Any **questions**?

If you have a PC problem or think you could help out other readers, contact Frank Leonhardt.

Q "I am currently using three PCs in a limited space (each of which is constantly being accessed by modem) and would like to ditch two of the monitors and keyboards and access all three machines via a single monitor and keyboard connected by a 'box of tricks' to all three machines.

For 'political' reasons I am unable to network the machines and hence I wondered if you knew of any products which would be of use to me?"
Paul Starling

What you ask sounds relatively simple, a three-way switch, but there are problems which make it rather more expensive than you may have expected. While switching the video signal between monitors is easy enough, assuming you're not using a fancy "green" monitor which turns itself off, keyboards are a lot more stroppy. There is a fairly constant two-way conversation taking place between the PC keyboard controller and the processor in the keyboard. If this gets interrupted then both the PC and the keyboard are prone to becoming confused.

A keyboard switch has to pretend to all the connected PCs that they are constantly talking to their own keyboard and convince the keyboard that it is always talking to the same PC. This rules out the possibility of a simple and inexpensive manual switch.

Although you didn't mention a mouse, these are just as much trouble as the keyboards. If you can stand having three keyboards and possibly three mice but just one monitor, then the cheapest solution is a simple video switch. If you want to switch more, you'd better check your bank balance.

There is actually a software solution to this problem which doesn't involve remote control over a network. MARC (Multi-Access Remote Control) is a package which successfully allows one PC to control many others using simple serial connections as well as a network. It has the added advantage that you can see a shrunken display of all the PCs you are controlling on-screen at once.

Which controller? What memory?

"I am currently using a 386DX system upgraded with a Cyrix DRX2-66 processor. It is equipped with 8Mb of RAM, a SoundBlaster CD-ROM player (2x speed) and a Quantum LPS420AT IDE HDD (420Mb). I use OS/2 Warp and Lotus SmartSuite for OS/2.

I have two questions. Firstly, my HDD transfer rate is currently rather slow (<800Kb). I am planning to purchase an EIDE controller: are my current CD-ROM player and HDD compatible with an EIDE controller? If this is the case, can you suggest which one (brand/type)?

Secondly, my motherboard can only take 8Mb on-board and for an additional 8Mb I have to use a proprietary memory board. But I have read that my board will accept any 16-bit memory expansion board and this is what I plan to purchase. Do you know of a 'good' 16-bit memory board which can take 8Mb of RAM and is compatible with OS/2 Warp?"
BL Halim

EIDE adaptors added to existing machines often seem to cause trouble, except when they are being added solely for a CD-ROM drive. That being said, your existing hard disk (and a second unit, should you choose to add one) should work without problems.

From your description, I suspect you have a Creative Labs CR-563 CD-ROM drive. These have a Panasonic rather than an IDE interface, although the 40-way cable is the same. There should be no conflict between either the sound card or special interface board you are currently using to attach the CD-ROM.

As for the memory question, although memory boards were popular in earlier years, processor speeds have greatly outstripped the fixed expansion bus performance and have created an unacceptable bottleneck.

Apart from upgrading PS/2 machines with a micro-channel (which is faster and allows wider addressing) I don't know of anyone still making such boards. Unless any readers know differently?

Pushing the file limits in DOS

"I need to develop a DOS application which must have about 100 files open at the same time. DOS states a maximum of about 255 but I have written a few programs (C++, QBasic) which all fail at around 20. I have fiddled with CONFIG.SYS and even played around with the standard C header files, but with no success. Is there a (relatively) easy method of overcoming this 20-file limit under DOS?"
Chris Fellows

I take it you have already tried increasing the limit in CONFIG.SYS using the FILES= entry? If you set FILES=30 you have the chance to open a maximum of 30 files at any one time, and so on. I suspect you may be having trouble with the stdio libraries which came with your "C" compiler. These often have an internal limit imposed on the array of file handles. It can sometimes be determined by looking at the manifest constant FOPEN_MAX in stdio.h.

To increase the limit, you can often adjust the symbol definition and recompile the libraries. Alternatively, the array can sometimes be dynamically allocated at run-time — consult your compiler documentation or, more reliably, have a good rummage through the startup module source. The alternative is to design your software in a way which doesn't require so many open files in the first place — DOS isn't terribly efficient at juggling lots of open files!

Waking up to PC fax

"To take full advantage of Windows 95, I recently upgraded my motherboard to a 133MHz Pentium with 16Mb of RAM. I have also installed an external fax/modem connected to the serial port. The fax/modem runs from the same line as the phone with the equivalent of a splitter box to filter calls.

The computer has an energy-saving feature, as emblazoned by the BIOS at bootup, but I have not yet enabled this feature. According to the manual, the jumper switch can be enabled if I install an energy-saving switch on the front panel. The manual states: 'System will be wake up while the keyboard or mouse be touched' (*sic*). I understand that part, but it doesn't really apply in my case; what I would like to do is leave the computer switched on, and then 'wake up' if a fax comes through. Would this work? Failing that, if I switch off the monitor and leave the system running permanently, would that consume a lot of electricity?

As I live in Italy, power cuts are not exactly unknown: so if we have one, would there be any problem about the computer re-setting? Which .INI file would I need to install the Fax .EXE file to reload? I use Eclipse software, which was supplied with the Electronic Frontier Modem as recommended in your recent tests [February 96]. It seems to do a good job."

Nigel Hinton

Some machines can be programmed to "wake up" on receipt of a ringing signal from an external modem (pin 22 goes high in time with the ringing) but these are fairly rare. External boxes are available which use the ringing signal to turn on a mains socket into which you can plug your whole computer.

Although this sounds like a good idea, you are then left with the problem of getting the machine to turn off again: unless the fax software supports this feature, it's not easy. Then your caller has to wait for the machine to boot before it can start receiving faxes. These could be some of the reasons why these devices can no longer be found on the market.

Using the low-power mode of your PC is probably the best idea. The bulk of the power consumption normally goes on the monitor so having one of these, which turns itself off, would be a great asset. Next to this, the disks and the processor are the most power hungry — though small (in size) modern drives use only a fraction of what they used to.

The power consumed by a processor is proportional to its clock speed. Energy is used each time a transistor in the chip changes state, and the faster it is running the more switches occur. Turning down the processor speed is therefore a good idea if you can do it. Beware the "turbo" buttons, found on many motherboards, which actually turn down the bus speed and leave the processor running at full tilt. If you want to turn down the processor clock rate, a switch connected to the speed selection jumpers is often the only way.

You can leave the PC out of things and use a type of fax/modem which stores incoming faxes until the PC is turned back on. As you'd expect, these cost more and their storage capacity is necessarily limited, but for a small office they could be just the job.

Personally, I have always had a real fax machine for incoming transmissions — and a solid, reliable, commercial one at that (purchased second-hand). The beauty of fax should be that it is always available, quick and straightforward to use. Getting a PC in the way has got to be a step backwards.

To get programs to start automatically when you boot Windows 95, place them in the Start Up section of the Start menu. You can do this by placing them in the "Start Up" folder, which is usually found in the \Windows\Start Menu\Programs. If your system is set up to keep start menus separate for each user then yours will be in \Windows\Profiles\username\Start Menu\Programs, where "username" is your user name.

Frank's bargain basement

Things are looking interesting on the CPU front at present. You can always buy the latest, greatest Pentium from Intel, but for those on a budget, price/performance is more important.

So how do you get the most bangs per buck? My favourite, for quite a while now, has been the Pentium 75: I never liked the P-60/66, which ran at 5v rather than 3.3v and got rather too warm. A P-75 can be had for well under £100 now and they perform rather well.

All current Pentiums run at external speeds of 50, 60 or 66MHz. A P-75 actually runs externally at 50MHz, multiplying this internally by 1.5. The P-100 is actually the same chip, clocked externally at 66MHz. Faster Pentiums simply multiply the external clock by two or 2.5, ending up with a P200 multiplying up a 66MHz by three (so it is said).

Intel doesn't guarantee that a chip sold as a P-75 will run at 100MHz if you change the jumper on the motherboard, but plenty of people have done this for a long time now without problems and saved about £100 each. It may reduce the life of the CPU, so doing this is entirely at your own risk but who wants to keep the same processor forever?

You not only have Intel processors to choose from now: Cyrix and IBM are launching a 686 which fits into a Pentium socket (the Cyrix 585 is actually a souped-up 486). AMD is about to deliver something, too.

From what I've seen, the claims made for the 686 aren't justified. While some instructions are undoubtedly faster than a Pentium, floating-point performance doesn't look so good. In addition, the entry-level 686 runs at double the external clock rate rather than 1.5x like Intel's. This gives its internal instructions a boost but each time it goes out to the bus the advantage disappears. This isn't to say it's not a good chip — and when a .35 micron version is produced, it should be even better. Whether it gives a better bang-per-buck than a P-75 depends on its final selling price and this is not available at time of writing.

If there is an update to this it will appear first on the *Computer Answers* Web site (see the *Contacts* panel).

A P-75 chip, costing less than £100, runs rather well

PCW Contacts

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There is a *Computer Answers* Web site at **http://www.users.dircon.co.uk/~wombat/answers/** which may contain late-breaking news. Letters may be sent to *PCW* at **VNU House, 32-34 Broadwick Street, London W1A 2HG**. Sorry, but due to the high volume of correspondence, individual replies are not normally possible.