip-hop, and one of the track name's has a typo. To fix a problem with a single track, right-click on the track and select Properties. Now, right-click and select Properties from the pop-up menu, and you'll see the screen above. Note that Amazon.com lists the track title as one word, Sugarcraft. Wrong—it's two words, doofuses! Simply click in the track title area to edit this property and click on OK. Don't bother changing the genre; we're going to change the genre for all the tracks at once. To do this, click on the first track, hold down the Ctrl key, and then click on the last one to select them all. Then follow the same procedure as above to change the genre.

Congratulations! You've just cleaned up your first record, a process you'll only have to go through once, and then only on those albums that lack proper tagging (which, if you ripped your albums from CD, should have been tagged automatically by your ripper anyway). Now, armed with this knowledge, tackle the rest of your collection—today, before things get more out of hand. You've been warned. MPC



Imported track data can be incorrect, so a little manual labor is bound to be necessary from time to time.



Nice, clean tags and album art—much better.

Let the Tags Be Your Guide

Here's a winning reason for audiophiles to maintain good ID3 tags. It may seem redundant, but we recommend that you rip each CD twice, once at 192Kbps for portable players, and again at 320Kbps for playback on a fancy-pants home-stereo system with higher fidelity.

It doesn't matter how you name the tracks; you can name the lo-fi track Boo.mp3 and the hi-fi track Boo2.mp3 or Boo Hiband.mp3. Remember, the file names don't really matter. A properly tagged album will allow you use your media player to create a playlist from an album or several albums with tracks whose tags indicate their bitrate is 320Kbps, or whatever you specify.

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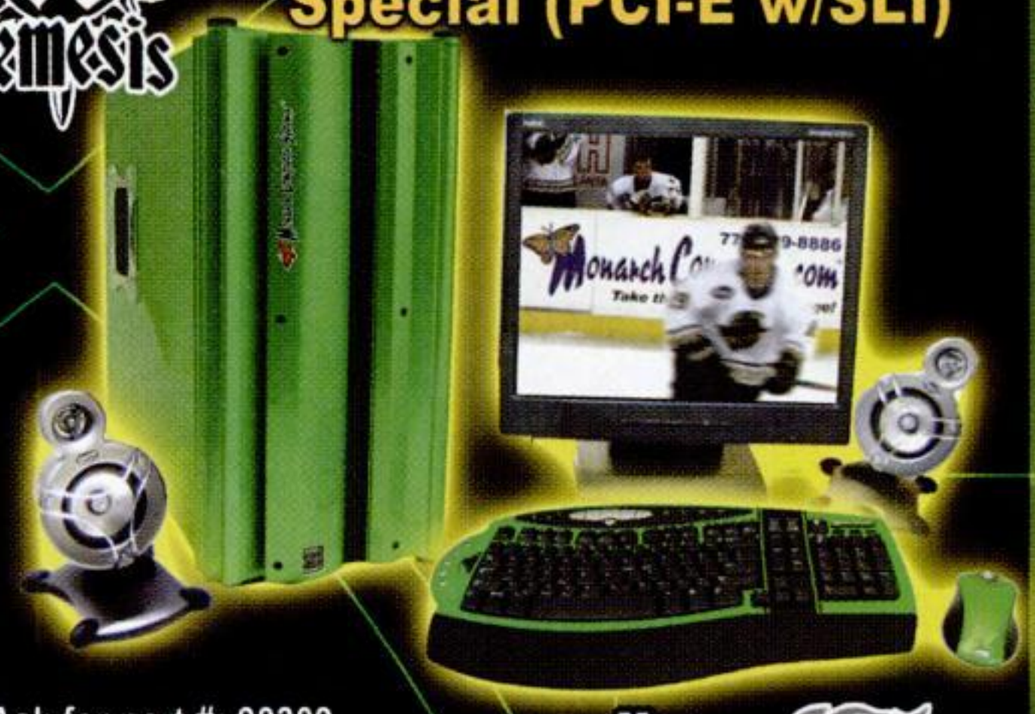
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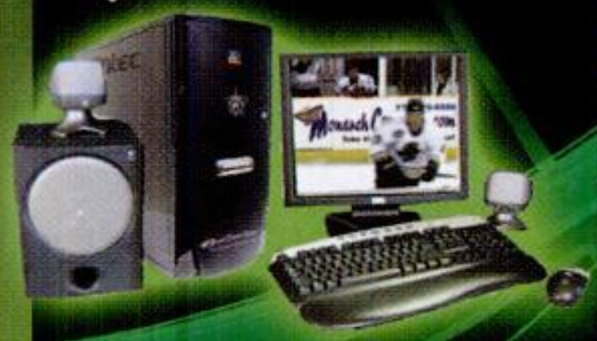
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DIRECTOR'S CUT

How-to pick the perfect DV-cam, and shoot and edit better video

SOMETIMES WE GET TOO ATTACHED TO OUR TECHNOLOGY; BUT WHEN IT COMES to our DVDs, we feel justified. A DVD isn't just seven cents' worth of cheap plastic that's been burned in by a laser. These shiny little discs hold our memories and histories. They are a part of us.

You have your own stories to tell and DVDs to build. In the following pages you'll learn which equipment to buy and what to look for in a camcorder. We'll show you important tips for shooting great-looking video. And, we'll help you select the best video-editing suite to put it on the living room big-screen.

BY MPC STAFF

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3 STEPS TO GREAT VIDEO

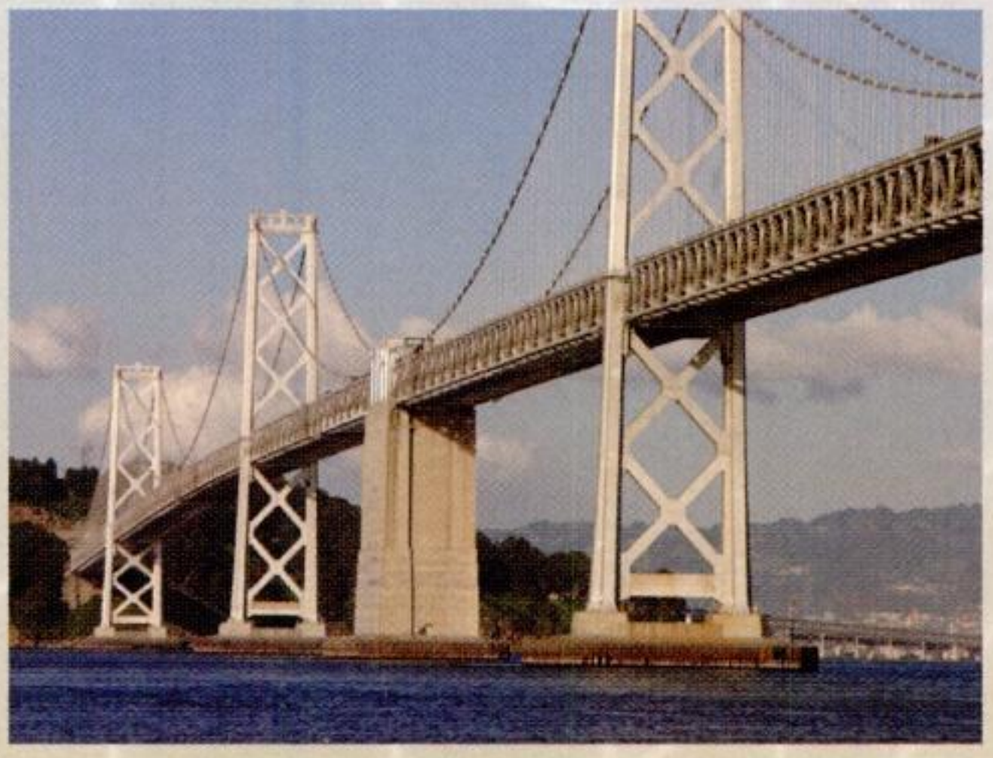


1 Equip

It takes more than a video camera to make great videos. But of course, a camera is a good place to start. The most common video format is Mini DV, and we'll show you what to look for in a DV camera. Do you need digital zoom, a big LCD screen, or other fancy features? We'll help you decide. After finding the perfect camera, add other basic pieces of field equipment, like a tripod, a microphone, and headphones. Now you're ready to shoot.

2 Shoot

Get out there and record some footage. We'll explain basic planning techniques for spontaneous events, like birthdays and graduations, and we'll also cover ways to plan your scripted, Sundance submission. If you're shooting on location—anywhere outside of your house (or studio)—paying attention to lighting, sound, and shot composition will pay off when it's time to edit. Shooting with a DV camera is similar to still cameras, but we'll show you how to use camera movements to give your footage a clean, professional appearance. You'll also learn how long to hold each shot, what footage is essential, and other tips.





3 Edit

Once the footage is "in the can," you'll need to transfer it to your PC and start editing. We look at several of the most popular video-editing suites on the market.

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EQUIP YOURSELF

When choosing a video camera, or deciding if the one you have now will work, think about what format it uses. Just as VHS and BetaMax faced-off in home-VCR format wars back in the 1980s, today there are several types of tape—and some tapeless—ways to shoot. The most common digital options include Mini DV, Micro DV, Digital8, and cameras that burn MPEG-4 or MPEG-2 directly to a DVD. The most common analog options include Hi8 and VHS-C. There are even some cameras that record directly to Secure Digital memory cards, but that format is far from acceptable for pro-quality video.

If you already have an analog video camera, you'll still be able to use it. But you'll need to digitize its footage by copying it to your computer. If you're upgrading to a new camera or don't own one, you'll definitely want to buy one that uses a digital format.

The digital tape formats are similar in quality and cost, but we heartily recommend Mini DV because it is the most widely supported format. (It's ubiquitous enough that most people just call it "DV," which we will do in this article.) Other types of digital tape may work depending on the software you use, but in general they offer no significant advantage. Video cameras that burn footage to discs (or store clips on flash memory) are also less supported than DV—and, in our experience, they tend not to work as advertised.



The current standard in digital video, Mini DV uses ordinary-looking tapes to capture the action.

There are dozens of good DV cameras on the market, so you should have no trouble finding one that meets your needs—and your budget. Make sure to get one with headphone and microphone jacks. Look for an optical zoom rating of at least 15X; you'll rarely use your digital zoom because it severely degrades the image quality of your



New storage options such as flash, SD card, optical, and hard drive have translated into smaller camera form factors.

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footage. Choose a camera with an image stabilizer to smooth out some of the small shakes in handheld shots. We prefer optical stabilizers to digital, because the digital version can also reduce video quality. Most models come with eyepiece viewfinders and LCD monitors, and we prefer LCDs of at least 2.5-inches. We like the option of switching between the two depending on shooting conditions. Finally, a night-shooting mode may save you in dark areas.

You'll find a wide range of video cameras with these options, but if your budget allows, try to get one with a progressive-scan CCD (charge-coupled device). The CCD works as the light-sensing chip to record images. Video is normally recorded in an alternating pattern, like window blinds, with half of the lines recorded at one time—like even lines, then odd ones. This every-other-line pattern flicks back and forth sixty times a second to produce a total of thirty frames each second. The progressive-scan CCD captures the entire frame at once, thirty times each second, for a slightly cleaner picture overall. A progressive-scan image looks more "film-like" and is especially better when used in freeze-frame or slow-motion effects.

Your production equipment should include more than a good camera. Headphones are the most important—and often overlooked—addition. Find a pair of closed headphones that muffle external audio to better monitor the camera's microphone. Few things can ruin a good video quicker than unintelligible dialogue. To get even more control over your audio, add a microphone. Look for a boom mic that mounts directly on top of the camera, or get a hand-held mic, which you can position closer to your subjects. These microphones will pick up little to no sound from the camera's zoom motor, and the closer you can get a microphone to an audio source, the better it will sound. Finally, get a tripod, and use it as often as possible. Your camera's image stabilizer may be great, but nothing can guarantee stable footage like a tripod. You'll easily notice a difference versus hand-held shots.

Your computer will need editing software and the right ports to make movies. For this feature, we'll show you the basics of Pinnacle Studio Plus ($100; **www.pinnaclesys.com**), but other options such as Adobe Premiere Elements ($100; **www.adobe.com**) could work. The DV video camera also needs a FireWire port (also know as iLink and IEEE 1394). You'll use a four-pin to six-pin FireWire cable to transfer standard DV footage to your PC. If you have a free PCI slot and no FireWire port, add a card like the Pyro BasicDV from ADS Tech ($59; **www.adstech.com**).



Camcorders may use a variety of media, but the controls are essentially the same for most of them.

WHAT YOU'LL NEED

- **DV VIDEO CAMERA, $350 TO $1,000**
- **CLOSED-STYLE HEADPHONES, $20 TO $100**
- **MICROPHONE, $50 TO $150**
- **TRIPOD, $30 TO $150**
- **FIREWIRE PCI CARD, $30 TO $60**
- **VIDEO EDITING SOFTWARE, $69 TO $150**
  (See our reviews on page 40.)

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DV-CAM BUYERS GUIDE

THE FIVE MOST IMPORTANT FEATURES

1 TAPE-BASED MEDIA

Going digital doesn't necessarily mean ridding yourself of tape. In fact, the single most common DV-cam format, MiniDV, still relies on the stuff. Tape's drawbacks are numerous: Unlike all the other recording media we'll discuss, for example, tape is not a random-access medium. This makes it difficult to locate specific scenes without spending a lot of time fast-forwarding and rewinding. Copying a tape's contents to your PC's hard drive for editing is also a slow process. And no matter how many spare cassettes you carry, you'll always run out at the most inopportune moment.

On the upside, tape delivers the highest quality because the video undergoes the least amount of compression during capture. Perhaps contra-intuitively, tape offers the easiest method of importing video into a PC-based editing package. The cassettes are cost-effective, too: Expect to pay about $15 for a two-pack, with each capable of recording up to 60 minutes of material.

2 IMAGE SENSOR

A DV cam's image sensor—typically a charge-coupled device (CCD)—absorbs light entering the camera through its lens and converts it into electrical charges. The larger the CCD, the more sensitive it is to light and the more capable it is of capturing image detail. Most consumer models have a single CCD, while high-end cameras boast three (one each for red, green, and blue light). We recommend an image sensor that's at least 1/3-inch across for best performance. You want one that's capable of at least 690,000-pixel (effective) video resolution and 2 megapixels of still-image resolution.

Playing your videos back on a widescreen TV? Look for models that can record in either 4:3 or 16:9 aspect ratios. And because it's unlikely you'll always be shooting outdoors in bright light, look for a DV cam with a low minimum illumination requirement (a lux, or candlepower, rating in the one to three range). The lower the number, the better the camera will perform indoors and in low-light conditions.

3 OTHER RECORDING MEDIA

Some DV-cams record directly to 3-inch DVDs, which cost about $6 each for DVD-RAM or $8 a piece for DVD-R. You can record up to 30 minutes of video on either. DVD-RAM can be erased and reused as many as 100 times; but the discs are less universally compatible with DVD drives and players than DVD+R and DVD-R.

There are also new DV cams that record directly to internal hard disks. Because the cameras are entirely self-contained, you don't need to carry any extra tapes or accessories. A 30GB drive can hold about seven hours of DVD-quality video in MPEG-2 format. Of course, when the drive is full, you'll need to delete (or at least archive) material in order to record more.

Some DV-cams use Flash memory, which—unlike any of the previously discussed media—is nearly impervious to skipping. The downside is its extremely limited capacity. One gigabyte of flash memory is capable of recording just 22 minutes of high-quality video.

4 LENS QUALITY

Without a good lens, the best sensor in the world won't mean a darn. Digital zoom has improved considerably, but silicon is no substitute for quality optics: Camcorders in this price range should sport at least 10x optical zoom. Image stabilization is another important feature; here again, optical is better than electronic because the latter manipulates the image being recorded, which can result in visible aliasing in your final video.

Auto-focus technology has also improved by leaps and bounds, but some instances demand manual override, a feature that all too few DV cams sport.

5 PORTS AND CONNECTORS

FireWire (IEEE-1394) is the fastest means of transferring video to your PC; USB 2.0 is the next best thing. Better cameras support both. Models that can perform analog-to-digital conversion are handy: They can digitize video from a VCR or analog camcorder and transfer it to your PC in real time.

Most DV cams also function as digital still cameras, storing images to flash memory. Some models can print stills directly to a printer (with PictBridge being the most common cross-brand standard).

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Canon Optura 50

A little chunky, but packed with features

Canon's Optura 50 may look svelt, but it's actually a bit portly, weighing in at 1.26 pounds. And although those extra ounces translate into extra features, the Optura ultimately falls well short of Kick Ass territory.

The Optura 50's 10x optical zoom lens features optical, versus electronic, image stabilization, which is a big plus. Optical image stabilization manipulates a prism to steady the image being recorded, whereas the electronic method manipulates the image itself. The difference was notable in our tests. We also appreciated the Canon's true manual focus ring, which is mounted right where it belongs: on the lens.

Place the camera in Network mode and you can use Canon's *DV Messenger* software and a USB cable to control the camcorder using your PC—even over the Internet. Sweet! We also liked that the viewfinder not only extended out, but it also pivoted up, much like an old 4x5 film camera. We also appreciated the abundance of buttons and dials that allowed us to print still images, choose exposure modes, control the camera's tape-transport mechanism, and perform other common tasks—all without being forced to navigate a maze of menus.

Canon managed to squeeze in every I/O port you can think of, too, including FireWire, headphone, external mic, S-video, and A/V-out. Do you have a bunch of analog tapes in your closet? Plug your old camcorder or VCR into the Canon and it will digitize the material in real time and transfer it to your PC over FireWire.

This MiniDV camera delivered video quality superior to DVD-, flash memory-, and hard drive-based cameras we've tested recently. However, the Optura 50 just wasn't as faithful to the source as we would like when compared with some similarly priced MiniDV-cams, such as Sony's DCR-HC42. The only other flaw: During quiet passages, you can clearly hear the whirring motor driving the transport mechanism.

The Optura 50's features far outnumber its flaws, but those flaws weighed heavy on our final verdict.



Canon's Optura 50 MiniDV camcorder had more features than any camera in its class, including a superior optical image stabilizer and a viewfinder that pivots up as well as slides out.

SPECS

RECORDING MEDIA	MiniDV tape, SD memory card
LENS	F1.8 – 2.8; 10x optical zoom; manual focus ring; optical image stabilization
IMAGE SENSOR	1/3.4-inch CCD with 1.23 megapixels in movie mode; 2.0 megapixels in still-image mode
ASPECT RATIO	4:3 or 16:9
I/O PORTS	Multipurpose 1/8-inch jack (stereo headphone out, A/V out for TV), S-video out, 1/8-inc mic input, FireWire, USB 2.0
BATTERY LIFE	1:43 (hours:minutes)

CANON OPTURA 50 **8**

$700, www.canon.com

Sanyo Xacti C5

An ultra-compact, flash-memory camera that doesn't suck

Hybrid digital camera/video recorders have historically let us down. They tend to be slow performers that fulfill neither role well. We did, however, think that Sanyo was on to something with its original C1 hybrid, released in the U.S. by Fisher as the FVD-C1. The second-generation Xacti C5 proves our hunch was right.

The C1's video suffered from severe grain in anything approaching even moderate lighting, and overexposure was a problem in bright sunlight. The C5's video, however, captured at the same VGA resolution (640x480, 30fps), is dramatically improved in both conditions. (While better, noise is still an issue in low-light scenarios.) The C5 also sports wind-noise-reduction and digital image-stabilization technology, which help deliver a better video-viewing experience. A 1GB SD card holds 60 minutes of video shot at the highest resolution, which conveniently is about the length of one battery charge.

The boost in video performance comes courtesy of a new 5x optical zoom lens and 5.1-megapixel CCD. This combo also produces crisp, well-saturated stills—particularly outdoors. (Plus, the zoom is much quieter than with the C1, so you can use it more freely when shooting video.)

The C5 shouldn't be confused with a full-featured point-and-shoot camera, however: It doesn't offer a burst mode, for example, and shot-to-shot performance is a bit slow at two seconds (without flash). Plus, its flash range is extremely limited. The C5 boasts the ability to capture stills while shooting video, but using this "feature" results in noticeable pauses in your video when stills are shot at the highest resolution.

The Xacti sports a slimmer formfactor that makes the C1 look antiquated, and the bright, 2-inch LCD displays sharp video playback and is serviceable for composition—even in direct sunlight.

Like the C1, this camera talks to you, which is a little creepy, but the C5 is the best compact hybrid digital camera/video recorder we've tested yet.

—STEVE KLETT



We tested the C5 using a 1GB SanDisk Ultra II SD memory card with the image quality set at 5MP High in Program Auto mode, Preview off, and all other settings at default.

Sanyo's Xacti C5 is one hybrid camera/vidcam that lets you have your cake and eat it too.

SANYO XACTI C5 **8**

$700, www.sanyodigital.com

MOVIN' ON UP!

What you get when you step up to the prosumer market

Tim Jennison, who invented the Video Toaster for the Amiga personal computer way back in 1991, deserves the lion's share of the credit for creating the desktop video market. The relatively inexpensive Video Toaster made it possible for consumers to create videos that approached professional quality; hence, the term "prosumer." This, in turn, sparked demand for inexpensive video cameras capable of doing the same.

The top prosumer camcorders today are Panasonic's DVX100a and the newer DVX200, Sony's HDV FX1, and the camera we'll take a closer look at here: Canon's XL2 ($5,000, **www.canon.com**). One factor that sets the XL2 apart from these other high-end models is its interchangeable lenses: You can remove the XL2's 20x optical zoom lens and replace it with a 3x wide-angle lens, a 16x manual-focus lens, any of the lenses designed for the previous-generation XL1, or even—with an adapter—almost any of Canon's EF still-camera lenses. And where consumer DV cams have just one CCD, prosumer models like the XL2 have three: one each for processing red, green, and blue light (the XL2's are 1/3-inch and offer a native 16:9 aspect ratio. You can also switch them to shoot in 4:3 aspect ratio.)

The ability to capture digital video in progressive-scan mode is a feature found in only a handful of prosumer DV cams, including the XL2. Most camcorders record an interlaced signal in which half of the information in a video frame is scanned each 1/60th of a second to create one field. The odd and even scan lines in two adjacent fields are then interlaced to create one coherent frame of video. The XL2 can shoot in this mode, but it's also capable of recording video at either 30 frames per second progressive-scan mode (30P), in which all the information in each video frame is captured at once, or even in a softer 24P mode to produce video that looks remarkably film-like.

It's hard to believe how good prosumer video gear has become. In recent years, films shot with digital camcorders like this have taken awards at the Sundance Film Festival and the Academy Awards. All it takes is a little bit of cash and a whole lot of talent.



Notice where Canon placed the XL2's boom mic: It's up and far away from the tape-transport mechanism, so motor noise doesn't bleed into the tape. You can also replace this mic with another; the camera can supply phantom power, too. What's more, there are two XLR balanced mic inputs on the back of the camera, and you can record up to four independent audio tracks.

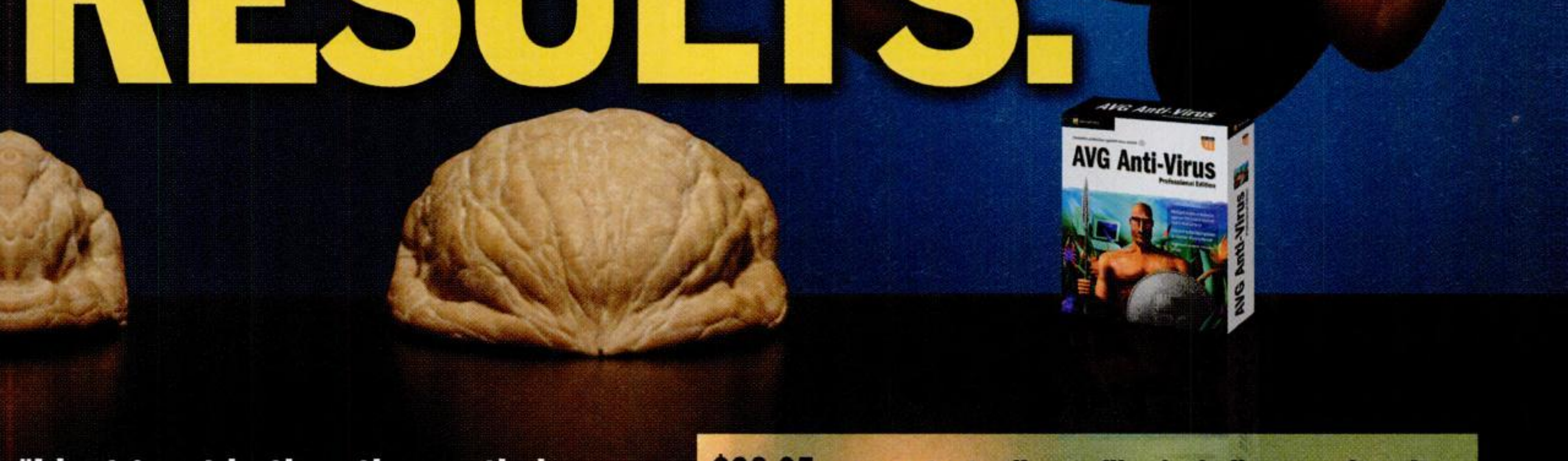
Prosumer cameras offer higher-quality lenses than consumer models. The Canon XL2's massive 20x optical zoom lens is coated with Flourite, to reduce lens flare, and features a highly effective optical image-stabilization system. But you can swap this lens for any of several other special-purposes lenses, or—with an adapter—any of Canon's EF-series still-camera lenses.

The viewfinder has a large rubber hood to block ambient light. Canon's decision to omit the flip-out LCD in the XL2's design is questionable, but you won't hear any criticism of the XL2's ability to record in your choice of 60 fields per second interlaced, 30 frames per second progressive scan, or a very film-like 24 fps progressive scan.

Not all prosumer cameras are as massive as the shoulder-carried Canon XL2, which tips the scales at 7.8 pounds when fully loaded. Sony's high-definition HDV-FX1 and Panasonic's DVX100a, for example, look very much like consumer DV cams.

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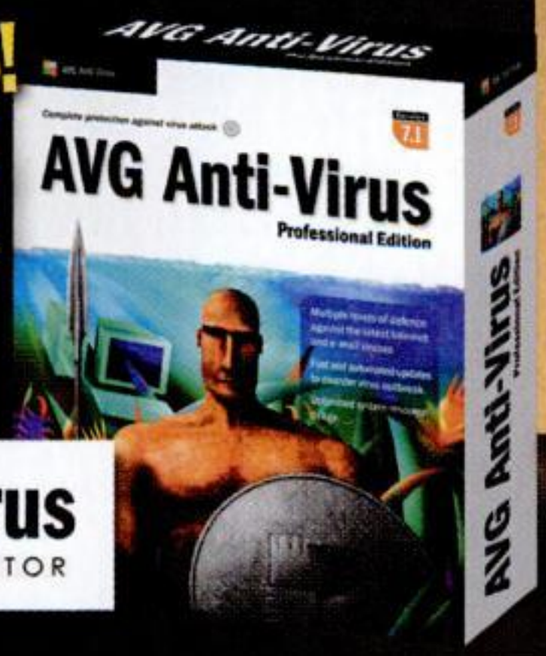
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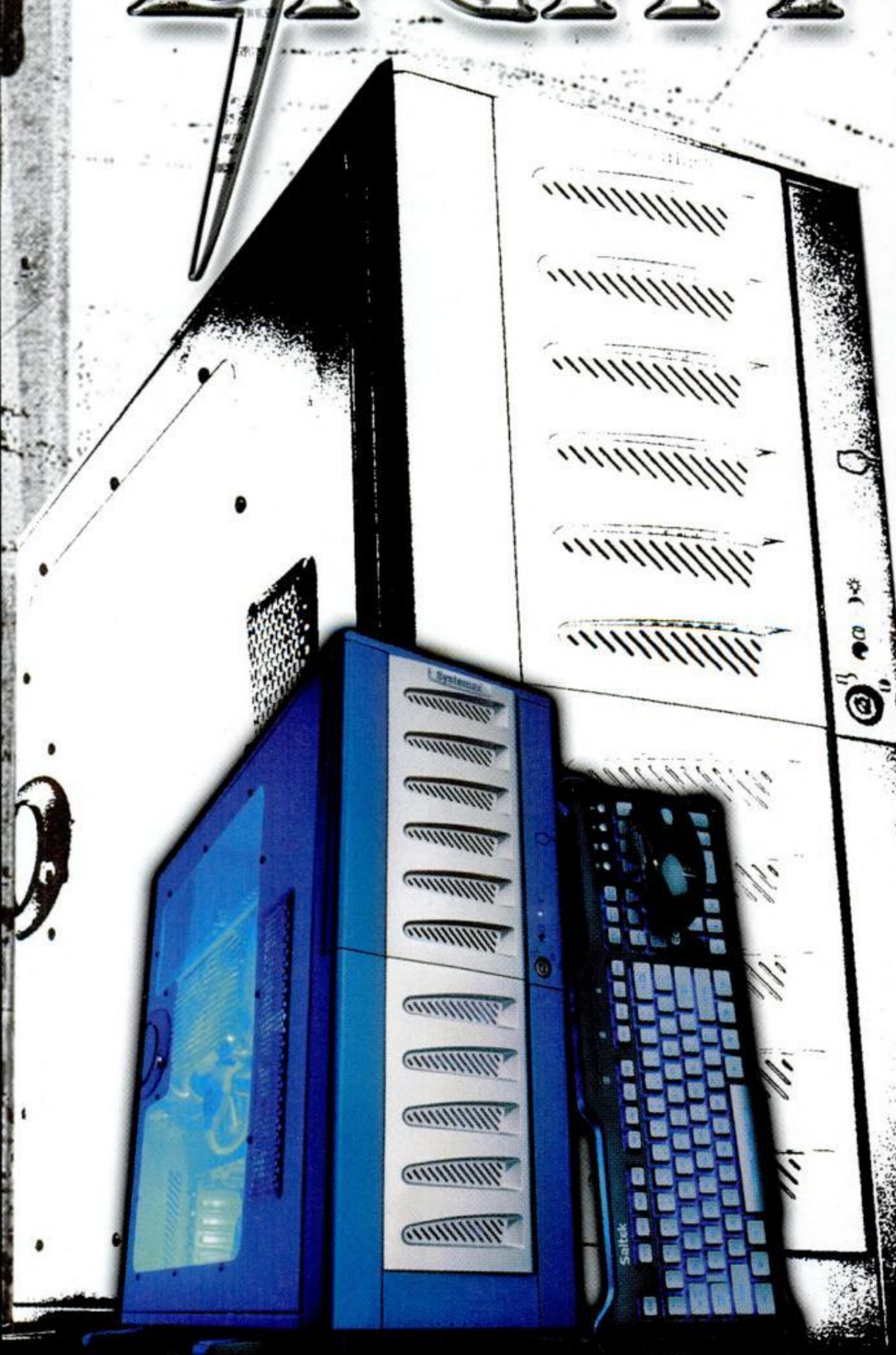
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LIKE A PRO

PLANNING

You might not think spontaneous videos, such as graduations and weddings, could benefit from planning. But before you even set up the camera and tripod, consider the key elements of the event: From where will your subjects be walking, what is the best spot to shoot them tossing mortarboards or bouquets, where will the sun be, and where will you be if it rains? The most important part of planning for an event-video is anticipating your best position for the key shots.

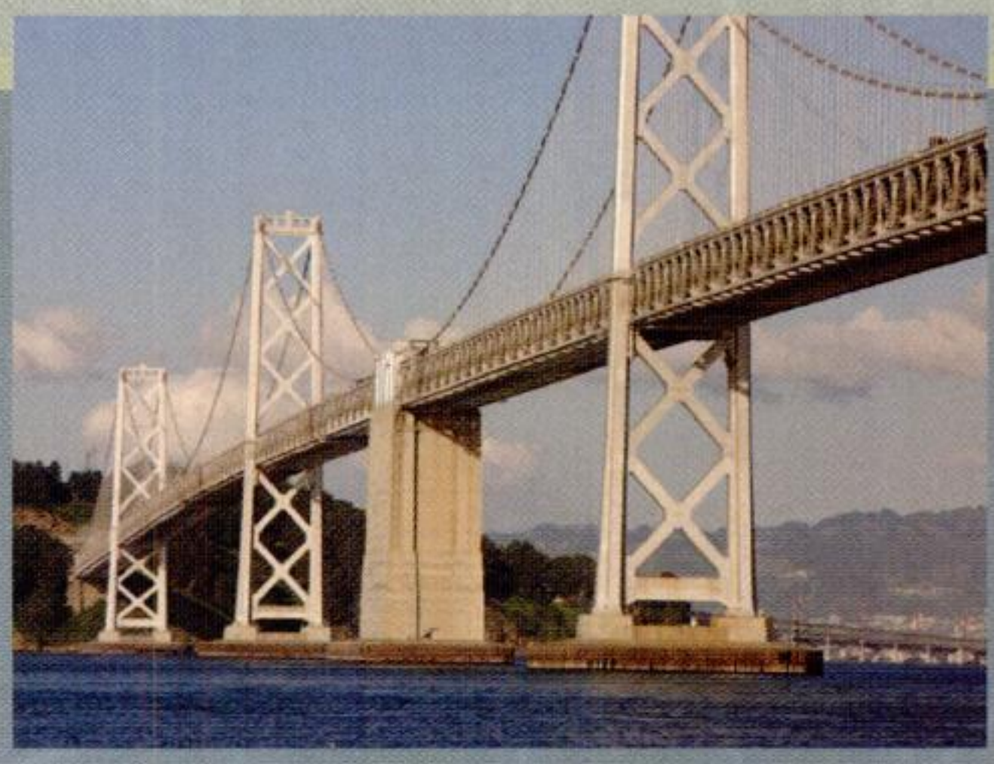
A scripted video, such as a family documentary or creative short, can benefit from even more planning. Because you'll imagine most (or all) of the shots before starting the video camera, take the time to write them down ahead of time. Make a list of the shots you need to record, and take it with you; cross them off as you progress. Keep track of these shots so you don't have any surprises when editing. Professionals even go so far as to draw storyboards—small thumbnail sketches—of the shots they want to capture, so they know in advance what the final product should look like. It's not essential, but if you have a little drawing ability it's well worth the effort.

COMPOSITION

Framing a video shot is similar to a still camera; Use the rule of thirds to keep images lively. Imagine horizontal and vertical divisions by thirds, and use these guides as interest points. Instead of putting your subject's eyes in the center of the frame, put them on the line for the top third. Or in a wider sunset shot, position the sun on the line for the left third.

When you're shooting moving subjects, try to keep them in the same relative position. Also, give them room in the direction they're moving. For example, if a boat is sailing to the right, place it on the line for the left third so that viewers can see what's just ahead. If you're shooting a static subject with a tripod, such as a person at a podium, don't try to adjust each time they lean left or right.

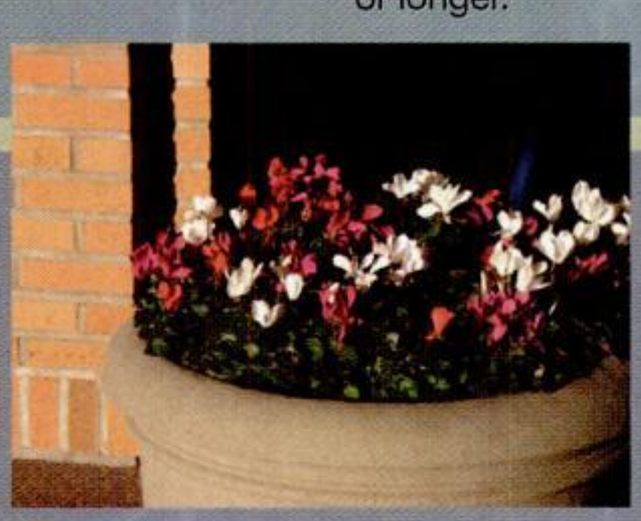
Watch out for objects that draw focus away from the subject. For example, put interview subjects in front of neutral backgrounds: an uncluttered desk, or a sheet of solid-color paper. Avoid clutter in general; if you can control what will be worn, ask that people choose simple, solid colors. Intricate patterns, stripes, and bright colors may have blurred edges that produce unwanted effects on camera. You don't want psychedelic patterns stealing the focus away from your subjects.



In this frame, the towers of the bridge demonstrate the rule of thirds, dividing the image in an appealing way.

A shot with little movement or zoom is going to be the most useful when editing. Use tilts and pans sparingly, and use the zoom to set up shots but rarely once you start recording. If zooming at all, do it as slowly as your camera allows; fast zooms are distracting. Hold each shot for about ten seconds or longer.







Zoom judiciously. While close-up shots can add interest to your video, avoid zooming in while the tape is rolling.

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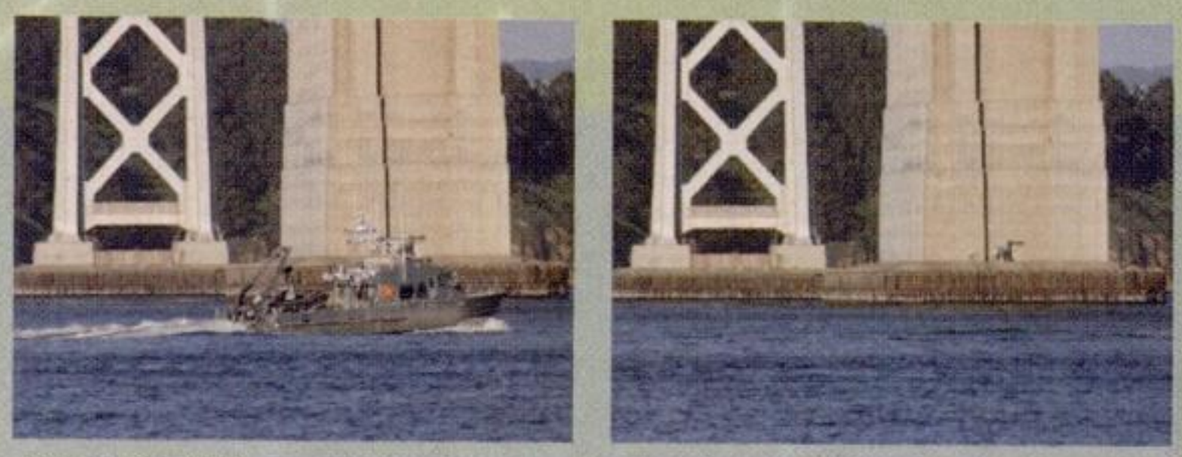
DIRECTOR'S CUT

SHOOT LIKE A PRO

JUMP CUTS

The best way to avoid jump cuts—the jarring effect of two mismatched shots—is to be mindful when shooting. Most jump cuts are caused by two adjacent shots in which the subject remains the same, but both the zoom and shooting angle aren't varied, such as an interview in which you cut out some of the unwanted footage, but the camera stays in the same position. The result is a subject that suddenly "jumps" across the screen. You may not be able to plan a smooth way to avoid this problem, but we'll explain ways to edit around it later. Jump cuts can also be caused by breaking the scene's imaginary plane in adjacent shots; if you're shooting a train traveling to the left, but move to the other side of the tracks and shoot it again moving to the right, this edit will cause confusion. Imagine a line adjacent to your view—in this case, it would be the track—and stay on one side of it while shooting.

Jump cuts can also be used for simple in-camera effects.



Jump Cut When editing two separate pieces of footage together, watch out for changes that will distract the audience. In this case, the boat in the first frame appears to have disappeared in the second.

One example you may have seen from Bewitched or many other places, is to lock the camera on a tripod for a shot, then alter the scene. For example, if a shot of a person standing in the frame is followed by one without them—if the camera stays in the same position and the background is the same—the result is a seamless disappearing act. But be warned. Audiences have been hip to these tricks for decades, and overusing them (or even using them at all) can look pretty cheesy.

AUDIO



Good audio production is one of the most critical components often overlooked by home videographers. Use your headphones to listen to what is being captured; if it sounds bad while shooting, it may be unusable when editing. For the best audio, get your microphone as close to a subject as possible. If you're shooting with a built-in mic or one mounted to the camera, lay off the zoom, and physically get closer. If you have an external mic, ask a friend to hold it off-camera but near the sound source. Or if your subject has to hold the mic, it may look awkward, but the improvement to your audio quality will make up for it.

Use your microphone to record a few minutes of background audio at your location. The pros do this with extra hardware, such as DAT (digital audio tape) recorders, but your DV camera will also do the trick. Just start recording the video without any particular framing. (Or write a note about the audio you're capturing, and tape that paper.) This sound should be free from any specific dialogue. We'll use this later to smooth over any audio gaps.

LIGHTING

To shoot the perfect video, you need lots of light to capture the action. When shooting outside without control of your light, simply be mindful of the existing light sources (such as the Sun, for instance) and try to keep them at your back. Ask your subjects to move if necessary to make them look their best. Watch out for bright objects, like a vending machine at night or a bright window in the day; your video camera will likely auto-adjust its exposure to compensate for the bright object, leaving the subject in the foreground dark and underexposed. Learn how to use your camera's manual exposure settings to correct this situation. (Sometimes the button is labeled "backlight.")

If you have full control over the setting—maybe you're shooting at home—try to get a few lamps together for simple three-point lighting. If the lights are too bright, try bouncing them off the ceiling or wall first. Place the primary light source in front of your subject to one side, a dimmer "fill" light on the opposite side, and the backlight behind. The backlight will illuminate hair and other translucent materials to give the shot depth.

MANUAL FOCUS

Your camera's auto-focus may be fantastic, but you will find situations where you have to take control, most often when shooting through glass or in low light. If the camera is rapidly scanning between focused and out-of-focus images—called "hunting"—hit its manual setting. Zoom all the way in on a subject; if shooting a group of people, aim at the center person's eyes. Use the eyepiece viewfinder instead of an LCD screen, and adjust the focus. Zoom back out and compose the shot.

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Camcorder & Computer Video MAGAZINE
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June 2005: "Top Pick", "incredibly powerful", "sophisticated features", "professional capabilities", "amazing program"
This award refers to the previous version MAGIX Movie Edit Pro 10.

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Adobe Photoshop Elements with Premiere Elements

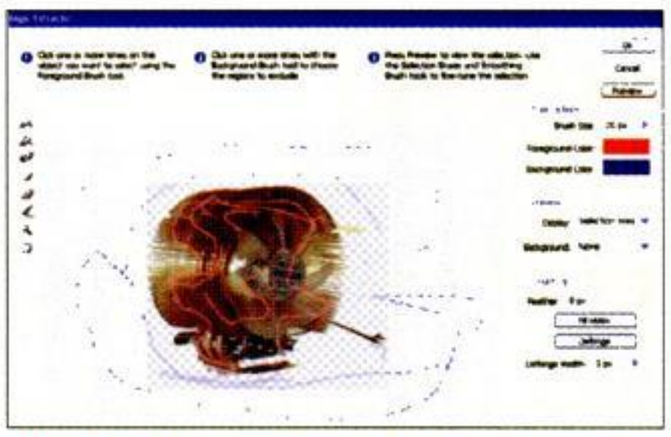
Front-row seats for cheap-seat prices

The newest update to *Photoshop Elements 4.0* is just a bunny hop forward from the previous iteration. Adobe really sweetens the deal, however, by bundling the home-user edition of *Photoshop* with the home-user version of *Premiere—Premiere Elements 2.0.*

Don't take that to mean that *Photoshop Elements* doesn't get any worthwhile new features; there are quite a few, including some that had even our designers' mouths watering. But the more noteworthy update is to *Premiere Elements.* While *Premiere Elements 1.0* was a decent 1.0 version, it was a rough product.

The most noticeable change to version 2.0 of *Premiere Elements* is the removal of the surfeit of palettes that Adobe normally buries you under. With *Premiere Elements 2.0,* as you grow or shrink particular palettes, the other palettes adjust accordingly. It's a nice touch that we'd like to see in other Adobe products.

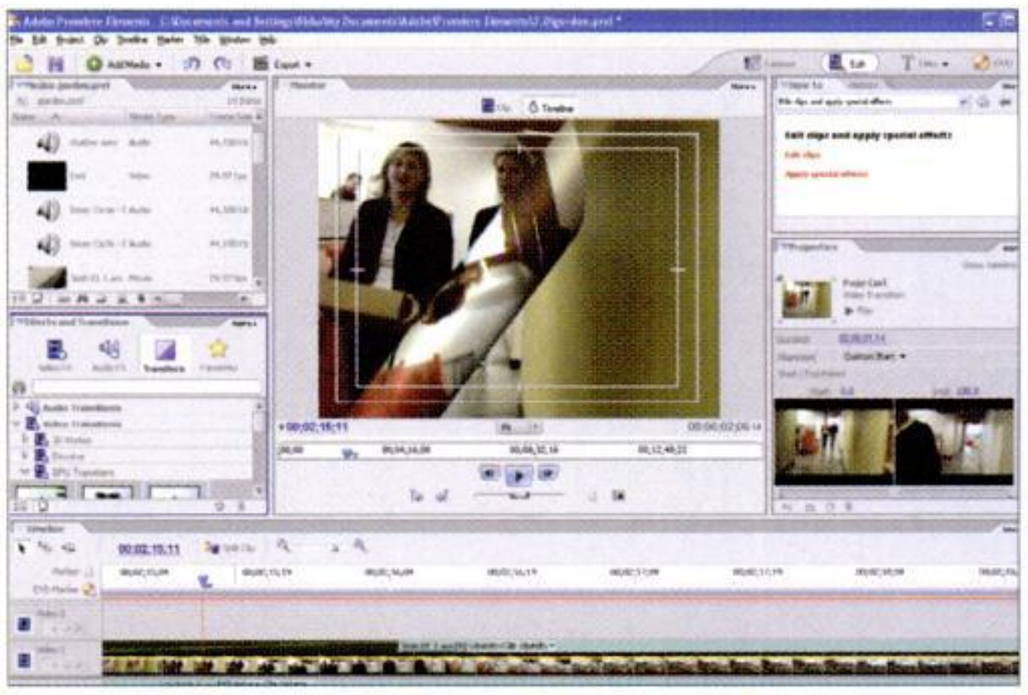
Premiere Elements 2.0 also now lets you create your own DVD menu templates. You can set your background video or image and customize text but, sadly, button editing is verboten, as are edits to the graphical overlays used for the templates.



With just a few clicks in *Photoshop Elements,* you can clip complicated objects from photos.

The templates themselves, however, are quite polished and exhibit none of the general cheesiness you find in competing products. The titling capability of the program is also enhanced and the stock of included Adobe fonts is pretty spectacular.

The real gem of *Premiere Elements 2.0* is its performance. Because it's based on Adobe's pro-level *Premiere Pro 1.5* engine, *Premiere Elements* sings—*just sings*—with today's hardware. If you're running a dual-processor or dual-core machine, *Premiere Elements'* multithreaded engine chews through video in a way that will make any hardware-head giggle with joy. Several of the video transactions are rendered on the GPU as well, for additional speed.



***Premiere Elements 2.0* uses the GPU to perform page curls, and it supports dual-core CPUs for maximum performance.**

Rev 2 also allows you to import video using High Speed USB with cameras that support the interface (FireWire is also supported), and the app can encode audio to the space-saving Dolby Digital 2.0 codec instead of using uncompressed PCM audio. Adobe also catches up to the competition by letting you import VOB files for editing. The VOBs must be unencrypted, though—so you won't be able to edit Sophia Copola out of *The Godfather III,* but you can re-import your movies once you've burned them to DVD.

With *Photoshop Elements,* Adobe mostly polishes the award-winning image-editing app. You still get a good taste of *Photoshop* without any of the pro-oriented pre-press stuff. The most notable changes are the skin-tone tool that lets you easily tweak skin tone in images, and the Magic Extractor. Every old *Photoshop*-hand knows what a daunting task it can be to clip images from photos; with the Magic Extractor, you easily separate your cat, kid, or car from the background. A similar tool called Magic Selection Brush lets you easily select objects. Both tools are far from perfect, but even if you think the Magic Lasso should be used exclusively by Wonder Woman, you'll be able to clip and edit like a *Photoshop* pro.

Where *Photoshop Elements 4.0* is lacking is in performance. Next to its multithreaded sibling, we found ourselves waiting an inordinate amount of time for Magic Extractor to complete. Admittedly our test clip is complex, but we were testing on a machine with four CPU cores and 4GB of RAM. Uninspiring performance doesn't outweigh the positives of the program, but after coming off a hardware high from *Premiere Elements 2.0,* the lack of any real multithreading was a bummer.



***Photoshop Elements 4.0* now includes a tweak dedicated to fixing skin tones.**

Purchased separately, the apps would total $200, but as a bundle you get both for $150. That might still seem like a lot, but between the pair, you'll be able to handle 95 percent of the image and movie chores you'll ever be tasked with.

—GORDON MAH UNG

ELEMENTS BUNDLE

+ 8MM

Dual-core and GPU support in *Premiere Elements.*

– VHS

Adobe Photo Downloader can be quite annoying.

$150, www.adobe.com

9

MAXIMUM PC KICKASS

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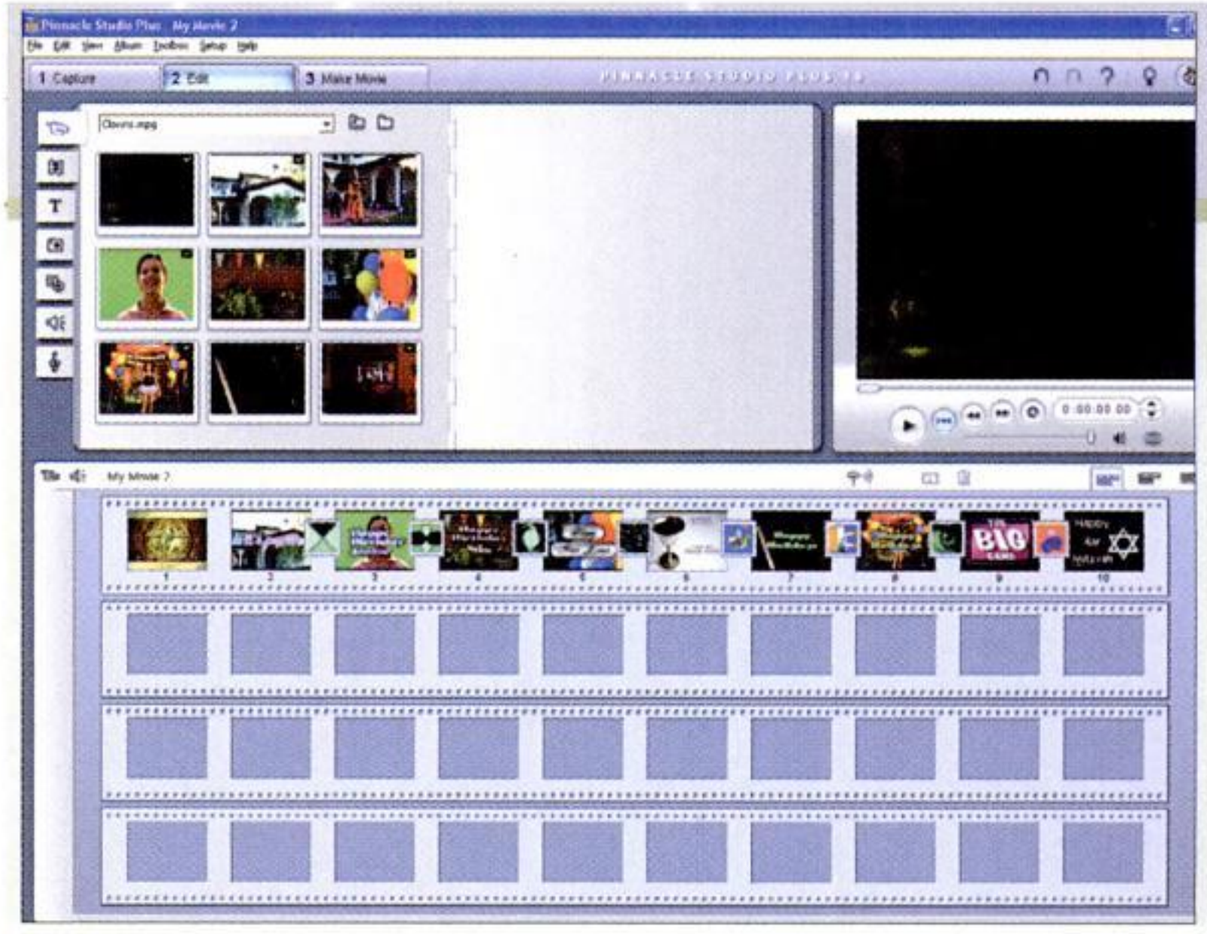
A Gun in a Knife Fight



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Pinnacle Systems Studio Plus 10

Now with 10 percent more bugs and crashes, apparently



***Studio 10's* storyboard review makes it a snap to add transitions in your home video.**

When it was released, *Pinnacle Systems Studio 9* gained a reputation as a roach motel: Bugs went in and they didn't come out. The bad word spread so fast and so furiously that the company wadded up the product, tossed it in a dumpster and started over again.

The result is *Studio Plus 10*. In a nutshell, the program features *Studio 9's* familiar and super-friendly interface bolted to an engine based on Pinnacle's professional *Liquid Edition* editor.

Unfortunately, somewhere along the way, things didn't gel. Despite putting reliability and bugs at the top of the priority list, Pinnacle's new *Studio* is less than optimal. OK, it was a buggy, horrible mess on not one, but two different machines. That's really unfortunate, because *Studio* sports some truly compelling features that make it a far friendlier video editor than its direct competitor: Adobe's *Premiere Elements 2.0*, which we reviewed in March.

Our first problem surfaced during the install on a dual-Opteron machine. The app took an inordinate amount of time to install, giving us an error message during the process, yet somehow the install completed anyway. We successfully captured 10 minutes of video from a DV cam, but after a few minutes of editing, the program crashed to the desktop. Mind you, that's *with* the latest update for the program installed. Indeed, the program crashed on us enough times that we gave up and moved to a second machine. Our second PC was an Athlon 64 FX-60 with 2GB of RAM, an nForce4 X16 chipset, and SLI. The program successfully installed the first two discs, but the third gave us an error. Nice. We finally gave up on the third bonus disc completely.

Pinnacle said the installation problem is a "known issue" that will soon be fixed with a new patch. The company also said it's working on a patch to specifically address "issues" with AMD machines.

If you can successfully install *Studio*, you'll find that it's quite welcoming to users of all stripes. If *Premiere Elements 2.0* is like an old college buddy, *Studio* is the little poodle that humps your leg when you come to visit—it's in your face and friendly from the start.

Newbies will feel right at home with the storyboard mode, which lets you perform a quick edit rather than tangling with the traditional timeline, although the program does support a timeline, if you prefer. And for users who don't want to actually edit their own videos, the SmartMovie mode will automatically turn your footage into a music video. It works in a pinch, but hardly counts as an actual project. It's analogous to a "write my sentence for me" button in *Word*, or an auto-crop mode for your images. Not everything about *Studio* is intuitive, however. We found DVD creation to be more straightforward with *Elements 2.0*.

We appreciate *Studio's* comparatively large assortment of transitions, but we find the program's pay-as-you-go scheme to be quite annoying. The program dangles pages of transitions in your face that you can't use unless you pay for them. You can disable the "premium" content ads, but it's a drag to be reminded that you need to pay more money for a product you already purchased. The program also includes more robust audio tools than *Premiere Elements 2.0*.

Studio boasts the ability to edit high-definition video, but we were unable to capture any video with our pro-level cam—a Sony HVR-Z1. It was probably an issue of how we configured the camera; after all, it's pretty unlikely someone will use an $80 program to edit video from a $5,000 camera.

Pinnacle says the latest version of *Studio* might be labeled 10, but it's really a totally new product. We believe it—this definitely feels like a 1.0 app! While we think Pinnacle is laying the foundation for a potentially great new editing application, it's pretty freaking far from that right now. That coupled with its Athlon stability issues make it impossible for us to recommend this program. (A patch is available now that may address many of these issues.) **—GORDON MAH UNG**



Nothing makes us madder than to pay for a program, which then tells us we need to pay more for more functionality.

PINNACLE SYSTEMS STUDIO PLUS 10

+ STUDIO 54
New engine and friendly interface.

− STUDIO APARTMENT
Crashes and has installation issues on Athlon 64 machines.

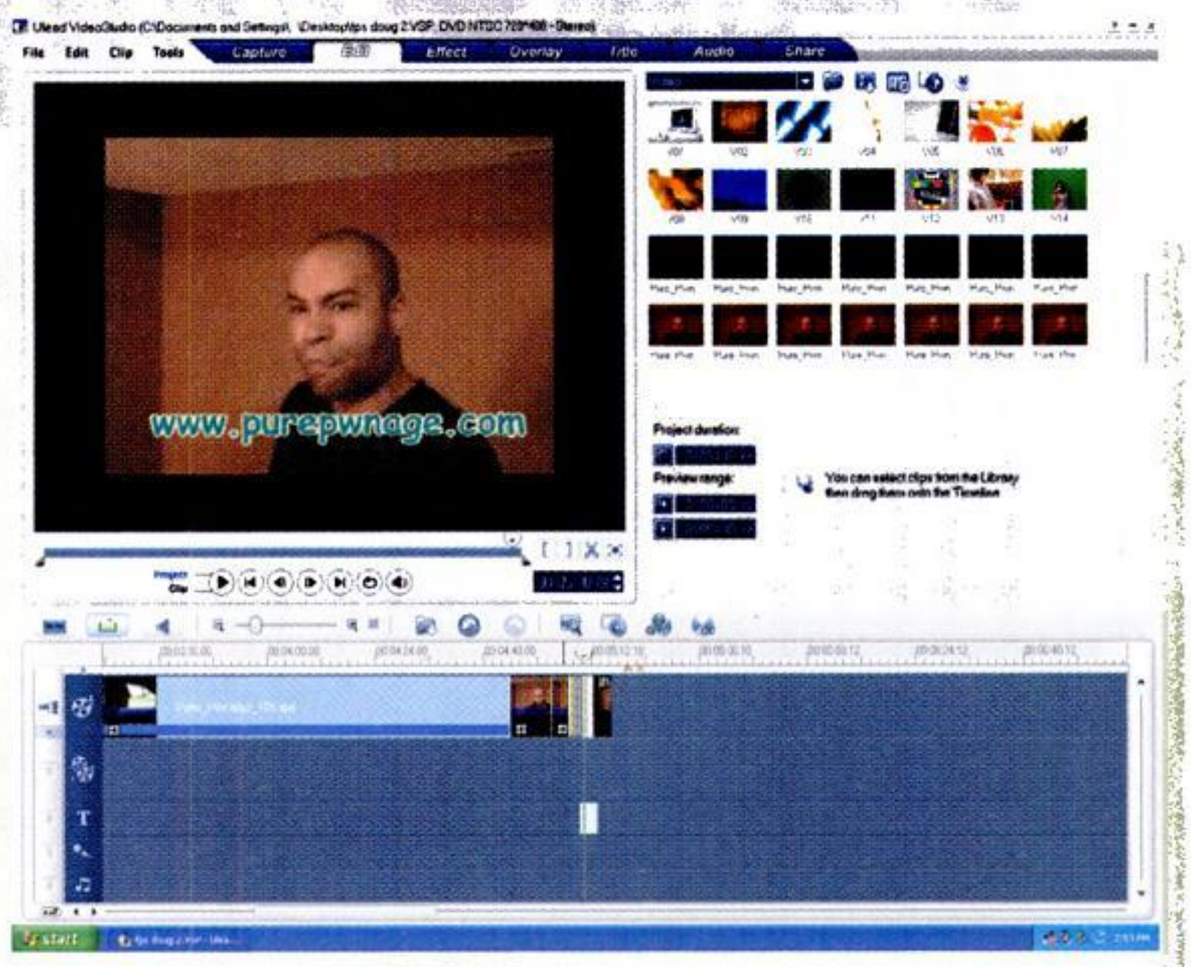
3

$80, www.pinnaclesys.com

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Ulead VideoStudio 10 Plus

The quick-and-dirty video editor



***VideoStudio 10 Plus* retains the series' familiar interface, while adding several key new features.**

We're taking the Three Bears' approach here. If *Premiere Elements 2.0* is too complex and Pinnacle's *Studio Plus 10* too buggy, Ulead's *VideoStudio 10 Plus* is probably just right for people who want the fastest route from DV-cam to the TV screen.

***VideoStudio 10 Plus's* new features include an anti-shake reduction filter to bring it up to par with its direct competitors; and support for HDV, multiple overlays, and MPEG4 and DivX output. And it includes a generous stable of powerful video effects—we particularly liked the duo-tone effect.**

For performance reasons, you won't be editing HDV content at native resolution. *VideoStudio10* uses a proxy video file to let you do your edits and transitions. When the project is output, it's supposedly at full resolution. However, we couldn't test the feature using an HDV MPEG2 file we captured with another application. We're not sure why, but it could just be a hitch with how we encoded the file.

One thing we are sure about though is performance. *VideoStudio 10* just didn't seem as responsive as the other three applications here. A very noticeable one or two second lag would occur before video playback would start or stop. However, our main complaint is in how poorly documented some controls are. For example, instead of including the keyboard command in a pop-up bubble when you hover over the soft button, you have to dig into the back of the manual to find the controls. We also don't like the fact that video playback stops when you change the scale on the timeline. When you're nose to CRT looking at a scene and want to zoom out of the timeline, you don't want everything to come to a screeching halt.

What this really comes down to is how many features you think you're going to want to use. *Movie Edit Pro 11* is roughly as easy to use as *VideoStudio 10*, but it adds a few more features. *VideoStudio10* is a good option for people who do not plan on getting down and dirty with their home movies.

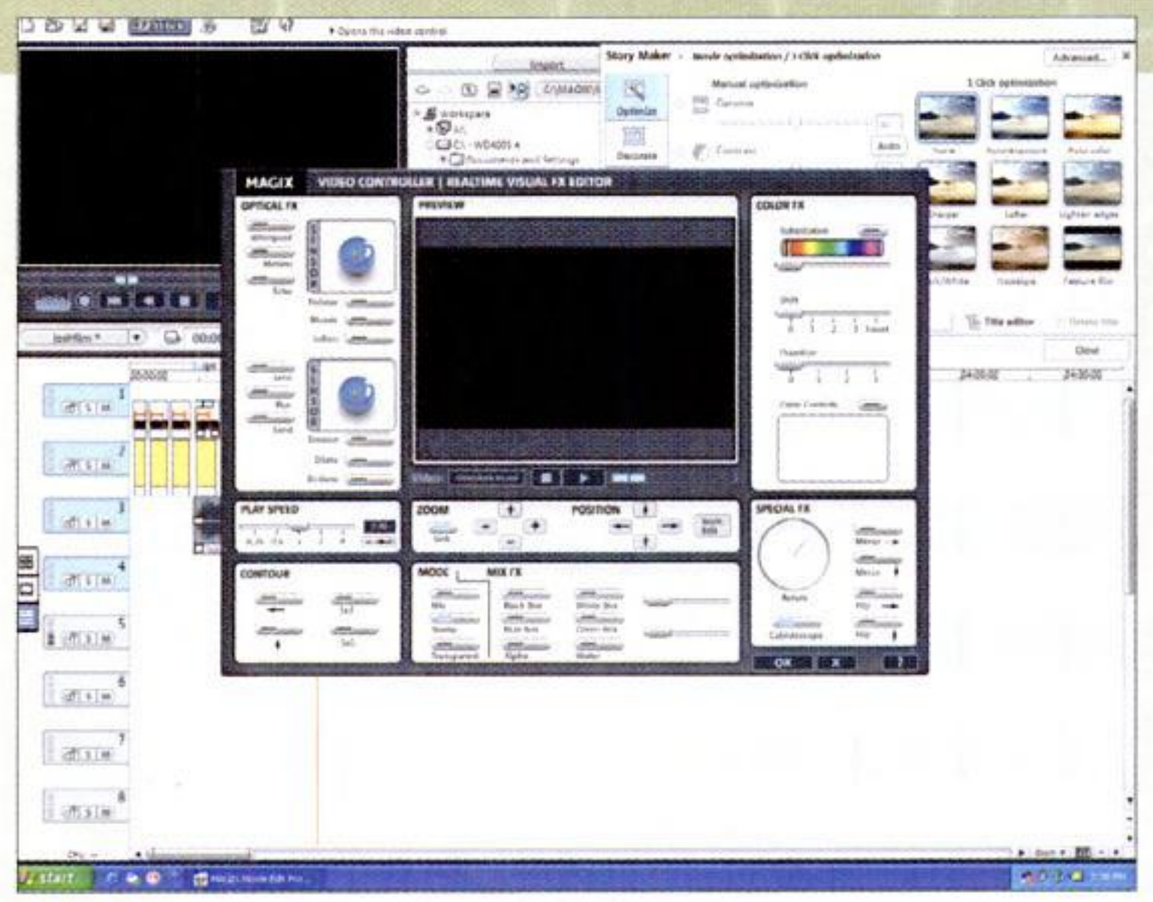
—GORDON MAH UNG

ULEAD VIDEOSTUDIO 10 PLUS **7**

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Magix Movie Edit Pro 11

Would you like a side of cheese with your video?



***Movie Edit Pro 11* has more than enough star wipes and other effects to keep even Homer Simpson happy.**

When watching home movies growing up, who didn't wish that Uncle Doug could have trimmed the boring sections from his reel and snazzed it up a bit with titles and effects.

Well, Uncle Doug, we've found your tool: *Magix Movie Edit Pro 11* is affordable, fairly powerful, and contains enough cheese-filled effects and transitions that we had to check the box to see if the developers were from Wisconsin. Our dairy favorite? The ability to overlay animated objects that look like leftovers from an episode of *Blind Date*.

OK, we're being a little hard on *Movie Edit Pro 11*. For a $60 program, you do get an awful lot of functionality, and not all of it is sharp cheddar. In fact, we'd rate some of the transitions and effects higher than those included with more upscale editing packages from Adobe and Pinnacle. The on-the-fly audio and easy to use color correction deliver functionality not present in other packages. Although Movie Edit Pro claims to support writing "HD discs," it's only in the poorly-supported WMV HD format, not true Blu-ray or HD-DVD formats.

Editing high-def camcorder footage was painfully slow on our Athlon 64 FX-60 system. Simply rearranging footage left the system noticeably pokey. The timeline editor obscured basic tasks such as splicing scenes and trimming footage. We didn't find the editing interface to be as intuitive as Pinnacle's or Adobe's consumer video editors. The title editor qualifies as bare-bones—without a wide color palette or font selection.

But the truth is that most people who use *Movie Edit Pro 11* will never shift into timeline mode. They'll just add the pre-fab transitions and effects, then click the burn button. For Uncle Doug, who just wants to add a Viking hat to a character or two, and maybe add some color and shake correction, *Magix Movie Edit Pro 11* offers more than enough power and is a hell of a deal too.

—GORDON MAH UNG

MAGIX MOVIE EDIT PRO **8**

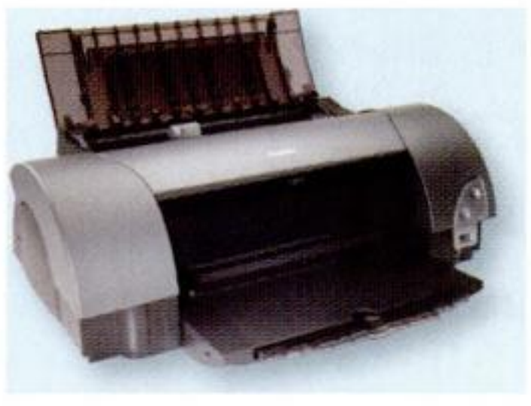
$60, www.magix.com

Shoot and **Score** Take better photos, fix the flaws, and get perfect prints



WHAT YOU'LL NEED

- Any digital camera with manual controls, such as the Nikon D50 on page 84.
- A computer with a USB port
- Image editing software such as Adobe *Photoshop Elements* ($100, **www.adobe.com**), *LView Pro* ($40, **www.lview.com**), or *Pixia* (free, **http://park18.wakwak.com/~pixia**)
- A color printer, such as the Canon i9900 pictured here



Whether you just got your first digital camera or you're looking to build on your picture-taking skills, you've come to the right place. Any bozo can take OK shots with most point-and-shoot digicams, but with a little extra know-how, your digital pictures can look incredible!

Sure, cameras have plenty of autopilot controls that'll do the dirty work for you, but they won't always give you the results you're after. You'll get better, more compelling pictures if you exercise some control over the exposure, shutter speed, and focus settings. To help you get the most out of your investment, we'll show you how to work your camera's controls to capture great images, fix problems and enhance details in an image editor, and optimize your pics for print.

BY KRIS **FONG**

Shoot better images

Before we can show you how to touch up your pics, you need to get familiar with how pictures are made. For a camera to create an *exposure*—an even balance of highlights and shadows—light from a subject enters the camera, exposes the image sensor, and becomes digitized. Your camera has two controls—the aperture and shutter—that can be automated or manually controlled to regulate the amount of light that enters the lens.

The aperture is a hole surrounded by thin blades that can be widened (to let in more light) or narrowed (to let in less light). It functions like your eye's iris and pupil. The shutter functions like a gate, controlling how long the image sensor is exposed—think of it as the eyelid.

Using the aperture

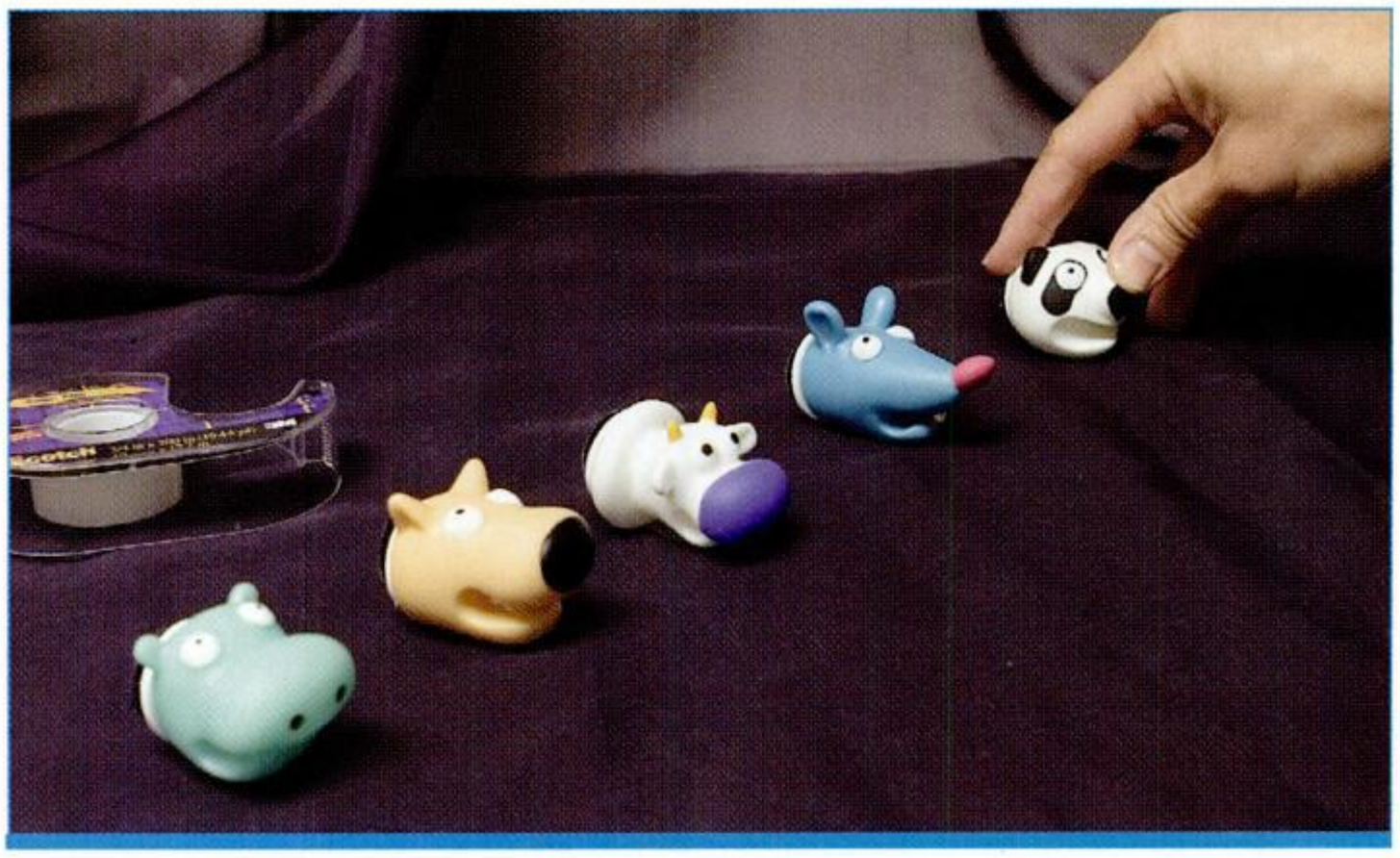
1 Consider Your Composition

Aperture size, measured in *f-stops* (the larger the number, the narrower the size) affects the focal range within an image, and can help you capture compelling portraits and still lifes.

A wide aperture (such as f-2.8) creates a narrow *depth of field*—the range in which all objects appear to be in sharp focus—to capture a sharply focused subject while blurring its foreground and background. A narrow aperture (such as f-16) creates a wider depth of field to capture a larger range of objects in sharp focus. Depth of field capabilities vary—SLRs generally offer a greater range than cameras with built-in lenses.

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One of the great things about a digital camera is it doesn't cost anything to experiment! To explore your camera's abilities, grab some small objects (like gummy bears or green army men) and place them in a 1- to 2-foot area on a well-lit tabletop, and try capturing your subjects using different settings. Be as creative, messy, or creatively messy as you want—it's your picture.



Place several objects at different distances from the camera, so you can see how your camera's aperture setting affects the depth of field.

2 Go Wide For Narrow Focus

To isolate one object from many, set a wide aperture. Objects that are some distance in front of and behind your focal point should appear slightly blurred—again, depending on the lens in your camera, your mileage may vary.

Set your camera to Aperture Priority (flip the dial to A or Av). In this mode, the camera automatically sets a compatible shutter speed for your aperture and subject. Get up close to your composition and angle the camera so you're capturing a range of objects in your frame. Then set your camera to its widest aperture (the smallest number available, such as f-2.4—view this in the viewfinder or LCD). Focus on one object in the center of your frame, press the shutter-release halfway to lock the focus and exposure, and then press down fully to take the picture. (We shot this at f-2.8.)

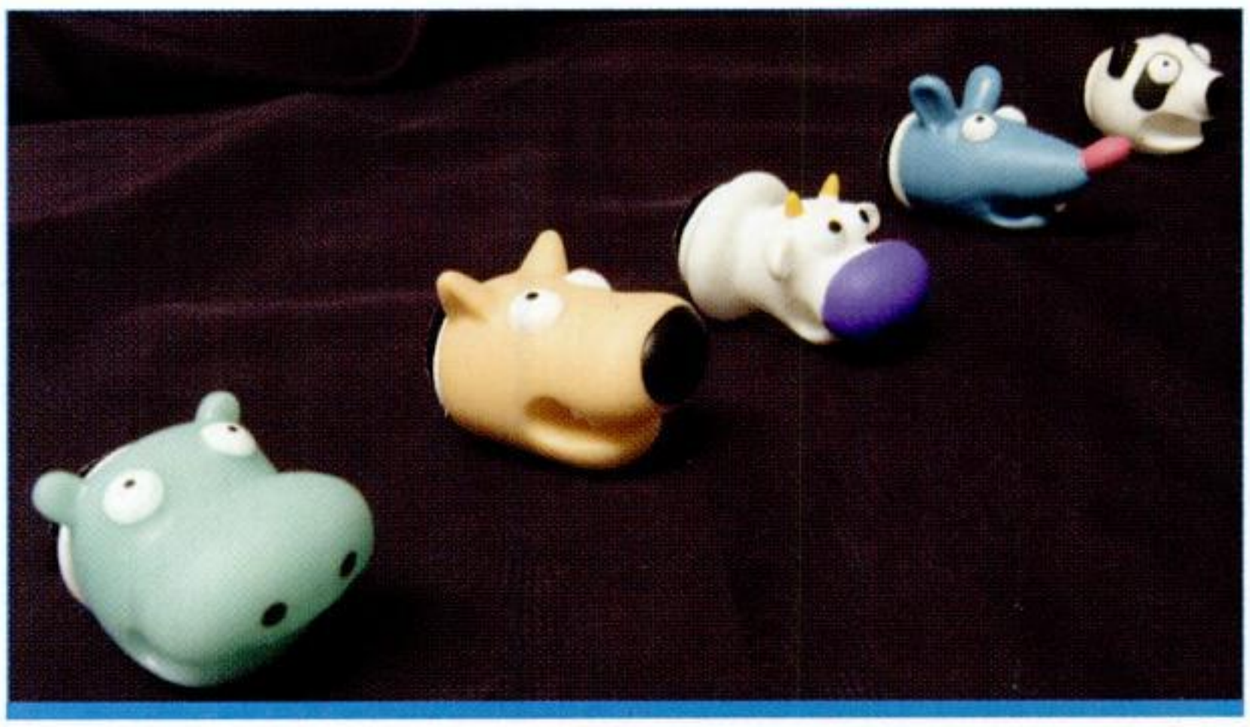


By opening your aperture all the way, you can create a very narrow depth of field, and focus in on a thin slice of a scene.

3 Go Narrow For Wide Focus

To create an image that shows all or most objects in sharp focus, use a narrow aperture. Frame your composition the same as in Step 2 and set your camera's aperture to f-8.0 or higher. Focus on the same center object, press the shutter-release halfway, and then press it fully. (We shot this at f-18.)

To see what changes in the depth of field look like, shoot at a variety of aperture sizes, making sure to frame the composition identically in each snap. When finished, download your pics to your PC and take a look at your images to see how your settings affected the range of focus. Then apply what you learned in your own portraits and still life images.



If you want a greater depth of field, close your aperture as much as possible.

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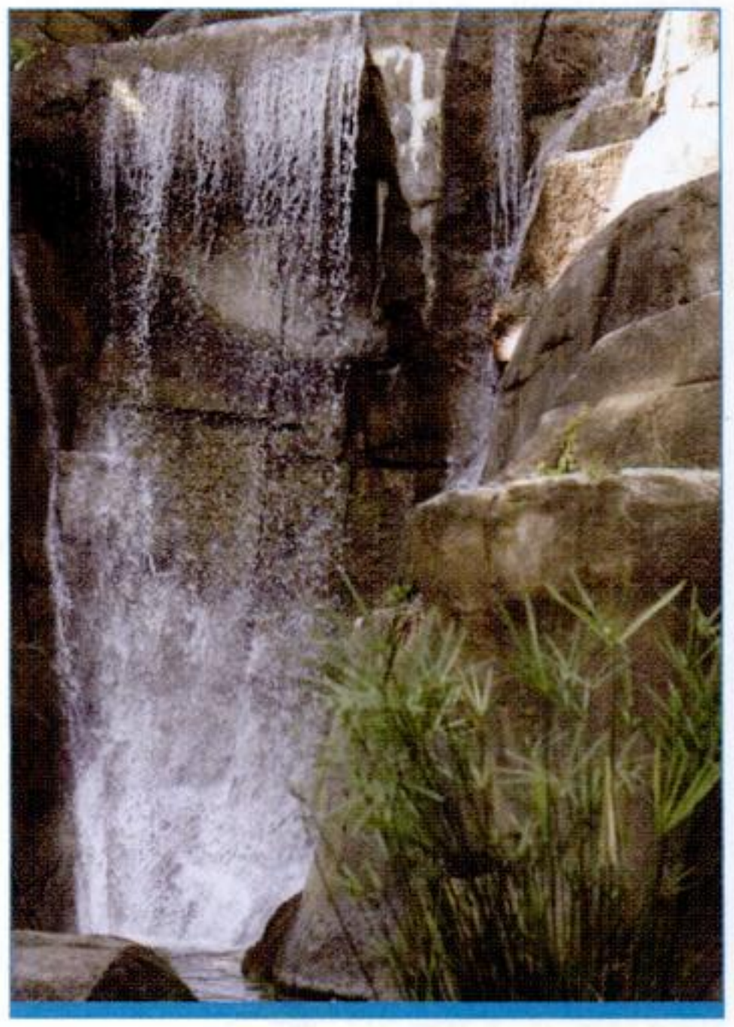


Using the shutter

1 Freeze Action

If you're shooting moving objects (like Junior riding his new bike), use Shutter Priority to freeze or capture motion. Remember that the shutter speed is the length of time the camera's sensor is exposed to the image you want to capture. Shutter speeds can range from thousandths of a second to many minutes. If you want to freeze action, such as a speeding race car or your pooch snagging a Frisbee mid-air, you must use a really fast shutter speed.

Find a place with moving objects, like a busy street, a basketball game, or a waterfall. Switch your camera to Shutter Priority (S or Tv)—your camera will automatically set a compatible aperture for your shutter speed and composition—and compose your shot. Set a fast enough shutter to freeze your subject's motion: If you're shooting cars, try 1/200 of a second; if you're shooting guys shooting hoops, try 1/125. Then shoot and review your image. If the subject's blurry, set a faster shutter. If the subject is frozen but the image is underexposed (dark), set a slower shutter that's fast enough to freeze the action. This 1/500-second shutter shot transformed the water flow into droplets.

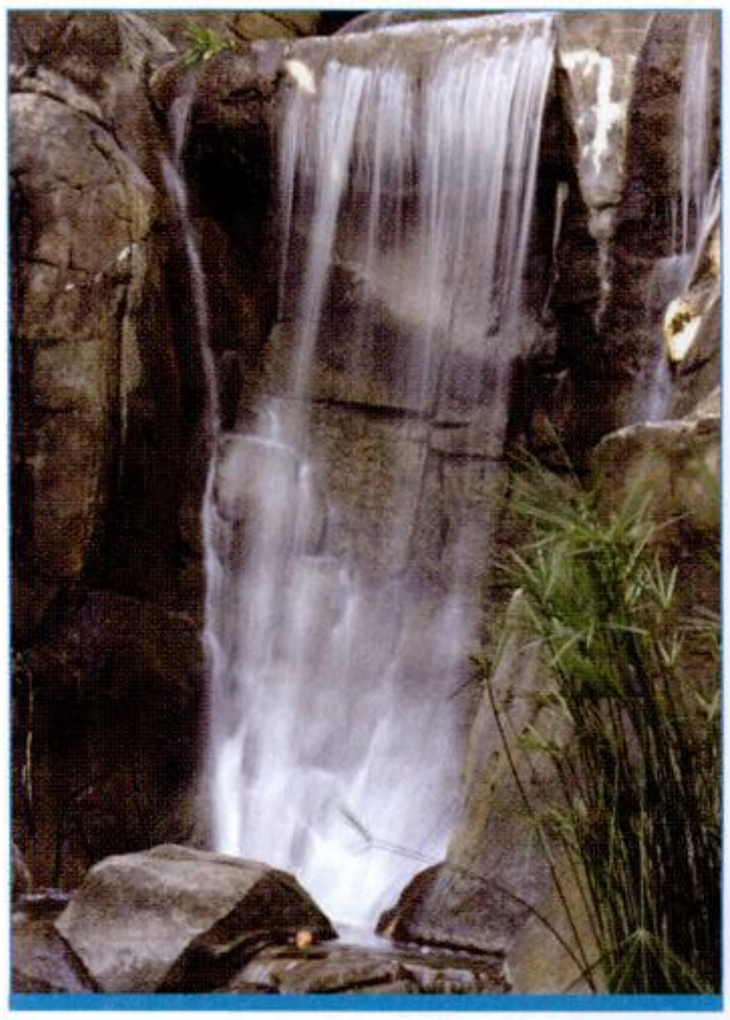


A fast shutter speed can freeze even the fastest moving object in flight.

2 Capture Motion

To add some creativity to objects on the move, use a slow shutter to capture motion. A slow shutter can capture the rush of falling water, the glowing trails of car headlights at night, or the dizziness of a merry-go-round. It'll also capture camera shake if you're handholding the camera, so use a tripod if you've got one (or cut back on the caffeine).

Find another moving subject (or chill with the one you froze above), compose your shot, and set a slow shutter for your object's movement. If you're shooting cars at night, try 1 second or longer; if you're shooting a merry-go-round, try 1/20 of a second. Then shoot and review. If you have too much movement, set a faster shutter. Not enough? Set something slower. We used a 4/10 of a second shutter to capture this.



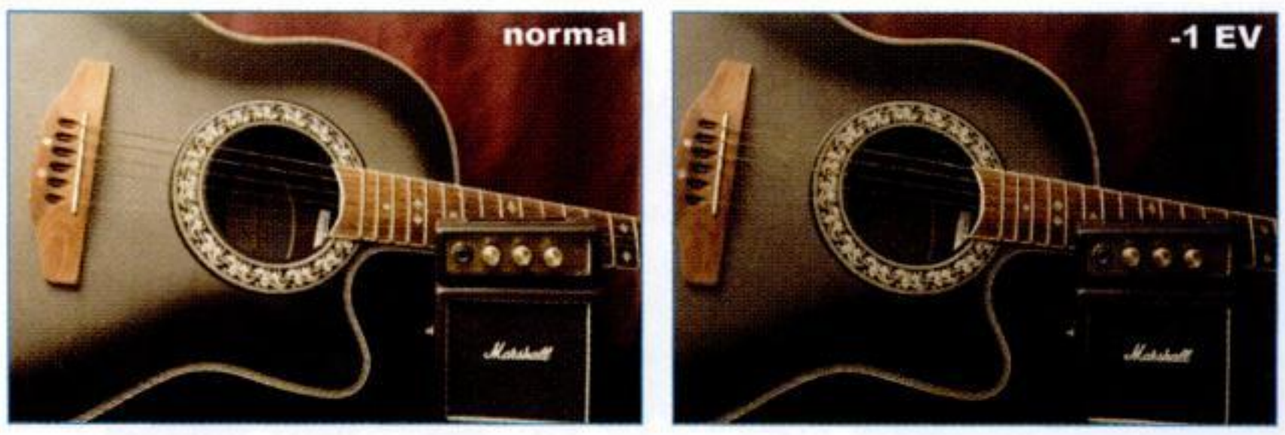
Using a low shutter speed lets you add motion blur to your shots. Anything slower than 1/60 can result in blurry images, especially if you don't use a tripod.

Getting the right exposure

1 Enlist Exposure Compensation

Sometimes your camera doesn't cut it. Your snowboarding shots came out dark, while your calla lily portrait was overexposed. It may be time to enlist the Exposure Compensation (the +/- button). This control lets you tell your camera you want a different exposure than what it's currently providing.

Most cameras have an exposure value (EV) range of -2 to +2, typically divided into 1/3-step increments (you should see a number in the viewfinder or on the LCD). Zero (0) means no compensation. If your pics are too dark, boost the EV number up a step or two, and take test shots until you get what you want. If your images are too light, lower the EV number a step or two until you're satisfied.



To compensate for an overexposed image—notice how the wood grain in the left image is blown out—we lowered the exposure a whole step.

Continued on page 48

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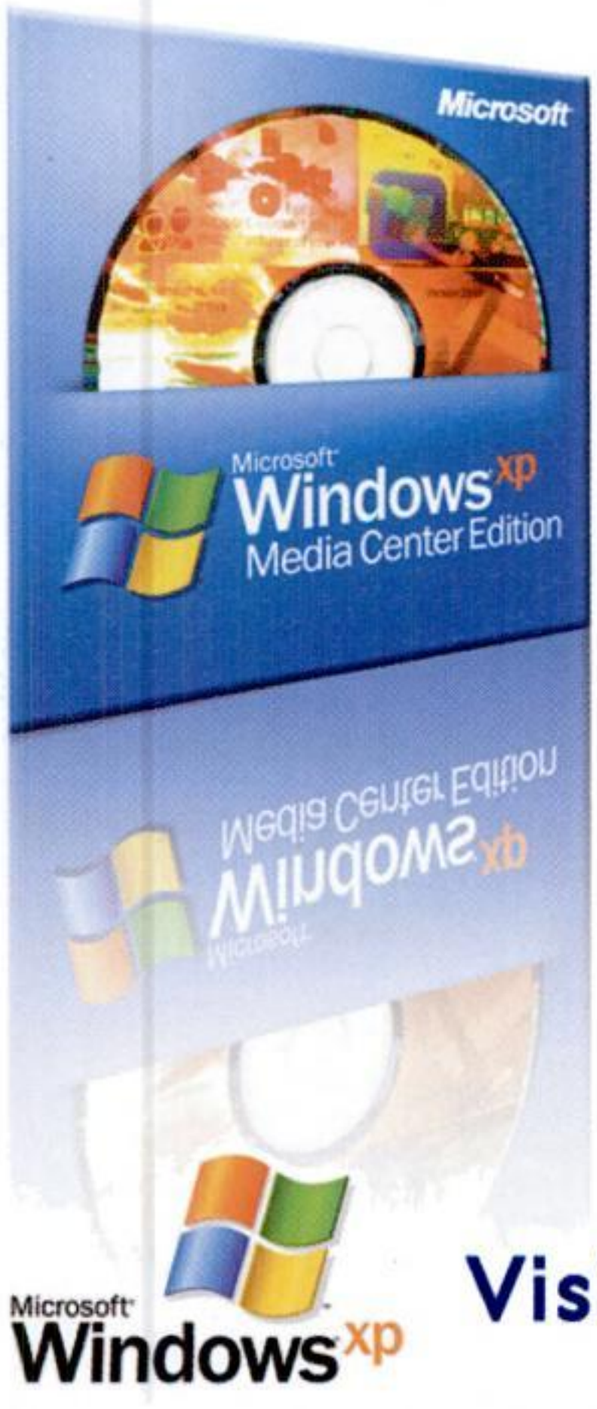
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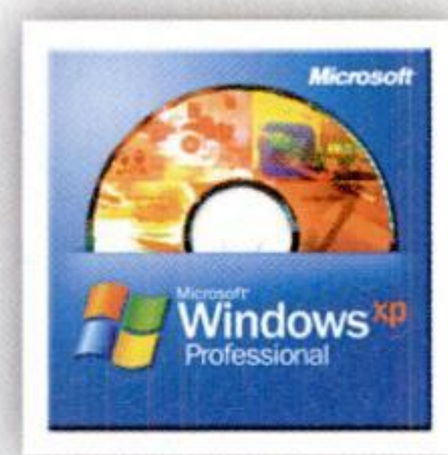
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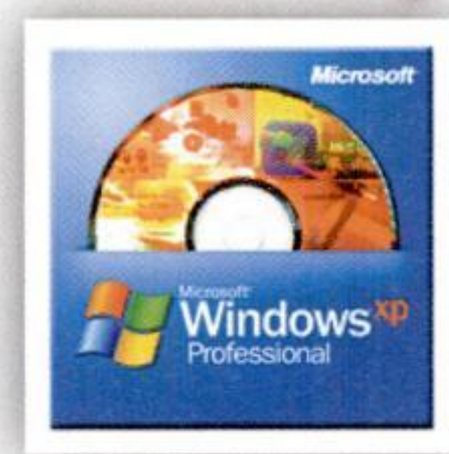


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Continued from page 46

Getting the right exposure

2 Go Full Manual

Exposure Compensation can only go so far—for everything else, there's Manual. This mode lets you fully control the aperture and exposure, allowing you to work around troublesome lighting or tweak it to your creative whim (like we did in our example). To show you how it works, let's play with underexposure.

Instead of heading blindly into Manual mode, use the two-step approach, which helps you get compatible aperture and shutter settings. Find something to shoot. Then switch your camera to Aperture Priority, set an aperture, make note of the shutter speed that your camera sets, and shoot a reference shot. To underexpose the image, switch the dial to M, set a faster shutter speed than what the camera set before, and shoot again. Experiment with different settings—both faster and slower speeds to see how they affect the exposure. Likewise, shoot in Shutter Priority, gauge the camera's auto aperture, and then flip to Manual and vary the aperture size to lighten or darken an exposure.



Manual mode lets you create some nifty effects—like this halo—that the auto modes would never let fly.

3 Boost The ISO

Shooting in low light is a whole other beast. While flash helps shed light on shady subjects, it also obliterates environmental lighting, like in a nightclub or on the Vegas strip. If you want to capture the atmosphere, boost the camera's ISO setting. This is also a great way to avoid camera shake.

ISO controls the image sensor's sensitivity—the higher the number, the less time required to get adequate light exposure, meaning the shutter can snap closed faster to help freeze action. Point-and-shoot cameras typically produce more image noise, or grainy texture, at higher ISOs than SLRs, so beware.

Find a dark place with interesting lights and locate a moving subject. Boost your camera's ISO up to 400 or higher and try to freeze the motion in your shot. If your shot is really blurry, set a higher ISO. Experiment with different ISO and Exposure Compensation settings until you get a good compromise of exposure and sharpness without too much noise.



You can manually tweak your image sensor's sensitivity for better results in low-light situations.

Continued on page 50

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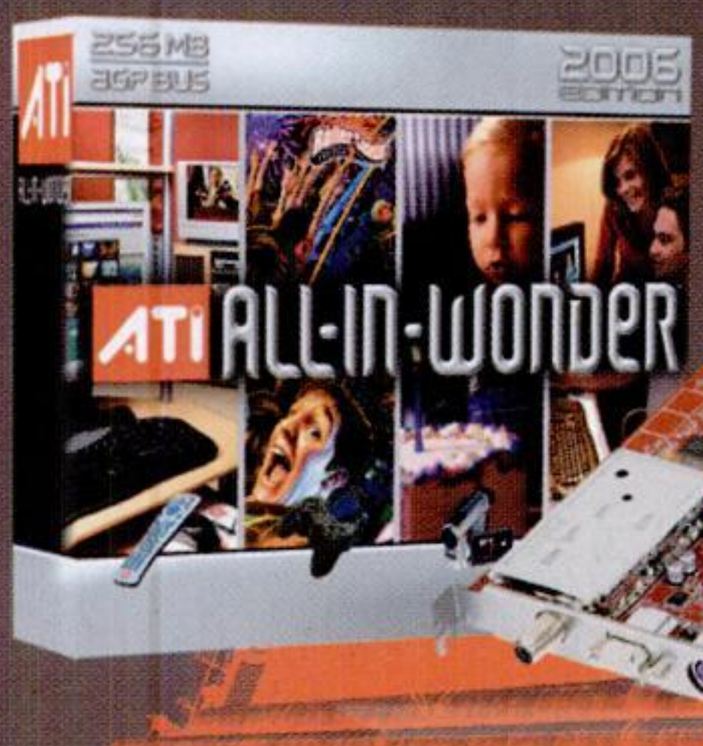
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Continued from page 48

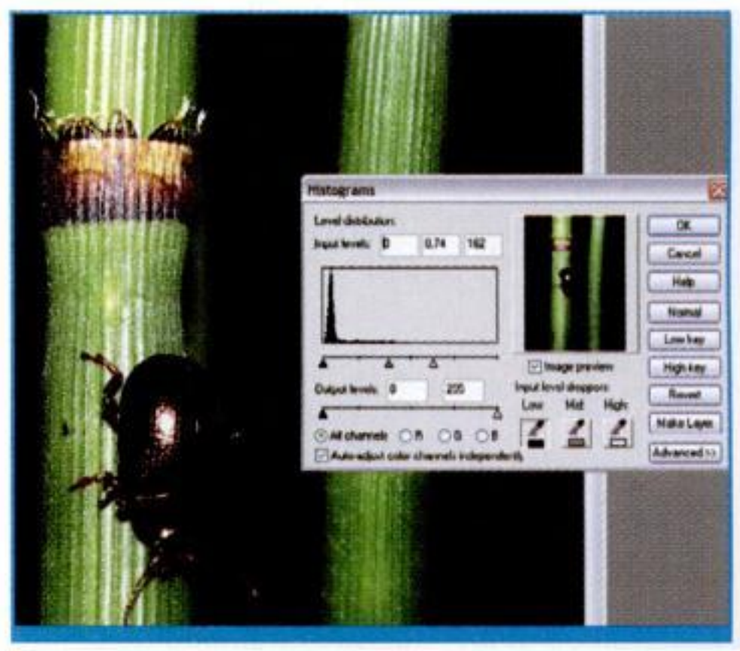
Correct your photos

No matter how kick-ass a photographer you are, your photos can benefit from a little photo fix. Whether your images need major resuscitation or just a light sprucing, there are plenty of image editors that get the job done. Here, we show you some quick fixes to common problems, using *LView Pro 2004,* a great (and cheap) all-in-one image processor. Other image editors function similarly, but you may have to dig into the documentation to figure out how a specific feature works if you use another app. Note: Before you start editing your photos, create a copy on which you can practice your touchups. You don't want to jeopardize the original.

1 Brighten Exposure

One of the most common digital camera problems is underexposure. Underexposure happens when the camera's sensor doesn't detect enough light from some or all of the subject. Luckily, you can easily fix it. In *LView*, select Color > Histograms. In the resulting window, your image's tonal range is represented as a mountain-like graph known as a histogram; black image data (shadows, dark colors) takes up the left region, gray data (shrubs, brick) resides in the middle region, while white data (white clouds, light colors) sits on the right side.

To fix your exposure, check the Image Preview box and then move the white data slider (the white triangle) to the left to brighten the highlights to your liking. Move the gray slider left to brighten the midrange, or right to darken it. When you're satisfied, click OK. (In the sample image at the right, we brightened the highlights and then darkened the midrange a bit to punch up our picture of the bamboo stalks.)

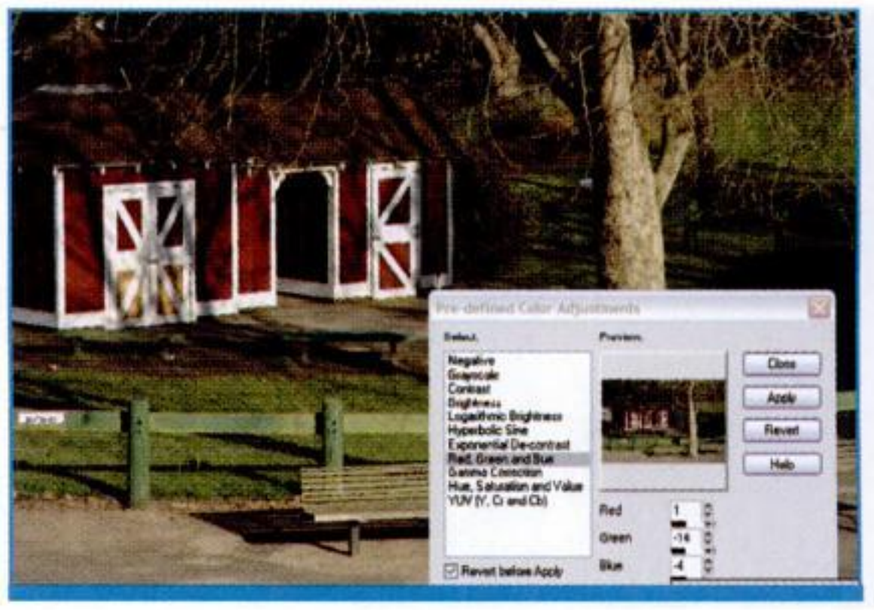


Fixing underexposed images is simple using *LView's* Histogram tool.

2 Fix Funky Color

To fix an off-color image, select Color > Adjustments. In the resulting window, select Red, Green, and Blue to display the RGB slider controls. Which slider or sliders you use depends on what colors you're trying to alter. The Red slider alters cyan (move left) and red (move right), the Green slider alters magenta (move left) and green (move right), and the Blue slider alters yellow (move left) and blue (move right).

To fix, say, a green-tinged image (like our example), click the Green slider button to display the slider and move the nubbin left until things look better in the Preview window. Click Apply to view the change on your real image. Continue in this manner with other sliders (if needed). To fine-tune changes, use any color's up or down arrow buttons. Once your color looks right, click Close.



It doesn't happen often, but if you accidentally shoot an off-color image, you can easily fix it by toning down the offending colors manually.

3 Sharpen The Fuzz

All images benefit from a little sharpening. You can greatly improve fuzzy images and boost the detail in images you're already satisfied with. To sharpen blurry images, select Color > Filters to open the Image Filters window.

If your image looks pretty good, select Sharpen for basic, light sharpening, and click Apply. If an image is slightly blurry, select Sharpen More, and click Apply. If your image is more than a little blurry, select Edge Enhance; if it's extremely blurry, select Edge Enhance More—or bail on the mess and call it art. Then click Close.



Sometimes fuzzy images are a good thing, but most images can use a little sharpening. To fix up blurry images, use the Sharpen filter.

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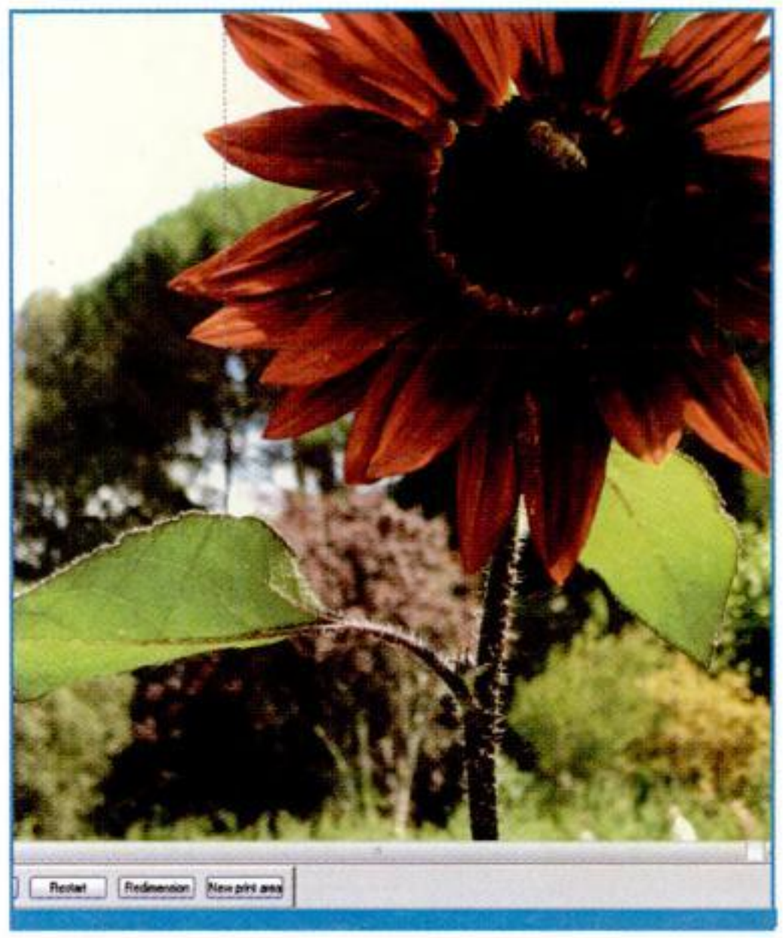


4 Brighten Exposure

If you want to remove unwanted perimeter obstructions or reframe your composition, use the crop feature. You can also use the feature to fake a longer zoom on an otherwise faraway subject if you've got a very high-resolution image.

To crop an image, select the Simple Crop tool and draw a marquee around the area you wish to keep. Resize and move the box as needed, and then click Crop Now! at the bottom of the screen. Keep in mind that you can crop out as much as 75-percent of a 3-megapixel image and still print a photo-quality 4x 6-inch print, while a 6-megapixel image will yield a 5x7 with the same amount of cropping.

Depending on the resolution of the original image, you may be able to crop in on the subject of your photo to create a more dramatic picture.



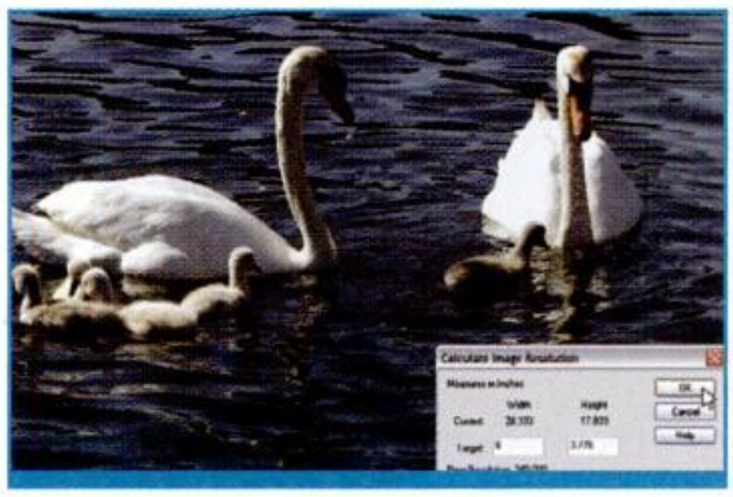
Print Perfect Pics

Printing pics may seem simple enough—heck, you just press Control-P, right? And then you blame the crappy results on the printer. No more excuses. Here's how to get perfect prints every time.

1 Resize Your Image

Unless you're shooting with a high-megapixel camera, your images most likely have a default 72ppi (pixels per inch) resolution—far from photo quality when printed. To get photo quality, your image needs at least a 200ppi resolution.

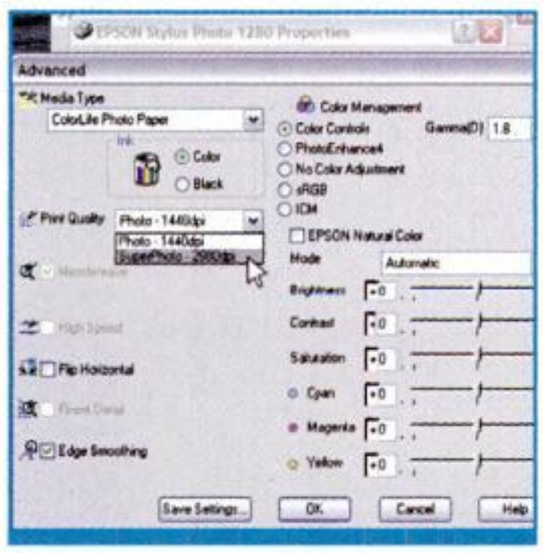
To change the resolution and resize your image for the paper at hand, select Image > Resolution to open a window. Click "Calculate for Physical Dimensions" to open another window. Then type a new width or height number in the respective field that corresponds with your paper—the opposite dimension and resolution will change accordingly to keep the proportions. Click OK in both windows to close them.



To print a photo quality image, a printer must be fed a 200ppi or greater source image! If you want your pics to look their best, you need to up the resolution yourself!

2 Command The Highest Resolution

Select File > Print (or Control-P) and in the resulting Print window, click Properties to open your printer driver dialog. Printer dialogs vary—we're using an Epson; if you're using something else, apply our instructions to your printer. Click the Main tab and choose your paper type from the Media Type list—be sure to use high-quality photo paper, preferably from the same manufacturer as your printer. Under Ink, choose Color. Under Mode, choose Custom, and then click Advanced.
In the resulting window, select your printer's highest resolution from the Print Quality drop-down menu. If you're using an Epson, choose No Color Adjustment under Color Management. Then click OK.



Using your printer's highest resolution may take slightly more ink, but your images will be indistinguishable from photomat prints.

3 Alert The Media

Click the Paper tab and select your paper size from the Paper Size drop-down menu. Under Orientation, choose Portrait (for a vertically-oriented image) or Landscape (for a horizontal one).
Most photo printers vary the amount of ink used on normal paper and photo stock. Once you've done that, click OK
to close the printer dialog, and then click OK in the Print window to print. MPC



We're on the home stretch now! Make sure you choose the proper paper size and type before you press OK on that final print dialog.

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Organize Your Pics With Free Software

We show you how to use Google's FREE *Picasa 2* to share, organize, back up, and edit your digital picture collection.

TIME 1:00 HOURS: MINUTES

WHAT YOU'LL NEED:

PICASA 2
FREE, PICASA.GOOGLE.COM
(and on the **disc!**)

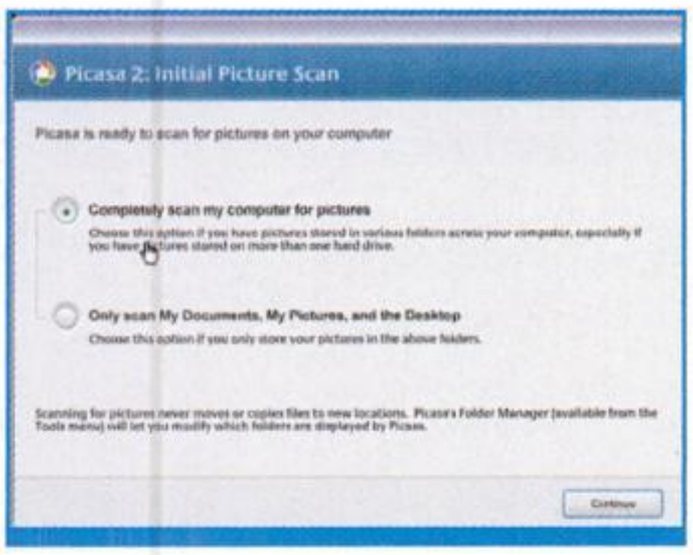
At just less than 5MB, *Picasa 2* is a very unassuming lil' program—but don't let that or the fact that it's completely FREE, fool you. This is so much more than just a photo browsing and organizing app. In fact, you can use it to do just about anything—edit, share, print, and back up photos; create slide shows and movies; order photo prints; and even set up a photo blog.

Its interface is feature-rich, yet elegantly simple—it's cleaner and more bug-free than several retail photo-editing suites we've tried. Best of all, *Picasa 2* doesn't force you to reorganize how you store your pics; it adjusts to how organized (or disorganized) you are.

To install *Picasa 2* you need only to click on the downloaded file, called "*Picasa 2*-current.exe". During installation an option window will pop up with everything selected by default. Alter these recommendations as you see fit—personally we hate letting any program set itself as the default for any type of application (read that last item carefully). Done. (Who said "nothing good in life is free"?)

BY STEVE **KLETT**

1 Search Your PC for Pics



***Picasa 2* will launch and immediately give you the option to scan your entire PC for image and video files, or just your My Pictures and My Documents folders and the desktop. (We wish there was an option to search only a particular folder, but alas, there's not.) Next, sit back and read a book—the search can take a while depending on how many pics you have, and how many hard drives you have (and how large they are). *Picasa 2* will search every nook and cranny of your PC for all images and video files (scores of which you've probably forgotten about, so you may want to make sure no one else is around your screen, wink, wink...), and it will organize them by date, which you can track in the left-hand column of the program's interface. Note the handy slider on the lower-right that lets you adjust the size of the image thumbnails.**

2 Examine and Tweak the Search Results

Once the search is complete, you can browse all of your pics by selecting individual folders in the Folders on Disc list in the left-hand column of the interface. From the Actions drop-down menu in the upper-right corner you can find out exactly where the pics for a particular folder reside on your drives, start a slide show, share the pics online with Hello (see sidebar on the next page), remove the images from *Picasa 2*, and delete and rename folders.

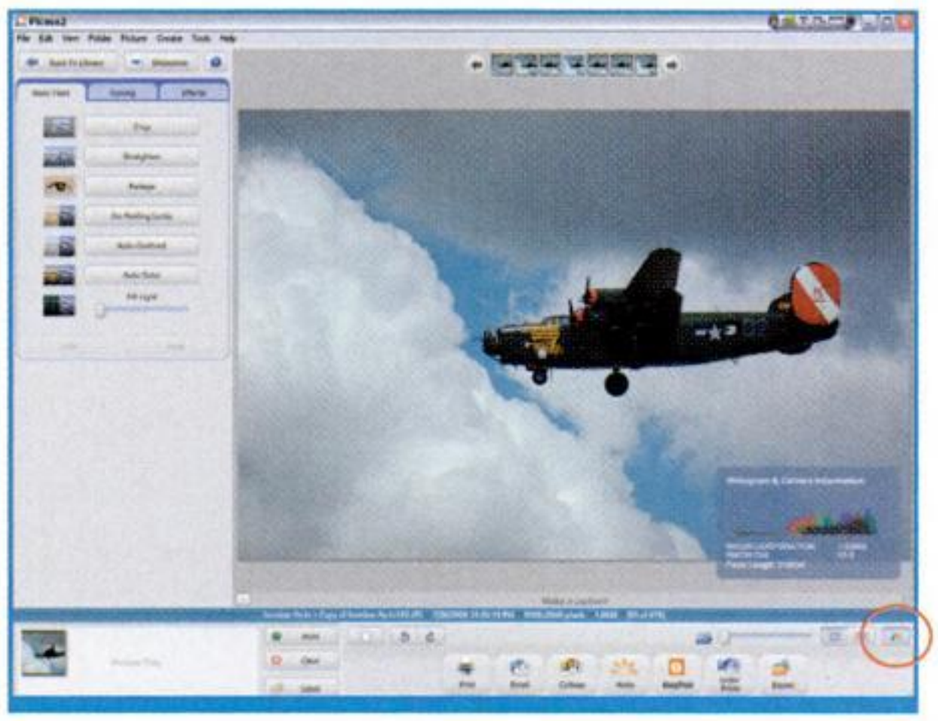
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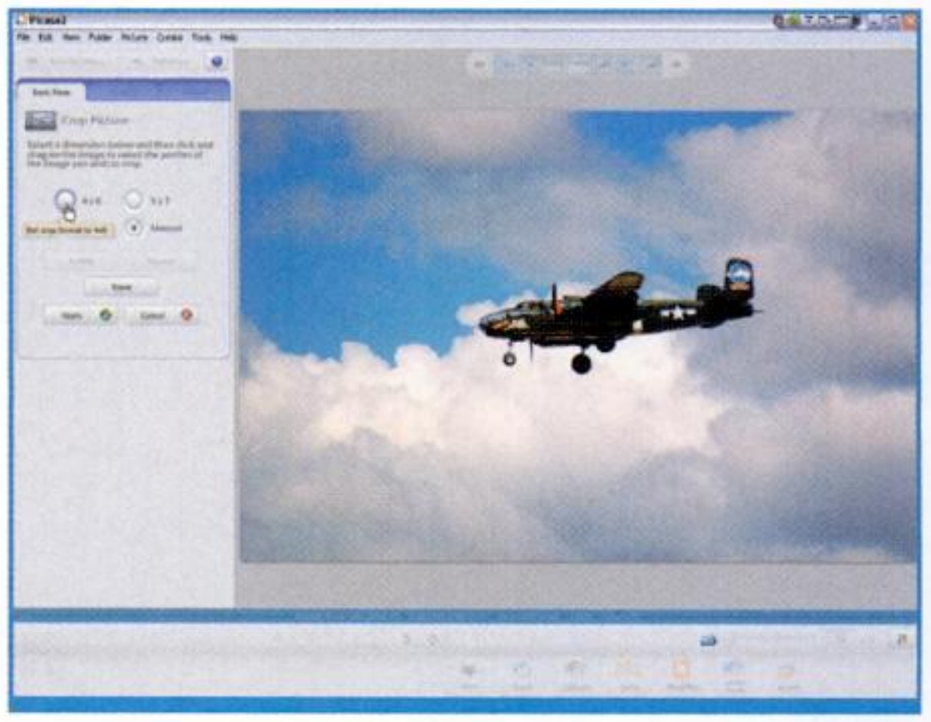
3 Explore the Interface

You can also view your catalog of pics in a cool timeline mode, send a CD of pics to friends or family, import new photos, or start a slide show using the four buttons on the top right of the interface.



4 Display Camera Data

Budding photographers will appreciate *Picasa 2*'s ability to display histogram and camera information for digital snaps, too. Simply toggle the button to the far right of the thumbnail image slider—the one with the propeller hat symbol on it—to view camera model, focal length, shutter speed, and f-stop data.

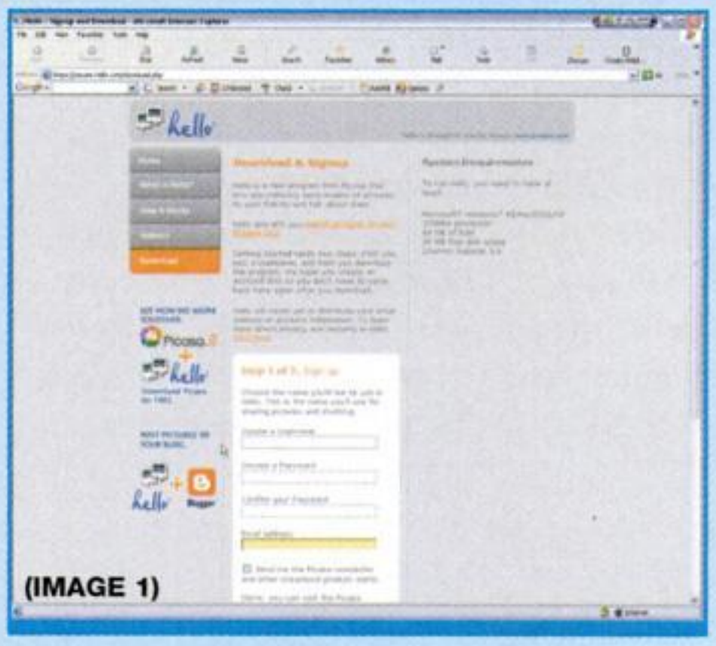


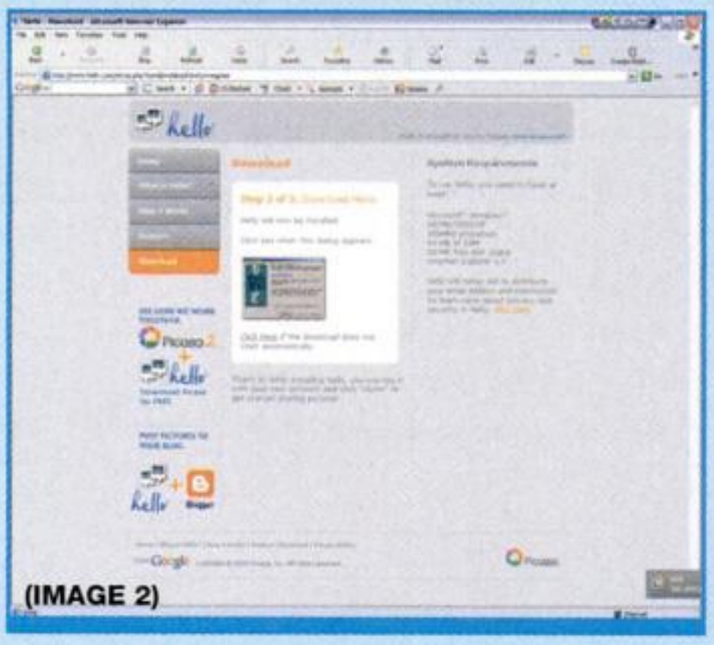
5 Edit, Create, Print, and Blog!

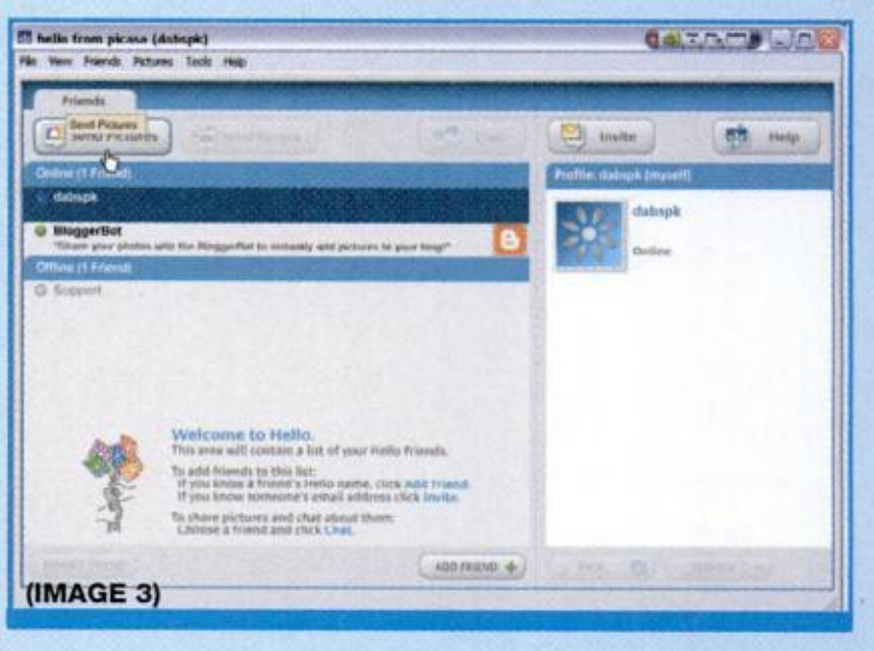
Again, *Picasa 2* is a powerful program, and so much more than just a photo organizer. For example, select the Tools menu and you'll find an easy way to back up important pictures. Select Create and you can set an image as your desktop, create a photo collage or movie, order prints (via your choice of online service), and publish your images to Blogger. And, of course, you can use the program to edit your images too. Double-click any pic and you'll find an array of easy-to-use editing tools that let you crop, auto-correct colors and contrasts, remove redeye, and apply a generous amount of filters.

Hello? Bueller? Bueller?

Sharing pics with *Picasa 2* and *Hello* is as easy as 1, 2, 3


(IMAGE 1)


(IMAGE 2)


(IMAGE 3)

You can also use *Picasa 2* to share your pics with friends across the country, via a new app called Hello.Select "Send to Hello" from the Actions menu and a web page will open that directs you to select a user name and password (image 1), and then download the small *Hello* program (you must allow the use of ActiveX to download it, which is fine). Install, launch, and log in. Click the Invite button (image 2) to send email invites to your pals to join *Hello*. Once you've got a few signed up, you're ready to share. Click the Send Pictures button (image 3) and the "Use *Picasa 2*" option. Select the folder of pics you want to share, and select "Send to Hello" from the Actions menu. *Picasa 2* will upload the photos. From there you just need to select which friends from your Friends list you want to share the pictures with—it's that easy. MPC

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Unfortunately, most families have more photographs than they realize, and those photos are rarely gathered in one place. The oldest photos may be fading away or suffering damage from mold, fungus, and airborne pollutants. Without preservation, those photos will be lost forever.

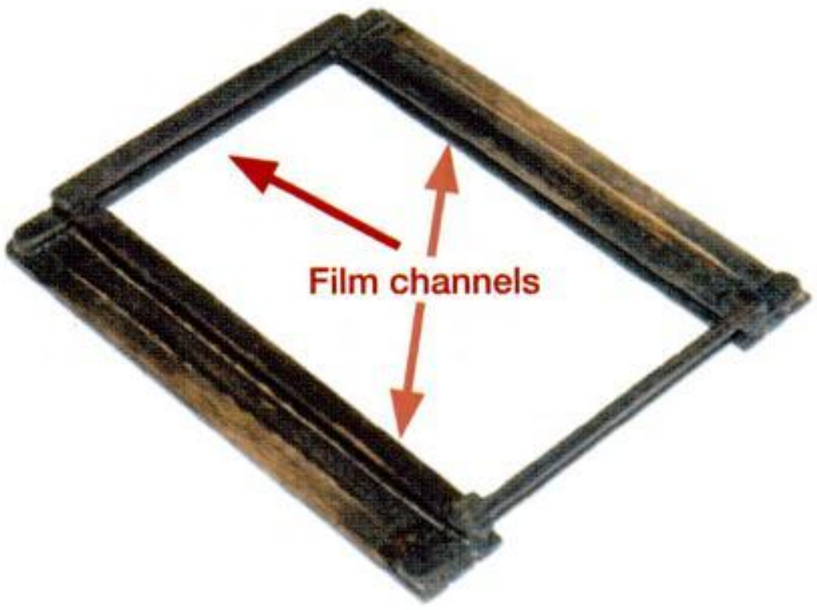
Now there's hope. Using a computer and a scanner, you can preserve your most valuable photos in digital form, earning the gratitude of your family and future generations. You might even create an archive of historical significance.

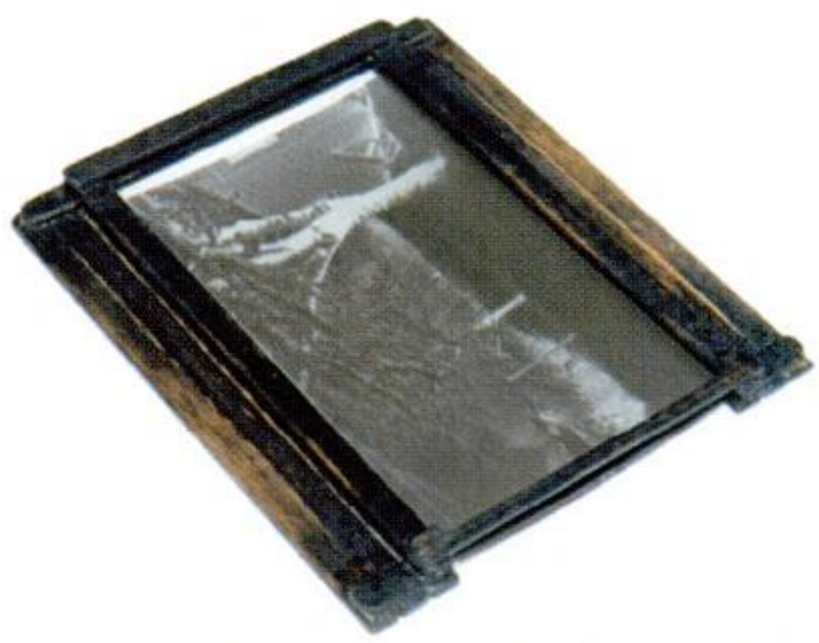
We'll show you how to scan, restore, and preserve your photographic prints, slides, and negatives. The same techniques apply to other materials, such as birth, death, and marriage certificates; property deeds; obituaries and news clippings; handwritten records in family bibles; and other old documents. By archiving and distributing these valuables on CDs or DVDs, you can share your history with your extended family and ensure that at least one copy will always survive, no matter what misfortune befalls the originals.

BY TOM R. HALFHILL

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Continued from page 57





Obsolete film sizes may not fit the standard film holders included with scanners. You can make custom holders out of black cardboard. Because I needed to scan a thousand ancient 116-format negatives, I constructed a sturdier film holder using wooden sticks from frozen veggie corn dogs.

Scanning Photographic Negatives and Slides

Scanning is the most important part of a photo-preservation project. It's usually the most time-consuming part, especially if you're preserving numerous photos. Some people compare it to mowing a lawn with scissors. Getting a good scan is also critical to the quality of your final images, because even the best *Photoshop* expert can't hide the shortcomings of a poor scan.

Because scanning is both a science and an art, your skill will improve with experience. For that reason, I recommend starting a large project by scanning a few dozen less-important and less-deteriorated photos first. If you start with the most interesting and difficult-to-fix photos, you'll want to rescan them later when your skills improve.

Make a concerted effort to find original negatives. Negatives and slides almost always scan better than second-generation prints made from those films. Unfortunately, many of our ancestors didn't save their negatives, or hid them away where they will never be found. My own scanning project began with the discovery of a thousand box-camera negatives in my late maternal grandmother's attic—pictures she took from about 1914 to the 1960s. Most are in excellent condition, and they have produced much better scans than the poorly made and badly faded contemporary prints that survive from those negatives.

Carefully store and handle any film made before the 1950s, which may have a cellulose nitrate base. Over time, nitrate film becomes chemically unstable and highly flammable, especially if large amounts are kept in airtight containers and stored at high temperatures (such as attics in hot weather). Under some conditions, nitrate film is spontaneously combustible. That's right, it blows up! To be safe, don't leave old negatives or slides in the scanner longer than necessary, especially if your scanner doesn't use a cold-cathode light source.

After about 1950, film manufacturers abandoned cellulose nitrate in favor of a triacetate base known as safety film. Sometimes the edge markings clearly say "safety film." Safety film isn't flammable like nitrate film, but it suffers from another chemical instability. If you find old negatives with a strong acid odor, it's evidence of "vinegar syndrome"—chemical breakdown of the triacetate film base. Another symptom is a shrinking film base, sometimes to the point where the film emulsion cracks like dried mud. Do your best to scan those negatives immediately and keep them apart from others that don't smell bad. The chemical process of vinegar syndrome is autocatalytic, which means the deterioration feeds on itself, and the acid fumes can trigger the reaction in other negatives sharing a similar film base. There's no known cure for vinegar syndrome, although freezer storage can slow the breakdown.

Yet another problem you may encounter with old negatives is oddball film sizes. My grandmother's box camera used 116-format roll film, which Kodak introduced in 1899 and discontinued in 1984. The negatives are 2.5 inches wide and 4.25 inches long. They're too big for the medium-format film holders included with today's scanners, which are designed for 2.25-inch-wide 120- or 620-format roll film. With a little ingenuity, you can make your own film holders for oddball sizes out of black cardboard. Anything that holds the negative flat and slightly above the flatbed glass will work (see photo).

Today's scanners have a maximum optical resolution of 2400 dots per inch (dpi) or more, but that doesn't mean you should scan everything at maximum resolution. Scanning at a high resolution is great, but the higher the resolution you use, the longer the scan will take, and the larger the file size will be. Doubling the linear scanning resolution (from, say, 300 dpi to 600 dpi) roughly doubles the scanning time and quadruples the file size. Scanning medium- and large-format negatives at high resolutions will produce gigantic image files, perhaps too large for your computer to handle. Color image files are three times larger than black-and-white image files, because the color image contains three times as much data per pixel in the RGB channels. Your storage requirements can quickly get out of hand if you don't choose the resolution carefully.

You should scan negatives at higher resolutions than you would scan prints of equal size, because negatives produce higher-quality enlargements. Your resolution target should be 300 dpi at the largest print size anyone is likely to make. For example, let's say you're scanning a 2.25-inch-square negative (a common size from the 1950s and '60s) and want to allow prints up to 12x12 inches. That's a 5.3x enlargement (12 divided by 2.25 equals 5.3), so you should scan the negative at 1600 pixels per inch (5.3 times 300 equals 1590, then round upward to 1600).

A smart approach is to match the scanning resolution to the quality of the negative. Pictures taken with cheap box cameras start looking mighty fuzzy beyond 2x enlargements—no matter how high a resolution you use during the scan—because the camera had a crappy single-element uncoated lens, and the spring-driven shutter was too slow for sharp exposures. Scanning those negatives for anything beyond a 3x or 4x enlargement is overkill. If a 2.5-inch-square negative was made with a box camera, scanning at 1200 dpi should be plenty. That's enough for a 4x enlargement of 9x9 inches (4 times 2.5 equals 9). The cheap camera lens will make greater enlargements look intolerably blurry, long before you notice any pixelation due to inadequate scanning resolution.

On the other hand, the same-size negative made with a top-quality old camera (such as a Rolleiflex) can be needle-sharp

Continued on page 61→

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Continued from page 58

and permit huge enlargements. Scanning at 1600 dpi or even 2400 dpi isn't too much—if your computer has enough RAM to handle such a large image file. Storing large images shouldn't be a deterrent, because the price of disk space is negligible—between $0.50 and $0.60 per GB.

Store old negatives and slides in archival plastic pages. Your scans may not be the last word. Some of your descendants might think they can make better scans with more advanced technology. Let them try!

Scanning Prints

Unless your ancestors were pack rats like my grandmother—who squirreled away a thousand box-camera negatives in her attic—you'll need to do some work from prints, not from original negatives. Although negatives almost always yield better scans than prints, it's possible to make scans of prints that improve on the originals.

Your minimum resolution for scanning any reflective materials should be 300 dpi, selectable in the scanner software. For original prints smaller than 8x10 inches, I recommend scanning at 600 dpi, because it allows you to enlarge the image at least 2x without pixelation. Scanning prints at resolutions higher than 600 dpi won't reveal more photographic detail. It's necessary only if you plan to make big enlargements and don't care if the images look blurry.

For important text documents, especially handwritten ones, scanning at 600 dpi often allows better reproduction without a hint of pixel staircasing. Although 600 dpi scans take longer and require four times as much disk space as 300 dpi scans, it's rarely a problem unless you have thousands of pages to save.

Be sure the scanner's flatbed glass and the print are clean before scanning. But don't make any aggressive attempts to clean an old print—you might cause irreversible damage. In particular, resist the urge to repair a torn print with tape. Unless you have archival-grade preservation materials, the tape will turn yellow

Continued on page 63→



Sepia toning was popular in black-and-white photofinishing before the 1950s. To preserve the original tone, you must carefully adjust your scanner software to scan the image as a color photo. The resulting file will be about three times larger than a monochrome scan. Some people prefer to scan in monochrome, then add sepia toning with image-editing software when making copy prints (as was done here).



Kodak's *Digital ROC* software can work wonders on faded colors. The original version of this picture, taken in 1957, is typical of old color photos—the blue dye layer faded much faster than the red layer, leaving behind a strong reddish cast. *Digital ROC* automatically produced the corrected version. Some scanner software includes *Digital ROC*. If yours doesn't, you can download the app from Kodak as a *Photoshop*-compatible plugin. The regular version costs $50 and a more sophisticated pro version is $100.

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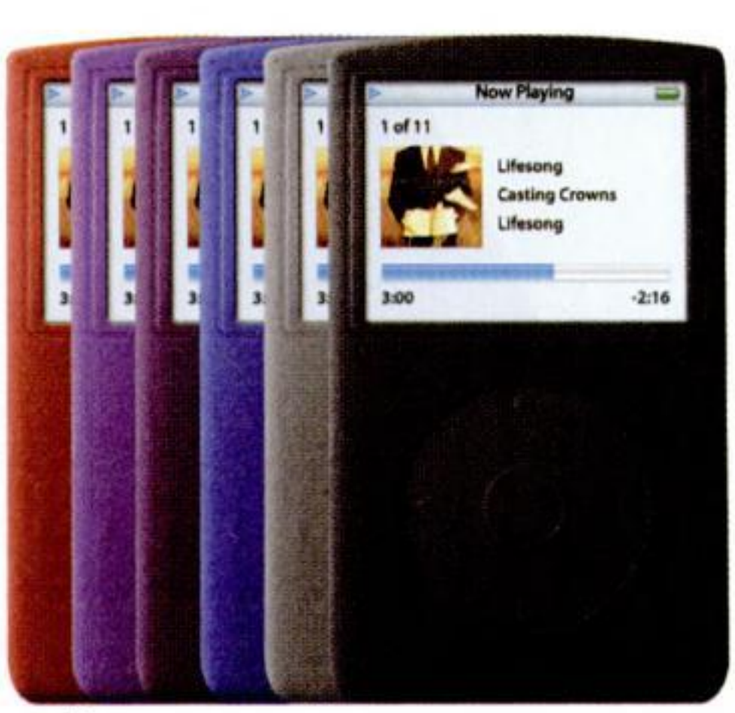




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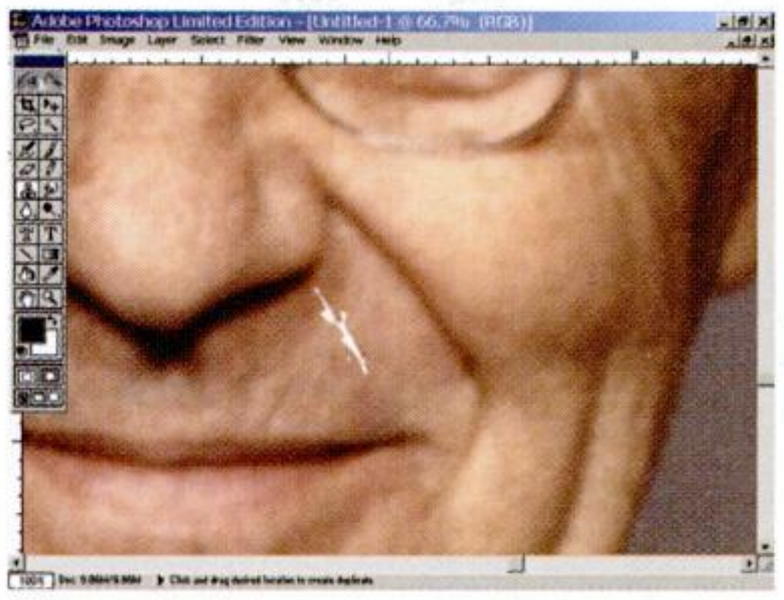
over time and leave sticky residue. It's better to repair a torn image in *Photoshop*. Likewise, scan a previously taped print without trying to remove the tape, or else you might peel off some of the image.

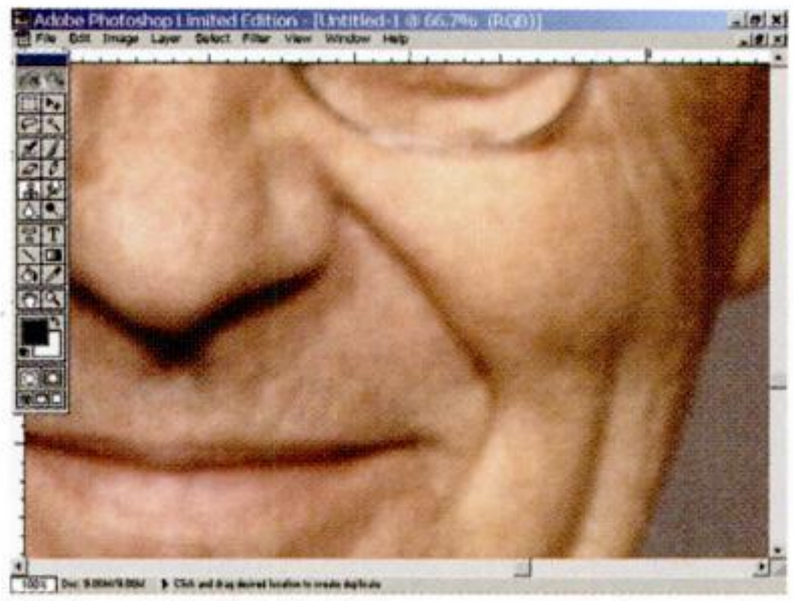
Many old black-and-white prints are sepia toned (light brown). Some people prefer to scan them in color to preserve their original appearance. However, color scanning requires careful adjustment to accurately reproduce the tone, and the images take longer to scan and occupy about three times as much disk space as a monochrome file. I prefer to scan sepia prints as monochrome images (see photos on previous page). If I make a copy print, it's easy to convert the monochrome image to RGB mode and apply sepia toning in *Photoshop* without altering the original file.

Some color prints are badly faded. I have seen horribly faded color prints made as recently as the 1980s, especially if they were exposed to light. Color images don't last as long as black-and-white images do, because color dyes aren't as stable as the silver halide emulsions of black-and-white materials. Dye layers tend to fade at different rates, producing a strong color cast that's very difficult to manually correct with image-editing software. Some image editors and scanner drivers have optional color-restoration filters that work more or less automatically, with varying degrees of success.

In my experience, the best and easiest color-correction software is Kodak's *Digital ROC* (Restoration of Color). Often it works miracles on faded colors (see the before and after photos on the previous page). A wise precaution—though it chews up twice as much disk space—is to save the uncorrected original image along with the corrected version. That way, future preservationists can use any superior color-restoration software invented in the years to come.

When scanning prints, don't forget to check the reverse side. You might find a handwritten caption or printed information from the commercial photofinisher that helps you pin down the photo's date and location. One of the most frustrating things about a family-history project is finding pictures of people and places you can't identify. In some cases, I have scanned the handwritten notes on the backs of old prints, in addition to recording the information in a text file. The handwriting sample might be a clue to identifying the photographer, and hence the subject.





***Photoshop's* clone tool requires a little practice but quickly fixes dust spots and other surface defects. With this image, I cloned some nearby pixels onto the nasty scratch, obliterating it completely. Long hairline scratches are harder to fix without leaving an obvious trail of cloned pixels. Instead of dragging the clone tool across the scratches, use a series of mouse clicks to fix the scratch in small sections.**

Restoring Scans of Old Photographs

Inevitably, some family photographs you scan will be in dreadful condition. The oldest photos may be torn, spotted, and badly faded. Even some photos just 20 or 30 years old may have weirdly distorted colors. It's almost impossible to resist the temptation to repair the scanned images with an image editor such as Adobe *Photoshop*.

Historians, archivists, and strict preservationists generally prefer to leave old images alone. Attempts to fix defects might eliminate original details or substitute false realities. However, some photos are in such poor condition that they demand attention. A good compromise is to keep the original scan unretouched while altering a copy of the file. This allows future generations to examine the original image and use more-advanced restoration tools that haven't been invented yet.

Some scanners have a feature called Digital ICE, which compares an infrared scan of the image with the visible image to automatically fix defects. Digital ICE can save you a great deal of manual retouching. However, it significantly lengthens the scanning time and requires lots of computer memory. Also, it doesn't work on prints, Kodachrome slides, or conventional black-and-white negatives, because the emulsions of those materials aren't compatible with the infrared scan. Digital ICE works only with non-Kodachrome slide films (such as Ektachrome) and recent dye-based black-and-white films. So even if your scanner has Digital ICE, manual retouching is unavoidable.

Your best friend for manually fixing dust spots, scratches, and other surface defects is *Photoshop's* clone tool (the rubber-stamp icon in the standard tool palette), or its equivalent in other image-editing programs. The clone tool copies pixels from one area of the image to another. To fix a dust spot, for example, you copy pixels from a clean area of the image that matches the area you want to retouch. For small spots, use a small soft-edge brush and work carefully with the image magnified at 100 percent on your screen (see the before and after photos below). A complete *Photoshop* tutorial is beyond the scope of this article, but you can find many hints and tips elsewhere.

Another valuable restoration aid is the histogram, which is affected by the exposure controls in the scanning software and the levels control in *Photoshop*. Often you'll need to stretch the histogram to expand the dynamic range of faded or low-contrast photographs. Almost all old black-and-white images need this treatment. Usually I adjust the histogram using the scanner software, then make any further tweaks in *Photoshop*. For extreme corrections of badly faded images, sometimes it's better to use image-editing software for all histogram adjustments (see the before and after photos on this page).

When using an image editor for major histogram adjustments, you must scan the

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Restore & Preserve YOUR PHOTOS





Here are before and after versions of a badly faded black-and-white photograph of my grandfather on the day of his baptism in 1897. The original photo is vanishing fast. I scanned it as a 16-bit monochrome image and used *Photoshop's* levels control to expand the dynamic range across the full width of the histogram. I also used *Photoshop's* curves control to boost the contrast.

Continued from page 63

image at a bit depth exceeding eight bits per channel. Otherwise, your image may suffer the dreaded "picket-fence effect"—abrupt tone transitions visible as narrow gaps in the histogram after stretching it out. By scanning the image at 12, 14, or 16 bits per channel, you can make radical changes to the histogram without leaving those gaps. Then convert the corrected image to eight bits per channel before saving. If you apply your major histogram corrections with the scanner software before scanning, you can safely use eight bits per channel. Scanners usually have 12 to 16 bits of internal dynamic range and will distribute the extra levels uniformly across the eight-bit range.

One tool to shun like poison is image sharpening—including the type known as "unsharp mask." Don't use it, either in your scanner software or your image-editing program. Although virtually all scanned images need sharpening, the amount varies according to the image resolution and output size. An image properly sharpened for making an 8x10 print might be severely oversharpened for making a 4x6 print.

CHOOSING A SCANNER

If you don't already have a flatbed scanner, don't agonize over which one to buy. These days, they're all pretty good. If almost everything you want to scan is reflective material—photographic prints and paper documents—any flatbed scanner will do. Even the cheapest models have more resolution than you need.

To scan negatives or slides, your choice becomes more critical. Making the best scans of 35mm and medium-format roll film requires a dedicated film scanner. Flatbed scanners with transparency lids and film adapters still can't match the sharpness of dedicated film scanners, no matter their claimed resolution. For various reasons, a film scanner with 2400 dpi resolution almost always outperforms a flatbed scanner with 4800 dpi resolution.

Unfortunately, good film scanners—especially medium-format scanners—cost much more than flatbeds and are more difficult to use. If you can't afford a dedicated film scanner right now, you can postpone that part of the project or settle for a good flatbed. While they're not ideal, the latest flatbeds with film adapters have improved and are sufficient for scanning most medium-format films, especially roll films exposed in box cameras that were popular decades ago. Those images are so fuzzy that using a better scanner won't matter. The latest flatbeds with transparency lids are sufficient for scanning 35mm negatives and slides if you don't anticipate making prints larger than 8x10 inches.

Most people need to scan at least some negatives and slides in addition to reflective materials. Original negatives and slides almost always yield better scans than prints from the same source will. The original film has more dynamic range (tonal variation from light to dark) and may have faded less than the prints have, especially if the prints were exposed to light. Therefore, when you purchase a scanner, make sure it comes with adapters for various film sizes, whether it's a film scanner or a flatbed with transparency hood. Common film sizes you will encounter are 35mm, 120 (2.25 inches wide), 620 (same width as 120), and 4x5 inches. Be sure the scanner includes film holders for all of those sizes.

A good flatbed with film-scanning capability costs $300 to $600. If that's too much right now, buy a cheaper model and start scanning the prints that you don't have negatives for. If you are thorough, your scanning project may take years, so you can postpone the purchase of a more expensive scanner until later. The future scanner you buy will be even better than those available now, and prices keep falling.

Many film scanners and a few flatbeds have a feature called Digital ICE that automatically fixes some dust spots and scratches on scans made from negatives and slides. Digital ICE, however, greatly slows down the scanning process and requires a powerful computer with lots of memory. It doesn't work with Kodachrome slides or the vast majority of black-and-white negatives. It's so slow and resource-intensive that it's useful only for the most important and damaged color negatives. Of course, fixing defects with an image editor such as Adobe *Photoshop* takes time, too. My own photo-scanning project was so large (thousands of images) that I have decided to leave detailed dust-spotting to future generations. My contribution is to preserve the rapidly fading images.

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Remember that you can't remove sharpening from a saved image, and you can't foresee how your scanned images might be used in the future. In addition, future software will almost certainly have better sharpening technology. Therefore, you should scan and save all images unsharpened. If you want to make prints, sharpen a copy of the image.

Preserving Your Digital Archive

Before embarking on your scanning project, decide how you will back up and archive the image files. Scanning takes lots of time, and you don't want to lose all your work to a hard-disk failure or other tragedy.

CDs might seem like the most logical archive media, but their 680MB capacity is inadequate for all but the smallest scanning projects, unless you divide the project into sections. (My own project would currently fill 20 CDs.) A better alternative is DVDs, which hold 4.7GB per disc (single-layer).

DVDs take a while to burn, so for most interim backups, I installed a removable hard drive bay in my computer. It accepts a standard IDE hard drive plugged into an inexpensive holder that slides into the bay like a drawer. I bought two identical hard drives and swap them between backups, always keeping one drive at another location 35 miles away. This protects my project against any catastrophe that might cause the loss of my home computer.

Many people worry about how long their storage media, especially optical media, will last. Writable CDs and DVDs use phase-change technology—a laser encodes the binary ones and zeroes on the disc by altering a dye layer. Those dyes aren't as stable as the glass-mastered metal layers in read-only CD-ROMs and DVDs. Some people have reported failures of writable CDs and DVDs after only a few years of storage or a few hours exposure to intense sunlight.

There are three ways to increase the chances your optical discs will outlast you. One is to use write-once discs (CD-R, DVD-R, DVD+R) instead of rewritable discs (CD-RW, DVD-RW, DVD+RW). Write-once dyes are much more stable than the rewritable dyes. Another way is to buy reputable name-brand discs instead of cheap generic discs. But even that's uncertain, because the name-brand companies often change suppliers to squeeze out the lowest manufacturing cost, so quality can vary from batch to batch. The only nearly foolproof way to guarantee media longevity is to burn multiple copies of your finished project on discs of different brands. For instance, you might burn one copy of the project on Verbatim and another on Memorex. That spreads out the risk, because one brand (nobody knows which) is likely to outlast the other. For final copies of parts of my project, I pay a little more money to buy gold-layered discs from MAM-A or Delkin, which are supposed to be the most stable writable media available.

Another consideration is file format. The ideal choice for image files would be a broadly supported, industry-standard format that stores the data uncompressed (for easier file recovery in case of bit errors). Unfortunately, there isn't such an ideal file format. JPEG is the next-best choice. It's widespread on the Internet and is the default in almost all digital cameras, so it will probably be supported for as long as computers exist. To avoid ugly compression artifacts, save JPEG images at the highest-quality (lowest compression) setting. Also, don't repeatedly load and save the same file in JPEG format, because each save applies another round of compression, which multiplies the artifacts.

GIF format uses a lossless compression method that's theoretically better than JPEG's lossy compression, but GIF has two drawbacks. First, GIFs are usually larger than JPEGs, even when the same image is saved at the highest-quality JPEG level. With today's high-capacity storage media, that's a relatively minor consideration. The larger drawback is that GIF saves only eight bits of data per pixel, so it's suitable for only black-and-white photos, not for color. (JPEG saves 24 bits of data per pixel—eight bits per RGB channel—enough for full color.) My tests with pixel-analysis software show that top-quality JPEG files of black-and-white photos are virtually indistinguishable from GIF files.

Final tip: If you plan to document your images with background information such as names, dates, places, and anecdotes (highly recommended), save those text files in plain-text ASCII format. Proprietary word-processor formats might not be readable in the future if the software isn't available. And always store the text files on the same media as the images—ideally, in the same directories, so they won't become separated in years to come. MPC



Scanning original negatives at high resolution can reveal fascinating details and clues, even if the photos were taken with cheap box cameras. The picture of my maternal grandmother was made in the 1920s, judging from her age, and was probably taken on a national holiday, because there's an American flag on the porch. Closer examination of the scanned image in *Photoshop* revealed a mysterious figure reflected in a hall mirror inside the house. After greatly enlarging the image, I recognized my grandmother's sister—crouched over the box camera, taking the picture!

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Recover Your Deleted Files



Recover lost or accidentally deleted images with these handy tools.

TIME 00:30 HOURS: MINUTES

If you shoot enough digital pictures sooner or later you're going to pull a Homer Simpson and delete an image, folder of shots, or perhaps even an entire hard drive worth of pics that you want back. D'oh!

Not to worry, however: In many cases you can get your priceless shots of lil' Jimmy's toilet-training back, with the aid of a couple of software tools. *Zero Assumption Recovery* (on the disc!) is a bit of freeware we like that you can use to recover files and images off of a media card or hard drive. However, if you're looking for a program designed specifically for the task of recovering deleted images from virtually any type of media, we recommend you slap down a measly $30 for the aptly named *MediaRecover*.

Whichever one you choose, here's how to get those files back.

BY STEVE **KLETT**

INGREDIENTS

- **ZERO ASSUMPTION RECOVERY**
  Free trial, www.z-a-recovery.com
- **MEDIARECOVER**
  $30, www.mediarecover.com

The Freeware Approach

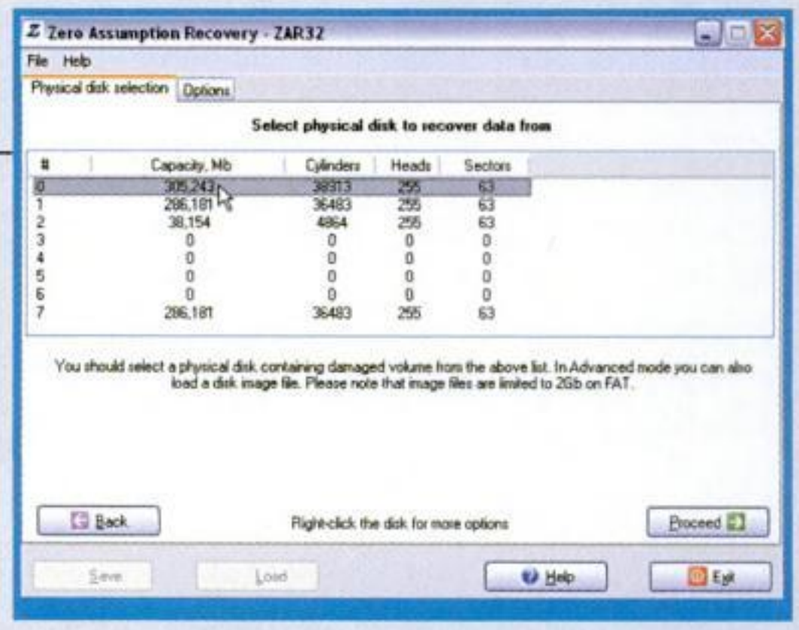
You're in college and would rather spend your money on Milwaukee's Best and pizza than fancy-pants data-recovery software: We've been there. You're not out of luck, as some decent free options exist, such as the free trial version of *Zero Assumption Recovery*. This slick little program will not only recover deleted images, but many other file types as well. Here's how to use *ZAR* to get your data back.

1 Optimize Your System

Fire up the program—you can probably leave the default settings alone. If you have more than 1GB of system memory, however, select the Options tab and "Faster method" from the "Volume parameters analysis" pull-down menu. Go back to Preliminary Setup and click the Proceed button.

2 Select the Hard Drive to Scan

Now, select the drive you want to scan for lost files by clicking it; select Proceed. Next, select the partition on the drive you want to search and click Proceed again.



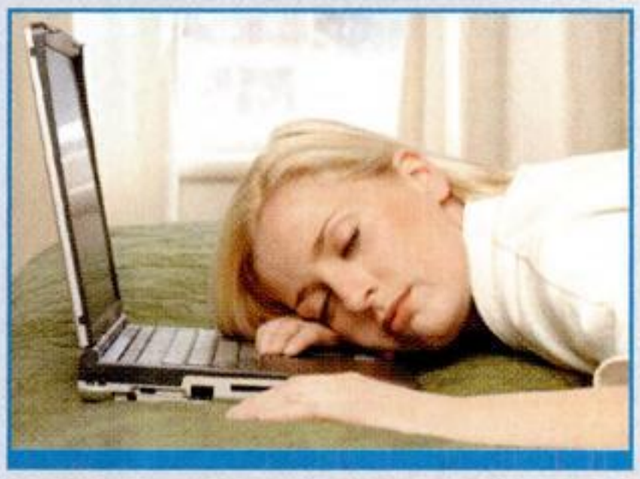
CAUTION!

If you accidentally delete data off of a portable media card or hard drive, stop using it immediately! Do not save or install anything to the drive you want to recover data from, or you could accidentally render your deleted files unrecoverable!

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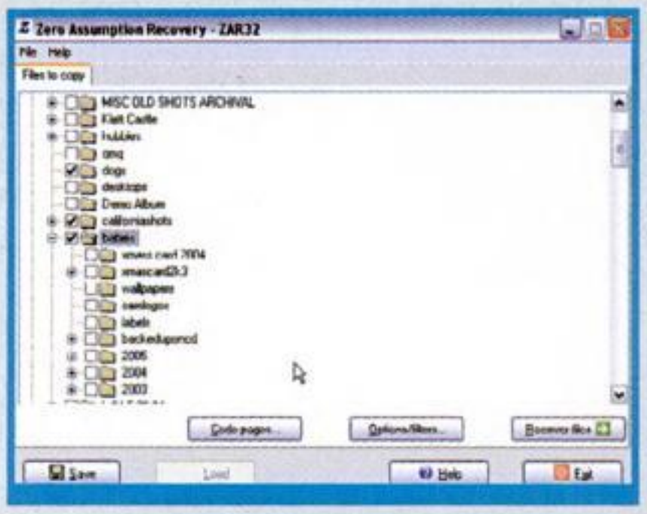
3 Wait for the Scan to Finish

Sit back and wait for the program to scan your drive, which might take a long time, depending on the size of the partition you selected. Our 300GB drive took an hour and 15 minutes.



4 Recover Your Files

Whoop! If the stars are aligned in your favor, you will be rewarded with your old folder structure, which you can navigate to locate and restore your files. Note: The trial version allows only four folders to be recovered per scan, so you might need to repeat this procedure multiple times—or pony up the $100 for the full version.



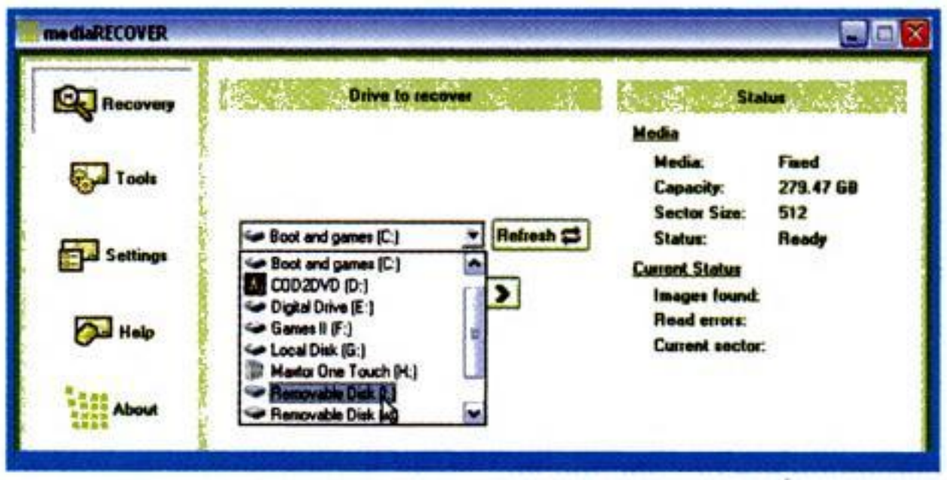
Recover Data from Portable Media

If you accidentally delete photos from one of the memory cards you use in your digital camera (such as a CompactFlash or SD), and you want them back, it's no problem. There are several utilities, including several freeware programs such as *ZAR*, that will do the trick.

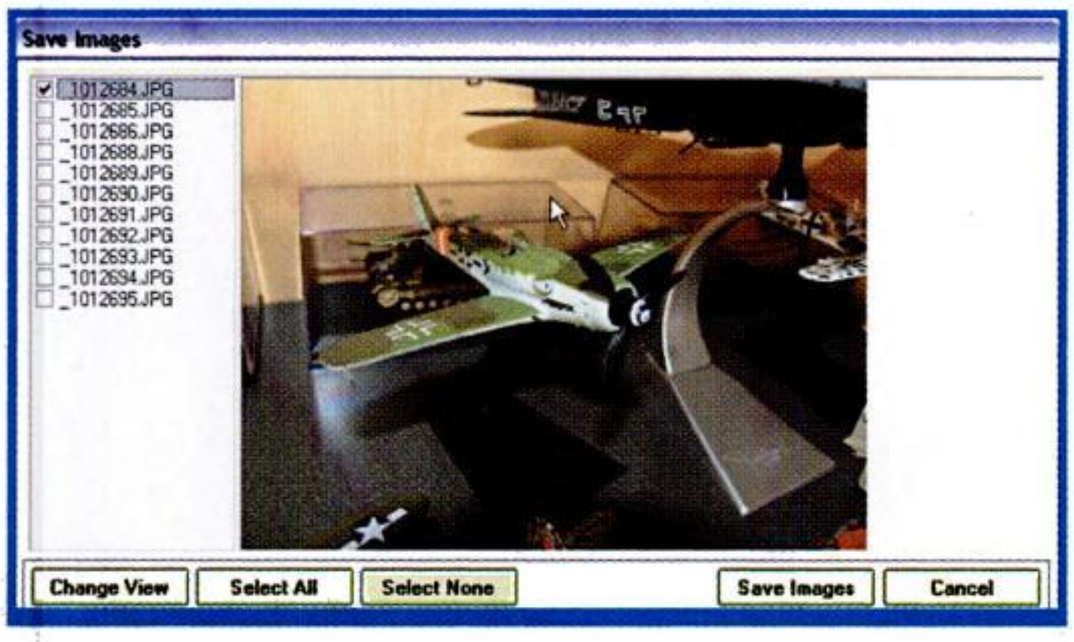
However, when it comes to preserving precious memories, we recommend you don't skimp: Slap down $30 on *MediaRecover*, which is designed from the ground up to rescue lost media files from hard drives and media cards of all types, including SmartMedia, CompactFlash, Memory Stick, Secure Digital, xD Picture Card, Microdrives, and MultiMedia Card. It does a good job, it's relatively fast, and it's a snap to use. We deleted a few dozen photos off a 1GB CF card and used *MR* to get 'em back—in less than 30 minutes, from start to finish.

1 Identify Your Drive

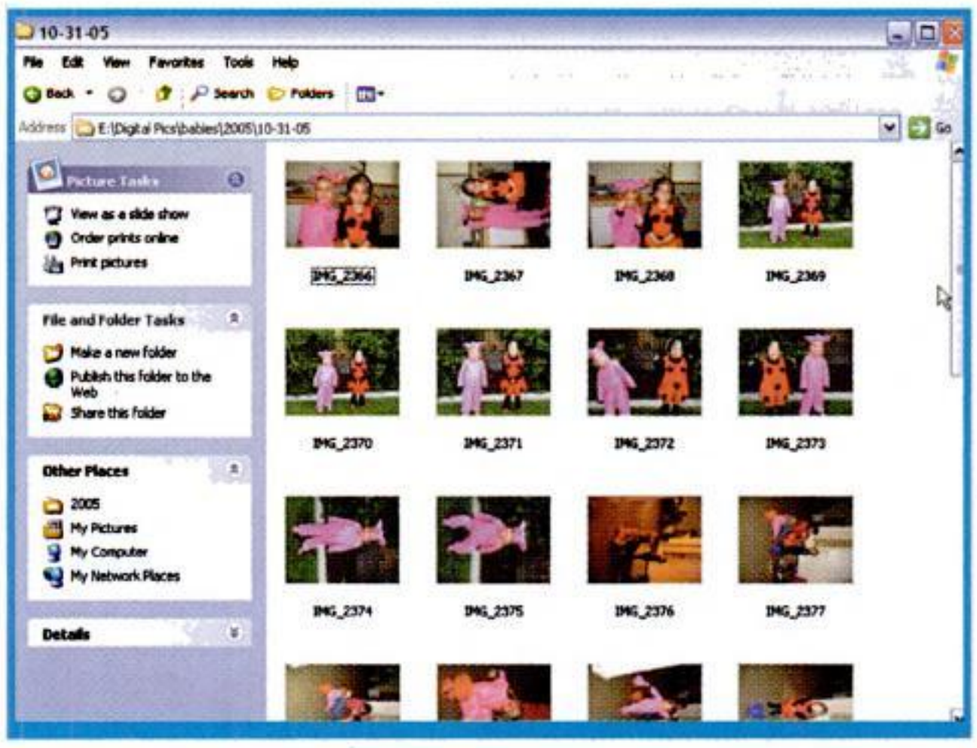
Insert the CF card into your PC's media reader and select the appropriate removable media drive letter to scan. Click Next, and then select a folder where you want recovered files to be saved. Click Next, then Start, and then select a Scan method (we choose Quick Scan because we're just after deleted photos)—leaving everything else at the default settings—and click Continue.



2 Select the Images to Recover



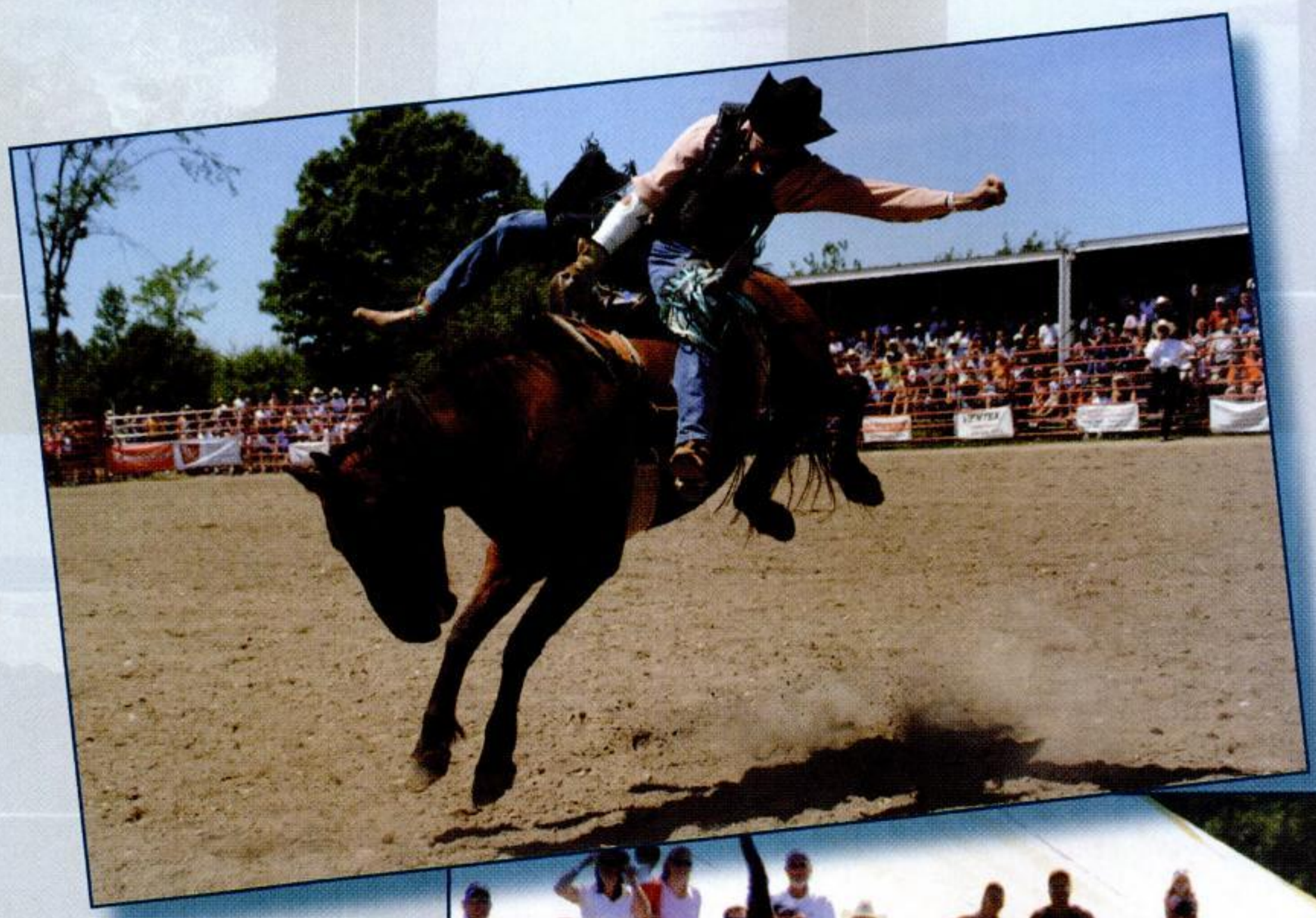
The scan commences and a window pops up that displays thumbnails of recovered images. When the scan is complete you just need to choose which images you want to save, and select Save Images. The preview window will close and bring you back to the root menu.

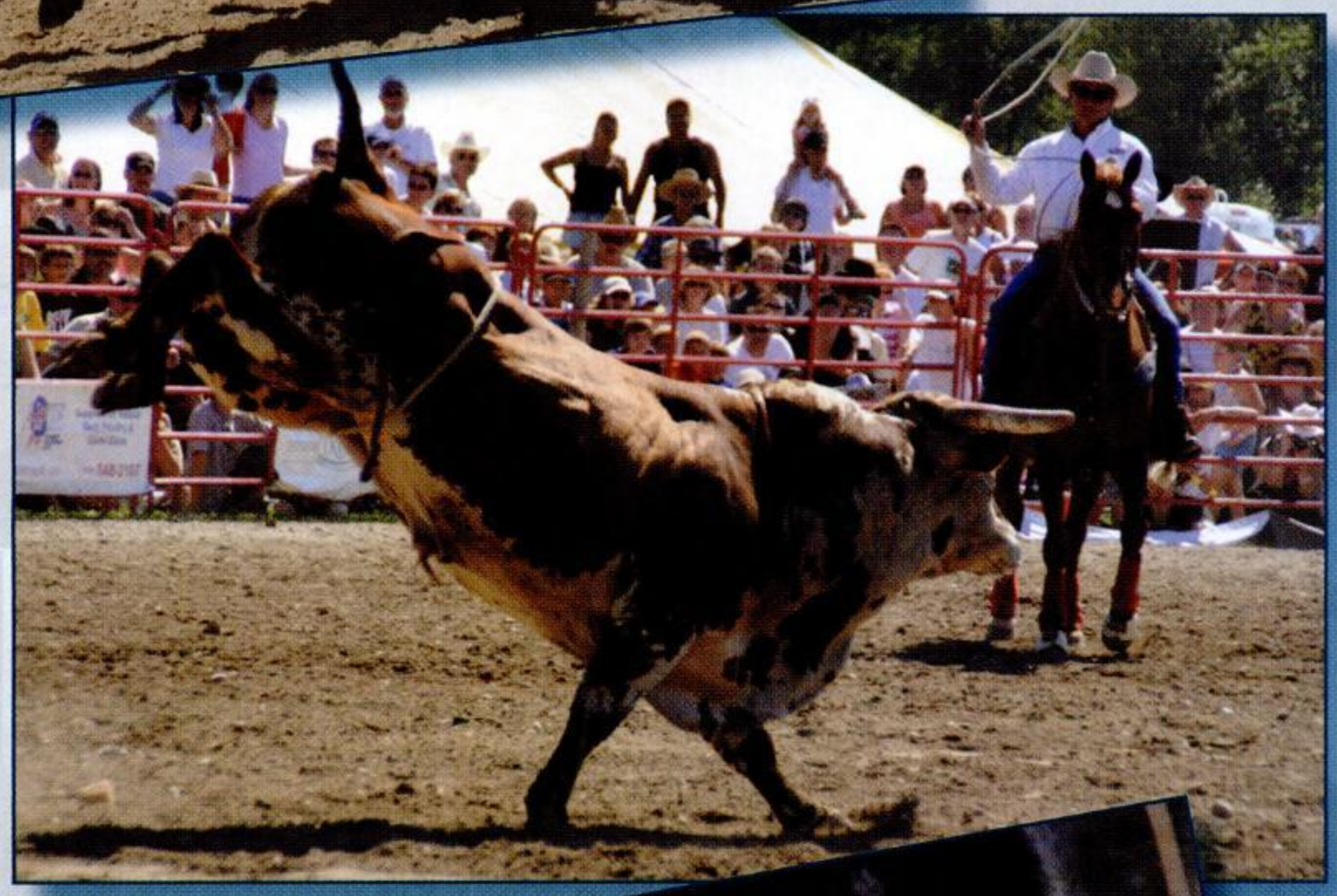


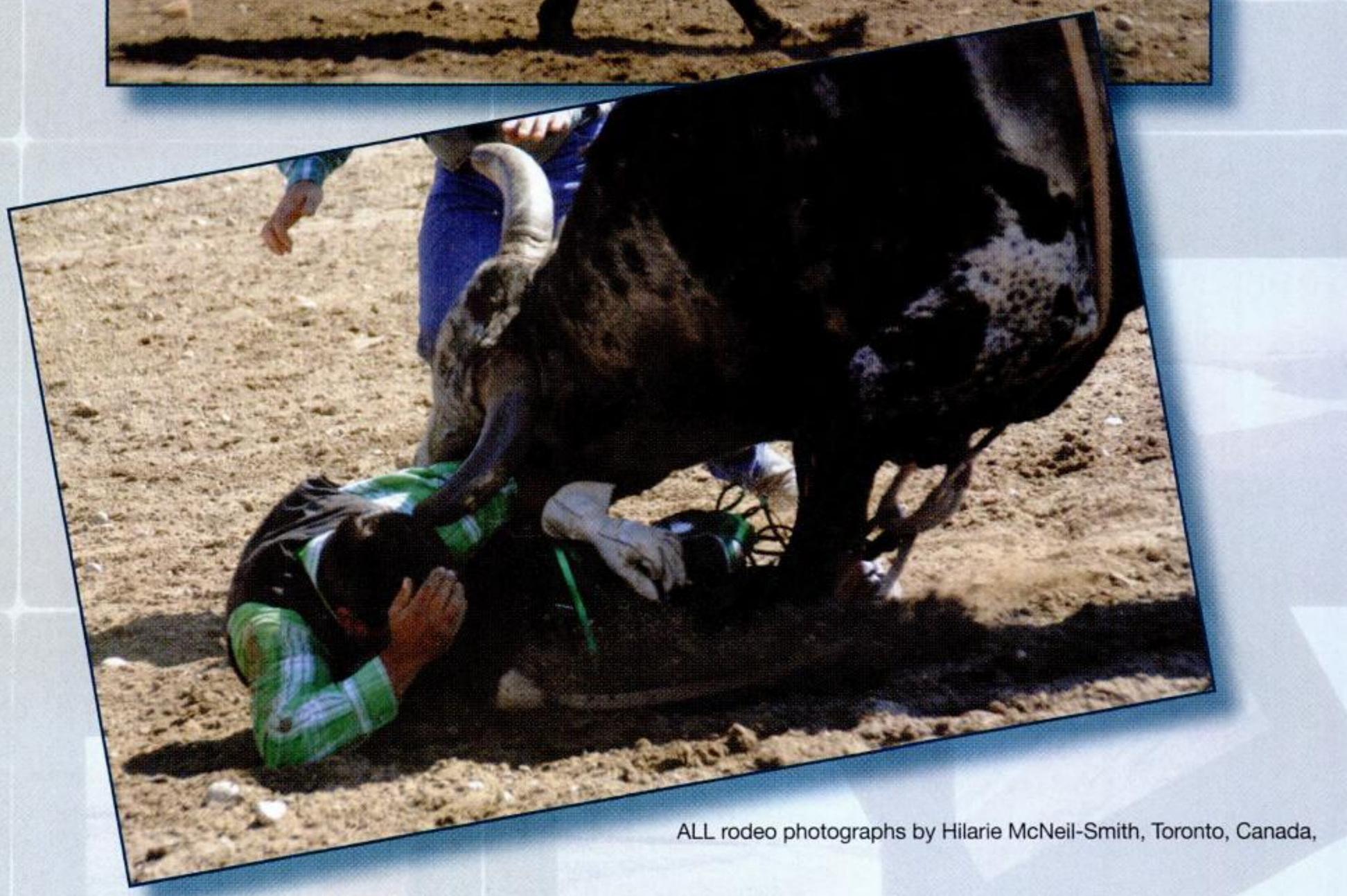
3 Save Your Files

The pay-off: Now, simply hit the "Open recovered files" folder and you're done. *MR* opens the folder in Explorer—in Thumbnails view, no less—and you can go to sleep knowing your pics are safe once again. MPG

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ALL rodeo photographs by Hilarie McNeil-Smith, Toronto, Canada,

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Create a Ken Burns-Style Slideshow

Photo Story 3 expert John "PapaJohn" Buechler shows you how to get the most out of Microsoft's powerful, and FREE, slide-show creation software.

TIME 2:00 HOURS

WHAT YOU'LL NEED

- **WINDOWS PHOTO STORY 3 FOR XP,** Available at www.microsoft.com/genuine/offers/. Windows Media Player 10 or higher is a prerequisite.
- **DVD FOR PHOTO STORY 3 FOR WINDOWS** (Optional plugin) from Sonic for $20, http://estore.sonic.com/enu/photostory/default.asp.
- **CUSTOM SAVING PROFILES** (Optional) from www.papajohn.org. Use the menu to navigate to the Photo Story 3 > Saving page.

Photo Story 3.1 is included in *Digital Image Suite 2006.* It's essentially the same as the free version of *Photo Story 3* but with an option to burn a story to a VCD, an additional higher-quality 1200x900 profile for computer viewing, and picture integration with the suite's library features. The suite runs about $55 after rebate at Amazon.com.

Cursory knowledge of Microsoft's *Photo Story 3* might cause some folks—particularly seasoned video editors—to dismiss the application as just another of the many available slide-show tools. But there's a concrete reason why this program should inspire excitement in any video-creation buff. That reason? Ken Burns.

In his *Civil War* documentary series, Burns popularized the art of bringing still images to life with elegant panning and zooming effects. These effects just happen to be *Photo Story 3's* specialty.

Sure, most movie-editing software can incorporate still pictures with video, but these stills are often resized to about one-third of a megapixel before pans or zooms are applied. Thus, if you're starting off with pictures from a 3-, 5-, or 8-megapixel camera, you're likely to be disappointed with the image quality of the stills in your movies. The same pictures in *Photo Story 3* will maintain *all* the original pixels, at resolutions up to 7200x7200 (50 megapixels). Better still, the duration of the pans and zooms, which are automatically applied, are typically spot-on. Of course, you can override any of the program's default decisions as you fine-tune your project.

As much as we like *Photo Story 3*, it does have room for improvement when it comes to flexibility. For example, you can't easily add a last-minute picture to your project. You only option is to add the photo to the end, and then jog it ahead one frame at a time. Argh!

Another weakness is the limited image-quality settings offered through the default saving choices. Images saved with these settings might play fine on computers, but for higher-quality viewing on a DVD/big-screen setup, a downloadable custom profile is needed.

You can't complain too much, however, when you consider the price of the software. For freeware, *Photo Story 3* brings a lot to the table. So, round up some pictures and give *Photo Story 3* a ride as we guide you through a nine-step process to making a slide show your friends and family will actually *want* to watch.

BY JOHN **BUECHLER**

1 What's Your Story?

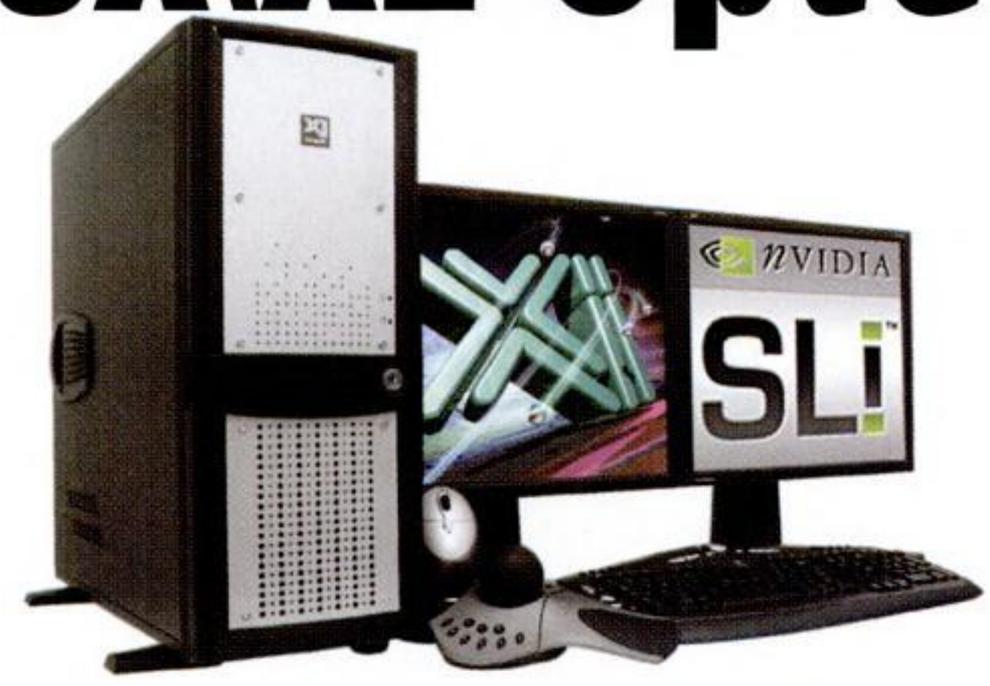
As you gather your pictures, think carefully about the story you want to tell. Critically select images that best fit this theme. And be judicious: Less can be more! A story from a few good pictures is easier to make, and more appreciated, than one that shows all the images in your library.

Your digital camera may be your main source of pictures. But you might also include scanned images, frame snapshots from video files, downloads from the Internet, Print Screen captures from your computer, and email attachments from family and friends.

Don't worry about cropping or resizing pictures before you import them. You'll get to do this within *Photo Story 3*. However, if your

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image needs more than a minor touchup, such as leveling the horizon, censoring part of the photo, or adding a logo, do these edits beforehand with a program such as *Paint Shop Pro* or *PhotoShop*.



Carefully select images that best illustrate your story.

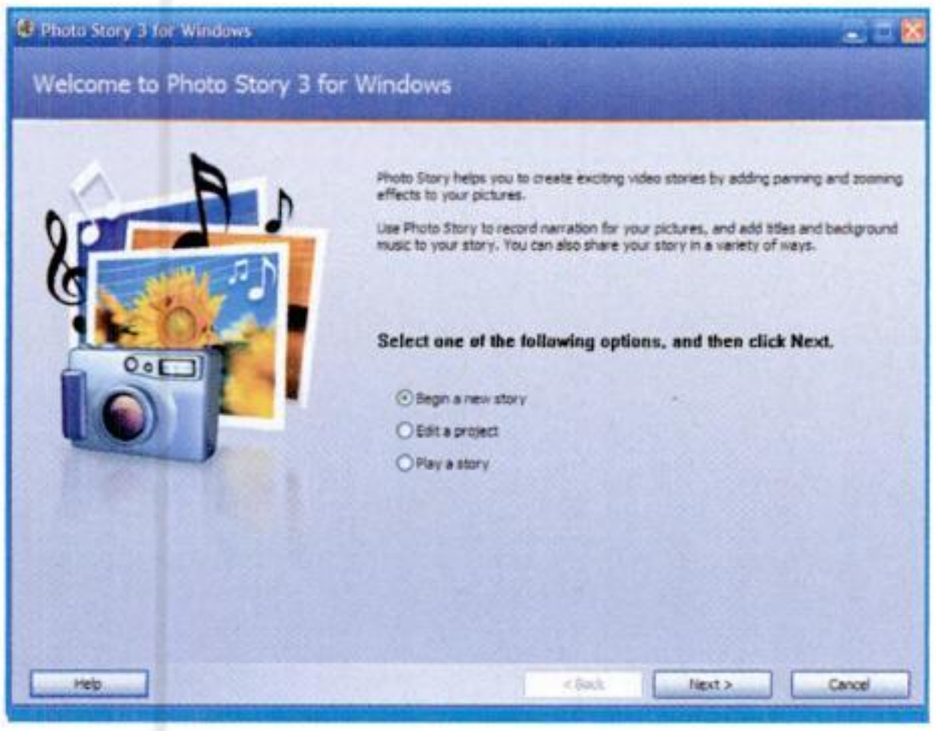
The subject of our sample story is a rodeo: Stories that convey a lot of action tend to be fun to assemble, and more enjoyable to watch. Our stampede of 8MB images comes courtesy of Hilarie McNeil-Smith, a Toronto-based photographer.

To create a story instead of a conventional slide show—indeed, the term conjures up not-so-fond memories of being forced to watch Dad's family vacation slide projector "shows" years ago—you can add interest by scanning an admission ticket, a program brochure, or anything else that adds a more personal and memorable tone (much like you'd do if you were creating a scrapbook).

As you gather images, let them guide you in how best to let the story unfold. Trust your gut: The best pictures will stand out from the crowd, and suggest their own logical sequence. (When you do import the images, *Photo Story 3* will display them on a filmstrip, starting with the first image imported. It won't use file names, so don't worry about them.)

It's important at this stage to think about motion settings for some of your high-resolution images. For instance, if you plan to use compound movements on the same picture, import a couple extra copies of the picture as you go. There's no need to make extras before importing, just note the ones you want to use so you don't forget them during the import (see sidebar "Change Panning in Midstream").

A slide show is limited to 300 pictures. At the default display setting of five seconds each, 300 pictures translate into a 25-minute story, which is more than enough. A five to 10 minute story is a good goal to start with, for which you'll need fewer than 100 pictures.



Start your story.

2 Open Photo Story and Begin

At this point you should have already downloaded and installed *Photo Story 3*: Fire it up, select "Begin a new story," and click Next.

There are six main working windows, each with Back and Next buttons. Use them to step forward or backward as you make your project. Going backward doesn't change or remove any of the choices you've made on the other windows. In our experience, *Photo Story 3* is very stable, and it won't let you exit without saving your project changes. That said, it's prudent to hit the Save Project button early and often.

A project file isn't a viewable finished story. It's a single compressed file with copies of all of the original files you import or make: pictures, music, narration, etc. The project file has a .wp3 extension. (If you have the skills and tools to open a compressed .cab file, you can go into the project file and extract copies of the original files at a later date.)

3 Import Your Pictures

Use the Import Pictures button or drag and drop from your file manager into this window.

The pictures will flow onto the filmstrip in the sequence you have them sorted in your folder. Here's where your pre-planning pays dividends. Don't forget the extra copies of the pictures you'll be adding compound motion to.

Some people don't mind black borders but others do. Pictures that don't align with the standard 4:3 aspect ratio of *Photo Story 3* will have black borders unless you manually take control of the motion settings to avoid them, or use the handy option on this window to remove black borders from one or all of the pictures.

There are four easy-to-use icons below the preview monitor: correct color levels, remove red eye, and rotate counterclockwise or clockwise by 90 degrees. You can also press the Edit button to go deeper and crop, correct contrast, adjust color levels, or add any of 10 special effects to your entire story: Black and White, Chalk and Charcoal, Colored Pencil, Diffuse Glow, Negative, Black Outline, Grey Outline, Sepia, Washout, or Water Color.

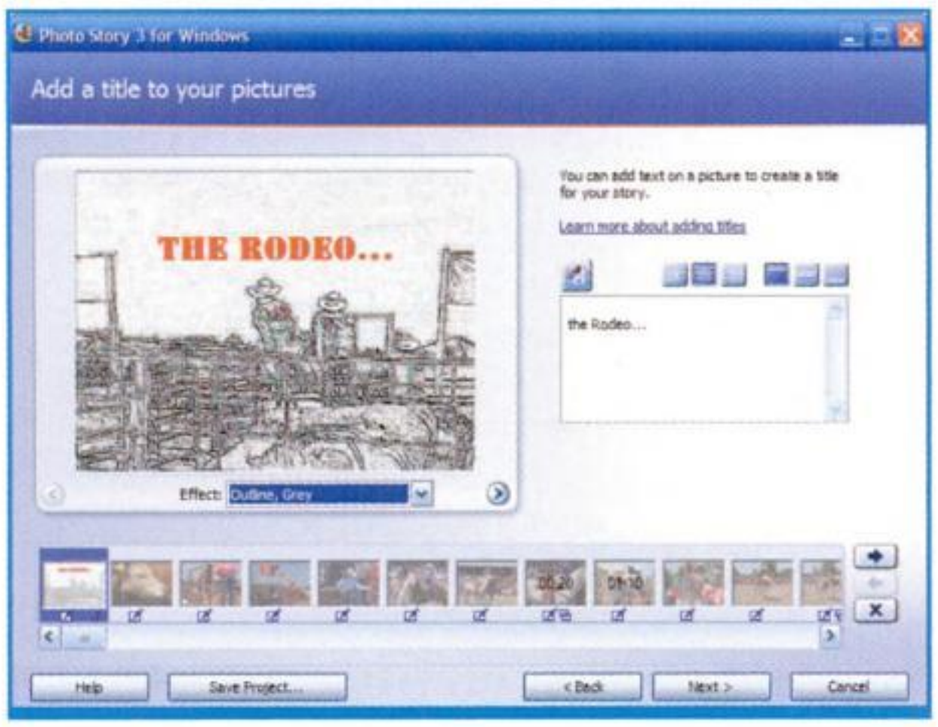


Import pictures in the order you want them to appear.

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Spice up your story by adding text to images, and apply an effect to add even more pizzazz.

4 Add Titles

A good pic might say 1,000 words, but that doesn't mean you shouldn't add your own text to an opening shot, a closing one, or anywhere between.

Text applied to a picture is "sticky" in that it stays in the position where it's been applied. It's the same as adding text in a graphics app before importing into the story. Text applied in a graphics program might be more artistic, but fixing typos or changing words are more easily done natively. Simple controls let you change the font, font size, color, justification, and vertical position.

There's a drop-down Effect list on this window that gives you another chance to use one of those 10 special effects, but this time on only the selected picture, not globally to all of them. Text applied to pictures can be enhanced with an effect—Grey Outline, for instance, gives it a sketch-like appearance.

5 Narration and Custom Panning and Zooming

Clicking Next brings us to the Narration and Custom Motion menu. This is the heart of *Photo Story 3*, where you transform your still pictures into video-like action clips with motion and narration.

Use Your PC to Add Narration.

Narration is added via your computer's microphone. Each narration is a separate Windows Media Audio (.wma) file stored within the project file. Narration is added one picture at a time, not across the entire story. You can pause after each image, take a breath, change narrators, skip a picture, and narrate some pictures now and others later.

Don't rush what should be a 20-second comment to fit into a picture that displays for 10 seconds, and don't quickly pan across a high-quality picture because you have only a few words to say. Balance the flow of the movement with the narration in a way that blends them and captivates you and other viewers. Use the Preview button regularly to see how it's going.



Add drama to your story with narration and customized motion.



The preview monitor has full controls and shows a respectable, but unchangeable, 320x240 size with audio.

A narration is limited to 300 seconds (five minutes), the same limit as the motion setting. 300 pictures at 300 seconds each sets the maximum playing time of a story at 25 hours (egad!). The amount of time a picture shows in the story automatically expands to fit the length of narration.

There's a place on this window to add notes about the picture to assist with your narration, if you need a little extra help. Press the Record button at the left to start the narration, and the Stop button next to it when done. Again, once you add music and/or narration, you can preview your work-in-progress before moving on. Don't like what you hear? Then hit the third button to the right to delete it for the selected picture, and try, try again.

Customize Motion Settings

Your goal isn't to have pictures flip like a slide show at five-second intervals with one-second transitions. Vary the speed at which your images display, to impart more impact to the most dramatic scenes. We've shown you how to slow things down a bit by adding narration. Now, let's look at motion settings.

Photo Story 3 takes the first pass at applying motion to each

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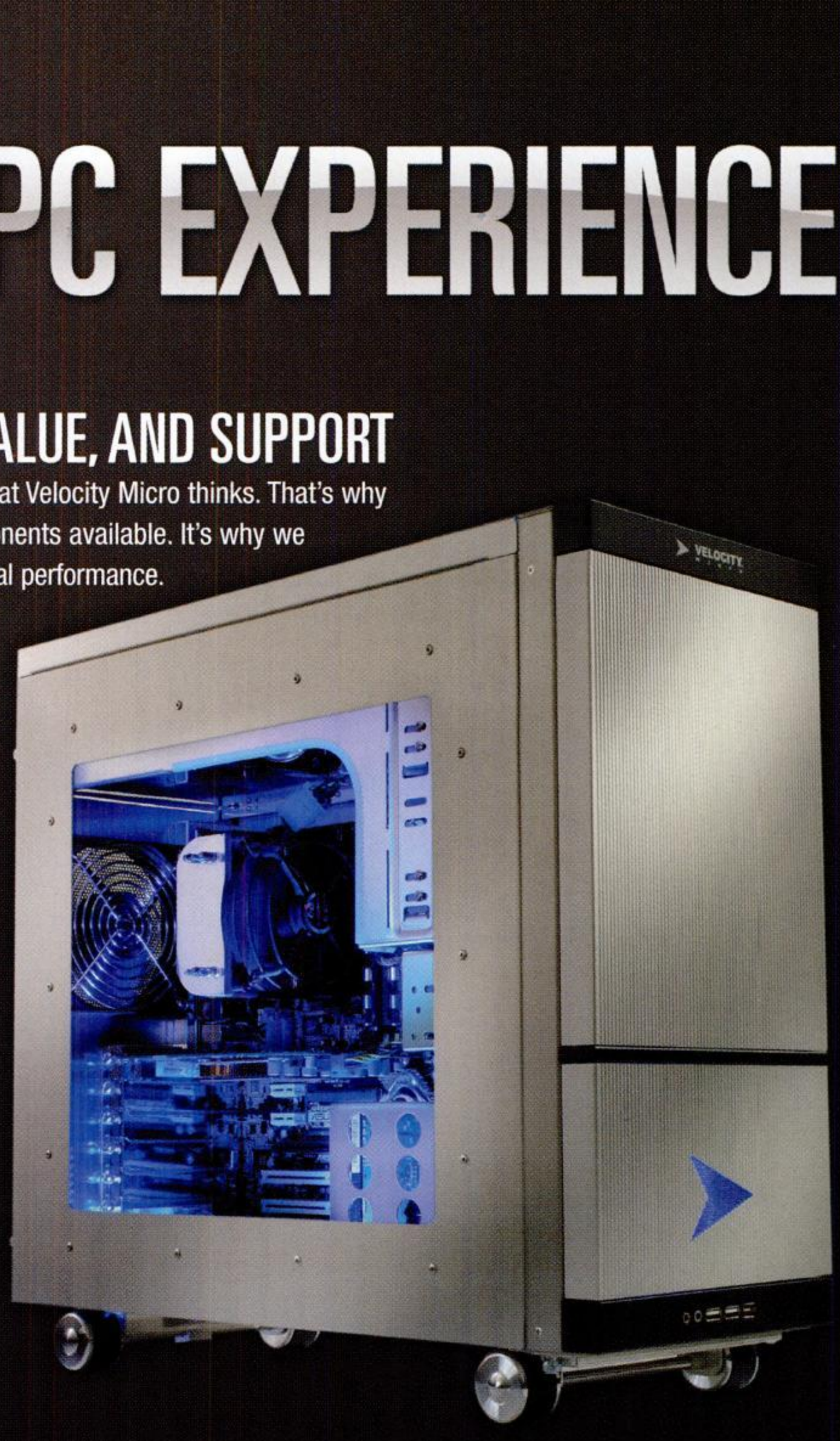
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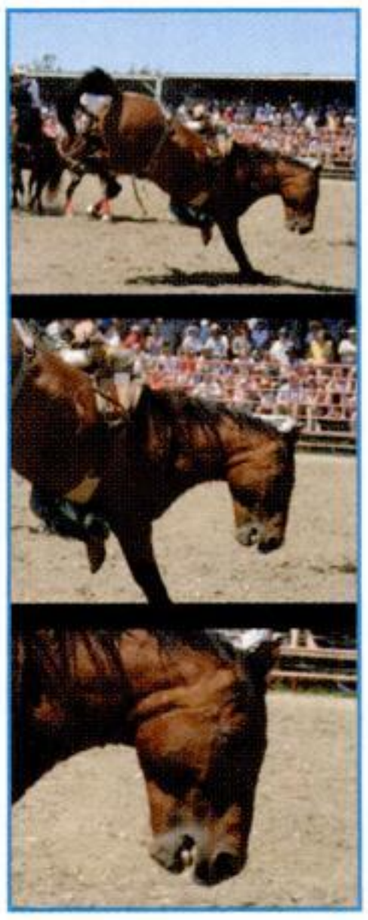
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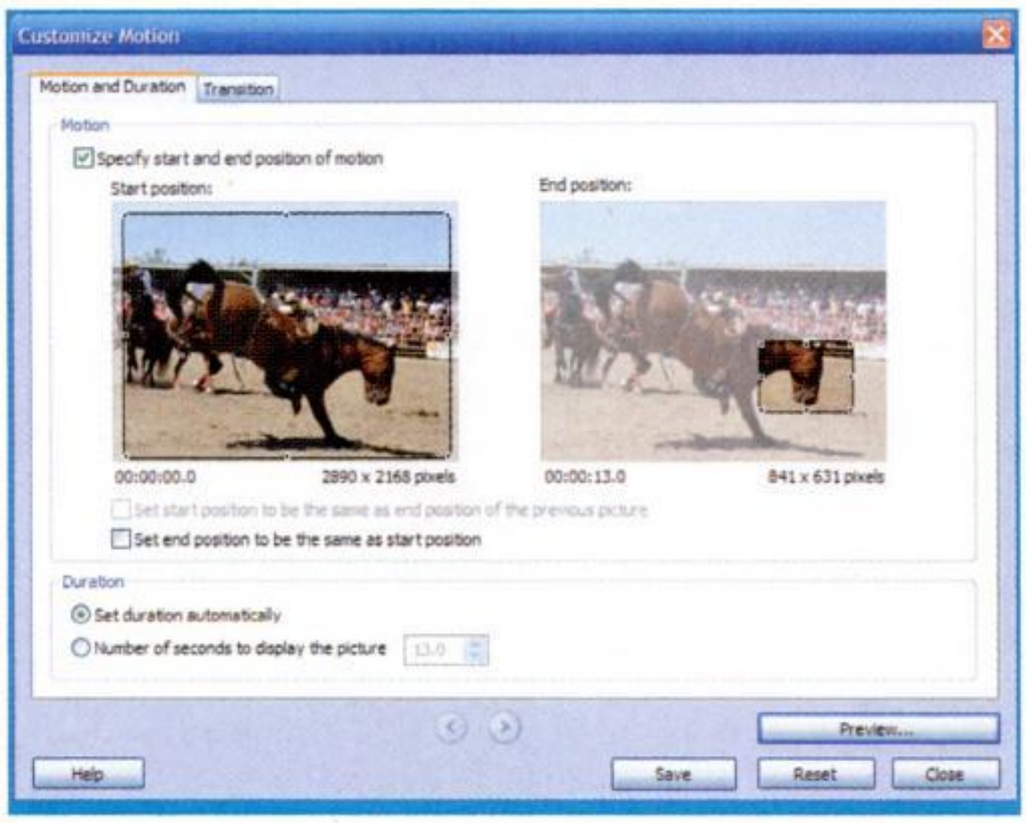
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The first screen shows frame snapshots taken as the story zooms into the horse's head. In the second screen we see that the quality of the video clip was maintained, as there are more than enough pixels in the imported file to work with.



picture, and the results are often good enough. In addition to motion, the application adds a one-second cross-fade transition between each of the pictures.

Sometimes, though, you'll want to control motion settings yourself. To do so, click the Customize Motion button under the preview window and then check the option to specify the start and end positions. This will let you reposition and resize each image individually. As you change these settings, *Photo Story 3* will keep the aspect ratio of the selection in a standard 4:3 video size. (There isn't a widescreen option at this time, unless you use custom profiles. See the "Using Custom Save Profiles" sidebar.)

As you resize and move the selections for the start and end positions, *Photo Story* sets the duration so the motion speed is perfect, at least as it sees it. You can override the program's decision by checking the option to set the number of seconds, and entering your figure. Go as low as one-tenth of a second for a blink of a picture, or as long as 300 seconds, if you've got lots to say.

Use the Transition tab to select a different type of effect to show between each picture and the next. Try different ones (48 transition effects are included) until you get the right feel for your images, using the dynamic preview option. (Do not overuse these transitions, as this can distract viewers—choose two or three you like and vary their use throughout your story.)

In addition to selecting the transition, you can change the duration of the transition, from one-tenth of a second to one that lasts the duration of the first of the two pictures.

It's often handy to use the left and right control icons at the lower center of the window to move to the previous or next picture without leaving the motion window. When you're in the mood to work on motion settings, stay there for a while and do it for many or all of the pictures. You'll be prompted to save the settings for each picture as you move along.

When finished with motion and transitions, press the Close button to return to the main working window.

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Change Panning in Midstream

Photo Story 3 applies panning and zooming to pictures automatically. The results are usually quite good, but here's how to kick 'em up a notch or two.

Let's say you want to start with a picture at full size, such as this one, and zoom from there to focus on the boy's head. That's a one-direction, one-step motion. *Photo Story 3* excels at doing this kind of movement.

But instead of stopping, pan from the boy's head to the man's, and then zoom from there back to full screen. That requires two motions beyond the first.

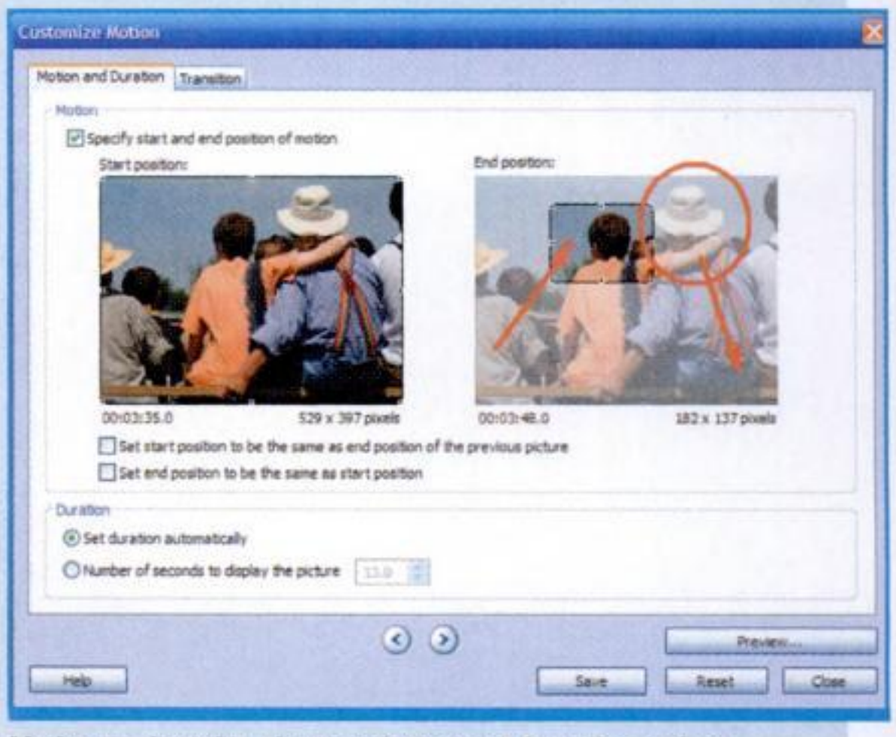
Each change in movement requires another copy of the same picture. For this example, import the same picture twice more so you have three copies to work with.

For the first leg of motion, use the settings shown in the screen above, from full size to the boy's head.

On the next copy, check the option to set the starting position at the same point as the ending position of the previous one. That'll align the two pictures when the motion changes direction.

What most people miss when trying this the first time is the need to delete the transition between the two pictures. On the transition tab of the second picture, uncheck the option to use one. That'll result in the motion smoothly changing direction. Try a preview with and without the transition and you'll see why.

Once the second part of the motion path is finished, do the third the same way, this time zooming out from the tight position on the man's head back to full screen.



Help maintain viewer interest by changing the direction of motion.

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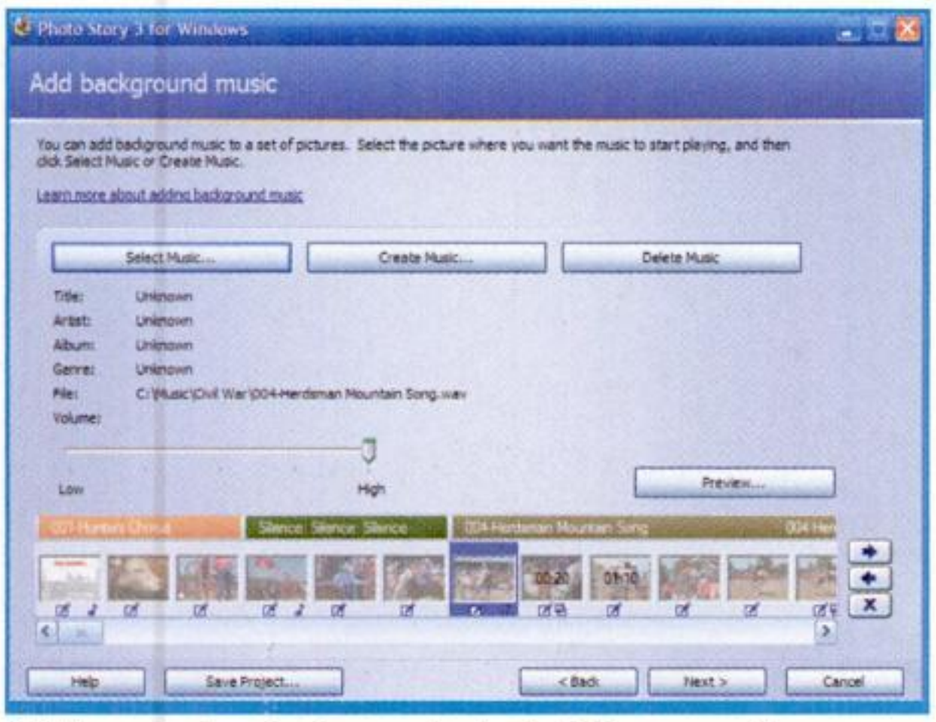
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Continued from page 74



Add music to start on selected pictures, and use Silence to mute it as needed.

6 Add Background Music

You've added some audio in the form of narrations. Now let's add background music to complement it. You can select something from your digital music library: Use any unprotected .wma, .mp3, or .wav file. Use several if your story is long enough.

Or let *Photo Story* make some music for you: Select a Genre: Classical, Country, Dance, Funk, Jazz, Latin, New Age, Pop, Rock, Silence, Soundtrack, and World are all options. Select a Style from a set that matches the Genre, and then a Band and Mood.

The computer-generated music files are created from midi files and saved in .wma format, and then automatically added to and saved with the project file. (If you select music from your library, it's also copied into the project file.)

The tune will start playing on the picture you currently have selected on the filmstrip. Unlike narration files, which don't go beyond the associated picture, music files play until they finish, or until they reach a picture that has a different tune assigned to it. You can change the music at the start of each picture.

If the Music Stops Too Soon

Photo Story 3 has a default behavior that might stop your music short; there's a way around this issue.

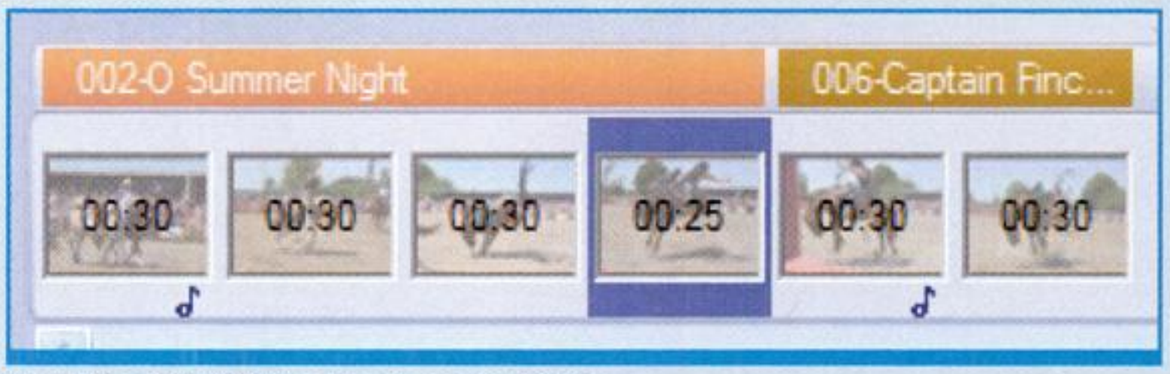
In this example, the story uses a music track of 115 seconds, starting at the beginning of the first picture. You'd expect it to play completely, ending about five seconds before the fourth picture finishes, but it fades out at the end of the third picture. You missed the best part of the music. What happened? What should you do?

Photo Story assumes that, because there's not enough music to make it all the way through the fourth picture, you'd rather have it stop early, at the end of the third one.

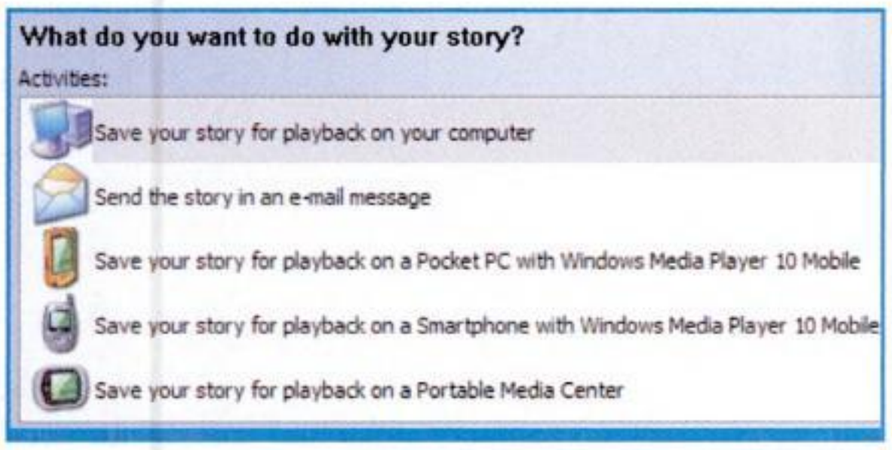
To keep it playing, go back and adjust the duration of the fourth picture so it ends slightly before the music stops. Now, with the duration of the fourth picture changed to 25 seconds, the music will finish to the last note.



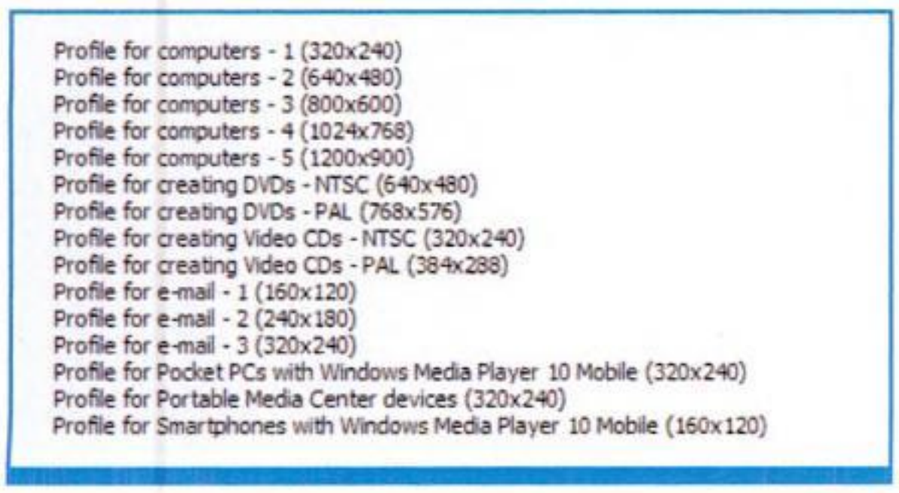
The first tune is ending too soon—it's not playing on the fourth picture.



Now the first tune plays completely.



Think carefully about how your viewers will want to watch your story, before saving your project.



This list shows the profiles included in the basic version of *Photo Story 3*. The choices range from low-quality to high-definition.

7 Render & Save Your Story

In digital video, creating or making the finished video or movie is called "rendering." The pictures, music, narration, and editing decisions all get blended into a Windows Media Video (.wmv) file.

Give some thought to your audience. How will they view your story? Perhaps on a DVD disc with a big new plasma screen, a Sony PSP, a Video iPod, an online video, or a phone with a video feature. Maybe they use all of these options, and you need to render a pack of different-quality files from the project.

If you save the project, you can open it at any time to render another copy at a different quality setting. Each choice in the list is a "profile." Your story will be saved automatically when you press the Next button on this window.

Photo Story 3 will list the options your system supports, and if you have the Sonic plugin, that will also be listed. (The plugin provides a direct one-step burn process to DVD, but with no features to edit the disc's appearance or add more stories.) The most common option is to save the story to your computer.

Select a folder on your hard drive, assign a file name, and use the Settings button to select the quality profile. The profile includes the resolution and other related settings for your project.

Continued on page 79

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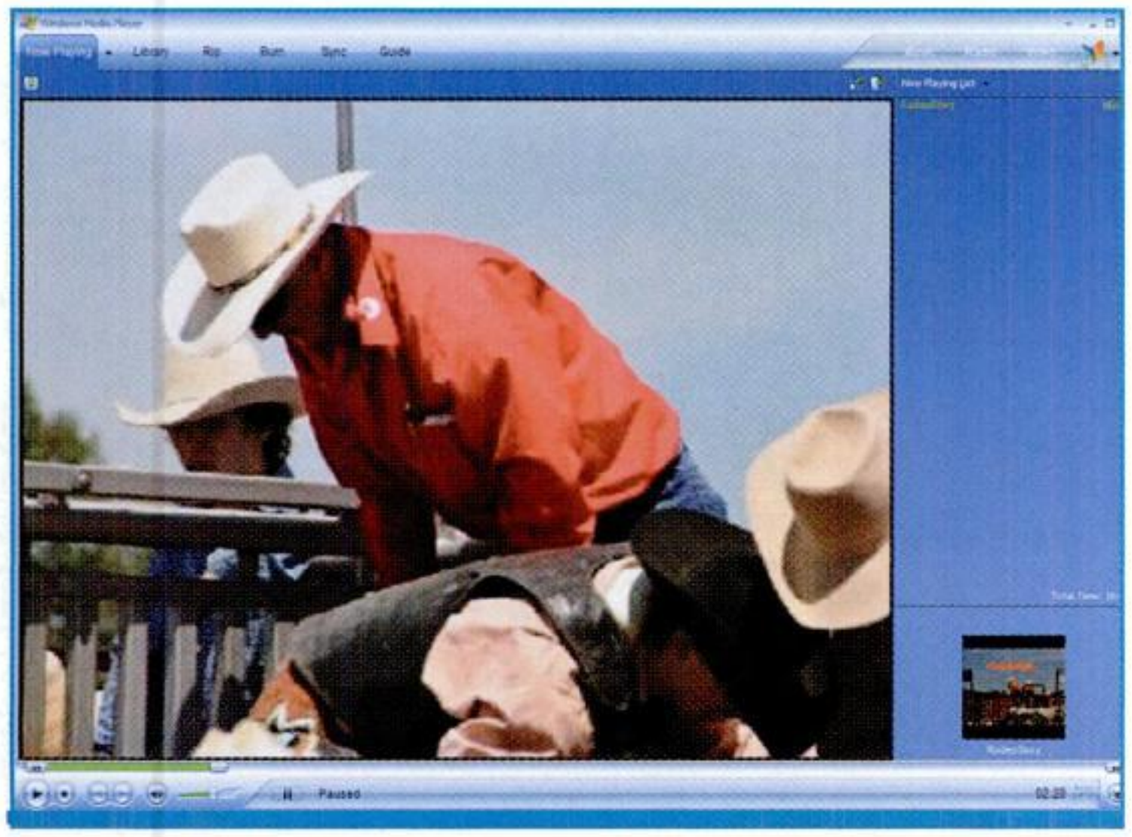
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Continued from page 77



Here's our rodeo story playing on a computer using the Windows Media Player.

8 Big-Screen Preview

You've been previewing your story at 320x240. After it's saved, select "View your story" to watch it in *Windows Media Player*.

If you see something you want to fix or adjust, close the player and use the Back button to go to the project-editing window. Fix or change what you want and re-render the story. (It's amazing how obvious typos will jump out at you during your "final" preview.)

When your story is ready for public viewing, it's time to burn it to a disc, upload it to a website, or attach it to an email.

9 Share the Results of Your Labor

Story files are fairly small and easy to pass around on a thumb drive or upload to a server. Some can easily go out as an email attachment.

The rodeo story—we've included a sample on the CD that came with this issue—plays for 16 minutes, has a DVD video size of 640x480 pixels, plays at a broadband bit rate of 793Kb/s, yet is only 32MB in file size. (An AVI file of that duration from a mini-DV camcorder would be more than 3GB.)

Photo Story 3 doesn't include a disc-burning feature. As we've mentioned, there's an optional DVD plugin from Sonic that does, and *Photo Story 3.1* supports VCD burning. But both of these options have limited features. We recommend that you use a full-featured disc-authoring suite, such as *Nero 7 Ultra Edition*. The latest versions of most popular disc-burning apps support .wmv files.

Photo Story 3 compresses .wmv files using a codec that's optimized for making videos from still pictures, which translates into extremely small file sizes. The downside of this efficiency is that a computer that doesn't have the specialized codec can't play the story. For example, Windows systems need to be online to automatically download the codec for the first time, which isn't a huge deal these days. However, an Apple computer, even with its specialized *Windows Media Player*, cannot play *Photo Story* 3 .wmv files, as it can't use downloaded codecs.

An increasingly popular work-around is to upload a story to a free online video-hosting service, such as Google Video, YouTube, Putfile, VideoEgg, and AddictingClips. Most of these services convert uploaded files into Flash video format, which just about every computer should be able to display.

An email attachment is always an option for distributing a story, too. But as email size limitations are often 10MB or less, and users often run with pretty full mailboxes, be sure this option is appropriate before using it.

Using Custom Save Profiles

Many experienced users were unsatisfied with the quality of *Photo Story 3's* default profile for creating DVDs—thus, the Custom Saving Profiles from PapaJohn.org.

The standard resolution of an MPEG-2 file on a high-quality DVD is 720x480. The default DVD profile in *Photo Story 3* is 640x480. This custom profile provides a new save option that aligns with the MPEG-2 standard at 720x480.

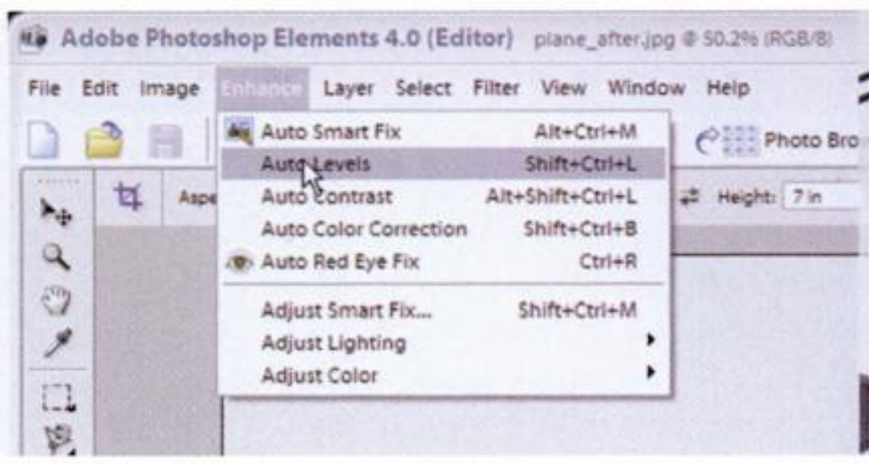
At www.papajohn.org, go to the Photo Story 3 > Saving page, scroll down to the section "Heading to a Disc," click the link to the NTSC profile and download it. Put the small profile (.prx) file into the same folder as the set of profiles that came with *Photo Story 3*. The default installation has the profiles in the C:\Program Files\Photo Story 3 for Windows\Profiles\1033 folder.

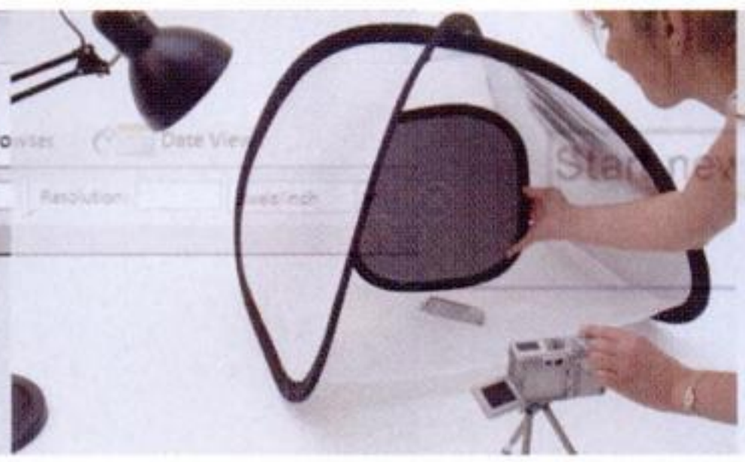
The next time you start *Photo Story 3*, there will be another profile in your list, named "PapaJohn – DVD." Give it a try; if it works better for you, use it as an option.

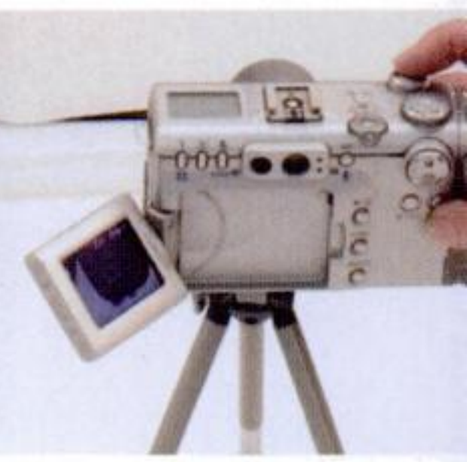
When you're at that website, you might note other custom profiles for making widescreen 16:9 stories, an option not included in *Photo Story 3*. If you use these, be sure to read the notes on the page that detail exactly how to get the best results. MPC

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Take **Better** Auction Photos







Not all of us have room for a photo studio—or the skill and experience to use one. We show you how to easily use the next-best thing to boost your auction results.

TIME 00:45 HOURS: MINUTES

If you've bought or sold something on eBay or another online auction site, you've likely come across an item listing with a barely recognizable photo; and no doubt that inferior photo is hurting more than helping said item's chances of being bid on. Perhaps, (gasp!) you've even posted such a photo yourself.

Don't feel too bad, not everyone has room for a professional-level photo studio in their home, let alone the skill and experience to use it adequately. In the rush to get things done, it's natural to just prop the item we want to sell on the kitchen counter, snap a quick, low-res pic with a point-and-shoot digital camera, and slap the image into our listing. These photos might not win any awards, but they're usually good enough to get the job done—sell the item in question. Better images, however, will almost always garner more bids, and more bids equal more clams for you.

One way to get near professional-quality results, at a minimal investment of time and money, is to use a photo tent kit, such as ePhotomaker. (Think of it as a photo studio in a bag that you can set up in minutes, use to quickly take your photos, and then disassemble and stow away just as easily.) A lamp is used to shine light through one side of the tent, which is then reflected and diffused evenly on the inside to remove shadow cast from your subject and produce a nice, well-lit, and perfectly exposed shot.

With just a little practice, you can be taking spectacular shots that will hopefully increase your profits. Here's how the ePhotomaker kit works.

BY STEVE **KLETT**

WHAT YOU'LL NEED

- **EPHOTOMAKER**
  $117-$175, www.bogenimaging.us
- **DESK LAMP**
  150-watt ($20-$100), may be tungsten- or halogen-based
- **DIGITAL CAMERA**
  Preferably one with manual white-balance settings
- **PAINTSHOP PRO X**
  Free trial, www.corelsoftware.com

1 Pitch the Tent



Setting up ePhotomaker couldn't be easier. Merely slip it out of its snappy flat canvas storage bag, grab one of the black rims, and give it a shake—it should snap open to form a tent shape with triangular side panels. Position the ePhotomaker on a flat surface, such as a table, with the open side facing you. Tip it over 90 degrees so that it's resting on the back panel. Attach the included support rod by affixing its yellow Velcro strips to the yellow tabs on the back rim of the tent, and turn the tent back onto its base with the open side facing you.

Next, position your desk lamp on the left-hand side of the tent. Either a halogen (best) or traditional tungsten lamp will do, just make sure the bulb is rated at 150 watts or more. If using a tungsten (incandescent) bulb, attach the included blue "daylight" film to the lampshade using the attached clips. This film will help compensate for the yellow color cast from tungsten bulbs by simulating daylight shooting conditions. (Make sure all other lights in the room are turned off.)

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2 Set up Your Camera



The ePhotomaker kit comes in two sizes, the smaller of which includes a mini-tripod (shown here). Position the tripod in front of the tent, turn the locking screw counter-clockwise to allow the tripod head to rotate freely. Attach your camera by screwing the top plate of the tripod clockwise into the tripod mount on the base of your camera, and then lock it in position by tightening the locking screw. To position the camera for a photograph, you can adjust the tripod's tilt and rotation by releasing the locking screw and tightening it again.

3 Prep Your Subject

The tent's sewn-in white fabric can be used as the backdrop for your photos. However, this fabric tends to get wrinkled while in storage, so we recommend ironing it first. But who likes to do that? Alternatively, insert a piece of white or colored heavy construction paper. Make sure the paper is large enough to cover most of the bottom of the tent and then at least half of the back wall. Place your subject in the center of the tent, and then adjust the angle of the lamp to ensure even lighting.

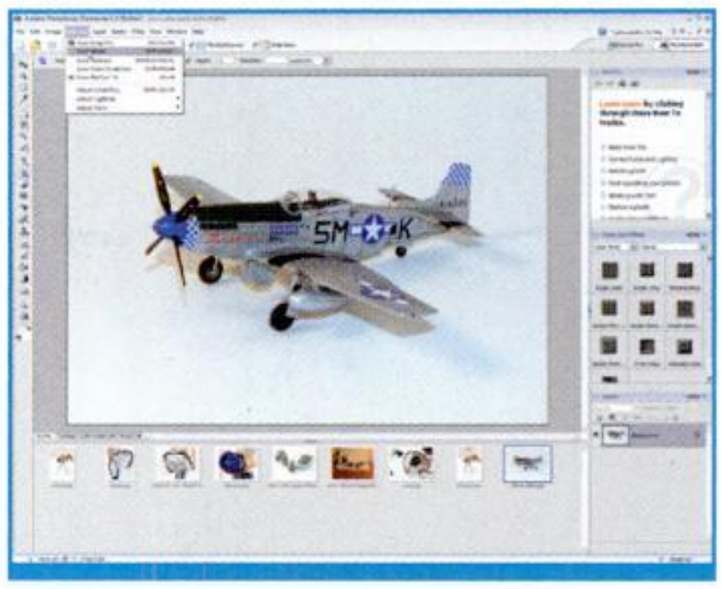
4 Compose and Shoot



Most modern digital cameras include preset white-balance (WB) settings, which should be set for incandescent light. Compose the subject in the viewfinder or LCD—nothing artsy-fartsy here, just get as much of the subject in the frame as you can—and fire away. For best results, we recommend that you shoot at your camera's maximum resolution, which will give you more flexibility when it comes to the cropping and touching-up stage. Use your camera's LCD to view your results. If the images look dark, or underexposed, you might want to experiment with your camera's EV compensation settings, if available.

If you only have an automatic WB mode, you'll want to use the included grey card (see image above) to help ensure the best possible exposure. Place the card inside the tent and in front of your subject, make sure the printed crosshair is in the center of the image and as close to the subject as possible. Depress the shutter half-way to lock focus and exposure settings, remove the card, and then fully depress the shutter.

Repeat these steps as needed to take as many shots of the subject as you require for your listing.



5 Transfer and Touch Up

Transfer your images to your PC and view them in a photo editor, such as *PaintShop Pro*. Crop as needed to show as much of the subject as possible. Typically, all that's needed for touch-up is to use your chosen photo editor's quick fix or auto-levels options. Feel free to experiment with different colored backdrops and lighting conditions—after just a bit of practice you should be churning out vastly improved photos that will help drive top dollar results for your auctions (see sidebar below).

6 Pack it Up



When you're finished, simply disassemble the tent, fold it up, and pack it away. OK, so this is easier said then done! First, fold the ePhotomaker flat, grab it by the left and right bottom corners, and then slowly bring your hands together. As your hands are about to touch, let your right hand pass beneath the left and the tent should fold into a tight circle. MPC

Before and After Shots



IMAGE 1



IMAGE 2

The proof is in the pudding, as they say, and in this case the pudding is a well-exposed "product shot" with minimal shadows and even lighting that will add interest to your auction listing. In the left-hand shot (image 1) we have a die-cast model airplane we shot on the kitchen counter under fluorescent lighting—fugly, to say the least, but not unusual for eBay. In the right-hand shot (image 2) we have another model airplane (identical in size) that we shot at the same time using the ePhotomaker kit.

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Seagate Barracuda 750GB

Meet the new 7,200rpm performance king

Big companies rarely take chances, and Seagate—the world's largest drive maker—is no exception. It has always played second fiddle to Hitachi when it comes to the 7,200rpm hard drive capacity war, and even though Seagate drives are reliable and semi-speedy, they've never delivered industry-leading or even outstanding performance. Well, those days are over. Seagate has shipped the world's first perpendicular desktop hard drive, which shatters the capacity record, and is also the fastest 7,200rpm drive we've ever tested.

BENCHMARKS

	BARRACUDA	WD5000KS
HD TACH 3		
RANDOM ACCESS TIME (MS)	13.4	**13.2**
BURST RATE (MB/S)	**256**	191
AVG. SEQUENTIAL READ (MB/S)	**66**	62.2
H2BENCHW		
APPLICATION INDEX*	**27.3**	27
OTHER		
DOOM 3 LOADING (SEC)	**28**	31
5GB READ (SEC)	**82**	99
IOMETER 50 PERCENT RANDOM WORKLOAD (IO/SEC)	**255**	214
OPERATING TEMP WITH NO FAN**	**53**	48

*Best scores are boided. *The application index is a real-world script of six applications. The score is based on the time it takes the drive to complete the scripts. **Hard drive temperatures measured using S.M.A.R.T. data, as reported by the Speedfan utility.*

The tenth-generation 7,200rpm (7200.10 for short) Barracuda drive pulls out all the stops. While the rest of the hard drive world is still using longitudinal recording, where the magnetized bits are laid down on the recording media in a flat orientation, Seagate has already moved to a new, more efficient way of packing bits onto platters. In perpendicular recording the bits "stand" up, so they are oriented perpendicular to the recording media. Perpendicular drives pack more bits on each platter, allowing for massive increases in capacity, as witnessed by this drive's unbelievable 750GB capacity (the next-biggest drive is a lowly 500GB).

Seagate's 7200.10 Barracuda is the world's first desktop hard drive to take advantage of perpendicular recording technology.



The 7200.10 Barracuda sports a 16MB buffer, a SATA 3G interface, and four 187GB platters. During testing, the drive set benchmark records in several categories, including sequential read speed, *IOmeter*, a 5GB read, and *Doom 3* loading. This drive kicks serious ass across the board. Not since the Raptor's arrival have we seen such a hard drive smackdown. The speed doesn't come without a price, however; the drive ran nuclear hot under load without cooling, and its application index score was lower than the WD400KD. (It was higher than the newer WD500KS, which means it might be time to revisit this benchmark.)

Folks, there's a new 7,200rpm sheriff in town, and its name is Barracuda.

—JOSH NOREM

BARRACUDA 750GB **9**

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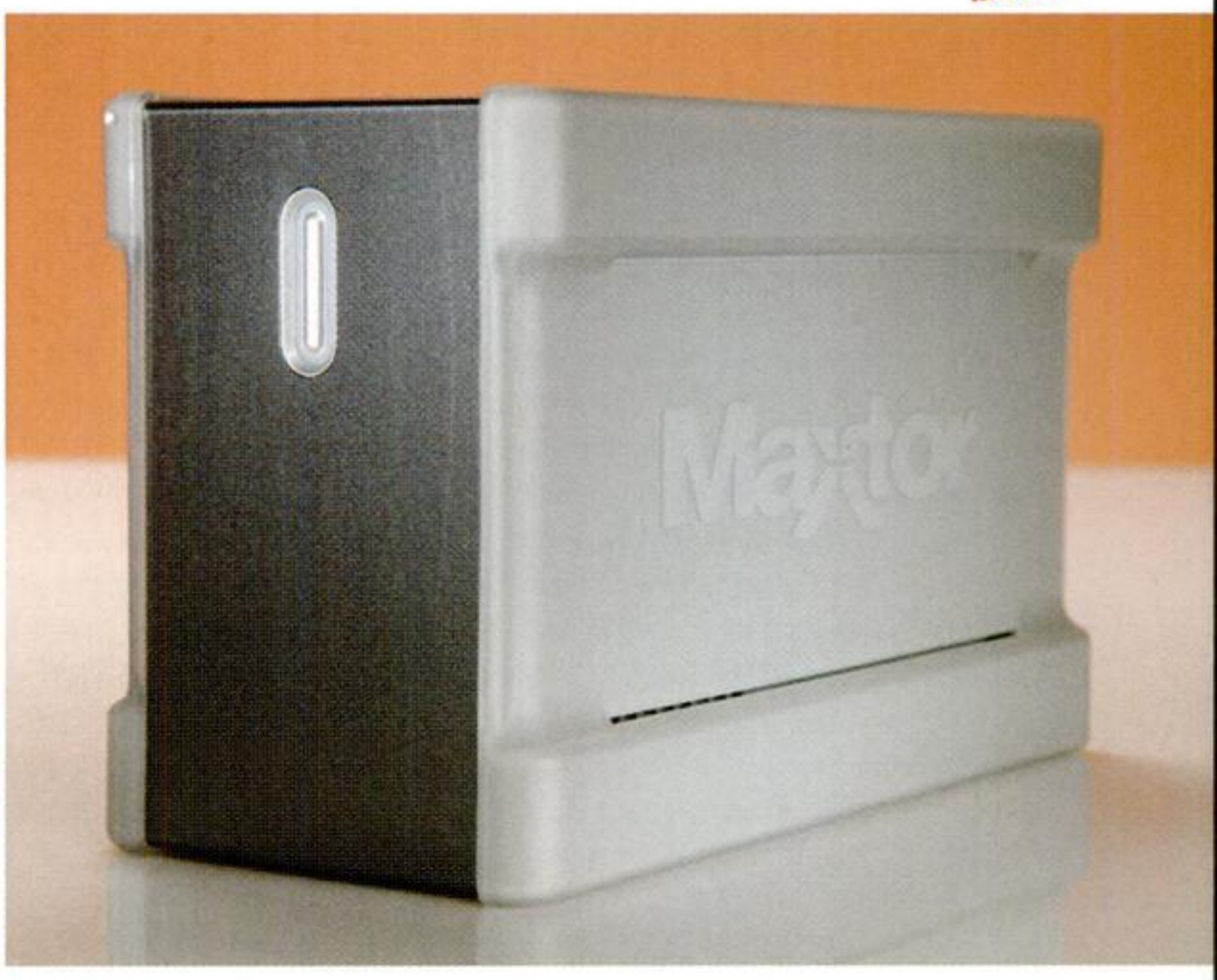
Backup drives are usually pretty bland and uninteresting, consisting of just a drive mounted inside a plastic shell. Not this time! Maxtor has managed to tickle our Geek-spot by wedging two 500GB drives inside a sexy rubber lunchbox, and adding a dash of RAID for spice. It all amounts to one hell of a drive, and it's the new end-all, be-all backup drive as far as we're concerned.

The Turbo's small footprint belies its behemoth capacity, which totals 930GB formatted, compliments of two Maxtor DiamondMax 11 500GB drives. While having two drives instead of one isn't *that* exciting on its own, we were stoked to learn that you can run the drives in either RAID 0 (striped) for maximum capacity, or RAID 1 (mirrored) for redundancy. You set up the array using the included software, which we found extremely easy to use. Note that if you run RAID 1, there's no way to swap out a drive in the event of a disk failure. Maxtor will send you a new unit, to which you would copy your data, and then you'd return the defective unit to Maxtor.

The Turbo's configuration utility sports some options we *love*—such as the ability to password-protect access to the drive in case of theft, the option to reduce seek times for quieter operation (although you can't adjust the integrated fan's speed), and the ability to easily tell the drives to spin down after a certain period of time.

The included backup software is Dantz *Retrospect*, but Maxtor has added a custom front-end that makes the software simple to use. You can make images of your drives, duplicate key files, or just keep certain folders synced with your backup drive at all times.

We're impressed. Way impressed. If Maxtor added a media reader, a USB port, and silenced the fan, this drive would have been worthy of a Kick Ass award.



With connectors for FireWire 400, FireWire 800, and USB 2.0, the One Touch III Turbo will work with any PC or Mac.

—JOSH NOREM

MAXTOR ONE TOUCH **9**

$900, www.maxtor.com

Continued on page 84

Copyrighted material

Continued from page 83

Nikon D50

Entry-level SLR is packed with features



Get yourself a Nikon D50 and get rid of that sissy, nickel-plated point-and-shoot.

Nikon's D50, the company's latest foray into the sub-$1,000 digital-SLR category, outstrips most other budget bodies in its class and kicks much point-and-shoot ass.

Much of that capability comes from the D50's lineage. The body feels and functions like a detuned D70, which was itself a breakthrough product. The D50 sports the same imaging sensor as the more expensive D70, and delivers terrific bang for the buck.

The body is rated for 2.5fps, which sounds slow, but thanks to fast write times, the D50 will shoot almost continuously until your memory card is full (provided you own a fast card, of course). We tested the D50 with a SanDisk Ultra II SD card and only experienced slowdowns shooting RAW or at high ISO. Nikon likely switched to SD to save space and make the D50 smaller.

SPECS

SHUTTER SPEED	Bulb-1/4000
FLASH SYNC SPEED	1/500
ISO RANGE	200-1600
SENSOR	6.1MP sensor
LENS SUPPORT	Nikkor DX and AF Nikkor lenses (no metering with AI and AI-S lenses)

The body is plastic but feels solid. Ergonomics are good but a few things irked us. First, you have to use the menus to switch metering modes. And there's only one command dial, so changing exposure settings in manual mode is cumbersome; it's much easier with two dials. Hobbyists will also miss a mirror-lock feature for macro or telephoto work, and we hate that the top LCD lacks a backlight. *Grrr.*

The biggest weakness of the camera is in perception though. At 6.1MP, many consumers will pass on the D50 in favor of a point-and-shoot with a higher pixel count that costs about the same. That would be a mistake. With its larger CCD sensor, the D50 will shoot far superior images to any point-and-shoot on the market today.

With a mirror lock-up feature, and a better viewfinder, this would be a Kick Ass camera, without a doubt. Coming off the full-frame EOS 5D (reviewed in April) and its spectacular viewfinder, the D50 finder looks like a disposable camera's. That shouldn't be a deal breaker, though, as the D50 is a great bargain.

—GORDON MAH UNG

NIKON D50 **8**

$700, www.nikonusa.com

Phanfare

Share all your digital photos online

Most of us have friends and family spread all over the country, which can make it challenging to share our digital snaps, let alone video. Lots of free online photo- and video-sharing sites have popped up to address these issues. However, these tend to suffer from speed issues, bombard you with ads, and come with strings attached—such as requiring you to buy prints within a certain amount of time or have your images deleted (yikes!).

If you've got lots of photos to share, and want the added security of having a secure offsite storage backup, we recommend going with a paid service, such as *Phanfare*. Getting your pics up on this site couldn't be easier. After you sign up, all it takes is a brief download of an elegantly simple-to-use front-end program and you're off in running. *Phanfare* uploads the full-res images you select in the background, which means that thumbnail images—up to 700 by 700 pixels—are available to share in mere minutes (viewers will have to wait for the full-size images to upload, should they wish to download them). There's no server space limit, so upload to your heart's content—including video clips of up to 5 minutes in length.

Phanfare supports all major file types—BMP, JPG, TIF, GIF, MPEG, MOV, AVI, etc.; it's ad-free; does not require viewers to join; provides a personal url and supports custom domain names; lets viewers order prints via Shutterfly, Kodak, and Snapfish; and you can use it to host images or video for blogs or online auctions. If and when you choose to discontinue the service it sends you all the full-size pics you uploaded via DVD. Nice—but it's not cheap. The service runs $7/month or $55/year—or you can sign up for a lifetime membership for $300.

However, *Phanfare* does prove the old axiom "you get what you pay for".



***Phanfare* represents a fast, simple, and reliable way to share your digital snaps—for a price.**

In our test the service was fast, reliable, fun, and easy to use—even for dear ol' Mom and Dad.

—STEVE KLETT

PHANFARE **9**

$55/year, www.phanfare.com

MAXIMUM PC KICKASS

Continued on page 86

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VANTEC

NexStar LX

NAS HARD DRIVE ENCLOSURE

Capacity meets flexibility with the NexStar LX from Vantec. Transforming any standard IDE hard drive into a NAS (Network Attached Storage) device, your files become easy to store and even easier to share. Now you can access movies, music, and photos from your entire network as well as from anywhere on the internet. With its USB port, the NexStar LX can also be used as a typical enclosure where a network is not available. No matter where you are, the NexStar LX will keep your data within reach.

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Continued from page 84

Canon EOS 5D

Full-frame digital photography finally gets cheap(er) with the 12.8 megapixel EOS 5D

Look into the viewfinder of a consumer-grade digital SLR and you'll notice a startling difference compared with a film camera and the same lens: Your view is cropped, in much the same way black bars crop a widescreen movie to fit an older TV.

Those black bars are gone with Canon's breakthrough 12.8MP EOS 5D camera, the first semi-affordable full-frame digital SLR. Peer through the beautifully bright viewfinder of the 5D and you'll be stunned by how much of the image you've been missing with your run-of-the-mill SLR.

That "black bar" effect is due to the size of the camera's image sensor. While a normal frame of film is roughly 36x24mm in size, the average consumer digital SLR, such as Canon's EOS 20D or Rebel XT, features a sensor that's about 22.5x15mm. The smaller sensors in these cameras, in effect, turn a "normal" 50mm lens into an 80mm telephoto. An ultra-wide angle 20mm lens is equivalent to an average 32mm lens.

Why doesn't everybody use a full-frame sensor? The problem is cost. The larger the sensor, the lower the yield. The lower the yield, the more it costs. That's the breakthrough with the 5D. While a $3,300 street price sounds steep, the company's first full-frame camera cost $8,000 in 2003.

To lower the price, Canon cut out pro features such as weather resistance and a more advanced auto-focus system. That doesn't mean the 5D is a featherweight that'll short out on a humid day. In fact, the magnesium alloy body feels more solid than the EOS 20D body and should survive light rains or mist just fine. Just don't expect to cover a hurricane with it.

Even without pro-level auto focus, the 5D is still improved over the 20D. Focus response is snappy and accurate, even in low-light conditions. We also like the diminutive size of the 5D compared with the huge pro bodies that scream "rob me at knife point, please." Given its three-frames-per-second capture rate, the 5D isn't intended as a sports camera, but its deep buffer of 60 JPEG or 17 RAW files, and fast write times to Compact Flash cards mean you'll likely never wait for a shot.



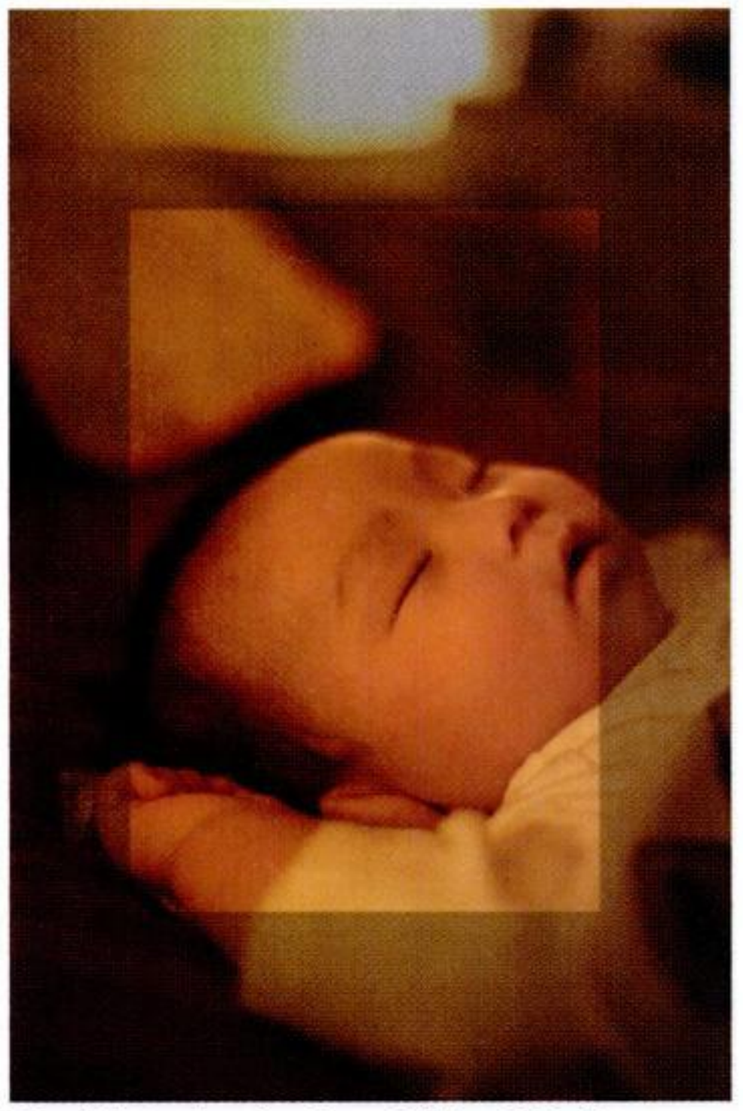
The EOS 5D features a huge, 60-image buffer and a magnificent 2.5-inch LCD for reviewing images.

We compared the 12.8MP 5D to an 8.2MP EOS 20D and Nikon's 12.4MP Nikon D2X. In low-light conditions, the 5D's high ISO performance is stunning. At 1600 ISO, it outclasses the 20D, which was the previous benchmark for low noise, or "grain." Thanks to improved noise algorithms, and a sensor that isn't as crowded with pixels as the smaller sensors in the D2X and 20D, the 5D is the new camera to beat for low-light photography. In resolution, as expected, there's no discernible difference between the D2X and the 5D, but both offer a bit more detail than the 20D's 8.2MP.

Is the 5D right for you? As any photographer will tell you, a camera is just a tool, and you pick the right tool for the job. The 5D is the tool for landscape, wedding, studio, or street photography, but not the best tool for sports or action shoots.

We give Canon kudos for getting a full-frame sensor into the hands of serious amateurs, but Canon isn't demonstrating the zany, out-of-the-box thinking that Nikon has with its D2X, which features an even more "cropped" mode to increase the frame rate from 5fps to 8fps at the cost of resolution.

Still, hold the 5D up to your eyeball, and you'll have a hard time looking through the viewfinder of a cropped camera again. **—GORDON MAH UNG**



The lighter box in the middle of the image shows you where most consumer-grade digital SLRs "crop" the image you would get with a 35mm film camera—or Canon's 5D.

SPECS

AF SYSTEM	Nine AF points with six hidden assists from -5 EV to 18 EV
METERING	35-segment evaluative, center weighted, partial, and spot
ISO RANGE	50-3200
SHUTTER SPEEDS	Bulb – 1/8000
FLASH SYNC	1/200
FRAME RATE	3fps for 60 JPG or 17 RAW
STORAGE	Compact Flash Type I and Type II

CANON EOS 5D

+ HENRI CARTIER-BRESSON

Butter-smooth images in low light, no crop factor, and a huge LCD.

– CARTER COUNTRY

Soft-touch shutter release feels mushy and viewfinder info is skimpy.

9

$3,300, www.canon.com

Continued on page 88

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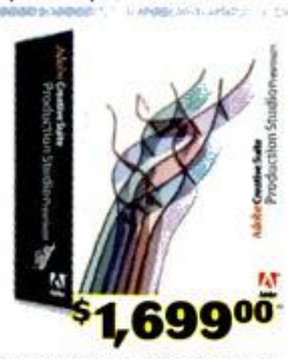


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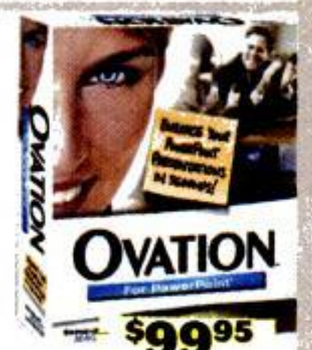
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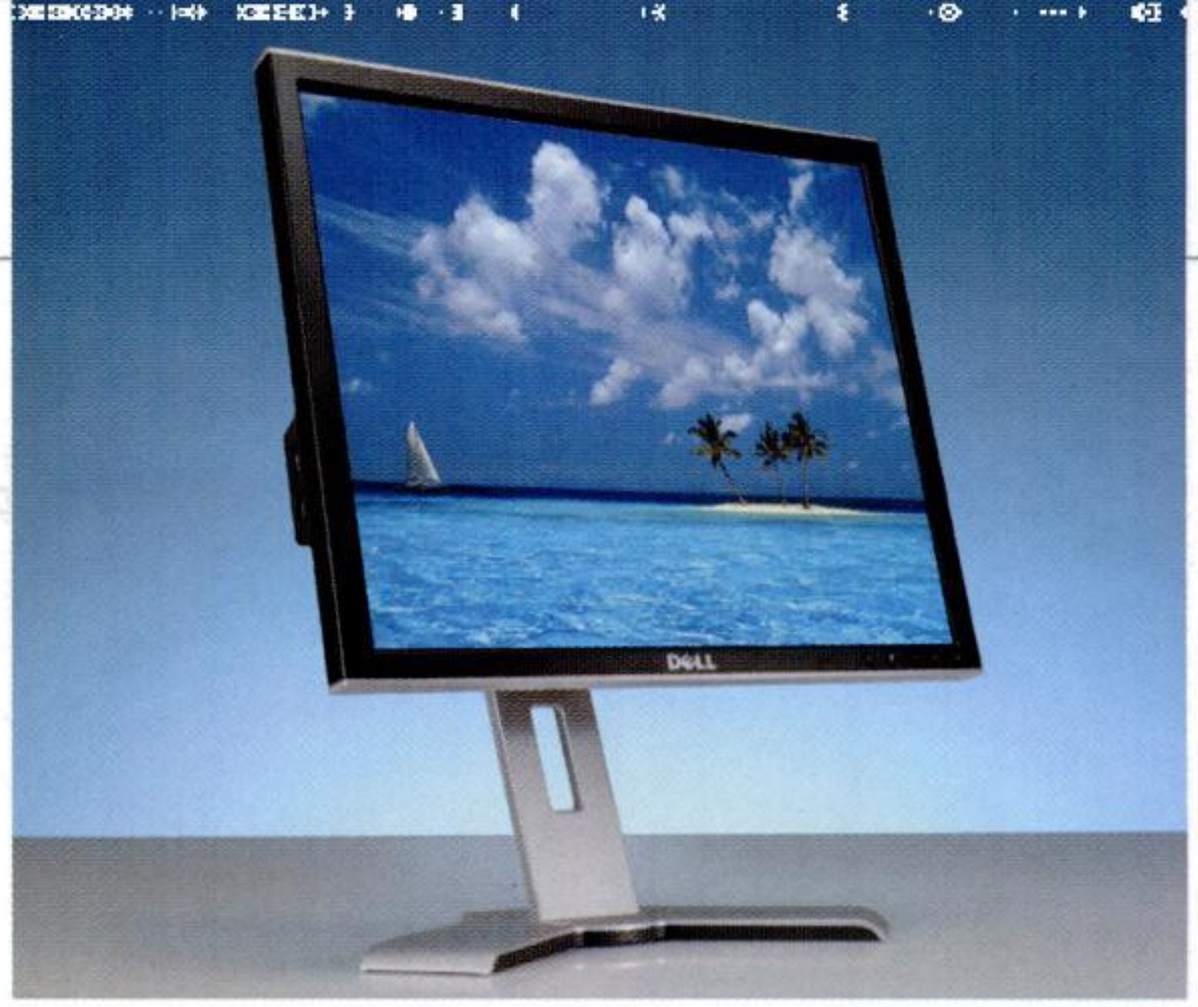
LCD Monitor Mixer

Four new 19-inch panels vie for your attention

It's gotta be hard for an LCD monitor these days. For one thing, the current market is packed tighter than a Hooter's at happy hour, and thanks to the technology's giant strides, it's harder than ever these days for an LCD to stand out in a crowd. Not only has every Tom, Dick, and Harry joined the fray, but most boast LCDs of competitive quality.

This month we look at four new high-performance LCDs from leading vendors. All offer a 19-inch viewable screen, a 1280x1024 native resolution, and a pixel response time in the single digits. But distinct personalities arise despite seemingly similar specs.

—KATHERINE STEVENSON



As usual, Dell offers a feature-rich product at a bare-bones price, with its 1970FP.



Samsung's 970P offers some innovative features, but they could stand to be more fleshed out.

SAMSUNG 970P

Call the 970P "Mac Daddy," because its shiny and sleek white cabinet with brushed-metal trim is way reminiscent of Apple's products. A double-hinged neck allows you to raise and lower the screen's height, but we found that the neck wouldn't remain fully upright, inevitably folding under the weight of the screen. Still, there's approximately 4.5-inches of height travel. You can tilt and rotate the screen, and the neck swivels 90 degrees to either side. The 970P also sports a unique cabling system: A connector dongle, with ports for a single DVI cable and a bundled power brick, is separated from the monitor by a 9-inch cable, meant to keep all unsightly wires off your work surface and out of sight. We'd prefer a longer cable between the monitor and the dongle and an integrated power brick—the way Apple builds its displays.

Continuing with the clean aesthetic, the monitor bezel is totally austere—Samsung relocated the power button to the monitor's base, and replaced the standard onscreen display buttons with a software controller called *Magic Tune,* which offers the usual assortment of picture adjustments, as well as a calibration routine, presets for certain types of applications, and custom-profile capabilities. While the software is useful, we'd like to be able to change the brightness or switch presets without having to launch an application.

In the *DisplayMate* (**www.displaymate.com**) evaluation scripts, the 970P stood out as offering the best screen uniformity of the LCDs here, betraying nary a hint of backlight on a completely dark screen. It also proved to have the deepest black level and superb off-axis viewing. In real-world use the 970P's performance was equally strong. Be it web surfing, movies, or games, the colors appeared true and screen quality was consistent.

SAMSUNG 970P

OSD
Strong performance and ergonomic features.

OCD
Cabinet is a little fancy-pants for our tastes, no OSD buttons.

8

$500, www.samsung.com

DELL 1907FP

BARGAIN
Good value, highly-adjustable stand, USB ports, reliable performance.

JARGON
Slight grayscale issues, some backlight seepage, isolated ghosting in games.

8

$340, www.dell.com

DELL 1907FP

Dell's 1907FP sports a streamlined black and silver aesthetic. The super-slim neck sports a nifty built-in track that lets you adjust the screen's height with ease, by as much as six inches. A Lazy-Susan-esque base offers 45 degrees of rotation to the left and right. The onscreen display is familiar, offering brightness adjustment and separate Red, Green, Blue color sliders when using a DVI connection. In addition to both DVI and analog inputs, the 1907FP includes four powered USB ports.

The 1907FP delivers solid performance, although it does suffer a couple weaknesses. On a completely dark screen, the backlight was evident along the bottom edge. And in *DisplayMate* we noticed that very light grays were indistinguishable from white on the extreme low end of the grayscale. The latter point could translate to diminished detail in images that contain a lot of light-colored information, but in our evaluations of various digital pictures, video, and games, we didn't notice a detrimental effect. Indeed, the 1907FP was a reliable performer in all of our tests, though we did detect subtle image ghosting in one gaming test, but only where high contrast—a black object against a light sky—exaggerated the effect.

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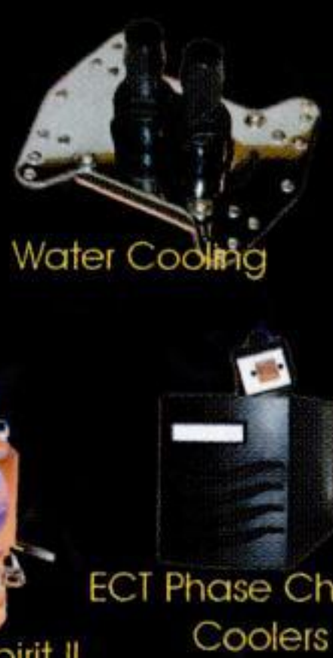
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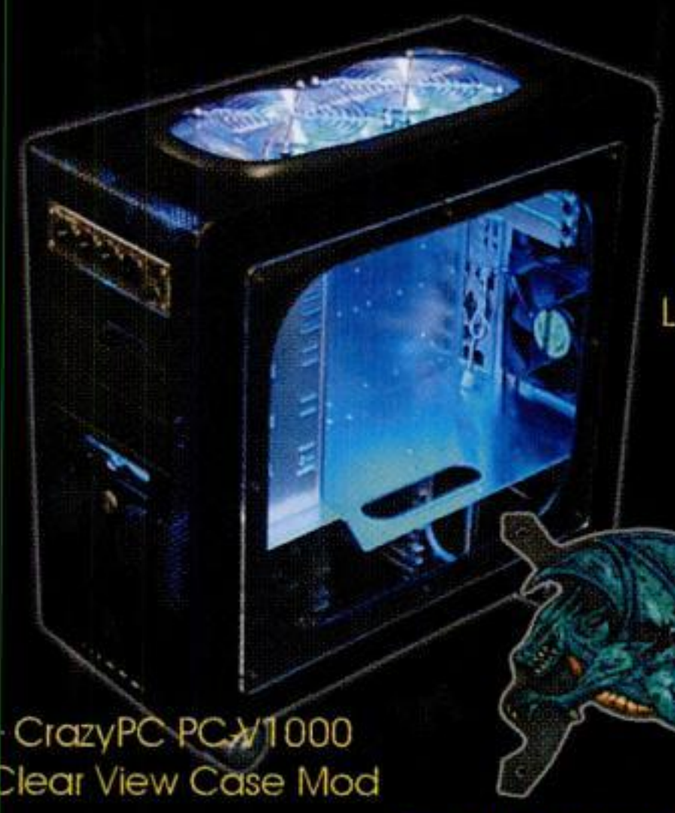
Extreme Spirit II Chipset Cooler

Water Cooling

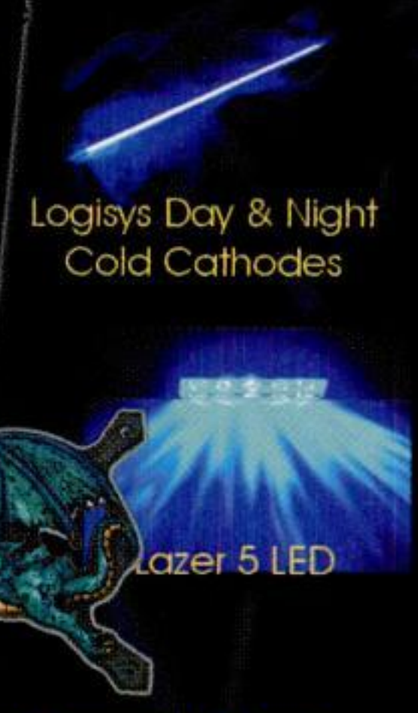
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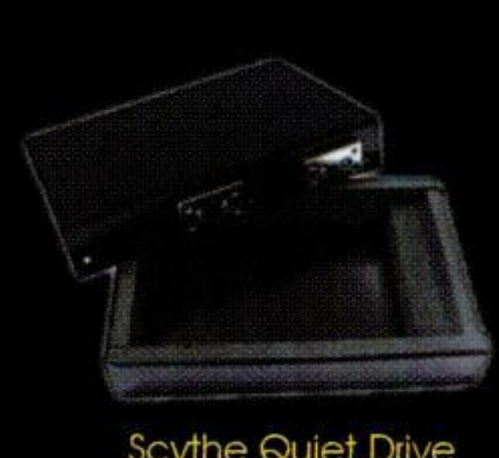
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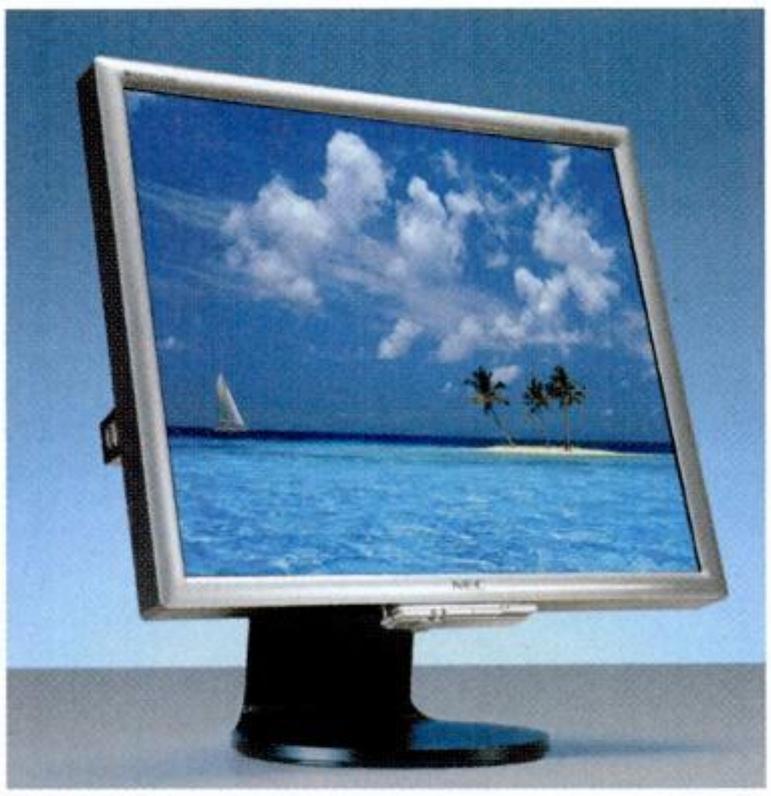
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Continued from page 88

LCD Monitor Mixer



NEC's 90GX2 glossy, vibrant screen is known to stop passers-by in their tracks.

NEC 90GX2

The first thing you notice about NEC's 90GX2 is its glossy screen. It stands in stark contrast to the Samsung and Dell monitors, which are both treated with anti-glare and anti-reflective coatings (as are the majority of LCD screens). These coatings give displays a flat, matte finish that doesn't reflect light. The benefit of NEC's so-called OptiClear technology is that the screen's high sheen intensifies colors and contrast, producing a much more brilliant, vivid picture. Of course, such a screen is not suited to all environments. In our Lab, for instance, the bright overhead fluorescent lights created distracting reflections on the 90GX2's mirror-like surface, and even in lower-light situations, you might notice ambient reflections in large swaths of dark color.

But this isn't likely to dampen most home users' appreciation of the screen's vibrancy. During our testing, the 90GX2 certainly stole the show in the entertainment and desktop applications. Games in particular had extraordinary visual panache, and the screen was free of any signs of ghosting during fast-motion sequences.

But the 90GX2 isn't flawless. The backlight is visible around the perimeter, especially on a primarily dark screen. And in *DisplayMate* we observed subtle color-tracking errors in grayscales of 64 steps or more (characterized by varying tints throughout the steps of the scale), and some compression at the dark end of scales comprising 128 or more steps. But these issues are of more concern to a user whose work requires precise color matching. As we said before, in our experience with a broad range of content, the 90GX2's picture is exceptional.

Like Samsung's 970P, the 90GX2 features a number of color-and-brightness presets intended to enhance various types of content—Photo, Movie, Games, etc. Unlike the 970P, however, you can switch among these offerings through the OSD buttons on the monitor's bezel. Sadly, the NEC doesn't have any built-in mechanism for height adjustment or screen rotation, although it does offer four powered USB 2.0 ports (along with analog and DVI inputs), which we like. And neat freaks might dig this display's cable-management system, which lets you run your signal, power, and USB cables discreetly through the monitor's neck (which has a detachable back).

NEC 90GX2

LUSTER

Glossy screen is stunning in the right environment; four USB ports.

BLUSTER

Glossy screen can be a problem in some environments; lacks height adjustment; some grayscale issues.

9

$500, www.necdisplay.com

XEROX XG-91D

Xerox's XG-91D screen sports a unique finish that straddles the line between matte and glossy. While the screen appears to be treated with an anti-glare coating, a sheer outer layer, which Xerox dubs XShield Protective glass, makes for a reflective surface—not so reflective as NEC's screen, but also not as eye-popping. In fact, the XG-91D's image appeared somewhat muted alongside the other monitors here. It helped some to turn up the brightness, but that threw the screen's black level out of whack.

Another dubious feature is the monitor's hard-wired DVI cable—the sole input besides power. It might ensure that the cable never gets loose or lost, but it also means that a bent pin on the $5 cable could render your display useless. And we're always a little disappointed when a monitor lacks an ergonomic stand. The XG-91D's screen can't be raised, lowered, or rotated. It tilts forward and back—that's all. Buttons on the bezel offer the standard OSD options.

During testing, the XG-91D delivered respectable performance in *DisplayMate*. The backlight did show through in spots on a solid screen, and the display's white appeared a little dull compared with the other screens here, but neither issue was severe. And to its credit, the XG-91D reproduced smooth, perfectly graduated grayscales of up to 256 steps. The XG-91D also handled all types of real-world content, including several games, without stumbling. Weighing its various qualities, we'd say it's a decent LCD, but for the same money, you can get something much better.

XEROX XG-91D

VIVID

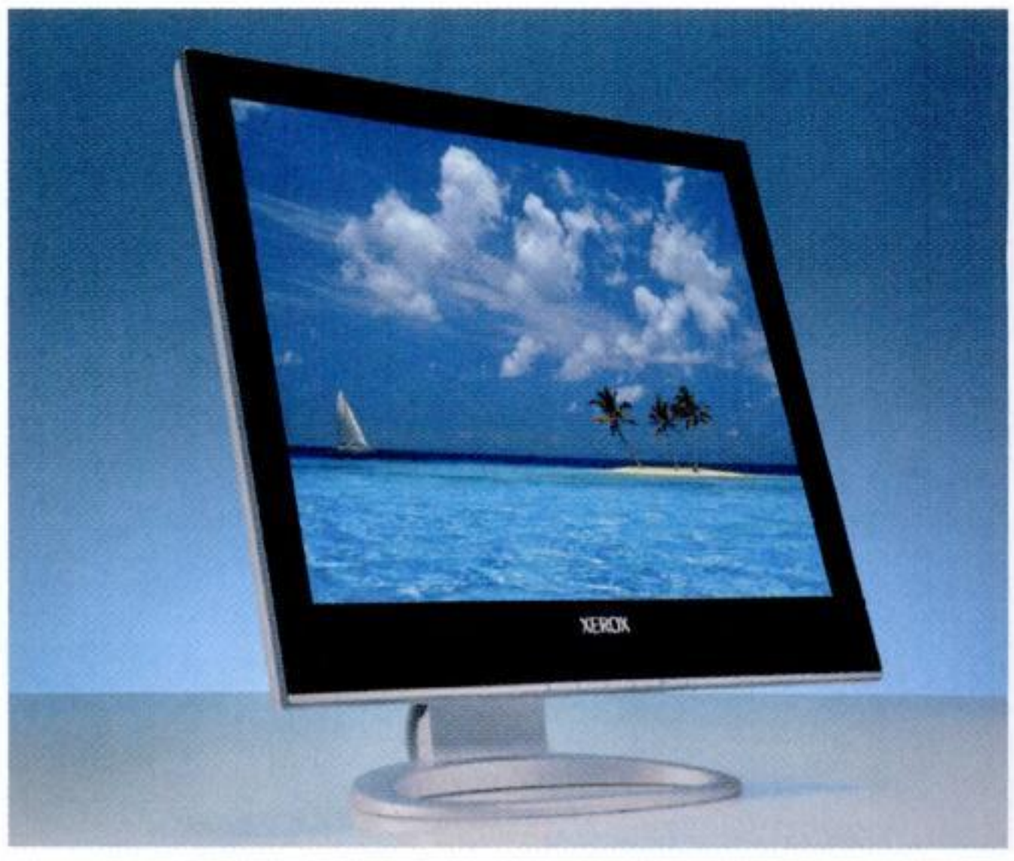
Decent overall performance.

LIVID

Hard-wired DVI cable; lacks ergo stand; muted picture.

7

$400, www.xerox-displays.com



In a crowded field, it takes a special something to attract the attention of discriminating users, and Xerox's XG-91D doesn't have it.

Continued on page 92

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www.rokulabs.com

Continued from page 90

Dell 3007WFP LCD Monitor

There's a lot to like about this 30-inch screen, but it's not perfect



In addition to tons of screen real-estate, the 3007WFP offers built-in USB 2.0 ports and a media reader.

Our first exposure to such grandeur was back in February 2005, with Apple's 30-inch, 2560x1600 Cinema Display. At that time, however, the only videocards for the PC that supported Dual Link DVI—which the LCD's native resolution demands—were costly, impractical workstation boards.

But times have changed, and today high-end consumer boards boast the Dual Link spec, putting a 2560x1600 30-inch LCD monitor within reach of PC power users. And prices have plummeted too, from Apple's original asking price of $3,300 to $2,200 for this Dell 3007WFP.

In action, the 3007WFP's epic size is astounding, but also a little daunting. In practice, we were most comfortable viewing the beast from about three feet away. At this distance, you can see, nay, *behold*, the numerous documents and windows you can have open at once, and yet still read text at a 9-point or higher.

The 3007WFP offers substantial height adjustment (3.54 inches); four powered USB 2.0 ports; and a built-in 9-in-1 media reader. But the LCD is sadly lacking any onscreen display adjustments—offering a pair of buttons to control the backlight's brightness.

Still, with the brightness all the way up, the 3007WFP turned out a very strong performance in *DisplayMate* (**www.displaymate.com**), revealing no flaws in the grayscale reproduction, screen uniformity, or video bandwidth tests.

Not surprisingly, movies and digital pictures look great on the giant screen. Gaming, however, comes with a couple compromises. It's unlikely you'll run your games at the monitor's native-res without taking a performance hit. (It's telling that Dell is pairing this monitor with its Renegade XPS quad-GPU gaming PC.) *Quake 4* at 2560x1600 on our P4 3.4GHz/GeForce GTX PC was unplayably slow. So we scaled the res down to 1600x900, the next possible setting this LCD supports full-screen (unfortunately), where contrast and detail were diminished and the picture seemed soft. Perhaps this is the result of the 11ms response time, or that the interpolation is just much more noticeable over such a large area. Similarly, in *Need for Speed 2,* interpolated to 1024x768, the screen was less sharp than Samsung's super-fast 940BF. It wasn't intolerable, and some editors felt like the sheer size of the screen makes it a fair tradeoff; it's just something to consider before succumbing to the sex appeal of such a massive (and expensive) monitor.

—KATHERINE STEVENSON

DELL 3007WFP LCD **8**

$2,200, www.dell.com

Alienware Ozma 7 Headphones

Fab 'phones from Florida



Alienware partnered with headphone-expert Ultrasone to offer these great-sounding, fabulously well-made headphones.

If you know your *Wizard of Oz* lore, you'll recall that Ozma was the young princess and rightful heir to the throne of Oz. Exactly what this has to do with audio and aliens is anyone's guess, but these headphones did take us over the rainbow.

Miami-based Alienware has developed a strong reputation for building balls-out PCs, and now the company has expanded into co-branded accessories. Partnering with Ultrasone for these headphones was smart: Ultrasone's $400 Proline 750 headphones impressed the heck out of us in our May 2005 issue, but we couldn't give them a Kick Ass award because the reference model isn't great for gaming. We have no such reservations about the $200 Ozma 7.

The Ozma 7 isn't quite as luxurious as the Proline 750: Its earcups and headband are well-padded, but the cups are covered in non-breathing pleather; the higher-end phones are outfitted with much larger earcups upholstered in ultra-soft velour. But where those reference-quality headphones delivered absolutely flat frequency response, the Ozma 7 headphones feature pleasantly boosted bass that's terrific for playing games, watching movies, and listening to music.

The Ozma 7 features Ultrasone's S-Logic technology, which delivers pseudo surround sound without electronically manipulating the audio. It's accomplished by offsetting the transducers inside the earcups, so the sound waves bounce and reflect off the folds in your outer ear. This, in turn, delays some frequencies from reaching your eardrums, which fools your brain into perceiving the sound as originating all around your head, instead of on polar-opposite sides.

S-Logic did amazing things for Eddie Kramer's brilliant engineering work on Jimi Hendrix's *Axis: Bold as Love.* With conventional headphones, stereo pans seem to go through your head; with the Ozma 7 phones, Jimi's guitar sounds like its orbiting the interior of your skull.

Equally as important as their sound, these well-constructed phones remained comfortable during long gaming sessions. And they come with an extraordinarily long cable—nearly 10 feet—so you don't need an extension cable to reach from your hi-fi to your Barcalounger.

—MICHAEL BROWN

ALIENWARE OZMA 7 **9**

$200, www.alienware.com

MAXIMUM PC KICKASS

Continued on page 94

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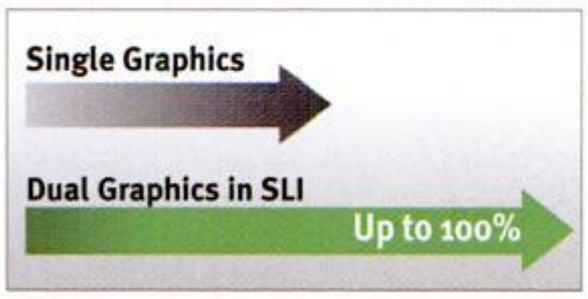


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Why NVIDIA® SLI™ In A Notebook?

Why dual-graphics NVIDIA SLI technology in a Notebook? When it comes to graphics, two is better than one.

At its most basic, SLI technology enables two graphics cards to work in tandem to process a single image, giving a significant boost to overall graphic processing speed: up to 100% over a single graphics card.



Until recently, SLI technology was solely available in desktop systems, due to space and thermal requirements. With enhanced engineering practices, Alienware was the first manufacturer to deliver both a 17" and 19" notebook utilizing SLI technology; delivering desktop-like graphics performance in a mobile form factor.

MARKET DEMAND

What's the driving force behind new NVIDIA SLI technology equipped notebooks? Power-hungry gaming aficionados.

The increased demand for more advanced graphics processing is the result of power-users' demands to experience the best image quality possible while wreaking havoc in their game of choice. These powerful notebooks are regarded as desktop replacements, as they provide the power to compete directly against PCs while delivering portability.

As gamers push the limits of screen size, processing firepower and mobility, we're sure to see the capabilities of notebooks continue to follow suit. Bigger screens, faster processing, lighter materials.

CRUNCHING GRAPHICS

To satisfy the needs of gaming and media enthusiasts, it is becoming increasingly common to see notebook screen sizes of up to 19" with HD resolutions of up to 1920X1200. At these sizes, notebooks are rivaling the screen resolutions of their desktop counterparts, and require the processing punch that gamers-on-the-go need to compete at the highest level. This is the environment where SLI shines.

SLI is able to increase the speed of graphic processing by employing Split Frame Rendering (SFR), whereby it analyzes the rendered image and splits the workload 50/50 between the two Graphics Processing Units (GPUs). Both GPUs work on the same frame simultaneously, each performing roughly half of the render calculations.



Split-frame rendering

Alienware Dual-graphics SLI Notebooks



The **Aurora m9700** is the industry's first 17" mobile system to offer the powerful dual-graphics capabilities of NVIDIA SLI technology.



With blazing dual GeForce Go 7900 GTX GPUs, the **Aurora mALX** delivers the ultimate mobile solution for playing games in immersive, cinematic detail on an expansive 19" wide.

www.alienware.com/awadvisor

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Continued from page 92

Pinnacle ShowCenter 200

This A/V streaming box has too many limitations

Pinnacle's ShowCenter 200 receives not only audio streams over a wired or wireless network, but digital video (including HD), digital photos, and Internet radio, too. Ultimately, however, we found the device to be hobbled by design shortcomings and DRM-related constraints.

The device sports a bounty of audio-video outputs, but HDTV owners will be disappointed by the absence of a DVI or HDMI port. You can plug digital cameras and storage devices into the handy front-mounted USB 2.0 port.

We connected the ShowCenter 200 to an 802.11g network for our tests. The server software consumed minimal CPU and memory resources on the host PC, and a Sigma Designs RealImage EM 8620 processor handled the decoding duties at the receiving end. We rarely saw more than 3 percent CPU utilization while streaming formats the player supports natively. Video and audio quality were uniformly excellent.



Pinnacle's ShowCenter 200 can stream audio, digital photos, and video, including high-def.

Pinnacle's *MediaManager* software makes it a snap to organize the video and photos stored on your hard drive, but Real Networks' Rhapsody is the only music subscription service it recognizes. Importing *iTunes* playlists is a clumsy process requiring third-party freeware, and then you're restricted to importing MP3s because there's no support for AAC files (the ShowCenter doesn't support FLAC or OGG files, either). And despite the fact that Yahoo's music subscription service uses encrypted WMA files, just like Rhapsody, *MediaManager* won't import songs from Yahoo's service at all.

SPECS

VIDEO OUTPUTS	Component, S-Video, composite
VIDEO FORMATS	MPEG-1, MPEG-2 (including VOB), MPEG-4 AVI, Divx (including Divx 6), Xvid, DV AVI, WMV
AUDIO OUTPUTS	Toslink, SPDIF, analog (two RCA stereo pairs)
AUDIO FORMATS	MP3, MPA, PCM WAV, WMA

The news about video formats is decidedly better, because the ShowCenter supports both Divx 6 and VOB files ripped from a DVD, as well as DV AVI, WMV, and most other flavors of MPEG.

The interface used to browse content in your living room could be improved. The UI is not entirely intuitive, and it responds sluggishly to commands sent from the remote. The ShowCenter 200 is a big step in the right direction, but we're still a long way from having perfect video streaming in the living room.

—MICHAEL BROWN

PINNACLE SHOWCENTER **7**

$300, www.pinnaclesys.com

Olive Musica Wireless Music System

This audio streaming box is expensive, but worth every penny

We're of three minds when it comes to the Olive Musica streaming box. The audiophile in us says, "We'll pay any price for a streaming box that sounds this fabulous." The skinflint in us says, "Why pay for features our PCs already have?" And the geek in us says, "That's cool!"

The Musica has several characteristics in common with our 2005 "Gear of the Year" pick, the Sonos Digital Music System. The Musica, for example, is outfitted with not only an 802.11g wireless access point, but also a built-in four-port Ethernet switch. The Musica delivers absolutely pristine audio quality that's at least on par with the Sonos. But like the Sonos, the Musica has a few redundant features.

Where the Sonos includes a superfluous built-in amplifier, the Musica comes with not only its own 160GB hard drive, but also its own CD burner, music database, and Internet radio presets. In fact, one of the manufacturer's stated design goals is to render the server PC unnecessary.



The Olive Musica streaming box will look right at home next to the finest hi-fi gear in your rack.

SPECS

AUDIO INPUT	Analog (RCA stereo)
AUDIO OUTPUTS	Toslink, SPDIF, analog (RCA stereo), headphones
AUDIO FORMATS	AIFF, AAC, FLAC, MP3, Ogg/Vobris, WMA, WAV
EXTRAS	Built-in 160GB hard drive, 24x CD-R/16x CD-RW, USB 2.0 (2)

Olive has wisely recognized, however, that 'tis better to augment a PC than to replace it with something inferior. Despite the large, high-resolution LCD, the innovative jog/shuttle controller, and the collection of buttons adorning the Musica's brushed-aluminum face, its user interface is much simpler than a mouse-driven GUI. The remote control serves its function well, but it's certainly not the best remote we've ever used.

It's inherently cool to watch the Musica suck a CD into its tray-less CD burner, and then proceed to rip the contents (you can even program it to do this without touching a single button). You can digitize analog sources, such as your collection of classic vinyl, too. Burning a CD on the spot is equally nifty. Armed with these gee-whiz features and the Musica's immaculate sound, the geek and the audiophile in us succeeded in overcoming our skinflint's objections.

—MICHAEL BROWN

OLIVE MUSICA **9**

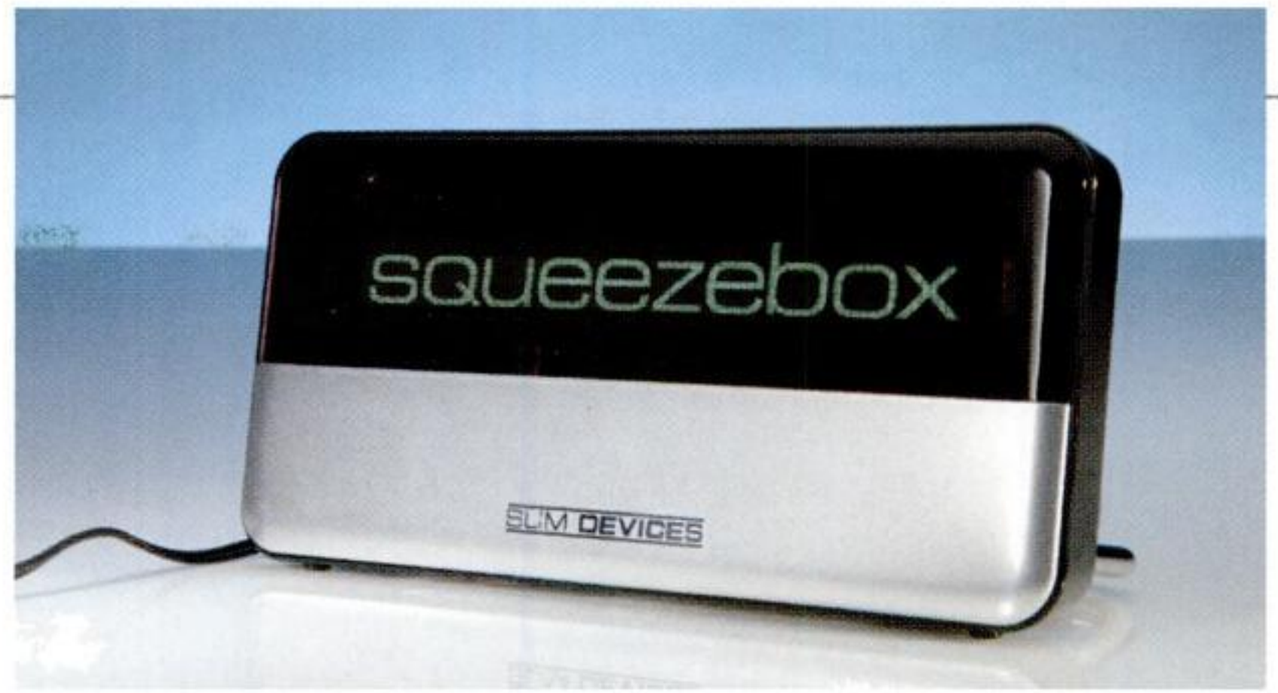
$1,100, www.olive.us

MAXIMUM PC KICKASS

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Squeezebox 3

It just keeps getting better



The Squeezebox 3 offers all the same audio-streaming goodness of the Squeezebox 2, but in a sleek, sexy new package.

We've long been fans of Slim Devices' audio-streaming boxes, having praised both the Squeezebox 1 and 2 with Kick Ass awards. So we won't keep you in suspense: We can find no reason not to do the same for the Squeezebox 3.

The guts are basically the same as the previous-generation box, but they're packaged in an elegant brushed-aluminum and black-plastic housing. The gray lens over the 320x32 vacuum fluorescent display renders the text an attractive aqua color, which is even more legible than the Squeezebox 2's green text. And both antennas on the 802.11g wireless version we reviewed are discretely hidden inside the case. Both the wired and wireless models are equipped with 100Mb/s Ethernet ports; and the wireless model can operate as a bridge, enabling Wi-Fi access for other non-wireless Ethernet devices.

On the software front, Slim Devices has added Pandora to its SqueezeNetwork. Pandora's interactive online music service analyzes the artists you like and then automatically plays other music that exhibits similar characteristics. When we told Pandora to create a radio station based on folk singer Guy Clark, for instance, it offered up songs from Clark contemporaries Doc Watson and Townes Van Zandt. No surprises there, but we had to give a thumbs-down to its recommendations of mainstream country crooners Clint Black and Randy Travis. Pandora then responded by streaming songs from Son Volt, Caroline Herring, and several other acts we weren't familiar with, but that we really enjoyed—widening our musical horizons in the process. (Pandora is free for 90 days; a one-year subscription costs $36.)

The Squeezebox 3 uses the same sweet-sounding 24-bit Brown-Burr DAC as the Squeezebox 2, and it offers both analog (RCA) and digital (optical and coax) outputs. Support for WPA Personal and WPA2-AES encryption sets it apart from most competing products, which limit your wireless network to the less-secure WEP. We'd like the Squeezebox 3 even more if it supported subscription music services like Rhapsody natively (there's a third-party plugin, but it hasn't worked in a year), but it offers so many other features and it sounds so delicious that its one major shortcoming ends up being pretty minor.

—MICHAEL BROWN

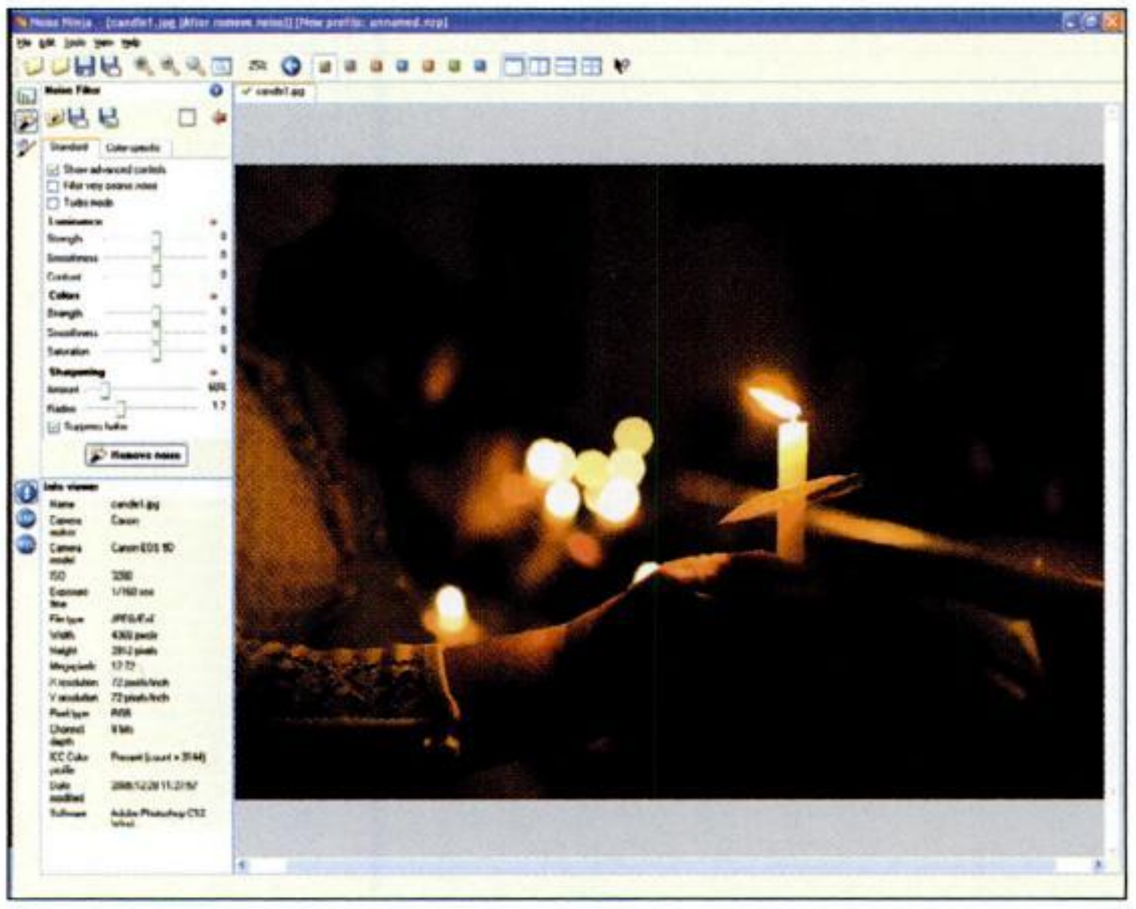
SQUEEZEBOX 3 **9**

$300 (wired: $250), www.slimdevices.com

MAXIMUM PC KICKASS

Picture Code Noise Ninja

Slice and dice those grainy digital pics



By harnessing the power of today's hardware, *Ninja* makes quick work of cleaning up pics.

As camera makers have shoved more and more pixels onto tiny imaging sensors, digital pictures have become increasingly noisy and so filled with grain that the old craptacular Disc Camera seems superior at times.

Enter PictureCode's *Noise Ninja*, an application that takes a +3 katana to the digital noise that can ruin an otherwise good picture. *Ninja* comes in a dizzying array of flavors but we looked at the stand-alone professional version (a plug-in for *Photoshop* is also available). The pro version supports 16-bit images, batch processing, and multi-threading.

We tasked *Ninja* with cleaning up a couple of grainy images from our own collection, one of which was a candlelit JPEG image taken with a Canon 5D at 3200 ISO. (While the 5D's full-frame sensor is more than capable of producing clean, sharp pictures, a candlelit shot at 3200 ISO is a challenge for any digital camera.) To compare the *Ninja's* performance, we also ran our images through Adobe *Photoshop CS2*'s built-in noise-reduction filter. There was no contest. *CS2's* "free" functionality doesn't hold a candle to *Ninja's* noise reduction, or speed. Furthermore, *Ninja* is aided by prebuilt profiles that are available for a host of digital cameras models.

What really impressed us was the program's efficiency. Tweaking an image often requires a lot of back and forth, as you "clean" areas, then revert back to the original, turn a few knobs, and clean again. With other products, it can get pretty tedious because of the slow pace at which the changes are processed. We had no complaints about speed with *Ninja*. Even on a single-core 3.8GHz Prescott Pentium 4, the performance was snappy. What's more, *Ninja* is multithreaded, so users with dual-core PCs and PCs with Hyper-Threading should see an even greater boost in speed. We applaud developers who support today's hardware instead of pandering to the unwashed masses of ancient Pentium IIIs.

***Ninja* isn't just about the hardware support though; its snappy performance, ease of use, and batch processing make it a must-have for anyone who is serious about his or her digital pictures. MPC**

—GORDON MAH UNG

PICTURE CODE NOISE NINJA **9**

$80, www.picturecode.com

MAXIMUM PC KICKASS

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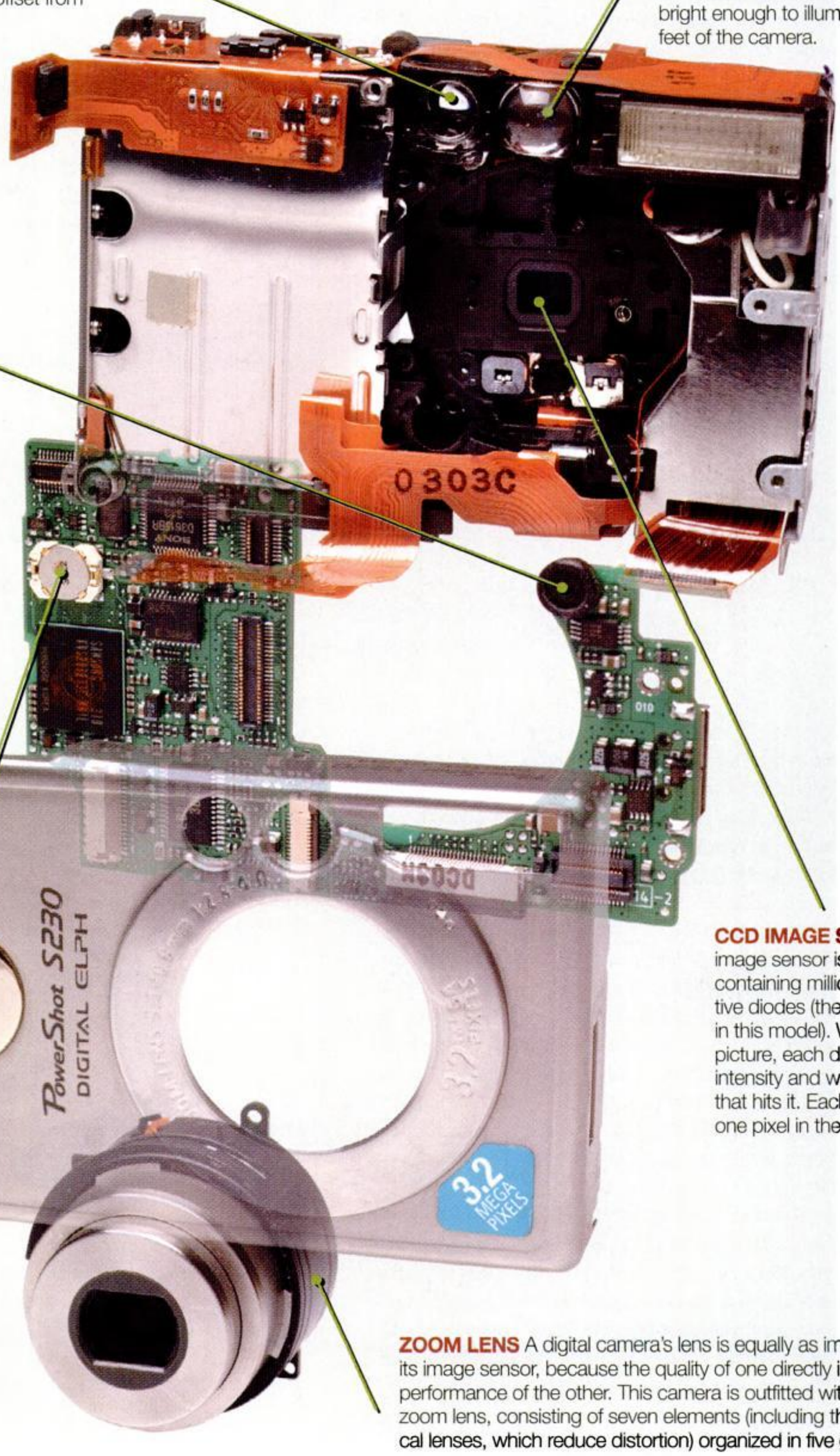
Point-and-Shoot Digital Camera

When we disassembled this Canon PowerShot point-and-shoot digital camera, we were amazed at the number of intricate components inside. Needless to say, the camera was nonfunctional when we put it back together. We're still waiting to hear back from Canon about our warranty claim.

Hardware Autopsy

OPTICAL VIEWFINDER The viewfinder is used to compose your image. In point-and-shoot models such as this one, it's typically slightly offset from the lens and image sensor.

AUTO-FOCUS ASSIST BEAM A bright-white LED behind this projection lens assists the auto-focus mechanism inside the lens. The LED is bright enough to illuminate objects within 9.8 feet of the camera.



SPEAKER Like many point-and-shoot cameras, this one is also capable of recording short videos. This speaker is used for playing back the video's soundtrack.

CCD IMAGE SENSOR The image sensor is a silicon chip containing millions of photosensitive diodes (there are 3.2 million in this model). When you shoot a picture, each diode records the intensity and wavelength of light that hits it. Each diode creates one pixel in the captured image.

BACKUP BATTERY The backup battery—this one is Lithium-Ion—stores the date, time, and other camera settings while the camera's main battery is being recharged or replaced.

ZOOM LENS A digital camera's lens is equally as important as its image sensor, because the quality of one directly impacts the performance of the other. This camera is outfitted with a 2x optical zoom lens, consisting of seven elements (including three aspherical lenses, which reduce distortion) organized in five groups.

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