Config nirvana

Roger Gann shows how to configure a spare parts PC, and the path to configuration bliss for new machines.

I recently put together a PC comprised of parts culled from my spares box which is full of bits that fall into the 'something old, something new...' category.

The PC's specification was nothing remarkable: an AMD K6-2/350, an ASUS motherboard and 64Mb of RAM. I bunged in my usual array of cards; an Adaptec AHA-2940 SCSI host adapter, a SoundBlaster AWE-32 sound card and an Intel 10/100 network interface card. I then did a clean install of Windows 98 which went smoother than a very smooth thing. However, when I checked the Device Manager device tree, the SoundBlaster was giving out warning cries. When I drilled down to its properties, it told me it was bereft of an IRQ. Now this is a fatal error as an IRQ is something a sound card, especially an old SoundBlaster, needs rather badly. I checked out the other cards and, yes, sure enough everything else was running tickety-boo — all, that is, except my SoundBlaster card.

What about IRQ steering — my old hobby horse? 'Why hadn't that kicked in and saved the day?', I hear you say. Well, that system component was up and running and, indeed, multiple devices were sitting on single IRQs — IRQ steering is a method of allocating 'lending' IRQs to devices, reallocating them when they're not immediately needed, thus allowing more than one hardware device to share a single IRQ.

The nub of the problem was that the SoundBlaster was an ISA 'legacy' device

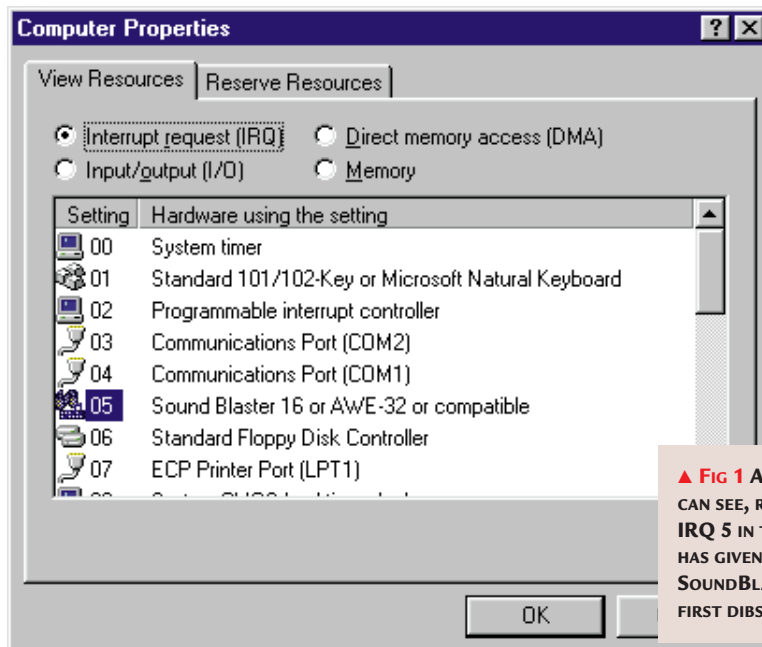*Fig 1* As you can see, reserving IRQ 5 in the BIOS has given the SoundBlaster first dibs on it

and IRQ steering (a.k.a. PCI Steering under Windows 98) is only available to PCI cards. Traditionally, SoundBlasters use IRQ 5 which is notionally allocated to LPT 2 but as few PCs have a second parallel port, this IRQ is invariably free. But not, of course, in this case: IRQ 5 was already spoken for and had been taken by a PCI device.

The next logical step was to manually dole out IRQs from the Device Manager, but with IRQ Steering in force the devices I wanted to monkey with weren't keen on playing ball. I suppose I could have selectively removed some or all of the other cards and got the SoundBlaster card going on its own, then reinstated the removed cards one at a time, praying

How do you achieve the nirvana of a well-configured PC?

that they leave IRQ 5 alone. But that would have been slow and tedious.

No, there's a simpler and better way of doing this. The key is the fact that the SoundBlaster AWE-32 is an ISA card, unlike the Adaptec and Intel items which are both PCI devices. And, as I've already pointed out, an ISA card is a *persona non grata* at the IRQ steering party. The solution here is to take IRQ 5 out of the pool of shared IRQs and thus effectively reserve it for the exclusive use of the SoundBlaster card.

Whether or not you can do this depends very much on the capabilities of your BIOS. My particular machine had an Award BIOS which supports this feature. Some older BIOSes only let you control the IRQs allocated to PCI slots, for instance. You simply enter CMOS setup and select the PNP/PCI sub-menu. Not only does this option allow you to explicitly allocate an IRQ to a specific PCI slot but you can also specify whether or not an IRQ is needed by an ISA device. In this case, all I had to do was specify that, yes, IRQ 5 was needed by an ISA device. It's also possible to allocate DMA
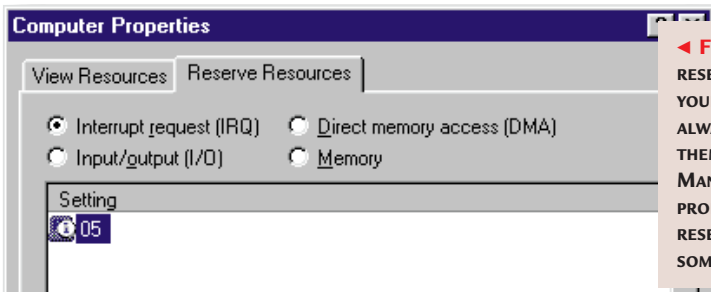
Fig 2 If you can't reserve ISA resources in your BIOS you could always try reserving them via Device Manager's Computer properties. Here, I've reserved IRQ 5 for some reason

channels in the same way using this menu — the SoundBlaster AWE-32 needs a pair and I could have reserved DMA 1 and 5 for it, marking them as 'spoken for' by ISA devices. Having made the changes, I saved them to CMOS, rebooted Win98 and we all lived happily ever after [Fig 1]. If your BIOS isn't helpful, refer to Fig 2.

■ An out-of-box experience

You may believe that the brand-new PC you have just unpacked from its box is in optimum condition and incapable of better performance. How can it be anything otherwise given its pristine, factory-fresh condition?

If only that were true. Any volume manufacturer will ship its PCs with the default settings that it thinks will suit most of its customers' needs. There's no margin left these days to accommodate personal settings and in any case the condition of the PC is largely out the manufacturer's hands thanks to the stringent contract terms on which Microsoft insists when makers want to pre-install Win98. The final straw is that your factory-fresh PC is unlikely to have the latest drivers and patches — Compaq Deskpro EPs still ship with Win95!

So how do you achieve the nirvana of a well-configured and bang up-to-date PC out of the box? The key is to get an internet connection up and running, pronto. This allows you to run Windows Update and thus you'll be able to get hold of such essentials as DirectX 6.1, the Media Player and the Y2K update as well

◄ **Fig 3** There's more than one way to Tweak a **BIOS** and Tweak**BIOS** (available from all the usual shareware sites) lets you twiddle with your **BIOS** settings in a pretty comprehensive manner

as a range of other fixes and add-ons. If you have gone down the Windows NT 4.0 route, get hold of Service Pack 4 and install it without delay (although, because of its size, this is perhaps best installed from a CD).

The next thing to check is your installed hardware to see exactly what you've got fitted in your PC, and then check out the manufacturer's web site for more up-to-date drivers.

Windows Update is supposed to offer an updated driver service to automatically freshen all your drivers but so far, despite months of trying, it has never found a more up-to-date driver for me on the Microsoft web site. So, don't mess about, go straight to the horse's mouth. Maybe you've got the plain vanilla drivers for your graphics card installed? Maybe the manufacturer's version has more recent, better optimised drivers which offer more functionality? There's only one way to find out…

Windows 98 makes it a lot easier to check out the version number of device drivers and this helps you establish the freshness or otherwise of your installed drivers. Simply open Device Manager, select the Driver tab and click the Drive File Details button. Do this for every device and make a list of version numbers. Armed with this, pay a visit to the manufacturer's web site to see if anything more modern is available and, chances are, there will be. Video drivers are one example of a class of driver that is updated with monotonous regularity.

Talking of display adapters, make sure you're getting your full half-pennyworth out of your monitor. If it is was a Plug-and-Play monitor, Windows 98 should have correctly installed it. If not, manually select your make and model of monitor in Display Properties.

Some monitor makers will have updated .INF files so this is worth investigating. Correct installation is important if you want to get the maximum resolution from your monitor; some still ship set to 640 x 480! And check the settings on your monitor while you're at it. Once you have set your preferred resolution, adjust the image horizontally and vertically to almost fill the screen and make any corrections to the geometry.

A QUICK LOOK AT MERCED

If you're interested in what Merced's going to look like and can't wait for it to be launched (when/if?), troll over to www.theregister.co.uk, home of 'feisty' computer newsletter, The Register. You'll find a number of slightly fuzzy images of the next generation IA-64 CPU there. In the flesh, the CPU measures about 5 x 3in and is encased in a heat-conducting metal alloy enclosure. It's not a 'Slot 1' device but plugs into a 560-pin PGA socket on the motherboard.

▶ Yes, this is what an **IA-64** **CPU** will look like; completely different to any other **Intel** processor

Another area through which you should take a wander is your CMOS setup which almost certainly will not have been optimised in any way. Understanding some of these settings, especially the memory timings and what have you, requires a masters degree in rocket science. Consequently they are best avoided. However, lots of the other settings are fairly easy to get a handle on. In any event, it's fairly painless to revert to the previous settings if something 'untoward' happens.

There are several things you might like to change. One such item is the boot sequence. Many BIOSes now let you boot from a SCSI drive, even with an IDE drive installed. Some let you boot from a CD, which is useful if you want to install NT 4.0 or Linux. So, check this setting.

You may also want to twiddle with the block mode. This is the way the hard disk is accessed. It should be set to auto if possible. Yet another setting you'll want to change if you use parallel port devices is the mode of the parallel port. Change it from Standard to Enhanced Parallel Port (EPP) or Enhanced Capabilities Port (ECP). Experiment with both to see which works best with your hardware.
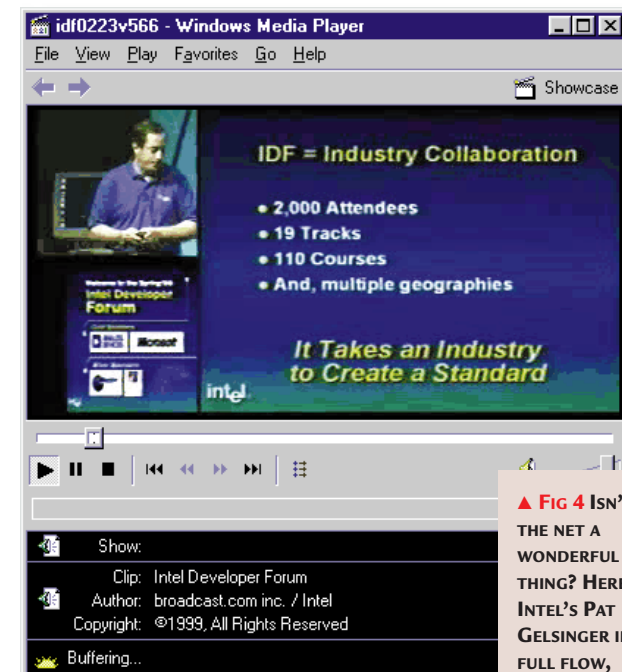
■ USB 2.0 on the way

By the middle of next year we could be seeing PCs shipping with a much faster version of USB. Work on the USB 2.0 specification has already begun and we'll probably see a final draft in September. It will offer between ten to 20 times the throughput of USB 1.1's 12Mbps — that is a data transfer rate between 120 and 240Mbps. Some US sources have speculated that the bus could deliver even more throughput, perhaps as much as 300Mbps.

What about 1394? Well don't hold your breath. If it pans out the way Intel has predicted, 1394 will become a consumer electronics technology used to interconnect home entertainment systems, digital cameras and the like.

All this emerged at the recent Intel Developers' Forum in Palm Springs. Intel's Pat Gelsinger [Fig 4] laid out an I/O road map for the next few years which, surprisingly, really didn't feature 1394 at all. If Intel has it's way, 1394's high-speed I/O technology won't feature in future PCXX specifications and as a result it'll be a cold day in hell before we see 1394 incorporated as standard in an Intel chipset, as Ultra DMA and USB have been.

Gelsinger predicted that 1394 could well become a niche technology. Whether or not it does depends largely on the extent to which users will want to connect non-computer peripherals such as digital cameras to their PCs. Even so, despite the enormous jump in performance, USB 2.0 still won't be a real threat to 1394 because by then the goal posts will have moved and 1394b will be available, offering between 800Mbps and 1.6Gbps.
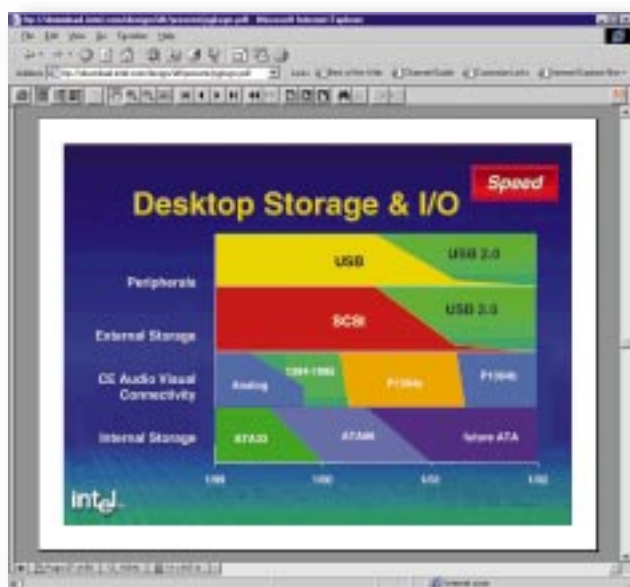
I guess we were never destined to see 1394 printers and scanners as the standard was always going to be more relevant to high-end devices, anyway. Certainly few current computer peripherals need that kind of throughput and most will be happy with what USB 2.0 has to offer.

Intel sees no major changes in desktop I/O for the next five years or so, but mainly refinements of existing technologies. It maintains that internal storage requires its own private bus and that this will be a further refinement of Ultra DMA using the ATAPI protocol.

ATA66 (a.k.a. Ultra DMA/66) will last through to about 2001 to be replaced by 'Future ATA' which, Gelsinger predicted, will feature a 1Gbps throughput. Interestingly, despite all the developments in SCSI Intel sees it being superseded, for external storage at any rate, by USB 2.0 by the year 2001 [Fig 5].

You can check out the full contents of Pat Gelsinger's presentation at developer .intel.com/design/idf.

▲ **Fig 4** Isn't the net a wonderful thing? Here is Intel's Pat Gelsinger in full flow, immortalised on a NetShow video at the recent Developers' Forum for USB 2.0

◀ **Fig 5** One of Gelsinger's PowerPoint foils outlining the future uptake of USB 2.0

PCW CONTACTS

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