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3COM 3C509B USER MANUAL



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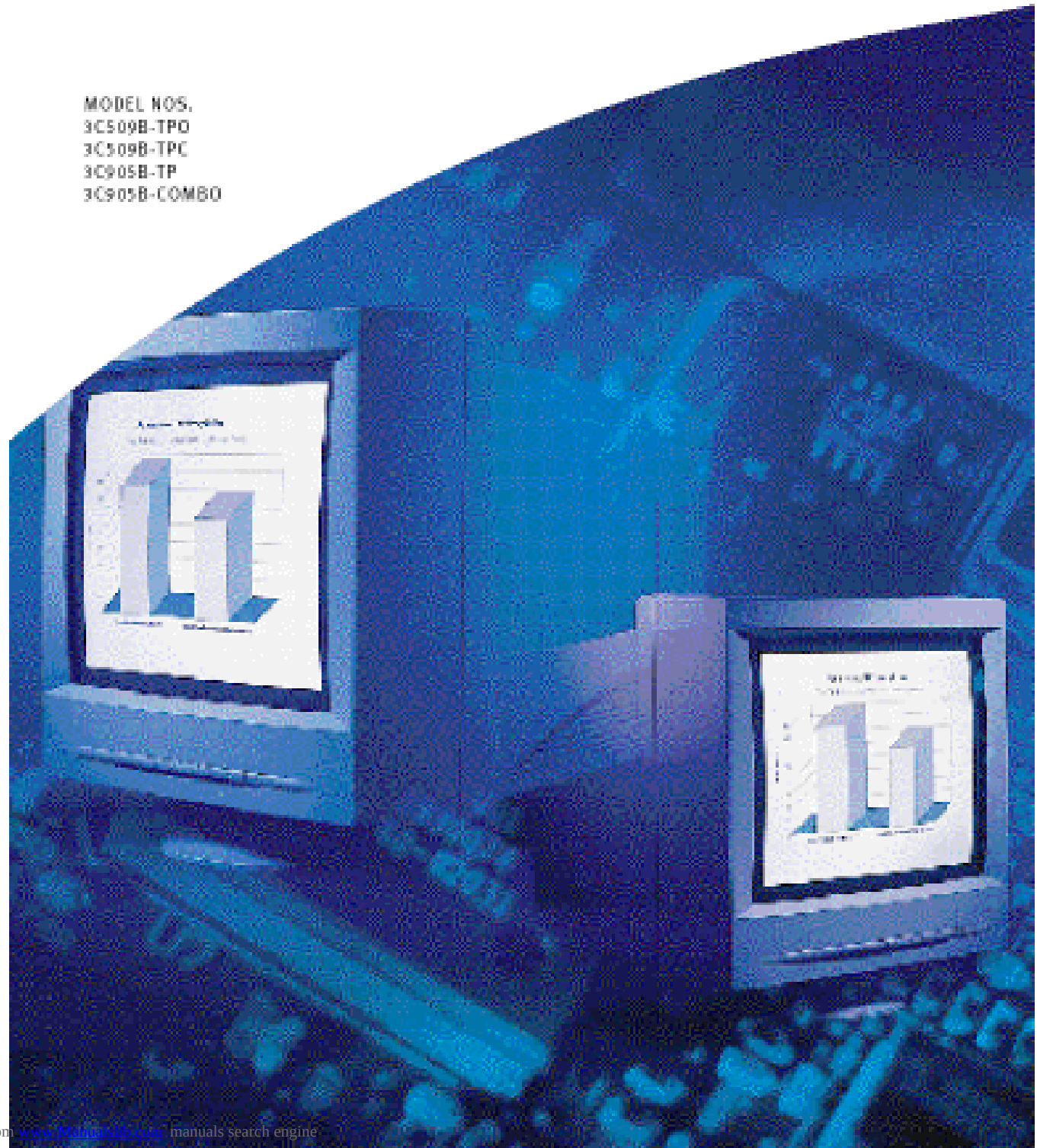
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3Com® EtherLink®

10 Mbps ISA Network Interface Card

User Guide

MODEL NOS.
3C509B-TPO
3C509B-TPC
3C905B-TP
3C905B-COMBO



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EtherLink® 10 Mbps ISA Network Interface Card User Guide

A member of the 3Com® EtherLink family of network interface cards

http://www.3com.com/
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About This Guide

This guide describes how to install, configure, and troubleshoot the 3Com® EtherLink® 10 Mbps ISA network interface card (called the 3C509B NIC in this guide).

This guide is intended for a variety of users, from network administrators who are familiar with computers and understand Ethernet networks, to small office and home users.

If release notes are shipped with your product and the information there differs from the information in this guide, follow the instructions in the release notes.

Most user guides and release notes are available in Adobe Acrobat Reader Portable Document Format (PDF) or HTML on the 3Com World Wide Web site:

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Conventions

Table 1 and Table 2 list conventions that are used throughout this guide.

Table 1 Notice Icons

Icon	Notice Type	Description
	Information note	Information that describes important features or instructions
	Caution	Information that alerts you to potential loss of data or potential damage to an application, system, or device
	Warning	Information that alerts you to potential personal injury

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Table 2 Text Conventions

Convention	Description
`Screen displays`	This typeface represents information as it appears on the screen.
The words "enter" and "type"	When you see the word "enter" in this guide, you must type something, and then press Return or Enter. Do not press Return or Enter when an instruction simply says "type."
Words in *italics*	Italics are used to: ■ Emphasize a point. ■ Denote a new term at the place where it is defined in the text. ■ Identify menu names, menu commands, and software button names. Examples: From the *Help* menu, select *Contents*. Click *OK*.

Related Documentation

The following document is intended to help you quickly install the 3C509B NIC using a standard configuration for a Microsoft Windows 95 or Windows 98 (Windows 95/98) environment:

Quick Guide for the EtherLink 10 Mbps ISA Network Interface Card

The quick guide is for users who choose the Express installation option within the 3Com Installation Wizard to install and configure the 3C509B NIC. Express installation is the choice for typical users who want a fast and easy installation method with minimal user intervention.

Express installation loads the latest Windows 95/98 drivers from the *EtherDisk* diskette, automatically tests the NIC and your network, and dynamically binds TCP/IP to the NIC.

If you do not have a DHCP server on your network, or if you have a static TCP/IP address, you must use the Custom installation option instead to install and configure the NIC. The Custom installation option is described in this user guide.

If your PC is not running Windows 95/98, you may not use the 3Com Installation Wizard. For installation instructions, see the appropriate chapter for your operating system in this user guide.

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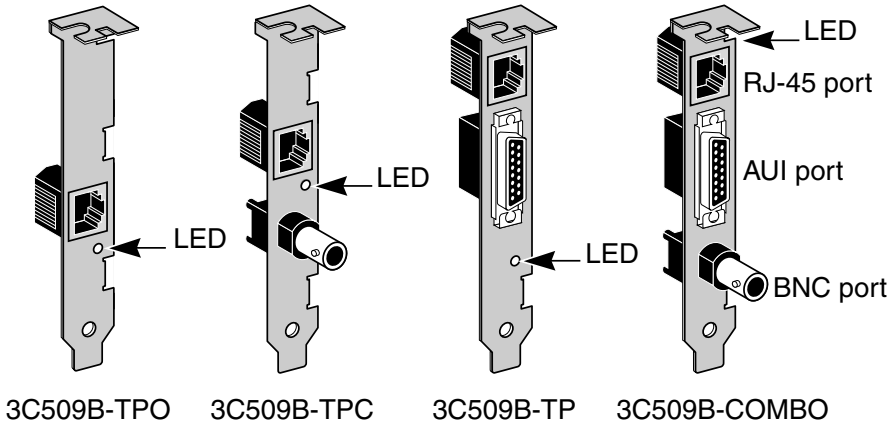
1 NETWORK INTERFACE CARD INSTALLATION

This chapter describes the 3C509B network interface card (NIC), provides procedures for installing the NIC, and describes the correct network cable to use for connecting each version of the NIC to an Ethernet network.

Network Interface Card Overview

The four versions of the 3Com® EtherLink® 10 Mbps ISA 3C509B NIC are shown in Figure 1. Use the appropriate version to connect your ISA or EISA PC to an Ethernet network using up to three different types of media.

Figure 1 3C509B Network Interface Card Versions



Each NIC has a light-emitting diode (LED) called the link LED, which indicates whether there is an active connection between the NIC and the hub. See "Link LED" on page 25 for a more complete description of this function.

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Table 3 shows the cable, connector, transceiver, and maximum network segments for the various 3C509B NIC models.

Table 3 Parameters for 3C509B NIC Models

NIC Model	Cable	Connector	Transceiver	Maximum Network Segment
3C509B-TPO	Category 3, 4, or 5 unshielded twisted-pair (10BASE-T)	RJ-45	On-board	328 ft/100 m
3C509B-TPC	Category 3, 4, or 5 unshielded twisted-pair (10BASE-T)	RJ-45	On-board	328 ft/100 m
	10BASE2 thin Ethernet coaxial	BNC	On-board	605 ft/185 m
3C509B-TP	Category 3, 4, or 5 unshielded twisted-pair (10BASE-T)	RJ-45	On-board	328 ft/100 m
	10BASE5 thick Ethernet coaxial	15-pin AUI	External	1640 ft/500 m
3C509B-COMBO	Category 3, 4, or 5 unshielded twisted-pair (10BASE-T)	RJ-45	On-board	328 ft/100 m
	10BASE5 thick Ethernet coaxial	15-pin AUI	External	1640 ft/500 m
	10BASE2 thin Ethernet coaxial	BNC	On-board	605 ft/185 m

Before You Begin

Before you install the 3C509B NIC, verify that you have all of the components. If any of these items are damaged or missing, contact your shipper or network supplier.

- EtherLink 10 Mbps ISA NIC (3C509B)
- *EtherLink 10 Mbps ISA Network Interface Card User Guide* (this guide)
- *Quick Guide for the EtherLink 10 Mbps ISA Network Interface Card*
- 3Com 3C509B *EtherDisk* diskettes 1 and 2

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You also need to know the following about your network environment:

- The kind of network cabling that is used to connect to the network at your site. You must use the same kind of network cable, and the NIC that you install in your PC must have a port that matches the connector on the network cable that you use.
- Your network protocol (IPX, IP, NetBEUI, or TCP/IP).

The next step is to install the NIC in the PC.

If your PC is running Windows 95 or Windows 98, before you install the NIC in your PC, be sure to perform the preinstallation procedure. See "Performing the Preinstallation Procedure" on page 30.

Installing the NIC

The following instructions apply to installing the 3C509B NIC in most PCs. If the instructions are not appropriate for your PC, see the documentation that accompanied your PC. You must have one ISA or EISA slot available in your PC in which to install the NIC.

CAUTION: *Each NIC is packed in antistatic packaging to protect it during shipment. Before handling the NIC, touch the bare metal case of your PC. While you are handling the NIC, wear a wrist strap attached to the PC chassis.*

If your PC is running Windows 95 or Windows 98, do *not* install the NIC in your PC until you have run the preinstallation procedure described in Chapter 2. If you do not run the preinstallation procedure, Windows will install the default driver and the 3Com NIC Diagnostic program will not be installed on your hard disk.

Remove all jewelry from your hands and wrists and use only insulated or nonconducting tools.

Follow these steps to install the NIC in your PC:

1 **Turn off power to the PC, and remove the power cord from the PC.**

2 **Unscrew the cover screws and remove the cover.**

On some PCs, it may be necessary to remove all cables before the cover can be removed.

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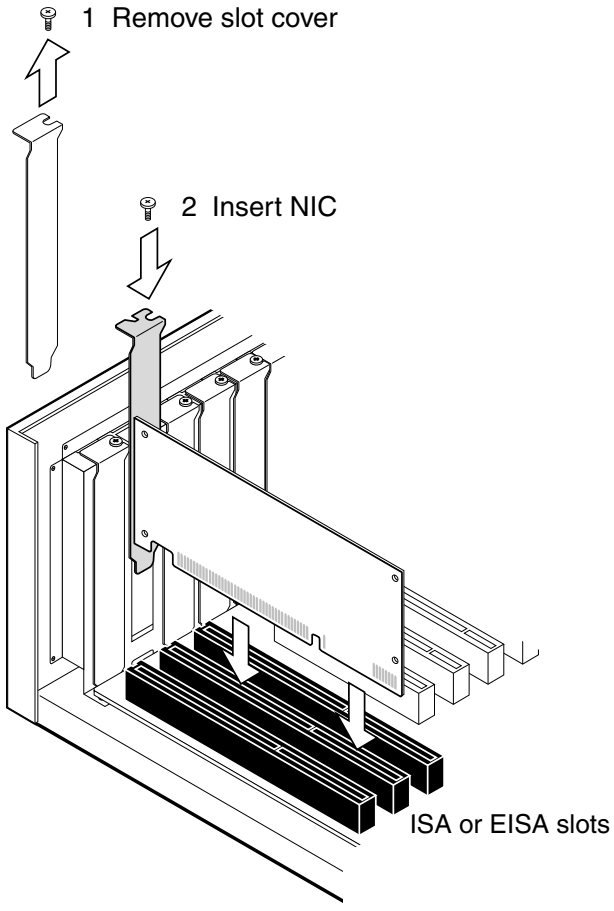
3 Locate an available ISA or EISA slot and remove the screw from the corresponding backplate (Figure 2). Save the screw.

Some PCs have both ISA and PCI slots. Make sure that you install the EtherLink 10 ISA NIC in either an ISA or an EISA slot. See Figure 2.

PCI slots, the shortest of the three types of slots, are white. The longer ISA slots are black. EISA slots, the longest, are brown.

The 3C509B NIC is shipped configured to work in an ISA slot. If you install the NIC in an EISA slot, see the instructions in the next section, "Using an EISA Slot."

Figure 2 Installing the 3C509B NIC



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4 **Remove and discard the backplate.**

5 **Ensure that the shape and length of the edge connector on the NIC match the slot that you intend to use (Figure 2).**

6 **Carefully insert the NIC in the slot. Press firmly with steady pressure to ensure that the NIC is fully seated in the slot.**

When the NIC is correctly inserted in the slot, the NIC backplate is flush with the PC backplate.

7 **Secure the NIC with the backplate screw.**

8 **Replace the PC cover. Reinsert and tighten the cover screws.**

9 **Reconnect all power and peripheral cables.**

Using an EISA Slot

The 3C509B NIC is shipped configured to work in ISA slots. If you install the NIC in an EISA slot, complete the hardware installation instructions in this chapter, and then reconfigure the NIC from ISA to EISA mode according to the instructions in "Changing NIC Configuration from ISA to EISA" on page 87.

Windows 95/98 or Windows NT

If your EISA-bus PC is running Windows 95/98 or Windows NT, do the following:

1 **Disable the Plug and Play feature on the NIC. (See "Disabling Plug and Play on the NIC" on page 41.)**

2 **Configure the NIC for a non-Pug and Play BIOS. (See "Configuring the NIC for a Non-Plug and Play PC" on page 43.)**

3 **For Windows 95/98, follow instructions in Chapter 2 and Chapter 3; for Windows NT, follow instructions in Chapter 4.**

Other Operating Systems

If your EISA-bus PC is running an operating system other than Windows 95/98 or Windows NT, follow the instructions in Chapter 5.

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Connecting to the Network

This section describes how to connect the 3C509B NIC to an Ethernet network using an RJ-45, BNC, or AUI port. Each 3C509B NIC provides different network ports, as shown in Figure 1 on page 17.

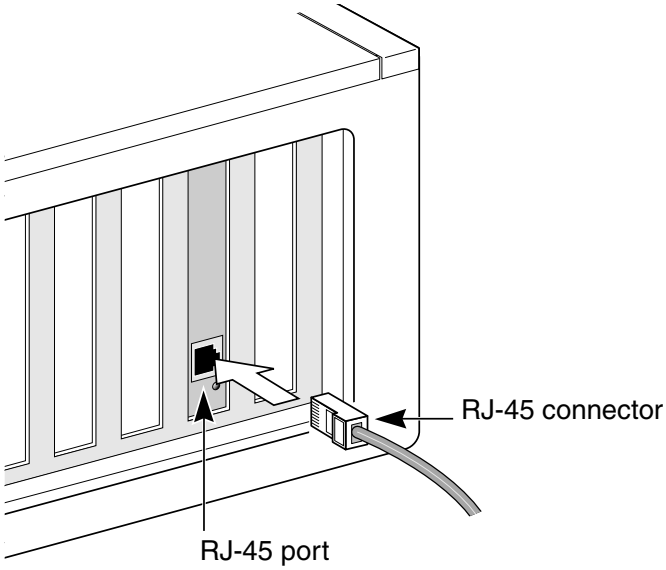
When you first install the NIC and power-on the PC, the LED on the NIC backplate lights, but the link is not active. To enable the link, you must load the network drivers. See "Link LED" on page 25 for more information.

Connecting an RJ-45 Port to the Network

Follow these steps to connect the RJ-45 port on the 3C509B-TPO, TPC, TP, and COMBO NICs to the network:

1 **Plug the RJ-45 connector on the twisted-pair network cable into the RJ-45 port on the NIC backplate, as shown in Figure 3.**

Figure 3 Connecting to the RJ-45 Port on the 3C509B NIC



2 **Connect the other end of the network cable to an active network port.**

Go to "Link LED" on page 25.

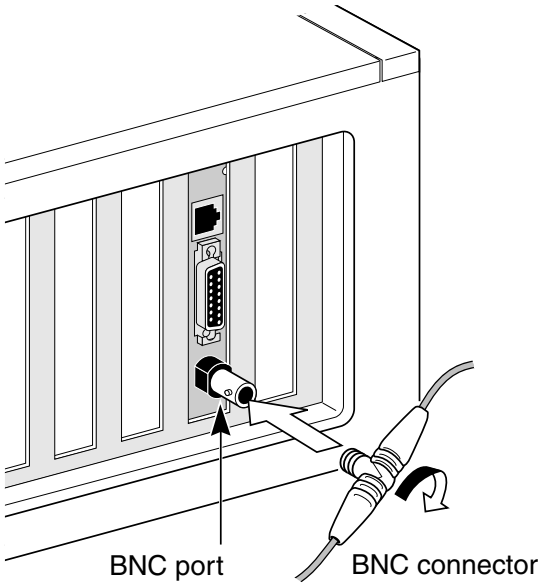
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Connecting a BNC Port to the Network

Follow these steps to connect the BNC port on the 3C509B-TPC and COMBO NICs to the network:

1 **Connect the BNC connector on the thin Ethernet coaxial cable to the BNC port on the NIC, as shown in Figure 4.**

Figure 4 Connecting to the BNC Port on the 3C509B-TPC NIC



2 **Connect the other end of the network cable to another PC or a 50-ohm terminator.**

Go to "Link LED" on page 25.

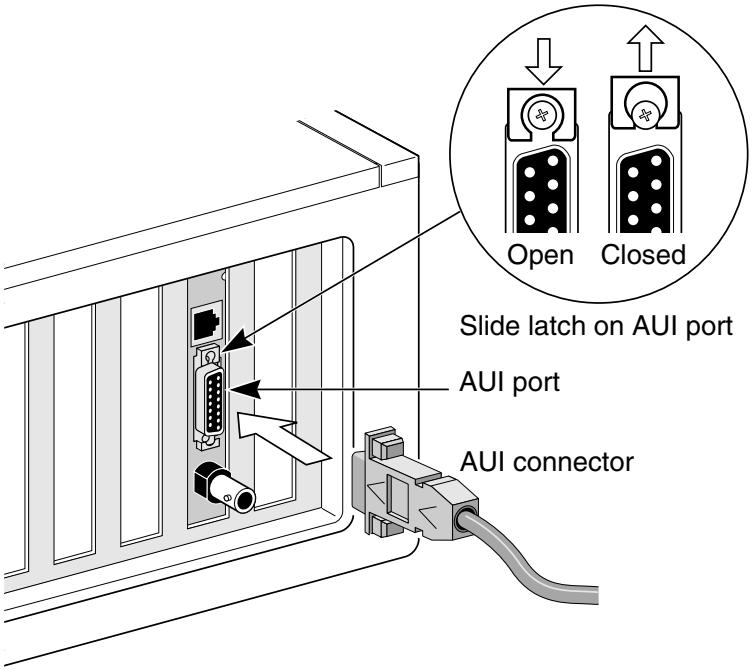
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Connecting an AUI Port to the Network

Follow these steps to connect the AUI port (Figure 5) on the 3C509B-TP and COMBO NICs to the network:

1 **Locate the 15-pin AUI port on the NIC and move the slide latch down to the open position.**

Figure 5 Connecting to the AUI Port on the 3C509B-COMBO NIC



2 **Connect the thick Ethernet coaxial cable to the AUI port on the NIC.**

This connector will attach only one way. Orient the AUI connector to match the AUI port on the NIC.

3 **Move the slide latch up to the closed position to lock the AUI connector in place.**

4 **Connect the other end of the network cable to an external transceiver.**

Go to the next section.

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Link LED

Each 3C509B NIC has a light-emitting diode (LED) that indicates whether an active 10BASE-T network connection exists between the NIC and the hub. The LED flashes if the polarity of the network cable is reversed.

When you first install the NIC and power-on the computer, the LED lights, but the network link is inactive. To enable the network link, you must install the network driver.

Table 4 describes the LED states.

Table 4 NIC LED Interpretation

LED State	Meaning
On	If drivers are installed, the connection is active. If drivers are not installed, this state indicates that the NIC is receiving power.
Off	If the LED is not lit, something is preventing the connection between the NIC and the hub.
Blinking	If the LED is blinking, the cable polarity is reversed. Try a different network cable or contact your network support representative.

If the NIC LED indicates a problem, perform the following steps:

1 **Ensure that the network hub and the network cable connected to your EtherLink 10 ISA NIC comply with the 10BASE-T specifications.**

2 **Ensure that the hub is powered on.**

You have completed the hardware installation. To install software:

- For PCs running Windows 95 or Windows 98, go to Chapter 2.
- For PCs running Windows NT, go to Chapter 4.
- For PCs running DOS, Windows 3.x, or Windows for Workgroups, go to Chapter 5.

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2 CUSTOM INSTALLATION SETUP FOR WINDOWS 95/98

This chapter describes how to set up your Windows 95 or Windows 98 (Windows 95/98) PC so that you can use the 3Com Installation Wizard to install and configure a 3C509B NIC.

If your PC is running Windows NT, go to Chapter 4. If your PC is running DOS, Windows 3.1, or Windows for Workgroups, go to Chapter 5.

You must first determine whether a Plug and Play BIOS is installed in your Windows 95/98 PC. See "Performing the Preinstallation Procedure" on page 30.

If you are running Windows 95/98 with a Plug and Play PC, you have the option to perform an Express installation. See the *Quick Guide for the EtherLink 10 Mbps ISA Network Interface Card* for Express installation procedures.

Selecting the Type of Installation

You can use the 3Com Installation Wizard to install and configure the NIC for a Windows 95/98 PC in either of two ways:

- Express installation
- Custom installation

Express Installation

Express installation, the installation method that most typical Windows 95/98 users choose, is fast and easy and requires only minimal user intervention. See the *Quick Guide for the EtherLink 10 Mbps ISA Network Interface Card* that came with the 3C509B NIC for information on how to perform the Express installation.

Express installation loads the latest drivers from the *EtherDisk* diskette, automatically tests the NIC and your network, and dynamically binds TCP/IP to the NIC.

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If you do not have a DHCP server on your network, or if you have a static TCP/IP address, you must use the Custom installation option instead to install and configure the NIC.

Custom Installation

Custom installation is for knowledgeable network users who need to use different configuration settings or change test sequences for automated installations. This option is for network administrators, MIS departments, and value-added resellers (VARs) who need to automate the installation process. Custom installation also enables you to save the configuration settings and test options that you select during the installation for use in future installations.

Custom installation loads the latest drivers from the *EtherDisk* diskette, automatically tests the NIC and your network, and configures TCP/IP (dynamic or static address). The Custom option also allows you to change configuration settings, disable tests, and save installation settings for future installations.

If you are installing the NIC in a Windows 95/98 PC that does not have a Plug and Play BIOS installed, you must install the NIC using the Custom installation option. (To determine whether your PC has a Plug and Play BIOS, see "Performing the Preinstallation Procedure" on page 30.)

Multiple NIC Installations

Install and configure each NIC individually according to the appropriate procedures (Plug and Play or non-Plug and Play) for PCs running Windows 95/98. See Chapter 1, Chapter 2, and Chapter 3.

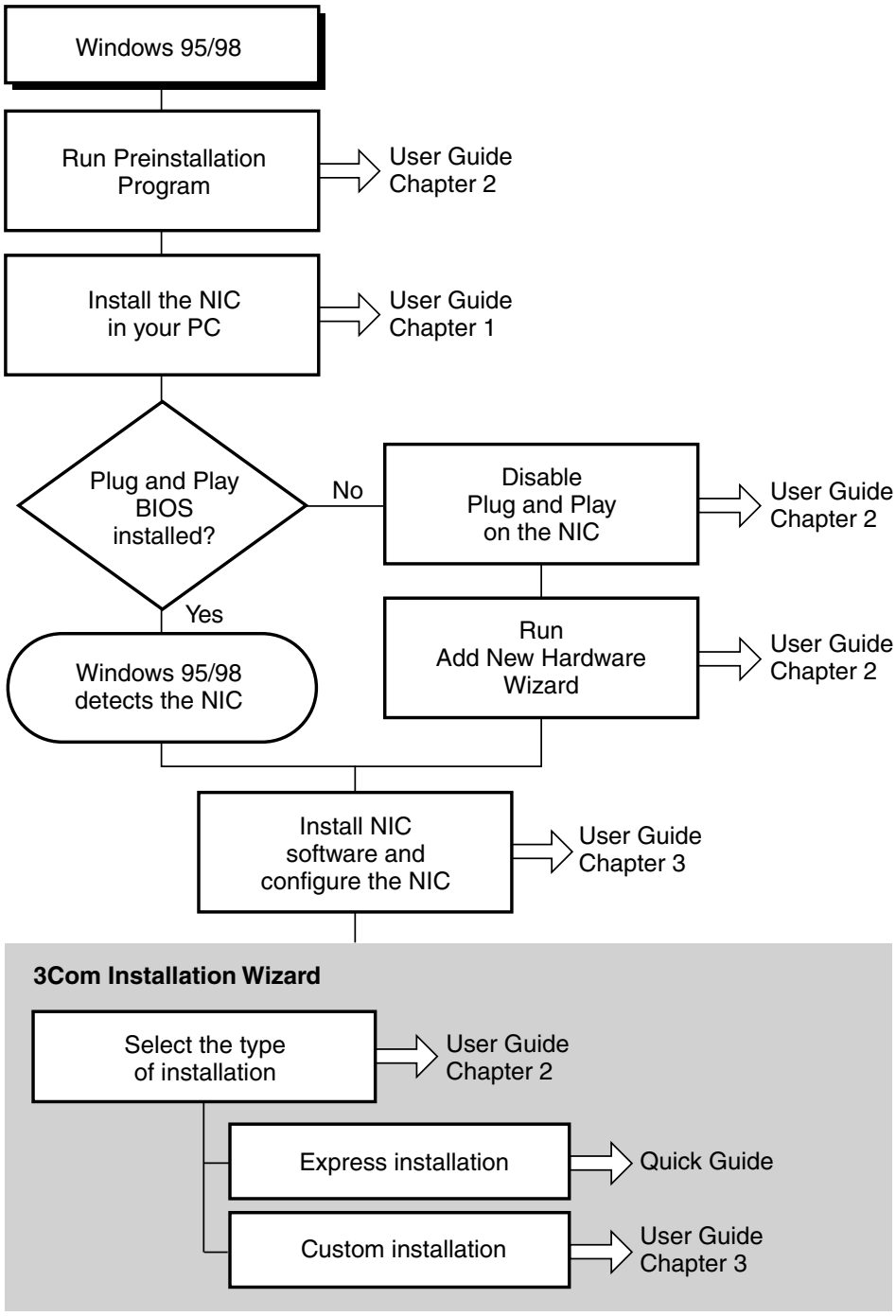
Windows 95/98 Setup

This section describes how to set up your Windows 95/98 environment to install and configure the 3C509B NIC using the 3Com Installation Wizard Custom installation option. This section includes procedures for PCs with or without a Plug and Play BIOS.

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Figure 6 provides a graphical overview of the steps required for installing and configuring the 3C509B NIC under Windows 95/98.

Figure 6 Windows 95/98 NIC Installation Overview



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Performing the Preinstallation Procedure

Preinstallation is important for proper setup of your Windows 95/98 system environment. It deletes the default .INF file and the default Windows driver for the NIC. You must perform this procedure to ensure that the latest NIC driver and the 3Com NIC Diagnostics program (a Windows-based program) can be successfully installed. If you do not perform preinstallation, the 3Com Installation Wizard will not run successfully.

Follow these steps to perform the preinstallation procedure:

1. **Turn the PC power on and boot Windows 95/98.**
2. **Click *Start* in the Windows 95/98 taskbar, and then click *Run*.**
3. **Insert *EtherDisk* diskette 2 in drive A, and then enter:**

   `a:\preinst1`
4. **Click *OK*.**

   - If your PC supports the Windows 95/98 Plug and Play feature, the Preinstallation Software screen appears, as shown in Figure 7, displaying a list of available IRQs.

     Click *OK*. The next step is to install the NIC in your PC (see Chapter 1). Then go to "NIC Configuration in a Windows 95/98 Plug and Play PC" to configure the NIC.

Figure 7 Preinstallation Software Screen



Record the displayed IRQs. You need to verify that an available IRQ is assigned to the NIC when the NIC Configuration Settings screen (Figure 28 on page 49) appears later in the 3Com Installation Wizard.

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- If your PC does not support the Windows 95/98 Plug and Play feature, the screen shown in Figure 8 appears. Click *OK* and go to "Disabling Plug and Play on the NIC" on page 41.

Figure 8 Non-Plug and Play BIOS Detected Screen



To install the NIC using the 3Com Installation Wizard Express installation option, see the Quick Guide for the EtherLink 10 Mbps ISA Network Interface Card *that shipped with the 3C509B NIC. To set up the NIC for installation using the 3Com Installation Wizard Custom installation option, go to the next section.*

NIC Configuration in a Windows 95/98 Plug and Play PC

This section describes how to set up your system environment when installing the NIC in a Windows 95/98 PC that has a Plug and Play BIOS installed.

Configuring the NIC for Windows 95, Version 950

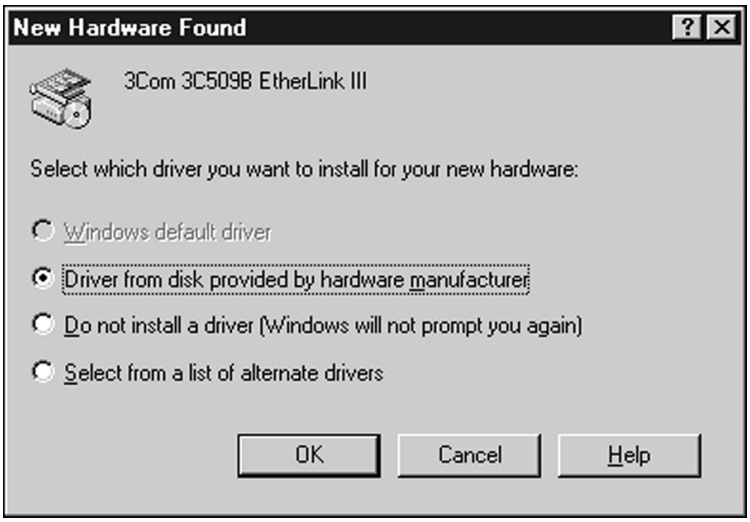
Follow these steps to configure the NIC in a PC that has a Plug and Play BIOS installed, and that is running Windows 95 version 950 (also known as version 950a, version A, or the "retail" version):

1 **Turn the power on and boot Windows 95.**

The New Hardware Found screen appears, as shown in Figure 9.

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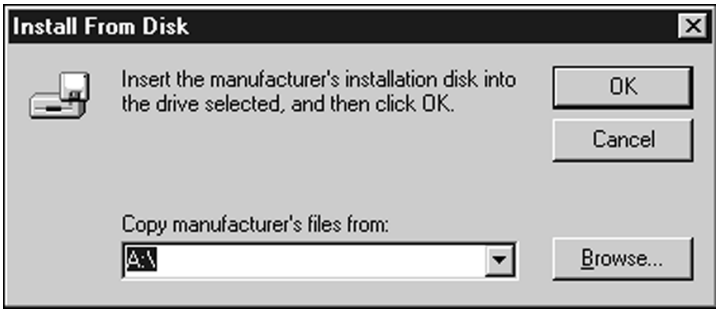
Figure 9 New Hardware Found Screen



2 Insert *EtherDisk* diskette 2 in drive A, and click *OK*.

The Install From Disk screen appears.

Figure 10 Install From Disk Screen



3 Make sure that the drive letter in the field corresponds to the diskette drive containing the *EtherDisk* diskette. Click *OK*.

Windows 95 copies files from the *EtherDisk* diskette to the PC hard drive and builds a driver information database.

- If you have never assigned computer and workgroup names for this PC, Windows displays the Network screen (Figure 11). In this case, continue at step 4.
- If you have previously assigned computer and workgroup names for this PC, the 3Com Installation Wizard starts. In this case, go to Chapter 3. You can change the Network screen fields later, as described in "Identifying Your PC on the Network" on page 59.

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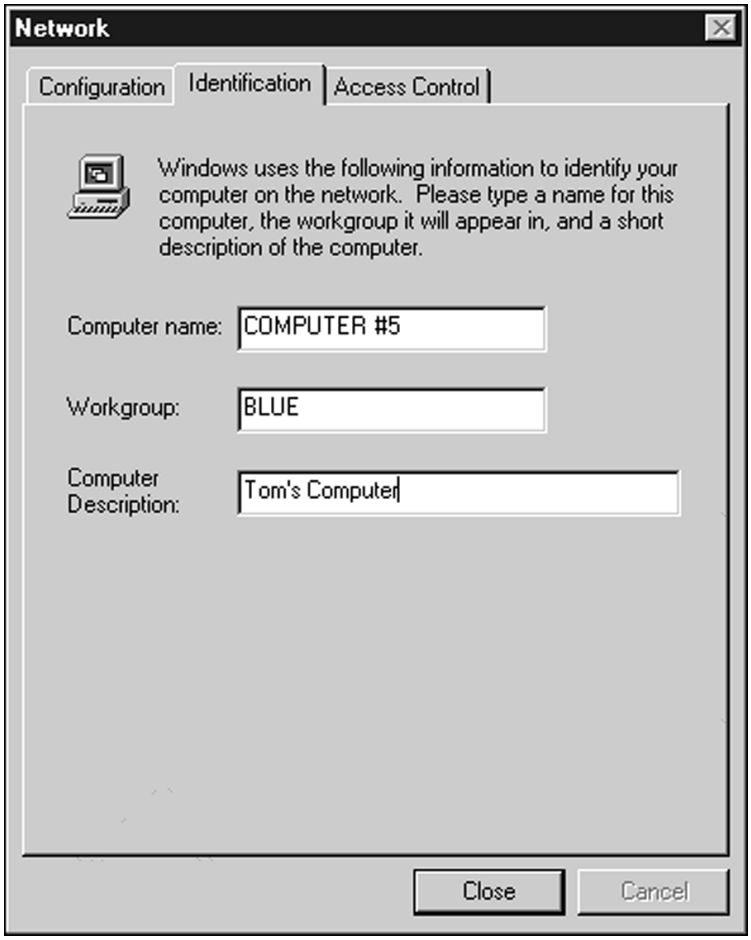
Figure 11 Network Screen



4 Click *OK*.

The Identification tab of the Network screen appears, as shown in Figure 12.

Figure 12 Identification Tab of the Network Screen



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5 Type in names for the PC and its workgroup according to the following guidelines:

Computer name	Identifies the computer on the network for other users. This entry must be a unique name of 15 characters or fewer, containing no spaces.
Workgroup	Identifies the group to which your computer belongs. If you are setting up a simple peer-to-peer network, this entry must be the same for all the PCs in your network.
Computer Description	Displays additional details to other users on the network about this PC. Filling this field is optional.

6 Click *Close*.

The 3Com Installation Wizard starts. Go to Chapter 3.

Configuring the NIC for Windows 95, Version 950b

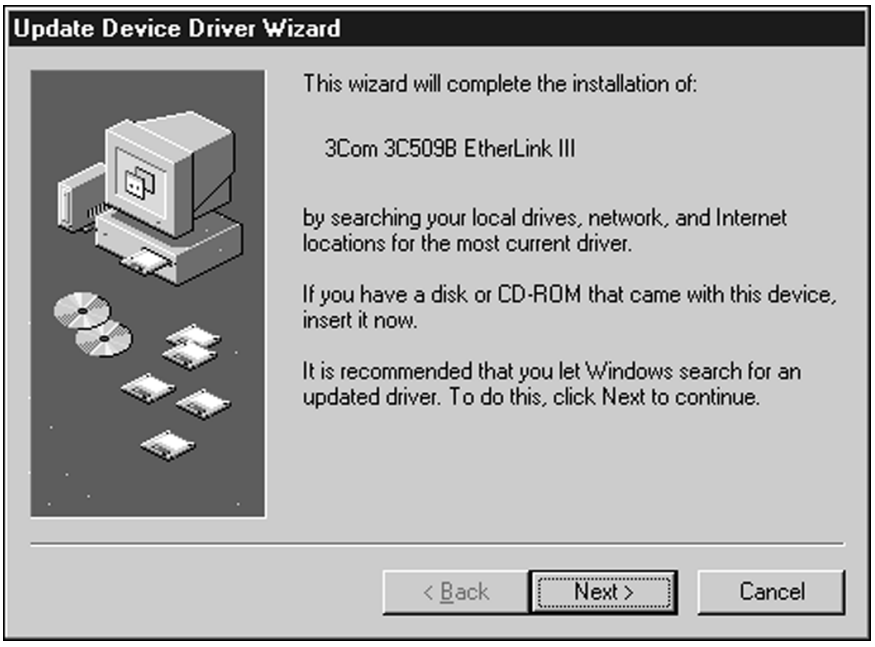
Follow these steps to configure the NIC in a PC that has a Plug and Play BIOS installed, and that is running Windows 95 version 950b (also known as version B, OSR2, or the "OEM" version):

1 Turn the power on and boot Windows 95.

The New Hardware Found screen appears. Then the Update Device Driver Wizard screen is displayed, as shown in Figure 13.

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Figure 13 Update Device Driver Wizard Screen

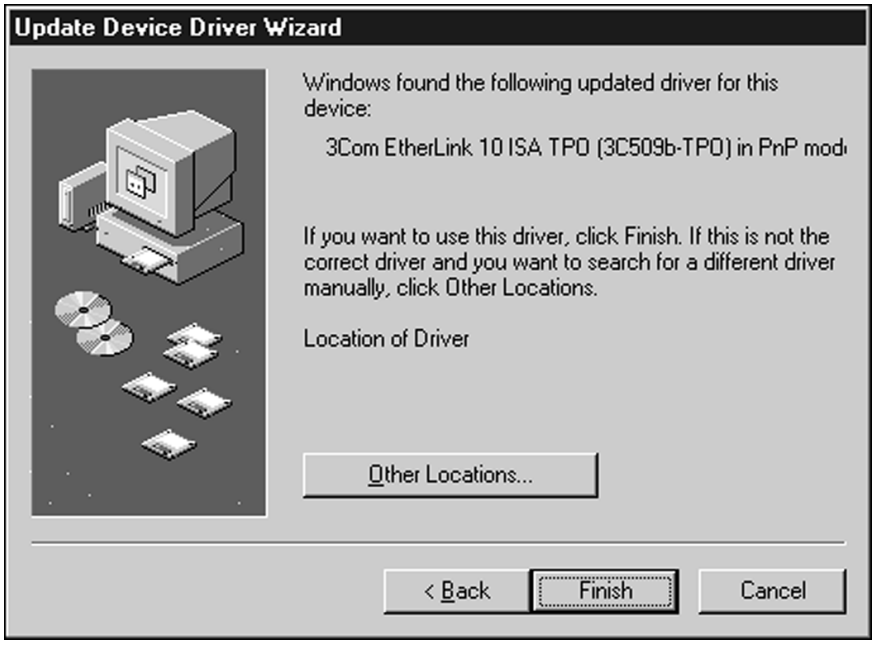


2 Insert *EtherDisk* diskette 1 in drive A.

3 Click *Next*.

Windows 95 displays the Update Device Driver Wizard again, this time confirming that it has found the updated NIC driver.

Figure 14 Updated Driver Found Screen



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4 Click *Finish*.

The Insert Disk dialog box appears, prompting you for the disk labeled:

```
3Com EtherDisk for EtherLink 10 ISA Family
Adapters (Disk 1)
```

5 Click *OK*.

The Copying Files dialog box appears, prompting you for the location of files on *EtherDisk* diskette 1:

6 If it is not already displayed in the Copy files from entry box, type:

```
a:\
```

7 Click *OK*.

Windows 95 copies files from the *EtherDisk* diskette to the PC hard drive and builds a driver information database.

- If you have never assigned computer and workgroup names for this PC, Windows displays the Network screen (Figure 15). In this case, continue at step 8.
- If you have previously assigned computer and workgroup names for this PC, the 3Com Installation Wizard starts. In this case, go to Chapter 3. You can change the Network screen fields later, as described in "Identifying Your PC on the Network" on page 59.

Figure 15 Network Screen

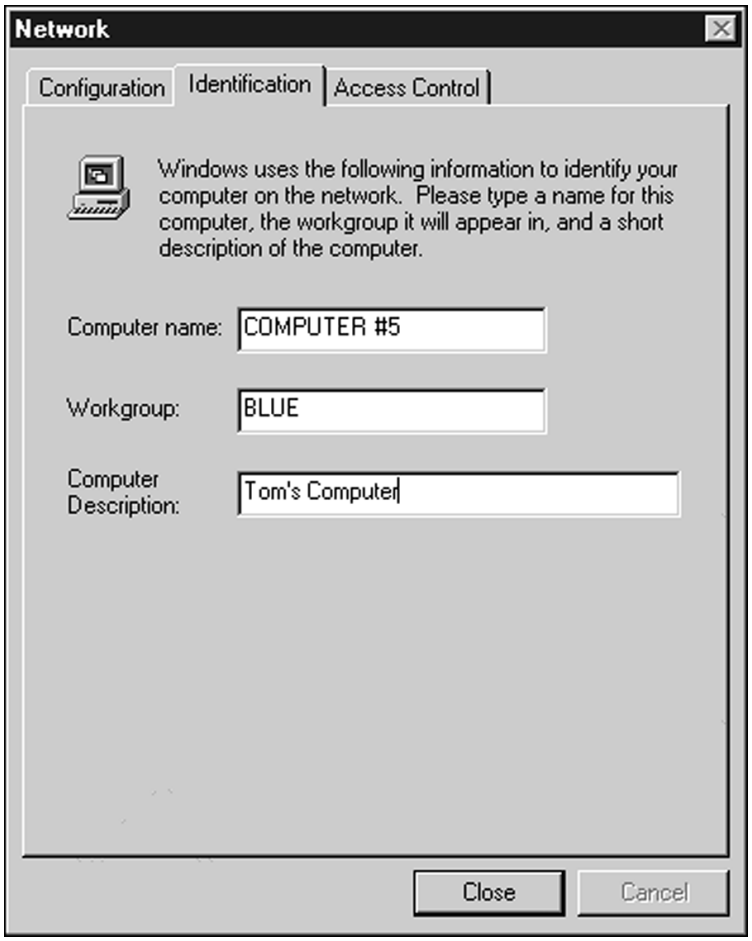


8 Click *OK*.

The Identification tab of the Network screen appears, as shown in Figure 16.

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Figure 16 Identification Tab of the Network Screen



9 Type in names for the PC and its workgroup according to the following guidelines:

Computer name	Identifies the computer on the network for other users. This entry must be a unique name of 15 characters or fewer, containing no spaces.
Workgroup	Identifies the group to which your computer belongs. If you are setting up a simple peer-to-peer network, this entry must be the same for all the PCs in your network.
Computer Description	Displays additional details to other users on the network about this PC. Filling this field is optional.

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10 Click *Close*.

The Insert Disk dialog box then appears, prompting you for the disk labeled:

`3Com NIC Windows 95/98 Installation Media`

11 Click *OK*.

12 If it is not already displayed in the Copy files from entry box, type:

`a:\`

13 Click *OK*.

The 3Com Installation Wizard starts. Go to Chapter 3.

Configuring the NIC for Windows 98

This section describes how to set up your system environment when installing the NIC in a Windows 98 PC that has a Plug and Play BIOS installed.

Follow these steps to configure the NIC:

1 Turn the power on and boot Windows 98.

The New Hardware Found screen appears. Then the Add New Hardware Wizard screen is displayed.

Figure 17 Add New Hardware Wizard Screen (1)



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2 Insert *EtherDisk* diskette 1 in drive A, and then click *Next*.

Windows 98 asks whether you want Windows to search for the best driver or display a list of drivers from a specific location, as shown in Figure 18.

Figure 18 Add New Hardware Wizard Screen (2)



3 Select *Search for the best driver for your device (Recommended)*, and then click *Next*.

Windows 98 requests that you select the drive locations for its driver search, as shown in Figure 19.

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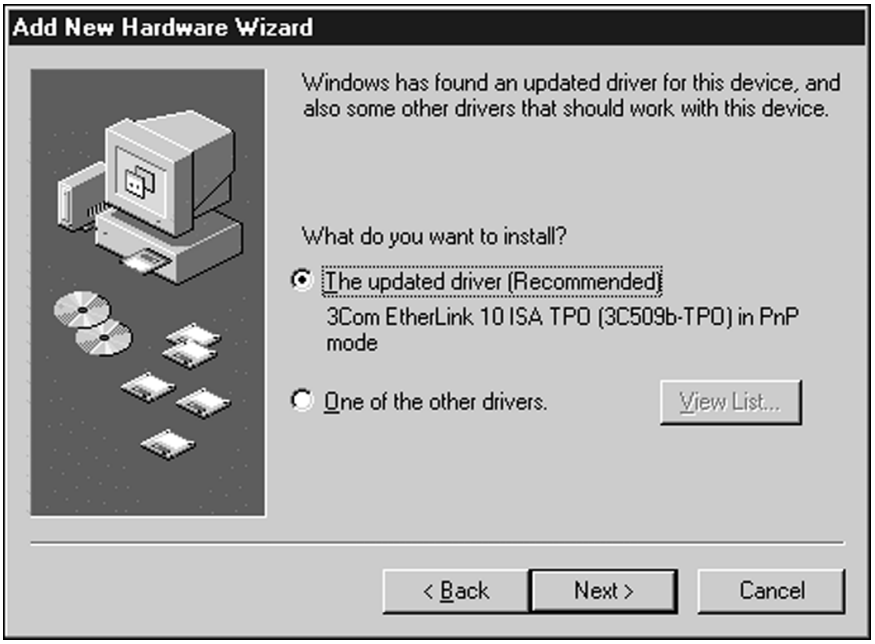
Figure 19 Add New Hardware Wizard Screen (3)



4 Select *Floppy disk drives*, and then click *Next*.

Windows locates the driver and requests that you verify that you want to install it, as shown in Figure 20.

Figure 20 Add New Hardware Wizard Screen (4)



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5 Select *The updated driver (Recommended)* and then click *Next*.

Windows again requests that you verify that you want to install the displayed driver, as shown in Figure 21.

Figure 21 Add New Hardware Wizard Screen (5)



6 Click *Next*.

Windows 98 copies the required files to your hard disk and builds the driver information database.

The 3Com Installation Wizard starts. Go to Chapter 3.

Disabling Plug and Play on the NIC

If your Windows 95/98 PC does not support Plug and Play, you must disable Plug and Play on the NIC before you can install the NIC software.

Follow these steps to disable Plug and Play on the NIC:

1 After installing the NIC in the PC, turn the power on and boot Windows 95/98.

2 Insert *EtherDisk* diskette 2 in drive A.

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3 Click *Start* in the Windows 95/98 taskbar, and then click *Run*.

4 Enter:

`a:\pnpdsabl.bat`

DOS PNPDSABL generates the messages shown in Figure 22. Plug and Play is disabled on the NIC.

Figure 22 DOS PNPDSABL Screen for Windows 95



5 If you are running Windows 95, click the *X* in the upper right corner of the screen to close the DOS screen. If you are running Windows 98, enter `exit` to return to Windows 98.

6 Remove the diskette from drive A.

7 Shut down the PC and turn the power off, then on.

The NIC is not detected when the PC reboots.

The next step is to configure the NIC.

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Configuring the NIC for a Non-Plug and Play PC

This section describes the procedure to install NIC software and configure the NIC when Plug and Play has been disabled on the NIC in a Windows 95/98 PC.

Follow these steps to install the NIC software and configure the NIC:

1 **Double-click the My Computer icon, double-click the Control Panel icon, and then double-click the Add New Hardware icon.**

The Add New Hardware Wizard starts and displays a warning to close all open programs before continuing. After closing all open programs, go to step 2.

2 **Click *Next.***

You are prompted to let Windows search for your new hardware.

If you are running Windows 98, you are warned that the screen may go blank while Windows searches for any new Plug and Play device. Click *Next*.

Windows may list all the devices it found and ask you if the device is listed below. Select *No, the device isn't in the list*, and click *Next*. Windows responds that it can now search for non-Plug and Play hardware.

3 **Select *No, I want to select the hardware from a list*, and then click *Next*.**

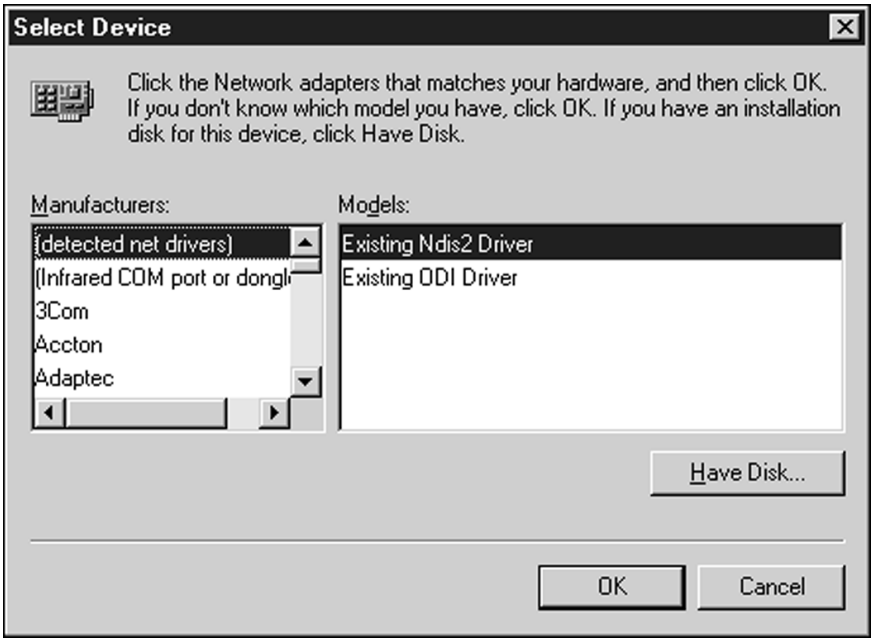
The Add New Hardware Wizard displays the Hardware Types list box.

4 **Select *Network adapters* and click *Next*.**

Windows 95 updates the driver database and then displays the Select Device screen, as shown in Figure 23.

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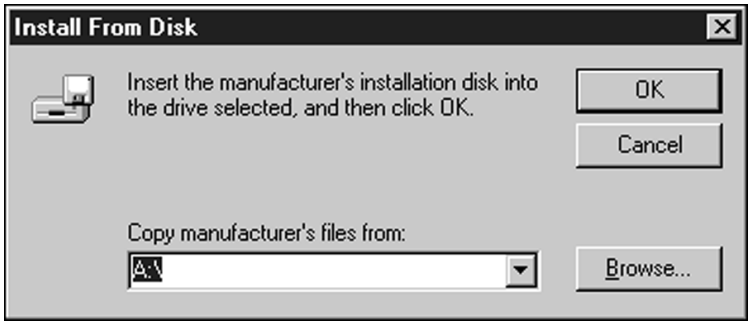
Figure 23 Select Device Screen



5 Insert *EtherDisk* diskette 1 in drive A and click *Have Disk.*

The Install from Disk screen appears.

Figure 24 Install from Disk Screen



6 If it is not already displayed in the Copy manufacturer's files from entry box, enter:

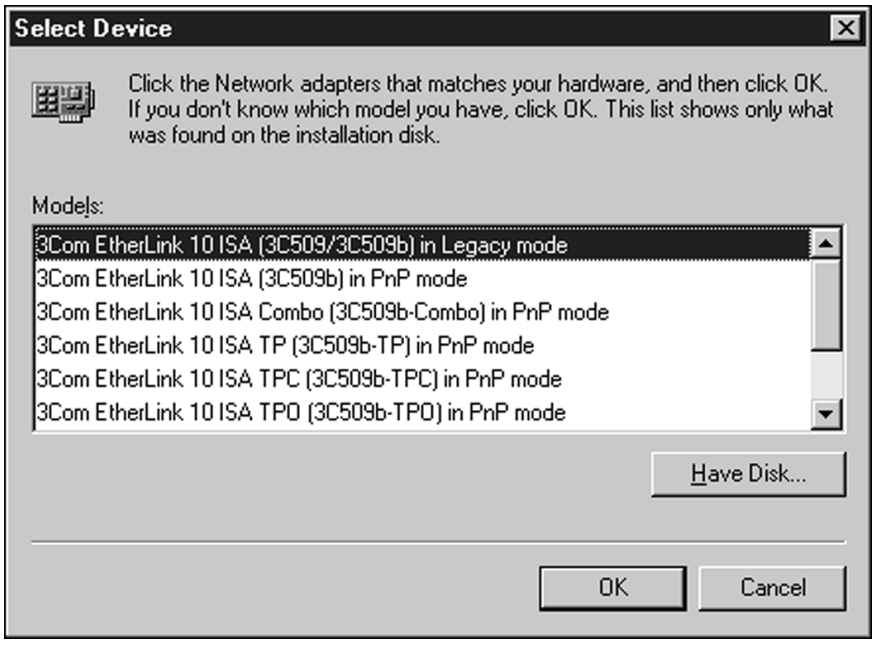
`a:\`

7 Click *OK*.

The Select Device screen shown in Figure 25 appears, with *3Com EtherLink 10 ISA (3C509/3C509b) in Legacy mode* selected.

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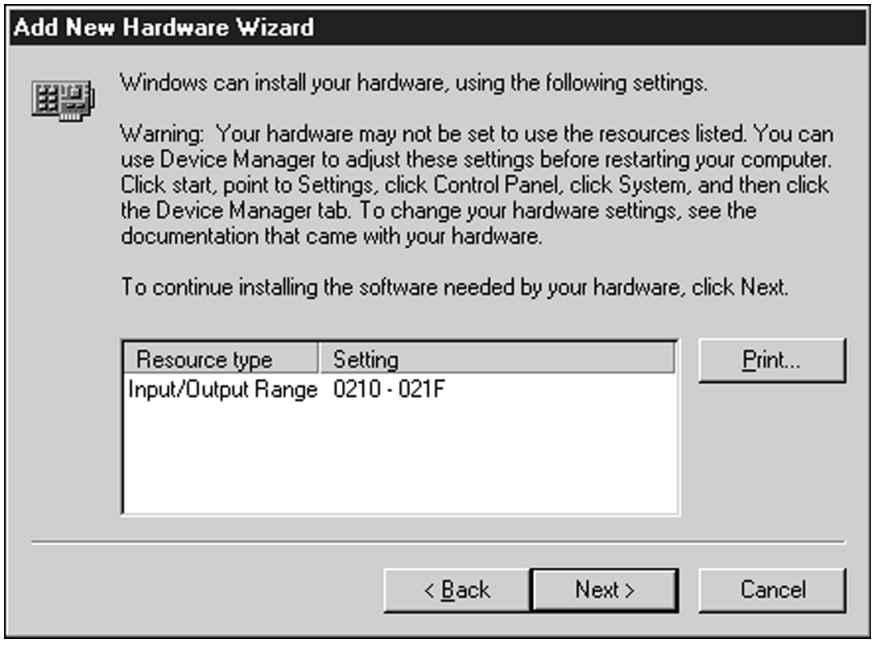
Figure 25 Select Device Screen



8 Click *OK.*

Windows copies the required files and updates the driver database. The Add New Hardware Wizard displays a screen showing the I/O range assigned to the 3C509B NIC.

Figure 26 I/O Range Assigned to the NIC Screen



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The text displayed in the I/O range screen (Figure 26) varies slightly for Windows 95 and Windows 98. The essential purpose of the screen is the same for both operating systems.

9 Write down the I/O range setting displayed in the list box (or click *Print*, if you are connected to a printer), and then click *Next*.

When you configure the NIC using the 3Com Installation Wizard, make sure that this setting matches the value displayed on the NIC Configuration Settings screen. See Figure 28 on page 49.

Windows copies the required files to your hard disk. The 3Com Installation Wizard starts.

CAUTION: *I/O base address 0x110 is reserved for system resources. If this address is assigned to a hardware device in your PC, contact your network administrator before continuing.*

The next step is to use the 3Com Installation Wizard to install NIC software and configure the NIC. Go to Chapter 3.

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3 USING THE 3COM INSTALLATION WIZARD FOR WINDOWS 95/98

This chapter describes how to install and configure the 3C509B NIC under Windows 95/98 using the 3Com Installation Wizard Custom installation option.

If your PC is running Windows NT, go to Chapter 4. Wizard installation is not available for Windows NT. If your PC is running DOS, Windows 3.1, or Windows for Workgroups, go to Chapter 5.

To install the NIC using the Express installation option, see the *Quick Guide for the EtherLink 10 Mbps ISA Network Interface Card*.

Required Information for Custom Installation

The following information may be required to complete the Custom installation described in this chapter:

- I/O base address (for non-Plug and Play PCs)
- Available interrupt request (IRQ) level
- TCP/IP configuration data:
  - IP address
  - Subnet mask
  - Gateway address
- DNS address data:
  - Host address
  - Domain address
  - Server address

Consult with your network administrator to obtain the required information before starting.

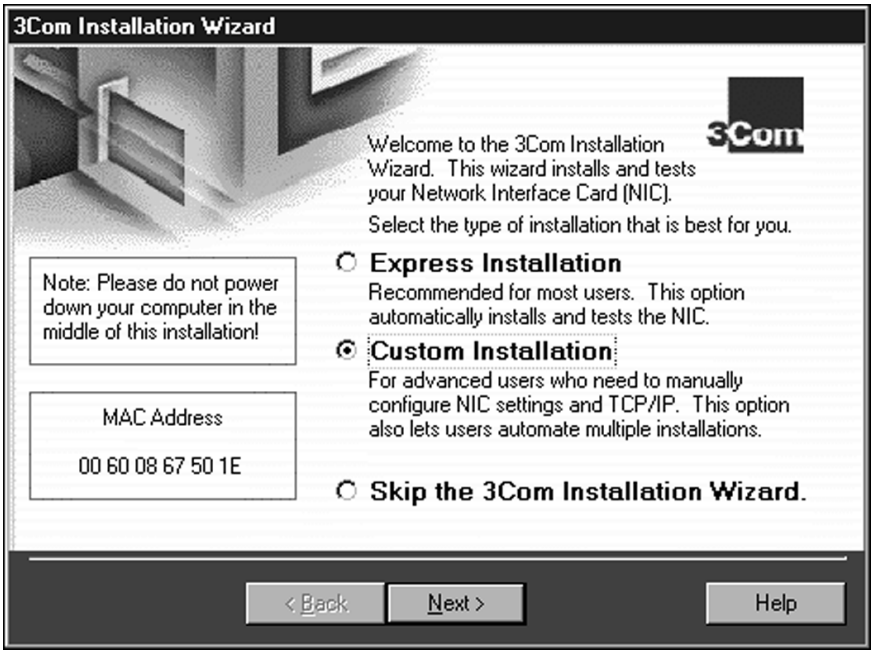
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Custom Installation

In the last step of the Windows 95 or Windows 98 setup procedure in Chapter 2, clicking *Next* starts the 3Com Installation Wizard.

The first 3Com Installation Wizard screen appears.

Figure 27 Selecting Custom Installation Screen



Follow these steps to perform a Custom installation:

1 **Select the *Custom Installation* radio button, shown in Figure 27.**

Selecting Skip Installation at step 1 completely bypasses the Wizard installation. The drivers for the NIC will be loaded, but you may have to complete the NIC configuration by using the procedures documented in Chapter 6, "Troubleshooting for Windows 95/98 and Windows NT." After selecting Skip Installation, go to "Completing the Installation and Configuration" on page 63.

For Express Installation, see instructions in the *Quick Guide for the EtherLink 10 Mbps ISA Network Interface Card.*

2 **Click *Next*.**

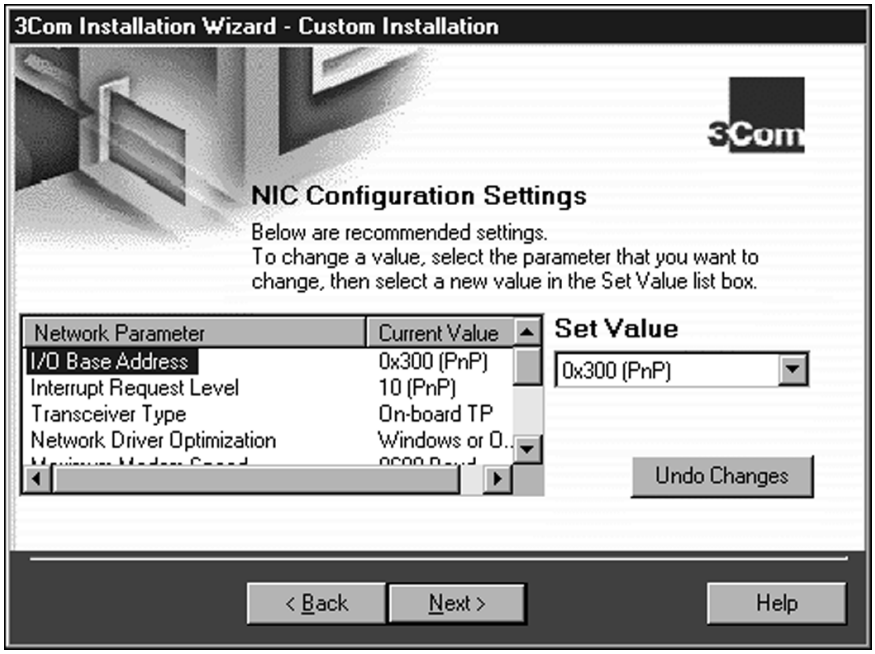
The NIC Configuration Settings screen appears, as shown in Figure 28.

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Configuring the NIC

The list box shown in the NIC Configuration Settings screen (Figure 28) displays recommended configuration settings for the NIC. You can either accept the recommended settings or change one or more to suit your operating environment.

Figure 28 NIC Configuration Settings Screen



For Windows 95/98 non-Plug and Play PCs, make sure that the I/O Base Address value shown in the list box under Current Value is the same value that you wrote down at step 9 of "Configuring the NIC for a Non-Plug and Play PC" on page 46. Also make sure that the Interrupt Request Level value is one of the available values that you wrote down while following the instructions in "Performing the Preinstallation Procedure" on page 30.

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To Accept Configuration Settings

Follow these steps to accept the recommended configuration settings:

1 **Click *Next*.**

2 **Go to "Testing the NIC and the Network Connection" on page 51.**

To Modify Configuration Settings

Follow these steps to change configuration settings in a Windows 95/98 non-Plug and Play PC:

1 **Under Network Parameter, select *I/O Base Address*.**

2 **In the Set Value selection box, click the scroll arrow to select the I/O range setting that you wrote down while following the instructions in "Configuring the NIC for Windows 95, Version 950b" on page 34 or in "Configuring the NIC for Windows 98" on page 38. See Figure 28.**

3 **Under Network Parameter, select *Interrupt Request Level*.**

4 **In the Set Value selection box, click the scroll arrow to select an interrupt request level that matches one of the available IRQs that you wrote down while carrying out the instructions in "Performing the Preinstallation Procedure" on page 30. See Figure 7 on page 30.**

5 **When you have finished changing the settings, click *Next*.**

The next step is to test the NIC and the network connection.

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Testing the NIC and the Network Connection

It is recommended that you test the NIC and then the network to verify that each is functioning properly before you continue the installation.

The NIC Test screen appears.

Figure 29 NIC Test Screen



Testing the NIC

Follow these steps to test the NIC:

1 **Click *Perform NIC Test*.**

While the test is running, a progress bar indicates test progress.

If a test fails, a message indicates the error type. Click the *Help* button in the error message screen to obtain more information. Chapter 6 provides additional troubleshooting help.

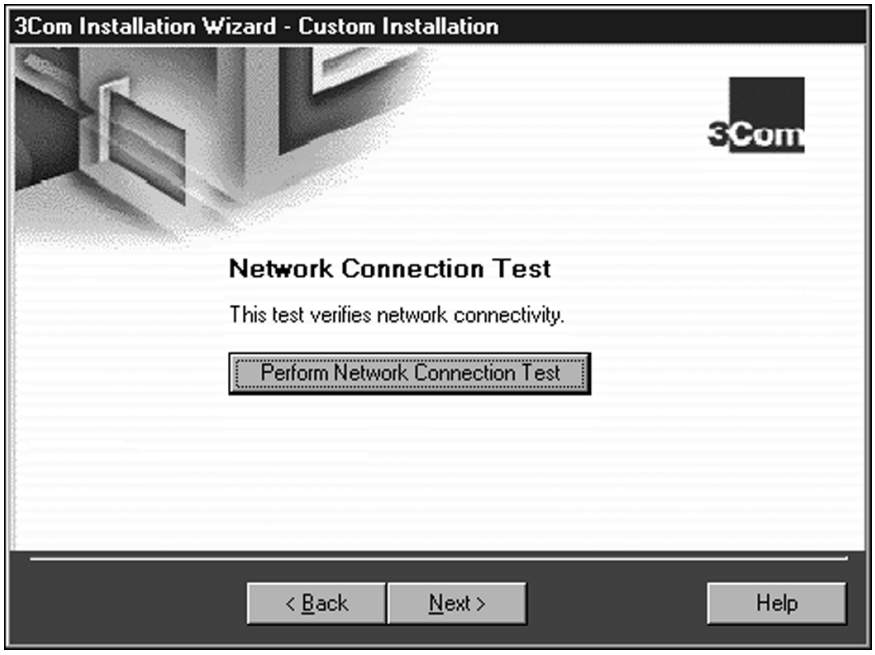
A message confirms that the NIC is functioning correctly.

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2 Click *Next*.

The Network Connection Test screen appears.

Figure 30 Network Connection Test Screen



Testing the Network Connection

Follow these steps to test the network connection:

1 Click *Perform Network Connection Test* to verify that the network is functioning correctly.

While the test is running, a progress bar indicates test progress.

If a test fails, a message indicates the error type. Click the *Help* button in the error message screen to obtain more information. Chapter 6 provides additional troubleshooting help.

A message confirms that the network is functioning correctly.

2 Click *Next*.

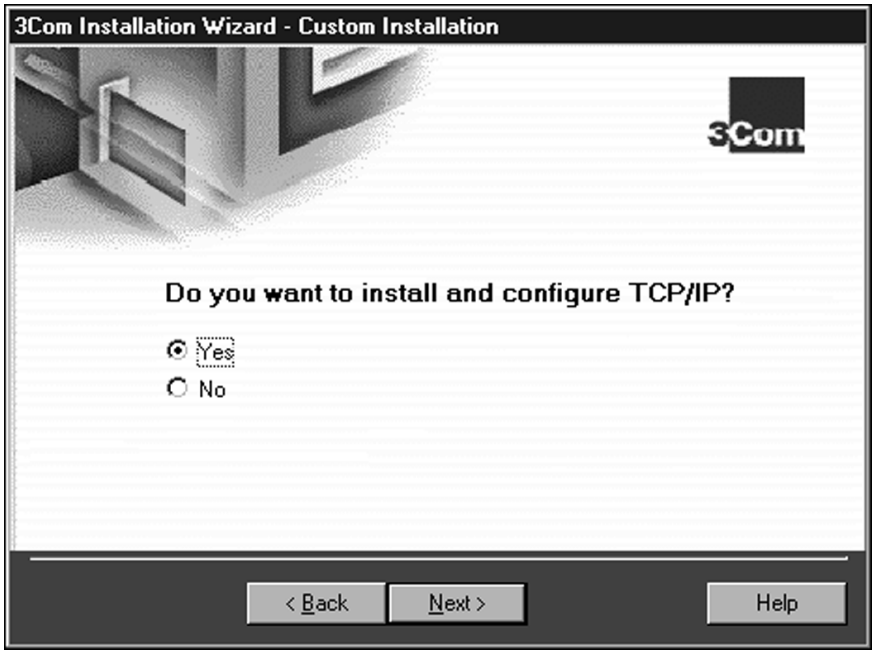
The TCP/IP Inquiry screen appears, as shown in Figure 31.

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Installing TCP/IP

Installing and configuring TCP/IP is optional. If you want to access the Internet, you *must* install and configure TCP/IP.

Figure 31 TCP/IP Inquiry Screen



To Not Install TCP/IP

Follow these steps if you do *not* want to install TCP/IP:

1 **Select the *No* radio button.**

2 **Click *Next*.**

Go to "Identifying Your PC on the Network" on page 59.

To Install TCP/IP

Follow these steps to install and configure TCP/IP:

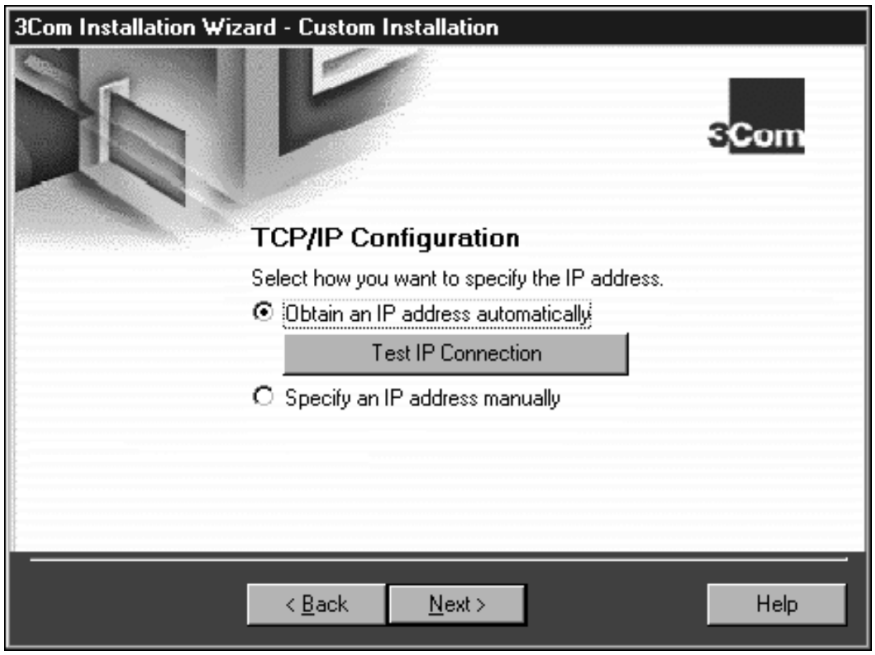
1 **Select the *Yes* radio button.**

2 **Click *Next*.**

The TCP/IP Configuration screen appears, as shown in Figure 32. The next step is to configure TCP/IP.

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Figure 32 TCP/IP Configuration Screen



Configuring TCP/IP

There are two ways to assign an IP address. You can obtain an IP address automatically or specify an IP address manually. Your network administrator will specify which method to use, and if required, provide an IP address for you to use.

To Obtain an IP Address Automatically

Follow these steps to obtain an IP address automatically:

1 **Select the *Obtain an IP address automatically* radio button.**

This option dynamically assigns a new IP address each time you connect to the network.

2 **Click *Test IP Connection* to test the DHCP server connection.**

While the test is running, a progress bar indicates test progress.

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If a test fails, a message indicates the error type. Click the *Help* button in the error message screen to obtain more information. Chapter 6 provides additional troubleshooting help.

A message confirms that the connection to the DHCP server is functioning.

3 **Click *Next*.**

Go to "Configuring DNS" on page 56.

To Specify an IP Address Manually

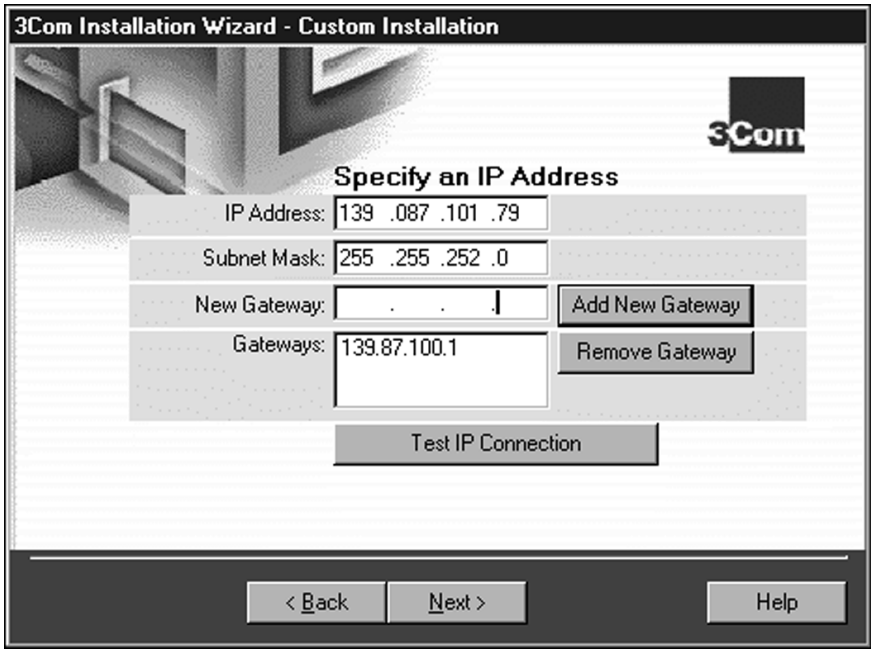
Follow these steps to specify an IP address manually:

1 **Select the *Specify an IP address manually* radio button.**

2 **Click *Next*.**

The Specify an IP Address screen appears.

Figure 33 Specify an IP Address Screen



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3 **Enter the IP address.**

4 **Enter the subnet mask.**

5 **Enter the new gateway address.**

At least one gateway must appear in the Gateways list box before you can advance to the next screen.

6 **Click *Add New Gateway* to add the new gateway configuration.**

The gateway is listed in the Gateways list box.

7 **Click *Test IP Connection* to verify that the gateway connection is functioning.**

While the test is running, a progress bar indicates test progress.

If a test fails, a message indicates the error type. Click the *Help* button in the error message screen to obtain more information. Chapter 6 provides additional troubleshooting help.

A message confirms that the IP address is valid and functioning.

8 **Click *Next*.**

The next step is to configure DNS.

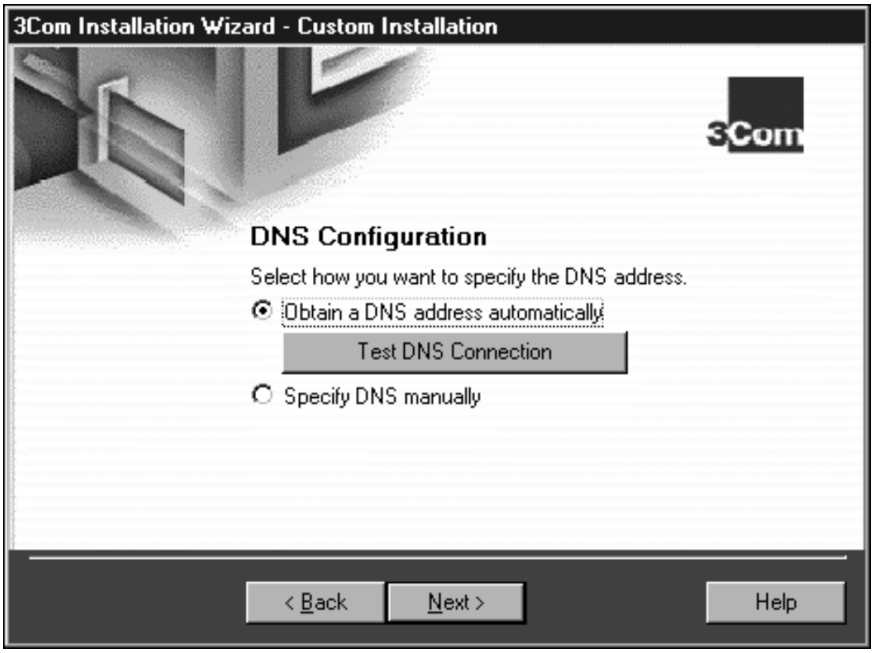
Configuring DNS

Dynamic Name Server (DNS) converts a World Wide Web URL to an actual IP address. You can configure DNS either automatically or manually depending on how your network is set up.

When you click *Next* in the previous section, the DNS Configuration screen appears, as shown in Figure 34.

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Figure 34 DNS Configuration Screen



To Obtain a DNS Address Automatically

Follow these steps to obtain a DNS address automatically:

1 **Select the *Obtain a DNS address automatically* radio button.**

This choice gives you a new DNS address each time you log on to the network.

2 **Click *Test DNS Connection* to verify that the connection to the DNS server is functioning.**

While the test is running, a progress bar indicates test progress.

If a test fails, a message indicates the error type. Click the *Help* button in the error message screen to obtain more information. Chapter 6 provides additional troubleshooting help.

A message confirms that the DNS connection is functioning.

3 **Click *Next*.**

The next step is to identify your PC on the network. Go to "Identifying Your PC on the Network" on page 59.

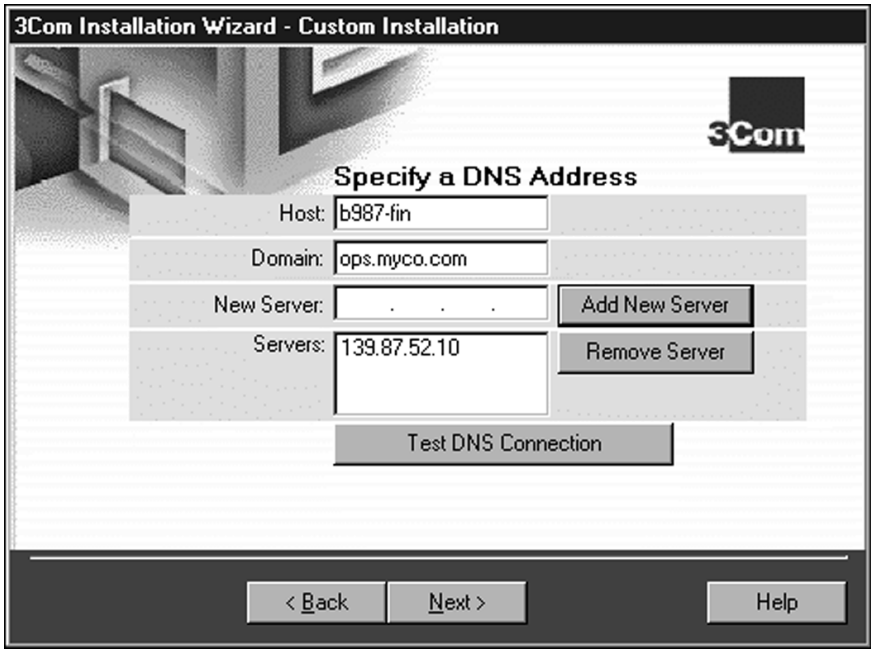
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To Specify a DNS Address Manually

Follow these steps to specify a DNS address manually:

1 **Select the *Specify DNS manually* radio button if you are using a permanent DNS address.**

Figure 35 Specify a DNS Address Screen



If DNS has been previously configured on your PC, the fields on this screen may already be filled in.

If DNS has not been previously configured on your PC, these fields are blank and you must fill them in to enable DNS.

2 **Enter the host and domain data in their respective fields.**

3 **To configure a new server, enter the new server address, and then click *Add New Server*.**

The new server appears in the Servers list box.

4 **Click *Test DNS Connection* to verify that the connection to the DNS server is functioning.**

While the test is running, a progress bar indicates test progress.

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If a test fails, a message indicates the error type. Click the *Help* button in the error message screen to obtain more information. Chapter 6 provides additional troubleshooting help.

A message confirms that the DNS connection is functioning.

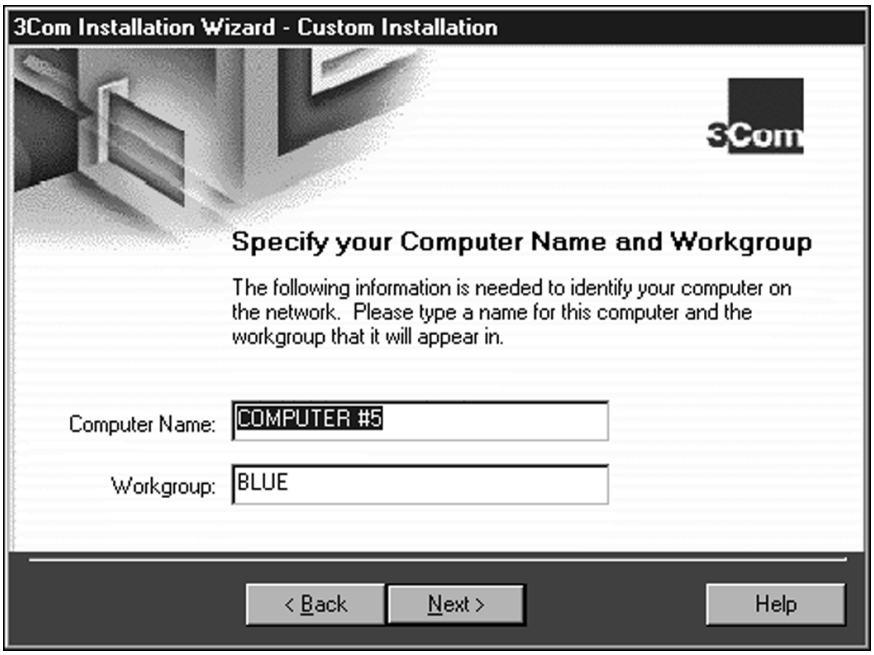
5 Click *Next*.

The next step is to identify your PC on the network.

Identifying Your PC on the Network

When you click *Next* in the previous section, the Network Identification screen appears, as shown in Figure 36. This screen allows you to identify your PC on the network. Contact your network administrator if you do not have information to enter in these fields.

Figure 36 Network Identification Screen



Follow these steps to enter field data:

1 Type the name of your computer.

There are many PCs and other devices on a network — each one must be uniquely identified on the network. This name identifies your PC on the network. The name can have up to 15 characters. Spaces are not allowed; however, you can use hyphens.

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2 Type your workgroup name.

This name identifies the group to which your PC belongs to and is likely to communicate with. This group will include most of the network resources that you use. (If you are setting up a simple peer-to-peer network, this entry must be the same for all the PCs in your network.) The name can have up to 15 characters. See your network administrator for more information.

3 Click *Next*.

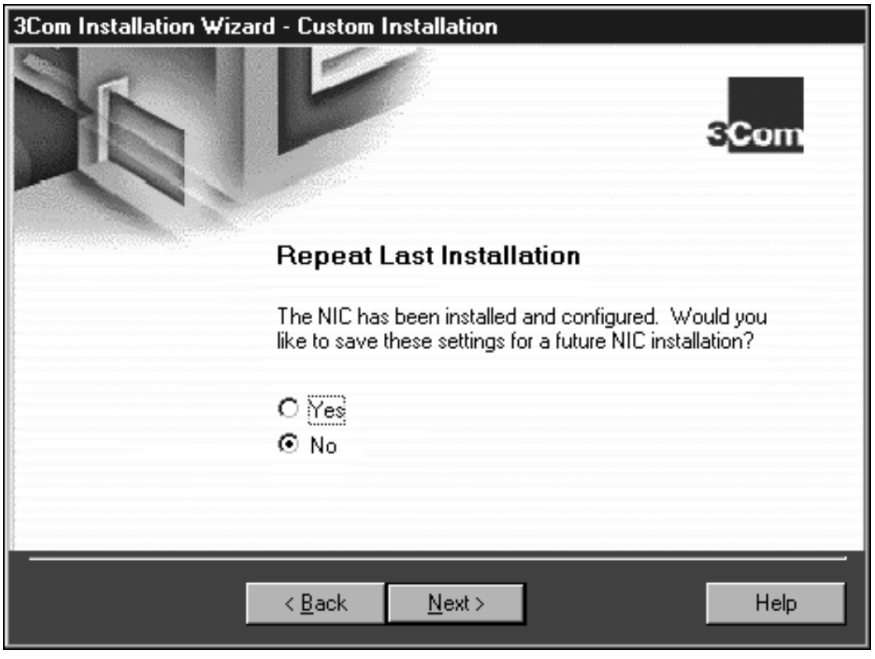
The next step is to optionally save the configuration settings and test options for this installation.

Repeating a Previous Installation

You can save the configuration settings and test options that you selected during this installation for use in future installations. Saving settings is optional.

When you click *Next* in the previous section, the Repeat Last Installation screen appears.

Figure 37 Repeat Last Installation Screen



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To Not Save Installation Settings

Follow these steps if you do *not* want to save these configuration settings:

1 **Select the *No* radio button, and then click *Next*.**

The Installation Complete screen appears, as shown in Figure 40 on page 63.

2 **Click *Finish*.**

Go to "Windows 95" on page 63 if you are running Windows 95 on your PC.

Go to "Windows 98" on page 65 if you are running Windows 98 on your PC.

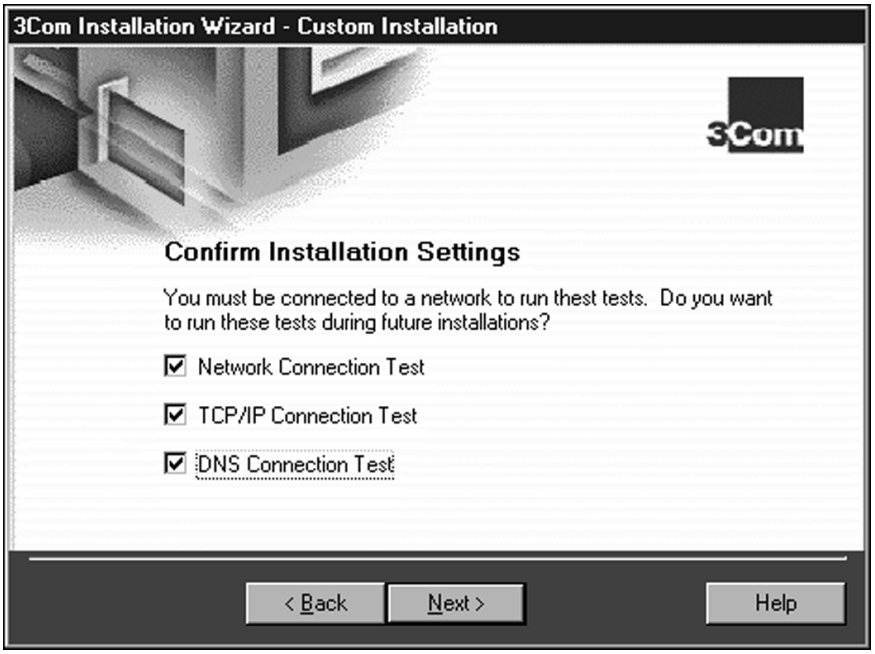
To Save Installation Settings

Follow these steps to save these configuration settings for future installations:

1 **Select the *Yes* radio button, and then click *Next*.**

The Confirm Installation Settings screen appears.

Figure 38 Confirm Installation Settings Screen



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2 Select the check boxes for tests that you want to run in future installations, and then click *Next*.

The Save Installation Settings screen appears.

Figure 39 Save Installation Settings Screen



3 Enter the path for the *EtherDisk* diskette that you are using.

This installation diskette is first copied to a temporary directory, and then that file is copied to the drive that you indicate. If you are saving to a diskette, insert a blank, formatted diskette in drive A. Upon completion, remove the diskette from the drive. You can use this diskette to perform future installations.

Otherwise, enter the name of the drive (for example, C:\) where you want to save the installation settings.

4 Click *Next*.

The Installation Complete screen appears, as shown in Figure 40.

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Figure 40 Installation Complete Screen



5 **Click *Finish.***

If you are running Windows 95 on your PC, go to "Windows 95" (in the next section).

If you are running Windows 98 on your PC, go to "Windows 98" on page 65.

Completing the Installation and Configuration

Procedures for completing the installation and configuration differ for Windows 95 and Windows 98.

Windows 95

This section describes how to complete the NIC installation and configuration under Windows 95 after you close the 3Com Installation Wizard (at step 5 in the preceding section).

- If your PC is running Windows 95 version 950 (version A), the New Hardware Found Screen appears briefly. Wait a few seconds. The Insert Disk dialog box appears, prompting you for the Windows 95 CD.

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- If your PC is running Windows 95 version 950b (version B, or OSR2), the Update Device Driver Wizard appears briefly. Wait a few seconds. The Insert Disk dialog box appears, prompting you for the Windows 95 CD.

1 Insert the Windows 95 CD in your CD-ROM drive and click *OK*.

2 In the Copy files from box, enter the path to your CD-ROM drive, and then click *OK*.

The System Settings Change dialog box appears, prompting you to restart.

Figure 41 System Settings Change Dialog Box



3 Click *Yes*.

You have successfully installed and configured the NIC under Windows 95.

The 3Com NIC Doctor (the 3Com NIC Diagnostics program) becomes available once the NIC has been installed. See "Diagnostic Testing Under Windows 95/98 and Windows NT" on page 96 for more information about using the Diagnostics program.

Verify that all existing installed hardware devices are still working. Typical devices to check include a sound card, CD-ROM drive, analog modem, LPT port to a printer, and game ports. If any devices are not working, go to Chapter 6 or the Windows Troubleshooting Help system.

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Windows 98

This section describes how to complete the NIC installation and configuration under Windows 98 after you close the 3Com Installation Wizard.

Windows continues copying files, and prompts you to insert *EtherDisk* diskette 1.

Figure 42 Prompt for EtherDisk Diskette 1



1 **Verify that *EtherDisk* diskette 1 is in drive A. In the Copy files from box, type:**

```
a:\
```

2 **Click *OK*.**

Windows 98 copies files from the floppy drive to your PC hard drive, and then requests that you insert the Windows 98 CD.

Figure 43 Insert Disk Dialogue Box



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3 Remove *EtherDisk* diskette 1 from drive A, insert the Windows 98 CD, and then click *OK*.

Enter the Windows 98 CD directory in the *Copy files from entry box*, usually as follows:

```
d:\win98\
```

If the Windows 98 installation files are on your hard drive, click *OK*. Enter the directory in the *Copy files from entry box*, usually as follows:

```
c:\windows\options\cabs
```

or

```
c:\win98\
```

Windows copies the appropriate files to the PC hard drive and displays a message that it has completed installation, as shown in Figure 44.

Figure 44 Installation Completion Screen



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4 Click *Finish*.

The System Settings Change dialog box appears, prompting you to restart.

Figure 45 System Settings Change Dialog Box



5 Click *Yes.*

You have successfully installed and configured the NIC for Windows 98.

The 3Com NIC Doctor (the 3Com NIC Diagnostics program) becomes available once the NIC has been installed. See "Diagnostic Testing Under Windows 95/98 and Windows NT" on page 96 for more information about using the Diagnostics program.

Verify that all existing installed hardware devices are still working. Typical devices to check include a sound card, CD-ROM drive, analog modem, LPT port to a printer, and game ports. If any devices are not working, go to Chapter 6 or the Windows Troubleshooting Help system.

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4 SOFTWARE INSTALLATION AND CONFIGURATION UNDER WINDOWS NT

This chapter describes how to load 3C509B NIC drivers and configure the NIC for Windows NT 4.0. You can apply the basic procedure described in this chapter to load drivers for Windows NT 3.51. The driver load procedures for Windows NT 4.0 and 3.51 are similar, with some variation due to design differences in the Microsoft interface for both versions.

If your PC is running Windows 95/98, go first to Chapter 2 and next to Chapter 3. If your PC is running DOS, Windows 3.1, or Windows for Workgroups, go to Chapter 5.

If you are installing multiple 3C509B NICs in a Windows NT PC, follow the procedure in "Installing Multiple NICs in a Windows NT PC" on page 78.

Installing Drivers and Configuring the NIC

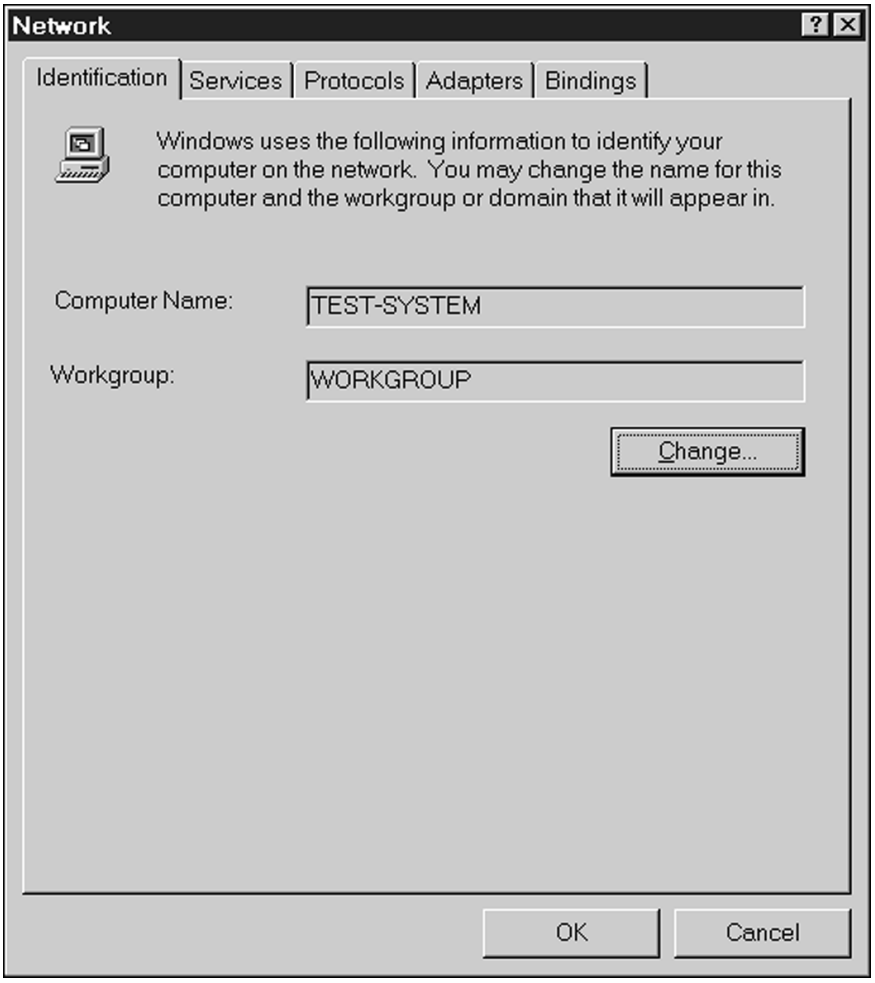
Follow these steps to install and configure the 3C509B NIC under Windows NT 4.0:

1. **Install the NIC in your PC. (See Chapter 1.)**
2. **Boot Windows NT.**
3. **Double-click the My Computer Icon, double-click the Control Panel icon, and then double-click the Network icon.**

   The Network screen appears, as shown in Figure 46.

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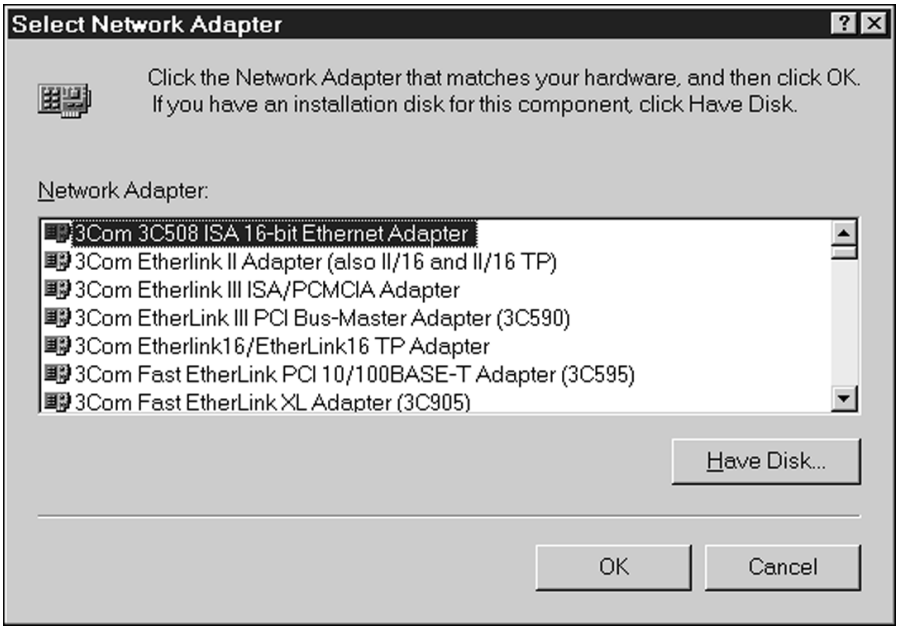
Figure 46 Identification Tab of the Network Screen



4 Click the Adapters tab and click *Add* to display the Select Network Adapter screen (Figure 47).

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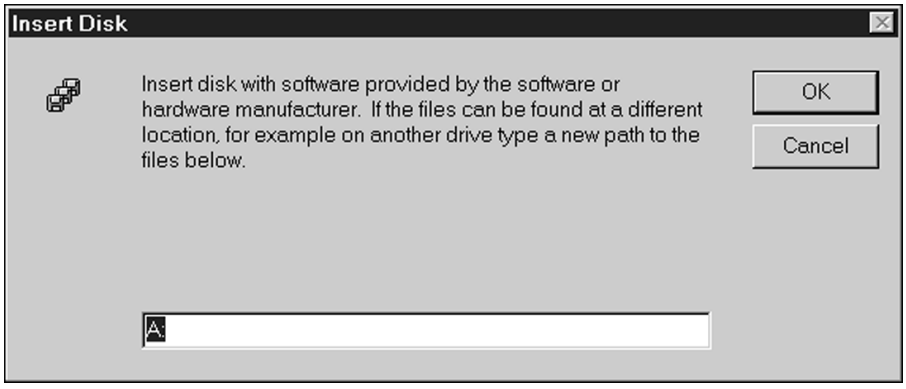
Figure 47 Select Network Adapter Screen



5 Click *Have Disk.*

The Insert Disk screen appears.

Figure 48 Insert Disk Screen



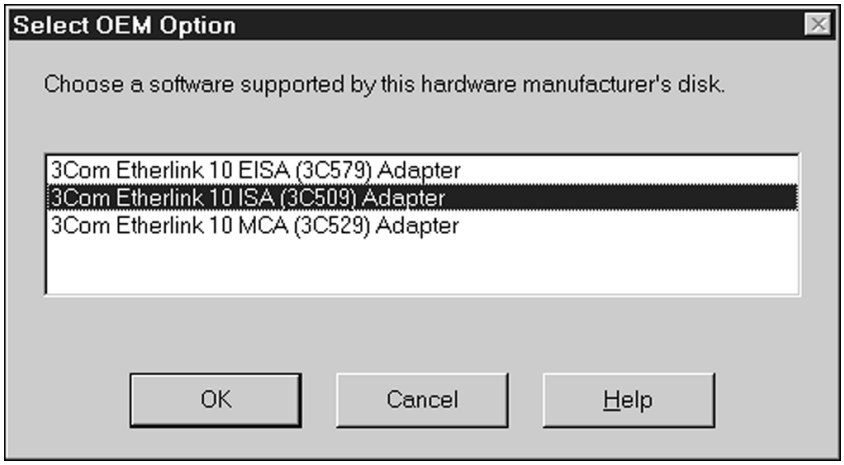
6 Insert *EtherDisk* diskette 1 in drive A.

7 Verify that the path to drive A appears in the entry box, and then click *OK*.

The Select OEM Option screen appears, as shown in Figure 49.

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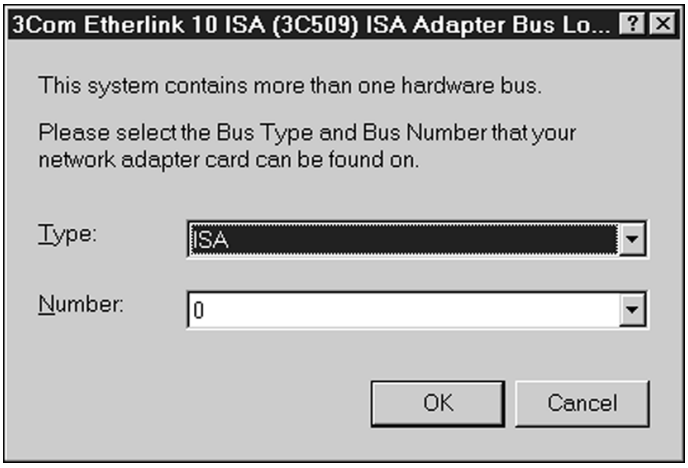
Figure 49 Select OEM Option Screen



8 If not already selected, select *3Com EtherLink 10 ISA (3C509) Adapter* and click *OK*.

The 3Com EtherLink 10 ISA (3C509) Adapter Bus Location screen appears.

Figure 50 3Com EtherLink 10 ISA Adapter Bus Location Screen

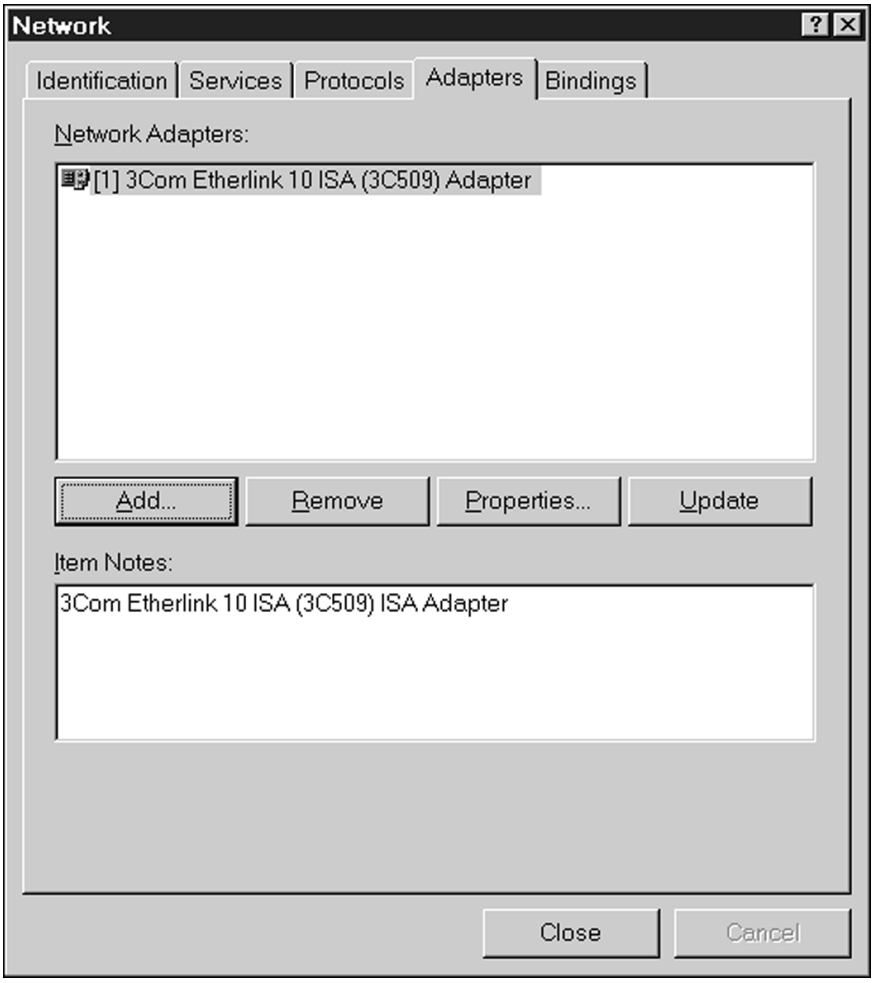


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9 Ensure that Bus *Type: ISA* and Bus *Number: 0* appear in their respective selection boxes, and then click *OK*.

Windows NT Setup copies the required files to your hard disk, and then displays the Adapters tab of the Network screen.

Figure 51 Adapters Tab of the Network Screen



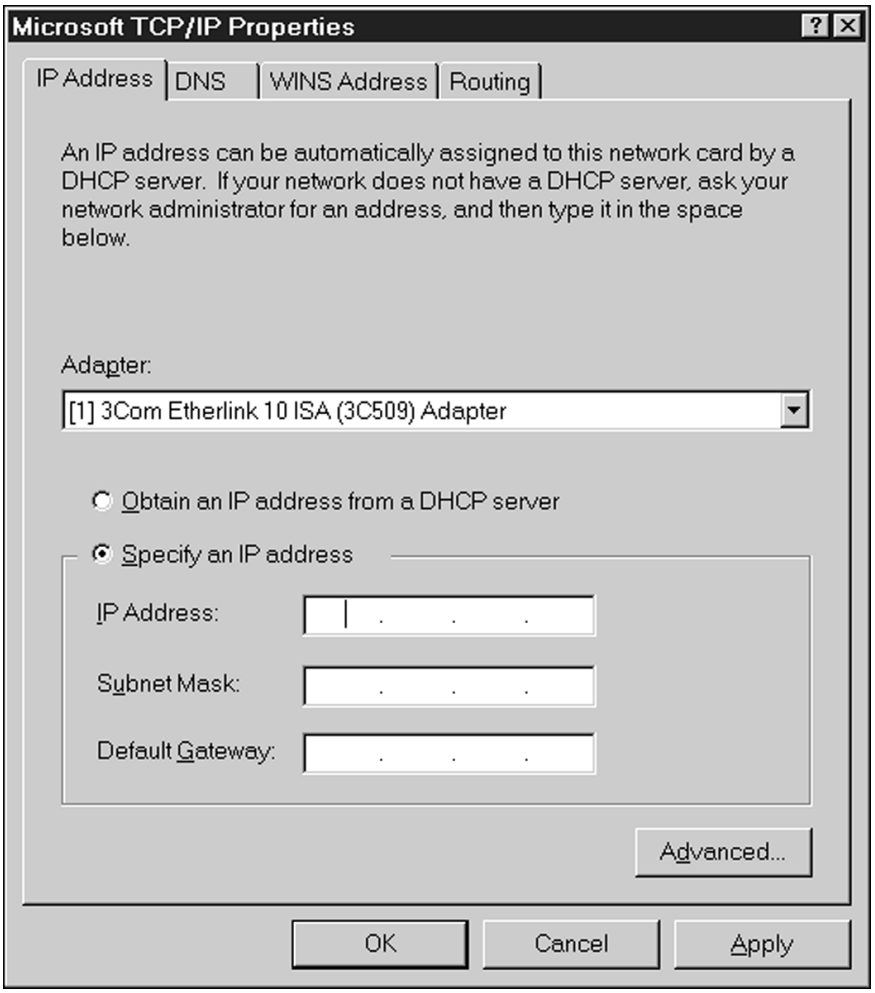
The next step is to install and configure TCP/IP in Windows NT either manually or automatically.

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10 Click *Close*.

The Microsoft TCP/IP Properties screen appears.

Figure 52 Microsoft TCP/IP Properties Screen



11 Choose a method to configure TCP/IP.

There are two ways to assign an IP address. You can obtain an IP address automatically or specify an IP address manually. Your network administrator will specify which method to use, and if required, provide an IP address for you to use.

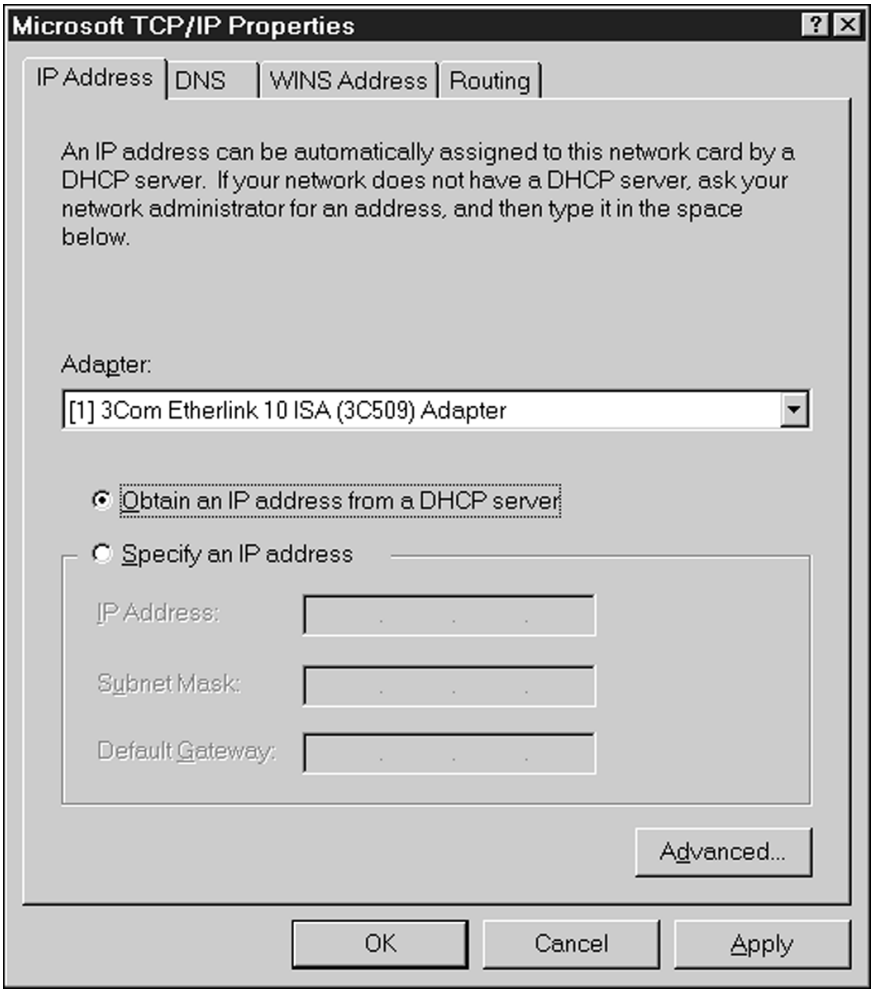
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- **To obtain an IP address automatically** — Follow these steps to install and configure TCP/IP automatically:

a Select the *Obtain an IP address from a DHCP server* radio button, as shown in Figure 53.

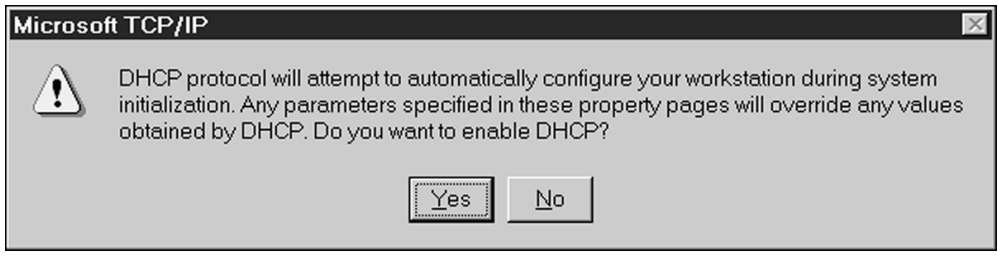
The Microsoft TCP/IP dialog box appears (Figure 54), prompting you to verify that you want to enable DHCP.

Figure 53 Obtain IP Address from DHCP Server Option



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Figure 54 Microsoft TCP/IP Dialog Box



b Click *Yes*.

The Network Settings Change dialog box appears, prompting you to restart Windows NT.

Figure 55 Network Settings Change Dialog Box (1)



c Click *Yes* to restart Windows NT.

TCP/IP is installed and configured.

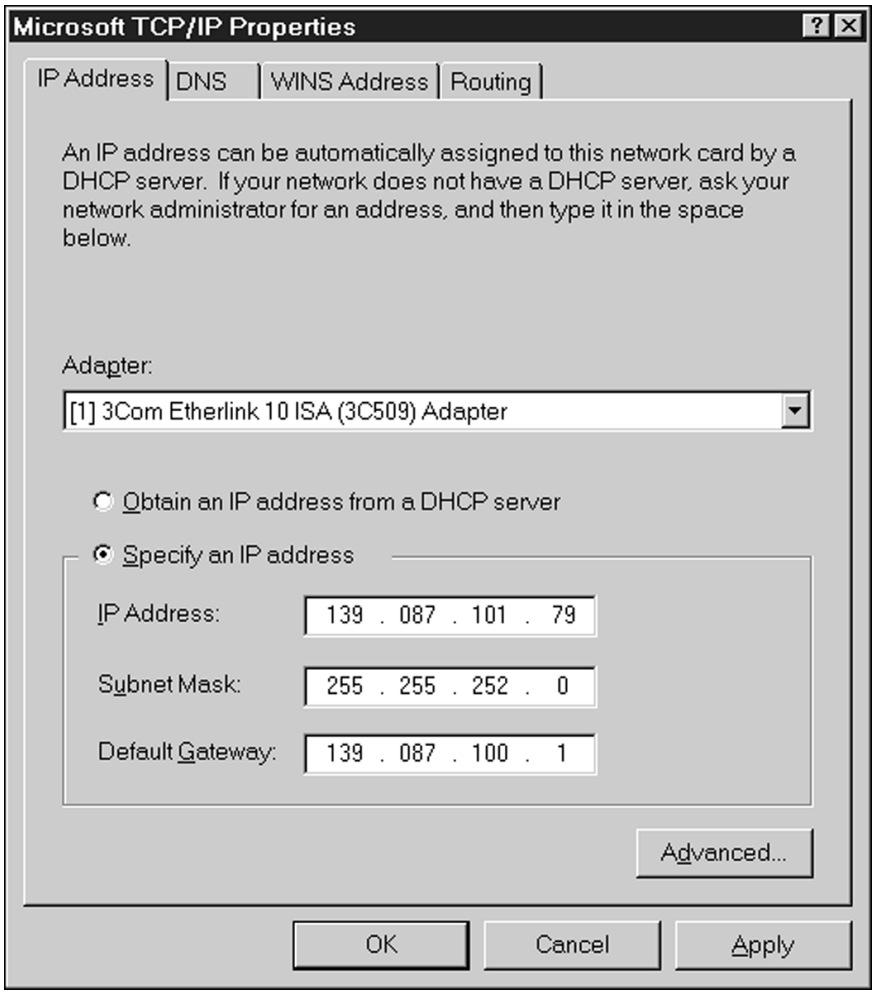
- **To specify an IP address manually** — Follow these steps to install and configure TCP/IP manually:

a Verify that the *Specify an IP address* radio button is selected, as shown in Figure 52.

b Enter the IP address, subnet mask address, and default gateway address in their respective entry fields, as shown in Figure 56.

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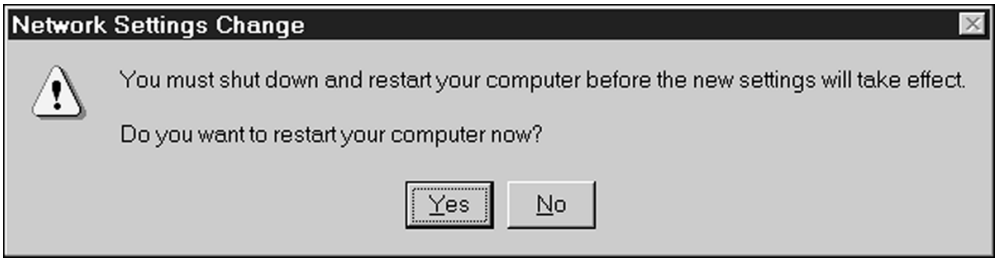
Figure 56 Specify IP Address Option



c Click *OK*.

The Network Settings Change dialog box appears, prompting you to restart Windows NT.

Figure 57 Network Settings Change Dialog Box (2)



d Click *Yes* to restart Windows NT.

TCP/IP is installed and configured.

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After restarting Windows NT, verify that all existing installed hardware devices are still working. Typical devices to check include a sound card, CD-ROM drive, analog modem, LPT port to a printer, and game ports. If any devices are not working, go to Chapter 6 or the Windows Troubleshooting Help system.

Installing Multiple NICs in a Windows NT PC

If you are installing multiple 3C509B NICs in a Windows NT 4.0 PC, use the following procedure to ensure that the NICs maintain separate resource assignments and are installed free of conflicts.

You must use this procedure to install multiple 3C509B NICs. Failure to follow this procedure may lead to problems requiring that you reinstall your operating system.

Installing the First NIC

Follow these steps to install the first NIC when you are installing several NICs in a Windows NT PC:

1 **Double-click the My Computer icon, double-click the Control Panel icon, and then double-click the Network icon.**

The Network screen appears.

2 **Select the Adapters tab, and then click *Add.***

The Select Network Adapter screen appears.

3 **Insert *EtherDisk* diskette 1 in drive A, and then click *Have Disk*.**

4 **If not already displayed, type:**

```
a:\
```

5 **Click *OK*.**

The Select OEM Option screen appears.

6 **Ensure that *3Com EtherLink 10 3C509B ISA* is selected, and then click *OK*.**

The 3Com EtherLink 10 (3C509b) ISA Adapter Bus screen appears.

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7 Click *OK*.

Windows copies files. A message is displayed, warning you to use the Network screen to install multiple NICs.

8 Click *OK*.

The setup program copies files, and the Network screen reappears.

9 Ensure that *3Com EtherLink 10 3C509B ISA* is selected, and then click *Properties*.

The 3Com EtherLink 10 Adapter Card Setup dialog box appears, showing the assigned I/O port address value.

10 Click *OK*, and then click *OK* again.

The Network screen reappears.

11 Click *Close*.

The Microsoft TCP/IP Properties screen appears.

12 From the Adapter box, select *3Com EtherLink 10 3C509B ISA Adapter*, select a method of assigning the TCP/IP address, and then click *OK*.

Messages are displayed, and you are prompted to reboot Windows NT.

13 Click *Yes*.

The NIC is installed and configured. The next step is to install the remaining NICs.

Installing Subsequent NICs

Follow this procedure to install the remaining NICs, one at a time, after you install and configure the first NIC:

1 Perform steps 1 through 5 of the preceding procedure.

The Windows setup program displays a message warning that a network card of this type is already installed.

2 Click *OK*.

The 3Com EtherLink 10 (3c509b) ISA Adapter Bus screen appears. A message warns you to use the Network window to install multiple NICs.

3 Click *OK*.

Files are copied, and the Network screen reappears.

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4 **Ensure that *3Com EtherLink 10 3C509B ISA* is selected, and then click *Properties*.**

The 3Com EtherLink 10 Adapter Card Setup dialog box appears, showing the assigned I/O port address value.

5 **Set the I/O port address to a nonconflicting value, and then click *OK*.**

The 3Com EtherLink 10 (3C509B) ISA Adapter Bus screen appears again.

6 **Click *OK*.**

The setup program displays a warning message.

7 **Click *OK*, and then click *Close*.**

Files are copied, and then the Microsoft TCP/IP Properties screen appears.

8 **From the Adapter box, select *3Com EtherLink 10 3C509B ISA Adapter*, select a method of assigning the TCP/IP address, and then click *OK*.**

Messages are displayed, and you are prompted to reboot.

9 **Click *No*.**

10 **Click *Start* in the Windows 95/98 taskbar.**

11 **Select *Programs*, then *3Com NIC Utilities*, and then *3COM NIC DOCTOR* to start the 3Com NIC Diagnostics program.**

The General tab of the 3Com NIC Diagnostics program appears.

12 **Select the Configuration tab and then verify that the I/O base address value is set to the value that you assigned earlier in this procedure.**

13 **Click *OK*.**

The second NIC is installed and configured. Repeat this procedure for additional NICs to be installed.

The I/O base address that you assign must match the I/O base address that you chose during the Custom installation. See "Configuring the NIC" on page 49.

14 **When all NICs have been installed and configured, reboot Windows NT.**

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5 SOFTWARE INSTALLATION AND CONFIGURATION UNDER WINDOWS 3.X

This chapter describes how to install NIC software and configure the NIC under DOS, Windows 3.1, or Windows for Workgroups.

If your PC is running Windows 95/98, go first to Chapter 2 and next to Chapter 3. If your PC is running Windows NT, go to Chapter 4.

Installing NetWare Drivers for DOS, Windows 3.1, and Windows for Workgroups

This section describes how to use the Intelligent Auto Install program COMSLINK.EXE to install client and driver software for DOS environments and Novell NetWare 3.1x or 4.1x under Windows 3.1 and Windows for Workgroups.

When your system administrator configures a 3Install account on your server, the Intelligent Auto Install program logs on to the server and updates the client software. COMSLINK.EXE creates a new AUTOEXEC.BAT file and saves the old file as AUTOEXEC.3CM. COMSLINK.EXE also creates a new CONFIG.SYS file and saves the old file as CONFIG.3CM.

Intelligent Auto Install Requirements

To use the Intelligent Auto Install program COMSLINK.EXE, your PC should have only one 3C509B NIC installed and a minimum of 1 MB of available hard disk space.

Running the Intelligent Auto Install Program

Follow these steps to run the Intelligent Auto Install program to configure the NIC:

1. **Install the NIC and connect it to the network, as described in Chapter 1.**
2. **Reboot to DOS.**

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3 Insert *EtherDisk* diskette 2 in drive A.

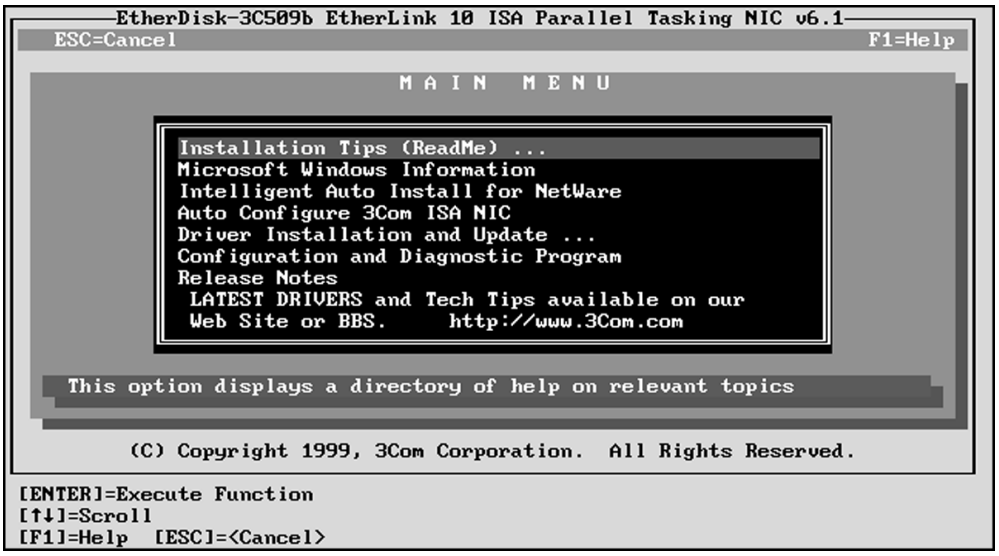
4 Run the DOS installation program. At the DOS prompt, enter:

```
a:install
```

The main menu is displayed, as shown in Figure 58.

The 3Com software license agreement is displayed the first time you run the DOS installation program. Type Y *to accept the agreement and display the main menu.*

Figure 58 Main Menu of the DOS Installation Program



5 Select *Intelligent Auto Install for NetWare* and press Enter.

The Intelligent Auto Installation menu is displayed.

6 Select one of the following menu choices:

- *Intelligent Auto Install for DOS*
- *Intelligent Auto Install for Windows 3.1x*
- *Intelligent Auto Install for WFW 3.1*

Follow the prompts.

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7 When the Intelligent Auto Install process is finished, remove *EtherDisk* diskette 2 from drive A and reboot the PC.

If you are running Windows 3.1x, after you connect to the NetWare server, run the WSINSTALL program for full Windows support. Contact your system administrator for the location of this NetWare utility.

If problems occur only when using the Intelligent Auto Install program, display or print the COMSLINK.LOG file to see a list of all events occurring during the Intelligent Auto Install installation and configuration process.

- To display the file, enter:

  `type comslink.log | more`

- To print the file, enter:

  `print comslink.log`

To install the network drivers for Windows 3.1x, Windows for Workgroups, or DOS in a non-NetWare environment, see the appropriate text files in the HELP directory on EtherDisk *diskette 2.*

Obtaining NetWare Loadable Modules

You can obtain current NetWare Loadable Modules (NLMs) for the NetWare servers listed in Table 5 from the Novell Web site, www.support.novell.com.

Table 5 NetWare NLMs

NetWare Server	NLM Name
NetWare 3.12	ETHERTSM.NLM
	NBI31X.NLM
	MSM31X.NLM
NetWare 4.11, 4.1	ETHERTSM.NLM
	NBI.NLM
	MSM.NLM

The 3C509B NIC no longer supports NetWare 3.11 and 4.0x servers.

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Installing Other Supported Network Drivers

Table 6 provides the text file names and driver names for other drivers supported by the 3C509B NIC. Text files for all supported network operating systems are included in the HELP directory on *EtherDisk* diskette 2.

Table 6 Network Driver Text File Names

Network Operating System	Text File Name	Network Driver Name
Banyan VINES	BANYAN.TXT	ELNK3.DOS
Microsoft LAN Manager	LANMAN.TXT	ELNK3.DOS
IBM LAN Server (DOS)	LANSRV.TXT	ELNK3.DOS
IBM LAN Server (OS/2)	LANSRV.TXT	ELNK3.OS2
Artisoft LANtastic	LANTASTK.TXT	ELNK3.DOS
DEC PATHWORKS	PATHWORK.TXT	ELNK3.DOS
DEC PATHWORKS	PATHWORK.TXT	3C5X9.COM (for NetWare ODI-compatible)
Windows for Workgroups (NetWare)	WFWNETWR.TXT	3C5X9.COM
Windows for Workgroups (NDIS 2)	WFWNDIS2.TXT	ELNK3.DOS
Windows for Workgroups (NDIS 3)	WFWNDIS3.TXT	ELNK3.386 with ELNK3.DOS
Windows 95 NDIS 2 16-bit network driver	W95NDIS2.TXT	ELNK3.DOS
NetWare Client 32	CLIENT32.TXT	3C5X9.LAN
NetWare 3.12 Server	NETWARE.411	3C5X9.LAN
NetWare 4 Server	NETWARE.411	3C5X9.LAN
NetWare OS/2	NWOS2ODI.TXT	3C5X9.SYS
Packet driver NOSs	PACKET.TXT	3C5X9PD.COM

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Removing NIC Software

EtherDisk diskette 2 includes an uninstallation program to remove the 3C509B NIC software.

To run the uninstallation program, at the DOS prompt, enter:

```
un3c509.exe
```

The NIC software is removed from your PC.

Configuring the NIC

This section describes how to configure the 3C509B NIC after you install it in your PC. If only one 3C509B NIC is installed and you are running Novell NetWare, use the Intelligent Auto Install program to configure the NIC and load the appropriate driver, as described earlier in this chapter.

To configure the 3C509B NIC, follow these steps:

1. **Install the NIC (see Chapter 1) and the network driver (earlier in this chapter).**
2. **Reboot to DOS.**
3. **Insert *EtherDisk* diskette 2 in drive A.**
4. **Run the installation program. Enter:**

   ```
   a:install
   ```

   The main menu is displayed, as shown in Figure 58 on page 82.

   The 3Com software license agreement is displayed the first time you run the DOS installation program. Type Y *to accept the agreement and display the main menu.*

5. **Select *Configuration and Diagnostic Program*.**

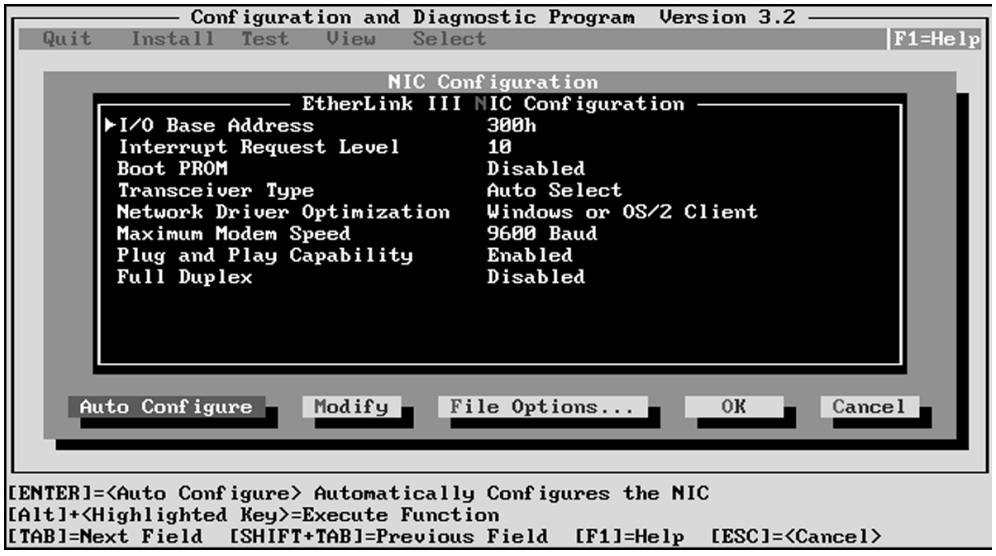
   If you have more than one NIC installed in the PC, select the NIC you want to configure. Tab to the *Select* button and press Enter.

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6 Select *Configure NIC* and press Enter.

The NIC Configuration screen is displayed.

Figure 59 NIC Configuration Screen



7 Select *Auto Configure* and press Enter.

The I/O base address, interrupt request level, and transceiver type are automatically configured to settings that do not conflict with other devices in your PC.

To change settings, follow the steps in "Changing Configuration Settings" later in this chapter.

If you encounter a problem with the *Auto Configure* option, press F1 for help.

The *OK* button is selected when configuration is completed.

8 Press Enter to accept the configuration parameters.

The NIC is now configured.

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Reconfiguring the NIC

EISA PCs come with an automatic configuration program that allocates resources to each installed hardware device in the PC.

Changing an ISA NIC to EISA mode enables the NIC to be configured by the EISA configuration program for correct EISA PC settings.

You can configure an ISA NIC for EISA mode only if the NIC is installed in an EISA slot.



If you have configured an ISA NIC for an EISA PC, the PROTOCOL.INI file looks for the parameter SLOT=number rather than the I/O base address. The SLOT number is required only if you have multiple NICs installed.

The following procedures are general. If you require more detail, see the configuration documentation that accompanied your PC.

Changing NIC Configuration from ISA to EISA

Follow these steps to configure the 3C509B ISA NIC for an EISA PC:

1. **Run the installation program as described in the preceding section, "Configuring the NIC."**
2. **From the main menu of the installation program, select *Configuration and Diagnostic Program*.**
3. **If you have more than one NIC installed, use the arrow keys to select the NIC you want to configure. Tab to the *Select* button and press Enter.**

   A screen identifying the NIC is displayed with the *Test* menu bar item highlighted.
4. **Use the arrow keys to select *Install*. The *Configure NIC* option is selected. Press Enter.**

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5 When the NIC Configuration dialog box is displayed, select *Modify* and press Enter.

The I/O Base Address field is selected. An I/O Base Address dialog box appears.

6 Use the arrow key to select *EISA* and press Enter.

The I/O base address setting is changed.

7 Select *OK* to save the new configuration setting and press Enter.

8 Exit the program and remove *EtherDisk* diskette 2 from drive A.

9 Insert the EISA configuration utility diskette provided with your PC in drive A.

10 Turn the power off. Wait 10 seconds, and then turn the power on.

11 Follow the instructions accompanying your EISA PC to run the EISA Configuration Program.

When the program prompts you for .CFG files to copy, insert *EtherDisk* diskette 2, press Enter, and select the appropriate file for your NIC as shown in Table 7:

Table 7 EISA Configuration Programs

For this NIC...	Select this .CFG file
3C509B-COMBO	!TCM5094.CFG
3C509B-TP	!TCM5090.CFG
3C509B-TPO	!TCM5095.CFG
3C509B-TPC	!TCM5098.CFG

If you are prompted for the wrong !TCM file:

a Turn the power off and remove the NIC.

b Clean the edge connectors on the NIC.

c Reinsert the NIC in the slot. Make sure the NIC is fully seated in the slot.

d Turn the power on.

You should now be prompted for the correct !TCM file.

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Changing NIC Configuration from EISA to ISA

To reconfigure the 3C509B NIC to ISA mode, the NIC must be installed in an EISA slot.

Follow these steps to reconfigure the NIC for an ISA PC:

1. **Run the installation program as described in "Configuring the NIC" on page 85.**
2. **From the main menu, select *Configuration and Diagnostic Program*.**
3. **If necessary, use the arrow keys to select the NIC you want to configure. Tab to the *Select* button and press Enter.**
4. **A screen identifying the NIC is displayed with the *Test* menu bar item already selected.**
5. **Select *Install* and press Enter.**
6. **When the NIC Configuration dialog box appears, select *Modify* and press Enter.**

   The I/O Base Address field is selected. An I/O Base Address dialog box appears.
7. **Use the arrow keys to select *ISA* and press Enter.**

   The I/O base address setting is changed.

If your PC supports Plug and Play, the I/O Base Address, Interrupt Request Level, and Boot PROM parameters are set automatically.

8. **Either select the option setting in the NIC Configuration dialog box for parameters that you want to change, or accept the defaults.**

   For more information about a setting, select the setting and press F1 (Help).
9. **Select *OK* to save the new configuration setting to the NIC and press Enter.**
10. **Remove *EtherDisk* diskette 2 from drive A.**
11. **Insert the PC configuration program diskette for your PC in drive A and reboot the PC.**

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Changing Configuration Settings

The NIC Configuration screen (Figure 59 on page 86) shows the current configuration settings for the installed NIC. You can change the default settings to:

- Disable Plug and Play
- Use a boot PROM
- Optimize driver performance for a specific operating system
- Optimize driver performance for operation on a server
- Change the type of network connector

Table 8 lists each software option, the default setting for that option, and other available settings for that option. For more information about an option, select the option and press F1.

Table 8 NIC Option Settings

Option	Default Setting	Supported Settings
I/O Base Address	300h	200h, 210h, 220h, 230h, 240h, 250h, 260h, 270h, 280h, 290h, 2A0h, 2B0h, 2C0h, 2D0h, 2E0h, 2F0h, 300h, 310h, 320h, 330h, 340h, 350h, 360h, 370h, 380h, 390h, 3A0h, 3B0h, 3C0h, 3D0h, 3E0h, EISA, ISA
Interrupt Request Level	10	3, 5, 7, 9, 10, 11, 12, 15
Boot PROM	Disabled. Does not apply for 3C509B-TPO.	Disabled, 8K, 16K, 32K
Transceiver Type	Auto Select for all except 3C509B-TPO (on-board TP)	On-board Coax (BNC), On-board TP (RJ-45), External (AUI/DIX), or Auto Select
Network Driver Optimization	Windows or OS/2 Client	DOS Client, Windows or OS/2 Client, Server
Maximum Modem Speed (fastest modem installed)	9600 Baud	No Modem, 1200, 2400, 9600, 19200, or 38400 Baud
Plug and Play	Enabled	Enabled, Disabled
Full-Duplex	Disabled	Enabled, Disabled

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If you are using a PC that supports Plug and Play, the IRQ and I/O base address values are set by Plug and Play. You can set the boot PROM size to indicate the presence and size of a network boot PROM. For instructions on disabling Plug and Play, see "Disabling Plug and Play on the NIC" on page 41.

Follow these steps to change the configuration settings:

1. **Run the installation program described in "Configuring the NIC" on page 85.**
2. **From the main menu (see Figure 58 on page 82), select *Configuration and Diagnostic Program*.**
3. **If multiple NICs are installed in the PC, use the arrow keys to select the NIC you want to configure. Press Tab to move to the *Select* button and press Enter.**
4. **Press Tab to display the dialog box, and then select the option that you want to change. Press Enter.**
5. **Use the arrow keys to scroll through the list of settings for that option. Select a setting and press Enter.**
6. **Continue this procedure for other options. For more information on a specific option, select the option and press F1.**
7. **To save the new settings, select *OK* and press Enter.**

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6 TROUBLESHOOTING FOR WINDOWS 95/98 AND WINDOWS NT

This chapter explains how to isolate and solve problems that may occur when you install the 3C509B NIC in a PC running Windows 95, Windows 98, or Windows NT.

Checklist

If you experience problems installing the NIC, first check these items:

- Check the NIC LED, as described in "Link LED" on page 25.
- Check the connectors. Examine the cable for obvious signs of damage, wear, or crimping. Substitute a known working cable.
- Check whether the NIC software is correctly installed. See Chapter 2 and Chapter 3.

If the problem persists, go to related procedures in this chapter or see Appendix C, "Technical Support."

Resolving Hardware Conflicts in Windows 95/98 and Windows NT

Follow these steps to resolve hardware resource conflicts (I/O base address or interrupt request level) if your PC is running either Windows 95/98 or Windows NT.

1 **From the *Start* menu, select *Help*.**

The Help window is displayed.

2 **Select the Contents tab, and then select *Troubleshooting*.**

3 **Double-click *If you have a hardware conflict*.**

4 **Click *Start the Conflict Troubleshooter* and follow the instructions.**

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Changing the I/O Base Address or the Interrupt Request Level

If you discover that you have a resource conflict, you can change the I/O base address or the interrupt request level (IRQ). If you are adding new hardware to your system, you may need to change a resource assignment to avoid a conflict. The following procedures describe how to change resource allocations for your Windows 95/98 or Windows NT PC.

Windows 95/98

Follow these steps to change the IRQ level assignment or the I/O base address in a Windows 95/98 PC:

1. **Double-click the My Computer icon, double-click the Control Panel icon, and then double-click the System icon.**

   The System Properties window is displayed.

2. **Select the Device Manager tab, double-click *Network adapters*, and then double-click *3Com EtherLink 10 ISA Adapter*.**

3. **Select the Resources tab.**

4. **Depending on the type of conflict that you have, select either *Input/Output Range* or *Interrupt Request*.**

5. **Select the resource that you want to change (IRQ or Input/Output Range) and select *Change Settings*. (If these options appear dimmed, clear the *Use automatic settings* check box.)**

6. **Scroll to a value that you know is available, and then click *OK*.**

   You recorded available IRQ values during the preinstallation procedure. See "Performing the Preinstallation Procedure" on page 30.

   Before you reboot Windows 95/98, make sure that the value that you assign to a resource matches the value for the same resource in the NIC Configuration Settings screen (similar to that shown in Figure 28 on page 49) in the 3Com NIC Diagnostic program.

7. **Close all open windows and restart the PC.**

   The hardware conflict should be resolved. If not, consult your system administrator.

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Windows NT

Follow these steps to change the IRQ level assignment or the I/O base address in a Windows NT PC:

1 **Click *Start* in the Windows NT taskbar.**

2 **Select *Programs*, then *3Com NIC Utilities*, and then *3COM NIC DOCTOR* to start the 3Com NIC Diagnostics program.**

The General tab of the 3Com NIC Diagnostics program appears.

3 **Select the Configuration tab.**

4 **Select the resource (I/O base address or interrupt request level) that you want to change in the Network Parameter column of the list box.**

The current value for that parameter appears in the Set Value entry box.

5 **Scroll to the value that you want to assign, and then click *OK*.**

6 **If you change the I/O base address, before you restart Windows NT, make sure that the address that you assign matches the I/O base address on the Adapters tab screen.**

Follow these steps to verify the base addresses:

a Double-click the My Computer icon, double-click the Control Panel icon, double-click the Network icon, and then select the Adapters tab.

3Com EtherLink 10 (3C509b) ISA Adapter is selected.

b Click *Properties*.

The I/O Port Address value appears in the scroll box on the 3Com EtherLink 10 Adapter Card Setup screen.

Ensure that this value matches the value set in step 4. To change this value, scroll to the matching value, and then click *OK*.

c Click *OK* to close the 3Com NIC Diagnostics program.

7 **Restart the PC.**

The hardware conflict should be resolved. If not, consult your system administrator.

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Windows 95/98, and Windows NT Troubleshooting

A comprehensive section on troubleshooting tips and techniques is provided in the online Help. To access the online Help, follow these steps:

1. **Click *Start* in the Windows 95/98/NT taskbar.**
2. **Select *Programs*, then *3Com NIC Utilities*, and then *3COM NIC DOCTOR* to start the 3Com NIC Diagnostics program.**

   The General tab of the 3Com NIC Diagnostics program appears.
3. **Select the Support tab.**
4. **Click *Release Notes*.**

Diagnostic Testing Under Windows 95/98 and Windows NT

The 3Com NIC Diagnostics program for Windows 95, Windows 98, and Windows NT is installed on your hard disk when you install the NIC software.

Starting the 3Com NIC Diagnostics Program

You can start the program by following these steps:

1. **Click *Start* in the Windows 95/98/NT taskbar.**
2. **Select *Programs*, then *3Com NIC Utilities*, and then *3COM NIC DOCTOR* to start the 3Com NIC Diagnostics program.**

   The General tab of the 3Com NIC Diagnostics program appears.

   For Windows 95/98 or Windows NT, you can also follow these steps to run the 3Com NIC Diagnostics program:
1. **Click *Start* in the taskbar, and then select *Run*.**

   The Run dialog box appears.
2. **In the Open entry box, type:**

   `tcaudiag`
3. **Click *OK*.**

   Table 9 shows the various tab screens that are available within the 3Com NIC Diagnostics program.

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Table 9 3Com NIC Diagnostic Program Tab Screens

Tab	Description
General	The General tab is the first screen to appear when you start the diagnostics program. This screen identifies the NICs installed in your PC and lets you get information that is specific to the selected NIC. This screen also provides check boxes for adding the 3Com NIC Diagnostics program icon to the taskbar tray of your PC and enabling the PC as an auto echo server system on the network. Click *NIC Details* to display a screen that lists detailed information about the selected NIC.
Configuration	The Configuration tab is used to change NIC configuration settings.
Statistics	The Statistics tab provides network traffic information that is updated by the NIC driver several times a minute.
Diagnostics	The Diagnostics tab provides access to the 3Com NIC Diagnostics program that lets you test the 3C509B NIC or change configuration settings.
Support	The Support tab provides five buttons, each of which provides different support-related information or options. ■ Diagnostics The *Diagnostics* button provides buttons for two tests that verify network and NIC functionality. ■ Release Notes The *Release Notes* button provides information about known problems with specific vendor models. ■ BBS Information The *BBS Information* button provides information for obtaining the latest 3Com software drivers. ■ http://www.3com.com The *http://www.3com.com* button takes you to the 3Com home page on the 3Com Web site. ■ Problem Report The *Problem Report* button displays forms for submitting a trouble report to 3Com through e-mail.

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Running Tests

Two tests help you troubleshoot problems with the NIC:

- NIC test
- Network test

NIC Test

Run the NIC test to determine that the NIC is working correctly. Be sure to run this test after you have verified that the network is functioning.

Follow these steps to run the NIC test:

1 **Click *Run NIC Test* to begin the test.**

A progress bar appears. Results are displayed when the test is completed.

2 **Click *OK*.**

Network Test

Run the Network test first if you are experiencing problems with the NIC. This tests the ability of the 3C509B NIC to transmit and receive data while connected to the network.

Follow these steps to run the Network test:

1 **Click *Run Network Test*.**

The Network Connectivity Test screen is displayed.

2 **Click *Start* to begin the test.**

The PC on the network acting as the receiver in this test is identified on the right side of the screen. Results are displayed when the test is completed.

To run the test continuously, select the *Continuous* check box.

3 **Click *Close*.**

Uninstalling the NIC

If you have problems installing NIC software, allow the 3Com Installation Wizard to finish. The installation cannot be canceled once it is started.

CAUTION: *Before attempting to reinstall 3Com NIC installation software, you must first perform the uninstallation process.*

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Follow these steps to uninstall the NIC software in a PC running Windows 95, Windows 98, or Windows NT.

1 **Double-click the My Computer icon, double-click the Control Panel icon, and then double-click the Network icon.**

2 **Select the 3C509B NIC.**

- **For Windows 95/98** — On the Configuration tab, select the 3Com EtherLink 10 ISA NIC.
- **For Windows NT** — On the Configuration tab, select *Network adapters*, and then select the 3Com EtherLink 10 ISA NIC.

3 **Click *Remove*.**

4 **Click *OK*.**

The System Settings Change screen appears, prompting you to restart your PC.

5 **Click *Yes*.**

The NIC is no longer recognized by your operating system. All 3C509B NIC software is removed from your PC.

Reinstalling NIC Software

When an event such as a hard disk crash occurs, the original configuration file written to the PC hard disk may be lost or damaged. In this case, you must reinstall the NIC software for the NIC to be operational.

To reinstall 3Com NIC software for Windows 95, follow the procedure specified in "Configuring the NIC for Windows 95, Version 950b" on page 34.

To reinstall 3Com NIC software for Windows 98, follow the procedure specified in "Configuring the NIC for Windows 98" on page 38.

To reinstall 3Com NIC software using saved settings from a previous installation, go to the next section.

If you are unable to reinstall the NIC or the NIC software successfully, see the appropriate troubleshooting sections in this chapter.

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Performing Automated Installations

This section describes how to install and configure 3C509B NICs when you want to perform multiple installations automatically or when you must reinstall the NIC software because it has been lost or corrupted.



This procedure uses configuration settings saved from a previous installation.

Installing from the Hard Disk

Follow these steps if the saved configuration settings are in a file on your hard disk:

1. **Click *Start* in the taskbar, click *Run,* and then enter the path to the file that contains the saved configuration settings that you want to use to reinstall the NIC.**
2. **Click *OK*.**

   The 3Com Installation Wizard starts and displays the first screen.
3. **Click *Install*.**

   3Com Installation Wizard screens appear sequentially, displaying the settings saved in the original installation.

Installing from a Diskette

Follow these steps if the saved configuration settings are in a file on a diskette:

1. **Insert the diskette containing the saved configuration settings in drive A.**
2. **Click *Start* in the taskbar, click *Run,* and then enter:**

   `a:\`
3. **Click *OK*.**

   The 3Com Installation Wizard starts and displays the first screen.
4. **Click *Install*.**

   3Com Installation Wizard screens appear sequentially, displaying the settings saved in the original installation.

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7 TROUBLESHOOTING FOR WINDOWS 3.X

This chapter explains how to isolate and solve problems that may occur when you install the 3C509B NIC in a PC running DOS, Windows 3.1, or Windows for Workgroups.

Checklist

If you experience problems installing the NIC, first check these items:

- Check the NIC LED, as described in "Link LED" on page 25.
- Check the connectors. Examine the cable for obvious signs of damage, wear, or crimping. Substitute a known working cable.
- Check whether the NIC software is correctly installed. See Chapter 4.
- Make sure the drivers installed are correct for the network operating system you are running (see "Installing Other Supported Network Drivers" on page 84).

If the problem persists, go to related procedures in this chapter or see Appendix C, "Technical Support."

Diagnostic Testing Under Windows 3.x

The Configuration and Diagnostics Program, on *EtherDisk* diskette 2, includes the diagnostics program used for DOS, Windows 3.x, and Windows for Workgroups. Run the diagnostic tests after installing the 3C509B NIC to check overall NIC operation and to isolate failures. After the NIC is installed, if the default tests do not isolate the problem, tailor the test parameters to accommodate your specific situation.



Do not run diagnostic tests with device drivers or memory managers installed.

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Boot your PC to DOS to avoid installing device drivers or memory managers.

Diagnostic tests are divided into three groups:

- The Group 1 tests check the physical components, connectors, and circuitry on the NIC.
- The Group 2 Network Loopback Test (for the 3C509B-TPC and COMBO NICs only) checks to see if the NIC can transmit and receive data through the coaxial transceiver.
- The Group 3 test (the Echo Exchange Test) tests to see if the NIC can transmit and receive data while on the network.

If the NIC passes the group tests successfully, the NIC is functioning correctly. If the problem remains, look at cabling, software, driver configuration, and issues that can affect network functionality.

Starting the DOS Configuration and Diagnostics Program

Follow these steps to run the Configuration and Diagnostics Program:

1 **Boot to DOS. (Use a DOS diskette.)**

2 **Insert *EtherDisk* diskette 2 in drive A.**

3 **Run the installation program. Enter:**

```
a:install
```

The main menu is displayed, as shown in Figure 58 on page 82.

4 **Select *Configuration and Diagnostics Program* and press Enter.**

If multiple NICs are installed, each NIC is listed.

5 **Select the NIC you want to test and press Enter.**

You can also run the tests from the command line. At the system prompt, enter:

```
3c5x9cfg run
```

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Running the Group 1 Tests

Group 1 tests evaluate the physical components of the NIC. A Group 1 test failure can indicate a faulty NIC.

For a description of each Group 1 test, press F1 to access Help. In the Help screen, tab to the Index *button and press Enter. Use the arrow keys to move through the Index listings. Select* Test Definitions *and press Enter.*

Follow these steps to run the Group 1 tests:

1 **From the *Test* menu, select *Run Tests* and press Enter.**

The Run Tests dialog box appears with the *Start* button already selected.

2 **Press Enter to start the tests.**

Group 1 tests run 10 times (default setting) unless you specify otherwise. The test results are displayed in the Results column.

Running the Group 2 Test

The Group 2 test is the Network Loopback Test. It tests whether the 3C509B-COMBO and 3C509B-TPC NICs can transmit and receive data over thin Ethernet coaxial wire. This test requires either installing a loopback plug at the transceiver connection on the NIC or running the test on an idle network.

A failure in this test usually indicates a cabling problem.

CAUTION: *Running the Group 2 test while connected to an active network can cause intermittent failures.*

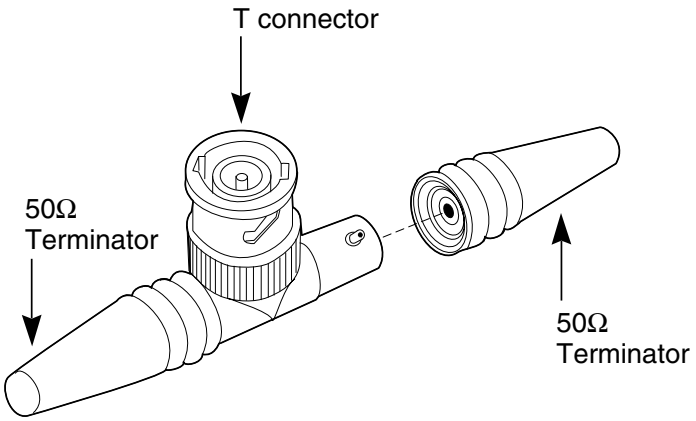
Assembling a Loopback Plug

If you do not have a loopback plug, you can order one from your authorized network supplier or you can make your own. You can purchase the terminators from your network supplier (3Com part number 3C535).

To assemble the loopback plug, connect two 50-ohm network cable terminators to a T connector, as shown in Figure 60.

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Figure 60 Assembling a Loopback Plug



Starting the Group 2 Test

Follow these steps to run the Group 2 test on either the 3C509B-TPC or 3C509B-COMBO NIC:

1. **Connect the loopback plug to the round BNC connector on the NIC.**
2. **Start the Configuration and Diagnostics Program, as described in "Starting the DOS Configuration and Diagnostics Program" on page 102.**
3. **From the *Test* menu, select *Test Setup*.**
4. **Enable the Group 2 test. Select *OK* and press Enter.**
5. **Go to the Run Tests dialog box to start the tests.**
6. **After the test is completed:**
   - **a** Exit the Configuration and Diagnostics Program.
   - **b** Remove the loopback plug.

Running the Group 3 Test

The Group 3 test is the Echo Exchange Test. It tests to see if the NIC can transmit and receive data while connected to the network. If you have successfully run the Group 1 and Group 2 tests, a failure in the Group 3 test usually indicates a cabling, hub, or network problem.

CAUTION: *Do not use an active network to run the Group 3 test.*

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To run the Group 3 test on the network, you need a second PC to serve as an echo server, and it must have a 3Com NIC installed. The echo server receives packets from and echoes packets back to the NIC being tested. The diagnostics program provided with the NIC supports the 3C509B echo server diagnostics program.

Setting Up an Echo Server

Follow these steps to set up an echo server:

1 **Insert the *EtherDisk* diskette for the echo server NIC in drive A of the echo server.**

2 **Start the diagnostics program on the echo server.**

The diagnostics program that you use is dictated by the NIC that is installed in the echo server. See Table 10. At the DOS prompt, enter the diagnostics program name for the associated NIC.

Table 10 Diagnostics Programs

Diagnostics Program Name	NIC Installed in the Echo Server
3C503.EXE	EtherLink II or II TP, EtherLink II/16 or II/16 TP
3C505.EXE	EtherLink Plus
3C507.EXE	EtherLink 16 or EtherLink 16 TP
3C508CFG.EXE	3Com Red
3C5X9CFG.EXE	EtherLink 10 family
3C523.EXE	EtherLink/MC
3C523TP.EXE	EtherLink/MC TP
3C527.EXE	EtherLink/MC 32
3C59XCFG.EXE	EtherLink 10 EISA/PCI bus master family (including Fast EtherLink NIC running at 10 Mbps)
3C90XCFG.EXE	EtherLink XL and Fast EtherLink XL family of NICs running at 10 Mbps

The main window of the diagnostics program is displayed.

3 **From the *Test* menu, select *Echo Server*, and then click *Start*.**

A message confirms that your PC is now set up as an echo server.

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Starting the Group 3 Test

Follow these steps to run the Group 3 test on the 3C509B NIC:

1. **Start the Configuration and Diagnostics Program on the PC in which the NIC to be tested is installed.**
2. **From the *Test* menu, select *Test Setup*.**
3. **Enable the Group 3 test. Select *OK* and press Enter.**
4. **Go to the Run Tests dialog box to start the tests.**
5. **After the test is completed:**
   - **a** Exit the program on the echo server.
   - **b** Exit the Configuration and Diagnostics Program.

Getting Help If a Test Fails

If a diagnostic test fails, the NIC may not be defective. The problem may be incorrect configuration settings, settings that conflict with other NICs, or improper installation.

For more information about a failed diagnostic test:

- Select the test that failed in the Run Tests dialog box and press Enter.
- Select the *Zoom* button and press Enter.



CAUTION: *If you intend to remove the NIC from your PC, make sure to turn the power off before removing or reinserting the NIC.*

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A SPECIFICATIONS

This appendix lists specifications, pin assignments, and cable requirements for the 3C509B NIC.

NIC Specifications

Network Interface

3C509B-TP 3C509B-TPO	Ethernet IEEE 802.3i 10BASE-T industry standard for a 10 Mbps baseband CSMA/CD local area network
3C509B-COMBO 3C509B-TPC	IEEE 802.3i 10BASE-T and Ethernet IEEE 802.3 industry standard for a 10 Mbps CSMA/CD local area network

Physical Dimensions

Length:	155.95 mm (6.14 in)
Height:	100.33 mm (3.95 in)
TPO height:	63.50 mm (2.50 in)
TPC height:	77.47 mm (3.05 in)

Environmental Operating Range

Operating temperature:	0˚ to 70˚ C (32˚ to 158˚ F)
Humidity:	10 to 90% noncondensing

Power Requirements

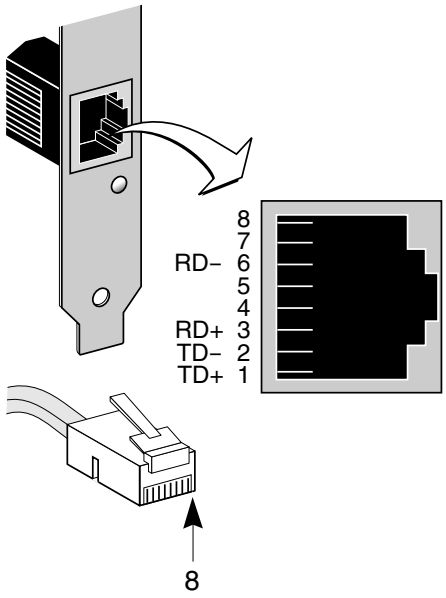
Operating voltage:	+5 V ± 5% @ 150 mA max +12 V ± 5% @ 0.5 A max

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RJ-45 Connector Pin Assignments

Figure 61 shows the RJ-45 connector pin assignments.

Figure 61 RJ-45 Connector Pin Assignments



AUI Connector Pin Assignments

Table 11 lists the pin assignments for the AUI (attachment unit interface) connector.

Table 11 AUI Connector Pin Assignments

Pin	Function	Pin	Function
1	Collision shield	9	Collision –
2	Collision +	10	Transmit –
3	Transmit +	11	Transmit shield
4	Receive shield	12	Receive –
5	Receive +	13	+12 volts
6	Power return	14	Voltage shield
7	Not used	15	Not used
8	Not used		

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Cable Specifications

To comply with the limits of a Class B digital device, 3Com requires that you use quality interface cables when connecting to this device. Changes or modifications not expressly approved by 3Com could void the user's authority to operate this equipment. Examples of supported cable types are shown in Table 12.

Table 12 Supported Cable Types

Type	Example
Unshielded twisted-pair 100-ohm	Category 3 LAN and high-speed data cable, for example, Anixter CM-00424BAG-3 or equivalent Category 4 extended distance LAN cable, for example, Anixter CM-00424BAG-4 or equivalent
Thin coaxial	RG58 A/U or C/U (50 ohm ± 4)
Thick coaxial	RG59 (50 ohm ± 2)



The 10BASE-T cable you use for establishing a connection to the network should not be used for any other purpose. It must be dedicated to the link between the NIC and the network.

For complete cabling details, see the IEEE 802.3 specification, section 8.4, "Coaxial Cables and Electrical Parameters."

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B Crossover Cable Troubleshooting Tips

When you work with 10BASE-T cabling, concentrators, and NICs from different vendors, it is possible to connect everything but still have no communication between file servers and workstations.

When there are several unknown variables, it is difficult to determine which component is failing. Start with the following procedure to narrow the range of possible causes:

1 **Determine whether your equipment complies with the 10BASE-T standard.**

This is particularly important for data concentrators (hubs or repeaters).

2 **Connect a straight-through cable from the PC to the hub.**

The hub performs an internal crossover so that the signal can go from TD+ to RD+ and TD– to RD–. When you look at an RJ-45 connector from the front (that is, the opposite side from where the wires enter the connector), pin 1 is identified on the right side when the metal contacts are facing up.

3 **Make sure that the TD+ and TD– wires are twisted together, and that the RD+ and RD– wires are twisted together.**

Using wires from opposing pairs can cause signals to be lost.

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Troubleshooting Hubs with Crossover Cable

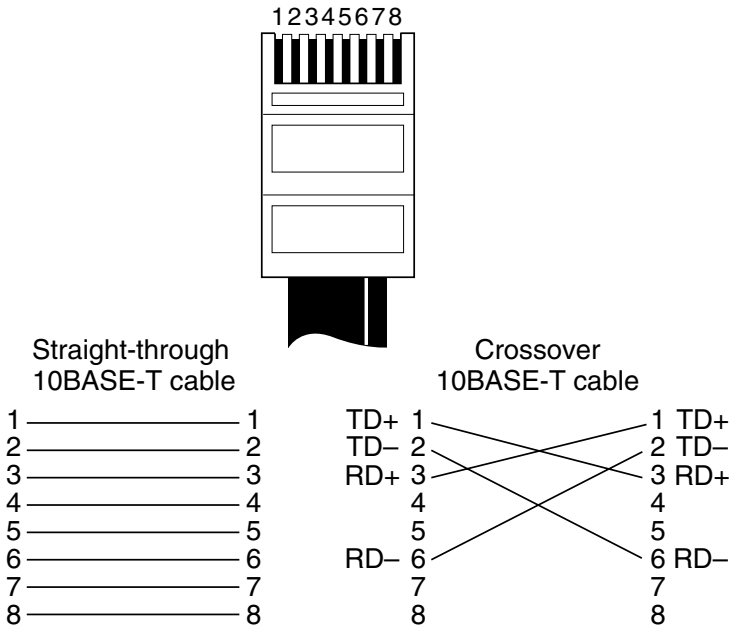
A crossover cable can be used to isolate failures in these components when hub performance or impedance settings are in question.

1 **Connect a file server and a client PC back to back with a crossover cable to verify that the NIC and network operating system are properly configured.**

2 **To make a crossover cable, connect TD+ to RD+ and TD– to RD–.**

The cable performs the crossover that is usually performed by the hub. Figure 62 shows the pinouts for the crossover cable:

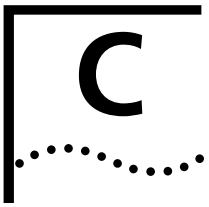
Figure 62 Straight-Through and Crossover Cable Pinouts



If the file server and client PC function together as a small network, then either the existing cabling or the hub is failing.

- With a correct crossover connection, the LED lights.
- With a straight-through connection, the LED does not light.
- With a polarity mismatch (that is, TD+ to RD– instead of TD+ to RD+), the LED blinks.

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TECHNICAL SUPPORT

3Com provides easy access to technical support information through a variety of services. This appendix describes these services.

Information contained in this appendix is correct at time of publication. For the most recent information, 3Com recommends that you access the 3Com Corporation World Wide Web site.

Online Technical Services

3Com offers worldwide product support 24 hours a day, 7 days a week, through the following online systems:

- World Wide Web site
- 3Com Knowledgebase Web Services
- 3Com FTP site
- 3Com Bulletin Board Service (3Com BBS)
- 3Com Facts℠ Automated Fax Service

World Wide Web Site

To access the latest networking information on the 3Com Corporation World Wide Web site enter this URL into your Internet browser:

http://www.3com.com/

This service provides access to online support information such as technical documentation and software library, as well as support options that range from technical education to maintenance and professional services.

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3Com Knowledgebase Web Services

This interactive tool contains technical product information compiled by 3Com expert technical engineers around the globe. Located on the World Wide Web at **http://knowledgebase.3com.com**, this service gives all 3Com customers and partners complementary, round-the-clock access to technical information on most 3Com products.

3Com FTP Site

Download drivers, patches, software, and MIBs across the Internet from the 3Com public FTP site. This service is available 24 hours a day, 7 days a week.

To connect to the 3Com FTP site, enter the following information into your FTP client:

- Hostname: **ftp.3com.com**
- Username: **anonymous**
- Password: **<your Internet e-mail address>**

You do not need a user name and password with Web browser software such as Netscape Navigator and Internet Explorer.

3Com Bulletin Board Service

The 3Com BBS contains patches, software, and drivers for 3Com products. This service is available through analog modem or digital modem (ISDN) 24 hours a day, 7 days a week.

Access by Analog Modem

To reach the service by modem, set your modem to 8 data bits, no parity, and 1 stop bit. Call the telephone number nearest you:

Country	Data Rate	Telephone Number
Australia	Up to 14,400 bps	61 2 9955 2073
Brazil	Up to 28,800 bps	55 11 5181 9666
France	Up to 14,400 bps	33 1 6986 6954
Germany	Up to 28,800 bps	4989 62732 188
Hong Kong	Up to 14,400 bps	852 2537 5601

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Country	Data Rate	Telephone Number
Italy	Up to 14,400 bps	39 2 27300680
Japan	Up to 14,400 bps	81 3 5977 7977
Mexico	Up to 28,800 bps	52 5 520 7835
P.R. of China	Up to 14,400 bps	86 10 684 92351
Taiwan, R.O.C.	Up to 14,400 bps	886 2 377 5840
U.K.	Up to 28,800 bps	44 1442 438278
U.S.A.	Up to 53,333 bps	1 847 262 6000

Access by Digital Modem

ISDN users can dial in to the 3Com BBS using a digital modem for fast access up to 64 Kbps. To access the 3Com BBS using ISDN, call the following number:

1 847 262 6000

3Com Facts Automated Fax Service

The 3Com Facts automated fax service provides technical articles, diagrams, and troubleshooting instructions on 3Com products 24 hours a day, 7 days a week.

Call 3Com Facts using your Touch-Tone telephone:

1 408 727 7021

Support from Your Network Supplier

If you require additional assistance, contact your network supplier. Many suppliers are authorized 3Com service partners who are qualified to provide a variety of services, including network planning, installation, hardware maintenance, application training, and support services.

When you contact your network supplier for assistance, have the following information ready:

- Product model name, part number, and serial number
- A list of system hardware and software, including revision levels
- Diagnostic error messages
- Details about recent configuration changes, if applicable

If you are unable to contact your network supplier, see the following section on how to contact 3Com.

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Support from 3Com

If you are unable to obtain assistance from the 3Com online technical resources or from your network supplier, 3Com offers technical telephone support services. To find out more about your support options, call the 3Com technical telephone support phone number at the location nearest you.

When you contact 3Com for assistance, have the following information ready:

- Product model name, part number, and serial number
- A list of system hardware and software, including revision levels
- Diagnostic error messages
- Details about recent configuration changes, if applicable

Here is a list of worldwide technical telephone support numbers:

Country	Telephone Number
Asia Pacific Rim	
Australia	1 800 678 515
Hong Kong	800 933 486
India	+61 2 9937 5085
Indonesia	001 800 61 009
Japan	0031 61 6439
Malaysia	1800 801 777
New Zealand	0800 446 398
Pakistan	+61 2 9937 5085
Philippines	1235 61 266 2602
P.R. of China	10800 61 00137 or 021 6350 1590
Singapore	800 6161 463
S. Korea	
From anywhere in S. Korea:	00798 611 2230
From Seoul:	(0)2 3455 6455
Taiwan, R.O.C.	0080 611 261
Thailand	001 800 611 2000
Europe	
From anywhere in Europe, call:	+31 (0)30 6029900 phone +31 (0)30 6029999 fax

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Country	Telephone Number
Europe, South Africa, and Middle East	
From the following countries, you may use the toll-free numbers:	
Austria	0800 297468
Belgium	0800 71429
Denmark	800 17309
Finland	0800 113153
France	0800 917959
Germany	0800 1821502
Hungary	00800 12813
Ireland	1800 553117
Israel	1800 9453794
Italy	1678 79489
Netherlands	0800 0227788
Norway	800 11376
Poland	00800 3111206
Portugal	0800 831416
South Africa	0800 995014
Spain	900 983125
Sweden	020 795482
Switzerland	0800 55 3072
U.K.	0800 966197
Latin America	
Argentina	AT&T +800 666 5065
Brazil	0800 13 3266
Chile	1230 020 0645
Colombia	98012 2127
Mexico	01 800 CARE (01 800 2273)
Peru	AT&T +800 666 5065
Puerto Rico	800 666 5065
Venezuela	AT&T +800 666 5065
North America	1 800 NET 3Com (1 800 638 3266) Enterprise Customers: 1 800 876-3266

Returning Products for Repair

Before you send a product directly to 3Com for repair, you must first obtain an authorization number. Products sent to 3Com without authorization numbers will be returned to the sender unopened, at the sender's expense.

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To obtain an authorization number, call or fax:

Country	Telephone Number	Fax Number
Asia, Pacific Rim	+65 543 6500	+65 543 6348
Europe, South Africa, and Middle East	+31 30 6029900	+31 30 6029999
Latin America	1 408 326 2927	1 408 326 3355
From the following countries, you may call the toll-free numbers; select option 2 and then option 2:		
Austria	0800 297468	
Belgium	0800 71429	
Denmark	800 17309	
Finland	0800 113153	
France	0800 917959	
Germany	0800 1821502	
Hungary	00800 12813	
Ireland	1800553117	
Israel	1800 9453794	
Italy	1678 79489	
Netherlands	0800 0227788	
Norway	800 11376	
Poland	00800 3111206	
Portugal	0800 831416	
South Africa	0800 995014	
Spain	900 983125	
Sweden	020 795482	
Switzerland	0800 55 3072	
U.K.	0800 966197	
U.S.A. and Canada	1 800 NET 3Com (1 800 638 3266) Enterprise Customers: 1 800 876 3266	1 408 326 7120 (not toll-free)

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3Com Corporation LIMITED WARRANTY

EtherLink 10 IMbps SA Network Interface Cards

HARDWARE

3Com warrants this hardware product to be free from defects in workmanship and materials, under normal use and service, for the following length of time from the date of purchase from 3Com or its authorized reseller:

Lifetime

3Com's sole obligation under this express warranty shall be, at 3Com's option and expense, to repair the defective product or part, deliver to Customer an equivalent product or part to replace the defective item, or if neither of the two foregoing options is reasonably available, 3Com may, in its sole discretion, refund to Customer the purchase price paid for the defective product. All products that are replaced will become the property of 3Com. Replacement products may be new or reconditioned. 3Com warrants any replaced or repaired product or part for ninety (90) days from shipment, or the remainder of the initial warranty period, whichever is longer.

SOFTWARE

3Com warrants that each software program licensed from it will perform in substantial conformance to its program specifications, for a period of ninety (90) days from the date of purchase from 3Com or its authorized reseller. 3Com warrants the media containing software against failure during the warranty period. No updates are provided. 3Com's sole obligation under this express warranty shall be, at 3Com's option and expense, to refund the purchase price paid by Customer for any defective software product, or to replace any defective media with software which substantially conforms to applicable 3Com published specifications. Customer assumes responsibility for the selection of the appropriate applications program and associated reference materials. 3Com makes no warranty or representation that its software products will meet Customer's requirements or work in combination with any hardware or applications software products provided by third parties, that the operation of the software products will be uninterrupted or error free, or that all defects in the software products will be corrected. For any third party products listed in the 3Com software product documentation or specifications as being compatible, 3Com will make reasonable efforts to provide compatibility, except where the non-compatibility is caused by a "bug" or defect in the third party's product or from use of the software product not in accordance with 3Com's published specifications or user manual.

YEAR 2000 WARRANTY

In addition to the Hardware Warranty and Software Warranty stated above, 3Com warrants that each product sold or licensed to Customer on and after January 1, 1998 that is date sensitive will continue performing properly with regard to such date data on and after January 1, 2000, provided that all other products used by Customer in connection or combination with the 3Com product, including hardware, software, and firmware, accurately exchange date data with the 3Com product, with the exception of those products identified at 3Com's Web site, http://www.3com.com/products/yr2000.html, as not meeting this standard. If it appears that any product that is stated to meet this standard does not perform properly with regard to such date data on and after January 1, 2000, and Customer notifies 3Com before the later of April 1, 2000, or ninety (90) days after purchase of the product from 3Com or its authorized reseller, 3Com shall, at its option and expense, provide a software update which would effect the proper performance of such product, repair such product, deliver to Customer an equivalent product to replace such product, or if none of the foregoing is feasible, refund to Customer the purchase price paid for such product.

Any software update or replaced or repaired product will carry a Year 2000 Warranty for ninety (90) days after purchase or until April 1, 2000, whichever is later.

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FCC Class B Statement

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

1 This device may not cause harmful interference, and

2 This device must accept any interference received, including interference that may cause undesired operation.

WARNING: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules, and the Canadian Department of Communications Equipment Standards entitled, "Digital Apparatus," ICES-003.These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from the one which the receiver is connected to.
- Consult the dealer or an experienced radio/TV technician for help.

The user may find the following booklet prepared by the Federal Communications Commission helpful:

The Interference Handbook

This booklet is available from the U.S. Government Printing Office, Washington, D.C. 20402. Stock No. 004-000-00345-4.

NOTE: In order to maintain compliance with the limits of a Class B digital device, 3Com requires that you use quality interface cables when connecting to this device. Changes or modifications not expressly approved by 3Com could void the user's authority to operate this equipment. Refer to the manual for specifications on cabling types.

FCC Declaration of Conformity

We declare under our sole responsibility that the

Model:	**Description:**
3C509B-TPO	EtherLink 10 ISA Network Interface Card with RJ-45 connector
3C509B-TPC	EtherLink 10 ISA Network Interface Card with RJ-45 connector and BNC connector
3C509B-TP	EtherLink 10 ISA Network Interface Card with RJ-45 connector and 15-pin AUI connector
3C509B-COMBO	EtherLink 10 ISA Network Interface Card with RJ-45 connector, BNC connector, and 15-pin AUI connector

to which this declaration relates, is in conformity with the following standards or other normative documents:

- ANSI C63.4-1992 Methods of Measurement
- Federal Communications Commission 47 CFR Part 15, subpart B
  15.107 (e) Class B Conducted Limits
  15.109 (g) Class B Radiated Emissions Limits

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