Connections in low places

Tim Nott reveals the ins and outs of getting connected – and what to do when it all goes wrong.

If the complications of running one Windows 9x PC aren't enough, then the fun to be had in connecting two can occupy many hours of your time. If you want a constant connection between two machines, whether it's to share data in a small business environment, or just to play games, then you'll have to do a bit of shopping. You'll need to buy two network cards (preferably the 10-baseT PCI variety) and either a length of Category 5 (Cat5) crossover cable, or, if you want to allow for more connections, a hub and two lengths of standard Cat5 cable.

The whole business is relatively inexpensive – around £50 with the hub, or £25 without – and if the cards are PCI, Windows 98 Plug and Play will guide you through the configuration process. For further information, see Bob Walder's walkthrough in February's *Hands On*, *Networks*, or September 1999's feature by Dave Mitchell. If you want to do it without wires, then see Mark Whitehorn's feature in January's issue.

If you're still reading, then this could be for several reasons, ranging from a sheer lack of money, to the inability to resist a challenge. Many users have an occasional need to transfer files to and from a notebook to a desktop PC, and network adaptors for the former are considerably more expensive. In that case, welcome to the world of Direct Cable Connection (DCC). This wasn't exactly a Windows 95 innovation – Windows 3.1 (or DOS 6 to be precise) came with something called Interlink, and technological historians can consult *Hands On*, *Windows*, August 1995 for the full story. DCC, however, doesn't have to be set up from command-line prompts with more switches than the flight deck of Concorde. Despite this, it can – and I speak from experience – be tricky to get working.

The first thing you need, unsurprisingly, is a suitable cable. Here you have three choices. You can use a null modem serial cable, a parallel cable or something mysteriously called a high-speed DirectParallel cable, which you can order from Parallel Technologies (www.lpt.com), according to the plug in the Windows help file.

With a null modem cable, you are limited to the speed of the serial ports: in theory you should get 115,200bits/sec (14Kbytes/sec) each way. A parallel connection is faster (40-70Kbytes/sec), but do make sure you get what is known as an Interlink or Laplink cable.
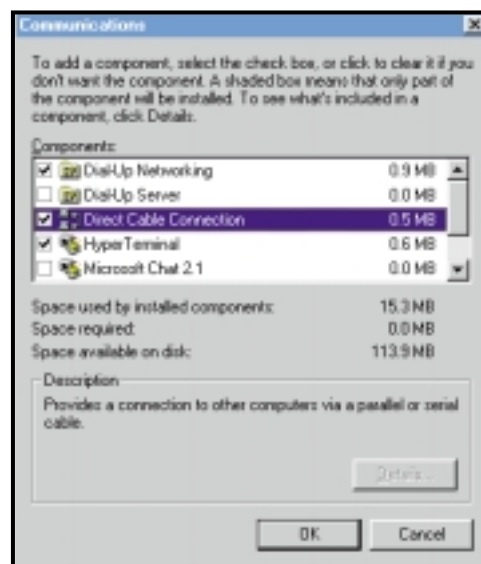
An ordinary pin-to-pin wired parallel cable won't work, as I found out much to my chagrin, but with a few modifications this can be put right. Fortunately, in one of these anorak pockets I have a soldering iron. You can get it right first time if you know the number codes for the wiring (see Cable stitch boxout, overleaf). Computers equipped with an ECP (Extended Capabilities Port), which includes most made in the past few years, are theoretically capable of much higher

Screenshot 1: When installing DCC, check that Dial-Up Networking is already installed

transfer rates than standard parallel – using the right cable – but the practical details of this are shrouded in mystery.
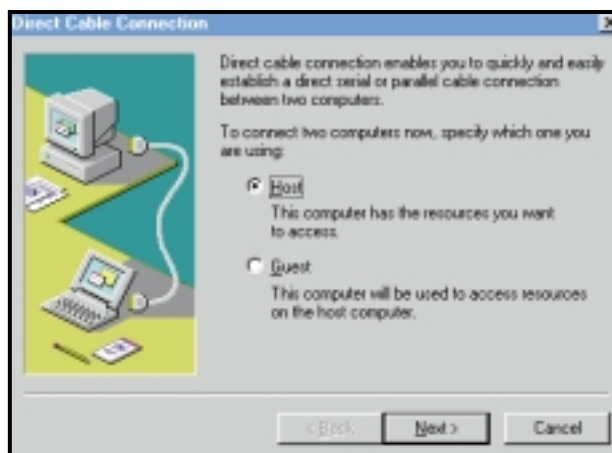
According to Parallel Technologies' website, the company's high-speed cable offers an impressive throughput of 'up to 500Kbytes/sec with high-speed ECP ports' and costs an equally impressive £43.75. More than this I cannot say, as the company doesn't seem to answer press enquiries.

Having obtained and connected the cable, the fun can start. First, you need to install DCC, so go to Control Panel, Add/Remove Software, Windows Setup, Communications and hit the details button. Select Direct Cable Connection, and if it isn't already installed, Dial-Up Networking (see screenshot 1). Follow the prompts, feeding it the Windows 98 installation disk when asked.

Then trawl through the Start menu, Programs, Accessories, Communications and you'll find Direct Cable Connection, which will launch the Wizard (see screenshot 2). Choose whether you want that computer to be the host or the guest – the latter has access to the former's files and printers. Don't worry too much about this decision as you can change around later.

Screenshot 2: The host machine will be able to access all the same files and printers as the guest machine
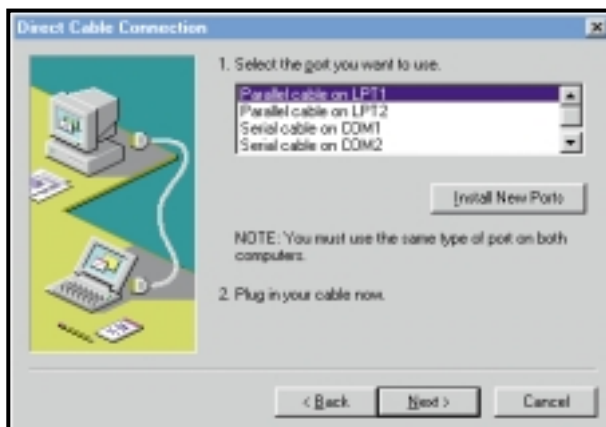
Screenshot 3: Choosing a port

Next you get to choose an available port, which should be straightforward enough. Obviously they have to be the same type of port (see screenshot 3), but you can connect COM1 to COM2, for example. Then you'll be asked if you want

If you have the Read Only option enabled, the guest won't be able to move or copy files

to set up a password, which is optional. This finishes the Wizard, and that PC will sit there waiting for a connection, while you repeat the process on the other machine.

The first machine might start moaning that it can't connect: you can close DCC and restart it when ready. With DCC installed on both machines, run DCC on one as the host (you get the chance to change this and the port each time) and then the guest.

If a miracle has occurred, the two computers will connect, you'll see a 'verifying password' message (even if you don't have one set), and you'll get a prompt button on the guest to show the files on the host. More likely, you'll get a 'can't connect…' message or some other manifestation of dismal failure. Close the connection (or non-connection) on both PCs and troubleshoot as follows.

1 Check the cable. Make sure there are no loose wires.

2 Check the settings in Device Manager, Modem. You'll see entries for each possible cable and port – check that the speeds in the Properties/Modem tab are set the same. If connection on a

serial port still fails – or only works for one guest/host arrangement, try dropping the speed on both (see screenshot 4 on following page).

3 Go to Control Panel, Networks and turn to the Identification tab. Check that each PC has the same Workgroup name, and a different Computer name. The Computer Description can be anything you want.

4 If you don't see a Network Neighborhood icon on your desktop, useless though it may have been, you have probably hidden it with TweakUI, or some similar utility. Go back to TweakUI, Desktop, and unhide it.

5 Two Windows 98 machines should be able to DCC happily with just the TCP/IP protocol installed (see Control Panel, Networks). However, Windows 95

uses the IPX/SPX and NetBEUI protocols. So if you are trying to get 95 to talk to 98, install one or both of these protocols on the 98 machine (Add, Protocol, Microsoft…).

6 In the Configuration tab, hit the File and Print Sharing button and tick the options you want to share when this machine is the host. I know it sounds obvious, but it's still the second most-common cause of being unable to access the host.

7 And the most common cause of not being able to access the host? Although sharing has been enabled in principle, no actual printers or folders have been shared on the host. You do this by right-clicking on the folder or printer, choosing Sharing… (or Properties, Sharing tab) and deciding how generous you want to be. You can choose a 'friendly' name for the shared resource (up to 12 characters) and add a comment – both can be useful in avoiding confusion with local drives.

Note that if you have the Read Only option enabled (see screenshot 5 on following page), the guest won't be able to move or copy files to the folder, although that user can copy (but not move) from it. Note also that sharing a folder gives all sub-folders the same default sharing settings, although you can change these on an individual basis.

Cable stitch

Normally, null modem serial cables have nine-pin, female D-connectors, whereas parallel cables have 25-pin, male D-connectors. The pins on these connectors are numbered from the top left looking at the male pins – extrapolate to suit, or strain your eyes at the tiny numbers usually printed on the connector.

Those curious about parallel technology and in particular ECP can find out more from Denis Kondakov's site (**www.frontiernet.net/~denis**), where you can download 'at-your-own-

Pin connections for a null modem cable should be as follows:

1 & 6	4
2	3
3	2
4	1 & 6
7	8
8	7

A parallel interlink cable should be wired as follows:

2	15
3	13
4	12
5	10
6	11
10	5
11	6
12	4
13	3
15	2
25	25

risk' instructions on making an ECP cable.

The world of plug and pray

A little problem that lifted itself out of the regular Q and A section concerned a reader whose PC wouldn't remember its display settings. We rounded up the usual suspects, installed new display drivers, checked out multiple users, waved a dead chicken at the monitor, all to no avail. Strangely enough, on a reboot, everything came out as normal. So I did what any reasonable man would do and gave up.

It was shortly after this that my faithful 17in Eizo shuffled off its mortal coil (or perhaps it was a capacitor), after six years of eyestrain-free service. Its replacement was a plug and play monitor. So I plugged it, and after a little hands-off kerfuffle, there it was listed in Device Manager. Brilliant. So, having had a good play with the display settings and the on-screen controls, I had everything just the way I wanted it.

The next morning, I booted up, and my nice new 19in display was lurching to one side in a resolution that can only be described as coarse, and a refresh rate low enough to cause instant brain damage. I checked the Device Manager: 'Unknown monitor'. Somewhat peeved, to say the least, I rebooted and went to get a cup of coffee. On my return a perfect screen awaited me.

Well, perhaps it was just one of those things. A few days later it happened again. Back to Device Manager. Unknown monitor. And to think they'd been intimately connected for several days. This time, I hit the Refresh button. 'Oh, it's YOU' said Windows, to the monitor. Sorry. A reboot later and we were back in business.

But then, after some intensive office reorganisation, it happened again, but this time on a different PC (but with the same monitor). And it continued to happen, sporadically. The scales fell from my eyes when I realised what the problem was – that plug and play seems to have the attention span of a guppy. If the monitor isn't connected to the PC and switched on when the PC boots, then the latter forgets it ever knew it. This isn't a problem with older-style PC cases, where there's an AC pass-through into which the monitor can be plugged: you just switch the PC on and off and the monitor follows. These new-fangled ATX cases (or most of them) lack the pass-through, apparently for safety reasons, so the monitor plugs into a separate mains outlet. So, if you switch on the monitor after the PC, Windows treats it as a perfect stranger. Such is progress.

I suppose, really, I should get used to the idea of leaving the monitor on all the time, as it uses less than 8W when it's in stand-by mode. But I'm reluctant to forego the satisfaction of turning everything off at the end of a hard day's work.

Screenshot 4 (left): If connection on a serial port only works for one guest/host arrangement, try dropping the speed
Screenshot 5 (below): Failing to set up sharing is the most common fault
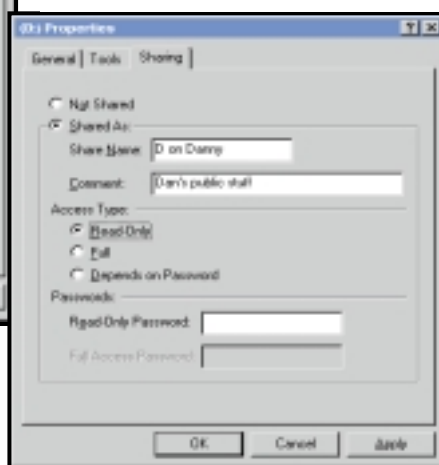
8 Repeat the last two steps for the other PC, unless you are always going to have the same host/guest relationship. There are several reasons for not having a constant relationship, apart from the etiquette of electronic hospitality. You will often find that the speed of file transfer depends on whether you are transferring from guest to host or vice-versa, and which computer is the host. Transferring a 1MB file in all four combinations landed me approximate transfer rates of 54, 28, 21 and 14Kbytes/sec on the same parallel connection.

9 Although you can swap host/guest between sessions and, with the right sharing enabled, transfer files either way from the guest, this isn't true peer-to-peer networking, as the host for the session cannot access the guest. But there is a way around this. Say the guest machine has the name TROUT and has its C: drive shared as CDRIVE. Create a shortcut on the host with the target \\TROUT\CDRIVE\WINDOWS \DESKTOP. This should then open a folder showing the guest's desktop.

Can it go by bus?
Finally, be aware of another gotcha. Since Dial-Up Networking and Direct Cable Connection share the same 'adaptor' you can't use your modem during a DCC session. It's possible to connect PCs via their USB ports, but only with a special cable and drivers from Laplink. Don't try it without this cable, as USB cables carry power and you might fry both of your PCs.