

**L**ast month's "Front Counter Mechanics" explained how to select and install network interface cards (NIC's). This month's article, the fourth and last in the *Computer Networks* series, describes the payoff: How to get the computers talking across the network.

Once the network cable and cards are working, configure the Windows network settings. This takes four steps:

- 1) Install the Network Neighborhood icon.
- 2) Set the Network Properties for each computer in the network.
- 3) Set the Share Properties for specific drives and printers on each computer.
- 4) 'Map' the shared drives and printers across the network.

Repeat these same four steps for each computer on the network. Bearing Step 4 in mind, begin with the computers with the drives and printers you wish to share, and end with the computers that have little or nothing to share. Throughout this process, Windows may ask you to install files from your original Windows installation disks (or CD-ROM), so have them (or it) handy.

## Installing The Network Neighborhood Icon

The Network Neighborhood icon is Microsoft's way of saying that Windows expects the computer to be part of a network. Eventually, Network Neighborhood can be used to navigate the network, but initially it's merely a shell. If you've installed the network cards and drivers successfully, you should be able to see the Network Neighborhood icon (**Figure 1**) somewhere on your Windows desktop.

If the icon is missing, the NIC or its driver isn't installed correctly. If you are unfortunate enough to find yourself in this muddle, you'll probably need to call the NIC manufacturer's support line for help; but if you're the self-reliant type, you can investigate the Device Manager settings:



**Figure 1** —  
Network Neighborhood Icon

- 1) Left-click the Start button.
- 2) Select Settings from the Start button window.
- 3) Left-click Control Panel in the Settings window.
- 4) Double-left-click System in the Control Panel window.
- 5) Left-click the Device Manager tab in the System Properties window.
- 6) Left-click the View Devices by Type radio button in the Device Manager window.



If the system has detected the network card as physically installed on the motherboard, there will be an icon for Network Adapters in the Device Manager window.

If there's nothing that says Network Adapters in the Device Manager window, your NIC is installed incorrectly on the motherboard. Review the instructions from *Part Three* of this series.

If there is a Network Adapters icon, left-click the "+" sign next to it. You should see your NIC listed. A successfully installed NIC will appear like the one shown in **Figure 2**.

An unsuccessfully installed NIC will be marked with the dreaded yellow circle and red exclamation mark icon. In that case, either there is a driver problem, or the NIC IRQ conflicts with the IRQ of another device.

To investigate a device conflict, double-left-click the NIC icon to view its Properties, then left-click the Resources tab in the Properties window. Device conflicts can sometimes be resolved by running the Windows Hardware Conflict Troubleshooter, which is available from Help in the Start menu. Devices that conflict with one another can usually be reconfigured to remove the conflict.

To identify and change the NIC driver, double-left-click the NIC icon to view its Properties, then left-click the Drivers tab in the Properties window. Very often, you can find updated drivers you can download from the NIC-manufacturer's website.

### Setting The Network Properties

Network Properties are the heart of the Windows network settings. If a computer is born when it's first powered up, then setting the Network Properties is like introducing it to the other members of its family. The settings in Network Properties tell Windows which network hardware and software to use, name the individual computer and tell it which network to join.

To set the Network Properties, right-click the Network Neighborhood icon, then select Properties. You'll see the Network window shown in **Figure 3**. The Primary Network Logon should be Client for Microsoft Networks. If it's not, left-click the down-arrow in the Primary Network Logon box, and see whether Client for Microsoft Networks is listed. If it is, double-left-click it to select it.

If Client for Microsoft Networks is not listed, do the following:

- 1) Left-click the Add... button in the Network window (**Figure 3**).
- 2) Double-left-click the Client icon in the Select Network Component Type window.
- 3) Left-click Microsoft and Client for Microsoft Networks in the Select Network Client window.
- 4) Left-click OK.

While you're looking at the Network window, note which protocols have been installed. Protocols are designated by icons that look like patch cords. 3Com dRMON SmartAgent PC Software, the protocol shown in **Figure 3**, was installed by the 3Com NIC driver software. The computers in your network must share a common protocol to communicate.

3Com ensures this by installing a proprietary protocol. The protocols most commonly used are TCP/IP, IPX/SPX, and NetBEUI.

Which ones do you need? It depends upon the requirements of the software programs you normally use. To be safe, I usually install all three protocols. They're easy to uninstall (just highlight and click Remove) as previously noted, and they might be missed in a way that's hard to diagnose. You add Protocols the same way you add Clients; just click Protocol in Step 2 of the example above.

Once the Primary Network Logon has been set to Client for Microsoft Networks, left-click the File and Print Sharing button in the Network window (**Figure 3**).

If you have files or software programs on the computer that you want to share with other computers on the network, put a checkmark next to I want to be able to give others access to my files.

Likewise, if the computer connects to a printer you want to share, put a checkmark next to I want to be able to allow others to print to my printer(s). If you're unsure about file or printer sharing, put checkmarks in the boxes anyway. You haven't actually shared a file or a printer yet, and you can always come back and remove the checkmarks if you change your mind later. More important, if neither file nor print sharing is enabled, the computer won't show up in the Network Neighborhood window. This may lead to confusion later.

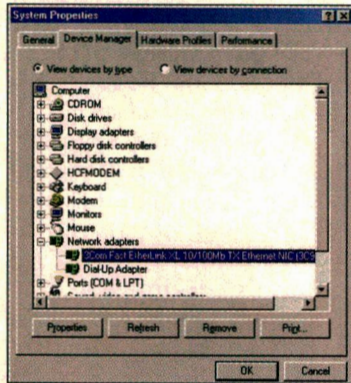


Figure 2 — Device Manager

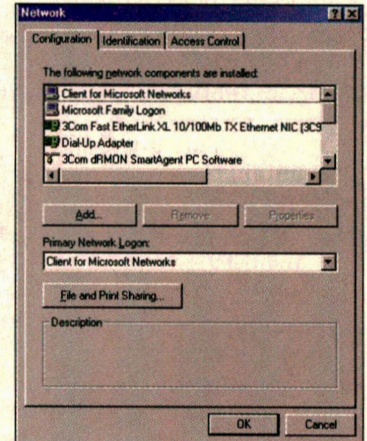


Figure 3 — Network Configuration



Once you've made your File and Print Sharing selections, left-click OK.

Next, left-click the Identification tab on the Network window (Figure 4). It's likely that you've already entered this information as part of installing the NIC driver. If so, here is where you can review and make changes to it. If not, enter your Computer and Workgroup names now.

In the Computer Name box, enter a concise and descriptive name. You can use any name you want, but it must be unique on the network (see Figure 7 for examples).

In the Workgroup box, enter a name for the network. The Workgroup name must be the same for every computer that joins the network. You can use any name you want, but keep it simple so it's easy to remember. In our shop, we use HR for Hansville Repair.

The Computer Description box is optional. If you've done a good job of selecting the Computer Name, anything you type in this box would be redundant, so you can leave it blank.

You can safely ignore the Access Control tab in the Network Properties window.

## Setting The Share Properties Of Drives And Printers

You might think telling Network Properties you want to share drives and printers would be enough, but it's not. Before Windows will actually let you share a drive or printer, you must set the Share Properties for each drive and printer that you wish to share.

Setting the Share Properties is similar for drives and printers, but you access their Properties in different ways.

To set Share Properties for drives, double-left-click the My Computer icon on your Windows desktop. Place the mouse pointer over the icon of the drive you wish to share, then right-click, then select Sharing... from the pop-up window. If Sharing... isn't one of the choices, you need to enable File and Print Sharing... in the Network Neighborhood Properties as described in the previous section.

Figure 5 shows the Sharing properties for the C drive on my computer at work. I have it set for Full access with no password required. This means that

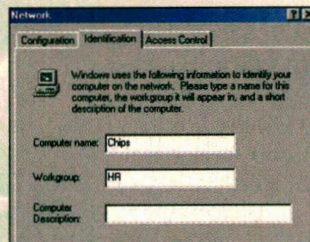


Figure 4 — Network Identification

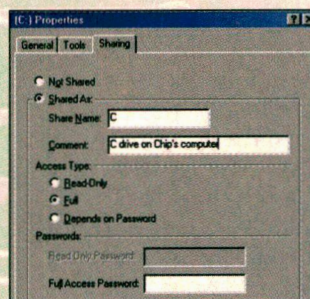


Figure 5 — Drive Sharing

anybody in the network can view, copy, change or remove any file on my C drive. If I had sensitive information on my C drive, I would want, at the very least, to require a password to access it. There are several other alternatives:

- 1) Read-Only will allow files to be viewed and copied, but not changed or removed. If something is entered in the Read-Only password box, only network users that know the correct password will have Read-Only access.
- 2) Depends on Password will allow either Read-Only or Full access. A password will be requested each time a network user tries to access the drive; access rights will be either Read-Only or Full, depending upon the password match.
- 3) Individual folders (directories) within a drive can be separately configured in the same manner. Simply right-click the folder icon, select Sharing... and proceed as before.

Once you've made your selections, left-click Apply.

To set the Share Properties for printers, double-left-click the My Computer icon on your Windows desktop, then double-left-click the Printers folder. Place the mouse pointer over the icon of the printer you wish to share, then right-click and select Sharing... from the pop-up window. (Again, if Sharing... isn't one of the choices, you need to enable File and Print Sharing... in the Network Neighborhood Properties as described in the previous section.)

Figure 6 shows the Share Properties for the printer connected to my computer at work. I have it set so that anybody on the network can use it. If I set a password, only the people who know the password can use it.

Once you've changed the Share Properties settings for the printer, left-click Apply.

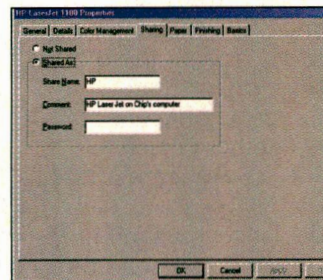


Figure 6 — Printer Sharing

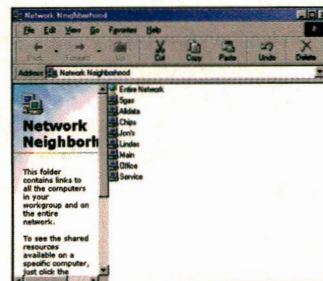


Figure 7 — Network Neighborhood

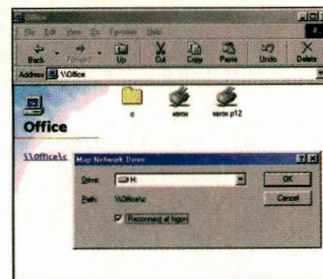


Figure 8 — Map Network Drive



# FRONT COUNTER MECHANICS

## 'Mapping' Shared Drives And Capturing Printers

At this point in the network set up, you should be able to double-left-click the Network Neighborhood icon and see every computer on your network (Figure 7). You can access any shared drive in the network from within Network Neighborhood simply by double-left-clicking the icon for the computer that contains the drive, then double-left-clicking the drive icon. Once the drive is open, you can do whatever the Share Access settings allow for that drive.

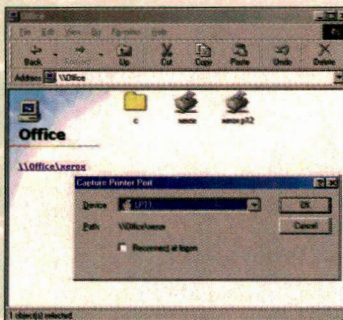


Figure 9 —  
Capture Printer Port

If you only want to occasionally swap files between computers, you need go no further in setting up the network; you're done. If, however, you want to access another computer's files on a regular basis, you need to 'map' that computer's drive. If you want to use another computer's printer, you must first 'capture' it.

To map a network drive, double-left-click the Network Neighborhood icon, then double-left-click the icon of the computer containing the drive you wish to map. Place the mouse pointer over the icon of the drive you wish to map, then right-click. Then select Map Network Drive... from the pop-up window. (If Map Network Drive... is dimmed, the drive isn't shared. Set the Share Properties as described in the previous section.)

Figure 8 shows the drive-mapping window for the Office C drive at my shop. The C drive on the Office computer will be mapped to drive H on my computer; I can select a letter later in the alphabet by left-clicking the down arrow in the Drive box. I've put a checkmark in the Reconnect at Logon box. This tells Windows that I want to automatically map the Office C drive to my drive H each time I turn my computer on. If I omit the checkmark, the drive mapping will be lost when I turn off my computer at the end of the day.

To capture a network printer, double-left-click the Network Neighborhood icon, then double-left-click the icon of the computer connected to the printer you wish to capture. Place the mouse pointer over the icon of the printer, then right-click, then select Capture Printer Port... from the pop-up window.

Figure 9 shows the Capture Printer Port window for the Xerox printer connected to the Office computer at my shop. I've left the Reconnect at Logon box blank.

This means the printer will only be available to my computer during the current session. Once I've turned my computer off, then back on, I'll have to recapture the Xerox printer to use it again.

The Reconnect at Logon feature can lead to confusion. If the computer I've asked to reconnect to happens to be off-line when I turn my computer on, I'll get a message like the one shown in Figure 10.

If I select Yes from this dialog, my computer will attempt to restore the connection the next time I power it up. If I select No, the mapping to the Office C drive will be lost, and I'll have to re-map it. The same holds true for automatically reconnecting to captured printers.

What happens when two computers mutually share their drives and printers? Let's say, for example, one computer has a shop management program on it, another computer has the printer on it, and both computers want to automatically reconnect at logon. Which computer do you turn on first? The answer is this: turn both computers on, but wait until both display the Windows logon dialog shown in Figure 11, then click OK on either one, in either order.

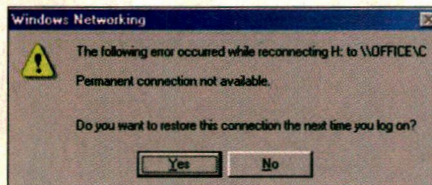


Figure 10 — Windows Networking Error

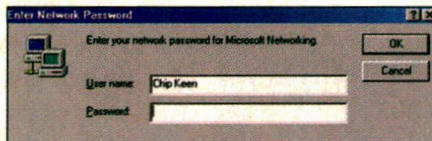


Figure 11 — Windows Logon

## Do-It-Yourself?

That wraps it up. When everything goes the way it's supposed to, building a small computer network really isn't as difficult as it might seem. It only sounds complicated when you attempt to explain it to someone else. If you've followed the assembly instructions in *Parts One* through *Four* of this article, you should have a fully-functional small computer network in your shop. The number of different (and possible) ways to use your network is limited only by your imagination, and by the thickness of your wallet. ■

—By Chip Keen