Jeff Bertolucci

See no evil, hear no evil

Your PC is a multimedia machine that can play music, games and movies. But unless you bought a system specifically for its audio and graphics capabilities, the chances are it's not giving you its all. Follow Jeff Bertolucci's tricks to take it to the max

If you've never delved inside your PC, upgrading may sound like a real effort. But many changes you can make to boost your system's performance are simple and require very little technical knowledge.

February 04's *Sound and vision* feature (page 108) looked at how to make a few simple alterations to an existing setup that will make all the difference to your audiovisual experience. We mainly discussed external system changes, although it's not necessary to set up all the upgrades we mentioned. The feature was geared to overhauling your system to create an entertainment machine ideal for TV reception, DVD recording and playback.

As you'll see over the next few pages, installing new and improved sound and graphics cards can make a huge difference and it doesn't have to cost you a fortune.

Of course, external audio and graphics cards are available but they add undesirable clutter around your machine as well as costing more. Besides, it really isn't that difficult to fit a replacement internal card. And once you've bitten the bullet and performed one internal upgrade we're confident you'll be keen to try others.

Upgrading your sound and graphics cards is only part of the process. Why not reward yourself and your PC with a speaker setup to complete your audiovisual system?

Getting ahead with graphics

The 3D graphics and cinematic effects of Half-Life 2 thrill you – or at least they did when you tried out the game on a 2GHz machine at the computer store. But on your system the action is slow and choppy.

Buyers' remorse sets in and suddenly you're ready to return the game for a full refund. Equally aggravating: your system won't play DVD movies, tempting you to throw the whole thing into the bin.

The solution? Upgrade your graphics card. According to conventional wisdom, it doesn't make sense to upgrade your PC's graphics if the system is more than two or three years old. That's good advice if you covet a £200–£300 graphics card that costs more than your computer is worth. But many of today's cards deliver dazzling 3D effects and fast performance for far less money.

The ATI Radeon 9200 SE 64MB and nVidia GeForce FX 5200 128MB, for example, cost £40 and £60 respectively and can perform sophisticated visual tricks such as anistropic filtering to render sharp, detailed 3D textures. Unless you're avid about playing games at very high resolutions you don't need to spend a fortune on a top-of-the-line graphics board.

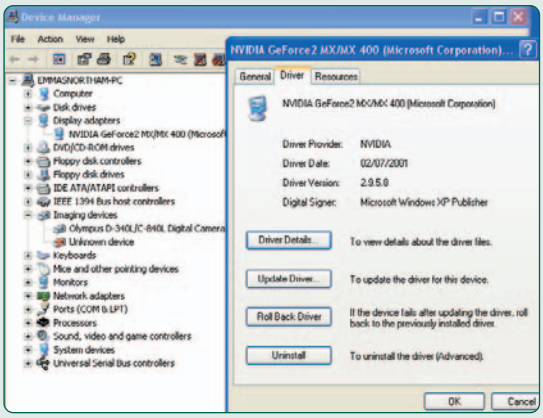
Many desktop PCs today use integrated graphics, which means that the processor and its chipset handle the graphics functions with

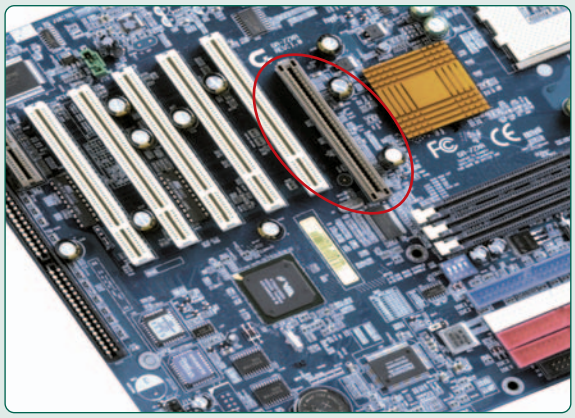
continued on page 138

ILLUSTRATION: SARAH AULD

Upgrade the graphics card

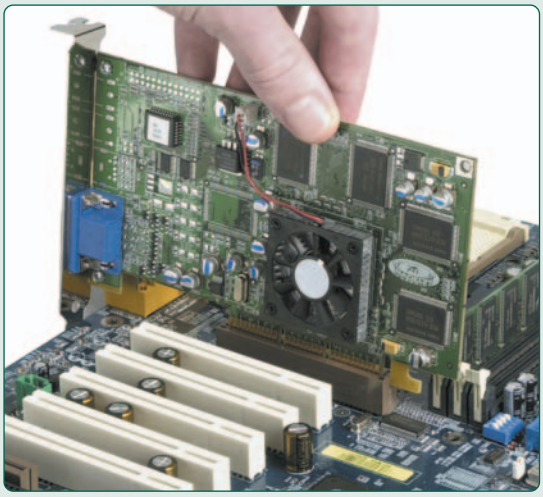
AGP cards and slots are not all alike. A 2x AGP system, for instance, transmits data at up to 512MBps (megabytes per second), a 4x system offers 1.1GBps performance, while 8x AGP promises 2GBps. The easiest way to determine your system's AGP specification is to contact the PC or motherboard manufacturer. This is crucial if you have a Pentium III or older system because many only have a 2x AGP slot. For a breakdown of AGP specs, see www.motherboards.org/articlesd/tech-planations/920_2.html. We're installing nVidia's GeForce FX 5700, which works with 2x, 4x and 8x slots. This will let us watch DVD movies on our ageing PC. For a selection of cards that use the FX 5700 see www.overclockers.co.uk.





1 Remove the existing graphics drivers via the Add/Remove Programs utility in Control Panel. Alternatively, right-click My Computer and choose Properties. Under the Hardware tab select Device Manager and expand the entry for Display Adapters. Double-click on the graphics card and, under the Driver tab, choose Uninstall

2 There are three types of slot on the motherboard. Replace the old graphics card with the new card – it slides into the larger brown AGP port, circled above



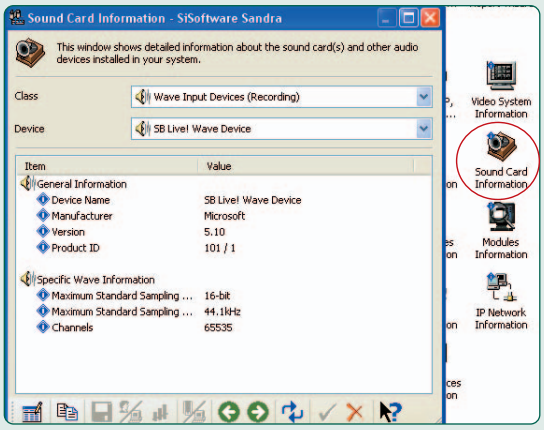
3 Carefully guide the edge of the graphics card into the AGP slot and gently but firmly push it in as far as it will go

4 When you reboot your PC the Found New Hardware Wizard should start up automatically. Simply follow the prompts to load the driver. If your graphics card was supplied with an installation disc, click Cancel and use the manufacturer's CD to install the card

Upgrade the sound card

Today's sound cards perform tricks that integrated audio can't match. High-end cards such as Creative's £155 SoundBlaster Audigy ZS Platinum Pro 7.1 offer 7.1 Surround Sound and Dolby Digital EX decoding. With this inside your PC you can set up one central satellite, two fronts, sides and rears and a subwoofer.

Of course, for serious audio pleasure you should combine this with a 7.1 speaker setup such as the Creative Inspire 7.1 T7700. Gamers in particular will benefit from enhanced audio quality as players will be able to hear villains and monsters approaching from directly behind them.



1 Before installing a new sound card you must eliminate all traces of its predecessor. First, find out whether you have a dedicated card or if sound is integrated on to your motherboard. If you're not sure, use a diagnostic utility such as SiSoft Sandra, shown above.

Carefully remove your existing sound card or, if your PC has integrated audio, enter your system's setup program to disable it. Check your PC manual for details on entering setup – typically, you press Delete or another key as it boots up. If the current sound card came with software utilities, uninstall them via the Add/Remove Programs applet in Control Panel

2 After opening the PC case and grounding yourself, remove the old sound card from its PCI slot and insert the new one. Some cards take up a second slot cover because the joystick/Midi port arrives on a separate bracket. While a number of cases come with an extra slot cover for this purpose, on an ageing PC you'll need to forfeit a second PCI slot to complete the installation. If you don't have two available PCI slots, shop for an audio card that requires just one

3 Bundled with the SoundBlaster Audigy ZS Platinum Pro 7.1 is an external box that connects to the sound card via an included cable. The box has a jack for headphones plus digital and analogue input ports for recording music. It's a breeze to install thanks to the detailed setup poster. Boot the PC and install the application software

some of the system memory used as graphics RAM. A more sophisticated approach involves combining a dedicated graphics processor with a specified amount of system RAM.

This integrated method produces perfectly acceptable results for mainstream business applications such as email and word processing, but today's demanding games require a standalone AGP graphics card for best performance.

Because our test PC had an AGP slot, which provides a direct path from the graphics card to system memory, we avoided the potential bottlenecks of the multipurpose PCI bus. Most PCs built during the past several years have an AGP slot on the motherboard. The exceptions are low-end Celeron PCs with integrated graphics, where the motherboard maker leaves out the AGP connector to cut costs.

An audible feast

Integrated audio is a checklist item on practically every motherboard made today.

So why upgrade the sound system when you're already enjoying CD-calibre playback? Because audiophiles, multimedia developers, musicians and gung-ho gamers want the best sound – something only possible with a high-end sound card and speakers.

Motherboard-based audio does an adequate job of playing music and basic sound effects in games. But to get a breathtaking audio experience you'll have to upgrade.

Take 16bit versus 24bit sound, for instance. CD audio is 16bit while DVD is up to 24bit. You've probably seen the term 'bit depth' when looking at graphics cards – the higher the bit depth, the greater the palette of colours. That means brighter, sharper, more realistic images.

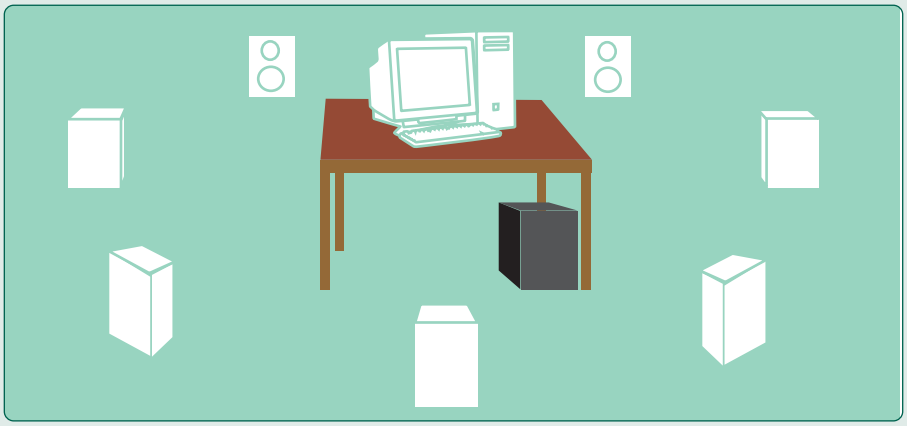
Audio works in much the same way. Musicians prefer 24bit recording, which captures more data and creates sound with greater clarity. Playback is important too: DVD audio content supports up to 24bit, which sounds better when reproduced on a 24bit sound card.

Speaker setup

The Creative Inspire 7.1 T7700 speaker set is a bigger challenge to establish, particularly as it consists of seven 5.5in-tall satellite speakers and a subwoofer slightly larger than two stacked shoeboxes. That translates into a lot of wires – from the subwoofer to each speaker and from the PC to the subwoofer. The setup diagram (shown below) will help you but trial and error is the modus operandi (to fix inaudible channels, mostly) until all the connections work properly.

The results of our 40-minute upgrade: glorious sound with crisp highs and thunderous bass. But remember that if you intend to experiment with speaker placement to achieve the best possible sound the setup time may be longer.

1 Setting up a seven-speaker and subwoofer system reflects personal preference. One scenario puts four speakers around the computer, three behind it and the subwoofer under the desk. Vendors usually provide helpful setup diagrams like this one



Problem solvers

Upgrades of yesteryear usually involved an afternoon of work. These days, with a little planning and research, the progress can go quickly and smoothly. But from time to time we all need a helping hand. Here, we answer the most likely problems you'll face while upgrading your audiovisual hardware.

Graphics

- **Problem** I don't know what type of AGP card I need.
- **Solution** Check your PC manual for the type of AGP slot on your motherboard. A 4x or 8x card will not fit a 2x slot.
- **Problem** My PC doesn't have an AGP slot.
- **Solution** You can still upgrade the system with a PCI graphics card if you have an open slot. Even though the PCI bus is slower than AGP, it's better than integrated graphics.
- **Problem** I can't reset the resolution and refresh rate with my new graphics card.
- **Solution** Make sure you have uninstalled the old graphics driver and properly installed the new card's driver.

Audio

- **Problem** My PC won't recognise the new sound card.
- **Solution** Did you go into your system's setup program and disable its integrated audio? You must do this to eliminate conflicts with your new card. You'll also need to confirm that your new audio drivers are installed in Windows.
- **Problem** The sound card I want requires two PCI slots, but my system has only one.
- **Solution** Try removing a card that your system no longer uses. For instance, if your PC has a USB or ethernet connection to broadband, you may discover that an unused 56Kbps modem is gathering dust in a PCI slot.