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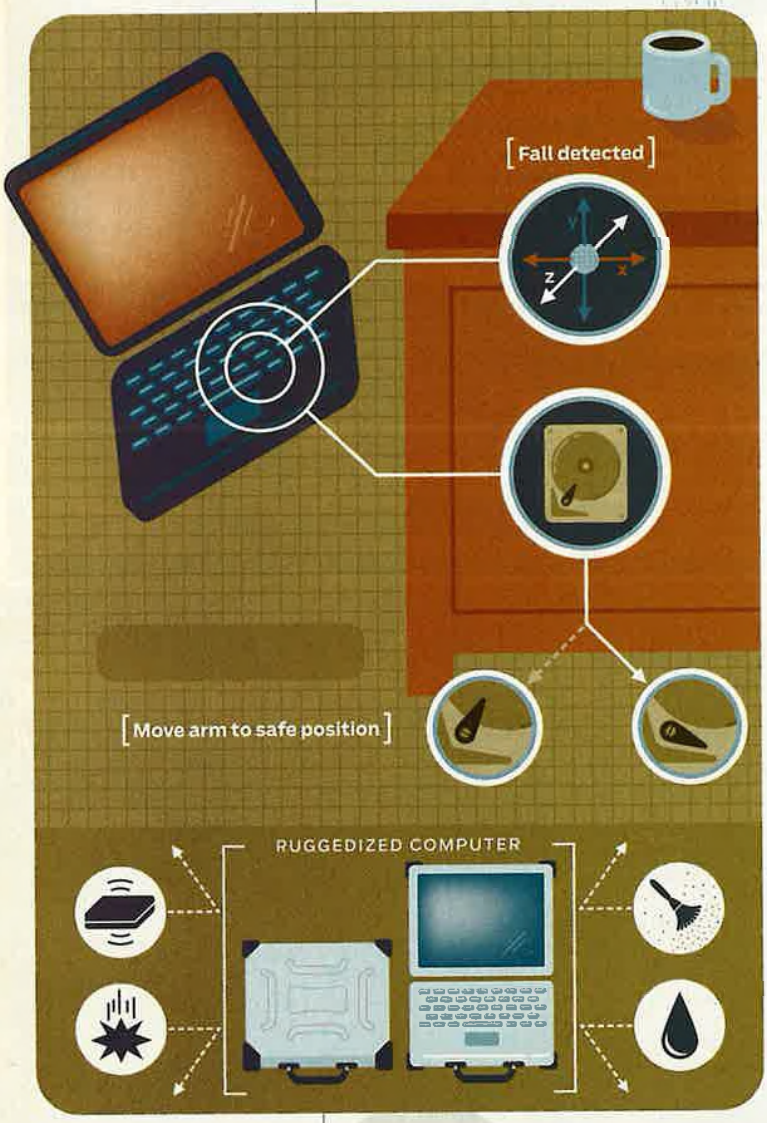
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BY JOEL JOHNSON

Tech Clinic



Drive Safe

Some laptops have hard drives that manufacturers claim can sense when they are falling and take measures to protect themselves. How does this technology work? Is it effective?

One of the most fragile parts of any laptop is the hard drive. Because of the high speeds at which their platters rotate, hard drives are especially susceptible to damage—even from normal, everyday jostling.

Inside any drive are a number of arms, similar to a tonearm on a record player. At the end of these arms are read/write heads that float less than a micro-inch over the magnetic surface of the drive platters, flipping bits between 1s and 0s. Sound delicate? Imagine what happens when you set your laptop onto a desk roughly—or worse, drop it on the ground. That arm can go crashing into the platters, not only ruining the data it was attempting to read or write, but also physically harming the drive itself. Once an arm touches a drive platter, the device can be rendered virtually useless.

First developed by IBM for its laptops (IBM's laptop division is now owned by Lenovo), drive protection uses accelerometers built into the computer to detect hazardous situations such as a sudden drop. When they do, they park the read/write arm to a datafree area of the drive within 500 milliseconds. When the heads are out of a read/write position, your data has a better chance of being recovered by a specialist, even if the drive is broken. Several mid- to high-end laptops now include this shock-resistant technology as standard, while some manufacturers offer the drives as a premium upgrade.

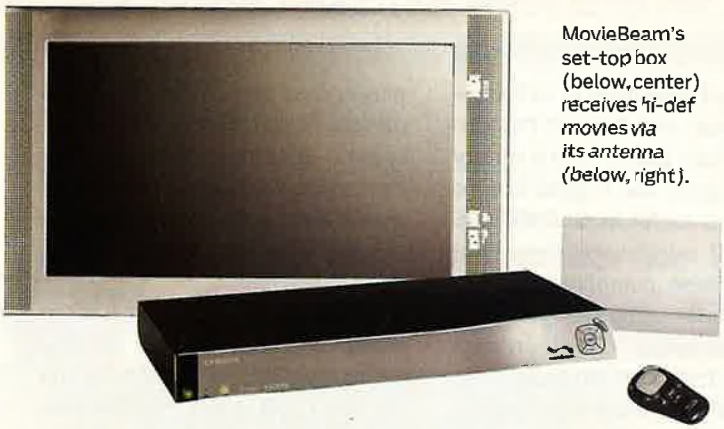
Drive protection is nice, hope-you-don't-need-it insurance for regular laptops, but if you find yourself out in the wild a lot, you might consider a "ruggedized" model. Developed for use by the military, police and other field-work-intensive users, these laptops put standard computer guts inside a hardened chassis with a scratch-resistant casing and extra padding. Panasonic offers

ILLUSTRATION BY HEADCASE DESIGN

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OVER-THE-AIR VIDEO RENTALS

by Cyrus Farivar



MovieBeam's set-top box (below, center) receives hi-def movies via its antenna (below, right).

What's the big idea? This past February, MovieBeam became the first company to offer high-definition video rentals by using an ingenious new system that taps into unused bandwidth from the Public Broadcasting System. MovieBeam's set-top box ($249) has an internal hard drive that holds around 100 movies at any one time (about 10 of which are hi-def). About 10 new movies arrive each week, replacing older ones.

How does it work? The MovieBeam set-top box uses a special antenna to receive a trickle-cast of movies over the airwaves. (The service was operational in 29 metropolitan areas at press time.) Customers rent and watch movies directly from the set-top box—new releases cost $3.99 and other movies cost $1.99; hi-def movies carry an additional $1 premium. Once every two weeks, the box calls MovieBeam over your landline and updates your account.

Will it catch on? Startup is expensive—in addition to the cost of the box, there is a $30 activation fee—but the cost of movies is on par with video rental stores. Selection is limited to the 100 titles in the box. However, Tres Izzard, president and CEO of MovieBeam, says what sets MovieBeam apart is the sheer volume of titles available at any given time. "If you're dealing with physical media [such as DVDs], you can't afford to have so many movies on hand."



ruggedized computers in its Toughbook series, and General Dynamics subsidiary Itronix sells a variety of semirugged and rugged laptops and tablets under its GoBook line. Instead of using active drive protection, these manufacturers use an alternate technique known as "shock mounting," which protects the hard drive by surrounding it in foam. But you should expect to pay considerably more for a knockabout laptop—prices can top $3500.

The Bus Stop

My computer always yells at me when I pull my USB devices out without ejecting them first. Am I really doing any damage to my computer or peripheral?

There is a reason the system barks at you when you yank out the USB plug on devices such as drives, music players, digital cameras and memory keys—it's trying to keep you from destroying your data. Although in most instances you can safely ignore the warnings, there are times you'll want to listen.

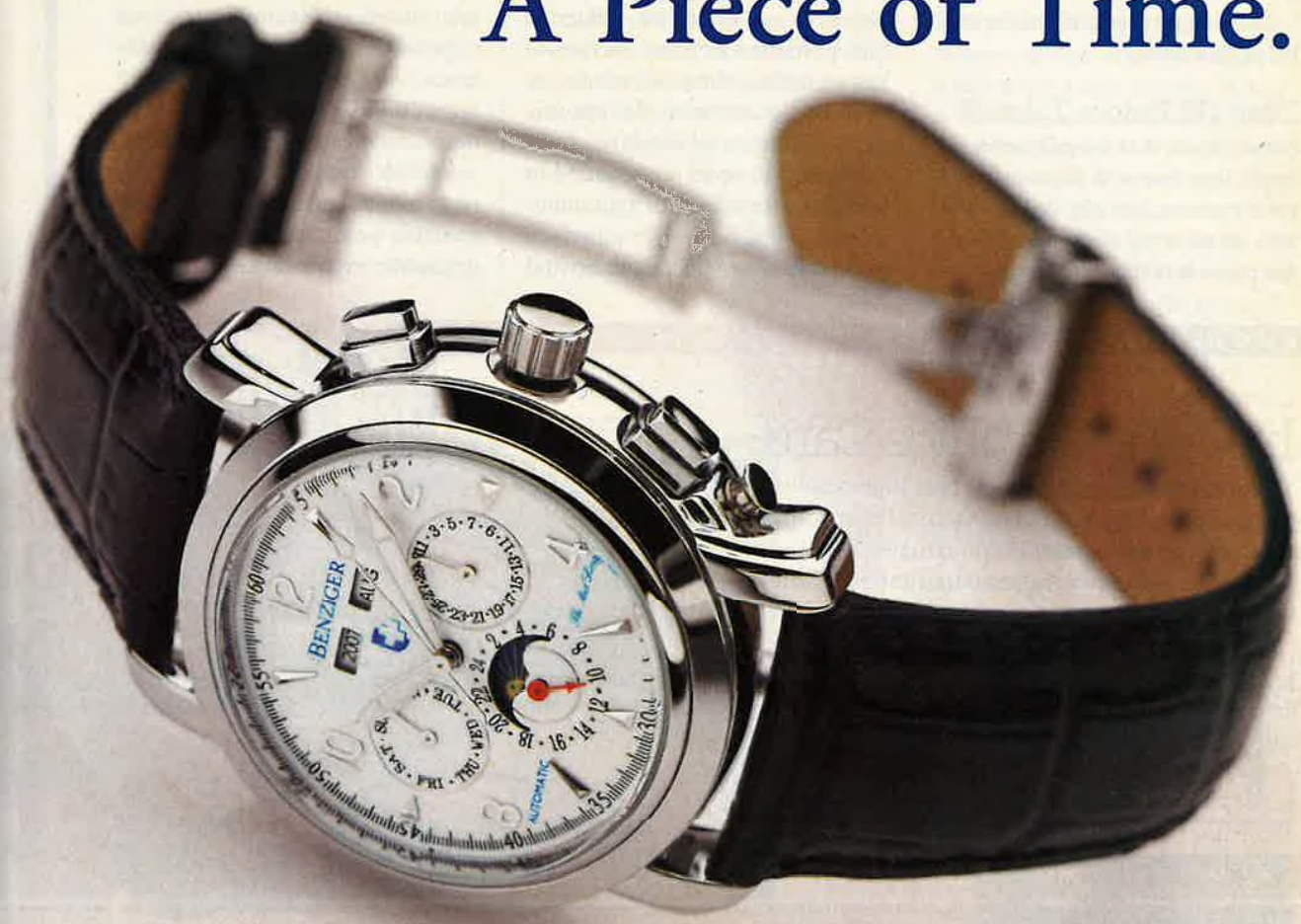
These warning messages originated in earlier versions of Windows, specifically Windows 95 and 98, when USB support was first added to the operating system. Mass-storage USB devices (i.e., flash memory and hard drives) are treated as separate drives by Windows. The USB standard has always been hot-swappable, meaning any USB products built to proper specification shouldn't be subject to electrical damage. However, operating systems often require that these devices be "unmounted" to prevent your data from being destroyed.

In the current version of Windows XP, Microsoft tries to reduce such data loss with a refined caching system for removable storage devices. The newer USB software controller within XP has write caching disabled, which means it is constantly updating your device's disk directory, the file index for each drive on a system. By keeping everything updated to your device all the time, XP attempts to avoid a data meltdown.

Keep in mind that it is never safe to yank out your USB device while your computer is actively reading from or writing to it. Doing so will almost certainly harm your data. So the reason for the reprimand is that Windows would rather be safe than sorry, even if most of the time there



More than a timepiece...
A Piece of Time.



The Mystique Transcends the Hidden Compartment

The Mad King timepiece is an elegant fusing of classic styling, Swiss engineering and precision kinetic movement. But the intrigue of this timepiece goes much deeper than its 25 jewels and secret compartment. It carries the legacy of King Ludwig II, the "Mad King of Bavaria."

The timepiece of a madman's greatness?

While current history and science have cleared Ludwig of his alleged madness, they are still unable to explain the mystical powers surrounding the man's extraordinary achievements and influence. Ludwig assumed the throne at 18 and brought about Bavaria's first lasting peace in decades. His friendship transformed Richard Wagner from a sickly and homeless wretch into one of history's greatest composers. Even Ludwig's remains survived a WWII bombing raid that all but obliterated the cathedral which housed his coffin. And a boy named August Benziger, who received this gift of a gold watch from the Mad King, grew up to become one of the most sought after portrait artists of the time.

A legacy lives on...Another begins.

To commemorate Ludwig's gift to young August, members of the Benziger family have commissioned a very limited issue timepiece with a secret compartment, just as the original watch had. Just from the heft of the Mad King upon your wrist, you'll know immediately that this *is more* than an elegant timepiece. It's a piece of time—worthy of the esteem that follows establishing a legacy of your own.

Only 500 Mad King automatic timepieces have been produced. Call right now for a RISK-FREE 30 day in home trial and try on the Benziger "Mad King" Timepiece. We're so confident it will be the best heirloom investment, that the Mad King comes with a one year replacement guarantee. Call and ask how to receive an additional black or brown crocodile-embossed leather "Brunnen" wristband FREE with your order.



Kinetically powered movement. Self winding. Requires no batteries • 25 sapphire/ruby jewels reduce internal friction and assure utmost accuracy • Polished solid stainless steel front case, sides and armatures for rugged durability • Polished solid stainless steel ***rear compartment*** *for storing items of personal value • Transparent rear crystal reveals kinetic self wind mech-anism • Brunnen wrist straps of genuine crocodile-embossed leather • Arosa Clasp -- burnished stainless steel deployment buckle lends sleek elegance while securing your investment snugly to your wrist • Water resistant • Includes Certificate of Authenticity, exclusive Serial Number and Owners manual*

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is little danger that you'll harm your PC or USB device.

Turn Off Before Takeoff

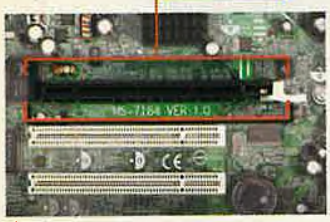
I understand that my cellphone might interfere with airplane guidance systems, but why do I have to turn off *all* of my electronics when the plane is taking off?

There is no definitive evidence that portable electronic devices—known in the airline safety industry as PEDs—consistently disrupt avionics. Commercial airplanes built in the last 30 years are required to withstand the effects of high-intensity radiated fields generated by ground-based radio, television and microwave telecommunications transmitters that exceed the emissions levels of anything coming out of a PED. Many reported incidents, such as one when a passenger's PDA supposedly caused a 747 to go into a shallow bank when the machine was turned on, are hard to duplicate, even when the airplane

Install a Graphics Card

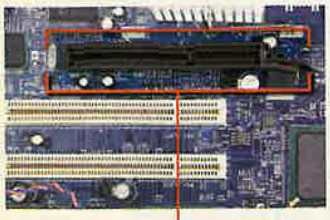
To smooth out video playback, play high-resolution games or get the most out of Microsoft's upcoming Vista OS, your computer is going to need a little help in the video-processing department. Here's how to give it a leg up.





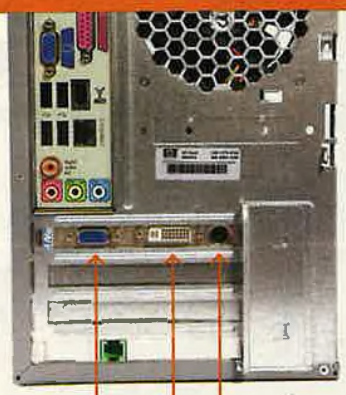
▲ PCI-E SLOT

AGP SLOT ▼





1 CHECK INSIDE YOUR PC
To determine what card fits in your computer, open it up and take a look at the motherboard. Your PC should have a dedicated graphics slot that fits either a PCI-E (Peripheral Component Interconnect Express) or AGP (Accelerated Graphics Port) card. PCI-E is the more advanced of the two technologies.





VGA



DVI



EXPANSION PORT

2 CONSIDER YOUR MONITOR
Different graphics cards have different combinations of outputs. Most common are VGA, DVI and a multipurpose video expansion port. Make sure to purchase one that matches your monitor.



3 PICK A CARD
Graphics cards range in price from $50 to over $650, and performance and accessories vary accordingly. If you just want to run the fancy AERO Glass features in Windows Vista, Microsoft suggests a 64MB card. If you'd like a noticeable bump up in video processing, however, we'd suggest at least 128MB.

PHOTOGRAPHS BY **BURCU AVSAR**

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manufacturer uses precisely the same device to conduct its testing.

So is the flight attendant wrong to make you pocket your PlayStation Portable? Not necessarily. The anecdotal evidence of anomalies (such as autopilot disconnects, uncommanded rolls and displays blanking) that exists is unsettling enough for airlines to err on the side of caution until a definitive body of research can be gathered. But answers may come soon. The FAA has been working with the RTCA, a private not-for-profit advisory committee, to study this phenomenon. They plan to issue a report by the end of 2006.



4 INSERT CARD
Your card will have a "hook" that anchors it into the slot. Push firmly until the card clicks into place. Plug your monitor into the back of the card—not your old monitor port. Turn your PC on and install your card's drivers. Adjust the screen to your preferred resolution.



THE KITCHEN-SINK CARD
Graphics cards improve the video coming out of your PC. ATI's All-In-Wonder X1900 ($460) gets video into your computer as well, letting you watch and record TV or any other video signal on your PC.

Panel Discussion

Is there enough of an advantage to a digital flat-panel monitor versus a VGA flat-panel to justify spending more money?

LCD flat-panel displays are inherently digital, in contrast to CRTs, which are analog. That means that in a flat-panel LCD monitor, a pixel is either on or off, while in a cathode ray display electrons are lighting up phosphors on the inside of the tube. Since the image data from your computer is a digital signal as well, using an end-to-end digital pathway like the Digital Visual Interface (DVI) is always going to provide the most accurate signal possible—with zero analog-to-digital conversion artifacts.

Video Graphics Array (VGA) connections on LCD monitors won't produce an optimal picture, but modern image processing hardware will be able to present a workable visual—especially at resolutions of 1280 x 1024 pixels or lower. And you'll still have the space- and power-saving advantages of an LCD.

These days, however, it's rare for an LCD panel worth its salt to come without a DVI connection. If your laptop or PC has a DVI output, we'd suggest springing for a DVI-enabled monitor to get the utmost image fidelity out of the equipment. (If you are interested in adding a DVI port to your PC, check out "Install a Graphics Card," at left.)

On the other hand, if you're looking for an inexpensive VGA-only flat-panel monitor, the screen probably will not be of high-enough quality to detect the difference between DVI and VGA anyway. **PM**

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