Play it cool

Does your CD-ROM drive need chilling out? Here's how Roger Gann coped when the heat was on.

Sometimes there's a simple solution to an inexplicable hardware problem — so simple that it stares you in the face, defying you to diagnose and spot it. Here's a case in point. My PC at home is a homemade hybrid, enclosed in a mini-tower. It stands on the floor next to my desk and, for the sake of convenience, I located the CD-ROM drive in the topmost drive bay, which makes a lot of sense. The drive was an old 8X LG IDE drive and, to be honest, it didn't get a lot of use. To cut a long story short, the drive had become unreliable, sometimes working, sometimes not, and frequently performing a disappearing trick from the Windows 95 Device Manager list. I deduced that I'd got a duff drive so I popped out to Simply Computers, bought another IDE drive and fitted it. End of problem — or so I thought.

▲ **Power to the people: Intel's Pentium II OverDrive chip**

It took a while but eventually the problem of the "disappearing" CD-ROM reappeared. Figuring that it must be a pretty big coincidence getting *two* dud CD-ROM drives, I decided to investigate further. No doubt about it, the drive was 100 percent correctly installed. Eventually I tracked down the cause of my woes: the modem. I use a Microcom V.34 external modem at home and to keep my desk free of clutter I site the modem on top of my mini-tower case, directly over the CD-ROM. When I was playing around with V.90 modems I unplugged the Microcom for a couple of weeks. Miraculously, the CD-ROM drive problems evaporated. How so? It turned out that heat was the problem. Although I turned the PC off when not in use, I left the modem on all the time. As a result, it ran hot and the heat it generated was conducted into the case and thus into the CD-ROM drive, which then got all hot and bothered. Moral of the tale? Keep your CD-ROM drives as far away from any sources of heat, particularly the new breed of super-fast, multi-gigabyte hard disks which produce prodigious amounts of heat. And, keep an open mind when diagnosing faults as things are not always what they seem.

It took a while, but eventually the problem of the 'disappearing' CD-ROM reappeared

Into OverDrive

Intel recently released the long-awaited Pentium II OverDrive. Before you get too carried away, let me explain that this is a Pentium II-based upgrade for the Pentium Pro processor. The Pentium II ODP is available in two versions: one that takes 150 and 180MHz Pentium Pro's to 300MHz, and the other, which takes 166 and 200MHz Pentium Pro's to 333MHz — the fastest processor speed possible on a 66MHz system bus. The Pentium II OverDrive has a suggested list price of around £365, which compares favourably with the retail version of the 333MHz Pentium II.

As well as a faster clock speed, you get several other benefits, too. The guts of the new OverDrive is still the old P6 core, but is now based on a 0.25micron process. You also get MMX extensions plus 512Kb of cache. Unlike the Pentium II cache, which runs at half the processor's core speed, the Pentium II OverDrive's cache runs at full speed. This translates into a performance gain of around six percent over a Pentium II — the iCOMP2.0 rating of a 333MHz PII being 366 against the 333MHz PII OverDrive's 387MHz.

I run Windows NT 4.0 Server on my Pentium Pro machine and the upgrade has made a noticeable difference to the machine's overall responsiveness. Intel's SYSmark32 benchmark posts an overall performance gain of about 50 percent over a 200MHz Pentium Pro running Windows NT 4.0, rising to 75 percent for a 150MHz processor.

It was the Pentium Pro's cache, if you recall, which was the downfall of the processor. It was integrated with the CPU in a single piece of silicon; a process that delivered excellent performance but from which it was difficult to derive good production yields. In short, it was too expensive to manufacture on a large

scale. There was no way of testing the two halves of the processor until it was too late. And if, for example, the cache was a dud, you would have to ditch the whole thing and start again. The Pentium II got around this by decoupling the cache from the processor, putting it on the circuit board to which the processor was attached and running it at a slower speed. As a result, the original Pentium II processors didn't offer significant performance advantages over the Pentium Pro, which remains the processor of choice in heavy-duty server configurations simply because of this and its support for eight-way (and higher) SMP configurations. The 1Mb cache version was particularly sought after.

The PII is limited to dual-processor configurations (as a result, so is this OverDrive) and this restriction won't be overcome until the much-delayed Xeon comes on stream, hence the refusal of the Pentium Pro to take an early bath. This new OverDrive therefore provides a decent mid-life "kick" for single- and dual-processor servers.

Intel stresses that not all Pentium Pro motherboards can take the upgrade and it quietly recommends upgrading your BIOS to the latest version first. It also provides a little diagnostic program (available from Intel's web site) that tells you whether or not it will work with your BIOS. The program was fairly ambiguous when it came to analysing my cheapo Pentium Pro motherboard, but the upgrade nevertheless worked perfectly.

Too hot to handle

As with all processor upgrades, the task takes only a couple of minutes to perform. I had to first unclip the large heatsink (a fiddly process), then unclip the Socket 8 ZIF lever to remove the old processor. I should have worn my oven gloves as both components were too hot to handle. You have to exert some care when inserting the new processor, as the pins are quite delicate.

The final step is to connect the power lead to the cooling fan: unlike previous OverDrives, this one doesn't draw power from the fan via the socket but from a power lead using a "Y" adapter provided for the purpose. The Pentium II ODP is a solid piece of kit, and to my mind looks like a powerful processor ought to: big and chunky with lots of heatsink fins. If looks were important, it would knock the somewhat flimsy, plasticky Pentium II into a cocked hat. I have to say I was pleased to find that you do get a decent cooling fan/heatsink with the OverDrive, which is more than essential given the high running temperature of the original

ANONYMOUS HARDWARE

I got an interesting email from reader Simon Allden the other day. It was a follow-up to my September issue column on BIOS upgrades. One problem I had come across was that of identifying the manufacturer of a motherboard: it seems they go to great lengths to leave off any identifying marks or labels. I suggested one way: that is, using the BIOS ID string, but this isn't foolproof because not all BIOSes (e.g. Phoenix or MR) use this method.

Simon suggests another possible avenue of investigation: "All electrical equipment sold in the USA apparently requires an FCC (Federal Communications Commission) ID to be issued, ensuring compliance with their equipment standards," he writes. "Thus, to find the manufacturer of a piece of electrical equipment, all you need do is fire up a search engine (I was told Yahoo works best for this search), type in the FCC ID as it appears on the piece of equipment (e.g. FCC ID H52PT-3006) and follow the appropriate link."

One useful web site he mentioned was www.sbsdirect.com/fccenter.HTML, a site worth bookmarking. This lets you enter the FCC ID and then performs a lookup on its database of manufacturers. I entered CJE-0159 and it correctly identified it as a US Robotics serial card made in 1992. Simon also mentions using Yahoo to perform the search, but I prefer to do my net-searching with an excellent piece of freeware called WebFerret, which hits multiple search engines simultaneously and collates and de-dupes the results, which you can then sort. If you click on a search hit, your browser fires up and takes you there. You can download WebFerret and other equally good search tools from www.ferretsoft.com.

▲WHAT IS THAT KIT? CHECK IT OUT WITH THE FCC

Pentium Pro. I've always found the add-on cooling fans you can buy for around a fiver are really low-quality plastic jobs with a life-span that makes a butterfly look like the epitome of longevity.

Cooling the old Pentium Pro used to be a perennial problem at Gann Towers but this doesn't arise with the Pentium II OverDrive. The fans Intel specifies for its OverDrive processors are very good. They're made of metal, look "heavy duty" and seem to last forever.

Incidentally, Intel has posted a little utility on its web site to help you identify what sort of Intel CPU you've got fitted. Called, rather unsurprisingly, CPUID, it is available in both DOS and Windows versions. This 126Kb download detects and lists such details as Family, Model and Stepping, although it neither detects clock speed nor the multiplier effect, which is a shame. And when you try it on a PC without an "Intel Inside" it simply declares "unable to identify". Download CPUID from www.intel.com/design/perftool/cpuid/utility.htm.

Of support and servers

Talking of servers, I recently installed a network for a small trading firm in the City area of London. I had specified Microsoft BackOffice Small Business Server (SBS) for the server and Windows NT 4.0 for the workstations, all of which was bought from Dell. SBS is a good choice for a small business as it encompasses Windows NT 4.0 Server together with most of Microsoft BackOffice at a knock-down price. For example, SQL Server, Exchange Server plus a whole raft of goodies and admin tools designed for the small, technically unsophisticated business.

The server was a Dell PowerEdge 2200, which comes "oven-ready" for SBS. In theory, you should be able to simply turn on the server and the SBS install should complete with minimal intervention required. Well, that's the theory. One of the key pieces of hardware SBS sensibly insists on is a modem, and the install won't complete unless it finds one. Naturally, the Dell PowerEdge SBS bundle includes a modem, an internal US Robotics V.34 Sportster. Needless to say, the SBS install routine couldn't detect the modem as it should have. As a result, it completely messed up the install because the absent modem caused a domino effect throughout the system, crippling RAS, Exchange Server and so on.

▸Available for Windows or DOS, CPUID will identify your CPU

I take the conservative view with server software installs that it has to go totally perfectly, otherwise it's a failure. This proved a costly failure as reinstallation over the existing dented installation (the Dell recommended solution) didn't resolve the myriad problems. So, I had to reformat the partition and start from scratch. All told, this cost a day's time.

SBS failed to detect the modem because it had been set to plug-and-play mode — NT 4.0 is not a Plug and Play operating system. Setting the modem to COM3, by moving a jumper, cured it. SBS correctly detected it and all was fine thereafter. This was a trivial mistake, but it has fatal consequences if you want to install SBS. Has Dell ever pulled one of its SBS specials off the production line and tried to complete the install?

Support came to an abrupt end — you'd think I'd installed a virus or something!

I had trouble with the workstations, too. These had 9Gb drives, split as a 2Gb FAT16 partition with the balance as a 9Gb NTFS partition. NTFS is awkward from a production point of view and it's often more convenient to "blow" operating systems onto a blank hard disk if FAT16 is used. Unusually, the Convert utility, which converts partitions to NTFS, had been added to the Program menus and so I ran the convert utility because I wanted the advantages of the NT File System. The problem was that shortly afterwards, the workstations in question refused to boot: the POST would successfully complete, but OS Loader just wouldn't kick in. A phone call to Dell support established that this was either a software or configuration issue. Because I'd converted the partition to NTFS, Dell would not offer further support. If my problem had been with Drive D: which was factory shipped as NTFS then support would have been forthcoming. But as Drive C: was no longer in the same condition as when it left the factory, support came to an abrupt end — you'd think I'd installed a virus or something!

There had been no warning about taking this clearly risky step and it seems absurd to offer support on one NTFS partition but not another. It speaks volumes about the company's faith in the operating system. Don't say you haven't been warned. Read the terms and conditions very carefully before installing any software onto your new PC. You may find that it will invalidate your warranty.

PCW CONTACTS

Roger Gann *can be contacted via the PCW editorial office (address, p10) or email* hardware@pcw.co.uk.