# Share options

**Roger Gann's step-by-step guide shatters the mysteries behind sharing an Internet connection.**

Apart from a raft of bug fixes and general improvements, Windows 98 Second Edition featured precious few new features, the most remarkable of which was apparently stolen from the Windows 2000 goodie bag: Internet Connection Sharing (ICS), which allows a host PC to act as an Internet gateway for other networked PCs.

Sadly, ICS is poorly documented and not at all obvious how to install, configure and run, which is a real shame as it is perfect for all those homes with two PCs and one phone line.

While it's been possible to share a fax modem since the release of Windows for Workgroups 3.1 in 1993, the ability to fully share a data modem is still an elusive Microsoft feature and you have to invest in Back Office Small Business Server to obtain it. However, Windows 98 SE now includes ICS, which lets two or more networked PCs share a single PPP Internet connection. So, if you have multiple PCs, ICS allows you and others on your local area network (LAN) to perform different Internet tasks simultaneously.

For example, one person could send and receive email, while another person downloads a file and another person browses the Internet. Connected devices receive transparent network configuration using Directory Naming Service (DNS) and Dynamic Host Configuration Protocol (DHCP) to resolve Internet names.

Connected devices and software also have comprehensive protocol support. For example, you can play Internet games without additional configuration, or you can use Point-to-Point Tunnelling Protocol (PPTP) and a Virtual Private Network (VPN) to gain access to corporate networks. Note that ICS is only found in the full retail and upgrade versions of Windows 98 SE – the downloadable/free Windows 98 Service Pack upgrade does not include it.

ICS is relatively easy to set up, but there are some pre-requisites:

- At least two computers.
- A functioning network interface card (NIC) properly installed in each computer. If you're sharing a DSL, cable modem, or other Ethernet-based Internet connection, the computer with the Internet connection must have two NICs installed. The network must also be cabled correctly and be functioning normally. The TCP/IP networking protocol must be installed on all the PCs.
- One of the PCs must have a properly configured and working Dial-Up Networking Internet connection, for example a V.90 or cable modem. This PC must be running Windows 98 SE (or 2000).
- The client PCs can be running any flavour of Windows 9x – in fact they can be any IP device. ICS will support MacOS and Linux clients, though Microsoft doesn't advertise this fact!

SCREENSHOT 1

**1** Assuming that you have a networked PC, running Windows 98 SE, with a working Dial-Up Networking connection, the first step is to install ICS. Open Control Panel and double-click on Add/Remove Programs. Click on the Windows Setup tab.

Scroll down to Internet Tools and click the Details button. Tick the Internet Connection Sharing box and click OK, then click Apply. Have your Windows 98 SE CD-ROM handy at this point. The ICS wizard is then launched (screenshot 1).

The first selection you need to make in the Wizard is for the type of connection you will be using. Make sure you select the right one. If you are using a cable modem, you will be asked to select an adaptor, which is your NIC.

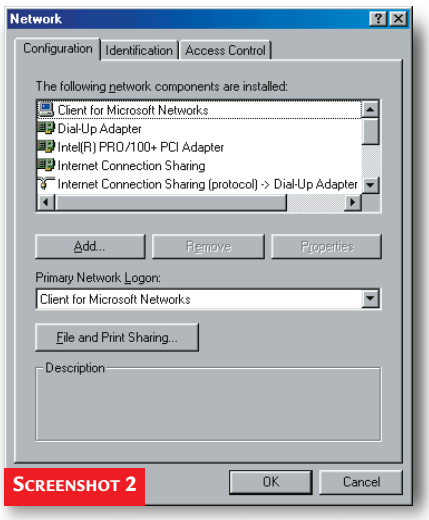
Be sure you choose the adaptor that is attached to your cable modem. If you don't choose the correct NIC, ICS won't install correctly and you'll probably have to remove and reinstall it and try again.

You will see that the ICS Wizard numbers your NICs one and two, but there's no clue as to which is connected to the cable modem and which is connected to your LAN. You have to guess, and if you guess wrong, you get to go through the whole process again!

Click Next and insert a blank formatted floppy disk in your drive. The wizard then creates a special install floppy to use on the other, client PC. Click OK when the disk has been created, then click Finish and restart your PC when prompted.

Don't click Cancel or restart your computer before completing this Wizard. There's no way to start it again, so if it's interrupted in any way, you'll have to start over, which means removing and reinstalling ICS.

**2** To check that Internet Connection Sharing has installed correctly, once the 'gateway' PC has restarted, right-click Network Neighborhood and examine the installed network components on the



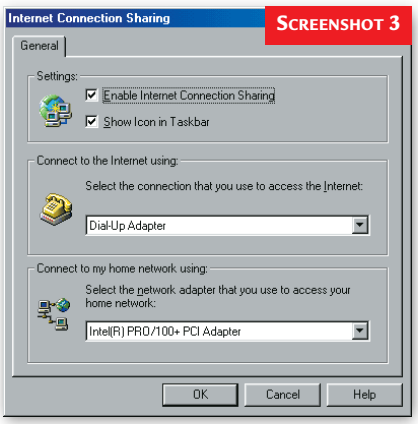
SCREENSHOT 2

Configuration tab. Internet Connection Sharing should be listed here, as a 'network adaptor'. You'll see three new instances of TCP/IP, like this:

- TCP/IP (Home) –> Your NIC
- TCP/IP (Shared) –> Dial-Up Adaptor
- TCP/IP –> Internet Connection Sharing

The (Home) instance refers to the device used to connect the host to the rest of the home network – if you select it and click Properties, you'll notice that a static IP address (usually 192.168.0.1) has been assigned to it.

The (Shared) instance refers to the device used to provide the shared Internet connection while the last entry is what used to be the TCP/IP properties of your Internet connection.



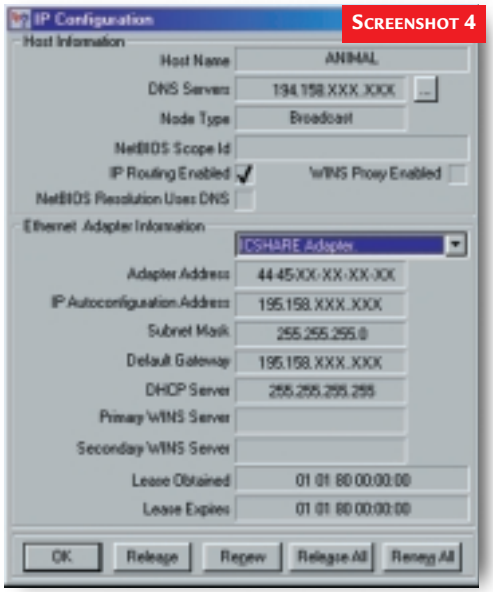
SCREENSHOT 3

**3** To activate the ICS status icon in the System tray, right-click the Internet Explorer icon on your desktop and select Properties. Click the Connections tab and in the LAN Settings box, click the Sharing button. Tick the Show icon in Taskbar tick box (screenshot 3). When you right-click on the ICS Icon in the system tray, you can choose:

- Status – This will show you the number of computers using Internet connection. It can take as long as 15 minutes before ICS shows the correct number of connections. This delay is caused because ICS holds Transmission Control Protocol (TCP) and User Datagram Protocol (UDP) ports open for a client for up to 10 minutes after the activity on that port has stopped. When a port is open for a client, ICS counts the port as a connected client. The count of connected computers is updated after the port is closed.
- Options – This will bring up the very limited ICS control panel
- Disable Internet Connections Sharing – Disables ICS

**4** Setting up the 'client' PC, (that is, the PC without the modem) couldn't be simpler: you don't even need to install Dial-Up Networking. To start the Browser Connection Setup wizard, insert the floppy disk you made in Step 2. Click the Start button, and then click Run. Type: A:\ICSCLSET.EXE and click OK. ICLSET doesn't do much – it merely tweaks the client's TCP/IP configuration.

For non-Windows 9x clients, it's easy to manually configure the client PC's TCP/IP settings. Set them to Obtain an IP address automatically (ie use DHCP). Clear any gateway entries and disable DNS as well, while you're at it.



SCREENSHOT 4

**5** To make sure that the 'client' PC is configured correctly, click the Start button, and then click Run. Type WINIPCFG and click OK. This launches the Windows 98 TCP/IP configuration utility. Select the Network Adaptor and you should see a range of settings similar to that in screenshot 4. The client PC automatically 'collects' its TCP/IP configuration from the ICS server courtesy of DHCP so if ICS is working correctly, you should see an IP address 192.168.0.2 or similar.

As well as the usual network adaptor and Dial-Up Adaptor entries, you should also find a third here; ICSHARE.

**6** With ICS up and running, you can connect to the Internet in the usual way at the 'gateway' PC: either explicitly; using Dial-Up Networking; or by launching Internet Explorer or Outlook Express to cause the system to automatically dial out.

If you launch a browser on the client PC and the ICS gateway isn't currently connected, it will then automatically dial out and connect for you.

**Some final caveats:** don't forget, the ICS gateway PC has to be switched on and booted up for the other PCs to be able to dial-out through it.

Also, although Windows 98 should disconnect an inactive connection after a specified 'time-out' period (usually five minutes) it occasionally won't. As you won't be able to tell if the connection is still 'up' from the client PC, if you're the only one surfing the Internet, you should always go over to the ICS gateway PC and make sure that the connection is terminated at the end of your session. This way, you won't get any nasty surprises when the phone bill arrives!

There is no minimum connection speed, but you should keep in mind that when two users are downloading, using the shared connection simultaneously (the worst-case scenario), each user will experience half of the original performance. But for casual web browsing, emailing or game-playing, two users can quite happily co-exist on a 56K modem.

## Troubleshooting

ICS has a few gotchas – the Microsoft Knowledge Base has about 60 ICS 'articles' – see www.infinisource.com/techfiles/ics-mskb.html. For example, CompuServe 2000 is a no-no. It doesn't work with CU-SeeMe over DSL connections either.

**Commercial alternatives**

Proxy – www.analogx.com/contents/download/network/proxy.htm
Wingate – http://WinGate.deerfield.com
Sygate – available at www.sygate.com/

## PCW CONTACTS

*Roger Gann can be contacted at the usual PCW address or by emailing: networks@pcw.co.uk*