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Ed Word



The Worst Case Scenario

Please send feedback and Boston cream pie to will@maximumpc.com.

I'm sure there are worse things that can happen, but from where I sit, this is pretty damn disastrous. It's 1:00 in the morning, and since I got home, I've gone into my computer room no fewer than 14 times. I turn the corner, take a quick peek at the lights one last time—no change. I want this to be my last check for the night, but I know it won't be.

As I write this, I'm on day eight of the longest broadband outage I've ever suffered through, and I don't know how much longer I can take it. As long as I've had broadband, I've subscribed to one of the smaller, boutique ISPs, simply because it doesn't prohibit me from running servers on my connection, and because I'd rather deal with a smaller company when I have problems than a hulking multinational, like the phone company. Over the last six years, I've had really good luck with Speakeasy—no unscheduled downtime longer than a few hours, and great speeds in both directions. But this outage might break me.

On day two of the outage, I played some single-player games, did a little work, and watched some movies. On day three, I started walking around my apartment with my laptop, trying to find the perfect place to hook onto an unsuspecting neighbor's wireless network. On day four, I read up on the basics of cracking WEP encryption. On day five, I

gave up, vowed to move to a monastery, and never use technology again. It's gone downhill from there.

This downtime has really brought my dependency on high-speed Internet access into sharp relief. My desperate need for bandwidth isn't just a monkey on my back—it's a 20-foot gorilla, and he's riding me like a pony every moment I'm disconnected! Everything from my day-to-day banking to paying bills to my phone service happens over that twisted-pair of copper wires. I really can't function as a contributing member of society without a steady stream of data.

Supposedly, an authorized phone company representative will grace me with his presence sometime between 8:00 am and 5:00 pm tomorrow. With a little luck, I'll be back online in time to pay my bills and engage in online bloodsports by early evening. If he fails me, I'll be the guy wandering around downtown San Francisco, with a laptop and a directional antenna, muttering about unprotected hotspots, uneven loop lengths, and ILEC difficulties.

It seems like a hassle, but at least I didn't have to call the phone company.

Will Sirl

MAXIMUM PC 3/06

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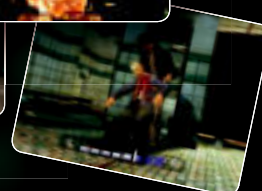
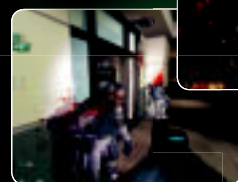
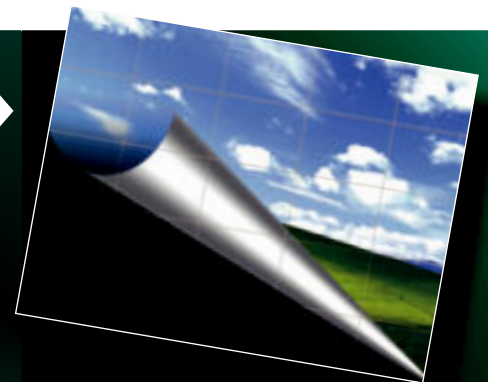
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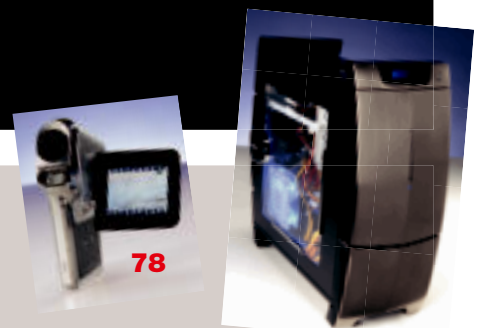
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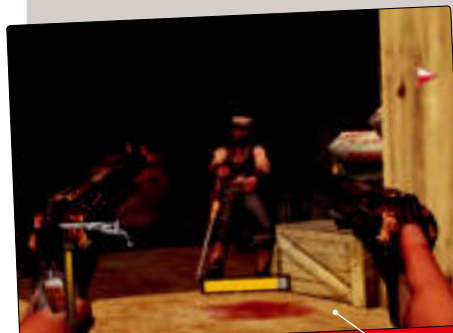
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Two Cores in Every Apple

Give Apple some credit: rushing out the first Intel-based Macs six months ahead of schedule was nearly miraculous. What's especially impressive is that the first two models are the MacBook Pro and iMac. Inch-thin notebooks like the MacBook Pro require much more custom engineering than roomy desktop systems. And although the iMac is a desktop, its slim all-in-one case makes it nearly as difficult to design as a notebook.

As I predicted last year, the x86 Macs aren't cheaper than PowerPC Macs. On average, Intel processors cost more than PowerPC processors. But the new Macs are much faster and a better value. Four other things about them should interest any computer enthusiast, even those who will never buy a Mac.

First, like all Macs, the new machines have the same curb appeal as the iPod. By comparison, the typical Windows PC looks as fashionable as a car battery. Beauty is only skin deep, but supermodels get paid a lot more for flashing their skin than the rest of us do. Other PC vendors should get off their butts and hire some case-modders.

Inside, the initial Intel-based Macs use the Core Duo (Yonah), the first dual-core descendant of the Pentium M. Despite Apple's minuscule market share, Macs are getting the very latest Intel chips, not bottom-shelf silicon. That means the new Macs will compete strongly with the performance of Windows PCs.

In addition, the new Macs have a next-generation BIOS that supports Intel's Extensible Firmware Interface (EFI). Eventually, all PCs will implement this standard, which was conceived to replace the ancient PC BIOS. It's ironic that Macs will be the vehicles for popularizing this PC technology. But then, the first blue-bellied iMacs of 1998 were largely responsible for popularizing another industry standard, USB.

More important, the new Macs are the first ones theoretically capable of natively running a Microsoft OS. The potential to support three platforms (including Linux) in one box is compelling—especially if the x86 transition starves Mac users for native software. Unfortunately, Apple isn't using Intel's virtualization technology to make multiboot systems more robust, but that could come later.

Although I still think the switch to x86 is a big gamble, so far Apple is taking the right steps.

Tom Halfhill was formerly a senior editor for Byte magazine and is now an analyst for Microprocessor Report.

Dell Goes Wild at CES

Shock and awe: A quad-GPU, overclocked Presler rig with dual Raptors, from Dell?



The Renegade's quad-GPU action is handled via four individual boards, each with 512MB of GDDR3 memory.

While Dell's XPS gaming rigs have always been respectable machines with decent performance, they've lacked a certain "badass" flair and insane hardware chops. But, hey, Dell was never trying to compete with boutique shops such as Falcon Northwest and Voodoo PC—until now.

At this year's Consumer Electronics Show (CES) in Las Vegas, Dell threw down the gauntlet with an unbelievably configured Limited Edition XPS gaming rig named the XPS Renegade (not to be confused with Dell's small-formfactor gaming rig, the Juvenile Delinquent).



Dell's XPS Renegade 600 features a custom paint-job and is only available in limited quantities.

The Renegade's specs are awesome. The CPU is an Intel P4 Presler core, factory overclocked from 3.4GHz to 4.26GHz, and storage duties are handled by two 150GB WD Raptors in a striped RAID array. But the Renegade's four GPUs are the *coupe de grace*—no other system boasts that kind of muscle. And we're not simply talking about two dual-GPU cards, but two individual 512MB GeForce 7800 GTX boards, each attached to a GeForce 7800 GTX daughterboard. nVidia reps say this particular configuration of quad-SLI will be exclusive to Dell, but they would not discuss other possible quad-SLI configurations.

A New Mobile Concept



Dell's mobile concept PC features a detachable keyboard, a 20.1-inch LCD, and a remote control.

Though the Renegade grabbed the headlines at CES, Dell's new mobile concept PC is also interesting. It's essentially a portable media center powered by Intel's new Yonah-based Core Duo processor; it sports a 20.1-inch LCD that flips up from its base (similar to a notebook). The wireless Bluetooth keyboard separates from the unit and a remote control is included as well, to interface with unit's Windows Media Center OS. When not in use, you can reattach the keyboard to the base, close the display, and carry the whole shebang via a built-in handle. Dell was showing it only as a concept, and whether the rig will ever hit market is anybody's guess.

GAME THEORY

THOMAS
MCDONALD



**Battlefront II,
Pshaw!
Give Me TIE
Fighter**

Star Wars Battlefront II is a painful experience. Don't get me wrong; it's a good game, much better than the first; but it's also a stark reminder of a time when LucasArts made the best space sims on the market, and how that time is long past.

For most of the 1990s, the X-Wing and TIE Fighter games would have placed at the head of my top-10 list. This was in the early days of good Star Wars gaming, so some of that appeal came, no doubt, from the ability to play anything inside the Star Wars universe. Though it has been about a decade since I've laid eyes on them, I think it's more than simple novelty and nostalgia that make these titles stick in my brain.

Battlefront II makes the mistake of reminding us of these glory days. The ground portions of the game are quite good, and a definite improvement over the flaccid original. The game feels more at home on the PC and less like an afterthought port. Its graphics are clean and appealing, if not cutting-edge, and the various story modes, units, and mission types are drastically improved. While the strategic element feels canned, it's a nice idea that shows potential for growth.

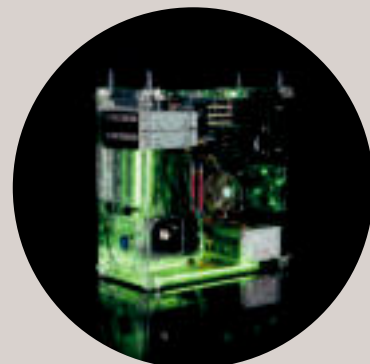
The biggest addition, however, is a new space combat mode that allows for dogfights and capital ship engagements. The mode will probably be fairly appealing to younger gamers, and it's really not that bad. The scale is suitably epic and the combat straightforward and appealing. For older PC gamers, however, it's like a faint hint of a shadow of an echo of a far better age in Star Wars space combat. Ships have only a minimal energy model, controls and weapons are arcade-simple, and evasive maneuvers are preset. It is, in every sense of the word, a shooter.

I hadn't even thought of TIE Fighter in years, but five minutes with Battlefront II made me realize that, even with the embarrassment of Star Wars gaming riches we now have at hand, a crucial component remains MIA. LucasArts needs to return to the SW games that put them on the map, and bring back good sim-style space combat.

Tom McDonald has been covering games for countless magazines and newspapers for 11 years. He lives in the New Jersey Pine Barrens.

**Want to Show Off
Your Raptor X?**

If you just bought a new Raptor X and want to show it off, WD is hard at work lining up cases with a see-through drive bay to do just that. At press time, it had only inked a deal with C3Case.com, but the drive maker says it has agreements with Antec, Silverstone, Cooler Master, Lian Li, and others to produce "Raptor-friendly" cases in the near future.



DDR RAM Drive Incoming

When a super-fast hard drive no longer cuts it, it's time to turn to RAM

You might think your WD Raptor is a fast hard drive—and it is—but no mechanical device can compete with RAM when it comes to access times, seek times, and transfer rates. That's why RAM drives have always been the Holy Grail of geekdom. But they've usually been too expensive or have used memory that requires an electrical current to retain the data, making them unsuitable for operating systems or porn collections.

That's why we're excited about an upcoming DDR-based RAM drive called the X1. It holds up to 8GB of DDR memory that you supply. Unlike other RAM drives, the X1 plugs into an external power supply instead of using bus power. That means it will retain your data even if you shut down



your PC. A power outage would still be problematic, of course.

The X1 is a PCI Express x1 board and is scheduled for release in Q1 of this year. Initial production will be limited to 512 units. Price had not been determined at press time, but you can keep an eye on the deets at www.ddrdrive.com.

**Dell to Begin Selling AMD Systems—
For Real this Time?**

From the "we'll believe it when we see it" front comes word that Dell is really, really serious now about selling AMD-based systems. Though we've all heard these rumors before, this time the rumors just might be true. In an interview at the CES trade show in January, Dell CEO Michael Dell said he "would not rule out" switching to AMD. This caused a Piper Jaffray analyst to submit a speculative report stating, "We strongly believe that Dell will start AMD-based system shipments as early as the second half of 2006."

Given Dell's eagerness to seriously compete in the gaming market, we think it'll have to eventually switch to AMD. The only question is, when?

Seagate Swallows Maxtor for \$1.9 Billion

In a move that surprised the PC hardware industry—including us—Seagate announced a buyout of rival Maxtor Corp. in a stock transaction valued at (put your pinkie on the side of your mouth) \$1.9 billion dollars.

The move was especially unexpected because there hasn't been much consolidation in the storage industry since Hitachi bought IBM's drive business in 2002 (and that came after a two-year lull following Maxtor's purchase of Quantum in 2000). Furthermore, Maxtor was considered a relatively strong player, though there were rumors suggesting the company was suffering incredibly slim profit margins.

Seagate is the world's largest manufacturer of disk drives, and reportedly owns 60 percent of the lucrative enterprise-storage market. In this space, its fiercest rival was Maxtor, whose Atlas 10K and Atlas 15K drives were considered the best drives of their class. The purchase will give Seagate considerable enterprise-drive market share, transforming the company from an 800-pound gorilla into a 1,000-pound beast. And if Seagate inherits Maxtor's fat contract to supply drives to Dell, it'll be sitting very pretty.

The deal leaves just two other drive makers—Western Digital and Hitachi—to compete with Seagate in the 3.5-inch drive market. Western Digital is the number two drive maker, followed by Hitachi.

The combined company will operate as Seagate, and will have its headquarters in Seagate's current Scott's Valley location, so pour out a 40-ouncer in honor of Maxtor—the company is a goner. At press time, there's been no word on the fate of Maxtor's just-released DiamondMax 11 line of hard drives.

Phantom Lapboard for Sale?

It's shocking, but Infineon Labs—the maker of the rightly maligned Phantom game console—is actually going to release its intriguing controller, the Lapboard, as a stand-alone product. As you can see in the picture, the Lapboard is a couch-friendly keyboard and mouse designed for gaming. From our brief time with the device several E3s ago, we consider it the most promising controller for on-the-couch PC gaming that we've seen.



AMD Inks Deal with Rambus

Though AMD was one of the pioneers of DDR, which scuttled Direct Rambus RAM's hopes of going mainstream, AMD says it will pay Rambus \$75 million over the next five years for access to Rambus patents used by technologies including DDR2, DDR3, FB-DIMMs, PCI-E, and XDR memory. Neither company is detailing AMD's plans, but we'd expect to see support for FB-DIMM (fully buffered DIMM) DDR3 memory in future AMD memory controllers. Also possible, but highly unlikely, would be an XDR-memory-based Athlon 64, or a Rambus-designed replacement for HyperTransport.



Phase-Change on the Cheap



PSU- and memory-maker OCZ has announced its intention to wade into the vapor-phase-change market with the world's first semi-affordable unit. Typical phase-change setups sell for around \$900, but OCZ says its upcoming Cryo-Z cooler will retail for around \$300. We're cynical, of course, but if OCZ pulls this off, it's great news for overclockers.

FUNSIZE NEWS

DELL SELLING TOO MANY AMD CPUS

According to a report at The Inquirer website, AMD resellers aren't getting as many AMD CPUs as they'd like, and they're blaming—drum roll, please—Dell. Though Dell doesn't sell any prebuilt AMD systems, the gigantor company recently began selling individual CPUs on its website, to meet customer demand.

XBOX 360 SHORTAGE STINGS MICROSOFT

Prior to shipping its next-gen Xbox 360 console in November, Microsoft made the bold claim that it would sell 4 million units within three months, but post-holiday sales figures totaled only 1.3 million sold. D'oh! Weak sales of the console, largely due to lack of product, caused Microsoft to change its forecast. The company now plans to sell 4 million units by June 2006.



A NEW USE FOR RFID TAGS

A couple in Bellingham, Washington, is taking security technology very seriously. According to a blurb at Dailytech.com, the couple recently had RFID tags implanted in their hands, in order to allow them exclusive access to their apartment and to their computers. We just wonder what's going to happen when they move into a new pad.

LIQUID-, ER, OIL-COOLING

Those crazy kids at Tom's Hardware website recently took a system with an Athlon 64 FX- and an nVidia 6800, removed the fans from all the components (GPU, CPU, and chipset), and poured eight gallons of cooking oil into the enclosure (after sealing it, of course). The resulting PC was dead silent, and the CPU ran at just 40 C under full load. Congrats, guys—that's one hell of a DIY project.



Gaming PC vs. Xbox 360

We've all walked down this road before: Every time a new generation of game consoles comes out, the wars start. Gamers everywhere get sucked into the ridiculous my-console-is-better-than-your-console-and-your-PC-sucks-too argument. No one ever wins, and it's really not fun for anyone. And, quite frankly, we're sick of reading emails that start out with, "My friend says his Xbox..."

To that end, we're pitting the latest and greatest on both sides of the fence against each other. On one side, we have the Xbox 360. It's loaded with several technological marvels including a tri-core Power PC CPU; a

custom ATI 3D accelerator paired with a small, but insanely fast cache; 512MB of RAM; and a 20GB hard drive. On the other side, we have our custom-built Road Runner PC—an FX-57-powered beast, with dual GeForce 7800 GTXs, 2GB of RAM, and 1TB of storage in a RAID 0 array.

From a pure hardware angle, the contest looks a little lopsided, but when it comes to gaming there are considerations other than hardware. The games available on each platform, the multiplayer infrastructure, and the subjective experience are all important too.

BY WILL SMITH

round 1

PERFORMANCE

You'll hear a lot about the Xbox 360's support for high-definition gaming. Odds are, if you're a PC gamer, you've been enjoying HD gaming for years. The Xbox 360 prefers to run at 720p, which is roughly equivalent to 1280x768 on the PC. However, we're accustomed to playing *Call of Duty 2* at 1920x1200 on our PCs, with 4x antialiasing and 8x anisotropic filtering! We love that the 360's high-speed cache lets developers enable antialiasing without a performance drop, but that still can't compete with a PC's ability to run at a much higher resolution with AA and aniso cranked all the way up.

WINNER: GAMING PC



round 2

MULTIPLAYER

The Xbox 360 has a big advantage over the PC (and the other consoles, for that matter) when it comes to multiplayer. Xbox Live is a revolutionary service, and it's been implemented perfectly in the 360. When you start a 360 game—any 360 game—you automatically log into Xbox Live, where you can see what all of your friends are doing, and invite them to join you in your games. In a game, you've got cellphone-quality voice communication with everyone else in the game. Xbox Live even lets you share your achievements in all games with your buddies, so you can see exactly how you stack up in single-player as well as multiplayer games.

There's just nothing like Xbox Live for the PC, but we sure wish there was. **WINNER: XBOX 360**



XBOX 360 PREMIUM:
\$400, www.xbox.com

round 3

THE GAMES

Every platform has exclusive titles, but just about everything save the most protected first-party titles eventually ends up on the PC, and many—such as *Half-Life 2* and *Unreal Tournament 2007*—debut there. While PC users won't see *Gran Turismo 5*, *Halo 3*, or any Mario games on the PC, we will get everything else. And despite what your Halo-loving friends might say, first-person shooters are better on ye olde PC.

At launch, there are a limited number of titles available for any new console, but Microsoft has upped the 360's ante by adding backward-compatibility for about 200 Xbox titles, as well as the Xbox Live Arcade—a kind of casual/independent-game emporium. Microsoft encourages small developers to take risks with their games, and helps ease the development costs. Arcade is an easy-to-use, digital-delivery system for games such as *Wii* that wouldn't otherwise be accessible to console gamers. That's all good, but not quite enough. **WINNER: GAMING PC**

round 4 CONTROLS

Gamepads have come a long way, and the wireless pad that comes with the 360 is as near to perfect as we've ever seen. Sure, it should come with rechargeable batteries, but even standard alkalines last a really, really long time.

Of course, the wired version of the 360 controller also works on the PC. Buy it, plug it in, and download the drivers from Windows Update. Plus, with the PC you always have the option of using the keyboard/mouse combo, which might be old-fashioned, but is still infinitely more flexible than any gamepad.

WINNER: GAMING PC

round 5 PRICE

This is a tough one to judge. At press time, the 360 is still primarily available online in hyper-expensive (think \$800 and up) bundle packages that include extra controllers, games, and other accessories. However, the consoles are starting to pop up in retail stores at the MSRP of \$400, for stand-alone sale. At \$800, bundled with a couple of games you probably don't want, an extended warranty that you don't need, and strategy guides that are just a waste of paper, any game console is massively overpriced. Even at \$400, the 360 seems a bit expensive, especially when you consider that most of the games are shipping at a \$60 MSRP.

Of course, even in a \$1,000 bundle, an Xbox 360 costs less than the pair of videocards inside our Road Runner machine. Top-of-the-line gaming PCs cost a pretty penny, to be sure, though it's also possible to build a great-performing gaming rig for less than \$1,300.

WINNER: XBOX 360

MAXIMUM PC ROAD RUNNER:
Priceless, www.maximumpc.com



And the Winner Is...

Despite a strong showing by the Xbox 360, we're not about to throw out our **gaming PCs** quite yet. If you look at comparative performance between the two platforms right now, and take into account the speed at which new hardware is released, you can rest assured that PC gaming will remain superior to this generation of gaming consoles.

Sure, the new console hardware has a lot going for it. We've already gushed about Xbox Live, and we really dig the media streaming aspects of the Xbox 360—when paired with a Media

Center machine, it's a fairly impressive streaming box! But the ability to use the 360 as a streaming box or DVD player is minor compared with the pure power and flexibility you get with even the most basic gaming rig.

We seriously doubt that any console in this generation will be able to deliver the depth and impact of a 64-player *Battlefield 2* game, or the micromanaging glee that comes from a game like *The Movies*. We'll take power over price—any day!



Our consumer advocate investigates...

- ✓ Newegg
- ✓ Port Magic
- ✓ Dell
- ✓ Nikon

Maximus, Watchdog of the month

DIGITAL SLR FOR \$300? NOT

I'm writing to you about the advertisement for Newegg.com on page 13 of the January 2006 issue of *Maximum PC*. The advertisement claims the company is selling an 8.2MP Canon EOS 20D digital SLR with lens for \$277. Pshaw! Try to order that! What a load of bunk; there were never any at that price, I'm sure.

— Jake Hoehl

Jake wasn't the only reader to complain about the ad that priced the fabu EOS 20D at less than \$300. Other readers said that when they saw the ad, they immediately went to Newegg's website and found the price to be \$1,399 with lens—about the normal street price of that model D-SLR. A number of readers complained that the ad was a "bait and switch" tactic, which is often used by shady New York City-based camera companies.

So what's the deal? The Dog contacted Newegg.com veeep Howard Tong to get his story. Tong told the Dog: "We deeply apologize to your readers and our customers for the pricing error that occurred on page 13 of the January 2006 issue of *Maximum PC*. We assure you that this price was the result of an unintentional human error made by Newegg's staff. We always strive for the best shopping experience and superior customer service. Therefore we would like to extend a special offer to anyone interested in purchasing the Canon EOS 20D digital camera, the subject of this error. We will continue to offer the EOS 20D EF-S18-55mm kit at the manufacturer's cost to us: \$1,399, and we extend our offer for free shipping. For your troubles, we will further provide a \$25 discount on this camera, good through March 2006. Please tell your readers to enter the promotional code MAX20106 for free shipping and MAX121605 for the \$25 discount.

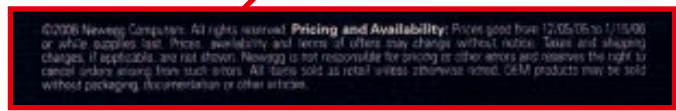
Tong also said the company does not ever engage in bait-and-switch tactics. "As company policy, Newegg only advertises and sells products

that are physically present in our warehouses. Once our inventory is depleted, 'out of stock' is inserted in the product listing."

Point taken. The Dog has seen his fair share of bait-and-switch tactics used to sell digital cameras, and Newegg's ad appears to be a legitimate mistake. Stores that primarily use bait-and-switch tactics to sell cameras consistently advertise products at low prices, month in and month out. In a typical scam the Dog sees, cameras that sell for \$1,500 at legitimate stores can be found advertised for \$900 at some stores—an amazing difference. Unfortunately, when you try to purchase the camera at that price, you're given a hard sell to buy lenses, lens cleaners, bags, and other accessories that pump up the price. Even worse, these shady stores sometimes remove the charger, battery, and straps from the kits and then try to sell the items to the consumer, claiming the lower-priced versions don't include them. A bold-faced lie, of course. Why would Canon, Nikon, or Olympus sell you a camera without a charger and battery?

In many instances, consumers report that after they've "purchased" a camera at the unbelievably low price, the camera is suddenly "back ordered" for weeks or months until the consumer gives up and cancels the order. The consumer is then given the run-around on obtaining a refund from the store. In the end, the shady store either sells you the camera with items you don't want (and for prices that exceed the normal street price) or it gets to "borrow" your \$900 for a month or two. The basic lesson, as always, is that if it seems too good to be true, it probably is.

In the case of Newegg, and other legitimate retailers, the Dog has queried attorneys on the subject of incorrect advertisements and the answer is that



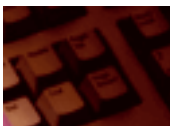
Read the fine print: It's pretty difficult to force vendors to sell a product at a super-low price if that price is a boo-boo.

advertisements are *not* contracts with consumers. If a newspaper ad mistakenly says you can get a new black Escalade for \$5,000 instead of \$50,000, you have no recourse. And, in fact, if you look at the Newegg ad in question, the fine print clearly says: "Newegg is not responsible for pricing or other errors and reserves the right to cancel orders arising from such errors."

HARRY POTTER FOR YOUR PORTS

I recently had a host of troubles with AOL's new add-in *Port Magic*. It downloads and installs itself, and suddenly, all my carefully arranged home networking is destroyed. When I called AOL for help, they couldn't tell me what the program had done, and suggested I call *Port Magic's* authors, Pure Networks. Pure Networks wasn't helpful either, as they just wanted me to reinstall the software. Doesn't AOL understand there are users who don't want the rest of their settings messed with? Can you find out what this program does, so other people with this problem don't have to waste as much time as I have getting things back on track?

— Will Kenyon



Got a bone to pick with a vendor? Been spiked by a fly-by-night operation? Sic The Dog on them by writing watchdog@maximumpc.com. The Dog promises to answer as many letters as possible, but only has four paws to work with.

The Dog pinged Pure Networks, the maker of *Port Magic*, to find out what the program does and what Will's problem might be. According to the company, the product manages ports. If, for example, you want to host a game on your PC, *Port Magic* would program the ports on your router so the game would accept packets for a game server. When the game server is turned off, *Port Magic* would close the port on the router, instead of the user having to do it manually. (A computer can be left open to attacks if a user forgets to close the port on the router.)

Port Magic can also automate remote access to a machine and deal with the port-forwarding that's needed for programs such as *PC*

Anywhere. Technicians at Pure Networks said a couple of problems could have occurred in Will's setup. They recommend setting the program so that ports are "sticky" and stay open. Techs also said it's possible there's a conflict with Winsock LSPs. A LSP, or layered service provider, is installed with most networking and antivirus programs, and according to Pure Networks: "Sometimes interactions between these LSPs can cause a machine to behave strangely with respect to networking."

The Dog's solution? Drop AOL and *Port Magic*. Pure Networks no longer actually supports or updates *Port Magic* as a product as of late last year. And AOL is, well, AOL. **MPG**

Recall Alert

■ Dell is recalling some 22,000 notebook computer batteries sold with the Latitude D410, D505, D510, D600, D610, D800, D810, Inspiron 510M, 600M, 6000, 8600, 9200, 9300, XPS Gen 2, and Precision M20, M70.

The batteries could overheat and pose a fire risk. Dell said it has received three reports of the batteries overheating and damaging a tabletop, a desktop, and "minor" personal effects. No injuries were reported. The batteries were manufactured in Japan and China and sold between Oct. 2, 2004 and Oct. 13, 2005 in the United States.

To check your notebook battery, remove the cell and look for the part number. If the part number contains the series: 3K590, C5340, X5308, F5132, U5882, U5867, P922, C5446, or C2603, the battery might be defective. If the number is not on your battery, the battery is fine. If the series is there, consumers are asked to visit www.dellbatteryprogram.com and to enter the full part number to see if it's included in the recall. If you cannot access a computer, you can call Dell at 866-342-0011 between 8 a.m. and 5 p.m. CT Monday through Friday, or write to Dell Inc., Attn: Battery Program, 9701 Metric Blvd., Suite 200 Austin, Texas 78758.

■ Nikon has extended the recall of batteries for some of its digital SLR cameras. In November, Nikon recalled around 710,000 EN-EL3 batteries sold worldwide that might over-

heat and melt. The batteries were sold with and for the D50, D70, and D100 digital cameras. The list of affected batteries is too long to list in detail, but if the first three digits of your battery's lot number (printed on the back of the battery) are: 44A, 46A, 47A, 48A, 49A, 4AA, 4BA, 4CA, 51A, 53A or 54A, you should visit www.nikonusa.com and click the recall notice for full details. If the battery is bad, the company recommends that you immediately stop using it and contact the company for a free replacement, which will arrive in 7 to 10 days.



Dell is recalling about 22,000 notebook computer batteries that might overheat.



Nikon has added an additional three batches of batteries to its recall.

MAXIMUM PC'S

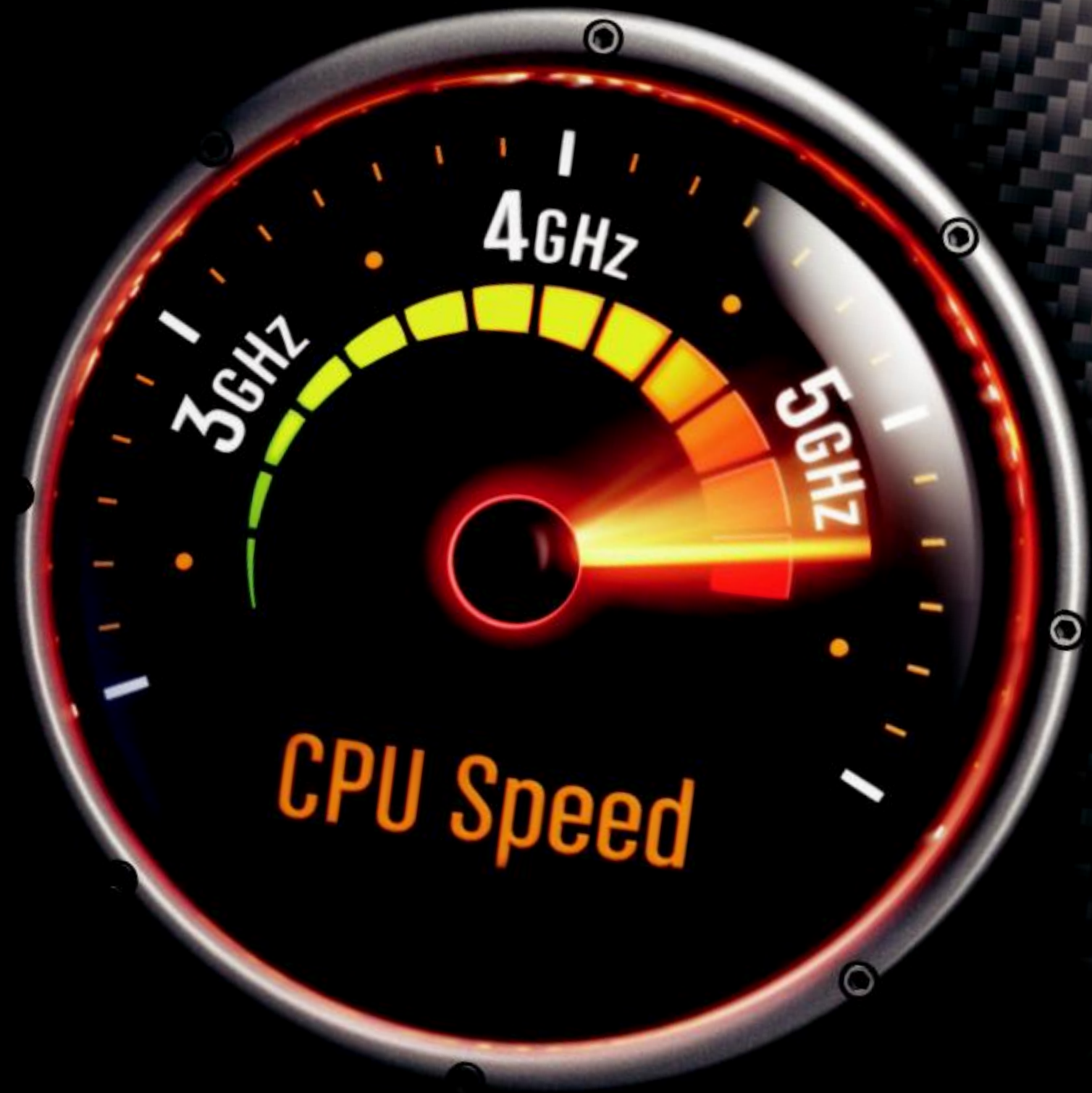
Ultimate Overclocking Guide!

BY JOSH NOREM AND GORDON MAH UNG

Get your gigahertz for free! We'll tell you everything you need to know to overclock your rig for maximum performance, with minimum risk! All you need is an adventurous spirit, a lot of patience, and an asbestos suit

If there's one activity that epitomizes the *Maximum PC* ethos, it's overclocking—the process of cranking up the speed on your PC's CPU as high as it'll go. The result is a free performance increase and the satisfaction of knowing you just stuck it to the man by unleashing your lowly 2.4GHz proc's true potential. Take that, oppressive corporate bureaucracy!

Though it sounds dangerous, and even a little scary, if you overclock with caution and care there's little risk to you or your precious CPU. In our all-inclusive guide, we'll explain the ins and outs of overclocking, walk you through the process with a visual tutorial, and show you Lab-verified benchmarks of the gains overclocking can yield. We'll also demonstrate the benefit of various cooling setups to the overclocking process. So, the only question now is: Do you feel the need? The need for speed?



CAUTION! Overclocking your processor may cause the following: frying your processor, killing your motherboard, voiding your CPU's warranty, shortening your CPU's lifespan, corrupting your Windows installation, deleting your hard drive, and emptying your bank account as you seek ever-improved cooling and higher clock speeds. *Maximum PC* assumes no responsibility should you hose your system. By reading this article, you agree to overclock at your own risk. Even if you follow our instructions to the letter, you can destroy your hardware! Consider yourself warned.



Overclocking 101

Understand the basics before you embark on any overclocking project

HOW DOES YOUR COMPUTER DETERMINE YOUR CPU'S SPEED?

If you've ever wondered just how your system tells your CPU what speed it should run at, the answer is easy. The default clock speed is stored on your CPU, and it's calculated using simple math. If you can multiply two numbers, you can calculate your clock speed.

The first number is your system's front-side bus (FSB) speed. On most systems, the front-side bus is the main conduit for information between the CPU and the rest of the system. Its speed is measured in megahertz (MHz). The second number is the CPU multiplier, which is an internal setting that is established by the manufacturer. To calculate the CPU clock speed all you do is multiply the FSB speed by the CPU multiplier.

So, if we have a FSB speed of 200MHz, and a CPU with a multiplier of 10, we multiply 200 by 10, and you can see we have a 2000MHz, or 2GHz, CPU.

WHAT IS CORE VOLTAGE AND WHY IS IT IMPORTANT TO OVERCLOCKING?

CPUs are designed to operate at one certain voltage; however, bold overclockers can squeeze out a few more MHz of performance by increasing the voltage running through the CPU. It's similar to punching the throttle on a car; you can't go faster unless you use more gas.

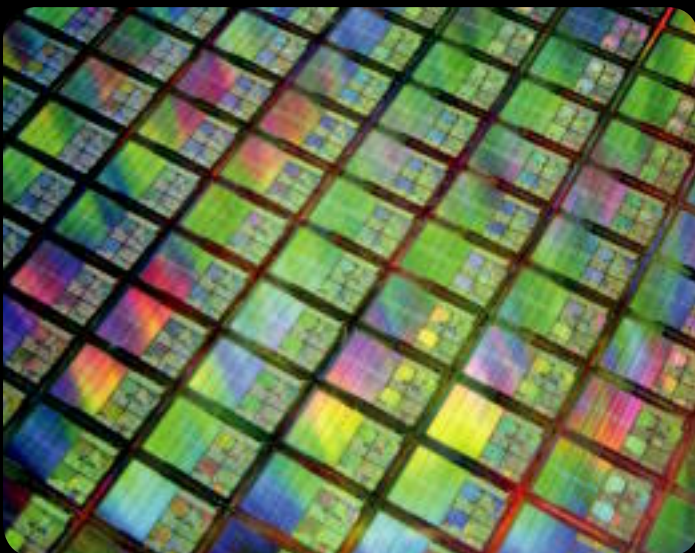
To give a real-world example, the 3.46GHz Pentium Extreme Edition processor we overclock later in this story has a core voltage of 1.3 volts. To get the chip to run at 4.44GHz, we had to increase the core voltage to 1.45 volts. Cranking up the voltage is the most dangerous part of overclocking, and greatly increases the chances of frying something. As a rule of thumb, increasing VCORE beyond 10 percent of the default voltage is risky.

CAN I OVERCLOCK MY DELL, HP, GATEWAY, ETC?

Probably not. Most OEM system builders make overclocking impossible by limiting user adjustments to key overclocking settings such as front-side bus speed, the CPU multiplier, and the core voltage.

WHAT IS MULTIPLIER LOCKING? HOW DOES IT AFFECT OVERCLOCKERS?

CPU manufacturers prevent most CPUs from operating if you change the CPU multiplier in the BIOS. This isn't really an anti-overclocking measure, it prevents unsavory vendors from taking slow, cheap CPUs and selling them as more expensive, higher-clocked CPUs for huge profits. The über-high-end CPUs, like the Athlon FX and Pentium Extreme Edition chips are not multiplier locked.



CAN YOU OVERCLOCK ALL CPUS?

The short answer is no. Some CPUs overclock like there's no tomorrow, while others might only go a smidge higher than stock. Here's why: To make a batch of CPUs, a huge silicon wafer is created that contains dozens of identical CPU cores (see left). The little cores are then cut from the wafer and tested for speed and stability. Because of manufacturing variances, only a small portion of the chips will run at the highest speed possible at a reasonable temperature, and the rest will be set to run at lower speeds. Sometimes, when the demand for the slower chips outstrips the demand for über-fast chips, chip vendors will sell chips that could run at a higher clock speed at a slower speed. These chips are the absolute best for overclocking, and should be sought out!

Overclocking: Step-by-Step

There are several basic tenets to overclocking any system. We're going to walk you through those here, then look into the AMD and Intel specifics on the next two pages

STEP 1: ENTER THE BIOS

Get into your system's BIOS by hitting the Del, F1, or F2 key during boot. The key varies by motherboard, so check your documentation if you're not sure what to press. Alternately, there are instructions during boot that tell you what key to press. If you just see a big splash screen with the motherboard logo on it, hit the Escape key or Tab to reveal the instructions.

STEP 2: FIND THE RIGHT MENU

Buried in your system's BIOS is a screen that contains your CPU configuration info. It might be labeled SoftMenu, CPU Configuration, or something else entirely. Look for the front-side bus (FSB) speed, or CPU-to-FSB ratio. Increasing the FSB speed is the most common way to overclock a CPU with a locked multiplier. On most current CPUs, the default FSB will be 200MHz.

STEP 3: CRANK UP THE FSB

OK, so you've found your FSB and you're ready to crank it up. As a general rule you should take baby steps: Increase your FSB speed by just 1MHz or 3MHz at a time. If you get freak-nasty and punch it up 5MHz, you'll likely end up with a machine that won't boot. If you know your CPU has a rep of giving up 50MHz without a tick, by all means, crank it! Select an increment, reboot your PC and see if it POSTs.

STEP 4: MAKE SURE YOUR CPU SURVIVED

If your machine booted just fine, you're in good shape, but you're not home yet. If Windows loads and applications run, you're in really good shape. Try to play a few games or start a few applications to see how the machine reacts. If all works well, you're ready to keep cranking up the clocks. Go back to Step 3 and continue to ratchet up the front-side bus until you're satisfied with the results, then go to Step 6. If your machine crashes or exhibits wonky behavior, proceed to Step 5.

STEP 5: D'OH!

You got greedy and overclocked the front-side bus by 50MHz and now your machine won't boot. No beeps, no POST screen, nothing. All is not lost. On some motherboards, simply powering off your machine by flipping the switch on the PSU or unplugging the system will reset the FSB to stock speeds and get you back in business. If your machine is still dead, you'll need to reset the CMOS. Check your mobo manual for the exact location, but the CMOS reset jumper is usually near the small coin-cell battery on your mobo.

STEP 6: CRANK IT UP ANOTHER NOTCH

If you've successfully overclocked your system but you want even more performance, you have two options. The first is to add more cooling. Better cooling greatly increases a CPU's overclocking potential. (You can learn about three possible cooling options on page 32.) Once you've upgraded your cooling, go back to Step 4 and begin overclocking again.

The second option is to up your CPU's core voltage. This runs your CPU harder than it was designed to go, and can help you eke out more MHz. But be forewarned, going more than 10 percent over stock voltage puts you at risk of juicing your processor and can decrease the life of the chip.

HOW CAN I TELL IF MY OVERCLOCKED RIG IS STABLE?

Your overclocked rig POSTs, boots, and seems to run Windows just fine. To be sure it's stable you've got to put your CPU into a hurt locker. A great way to test an overclocked CPU is to encode some video. Use an app like *DVD Shrink* to resize a disc, if nothing else. If the app crashes, acts funny, or if you see anything out of the ordinary, your overclock job is probably at fault. You need to either up the CPU voltage, add more cooling, or crank the speeds down a smidge and test again.

Overclocking Athlon 64: Step-by-Step

We fired up one of our favorite Athlon 64 mobos—a DFI LanParty SLI Ultra-D—and cranked it up a notch in the name of science. A lot of AMD boards include overclocking utilities that let you change settings from within Windows, but we're doing it the old-fashioned way, through the BIOS

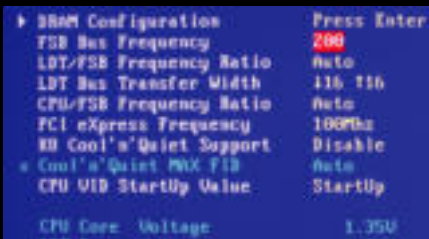
STEP 1: ENTER THE BIOS

Before you attempt to overclock your rig, make sure you back up your important files. Overclocking too far can corrupt your files. Once you've backed up your data, you can venture into the BIOS. This Phoenix BIOS is standard fare, and will look familiar to BIOS veterans.



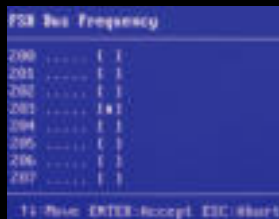
STEP 2: LOCATE THE RIGHT MENU

Under the section labeled Genie BIOS Setting, we find the Holy Grail: "FSB Bus Frequency." That's the one. Let's open it up and see what our options are.



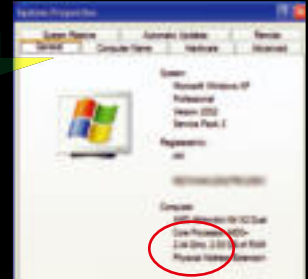
STEP 3: INCREASE THE FSB

Here we have the optional FSB frequencies, in handy-dandy 1MHz increments. That's just the way we like it, because it allows for a very fine level of tuning. Let's crank up the FSB a conservative 3MHz, which should boost our CPU clock about 40MHz. Remember, 3MHz (the FSB increase) times 12 (the CPU multiplier) equals 36MHz—not too shabby!



STEP 4: IT'S ALIVE

After making the changes, we rebooted. It posted, and we see here we have successfully overclocked from 2.4GHz to 2.44GHz! Because the BIOS rounds up, it's reporting a 40MHz jump. Now repeat Steps 3 and 4 until your system doesn't boot anymore, and then jump down to Step 5.



STEP 5: START OVER FROM SCRATCH

When your machine ceases to boot, reset the CMOS via the jumper on the motherboard. For reference, it's typically located near the CMOS battery. You can also just remove the battery for a few seconds if you can't find the reset jumper.

STEP 6: GIVE 'ER MORE JUICE

If you find yourself hitting the wall and your rig won't overclock any higher, you can try increasing the CPU's core voltage. On our DFI board, this is possible through the CPU VID control. Start out with extremely tiny steps, and don't increase the voltage more than 10 percent. For example, if core voltage is 1.4V, don't go higher than 1.5V. Tweaking your voltage can fry your CPU, so if you're nervous, just leave it set to "auto," and crank your CPU clock down a notch or two.

BEST AMD PROCESSORS FOR OVERCLOCKING

- ▶ **X2 ATHLON 3800+** This 2.0GHz entry-level dual-core proc has been known to go all the way up to 2.6GHz.
- ▶ **SEMPRON 3100+** It ships at only 1.8GHz, but enterprising overclockers have cranked this bad boy to 2.4GHz and beyond.
- ▶ **ATHLON 64 VENICE 3800+** Out of the box it runs at just 2.4GHz, but up the voltage and you'll be flying high at 2.8GHz in no time!

Overclocking Intel: Step-by-Step

Getting a simple overclock out of an LGA775 Intel motherboard is amazingly easy. The only rub is that some Intel-based boards require you to increase the FSB speed in percentages, so keep a calculator handy. For this example, we used the Asus P5ND2-SLI P4 LGA775 board, which supports overclocking from within Windows and the BIOS too

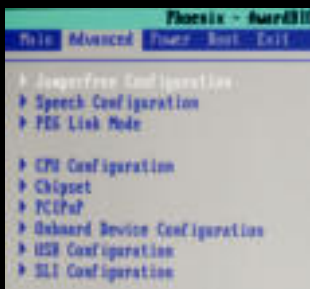
STEP 1: ADD NOS

The majority of modern motherboards support overclocking from within the operating system, so rather than fiddling around in the BIOS you can just run a vendor-made overclocking utility in Windows. Asus' NOS is a typical specimen. You select the percentage of the overclock you desire and reboot. A manual Precision Tweaker function lets you goose the FSB manually as well.



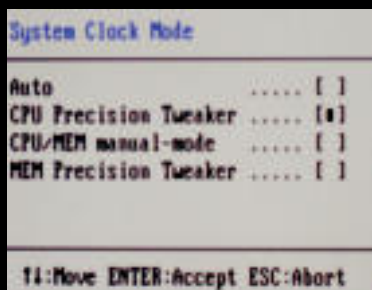
STEP 2: BACK INTO THE BIOS

You can also adjust FSB settings from within the BIOS, which is what we prefer (we don't fully trust the Windows apps). Just go into the BIOS and look for a section that refers to your CPU or frequency setting. On our P5ND2-SLI board, they're in a section labeled JumperFree.



STEP 3: TWEAK BY HAND

We bypassed the auto overclock modes and set our front-side bus manually using the Precision Tweaker. Other BIOSes won't use fancy words, and will simply list this setting as front-side bus speed.



STEP 4: TYPE IN THE FSB SPEED

You can enter the front-side bus speed directly here, which is a little easier than choosing a percentage.



STEP 5: DO THE MATH

The P5ND2-SLI displays the final bus speed but many other boards use the base clock speed of the front-side bus. For example, a 1066MHz front-side bus isn't truly clocking at 1GHz; it's really 266MHz quad-pumped, which means it sends and receives data four times per cycle. An 800MHz bus is really 200MHz times four.

STEP 6: CHECK FOR STABILITY

Our 3.73GHz P4EE actually gave us reasonable reliability at 4GHz with air-cooling and two 12cm fans parked next to the processor and voltage regulators. Fortunately, if the OC failed, this board (and most all modern motherboards) will reset the CPU clock speed to its stock setting or lower so you don't have to reset the CMOS to get the system working again.

BEST INTEL PROCESSORS FOR OVERCLOCKING

- ▶ **INTEL PENTIUM EXTREME EDITION 955** We hit a reasonably reliable 5GHz with phase-change, so we think there's a ton of overclocking potential in the new Presler dual-core, even at the high end.
- ▶ **INTEL PENTIUM D 840** The budget dual-core 3.2GHz Smithfield will push the envelope for overclockers—up to 4.0GHz—provided you can keep it cool enough.
- ▶ **INTEL PENTIUM 4 560J** Using water-cooling, we've pushed this 3.6GHz Prescott-core CPU up to 4GHz with nary a problem.

Lab Tested: Air, Water, and Vapor Phase-Change Coolers

Serious overclocking requires serious cooling. We ran high-end air, water, and phase-change coolers to show you what can be achieved with various cooling methods

An overclocked CPU with a screaming front-side bus and enough voltage running through it to electrocute a chicken can get hot. Very hot. So hot that if you want to do more than bush-league overclocking,

air-cooling ain't gonna cut it. Hard-core overclockers usually choose water-cooling. And if even that's not cool enough for you, there's always ultra-expensive phase-change cooling. To show you what can be

achieved with each of these cooling set-ups, we grabbed the best coolers available in each category, strapped them to our 3.46GHz Presler Pentium Extreme Edition 955, and let 'er rip.

AIR-COOLING

We actually used two coolers for our air-cooling tests: Zalman's CNPS 9500 LED and Cooler Master's Hyper 6+. Both coolers received a 10 verdict and a Kick Ass award from us last year, and are the crème de la crème of aftermarket heatsinks.

We started out with the Zalman, but when we saw temps run up into the 80 C range, we switched to the Hyper 6+ to verify the numbers. Our readings were confirmed. Sure, we were running at 4.1GHz—700MHz higher than stock—but we were still surprised to see idle temps of 60 C and load temps in the 80 C range. That's stupid-hot, and much hotter than we would ever want to run a processor on a daily basis. Amazingly, while the older Prescott CPUs used to throttle (or slow down internally in order to reduce temperatures) at 74 C, this new Presler chip slows down only at around 85 C.

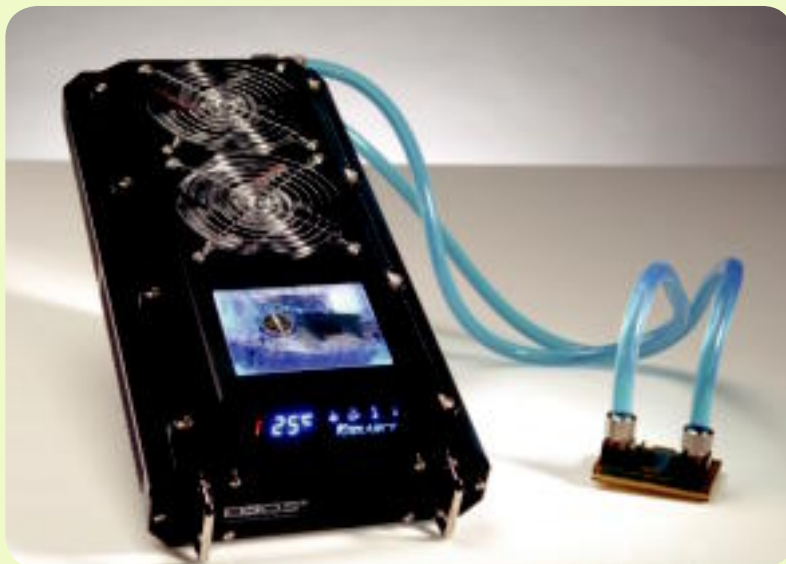
It's amazing we were able to overclock this CPU by more than 700MHz using just a heatsink/fan, but it was running way too hot for our tastes.



Cooler Master's Hyper 6+ is a fantastic heatsink, and allowed us to overclock the hot Pentium by 700MHz. Not too shabby.

WATER-COOLING

For our water-cooling adventure, we busted out Koolance's outstanding Exos 2 external cooling kit from the nether regions of the Lab, and then pushed the kit to its limits. The Exos 2 boasts dual 12cm fans blowing over a radiator the same size, and it's capable of outstanding cooling performance. We turned the fans to full-speed for testing in order to ensure maximum cooling ability. Though we were able to achieve an extra 300MHz overclock—to 4.44GHz—this CPU was just as hot as using water as it was using air-cooling, registering full-load temperatures higher than 80 C. That's damn hot for a water-cooled setup, but this is the game of overclocking. If you want to ratchet up the clock speeds—1000MHz in this example—be prepared for some seriously hot CPU temperatures.



Koolance's Exos 2 external water-cooling unit allowed us to crank up the CPU another 300MHz over what we could achieve with a heatsink/fan. This is the power of water-cooling.

VAPOR PHASE-CHANGE

In the cooling world, vapor phase-change is the end-all, be-all of cooling. It gets a CPU colder than a well-digger's ass—sub-zero usually. To see what phase-change could do with our trusty Pentium Extreme Edition, we ordered up a phase-change monster—the Vapochill Lightspeed. As a stand-alone unit, it can be integrated into any case and is perfect for our testing.

Once up and running, the cooler ran at negative 40 C at idle, and under load it cranked a still-frigid 0 C. Though the \$900 price tag is tough to swallow, we have to admit the performance is breathtaking. With the Vapochill installed, we were able to crank our CPU up 650MHz beyond the previous high point, all the way to 5.04GHz. And as the benchmarks show, this increase in clock speed proved measurable gains in every benchmark except *DVD Shrink*. We're not sure what happened there, but our DVD encode test got slower at 5GHz. Regardless, the proof is in the pudding, and gaining a 1.6GHz overclock that runs at 0 C under load is damn impressive.



The Vapochill Lightspeed is the ultimate CPU cooler, and uses a refrigerant code-named R507. It allowed us to ratchet the CPU clock speed another 650MHz (up to 5.04GHz) above what we were able to achieve with water, while keeping the CPU at a cool 0 C, even under 100 percent load.

WHAT IS VAPOR PHASE-CHANGE?

Phase-change occurs when a liquid changes to a gas, or vice versa. Most liquids must absorb a ton of energy (usually in the form of heat) before they'll change phase, and they must expel an equal amount of energy to convert back from a gas to a liquid.

Overclockers can utilize phase-change to transfer a ton of energy away from a hot CPU to a more suitable location—like a radiator. Cool refrigerant enters the CPU block, where it's warmed by the CPU until it enters the gaseous state, pulling heat from the hot CPU in the process. This is the first phase change. Then the gas enters the compressor, where the pressure of the gas is increased dramatically. Increasing the pressure decreases the amount of energy that must be removed from the

gas before it can convert back to liquid.

Next, the highly compressed gas is fed into the condenser, which is a radiator/fan assembly. In the condenser, the gas cools until it's turned into liquid, changing phase for the second time. Next, the liquid is squeezed into a thin, copper tube called a capillary tube. At the end of the capillary tube is the cold plate that rests on the CPU. This tube separates the high-pressure section of the system from the low-pressure section of the system. When the refrigerant returns to the CPU block—also called the evaporator—the low pressure of that portion of the loop lowers the energy required for the liquid to change phases once more—from a liquid to a gas. Then the cycle repeats.

FINAL THOUGHTS

If you take a gander at the benchmark chart, you'll see our overclocking results improved when we applied more cooling power to the processor. This is a typical scenario. If you think you are at an overclock ceiling, add a little more voltage first, and if that doesn't work, add more cooling until you're happy with your performance, or until you hit your budget's ceiling.

Remember, overclocking starts with the motherboard. It doesn't matter how much cooling you have, or what CPU you're using—if you're mobo doesn't have overclocking options, *faghettaboutit*. **MPC**

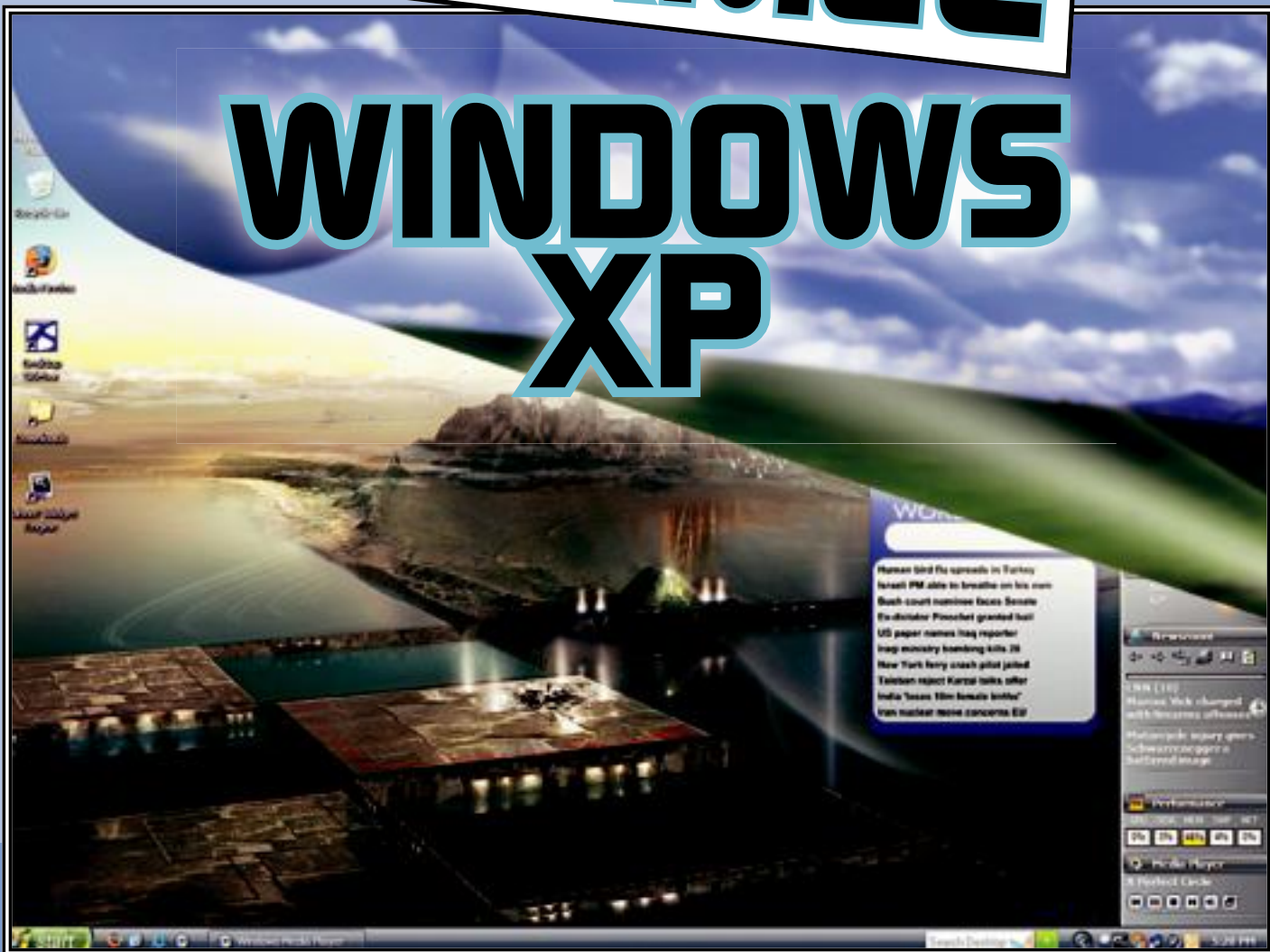
BENCHMARKS

	STOCK	AIR	WATER	PHASE-CHANGE
CLOCK SPEED ACHIEVED	3.46GHz	4.16GHz	4.44GHz	5.04GHz
3DMARK05 OVERALL	7297	8004	7978	8106
3DMARK05 CPU	7111	8509	8185	9247
NERO 7 RECODE	2880	2291	911	Would not run
DVD SHRINK TRANSCODE	2040	1597	1459	1635

Best scores are bolded.

MODERNIZE

WINDOWS XP



Who says you can't teach an old dog new tricks? Whip this aging OS into fighting shape with our expert advice

BY OMEED CHANDRA

The first time we used Windows XP, it seemed like the OS of our dreams. After all, XP combined the stability of Windows NT with the gaming chops of Windows 9x, and even threw in a colorful new interface as a bonus. What more could we ask for?

A lot, it turns out. In the more than four years since we awarded Windows XP a perfect 10 verdict, the proliferation of viruses, worms, and spyware has exposed the operating system's intrinsic weaknesses. Meanwhile, continued innovation from Apple has pushed OS X to the forefront in terms of features, flashiness, and usability. Mac users can now boast of their OS's slick UI, instant search, and superior multimedia capabilities.

Luckily, hope is on the horizon. The next version of Windows—Vista—is expected to close the gap on all of these fronts when it's released later this year. But what about those of us who don't want to wait that long for a modern OS? You already know how to secure Windows with antivirus, anti-spyware, and firewall software, but how about bringing it up to date feature-wise? Good news: With a little help from some nifty low- and no-cost utilities, bringing Windows XP up to snuff is as easy as pie. We'll show you how to get the OS goodness you crave without waiting for Vista, or selling your children into servitude to buy a pricey Mac.

FUNCTIONALITY

Five years ago, hard drives were in the 40GB range, many people still used 56K dialup, and only gamers had 3D accelerators. Windows XP was built for those times, but today's world demands an OS that recognizes the promise of faster Internet connections and meets the challenges of locating information on a jam-packed 400GB hard drive. Here are some utilities that can add the functionality you need to Windows XP.

Desktop Search

Would you rather be stuck on a desert island with no food, water, and clothing, or trying to locate a file on your computer using Windows' built-in search utility? That's a tough call, considering that you could very well die of old age before Windows finds the file you're looking for.

Luckily, thanks to the advent of external desktop search apps, you may never need to use the Windows search utility ever again. Desktop search programs constantly run in the background, indexing the contents of files on your hard drive as they are created or modified. This facilitates near-instant searches of your computer—you can find and display all the documents on your computer that contain

the phrase "Enrique Iglesias" just as quickly as you could perform the same search on Google. There's no need to worry about sapping your computer's performance either, because most desktop search tools only add to their index while your system is idle.

Until Vista delivers integrated desktop search, Windows XP users have a plethora of free third-party search tools to choose from. Our top choices are *Google Desktop* and Microsoft's *Windows Desktop Search*. Both members of this dynamic duo beat the hell out of old-school search technology, but each one also has its quirks.

Windows Desktop Search (<http://toolbar.msn.com>) is bundled with the *MSN Search* toolbar, which can easily be disabled if you don't want to use it. (The toolbar adds rudimentary tabbed-browsing to *Internet Explorer*, and also supports a phishing-protection plugin.) When you run a search, *Windows Desktop Search* displays a substantial preview of each file matching your search query, as opposed to the brief summary shown by *Google Desktop*. Our main complaint with *Windows Desktop Search* is that it can't search PDF files out of the box. Microsoft makes you download a separate plugin for that—not the end of the world, but an unnecessary hassle to be sure.

Meanwhile, *Google Desktop* (<http://desktop.google.com>) bundles a groovy sidebar application that lets you download and use all sorts of useful applets on your

desktop. (For more information, take a gander at the "Sidebars" section on page 38.) As with *Windows Desktop Search*, you can download plugins that expand the capabilities of *Google Desktop*. You can search many popular file types (including PDFs) by default, and *Google Desktop* will even index your Gmail account. However, while Google's search program is a bit more user-friendly than Microsoft's, it's also marginally less customizable, with fewer options exposed to the user. There are tons of third-party plugins for *Google Desktop*, however, that let you add search to almost every common file type.

We recommend you try out both search utilities, then pick the one you like best and uninstall the other. While you can run them both at the same time, we don't recommend it, as the indexing utilities will take a long time to create their respective indices if they both run



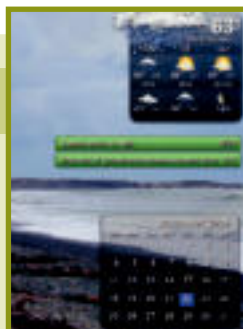
The search interface for *Google Desktop* will be immediately familiar to anyone who uses Google's Internet search engine.



Windows Desktop Search will find your files in a split second and display a preview or other contextual data, such as album information for music.

WIDGETS

What's a widget, you ask? Only the best thing to happen to computers since the Internet! OK, maybe not, but widgets are pretty damn cool. A widget is a small applet that resides on your desktop and culls the information you want from your computer and/or the Internet, presenting it quietly and attractively. This information could be anything from the latest baseball scores to a webcam displaying the current ski conditions at your favorite resort.



Decorate your desktop with spiffy widgets to put all sorts of useful info at your fingertips.

Widgets were popularized by a program called *Konfabulator*, which has since been acquired by Yahoo! and renamed *Yahoo! Widget Engine*. That's a good thing, because Yahoo! reduced the app's price to nothing! Yahoo! also maintains an online gallery of widgets for every occasion—more than 1,600 of them as of this writing. Have a look at <http://widgets.yahoo.com>.

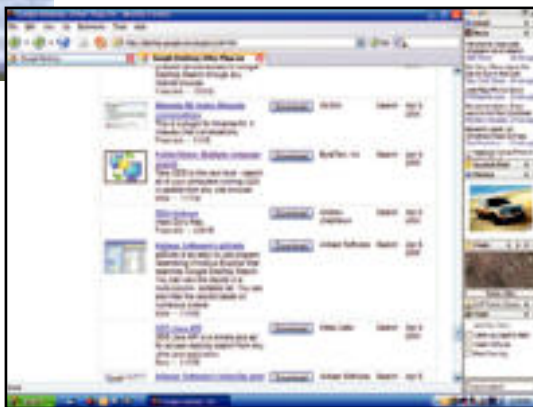
MODERNIZE WINDOWS XP

Sidebars

Of all the new features set to debut in Windows Vista, we think the on-again, off-again sidebar is one of the coolest. (For a while, the sidebar fell off of the Vista features list, but it seems to be back, at least for the time being.) For the uninitiated, the sidebar is exactly what it sounds like: a long bar down the side of your screen that can display all sorts of fun and useful information, such as weather forecasts (useful), RSS news feeds (also useful), and photos of your hamster (fun). This is similar to the concept of widgets; the sidebar simply provides a convenient and prominently visible place to display useful or entertaining info.

And guess what? You don't have to wait for Vista to get in on the hot sidebar action. Since Microsoft first demoed the concept several years ago, numerous free third-party sidebar applications have been created. Our top pick is *Desktop Sidebar* (www.desktopsidebar.com), which is fast, stable, and boasts a solid library of skins and plugins. Some of our favorites include the ABC BitTorrent Panel, which lets you monitor your BitTorrent downloads; the DSiTunesController plugin, which allows you to control *iTunes* even if it's minimized; and the Calendar Panel, which displays your upcoming appointments from *Outlook*. All of these plugins and more are either included with *Desktop Sidebar* or freely downloadable from the program's website.

Of course, if you're already using *Google Desktop Search* on your computer, you might simply want to use the sidebar that's included with it. Google's sidebar comes stocked with a bevy of plugins, many of which are related to Google ser-



Google also bundles a sidebar with its desktop search application. It ain't original, but it gets the job done.

vices. For example, the default installation includes a newsfeed from Google News, a rotating display of maps from Google Maps, and a GMail plugin. You also get conveniences such as a to-do list and a web/desktop search box. Dozens of additional plugins are available online (<http://desktop.google.com/plugins>); most of them offer functionality similar to the plugins available for *Desktop Sidebar*.

PDF Technology

If you've used a Mac recently, you may already know that newer versions of OS X offer built-in support for Adobe's ubiquitous PDF file format—any app that can print can create PDFs. Meanwhile, Windows users are stuck viewing PDFs in the slow and bloated *Adobe Reader* application, and have no easy way to produce their own PDF files. Right?

Wrong! Denizens of Windowsland do in fact have recourse from Adobe's PDF monopoly. For viewing PDFs, we recommend ditching *Adobe Reader* for the lean and mean *Foxit Reader* (www.foxitsoftware.com). This program is the most polished and complete alternative PDF viewer we've seen here at *Maximum PC*. It's free, requires no installer, and leaves a footprint of less than 3MB on your hard drive. Best of all, it supports all the most important features of *Adobe Reader*, yet boasts a startup time that's measured in seconds instead of weeks (yes, Adobe, that's a dig).

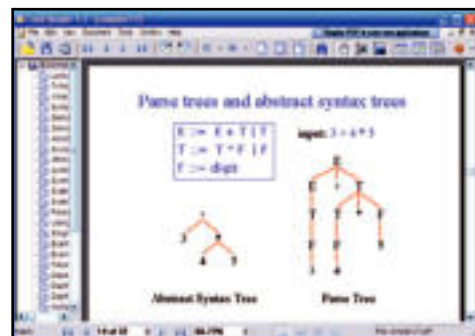
What about those of us who need to produce our own PDFs? You could shell out the big bucks for a professional PDF-creation program—or you could just download the free, easy to use *PDFCreator* (www.sourceforge.net/projects/pdfcreator). This simple open-source tool installs as a printer driver

in Windows. That means you specify output settings (resolution, paper size, etc.) through Windows XP's Printers and Faxes utility. Conveniently, it also means you can produce PDF files from any Windows program that's capable of printing.

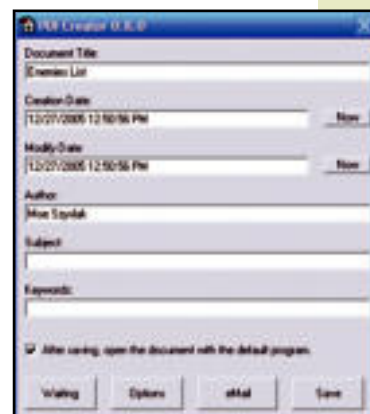
When you want to export a document to PDF from a program, just use the usual Print command and select "PDFCreator" as your printer. A dialog box will pop up asking you to specify a filename and optional information such as an author and

subject. Simply enter the requisite information, click Save, and choose a location for the file. That's all—it's really that easy!

Continued on page 40 →



Foxit Reader is a fast, streamlined alternative for viewing PDF files.



With the free open-source PDFCreator tool, you can create your own PDFs from any program that supports printing.



Monitor stock prices, check the weather, and keep up on the news—all from the side of your computer screen with *Desktop Sidebar*.

MODERNIZE WINDOWS XP

Continued from page 38

Web Browser and Email Client

By now, every power user knows that *Internet Explorer 6* is far behind the curve in terms of features and security. Microsoft knows that too, and is busy working on a new version of *IE* that will add key enhancements like tabbed browsing and improved security. We'll reserve judgment on *IE7* until the final version is in our hands, but until then, there's no reason to recommend using *IE6* when two outstanding alternative browsers are available free of charge to Windows users.

Our favorite alternative web browser is *Firefox* (www.mozilla.com). The core program offers niceties like tabbed browsing, a download manager, and RSS support. In conjunction with the vast library of extensions available on the Internet, *Firefox* becomes incredibly powerful and almost infinitely customizable. *Firefox* isn't perfect—it occasionally displays a web page incorrectly, and it has a knack for letting misbehaving plugins consume undue amounts of memory—but for the time being, it's almost universally accepted as the best web browser. Grab it today, and check out some extensions on the Mozilla website or at the Extension Room (<http://extensionroom.mozdev.org>).

The *Opera* browser (www.opera.com) has also garnered quite a bit of attention since it became a free product. It's a solid browser with a fiercely loyal fan base, and has some interesting features—built-in mouse-gesture support, anti-spyware features, and even voice navigation—that might be worth a try. The interface, however, is not as immediately intuitive as *Firefox's*, and we encountered problems rendering some web pages.



Step on up to tabbed browsing with the highly extensible *Firefox* browser.



Mozilla's *Thunderbird* email client boasts a junk-mail filter and other key features that *Outlook Express* lacks.

Though it doesn't get as much attention as *Internet Explorer*, the *Outlook Express* email client that comes with Windows is equally dated. If you've already bought a more powerful client such as Microsoft's *Outlook 2003*, you have no need for concern. But if you don't need or can't afford a high-end email client, you might want to consider Mozilla's free *Thunderbird* client (www.mozilla.com/thunderbird). It offers all sorts of features not found in *Outlook Express*, from message encryption to a spam filter. And like *Firefox*, *Thunderbird* supports extensions, allowing you to customize and expand its capabilities to your heart's content.

Multimedia Apps

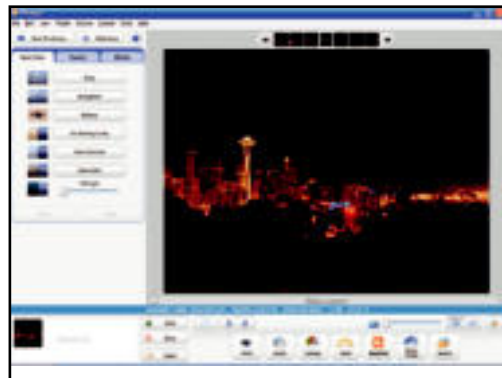
Multimedia is something at which Apple has always excelled. Its suite of *iLife* apps gives users an easy way to edit and organize photos, make home movies, burn DVDs, and more. Fortunately, you can get most of these capabilities for free on Windows.

Google's *Picasa* software (<http://picasa.google.com>) is great for organizing your photos and making simple touch-ups. Its intuitive interface offers a simple way to sort through your photo library and create your own slide shows. *Picasa* also gives you the power to easily make essential photo edits, such as cropping, color saturation, straightening, and red-eye removal. For the casual photographer, it's a must-have piece of software.

Despite being a niche product, Apple's critically acclaimed *Garage*

Band also has a free alternative on the PC. Actually, it's a combination of two programs: *Audacity* (www.sourceforge.net/projects/audacity) and *Buzz* (www.buzzmachines.com). The former allows you to record and edit multitrack audio, while the latter lets you synthesize your own instrumentals and combine them with other audio tracks to make beautiful music. The catch? Neither app can hold a candle to the user-friendliness of *Garage Band*, and because they're free, community-based tech support is all you'll get. They're very potent tools, however, if you're willing to take the time to learn them.

You probably know that Windows XP lacks built-in DVD burning and authoring capabilities. Well, there's an easy solution to the first problem: *BurnOn CD&DVD* (www.burnworld.com/burnoncd dvd), a rudimentary burning app that allows you to burn data CDs and DVDs as well as video



Organize your photos and make essential edits with Google's free *Picasa* picture-management software.

DVDs (though you'll need a separate program to create the requisite VOB files). The free version of *BurnOn CD&DVD* displays a pop-up ad every time you exit the program, but it's otherwise a fully featured program.

Unfortunately, if you're looking for a complete, well-rounded video-editing and DVD-authoring package à la *iMovie* or *iDVD*, you'll have to plunk down the cash for an app such as Adobe's *Premiere Elements* (www.adobe.com) or Pinnacle's *Studio Plus* (www.pinnacle.com). Alternatively, you could hold out for Vista and the new version of *Windows Movie Maker*, which is rumored to include improved editing capabilities and integrated DVD burning.

MAKEOVER

Now we've added some much-needed features to Windows XP, but what can we do to make it look better? With a new theme or skin you can give Windows a hip new look!

Admit it: Looks matter. If they didn't, Britney Spears would be a convenience store clerk in Louisiana and more people would drive Volvos. The same principle applies to computers. Although Macs have many positive qualities these days, what do you think is the number-one reason cited by people who switch from Windows? Yeah, that's right: "The iBook is soooo cute!" And on the software side of things, let's face it: Windows XP's Luna theme was attractive and modern back in 2001, but this is 2006, folks.

You probably won't have much luck convincing the folks at Dell and HP to stop designing ugly computers, but you *can* overhaul the appearance of your operating system with minimal effort. Our favorite OS-skinning application is Stardock's *WindowBlinds* (\$20, www.stardock.com), which lets you revamp the look of your entire GUI—Start menu, program windows, desktop icons, the works. *WindowBlinds* boasts a collection of literally thousands of community-created themes, but the latest version of the software also offers a special treat. On systems equipped with a 3D accelerator, *WindowBlinds 5* delivers a few of the slick visual effects of Windows Vista's much-touted Aero Glass UI, such as transparent window borders. It's also much less GPU-intensive than Vista will be—we experienced very smooth performance on a 4-year-old Radeon 8500 128MB videocard.

Does all of this sound too good to be true? Well, there are two gotchas.

First, most of the skins available for *WindowBlinds* are created by amateurs, and it shows. We tested many top-rated skins from www.wincustomize.com, a popular skin repository, and although we stumbled across a few gems, the vast majority of the skins we found were downright garish. Sadly, as we were writing this article, a particularly stylin' skin that impeccably imitated Vista's Aero Glass UI was removed by its author on Microsoft's request.

The other major catch of *WindowBlinds* is that, like any low-level OS modification, it has the potential to screw up your system. Our own experience was positive, but we've heard of cases in which *WindowBlinds* caused problems ranging from sporadic program crashes to the corruption of Windows XP's icon files. As such, we understand that many folks won't be comfortable installing such an invasive program.

If that describes you, you can still make Windows XP look a bit more modern. When Microsoft shipped Windows XP Media Center Edition 2005, it served up a new theme called Royale, which has since been made available (for free) to all Windows XP users. Royale is essentially a sleeker, more contemporary version of the Luna theme. Because it's made by Microsoft, it's a safe choice for those who don't want to

mess with third-party window managers. To get it, head over to www.microsoft.com and search for "Royale"; it should come up under the title "Desktop Backgrounds for Windows."

It's worth noting that aesthetics and productivity sometimes go hand-in-hand. An example of this is the venerable Alt-Tab feature, which by default simply displays a list of icons representing the programs you have running. Alt-Tab is handy as it is, but wouldn't it



Keep the holiday spirit alive all year long with a *WindowBlinds* Christmas desktop theme.

be even better to see a small snapshot of each program, so you could easily choose between the six instant messaging windows you have open? We sure think so. Luckily, the *Alt-Tab Replacement PowerToy* (visit www.microsoft.com and

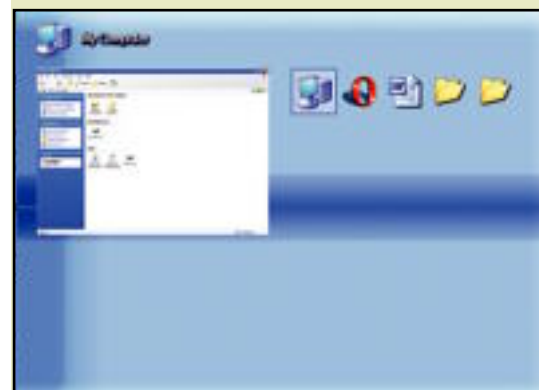
search for "powertoys") does exactly that. It's not quite the same as the Mac's Exposé feature or the Flip 3D view of Windows Vista, but it's definitely an improvement. [MPC](#)



Microsoft's Royale theme for Windows XP is a slightly sleeker and more modern take on the Luna theme.



Tired of Windows XP's bubbly UI? A chic black desktop theme might be just what you need.



The Alt-Tab Replacement PowerToy improves both the form and function of Windows XP, with handy previews of the windows you have open.

MAXIMUM PC

GAMING AWARDS 2005

THE MORE HUMAN THAN HUMAN AWARD **FEAR**

With enemies who immediately take cover, try to flank you, and spray you with hot lead when they're pinned down, the A.I. in *FEAR* is the best we've ever seen, hands down.

\$50, www.whatisfear.com, ESRB: M




HOLY CRAP! A FUN ADVENTURE GAME!

INDIGO PROPHECY

The common wisdom is that adventure games suck. We generally agree, but *Indigo Prophecy's* branching story lines, innovative and time-critical control scheme, and gritty plot make this a can't-miss for all gamers.

\$40, www.atari.com/indigo, ESRB: M



The Gamies? The FiPSies? The Fraggies? Whatever they're called, we're ready to hand out the 2005 Maximum PC Gaming awards! Here are our verdicts on the best—and worst—games of 2005

BY THE MAXIMUM PC STAFF

The year 2005 has come to a close, and for the record, *Duke Nukem Forever* still hasn't shipped. No worries; plenty of games did ship this year, and there were a ton of awesome titles. 2005 will definitely go down as a kick-ass year for PC gaming.

The most anticipated games of the year were mostly follow-ups to previous titles—*Quake 4*, *Age of Empires III*, *Brothers in Arms: Earned in Blood*, and *Battlefield 2*. But there were a few all-new games that impressed the heck out of us too, and now is the time to pay our respects to all worthy comers.

In addition to selecting one title as "Game of the Year," we've given props to 14 other stellar titles that kept us up all night. It's rare to find a game so good that we're

glued to our computers for hours on end, cursing the fact that we have to go to work the next day.

Of course, no year is all *Half-Life 2* and *Knights of the Old Republic*, and gaming in 2005 certainly wasn't a painless experience. We're still trying to forget *Area 51*, *Psychotoxic*, and the *Doom 3* expansion, among others. We've pointed out some of the worst stinkers so you can avoid them when visiting your local bargain bin.

OK, the red carpet is on the floor, the celebrities are emerging from their limos, and the awards ceremony is about to begin. Join us as we pay homage to the best—and worst—games of 2005.



TASTIEST RETINA DELICACY

QUAKE 4

The *Doom 3* engine is a year old now and, damn, does it look good. Sure, people still look plastic-y, but the normal maps, dynamic lighting, and high-res textures make our videocards groan and our loins tingle. **\$50, www.quake4game.com, ESRB: M**



THE MOST GRATUITOUS USE OF POOP IN A GAME

BLACK AND WHITE 2

Black and White 2 is really all about choices. Do you use your creature's house-size poo as a weapon against your enemies, a blessing from a benevolent god, or another way to mete out the punishment of a malevolent god? You decide.

\$50, <http://blackandwhite.ea.com>, ESRB: T

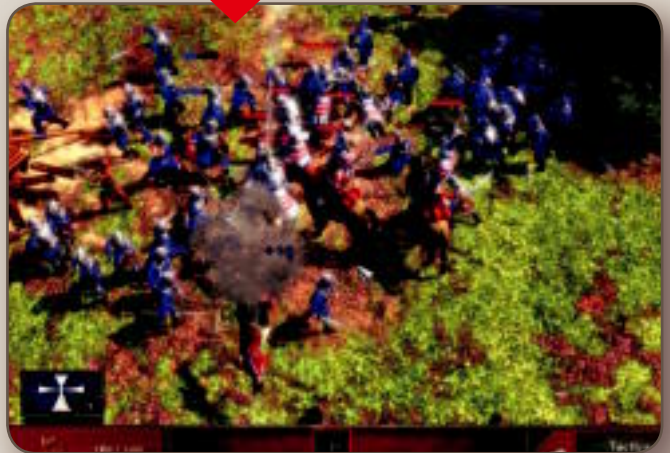


PHYSICS REALLY IS PHUN

AGE OF EMPIRES III

AoE III marks the first appearance of the Havok physics engine in a real-time-strategy game, and it's about time. This slick innovation lets us send massive cannon balls directly into rows of musketeers. When they're hit, they get thrown around like rag-doll bowling pins, and we laugh sadistically. It's just fun!

\$50, www.ageofempires3.com, ESRB: T



BEST EXCUSE TO BUY 5.1 SPEAKERS

CALL OF DUTY 2

MG42! Germans! The sounds of warfare never sounded so glorious or so terrifying as they do in this bombastic WWII shooter. As one editor quipped, "When I hear an MG42 fire up in front of me, I want to dive under my desk for cover." \$50, www.callofduty2.com, ESRB: T



THE "YOU REALLY NAILED HIM" AWARD

FEAR

The nail gun in *FEAR* takes the typically mundane experience of wasting foes and turns it into an exercise in interior decorating. "Let's see, I'll put you up on that wall, and you over there." The possibilities for new arrangements are simply endless.

\$50, www.whatisfear.com, ESRB: M



BEST INSIDE JOKE

SPLINTER CELL: CHAOS THEORY

The second *Splinter Cell* game was filled with alarms that, once sounded, required you to restart the level—and it sucked. In the third installment, after being warned not to set off any alarms, Fisher asks, “And if I do, I have to start over, right?” His boss then says, “Damnit, Fisher, this isn’t a video game.” Well-played, Ubisoft. **\$50, www.splintercell.com, ESRB: T**



THE GAME WE HATE TO LOVE

GRAND THEFT AUTO: SAN ANDREAS

We hate to admit it, but *San Andreas* is one of the best games we’ve played in recent memory. Everything from the engrossing story to the game’s superb voice-acting and myriad side-missions sucked us in like no game has in a long, long time. Grove Street for life! **\$50, www.gtasanandreas.com, ESRB: M**



THE MICROMANAGEMENT AND MACHINIMA ACHIEVEMENT AWARD

THE MOVIES

We don’t usually go for games that require tons of micromanagement, but there’s something pretty compelling about keeping your rising starlets off the hooch and on the movie lot. Beneath the *Sims*-style micromanagement, there’s an advanced open-ended machinima-creation game, unlike anything we’ve ever played before. **\$50, www.themoviesgame.com, ESRB: T**



THE GIVE US MERCY AWARD FOR HUMANE GAMEPLAY

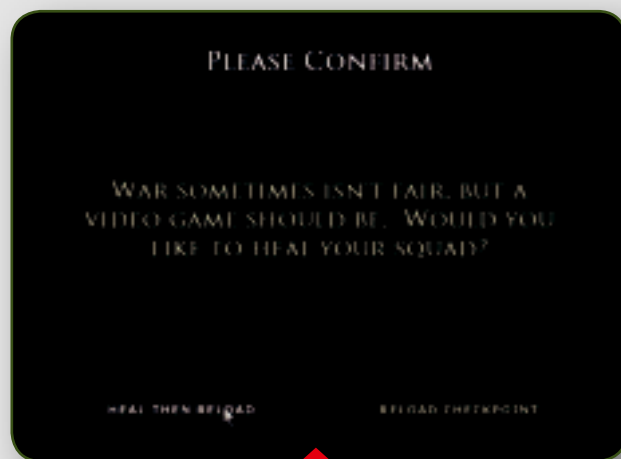
BROTHERS IN ARMS: EARNED IN BLOOD

Die, respawn, die again, respawn again, die yet again—we’ve all been locked into this frustrating cycle before. *Brothers in Arms*,

THE IT’S ABOUT DAMN TIME AWARD

GAMES ON DVD

We have had it up to *here* with multi-CD installations. Having to swap out six discs to install a game is idiotic. When the first games on DVD arrived in our office, we were beside ourselves in ecstasy. All we ask is for that to become the norm in 2006, rather than being the domain of more-expensive-yet-not-so-special “Collector’s Editions.”



however, gives frustrated gamers who are stuck in a tight spot a helping hand. That’s the way we like to play. **\$50, www.brothersinarmsgame.com, ESRB: M**

MOST ASININE GAME FEATURE

In *Battlefield 2*, a “yes” vote has to be cast by damn near everyone on the server to kick off a player, rather than by just his teammates. That’s lame, with a capital L.

MOST DISAPPOINTING EXPANSION

Doom 3: Resurrection of Evil brought us back to the Mars Facility’s test labs, as if we didn’t get enough of that the first go-around.

MOST ORIGINAL GAME

PSYCHONAUTS

This twisted platformer puts you inside the mind of 12 deranged antagonists, allowing you to tower over a citadel populated with lungfish on one map, and play chess against Napoleon's army on the next. Wildly entertaining and always hilarious, *Psychonauts* is easily the most original game of the year, and the best platformer we've ever played on the PC. Bravo, Tim Schafer. Brav-o.

\$40, www.psychonauts.com, ESRB: T



THE MOVIE SUCKS, BUT THE GAME ROCKS

CHRONICLES OF RIDDICK: ESCAPE FROM BUTCHER BAY

Gravity, male pattern baldness, sucktastic games based on movie licenses—all have been inescapable truths of the universe. Until, that is, *Escape from Butcher Bay* saved the latter from the category. Easily one of the best—and most underrated—games of the year, *Riddick* blew us away with its badass nature, and was all the more enjoyable since we were just expecting another awful movie cash-in. \$20, www.riddickgame.com, ESRB: M



GAME OF THE YEAR

BATTLEFIELD 2

Forget World War II; it's over, man. The modern battlefield is a much more exciting place. With dozens of land, sea, and air vehicles and a wide assortment of modern small arms, *Battlefield 2* delivers the definitive large-scale combat experience.

There are dozens of ways to play—you can be anything from a snake-eater deep behind enemy lines to the commander who orchestrates an entire offensive. This is truly a game for everyone.

\$50, <http://battlefield2.ea.com>, ESRB: T



Build A Media Server

Do you have thousands of MP3s and hundreds of movies on your hard drives? If so, you'll benefit from building an inexpensive, always-on media server!

Where's that Devo MP3 you downloaded last week? Is it on your laptop? Or on your desktop? Chances are, if you have more than one PC, you're having a hard time keeping all your multimedia files organized. You could stream them all from your gaming rig, but do you really want to chance slower disk access and lost CPU cycles mid-deathmatch just because your wife needed to download a few dozen songs from the living room?

The best way to make sure your files are in one, easy-to-find place, and available 24 hours a day, seven days a week is to store and serve them on a dedicated media box. Unlike your über gaming rig, built to push maximum frame rates, the media server should run cool, quiet, reliably, and without frills—an understated sidekick to free your power PC from mundane file-serving duties. Here's how to build one.

BY BRIAN LAM

INGREDIENTS

- **ATX CASE**
with several hard drive bays
- **WINXP PRO OR MEDIA CENTER EDITION**
- **A 2GHZ+ CPU**
with compatible motherboard
- **1GB RAM**
- **DVD BURNER**
- **AT LEAST ONE LARGE-CAPACITY HARD DRIVE**
- **EXTERNAL HARD DRIVE**
- **OPTIONAL**
Extra drive for RAID array;
streaming media boxes;
TV-tuner card



Picking the Perfect Components

CPU

Raw, unadulterated power? Forget about it. In this machine you'll want only enough speed to serve up files and run your streaming software. A slower processor will save you money that you can use on storage—the heart of a media server—or even your primary rig. And a slower processor will also generate less heat, requiring a more modest cooling setup and aiding overall reliability. Also, because most media servers can

do double-duty as home theater boxes, keeping the rig quiet means you can use it in your living room, if need be. We recommend the Pentium M or Mobile Athlon processor paired with a silent cooler, but these chips can be pricey. If you don't want to buy a ton of new hardware, you can probably adapt an older PC. We wouldn't recommend anything slower than 2GHz, though.

Storage

Using a lackluster CPU is fine, but a media server should have a robust storage setup. A single, fast drive paired with a large backup drive should do the job. We wouldn't fool with any drives smaller than 400GB—either the 400GB Western Digital Caviar SE with a 16MB buffer or the Hitachi 7K500 500GB is ideal. The WD drive is a little quieter, while the Hitachi, obviously, offers more capacity.

If you're concerned about data reliability, a RAID array is an option. A RAID 1 array, also known as a mirrored array, automatically copies your data to two hard drives in real time.



Hitachi's 500GB Deskstar delivers kick-ass performance, for the low, low price of 50 cents per gig.

Sounds like a good idea, right? It can be, but running RAID doesn't necessarily make your rig bulletproof against data loss. If your media files

Continued on next page →

Continued from previous page

are accidentally deleted, by you or by malicious software, the RAID backup will be wiped out at the same time.

For the most part, a single drive, which can keep up with typical media-streaming situations, will be marginally less noisy, and generate less heat. With the cash you save, you can buy an external backup drive. Your backup drive should include software that automatically copies the contents of your disk according to your set schedule. Unless you add tons of media every day, we recommend you run backups weekly. Any backup drive will do, as long as it can back up your primary drive in its entirety.

Soundcard

If your media server is destined to sit in a closet, disconnected from everything but power and Ethernet, it really doesn't need a soundcard. If

you're going to set it up in your living room, however, you'll definitely want a good, stand-alone soundcard. We recommend the X-Fi XtremeMusic. It's a good value, and delivers superior sound quality, suitable for playback on a high-end home theater system.



If your server requires a soundcard, you can't do better than Creative Labs' X-Fi XtremeMusic.

Case, etc.

The other component you should choose with care is your case. We mentioned that a media server can double as a great living room PC. If that's your goal, a slim-line case, such as Antec's Minuet or Overture boxes, or even a small formfactor or mini-ATX case, will fit right in with your home theater equipment, although future expandability will be limited. If you're going to throw your PC into a closet, any beige box will do.

This is the one time that it's acceptable to use integrated video for your rig. Anything more is overkill, and anything with fans will just make more noise. The only reason to use a stand-alone videocard in a media server is if you need to connect it to a device that requires a component input, like an HDTV. As far as RAM goes, procure at least a gig.



A good small formfactor case, like this Shuttle SB86i, will fit right into your living room—just make sure it's big enough to hold a couple of hard drives.

The OS

In the past, we've recommended everything from Windows 2000 to Linux for a streaming server's OS, but over the years, we've found that the best solution is actually very simple: Windows XP Professional. The rise of inexpensive video and audio streaming boxes opens lots of doors for the owner of a media server; however, most of the software requires Universal Plug and Play support, which only works on Windows XP (and it's many variants). You can even use Windows Media Center 2005, which delivers a few extra bonus features, with a catch.

The catch is, you can't officially buy a retail box of Media Center 2005; instead you have to buy the special OEM version. You can get Media Center 2005 at online stores such as Newegg (www.newegg.com) for about \$130. Add a supported TV tuner and a remote, and Media Center lets you use your PC (as well as any connected streaming box or Xbox 360) as a PVR and digital-media hub, from which you can access movies, music, photos, and more.



There are fancier alternatives these days, but for ultimate compatibility and easy maintenance, we recommend Windows XP for your media server.

Putting the Pieces Together

At this point, you need to assemble your rig, just like any other system. Build your rig, and then install Windows and all the necessary drivers, security patches, and updates, and your machine should be ready to go. Before you partition your hard drive during the Windows install process, consider creating separate partitions for your applications and data. Doing this makes backing up your data much faster, and prevents you from backing up data that doesn't change every week—like the contents of your C:/Windows folder. You shouldn't need more than 40GB for your Windows drive, so you'll still have tons of space for your media files. You should also give your machine a descriptive name, which will be easy to type, when the Windows installer prompts you.

Copying Your Media

Now that your box is set up, you'll want to create folders for your separate media types off the root of your media partition. We recommend creating a Media folder on that partition, then creating subfolders for videos, music, and photos. You might even want to set up folders dedicated to downloaded files, ISO backups of your application CDs, or anything else. Now, start collating all those loose media files from your various PCs. You can copy them through the network, but if you're dealing with a few hundred gigs of data, it's much faster to use that external drive and run around your house, collecting all the media on it and then transferring it to its new home on your server.

Sharing with Others

Now that all your media is on your server, you'll want to make sure that other machines on your network can access it. Right-click each of the folders you want to access on the network, and select Sharing and Security. Check the box that says "Share this folder on the network" and give your share a descriptive name. If you want to be able to make changes to your files remotely, or add new ones, you'll need to check the box labeled "Allow network users to change my files." That will

allow anyone with an account on the machine to add, delete, or change files on the server. You can manage accounts in the User Accounts Control Panel. You should be able to access any of the shared directories by typing //name of server//name of share in Windows Explorer

Next, install software for any streaming devices you have, like a Squeezebox or a video streaming box. Once that's done, your server is up and running!

Maintaining Your Server

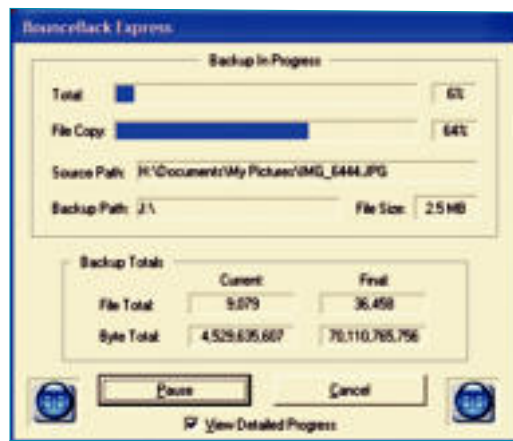
Because of its uptime, your media server needs even more protection from malware than your regular machine. Make sure you install antivirus software, and schedule automatic definition updates, as well as daily or weekly scans of all your drives during the night hours. Set up firewall software, making sure to open the ports that your streaming software and generic Windows networking use. The procedure for this varies based on the streaming software you use and the firewall, so you'll have to consult your

documentation.

This is also the time to schedule a weekly backup to your external drive. Your backup drive should have come with software that will allow you to duplicate the filesystem of your drive, don't fool with incremental backups or proprietary compressed archives, if your software supports them. They're not worth the hassle, and because you're backing up heavily compressed media, there won't be any space savings. [LIFE](#)



A good backup drive is essential for reliable operation of your server, but only if you run regular backups.



Luckily, most backup drives come with software, like *BounceBack Express*, that makes it easy to schedule a weekly or monthly backup.



Ask the Doctor

Diagnosing and curing your PC problems

ALL SHOOK UP

My PC was shaken up during a recent move, and my videocard came loose as a result. I resealed all the cards and memory and rebooted the PC. All appeared to be fine until the Windows logo appeared: My monitor suddenly went black and displayed an "out of scan range" message. Do I have a hardware issue, or will a Windows reinstall solve my problem?

—Lucy Manning

By displaying an "out of scan range" message, your monitor is telling you that the videocard is using an incompatible refresh rate. That normally wouldn't happen unless you changed the monitor setting in the software driver, but it's also possible that the device driver has become corrupted. Try uninstalling the videocard driver software, restarting your PC, and then reinstalling the latest version (consult the GPU manufacturer's website). If that doesn't work, try removing the videocard and blowing out the slot with compressed air; perhaps a bit of dust or debris got in there and is interfering with the edge connection. Reinstalling Windows is unlikely to solve your problem.

A NOT-SO-JOYFUL NOISE

I own a Dell 8250 with a P4 3.06GHz processor, 512 MB RDRAM, and Windows XP Professional Edition (SP2). About 18 months ago, the PC's fans began to get very loud whenever the PC is powered on for more than 15 minutes—I can hear them revving up and down until I either turn off the PC or open the case and blow air into it using an 8-inch fan. I'm willing to install a liquid cooling system to get rid of the noise, but what would be the best product for a Dell system such as mine?

—Karlos Moreno

There are plenty of ways to quiet a PC, Karlos, but you should think twice before jumping into the exotic world of water-cooling. It's



Water-cooling some of your components is an effective method of reducing or altogether eliminating fan noise, but one shouldn't venture into this territory lightly.

expensive, time consuming, and we're not even sure if you can jam an off-the-shelf kit into a proprietary Dell enclosure. Besides, there are plenty of other alternatives, most of which we covered in the How To section of our September 2005 issue (point your browser to www.maximumpc.com/how-to).

But before you do anything, find out what's making all that noise in the first place—especially if this is a relatively new phenomenon. Open your case to reveal the motherboard, and systematically stop each of the fans you can see, by carefully pressing your finger down on the hub (don't touch the blades!) for a second or two until you've isolated the fans making the most racket. If your case fans are the culprits, replace them (if you can) with same-size models from Silent-X, Panaflo, or Antec. If you still want to go with water-cooling, you'll most likely have to get an external unit (as we have no idea what the inside of your Dell can hold). Top-rated external units include the Corsair Cool, Zalman Reserator, and the Swiftech kits.

SOUND BLASTER DEAD?

I bought a CyberPower PC with a Creative Labs Sound Blaster Live in March 2005. The system runs great except for one thing: If the system has been powered-down for a long time, I get no sound when I power it up. If I warm-boot the system, the sound



works fine. CyberPower isn't sure how to solve the problem, and the suggestion from Creative Labs' tech support—that I uninstall and then reinstall all the soundcard drivers and software—hasn't fixed it either.

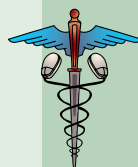
—Greg Manchester

That's an unusual problem, but the Doc will take a stab at solving it:

This could be a conflict between the soundcard and your PC's onboard audio, which should be disabled by default; it could be a damaged cable or jack connecting your speakers to your soundcard; or it could simply be a bum card.

The first and easiest troubleshooting step is to make sure your PC's onboard audio is disabled. Next, eliminate the cable as a problem by leaving it plugged in and wiggling it and applying pressure at each end. If you hear static or if the sound is intermittent (play a CD, so you have a sound source), you probably have a bad cable. If that doesn't solve the problem, try moving the soundcard to a different expansion slot. If you're running Windows XP, you don't even need Creative's drivers because the Sound Blaster Live is supported natively. www.creative.com

Always try the simplest solutions first: If you think your soundcard has failed, for example, check your audio cables as a first troubleshooting step.



Sing it with me! "Doctor, doctor, gimme the news! I got a bad case of the PC blues." No pill's gonna cure your ill, so send a description of your problem to doctor@maximumpc.com. He'll shake his fist, knock on wood, and enlist the spirit of Robert Palmer to help make things right.

White Paper: Biometric Security

Popping up in everything from notebook computers to drivers' licenses, biometric security promises to be the ultimate security solution. But there's a long road to travel; will we be happy when we get there?

BY GORD GOBLE

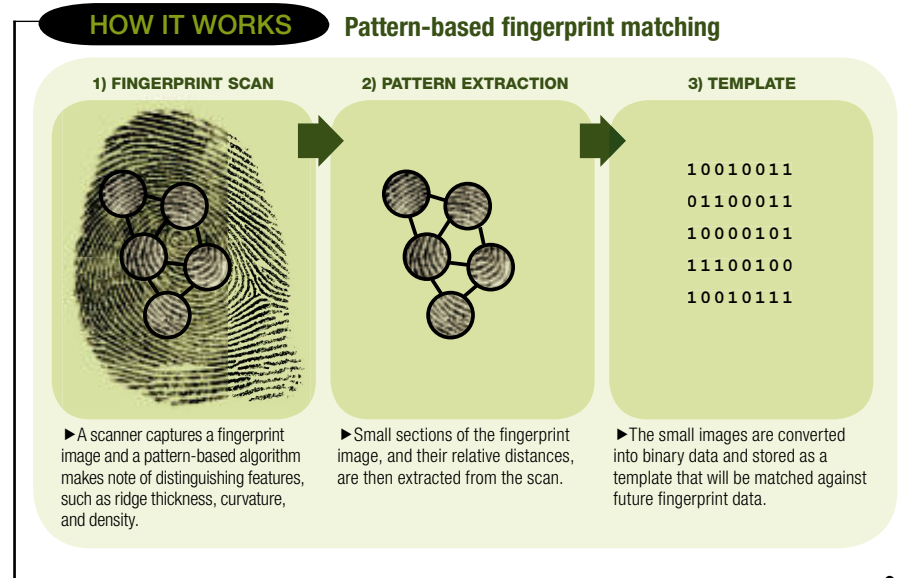
If you think biometrics is the visual-effects technology behind cinematic cyborgs such as Robocop and the Terminator, you're not alone. In reality, it's the science of verifying the identity of a living person by analyzing one or more of his or her physiological characteristics—say, iris pattern or voiceprint.

If that sounds complex, consider that one of biometrics' oldest and most widely accepted applications is the simple art of fingerprinting. Today's technology, of course, goes far beyond inky fingers. You'll find biometrics in everything from laptops and PDAs to airports, office buildings, passports, and drivers' licenses. There may come a day when printed identification becomes as quaint as a wax seal. We'll look at the different types of biometric applications, explore each one's strengths and weaknesses, and discover why in one way or another, biometrics are destined to impact your daily life.

A HIGH-TECH SECURITY BLANKET

There's a simple reason why biometric research-and-development efforts are progressing at such a rapid pace: security. Given that so much of your physiology is completely unique to you, and assuming there is a quantifiable and 100-percent accurate method of measuring or gauging one or more of your physical attributes, biometrics is the most convenient and foolproof security technology available; in theory, at least.

Biometrics has already made significant inroads into the computer market: An increasing number of new notebook com-



puters, mice, and even USB drives feature integrated fingerprint scanners, and you can add one of these devices to any existing PC for as little as \$30. Unlike a physical device, your fingerprints cannot be lost, stolen, or accidentally left behind. And unlike passwords, they cannot be forgotten.

But biometrics-protected notebooks are just the tip of the iceberg. Walk into a high-security building and chances are you'll have another part of your physiology measured—perhaps by a face, eye, or hand-geometry scanner, or by a device that performs voice authentication. In some parts of the world, you must submit to eye and/or fingerprint scanning in order to obtain a driver's license or a passport. There might even come a time when everyday transactions will require a quick analysis of some portion of your physiology.

GIVING BIOMETRICS THE FINGER

Fingerprint scanning is the most common and least expensive form of biometrics. Here, your print is initially scanned by a light source—such as a laser or LED—and the image is temporarily stored in a CCD or CMOS device. The print image is never permanently stored, for security reasons; instead, the device employs a series of secret algorithms to convert the location, size, and shape of the finger's ridges, valleys, and other characteristics into a string of ones

and zeroes. This calibration template is then matched against templates created in future scans to determine a positive identification.

The problem with today's fingerprint-based biometrics technology is that it's far from infallible. For starters, fingerprints can be altered—deliberately, accidentally, or with the simple passage of time. Fingers also tend to get dirty, which can impact a print's appearance. Fingerprints can even vary from one impression to the next, depending on the level of pressure the user applies to the scanner.

A far more disturbing threat is the potential for "spoofs." Spoofing is the practice of deceiving a biometrics device by introducing counterfeit samples. These sorts of tricks have proven all too easy to pull off with fingerprint scanners, using "fake fingers" fashioned from soft, pliable substances such as gelatin, wax, and silicone.

A Clarkson University study, funded by the U.S. Department of Homeland Security and the U.S. Department of Defense, demonstrated just how easily some camera-based fingerprint-scanning technologies can be fooled. Researchers collected several fingers from cadavers, and fashioned casts from live fingers using dental materials and Play-Doh. After testing more than 60 of the faked samples, they achieved an alarming 90-percent false-positive rate.

Seemingly more-sophisticated biometrics technologies are also susceptible to coun-

Laser Mouse

The very first computer mouse was fabricated from a block of wood, and the typical mouse remains about as responsive and accurate. Laser mice changed everything, so we gutted this one to see what makes it tick

terfeiting. Take iris scanning, for example: With this technique, a near-infrared camera illuminates and photographs the eye's iris. A person's iris remains comparatively stable from childhood to death, and the chances of two irises being identical are infinitesimally small—one in 10^{78} —so this method would appear fail-safe.

The reality, however, is that many of today's inexpensive iris scanners can be thrown off by minutiae such as tears, contact lenses, and even certain eye colors. More costly commercial iris scanners also remain open to attack: A study published by Japan's Yokohama National University in 2004 revealed that two commercial iris-recognition devices could be tricked 100 percent of the time, and a third was fooled 50 percent of the time. The weapons used for these deceptions included everything from glass eyes to videotaped irises and high-resolution photographs.

GEORGE JETSON OR GEORGE ORWELL?

One approach researchers are taking to foil these spoofs is known as "liveness detection." Future biometrics devices will be able to distinguish a living eye, finger, or face from an inanimate imitation. A fingerprint scanner, for example, might incorporate technology for detecting and measuring perspiration, collagen, and even hemoglobin levels. Iris scanners, meanwhile, might combat photo spoofs by detecting dot matrices or dyes used in printing.

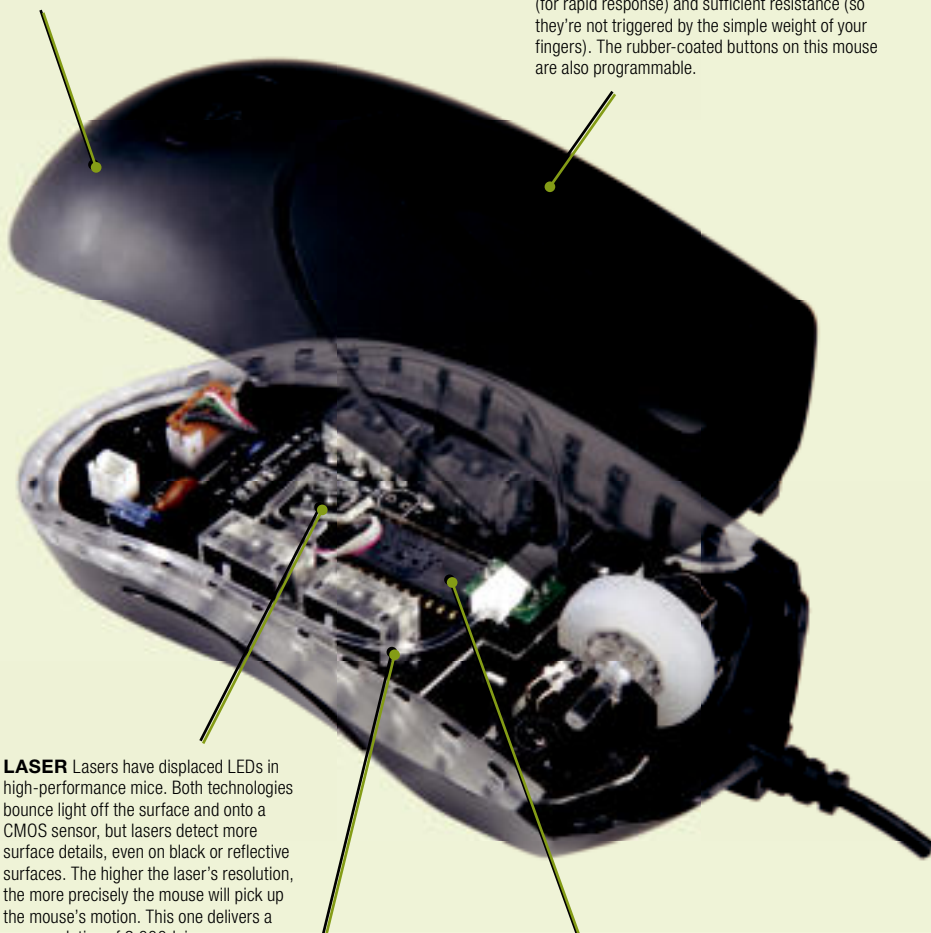
Other objections to biometrics will be more difficult to overcome. Can privacy be guaranteed in a world where not only your image, but everything from your fingerprints to your blood type might be captured and stored in some central database—just so you can gain access to the office building in which you work?

The people of Jamaica might be ahead of the rest of the world in struggling with this very issue: That country's government has proposed creating a biometrics-based national registration system. Citizens would be required to submit their personal information and fingerprints to a national database accessible by every governmental agency, from the police, to the tax collector's office, to the national health-insurance department. The nongovernmental organization Jamaica Council for Human Rights has fiercely objected to the move, citing its Big Brother implications.

Biometrics was a nascent market even before 9/11, and the tragic events of that day have only expedited its development. Even if industry succeeds in developing absolutely foolproof biometrics security systems, the key question is this: Just how much of our privacy are we willing to part with in the pursuit of personal and national security? **MP**

SHELL You'll spend many hours manipulating a mouse, so it's crucial that the shape of its outer shell fit comfortably in your hand. Button placement is equally important. The design of this laser mouse is ambidextrous, in order to be comfortable for both right- and left-handed users.

BUTTONS There's not a lot of mystery behind a mouse's buttons, but the best ones strike the perfect balance between having a short throw (for rapid response) and sufficient resistance (so they're not triggered by the simple weight of your fingers). The rubber-coated buttons on this mouse are also programmable.



LASER Lasers have displaced LEDs in high-performance mice. Both technologies bounce light off the surface and onto a CMOS sensor, but lasers detect more surface details, even on black or reflective surfaces. The higher the laser's resolution, the more precisely the mouse will pick up the mouse's motion. This one delivers a max resolution of 2,000dpi.

CMOS SENSOR This device captures the laser light bounced off the surface and sends it to a digital signal processor (DSP). The DSP examines the patterns in each image captured, in order to determine how far the mouse has moved in the interval. The corresponding coordinates are then relayed to the host PC, which moves the cursor across the screen.

LIGHTING STRIP Interior tubing channels LED light from its source to the non-slip side rails of the mouse. Lighting effects don't serve any function other than to add a "cool factor" to the product.

MINI PREVIEW



ENEMY TERRITORY: QUAKE WARS

Quake 2 meets Battlefield 2, with a dash of Doom 3

Enemy Territory: Quake Wars has become our most-anticipated game of the *Quake* franchise ever since it was unveiled at last year's E3 trade show. We sat down with the game's designers for a multi-hour briefing, and came away with high hopes for the online frag-fest.

Not familiar with *Quake Wars*? Here's a little background: It's an online-only multiplayer game being developed by Splash Damage (the creator of *Wolfenstein: Enemy Territory*, a free, online-only, multiplayer game set in the *Return to Castle Wolfenstein* universe). *Quake Wars* will be a strategic combat game—a la *Battlefield 2*—that pits the half-man, half-machine Strogg against the human Earth Defense Force (EDF). When you join a server, you'll decide whether you want to be part of the EDF or play as Strogg, choose from one of five player classes, and then jump into the fray. Splash Damage doesn't envision any single-player component, although it might create a limited mode with bots for training and practice.

Quake Wars will feature persistent ranks, in-game voice chat, gigantic maps, and both day and night missions, just like *BF2*. But whereas the action in *BF2* involves real-world weapons and enemies, *Quake Wars* will deliver a sci-fi experience. The Strogg and EDF soldiers couldn't be more different from each other, and each force will have dissimilar capabilities, vehicles, and defense structures. We're especially looking forward to playing as Strogg—they pilot hover vehicles and stab their needle-like appendages through their enemies' necks.

The game will use a modified version of the *Doom 3* engine, featuring id's new MegaTexture technology to render massive outdoor areas—something the *Doom 3* engine isn't capable of. *Quake Wars* is scheduled to ship this year, so we hope to be impaling EDF weenies in the very near future.

Preview

ATI Radeon X1900

The Red team is preparing a second salvo of 90nm graphics processors, including new All in Wonder and CrossFire editions

Although the dust has barely settled on ATI's messy launch of the X1800 series of videocards, the company is ready to introduce a whole new set of high-end GPUs: the X1900 series.

This development couldn't have happened soon enough for ATI, considering that the company's current top-of-the-line videocard—the X1800 XT—doesn't come close to beating nVidia's 512MB 7800 GTX in most benchmarks. If nVidia's edge can be attributed in significant measure to the 7800 GTX's 24 pixel-pipeline architecture, versus the X1800 XT's 16 pixel pipelines, it will be interesting to see how ATI's X1900 series fares. It still has just 16 pixel pipes, but it sports 48 pixel-shader units—like the 7800 GTX.

ATI says the increased number of pixel-shader units will not only enable the chip to handle more pixel-shader operations simultaneously (166 billion operations per second, compared with just 60 billion/sec on the X1800), but that the new processor can also handle longer and more complex shader instructions than the previous generation.

The Pixel Shader 3.0-compliant X1900 will be available in two base configurations. The top-of-the-line X1900 XTX will feature a 650MHz engine clock, and its 512MB of GDDR3 memory will be clocked at 775MHz. This card will be priced at \$650. The core on the more mainstream X1900 XT (if you consider a \$550 videocard to be mainstream) will run at 625MHz and its 512MB of memory will run at 722.5MHz. Ever sensitive to questions about availability at launch, an ATI spokesperson told us that even the high-end board will be available "in quantities at launch that we think will be greater than those of nVidia's 512MB GeForce 7800 GTX during its entire life cycle."

ATI assured us that both an X1900



ATI hopes to get a second chance to steal the performance crown from nVidia when the company introduces its 48 pixel-shader Radeon X1900 series of videocards.

CrossFire Edition and an All in Wonder X1900 will also be available in volume at launch. Curiously, the GPU and memory clock speeds on the X1900 CrossFire Edition (\$600) will match those of the slightly slower X1900 XT, as opposed to the X1900 XTX. The videocards in a CrossFire system can run at asymmetric clock speeds, however, so the faster 1900 XTX card won't need to throttle down to match the slower CrossFire Edition card. The \$500 All in Wonder implementation, meanwhile, will feature a single-slot cooler, made possible by its relatively sedate clock speeds of 500MHz for both core and memory.



ATI assures us it'll ship large quantities of the Radeon X1900 CrossFire Edition (shown here), All in Wonder X1900, and two other Radeon X1900 SKUs, all on the same day.

MICHAEL BROWN



Bats down the SLI Bridge Rumor

Think you can improve performance by removing your SLI connector? Think again

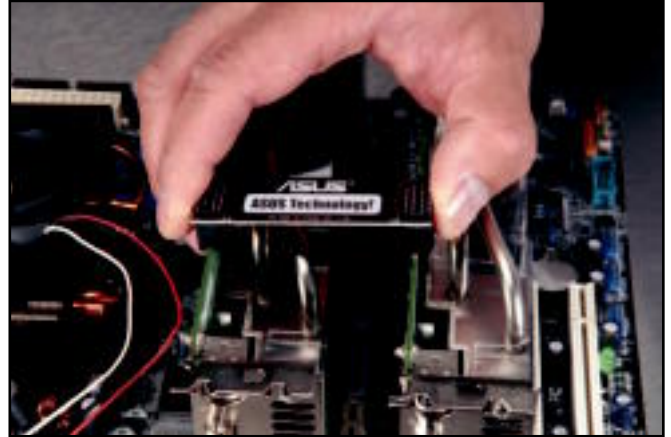
Along with all the emails I get promising richer, thicker hair or entreating me to help the crown prince of Nigeria, I regularly receive messages making odd tech claims. One that recently perked my interest stated that removing the bridge between two SLI GeForce cards actually *increases* performance.

How can this be? It wasn't until recently that new drivers even allowed us to run SLI without a bridge connector, so how was a performance improvement possible? Could the conspiracy theories be correct? Is nVidia forcing people to buy bridge connectors because the company also secretly owns the small firm that makes those parts too?

We decided to get to the bottom of the mystery. As you know, SLI works by connecting two graphics cards together to share the workload of image rendering. The cards can communicate through the PCI Express bus, but they also communicate via a special bridge connector. Or so we're told by nVidia.

After configuring an Asus A8N-SLI Deluxe motherboard with an Athlon 64 FX-55, 2GB of DDR400, and two eVGA GeForce 7800 GTX 512MB cards, we ran the rig through a series of benchmarks, both with and without the bridge in place.

The verdict? Don't run your rig without the bridge card. We found that pulling the little connector seriously impedes performance in every benchmark we ran. Sure, the videocards still work,



We recommend you run your two videocards *with* the SLI connector.

but not at their maximum speed.

The nVidia eggheads weren't surprised. Without the bridge connector, the cards exclusively rely on the PCI Express bus to communicate. And while the low-end cards—such as the GeForce 6600 and 6600 LE—only use the PCI-E bus to communicate, the bus doesn't provide enough bandwidth for the high-end cards. As you do more 3D work, you generate more traffic, which can swamp the bus. When you crank up a pair of 512MB 7800 GTX cards to high resolutions and maximum AA settings, you need the dedicated link to keep the cards from overloading the PCI-E bus.

BENCHMARKS

	3DMARK03	3DMARK05	DOOM 3	FAR CRY
WITHOUT BRIDGE	25,271	12,140	75.3	117.8
WITH BRIDGE	32,094	12,526	99.2fps	153.3fps

Best scores are bolded. All tests were run at 1600x1200 on our standard videocard test bed, with two 512MB eVGA GeForce 7800 GTXs.



The left side was cleaned with ArctiClean; the right with alcohol.

cleaning residue from the heatsink or CPU.

To see how well it worked, I found an old heatsink in the Lab that had silver-based thermal compound dried and caked on it. On one half I used the ArctiClean combo, and on the other side I used standard alcohol.

The results: pretty impressive. While I can't say that the ArctiClean actually cleans the surface better than alcohol (to the naked eye anyway), I can say it takes a lot less elbow grease. Only with a lot more scrubbing and buffing, and several extra passes was I able to get the alcohol side to look as shiny as the ArctiClean side. Arctic Silver claims that ArctiClean contains flash corrosion inhibitors to reduce the corrosion layer on copper or aluminum, but I couldn't test that.

What I can tell you is that ArctiClean makes cleaning easier and faster, and gets you a spic-and-span heatsink surface in less time than standard alcohol.

Gordon Mah Ung

Kisses His Isopropyl Goodbye



New ArctiClean cleans better than alcohol

Alice Nelson and Florence Johnston would agree: Cleaning the remnants of used thermal pads and thermal grease from a CPU cooler is a bitch. And I concur: As someone who has done his fair share of CPU showdowns, I can tell you that it's no fun to try to clean that funky stuff up.

We normally keep a large bottle of 99-percent isopropyl alcohol handy for the job, but sometimes that isn't even enough. When I saw Arctic Silver's ArctiClean (\$7, www.arcticsilver.com), I decided to give it a whirl. ArctiClean uses a two-step process: The citrus-and-soy-based "thermal material remover" wipes out most of the gunk (including wax thermal pads) and the follow-up "thermal surface purifier" removes the

How We Test

Real-world benchmarks. Real-world results

Computer performance used to be measured with synthetic tests that had little or no bearing on real-world performance. Even worse, when hardware vendors started tailoring their drivers for these synthetic tests, the performance in actual games and applications sometimes dropped.

At *Maximum PC*, our mantra for testing has always been "real-world." We use tests that reflect tasks power users perform every single day. With that in mind, here are the six real-world benchmarks that we use to test every system we review.

SYSmark2004: This is the most comprehensive application benchmark available, using no fewer than 19 applications to measure the time it takes for the PC to complete to real-world computer-intensive tasks. Our *SYSmark* score is a composite based on the time the test takes to complete several different types of tasks.

Adobe Premiere Pro: The leading non-linear digital-video editor has recently been retooled with more support for multi-threading. We take a raw AVI file, add several transitions and a soundtrack, export it to a generic MPEG-2 file, and then report the time the script takes to complete.

Adobe Photoshop CS: We don't subscribe

to Apple's half-baked idea that running one filter test in *Photoshop*, in one certain way, at a particular time of day provides an accurate measure of performance. Instead, we take a high-resolution image and throw it through just about every filter available in *Photoshop CS* at it. Our score is the time it takes for the script to complete.

Divx Encode: Video encoding is today's time-suck. We transcode a short movie stored on the hard drive from MPEG-2 to Divx using *#1 DVD Ripper*. We report the length of time the process takes to complete.

3DMark05: After ranting about real-world tests, you might be surprised to find this "synthetic" graphics test in our suite. *3DMark05*, however, has proved to be the standard by which graphics cards and PCs that run them are judged. Instead of reporting a meaningless composite score, we run the third test at 1280x1024 with 4x antialiasing and 4x anisotropic filtering, then report the frame rate. Our zero-point system with SLI can't even break 30 frames per second.

Doom 3: It's the hugely popular game is a dark, scary, and serious test of PC horsepower. We run this game with 4x antialiasing and 4x anisotropic filtering, at 1600x1200 resolution, and report the frame rate.

Our monthly category-by-category list of our favorite products. New products are in red.

High-end videocard:

eVGA e-GeForce 7800 GTX 512
Who wouldn't want a 21 percent speed boost over 256MB cards?

Midrange videocard:

Leadtek WinFast 7800GT TDH Extreme

Soundcard:

Creative Labs X-Fi Xtreme Music

Hard drive:

Western Digital WD400KD
The new Raptor is fast but if you only have cash for one drive, stick with the WD400KD

External backup drive:

Western Digital Dual-Option Media Center 320GB

Portable USB drive:

Seagate Portable External Hard Drive 100GB

DVD burner:

Plextor PX-716A

Widescreen LCD monitor:

Dell 2405FPW

Desktop LCD monitor:

Samsung SyncMaster 940BF

Socket 939 Athlon 64 mobo:

Asus A8N32-SLI Deluxe

Socket 775 Pentium 4 mobo:

Asus P5ND32-SLI

Portable MP3 player:

Apple iPod

5.1 speakers:

M-Audio Studiophile LX4 5.1 (LX4 2.1 with 5.1 Expander System)

2.1 speakers:

M-Audio Studiophile LX4 2.1

Mid-tower case:

Lian Li PCV-1100

Full-tower case:

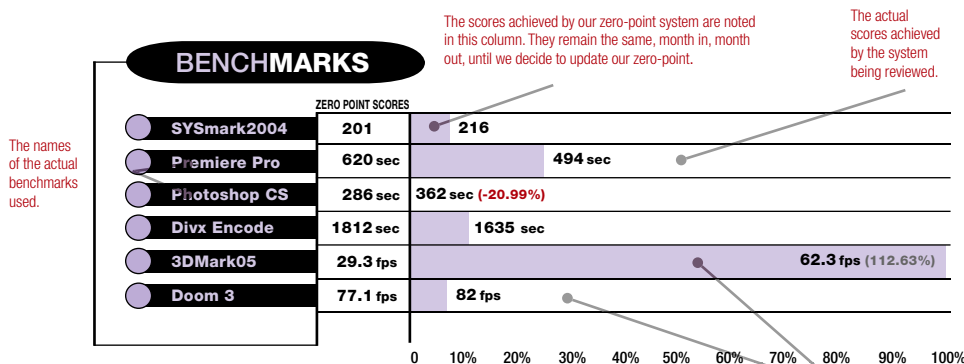
Silverstone TJ07

Games we are playing:

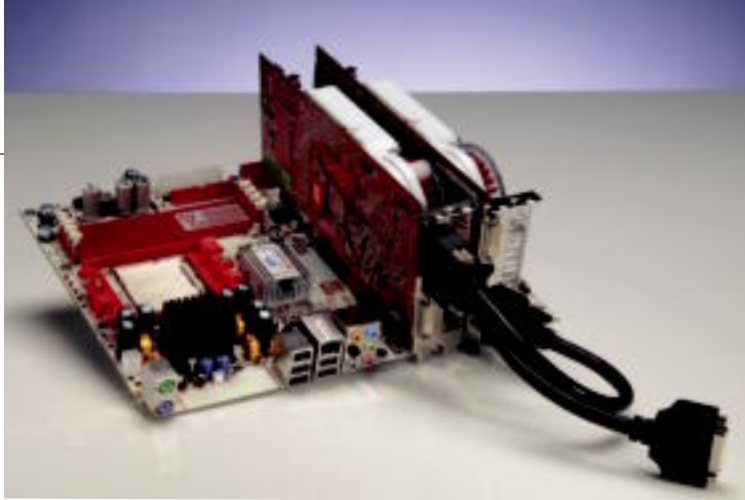
Call of Duty 2, *Gun*, *Need for Speed: Most Wanted*, *Battlefield 2*, *Dungeon Siege II*

How to Read Our Benchmark Chart

Maximum PC's test beds double as zero-point systems, against which all review systems are compared. Here's how to read our benchmark chart.



ATI Radeon X1800 XT Crossfire Edition



Sapphire Technology's Radeon X1800 XT was the second GPU in our test system.

It's better, but this card's still playing second fiddle

ATI's CrossFire technology finally gave ATI a dual-GPU solution. And even as we greeted the Radeon X850 XT CrossFire Edition with a barely stifled yawn, we held out hope that the X1800 XT CrossFire Edition would help the company advance down the field. No such luck.

This is not to say that ATI has completely fumbled the ball: A single 512MB X1800 XT is certainly fast, and pairing one with a CrossFire master card boosts performance anywhere from 24- to 73 percent. It's just that two X1800 XTs running in CrossFire mode deliver benchmark results that are well behind a pair of nVidia's 512MB GeForce 7800 GTXs in SLI. And now that nVidia has figured out how to run *four* GPUs in a single system (turn to page TK in the QuickStart section of this issue for the full story), nVidia has moved the goal posts even further.

We think at least part of the performance shortcoming can be attributed to ATI's own core-logic chipset. We benchmarked the X1800 XT CrossFire solo first in our default test bed—an nForce4 system (an Asus A8N-SLI Deluxe motherboard, a 2.6GHz AMD Athlon 64 FX-55, and 2GB of DDR400 RAM)—and then in an ATI Radeon Xpress 200 environment (using Sapphire Technology's Pure CrossFire PC-A9RD480 motherboard with an identical CPU and RAM). The card performed about two percent faster in the Asus motherboard.

If you're not interested in AMD compatibility, ATI has also certified CrossFire

for use in motherboards with Intel chipsets. ATI tells us it has also provided some of its system integrator partners with Catalyst drivers that support motherboards with nVidia's nForce4 chipset. These special drivers are not available to the general public—and ATI doesn't plan to release them.

system's *3DMark05* score topped that of the SLI rig by nearly 3 percent.

Returning to the subject of drivers, ATI makes it easy for anyone to overclock an XT-class videocard right from within

SPECS

GPU	ATI X1800 XT
MEMORY	512MB GDDR3
CORE CLOCK SPEED	594MHz stock (tested at 624MHz)
MEMORY CLOCK SPEED	693MHz (tested at 797MHz)

Ignoring the negligible 2 percent performance deficit between ATI and nVidia chipsets, both 1800 XT cards we tested lagged behind a single 512MB GeForce 7800 GTX running on the same motherboard. The stand-alone Sapphire card was 9.4 percent slower running *3DMark05*, for example. Even though ATI's OpenGL drivers have improved considerably, the Sapphire card ran nearly 22 percent slower than eVGA's 512MB GeForce 7800 GTX card in *Doom 3*. Pairing Sapphire's card with ATI's X1800 XT master card boosted *Doom 3* performance

from 60.1fps to 87.2fps, but those frame rates are still 12fps slower than a pair of 512MB 7800 GTX cards in SLI.

ATI stacks up better when you compare two 512MB X1800 XT cards running in CrossFire mode to two 256MB 7800 GTX cards running in SLI. The eVGA eGeForce 7800 GTX KO boards we tested were not significantly faster than the ATI/Sapphire pairing in most tests, and the CrossFire

BENCHMARKS

	X1800 XT CROSSFIRE	GEFORCE 7800 GTX 512MB IN SLI
DOOM 3 (FPS)	87.2	99.2
FAR CRY (FPS)	158.9	153.3
HALO (FPS)	139.9	138.6
3DMARK05	11,985	12,526
3DMARK03	27,477	32,094
3DMARK03, GAME 2 (FPS)	73.9	92.6
3DMARK03, GAME 4 (FPS)	103.7	129.6
HQV SCORE	93	56

Best scores in each category are bolded. Halo tested at 1600x1200 with sound disabled. Doom 3 tested at High Quality, 1600x1200, 4x AA. Far Cry and 3DMark03 Game 2 and Game 4 tested at 1600x1200, 4x AA, 8x aniso. 3DMark03 and 3DMark05 run using default settings.



ATI's X1800 XT CrossFire Edition connects to either a second X1800 XT or an X1800 XL card in the same system via a dongle plugged into the bifurcated port at the top of its mounting bracket.

Catalyst Control Center. Once you've unlocked the card using ATI's OverDrive tool, you can initiate an automated software routine that measures the system's tolerance for overclocking and then sets up what it considers to be safe parameters for overclocking the GPU and memory. In our tests, OverDrive increased the card's core clock from 594MHz to 624MHz, and the DDR3 memory's clock speed from 693MHz to 797MHz.

ATI is also finally delivering on some of its promises about Avivo video technology.

but the latest Catalyst drivers have dissolved much of our skepticism: The X1800 XT's *HQV* benchmark scores are now far superior to those of nVidia's cards. And ATI tells us there are more improvements to come.

CrossFire's external cabling arrangement still strikes us as a kludge, but if having a pair of videocards with a gigabyte of video memory is essential for your next rig, the X1800 XT CrossFire could be a worthwhile alternative to nVidia's 512MB 7800GTX boards, especially if ATI can actually produce the boards in any appreciable

Our early hands-on experience with ATI's X1000-series of video-cards left us wondering if the Avivo demos we'd seen were little more than smoke and mirrors,

quantity (finding 512MB nVidia boards continues to be as futile as looking for bones in ice cream). And if video decoding is your crucial videocard application, ATI's *Avivo* software is now the best solution—and it's free (nVidia's *PureVideo* software costs an additional \$20).

—MICHAEL BROWN

X1800 XT CROSSFIRE EDITION

- + DUAL EXHAUST**
Provides a solid upgrade path for X1800 owners. ATI makes overclocking nearly foolproof.
- EXHAUST FUMES**
The CrossFire cables are a pain, and the cards aren't nearly as fast as those based nVidia's technology.

8

● \$600, www.ati.com



CrossFire depends on this hydra-like cable to communicate with the second GPU in the system. A compositing chip on the master card combines the renders from each card and sends the final image to the monitor.

AeonCraft Lexa

One part Lexus, one part Camry

What do you do when your brand is universally recognized as being so crazy-low-priced that consumers ignore you when searching for something more upscale? You add a “luxury” sub-brand. If it worked for Toyota with Lexus maybe it’ll work for iBuypower with its AeonCraft brand.

In execution, AeonCraft makes an admirable attempt to set itself apart from its parent company by doing something iBuypower wouldn’t normally do. To keep the CPU cool, AeonCraft utilizes an exclusive new water-cooling system. Very similar to Cooler Master’s Aquagate Mini, AeonCraft’s solution is also a two-piece, maintenance-free unit. The Lexa rig also sports the new and fast Athlon 64 FX-60 dual-core processor, and an Asus A8N32-SLI motherboard complete

with two x16 PCI Express slots for graphics cards. AeonCraft even throws in a pair of eVGA 256MB GeForce 7800 GTX KO videocards and an X-Fi soundcard. Three of those components top our monthly “Best of the Best” list, and the FX-60 pretty much steamrolled Intel’s newest dual-core in last

month’s CPU feature story. The icing on a pretty tasty-looking cake is the BenQ DVD burner, which supports LightScribe.

Alas, it’s not just the parts that make a PC. Like we said, AeonCraft’s Lexa is an admirable attempt, but it doesn’t automatically punt the company into the boutique-chic neighborhood.

The pair of Raptor hard drives would be more compelling had AeonCraft gotten its hands on Western Digital’s new super-fast 150GB Raptors. That would have given the Lexa deadly HD speeds and 300GB of storage. As it stands, the two 74GB Raptors in the AeonCraft leave you with less than 150GB — Senator, we know people whose laptops have more storage than that.

On the performance tip, the FX-60/SLI combo pulls no punches. With updated GeForce drivers that don’t retard SYSmark 2005 scores (see our CPU showdown in the February issue for details), we saw the AeonCraft pull down a shockingly fast score of 273. That doesn’t eclipse the record set by Falcon Northwest’s Mach V (reviewed in February), but it’s the fastest we’ve seen from a non-overclocked production machine. Is it any wonder that the other (Intel-based) machine we had lined up for review bowed out this month?

The Lexa’s gaming scores were neck-and-neck with the FX-57-powered HyperSonic machine we paped in October. That’s to be expected — the single-core 2.8GHz FX-57 is simply faster in single-threaded gaming apps than the dual-core 2.6GHz FX-60. *Photoshop*



A work in progress? The AeonCraft gets the prize for being the untidiest PC we’ve seen in months.

and *Premiere Pro* performance was right at the front of the pack.

Our biggest problem with the Lexa is in presentation. A machine that costs four large, should sport an internal wiring job that’s tighter than a gunnery sergeant’s rack. The Lexa’s wiring is anything but. In fact, it’s so messy, you’d almost have to *plan* it that way. The odd thing is that AeonCraft includes a window on the case so you can clearly see the unkempt innards. Perhaps messy is the new tidy?

Inattention to details puts a serious dent in AeonCraft’s attempt to move beyond the white-box crowd. It’s not a fatal mistake, but we expect more from a company that’s catering to the power-user crowd, and asking power-user prices.

—GORDON UNG



The AeonCraft Lexa surfs the border between generic white-box machines and high-end boutique-vendor rigs.

UNDER THE HOOD

BRAINS

CPU AMD Athlon 64 FX-60 (2.6GHz dual core)

MOBO Asus A8N32-SLI (nForce4 X16)

RAM 2GB Corsair (two 1GB sticks)

LAN Dual Gigabit LAN (Intel and nVidia)

HARD DRIVE Two 74GB Raptors (10,000rpm SATA) in RAID 0

OPTICAL BenQ DW1625 DVD+/-RW (dual layer with LightScribe), Sony DDU 1615 DVD-ROM

BEAUTY

VIDEOCARD Two eVGA GeForce 7800 GTX KO, 256MB in SLI (490MHz core, 650MHz RAM)

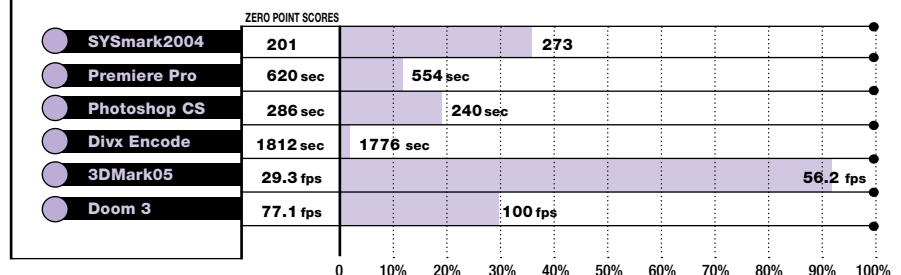
SOUNDCARD Sound Blaster X-Fi Xtreme Music

CASE NZXT Lexa gaming tower

BOOT: 34 sec.

DOWN: 12 sec.

BENCHMARKS



Our zero-point reference systems uses a 2.6GHz Athlon 64 FX-55, 2GB of DDR400 Crucial Ballistix RAM, two nVidia GeForce 6800 Ultra cards in SLI, a Maxtor 250GB DiamondMax10, a Sound Blaster Audigy 2 ZS, a PC Power and Cooling TurboCool 510 Deluxe Express, and Windows XP Pro with SP2.

AEONCRAFT LEXA

- + **LEAF BLOWER**
Who can be down on dual-core FX-60 and two 7800 GTXs in SLI?
- **RAKE**
Wiring job by Don King’s hair stylist.



\$3,945, www.aeoncraft.com

Asus N7800GT Dual

Two GPUs, one PCI Express slot

What could be better than running two GeForce 7800 GT cards in SLI? How about two GeForce 7800 GTs and 512MB of memory *in a single card*? Asus has built just such a beast, albeit in very limited supply, with a couple restrictions, and at a relatively high price.

Gigabyte went down this road last year, with the GV-3D1-68GT (featuring dual 6800 GTs). Asus takes the concept a couple steps further: Not only does the N7800GT Dual feature a faster GPU, but Asus tells us its working on a

new motherboard design that will enable you to run two of these cards in SLI to create a *quad-GPU* system.

Asus recommends running the card with only Asus' own driver, which is based on nVidia's ForceWare version 77.77. But we also tested the card with nVidia's ForceWare 81.95, and the card obediently delivered slightly better benchmark numbers (leaving us to wonder why Asus made such a recommendation in the first place. For the record, the benchmarks published here are based on Asus' drivers.)

The N7800GT Dual has other limitations, too: It's compatible with only certain



Asus' N7800GT Dual cleverly manages to squeeze two GeForce 7800 GT GPUs onto one circuit board. It delivers a sweet performance, but with a few strings attached.

BENCHMARKS

ASUS N7800GT DUAL	
DOOM3 (FPS)	86.2
FAR CRY (FPS)	141.0
HALO (FPS)	131.3
3DMARK05	11,500
HQV SCORE	56

Halo tested at 1600x1200 with sound disabled. Doom 3 tested at High Quality, 1600x1200, 4x AA. Far Cry tested at 1600x1200, 4x AA, 8x aniso. 3DMark03 and 3DMark05 run using default settings. HQV score is derived from the HQV Benchmark DVD.

nForce4 motherboards, including Asus' own P5ND2-SLI and A8N-SLI series, and Gigabyte's K8NXP-SLI. The card ran fine in our A8N-SLI Deluxe motherboard with PC Power and Cooling's Turbo-Cool 510 SLI power supply, but you also have the option of plugging the card into an external power supply all its own.

In terms of performance, the N7800GT Dual proved to be slightly faster than two conventional 7800 GT cards running in SLI. But this card's \$800 price tag renders it about \$100 more expensive than a pair of 7800 GT cards from Asus' competitors. Buyers should also take the driver restriction into account.

—MICHAEL BROWN

ASUS N7800GT DUAL
\$800, www.asus.com

8

eVGA e-GeForce 7800 GTX

An absolutely great videocard... if you can find one

ATI had no sooner shipped its top-of-the-line X1800 XT—hyper-clocked and stuffed to the gills with 512MB of memory—than nVidia threw down its trump card: a hyper-clocked GeForce 7800 GTX stuffed to the gills with 512MB of memory.

One look at this card's dual-slot cooler, with its mondo fan and octopus-like heat pipes, tells you eVGA's implementation doesn't stray far from nVidia's reference design. eVGA didn't find it necessary to goose clock speeds, either: The GPU hums along at 550MHz, while the DDR3 memory trips the light fantastic at a whopping 850MHz.

We attribute this card's improved benchmark scores, which are about six percent higher than those of the nVidia design we examined in our January 2006 issue, to improved drivers. Comparing the performance of eVGA's card to an X1800 XT implementation from one of ATI's biggest third-party manufacturers—namely, Sapphire—throws nVidia's accomplishment into even bolder relief: eVGA's card wracked up a 3DMark05 score of 10,958, compared with the Sapphire X1800 XT's 9,208 3DMarks. And while Sapphire's card delivered a respectable 60.1 frames per second in *Doom 3*, eVGA's



The only videocards that can come close to the performance of eVGA's e-GeForce 7800 GTX are other cards based on the same nVidia GPU.

card clubbed it over the head by muscling out 76.8fps.

If you can raid your trust fund, running a pair of these monsters in SLI is an unabashedly decadent experience—we're talking *Doom 3* at nearly 100fps (with a link connector—you *can* run these cards in SLI without a link connector, but we experienced a significant performance penalty). With numbers like these, it's evident that eVGA didn't really *need* to move much beyond what nVidia had wrought. In fact, eVGA's biggest problem is that nVidia can't supply enough GPUs to meet demand.

One area in which ATI *has* caught up to—and surpassed—nVidia is video performance. Turn to our review of ATI's X1800 XT CrossFire Edition on page 60 for more on that note.

—MICHAEL BROWN

eVGA e-GEFORCE 7800 GTX
\$750, www.evga.com

9

MAXIMUM PC
KICKASS

Nikon D50

Entry-level SLR is packed with features

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.

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

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)



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

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

\$700, www.nikonusa.com

8

Acoustic Research Digital MediaBridge

This A/V streamer is frustratingly close to being great

The AR Digital MediaBridge offers a host of welcome features, including the best TV-based user interface we've seen. It also includes a not-so-welcome cooling fan. Most of its remaining shortcomings should be easy for the manufacturer to overcome.

Curious to discover why such an otherwise elegant device requires videocard-style cooling, despite its external power brick, we immediately popped the MediaBridge's lid for a look-see. Inside, we found proof that some older components never really go away: The MediaBridge is built around AMD's Geode CPU, and nVidia's nForce2 chipset and nForce2 IGP integrated graphics processor.

Fortunately, the fan is quiet enough—and the MediaBridge's performance is fabulous enough—that we can ignore it. With all that power under the hood for decoding, we had no problem playing *Call of Duty 2* on our host PC while a ripped DVD version of *The Abyss* streamed to our home-theater system over an 802.11g network (802.11b is also supported, as is wired Ethernet). The unit's back panel bristles with connectors, including optical and coaxial SPDIF; component, composite, and S-video; a DVI port; and a USB 2.0 port (which would be much handier on the front panel).

The MediaBridge was an absolute breeze to set up and use, with an intuitive user interface and a terrific remote. Dedicated buttons call up directories of movies, music, and digital photos stored on your PC, and a "go back" button makes simple work of backing out of nested menus. The



The stylish AR Digital MediaBridge can stream audio and high-definition video without breaking a sweat.

remote can be programmed to control up to five other components, too.

Support for nearly every A/V format (including 480p and 720p HD for video, and 1080i HD for digital photos) left us doubly disappointed by the absence of support for subscription music services, such as Rhapsody. This wouldn't be such a problem if the box supported Internet radio or Universal Plug-and-Play server software, but it doesn't. The manufacturer promises Rhapsody and Internet radio support "soon," but it was less certain about the general UPnP support that would open Yahoo's music service among others. All these shortcomings could be easily remedied with a software upgrade; but as it works now, the MediaBridge falls just shy of Kick Ass.

—MICHAEL BROWN

AR DIGITAL MEDIABRIDGE

\$350, www.araccessories.com

8

Sytrin Nextherm ICS 8200 ML

It's an air-conditioned case—and it actually works!

The Nextherm is one heck of an interesting case, as it's the first PC enclosure we've ever tested that features "air conditioning." What does that mean? Inside of the case is a Peltier cold plate. In action, air passing over the cold plate is chilled before moving onto all the internal components. Amazingly, it works exactly as advertised. Couple this surprisingly effective cooling setup with a solid, well-made case and you've got a tantalizing enclosure that almost justifies its exorbitant price tag.

First, a bit more detail about the A/C unit: There's an intake fan in the lower-front portion of the case, behind which sits a large copper heatsink mounted to the Peltier cold plate. If you don't already know, a Peltier cooler is a thermoelectric device that uses electric current to produce opposing temperatures on either side of the plate. In this situation, the cold plate faces up, toward the heatsink, and the hot plate faces down, toward the floor. A plastic "ramp" connected to the heatsink/cold plate directs air up toward the hard drives and the GPU/CPU area.



Tall, dark, and handsome; the Nextherm's unassuming exterior belies its fancy innards.

The whole system is controlled via a panel located at the top of the front bezel. This slick contraption features a color LCD display, a button to turn the display on/off, a button to change the intensity of the cooling system, and temperature readouts. You can turn off all cooling (for quiet operation), have just the intake fan running, or turn on "snow" mode, which activates the Peltier cooler, which is very effective at blasting super-chilled air into the case. The only drawback is that the A/C unit is somewhat loud. It doesn't sound like a Boeing 747, but it's not going to win over any lovers of quiet computing.

"Great," you're thinking; "but does it actually make a difference?" Yes, it actually does. Although we couldn't discern a difference in CPU temps, our 6800 GT videocard ran a full 6 C cooler with the A/C on. It also thoroughly cools the hard drives, and the capacitors around the CPU.

Cooling aside, the Nextherm is a structurally sturdy, steel enclosure. The expansive interior is mostly tool-less. Pop-on rails are used for the 5.25-inch bays, so you just snap them on and slide the drives into their respective bays. Little plastic holders affix your PCI-slot devices, and they're relatively easy to use. Just lift up the bracket, slide the device into its slot, then push the bracket down and it's secure.

The only parts that require tools are the two 3.5-inch drive bays. This is clearly a shortcoming of this case, but we don't see it as a deal breaker, as not many people



The Nextherm's cooling apparatus is in the lower front. When activated, it gets mighty cold, chilling the air passing over it. The air is then sent up the curved, plastic ramp into the case.



A color LCD reveals the status of the cooling system and the case temperatures. Two probes are included, and you can attach them wherever you'd like.

have more than two hard drives.

There are FireWire, USB, and audio ports under a discrete flap on top of the case. The solid-black front bezel is understated yet sexy, and features a pop-open door that reveals the front drive bays.

We were skeptical prior to reviewing the Nextherm, but we're believers now. It's a bit pricey and lacking in the storage department, but it's otherwise an outstanding case.

— JOSH NOREM

SYTRIN NEXTHERM ICS 8200 ML

- + **AIRY**
Big, solid, chilly, sexy.
- **HAIRY**
Expensive; only two 3.5-inch bays; noisy with A/C on.



• \$360, www.sytrin.com

Microsoft Natural Ergonomic Keyboard 4000

Our wrists never had it so good!

Finding the perfect keyboard can be tricky, especially if you prefer the split “ergo” design to the traditional style—as the options for the former have become increasingly limited in recent years. Fortunately, we’ve long been able to count on Microsoft’s Natural Keyboard Pro, finding its combination of split design, traditional key layout, and integrated USB 1.0 ports superior to all others. Now it seems Microsoft’s Natural Ergonomic Keyboard 4000 could finally replace the aged Natural Pro as our split-keyboard of choice.

Instead of sporting the typical, and potentially uncomfortable, upward-tilting design, the Natural 4000 tilts down, away from you. The downward action puts your wrists above your fingers, which prevents you from contorting your wrists into an unhealthy position. And, indeed, our sensitive wrists remained free of irritation throughout our testing of the keyboard.

The “added features” are useful, but not revolutionary. There’s a series of custom macro buttons above the standard keys. We immediately configured ours to control our media player; alternatively, you could have them open specific applications or fire up certain keyboard shortcuts. A zoom toggle between the two halves of the keyboard is nice, but we’d rather use it to scroll up and down than to perform the default zoom/magnify function.

The 4000’s key action is soft and quiet, even compared with others of its ilk. We personally don’t mind a keyboard with more resistance and a healthy



The new Natural Ergonomic Keyboard 4000 tilts away from you, making it a comfortable, safe typing surface for everyone.

click, but we know some users will truly value the Natural 4000’s quietude. Also, the keys reside in comparatively shallow pockets, making the distance of travel for each key much shorter than that of a standard Keytronics keyboard, and even the Natural Keyboard Pro.

Like most boards we’ve tested recently, this keyboard sports the “enhanced” F-keys that “supplement” the default function of the F1-F12 keys. We’re not fans of this tack. What’s the point of adding hardwired keyboard shortcuts for functions like Print and Cut that already have perfectly serviceable keyboard shortcuts?

We miss the Natural Keyboard Pro’s integrated USB hub. But because we haven’t been able to use the unpowered hub for USB thumb drives above 512MB, its absence on the Natural 4000 isn’t devastating.

—WILL SMITH

KEYBOARD 4000

\$50, www.microsoft.com



Dell 3007WFP LCD Monitor

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

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 video-cards 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



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

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

\$2,200, www.dell.com



WD Raptor X

The fastest—and most expensive—hard drive available

Though the 74GB Raptor enjoyed fame and fortune for more than a year as the world's fastest hard drive, its low areal density and 8MB buffer allowed high-capacity 7200rpm drives to catch up—and even surpass—the mighty Raptor. WD has remedied the situation with an all-new Raptor that ups capacity, buffer size, and the ante, as it were. It's a hellaciously fast drive, with a price tag to match.

The new drive sports the same 10,000rpm spindle speed as the last-gen Raptor, but has twice the capacity at 150GB, and double the buffer size at 16MB total. The only other significant change is in the drive's queuing technology: The old Raptor used tagged command queuing, which was only supported by a few add-in SATA controllers. The new drive supports native command queuing (NCQ), which is the industry standard for SATA drives and is supported

BENCHMARKS

	WD RAPTOR X	WD CAVIAR SE
HD TACH 3		
RANDOM ACCESS TIME (MS)	8.2	13.1
BURST RATE (MB/S)	139	138
AVG. SEQUENTIAL READ (MB/S)	75	57
H2BENCHW		
APPLICATION INDEX*	40.1	29.7
OTHER		
DOOM 3 LOADING (SEC)	31	30
5GB READ (SEC)	100	101
IOMETER 50 PERCENT RANDOM WORKLOAD (IO/SEC)	296	230
OPERATING TEMP WITH NO FAN**	52	52

Best scores are bolded. *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.

on all late-model chipsets, including Intel 915x and higher, and nVidia's nForce4. Other notable specs include a two-platter design, a five-year warranty, and two flavors of availability: a standard-looking version for \$300, and a version with a see-through top (the Raptor X) for \$350.

During testing, the drive performed



Say hello to the Raptor X. WD also sells a window-less version for \$50 less.

exactly as we'd expect a drive with these specs to perform—it blew every benchmark record we have out of the water. To say it's pretty fast is like saying we kind of like PC hardware. Even compared with the fastest 7200rpm drive available—WD's own WD400KD—the new Raptor eats that drive's lunch and gives it a wedge to boot.

Our only issue with this drive is that it seems pricey at \$300, and especially so for the \$350 X version. You can buy a pretty-damn-fast 400- to 500GB drive for less than that, but Raptors have always sacrificed capacity for speed, and this drive is no different.

—JOSH NOREM

WD RAPTOR X
\$350, www.wdc.com



Hitachi Notebook Upgrade Kit

A kit that leaves no drive behind

Every notebook user has confronted capacity issues at some point: The dinky 20GB or 40GB drive that seemed big enough when you bought your laptop fills up, and you need more storage. You could buy an external USB/FireWire drive, but then you'd have to lug it around with you. Or you could upgrade the internal hard drive in your notebook, but what would you do with the old drive? Hitachi cleverly solves the problem with an upgrade kit that gives you a new 2.5-inch hard drive ranging from 40GB to 100GB and a USB enclosure to convert your old drive into a portable USB hard drive. In practice, it works exactly as advertised, and it turns out to be a decent bargain as well.

Provided your laptop accepts a parallel ATA 2.5-inch hard drive (and most do), installation is simple. First you place the new drive inside the USB enclosure. Next, you boot off the included CD, which clones your existing drive to the new drive. When that's finished, you take the new drive out of the USB enclosure and install it in your laptop (you just have to find the hard drive area on the underbelly of your notebook, remove the cover, remove the drive, and perform the swap). You then take the old drive and insert it into the USB enclosure, fasten several screws, and you're done. On our test



Waste not, want not! Hitachi's upgrade kit gives you a new high-capacity hard drive, and a USB enclosure for your old notebook drive.

machine, the process was trouble-free.

Our gripes? We're not crazy about the external enclosure. The plastic casing feels cheap and the drive rattles around inside when you shake it, which can't be good for the drive or the data on its platters. Though it's unlikely you'll intentionally shake a hard drive, it's disappointing that the unit doesn't feel more durable. We'd also like to see a kit with a 7200rpm hard drive, instead of the current 5400rpm offerings.

—JOSH NOREM

HITACHI NOTEBOOK UPGRADE
\$220 (100GB), www.hgst.com



Cooler Master Susurro

Silent, but not cool enough for our tastes



The Susurro is a decent cooler in every way, but not quite “maximum” enough for our tastes.

Cooler Master says that the word Susurro means “silent” in Latin. And we believe it, based on this cooler’s sound profile (and the fact that we looked the word up). The Susurro specs list the noise output at 16dbA, and that sounds about right. Unfortunately, while this cooler is quiet and easy to mount, its cooling performance is lacking.

It should be noted right up front that this cooler is intended for AMD processors exclusively, so Intel fanboys should skip this review. The Susurro mounts using the AMD backplate and is compatible with Socket 939, 940, and 754 CPUs. Cooler Master claims the cooler will also work with Socket M2—AMD’s upcoming socket which will replace Socket 939. The M2 socket (rumored to be named Socket F) is supposed to launch in mid-2006, so while it’s nice to know that the Susurro will work with the future socket design, it would seem that *any* Socket 939 cooler will also be compatible with Socket M2, because this cooler mounts using the basic

AMD backplate. If that’s true, this “compatibility” isn’t an especially noteworthy feature.

Installation of the Susurro is simple: Just drop it onto the backplate, secure a tension arm, and you’re done.

The cooler uses a massive copper heatsink that weighs 685 grams, which is astonishing given its “low profile” stature. Usually heatsinks this size weigh half as much. The Susurro sports a 9.2cm fan that spins at an inaudible 800rpm at idle. Under load it cranks up to 2800rpm, making a bit more noise, but nothing we could hear over our test system’s case fans.

As the benchmarks show, the Susurro wasn’t as cool as the stock AMD FX-55 reference cooler during our testing. Granted, its temperatures are perfectly acceptable and the unit is certainly quiet, but with performance this close to the stock unit (which is also relatively quiet), it’s difficult to recommend the Susurro .

—JOSH NOREM

COOLER MASTER SUSURRO
\$25, www.coolermaster.com

8

BENCHMARKS

	SUSURRO	STOCK COOLER
IDLE (C)	45	40
100% LOAD (C)	55	54

Best scores are bolded. Temps were recorded using the Asus AI utility. Idle scores were determined after 30 minutes of inactivity. Full-load temps were achieved running CPU Burn-in for one hour.

Thermaltake Tide Water

A good idea, but very poorly implemented

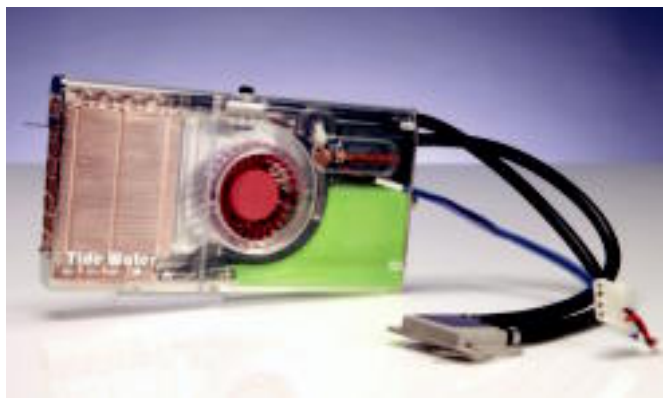
Now that GPU temperatures are exceeding CPU temps, water-cooling has become a much more appealing way to deliver exceptional cooling to your videocard without a lot of noise. The problem is, no one has built stand-alone GPU water-cooling kits—until now. Thermaltake’s Tide Water is an innovative product that indeed succeeds at cooling your GPU in silence. Trouble is, the omission of RAM heatsinks means that while your GPU will be chillin’, the rest of your videocard will be suitable for grillin’.

Installation is relatively easy. You install two posts to whatever card you have (the kit fits both ATI and nVidia cards). Then you place the water-block on top of the GPU core and secure it with two screws that attach to adjustable arms. While this isn’t the best design, the straightforward directions, if followed, will prevent you from causing any damage to your GPU.

Next, you attach the radiator/fan assembly to two empty PCI slot covers. The cooling unit is rather large, but it’s well-designed and includes a massive copper heatsink, a central fan that sucks air out of the fins and then exhausts it from your case. The last step is to select whether you want the cooler to

operate in “quiet” or “normal” mode by toggling a small switch. The Tide Water comes prefilled with coolant, so you needn’t mess with that aspect, and a water-level indicator lets you monitor the coolant level.

As stated previously, the Tide Water’s GPU cooling performance is exceptional, registering



The Tide Water gets kudos for its innovation, and anti-kudos for its lack of RAM cooling.

46 C at idle and 57 C under full load. These results are considerably better than the stock cooling apparatus achieves on our 6800 Ultra test card. The absence of any heatsinks for the board’s RAM, however, is a major problem. Our card’s capacitors and memory chips became so hot during testing we feared for the safety of our board. Running your card at these temperatures for prolonged periods is sure to decrease its life span. Thus, we cannot recommend this product unless you use aftermarket heatsinks for the memory chips.

As it stands, the Tide Water is a decent way to water-cool your GPU, but it costs twice as much as the Zalman VF700, but performs worse, so we’re not big fans.

—JOSH NOREM

THERMALTAKE TIDE WATER
\$90, www.thermaltake.com

6

BENCHMARKS

	TIDE WATER	STOCK COOLER
IDLE (C)	46	47
100% LOAD (C)	57	67

Best scores are bolded. Temps were recorded using the Asus AI utility. Idle scores were determined after 30 minutes of inactivity. Full-load temps were achieved running CPU Burn-in for one hour.

M-Audio StudioPro 3 Speakers

There's just no 'there' there

We so dug M-Audio's Studiophile LX4 speaker system that we named it "Gear of the Year" in our December 2005 issue, and we looked forward to seeing what the company could do for those of us with smaller budgets. The answer? Not enough.

M-Audio's StudioPro 3 isn't a terrible self-amplified speaker set, but neither is it great—even when you consider its \$100 price tag. At first glance, the speakers look very much like M-Audio's higher-end studio monitors. The hefty cabinets are constructed from medium-density fiberboard (the pair weigh in at 8.8 pounds), and the 3.25-inch low-frequency drivers and 1.0-inch silk dome tweeters are magnetically shielded.

The absence of a subwoofer didn't alarm us, because we've heard other 2.0-channel speakers that manage to deliver enough low-end oomph to please our eardrums.

And our hopes rose higher when we plugged in the StudioPro 3s and cued up John Hiatt's *Riding with the King*: Hiatt's edgy opening guitar

SPECS

HIGH-FREQUENCY DRIVERS	1-inch silk dome, magnetically shielded
LOW-FREQUENCY DRIVERS	3.25-inch paper-fiberglass composite cone, magnetically shielded
AMPLIFIER	10-watts RMS per channel, <0.5% THD, >90dB signal-to-noise ratio
INPUT/OUTPUT CONNECTORS	Stereo RCA in, 1/8-inch Aux in, 1/8-inch headphone out
OTHER	Bass Boost EQ switch, speaker stands



M-Audio's speaker systems have wowed us in the past, but the company's StudioPro 3 monitors leave us wanting more boom in the room.

riff crackled, and it sounded as though Scott Matthews' Hammond organ was in the room with us. But when Nick Lowe came in to anchor the jangly tune with his walking bass line, our optimism evaporated—the StudioPro 3 system just doesn't have much going on down below.

Tripping the speakers' bass-boost switch (on the back of the cabinet housing the 10-watt-per-channel amp) helped some, but it wasn't enough to satisfy our craving for thumpin' bass. The absence of any meaningful bottom end was especially problematic for gaming. The StudioPro 3 set delivered voices and small-arms fire with aplomb, but large explosions and larger weapons sounded anemic at best.

We know it's possible to deliver a rockin' 2.1-channel speaker system for a \$100 budget, because we absolutely adored Tascam's unconventional VL-S21 flat-panel-plus-subwoofer monitoring system when we checked it out in June 2005. M-Audio's solution is better than many budget audio systems we've reviewed in the past year, but it doesn't come close to competing with Tascam's.

—MICHAEL BROWN

M-AUDIO STUDIOPRO 3
\$100, www.m-audio.com

7

Alienware Ozma 7 Headphones

Fab 'phones from Florida

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 Ultrasonics for these headphones was smart: Ultrasonics'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 Ultrasonics'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



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

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
\$200, www.alienware.com

9

MAXIMUM PC
KICKASS



Xitel's HiFi Link for iPod pipes both audio *and* video from your video iPod to your home-theater system.

Xitel HiFi Link for iPod

Sounds good, but we want more

The iPod was designed to be a personal audio device, so it's amazing how many companies have come up with gadgets that integrate the little buggler into your hi-fi system. Xitel's HiFi Link goes a step further than many, enabling you to output video as well as sound.

This renders the HiFi Link a particularly good companion for video iPods, but Xitel provides snap-in adapters so that every other model (except the Shuffle) will dock with it, too. The device comes with everything you need, including a power adapter for charging your iPod, an audio/video cable, and an infrared remote.

The HiFi Link delivers excellent audio quality, and bass lovers will appreciate the inclusion of SRS Labs' TruBass. TruBass uses psychoacoustic principles to create the perception that a speaker is producing lower frequencies than it actually is. You turn a knob on the back of the unit to control the amount of bass boost, but audiophiles will appreciate the knob's reassuring "click" that tells you the effect has been shut off.

Video quality was pretty good, especially considering that the iPod's resolution is limited to 320x240 pixels, but we were disappointed that Xitel hobbled the device by including only composite video output. A better design would also fea-

ture S-video, where the chrominance and luminance elements remain discrete to deliver better image quality.

The remote echoes the iPod's control wheel, but the rubbery buttons are as clunky as the iPod's wheel is slick. Also, the remote offers only limited functionality: You can go back and forth between tracks and playlists; start, stop, and pause songs; and turn the iPod on and off, but you can't drill down into the player's nested menus. Blame Apple for this limitation; the user interface doesn't output to the dock interface, so you can't see it on your TV. The final shortcoming, however, can't be so easily dismissed: The docking station lacks a USB port, so you can't sync the iPod with your computer while it's docked.

—MICHAEL BROWN

XITEL HIFI LINK FOR IPOD

+ **NAKED HOUSEWIVES**
Let's you watch your iPod videos on the big screen.

- **DESPERATE HOUSEWIVES**
Docking station lacks S-video and USB.

6

• \$100, www.xitel.com



Linksys WUSB54G

Linksys' inelegantly named WUSB54G is not just an 802.11b/g network adapter, it's also a handy Wi-Fi finder. It's just the ticket for frequent travelers, especially those with laptops predating 802.11g.

The Wi-Fi finder aggressively snoops out wireless routers and displays their SSID and operating channel on its 1.5-inch LCD. It proved capable of detecting our test router from a range of 120 feet (with two residential-construction walls in between). It also sniffed out two of our neighbors' Wi-Fi routers. The device will advise you whether detected routers are secure (one of our neighbor's wasn't), but its simple padlock icon won't tell you what type of security—WPA or simple WEP—is in use. The LCD isn't backlit, either, so bring a flashlight if you plan to go war-driving in the dark.

The WUSB54G is on the chunky side (measuring 3.78 inches long, 1.14 inches wide, and 0.63 inches thick), and it blocked the adjacent USB port on our test laptop. But Linksys provides a docking cradle with a 4-foot cable, which enables you to orient the adapter to receive the strongest possible signal while it charges its Li-ion battery.

We were also pleased with the WUSB54G's real-world performance as a Wi-Fi adapter. Although we didn't get anywhere near the mythological 54Mb/s promised by the 802.11g standard, throughput of 18.2Mb/s enabled us to transfer a 239MB test file from our laptop to a PC hardwired to the router in just one minute, 45 seconds.

—MICHAEL BROWN

WI-FI FINDER/ADAPTER

\$90, www.linksys.com

8

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 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 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.



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.

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

SANYO XACTI C5

\$700, www.sanyodigital.com

8

Konica Minolta Dimage X1

All flash and little substance

The X1 makes it clear that Konica is well aware of our penchant to gravitate toward, hold, and purchase shiny objects. However, unless you care little about performance and getting the highest-quality images possible for your dollar, there are better options available.

The X1 looks great on paper—it's the first compact camera with folded optics to sport an 8-megapixel CCD and anti-shake technology. The anti-shake mode kicks in automatically when hand movement is detected, adjusting the lens accordingly. It's effective; we'd rather have it than not. It's particularly useful in low light and when shooting video—a slick indicator light comes on to let you know when anti-shake is on. The smooth, metallic body is comfortable to hold, and the buttons are well-placed for easy use. We especially like that you can customize the functions of the four-way controller on the back of the camera.

Unfortunately, while the body finish looks nice, it's impractical. It's prone to fingerprints, and is highly reflective—so much so that shots can be difficult to compose outdoors in direct sunlight (there's no optical viewfinder, so you must use the LCD). To make matters worse, the LCD display is very grainy, which makes it hard to tell if your snaps are correctly exposed in the field.

All of this might be forgivable if the X1's image quality was tip-top, but it's average at best. Noise was more prevalent overall than with other competitive cameras we've tested—and its fastest ISO speed is a lowly 200. Outdoor shots tended to be well-exposed with good color saturation, but just not as sharp or vibrant as other compacts we've tested lately,



We tested the X1 at the highest resolution setting using a 1GB SanDisk Ultra II SD memory card in Program Auto mode, Preview off, and all other settings at default.

The Dimage X1's photo-taking performance doesn't measure up to its looks.

such as Canon's SD500.

Also, the X1's a pretty sluggish performer: Lag time between shots at the highest resolution was a bit more than three seconds, which is below average. Video quality was also average and capped at 20fps—30fps is becoming the norm these days.

Indeed, once you get past the X1's looks, there's not much to warrant a recommendation, given the performance of its competitors.

—STEVE KLETT

KONICA MINOLTA DIMAGE

\$400, www.konicaminolta.us

5

Adobe Photoshop Elements with Premiere Elements

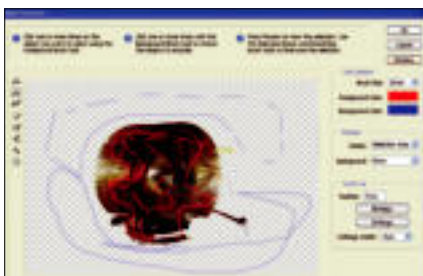
Front-row seats for cheap-seat prices

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



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

graphical overlays used for the templates. 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.

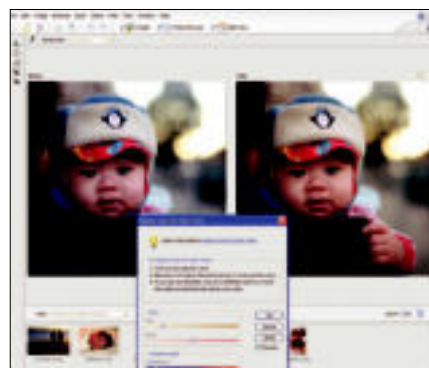
Rev 2 also allows you to import video using High Speed USB with cameras that support the interface (FireWire is also supported), and the app can encode audio to the space-saving Dolby Digital 2.0 codec instead of using uncompressed PCM audio. Adobe also catches up to the competition by letting you import 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



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



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

coming off a hardware high from *Premiere Elements 2.0*, the lack of any real multithreading was a bummer.

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	9
Dual-core and GPU support in <i>Premiere Elements</i> .		
-	VHS	MAXIMUM PC KICKASS
Adobe Photo Downloader can be quite annoying.		

\$150, www.adobe.com

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On Sale February 28

City of Villains

Finally, a suitable outlet for the super-powered evildoer in all of us

City of Villains is a stand-alone expansion pack to the *City of Heroes* MMO. This time around you play as a super-villain instead of a one-dimensional good guy, because—let's face it—being bad is always more fun than being good.

You begin as a villain-in-training in new zones within the Rogue Isles. You're a minion of Lord Recluse and the Arachnos organization, and as in *CoH*, you'll work your way up the social hierarchy by completing missions, meeting new contacts, and collecting clues that move the global story forward.

The missions are twisted reflections of a hero's normal day at the office. Instead of rescuing civilians from muggers, you're robbing banks, beating up rival clans, and planting bombs. Unfortunately, despite the new take on quests, the formula begins to drag when you're sent to the same dungeons repeatedly. Playing in teams makes missions more bearable, and lets you challenge more difficult opponents.

Character customization includes more skins and nearly infinite appearance options. We welcomed the change from spandex tights to zombified brutes and hulky monsters. But your villain can look almost the same as your hero, if you're particularly attached to that look.

New classes, like the mastermind, are wildly fun to play. You can create robot drones or ninja lackeys to tail along and fight by your side. Team battles become a visual feast when two or three masterminds join the fray. Lair building is another new feature; your guild (cleverly called a supergroup) can purchase a base, which they can then customize. Protecting your base keeps you invested in your supergroup.



Combat in *City of Villains* is still a frenzied click-fest to get your super powers off first!

Player-vs-player (PvP) combat unlocks at level 15, but is limited to just four zones. The frame rate really chugs in these arenas when too many characters are present, but dueling with other players is a blast when the frame rates are smooth. You can only interact with heroes if you have both the original game and the expansion, but there's no monthly fee increase if you have both.

City of Villains contains enough new material to make the expansion a must-buy for current *CoH* subscribers. Newbies can play either way, but most players will eventually want both games to maximize PvP features.

—NORMAN CHAN

CITY OF VILLAINS

\$50, www.cityofvillains.com,
ESRB: T

8

Gun

A game for 'the man with no name' in you

We've been hankerin' for a good ol' fashioned western shooter ever since we finished blasting our way through LucasArts' classic *Outlaws*. It's taken nearly eight years for *Gun* to finally hop in the saddle, but it arrives with six-guns blazing.

Developed originally for the PS2, *Gun* has been unabashedly ported to damn near every other platform, and there's little that distinguishes *Gun* on the PC from its console cousins. Thankfully, the story and gameplay are good enough to let this slide.

You are Colton White, an Eastwood-wannabe who's out to avenge the murder of his father—a task that will put you in just about every clichéd shoot-out situation you can think of. The story is well written and told through plenty of entertaining cutscenes. There are tons of mini-games and side missions you can tackle, everything from playing poker to hunting wanted criminals and helping the local lawmen. The extra content is little more than fluff, however. It quickly becomes ultra-repetitive and you don't really need it to develop your character (the main plotline action should suffice).

Still, without the fluff, the game would be embarrassingly short—you can complete the main story in as few as six or eight hours. However, your screen will be filled with hot lead almost the entire time—the action is fast and furious and the pace never really lets up (unless you take the time to explore). The boss battles are challenging and memorable, as are the horse-and-stagecoach-riding sequences. What the title is missing, ironically, is a classic high-noon showdown. This could have been a great dramatic device, particularly considering the "bullet time" Quick Draw mode. This slows the



***Gun* is brimming with mature situations, language, and more than its fair share of gore: You've been warned.**

bad guys down so you can take 'em out with your six gun—for a limited amount of time—and it's a blast, literally.

Had Neversoft put as much time and care into developing *Gun*'s game world as it did with its story, this title would be up there with the likes of *GTA*. As it stands, it's an entertaining game that fills a void—but only for a few hours.

—STEVE KLETT

GUN

\$40, www.gunthegame.com,
ESRB: M

7

Need for Speed: Most Wanted

Running from the law has never been this fun

Need for Speed has always been about driving really fast cars in beautiful real-world locations. Unlike boring driving sims, where the focus is on making perfect corners and minimizing your lap times, *NFS* eschews realism for pure action, raw speed, and visceral sensation. The latest edition in the series, *Most Wanted* continues the tradition.

In *Most Wanted*, you not only need to build a reputation by competing in tons of street races and completing lots of specific events, you need to do it while you avoid arrest by the police in a large, completely open city. The living, breathing metropolis includes a multitude of shortcuts through shops, parking lots, moving traffic, and even off-road locales. You'll need to learn all the shortcuts in order to avoid arrest. There are also dozens of Crashbreakers—obstacles that you can use to shake even the tightest pursuit—spread throughout the city. Crashbreakers can be anything from exploding gas stations to a collapsing water tower.

There's a wide variety of race types—everything from Knockout, where a racer is removed from the race after each lap, to checkpoint-style speed runs. In addition to completing races to advance, you'll have to achieve certain milestones, such as blowing through speed traps at an insane speed, or evading the police after a six-minute chase. It's a helluva lot of fun.

The setting for *NFS: MW* is really the real star of the show, unlike other open-world games like *GTA* or *Midnight Club*, EA didn't sacrifice the graphic detail of any particular portion of the city in order to have a larger city.



We love that changing your car's appearance in *Need for Speed: Most Wanted* actually makes it less likely the cops will recognize you and start pursuit.

Different areas of the city have a different look, allowing you to tell exactly where you are at any time, just by the color and tone of your surroundings. Best of all, unlike other open-world racing games, you don't have to drive across town if you don't want to; the game includes shortcuts to all the races and events you need to compete in.

—WILL SMITH

NEED FOR SPEED: MW

\$50, www.needforspeed.com,
ESRB: T



The Matrix: Path of Neo

Yay, another horrible Matrix game

Remember *Enter the Matrix*? Shiny's last game, timed to coincide with the launch of the last two *Matrix* movies, was seriously flawed, but still included moments of fun. *Path of Neo* addresses the main complaint about the first game—you couldn't play as Neo—but bugs, bad decisions, and schizophrenic cutscenes leave this game in worse shape than its predecessor.

As you progress through *PoN* you'll unlock new abilities and fighting styles for Neo to use; however, the game's simplistic, button-mashing fighting engine doesn't require you to use the new skills at all. All you need to do to win is to jump around like a madman, mashing buttons. Although you have an arsenal of weapons at your disposal throughout the game, the awkward and inaccurate control scheme makes it impossible to use them effectively. Instead, you'll find yourself relying on your martial arts "skills," except in rare circumstances where firearms are required.

While the martial arts combat can be visually satisfying, we felt like we didn't actually have control over the action. Despite pushing the appropriate buttons to start combos and enact big moves, Neo almost always ended up performing the same boring routine, over and over.

Walking along the *Path of Neo* left us with more than one head-scratching moment. We were initially confused (and then annoyed) by the mashed-up cutscenes, with footage culled from all three movies in an attempt to improve the unsatisfying second and third parts to the trilogy. The puzzle levels couldn't be solved using any logic we saw, instead they



The *Path of Neo* seems like it could be a fun game, until you sit down to play it.

required blind exploration. And worst of all, after finishing the game, the inexplicable ending still has us wondering whether the Wachowski brothers added this awful final boss because they actually thought it would be fun, or were they making a sly commentary about the current state of video games? We're really not sure, but either way it was un-fun.

—WILL SMITH

THE MATRIX: PATH OF NEO

\$50, www.pathofneo.com,
ESRB: T



Win *Rig of the Month* **AND WIN BIG!**

**IF YOUR MODDED PC IS CHOSEN AS A
RIG OF THE MONTH, IT WILL:**

- ▶ 1 Be featured before all the world in *Maximum PC***
- ▶ 2 Win you a \$500 gift certificate for TigerDirect.com**

SO WHAT'S STOPPING YOU?

TO ENTER: Your submission packet must contain your name, street address, and daytime phone number; no fewer than three high-res JPEGs (minimum size 1024x768) of your modified PC; and a 300-word description of what your PC represents and how it was modified. Emailed submissions should be sent to rig@maximumpc.com. Snail mail submissions should be sent to Rig of the Month, c/o Maximum PC, 4000 Shoreline Court, Suite 400, South San Francisco, CA 94080.

The judges will be *Maximum PC* editors, and they will base their decision on the following criteria: creativity and craftsmanship.

ONE ENTRY PER HOUSEHOLD. Your contest entry will be valid until (1) six months after its submission or (2) October 15, 2006, whichever date is earlier. Each month a winner will be chosen from the existing pool of valid entries, and featured in the Rig of the Month department of the magazine. The final winner in this contest will be announced in the January 2007 issue. Each of the judging criteria (creativity and craftsmanship) will be weighed equally at 50 percent. By entering this contest you agree that Future US, Inc. may use your name and your mod's likeness for promotional purposes without further payment. All prizes will be awarded and no minimum number of entries is required. Prizes won by minors will be awarded to their parents or legal guardians. Future US, Inc. is not responsible for damages or expenses that the winners might incur as a result of the Contest or the receipt of a prize, and winners are responsible for income taxes based on the value of the prize received. A list of winners may also be obtained by sending a stamped, self-addressed envelope to Future US, Inc. c/o Maximum PC Rig of the Month, 4000 Shoreline Ct, Suite 400, South San Francisco, CA 94080. This contest is limited to residents of the United States. No purchase necessary; void in Arizona, Maryland, Vermont, Puerto Rico, and where prohibited by law.



We tackle tough reader letters on...

✓ **The Speed of Light** ✓ **Water-Cooling**
 ✓ **AGP Legacy** ✓ **The Best Speakers**

3.0 X 10^8

Congratulations guys on breaking the biggest news story of the century ("IBM Slows Light, Paving the Way for Optical CPUs," January 2006). It was a nice touch doing it so discretely, too. The scientific community must be reeling, what with having to now re-write the laws of physics.

Personally, I've never really been able to accept Einstein's theories as absolute truths. It's good to hear that IBM has blown them out of the water.

It was previously held that even the incredible gravitational forces of a super-massive black hole were not enough to slow light, to hear that IBM has done it (and not by a small margin either—1/300th of it's speed is astounding), using less energy than that used by a normal PC's CPU.

I really would like to hear more on this. Please could you provide us details of exactly how IBM has slowed the speed of light thus proving that it isn't the constant that Einstein claimed it was, and that the current laws of physics are based on bogus info. (I can just imagine all of the astronomers now running around recalculating all of the astronomical measurements previously assumed.)

Again, kudos, to you and your team on breaking this incredible story!

—Michael Fowler

EDITOR IN CHIEF WILL SMITH RESPONDS: I'm definitely not a physicist, but from what I remember of physics in high school and college, what you're saying is incorrect. Nothing moves faster than the speed of light in a vacuum. And, according to Einstein, nothing can go faster than the speed of light. However, light passes through different types of matter at different speeds. When light moves through air, glass, or water, photons scatter as they hit individual molecules, and the perceived speed of light decreases.

IBM created a material that slows light considerably, at room temperature, which is one of the stumbling blocks that has prevented the development of a microchip that uses photons in place of electrons.

CUTCOPYPASTE

In the January 2006 issue we reviewed the NV Silencer 5, but mistakenly labeled it the NV Silencer 2. D'oh!

I will agree that the original headline isn't 100 percent accurate. We could have said "IBM Develops Material that Has Insanely High Refractive Index at Room Temperature," but that doesn't have quite the same appeal. I'm just going to claim artistic license on this one and move on.

MAXIMUM PC LIED – SAY IT ISN'T SO!

You recently reviewed the Gigabyte GV-3D1-68GT, and gave it a pretty solid review. I was interested in the card, but had thought it would only work in Gigabyte motherboards. But there in your article you state that the board is compatible with any nForce4 mobo. Naturally, I bought it, but the install procedure

directed me to flip a "3D1" switch, which is only located on Gigabyte boards!

The manual had a one-sentence blurb stating that this board could only be used in conjunction with Gigabyte K8/P4 SLI mobos.

So did I make a purchase based on bad information from your mag, or is there something I missed? In the past four years as a subscriber this is the first time you have steered me wrong; your help and response is appreciated.

—Chris Wachter

EXECUTIVE EDITOR MICHAEL BROWN RESPONDS: We tested the GV-3D1-68GT with an Asus A8N SLI Deluxe motherboard, so we know it doesn't

Water-Cooling Maintenance

I would like to comment on your Head2Head article in the February 2006 issue, "Air-Cooling vs. Water-Cooling." There should be one additional category: maintenance. Water-cooling requires a refill of coolant once a year while air-cooling requires none. I considered water-cooling before, but the annual coolant-refill scared me off. The coolant is not cheap (\$20/bottle), and it's such a hassle to refill the coolant once a year.

—Macsen Wong

SENIOR EDITOR JOSH NOREM RESPONDS: We don't know where you are getting this information from, but it's incorrect. We've never heard of a water-cooling kit that needs to be flushed annually. You might need to add a smidge of water to a kit once a year, to make up for evaporation, but that process takes just a few moments.

For example, the Cooler Master Aquagate Mini (shown here) comes prefilled and does not need fluid replacement for two years. The Koolance Exos 2 requires the



fluid to be replaced every two to three years, and the Corsair Cool calls for the fluid to be examined every six months, and replaced only every two years if the fluid is murky or looks contaminated (not a likely event).

We agree with you that if you *did* have to replace the fluid, it would be difficult. But 90 percent of the required "maintenance" is simply adding fluid to the system, and for the majority of kits on the market that's a very simple operation. Considering the superior cooling performance water offers, we think spending two minutes a year to check your fluid levels is hardly a burden.

COMING NEXT MONTH

IN MAXIMUM PC'S GORDITAS-GONE-WILD! APRIL ISSUE

require a Gigabyte motherboard to function in dual-GPU mode. In order to get the card to work in dual-GPU mode, however, you first need to set a DIP switch on the card (you'll find it on the back of the card, in the bottom-left corner; it's described on page 6 of the user manual).

This next point doesn't apply to your dual-X16 SLI motherboard, but you would need to set an earlier SLI motherboard to single-video-card mode. You want to make sure all 16 PCI Express lanes are enabled in the slot in which the card resides. If you were to set a mobo like our A8N to dual-video-card mode, each of the two PCI Express slots would get only eight lanes, giving each of your GPU cores only four lanes worth of bandwidth.

KISS AGP GOODBYE, PART 1

I have a decent computer running the 875P chipset (specifically Asus P4C-800E Deluxe) with Pentium 4 and an X850 XT PE AGP card. I tend to upgrade little-by-little as I need newer parts in order to fit my needs. I'd like to upgrade my videocard, but I don't want to upgrade my mobo, CPU, and memory. What are my upgrade options?

—Ran Zhang

EXECUTIVE EDITOR MICHAEL BROWN

RESPONDS: We decided to drop coverage of AGP cards in April 2005 because the majority of motherboard and videocard manufacturers were migrating their high-end parts to PCI Express. That said, videocard manufacturers continue to support the older architecture—but not with their top-of-the-line GPUs. Neither ATI nor nVidia have shown us AGP reference designs based on their Radeon X1800 and GeForce 7800 series GPUs.

ATI says it will likely offer AGP cards powered by their midrange X1600-series chips, but we'd be willing to bet that such a card would not deliver better benchmark performance than your existing X850 XT Platinum Edition. While you would gain support for Shader Model 3.0, the current midrange card shouldn't outperform your older high-end card. You're probably better off saving up until you can upgrade your CPU, mobo, and videocard at the same time.

KISS AGP GOODBYE, PART 2

Is there an AMD Sempron 2800+ mobo you'd suggest for your "\$300 Budget PC" (January 2006)

that has AGP support instead of PCI Express? The cheapest way to go right now is AGP. I'd like a carbon copy of the mobo you guys mentioned, just with AGP support instead of PCI Express.

—Aaron Babcock

SENIOR EDITOR GORDON MAH UNG: We made a conscious decision to go with PCI-E instead of AGP. We know budget people won't pay \$500 for a videocard today, but in two years, that \$500 card will be far more affordable. PCI-E also offers a better upgrade path. AGP performance tops out with X850/6800 Ultra-class boards. There's really no AGP price advantage over PCI-E anymore either. So, take our advice and say your last goodbyes to AGP.

I LOVE MY Z-5500S!

The M-Audio Studiophile LX4 system looks like a nice system, but why have you replaced Logitech's Z-5500 in the "Best of the Best" list with the M-Audio system? I don't know very much about audio fidelity, but just comparing specs it seems that the Logitech system boasts a better SNR—as well as more power, a decoder, a controller, and a lower price than the LX4 2.1 plus 5.1 expansion.

If the M-Audio system is truly better, would you please explain?

—Will Barley

EXECUTIVE EDITOR MICHAEL BROWN

RESPONDS: To paraphrase Mark Twain, there are lies, damned lies, and then there are spec charts. That's why we place so much emphasis on real-world, hands-on product testing. Much of our reasoning for christening the LX4 and LX4 5.1 Expander System as "Best of the Best" (and "Gear of the Year") in the speaker category can be found in our review of the product.

Our "Gear of the Year" story from the December issue summed it up nicely: "Loud and proud is no longer enough. We want our audio to be refined as well."

The LX4 system doesn't have a decoder, but that's not important unless you need to hook up a game console or an external DVD player. A high-powered amp isn't necessarily a great-sounding amp. We'd rather pay more for features we're actually going to use—like killer drivers, solid enclosures, and a squeaky-clean amp—than a digital decoder we're not going to use. But if you happen to need a decoder, for whatever reason, the LX4 isn't the right speaker system for you at any price. **MPC**

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NICK FALZONE'S

Sangaku PC

The name comes from the Japanese word for "mathematics tablet." The rig itself is the culmination of Nick Falzone's furniture-making skills, his passion for computers, and the persistent nudging of his friend Jeff Greger. The latter got Falzone to finally undertake his first mod project, and it's pretty clear he's got a knack for the pastime. Actually, pastime is too trivial a term for a project that took 300 hours and comprises approximately 130 wood joints, most of which were made entirely by hand, using Japanese chisels and a dozuki saw.

By removing four ebony joint pins, Falzone can slide the top off. Then the inner acrylic frame that holds all the PC parts can slide up and out of the wood frame, for serious tinkering.



Abiding by Japanese custom, Falzone's joinery is so precise that no glue was used to hold together the rig's wooden frame. The decorative "screen" is a water-color painting atop a sheet of frosted Plexiglass and backlit by cold cathode fluorescent lights.



The fan controller and the on/off and reset buttons are mounted inside the case, to keep the front bezel clean and simple, and to make regular use of the sliding Shoji doors.

For his winning entry, Nick wins a \$500 gift certificate for TigerDirect to fund his modding madness! See all the hardware deals at www.tigerdirect.com, and turn to page 101 for contest rules.

If you have a contender for Rig of the Month, e-mail rig@maximumpc.com with high-res digital pics and a 300-word write-up.

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