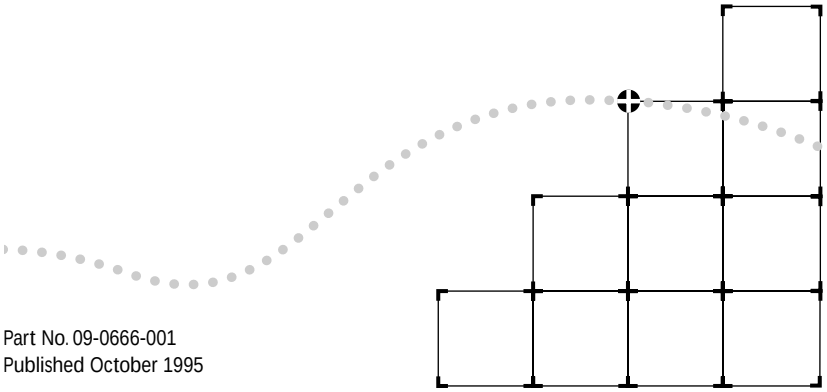
ETHERLINK® III PARALLEL TASKING® EISA BUS MASTER NETWORK ADAPTERS USER GUIDE

Members of the 3Com EtherLink III family of adapters



Part No. 09-0666-001
Published October 1995

3Com Corporation ■ 5400 Bayfront Plaza ■ Santa Clara, California ■ 95052-8145

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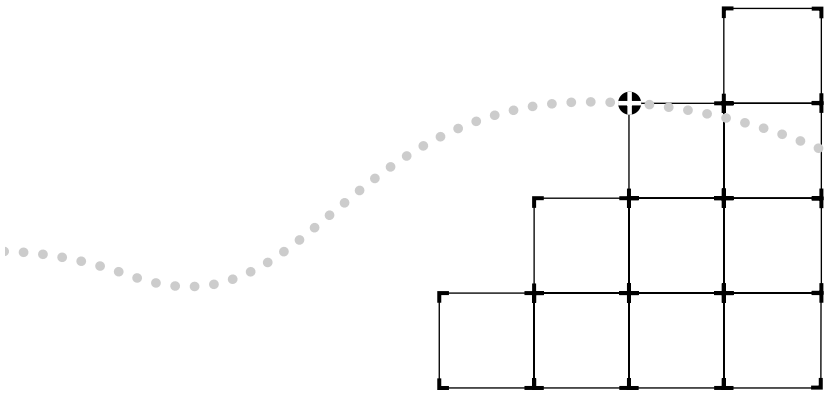

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ABOUT THIS GUIDE

Introduction

This guide describes how to install the following 3Com® EtherLink® III Parallel Tasking® 10 Mbps EISA bus master network adapters:

- 3C592-COMBO (10BASE-T, thin coax, and thick coax) adapter
- 3C592-TPO (10BASE-T) adapter

Also included is information about installing network drivers, troubleshooting the adapter, and using the diagnostic tests if an adapter malfunction occurs.

Throughout this guide, the product number 3C592 designates both members of the EtherLink III family of 10 Mbps EISA adapters.

How to Use This Guide

The following table shows where to find specific information in this guide.

If you are looking for:	Turn to:
Information about the 3Com EISA bus master network adapters	Chapter 1
Instructions for installing the adapter	Chapter 2
Procedures for connecting the adapter to the network	Chapter 2
Instructions for configuring the adapter with the EISA configuration utility	Chapter 3
Procedures for changing software option settings	Chapter 3
Instructions for installing network drivers	Chapter 4
Details on troubleshooting and running the diagnostic tests	Chapter 5
Information on adapter specifications, pin assignments, and cabling requirements	Appendix A
Information on 3Com's technical support services	Appendix B

Conventions

The following tables list text and icon conventions that are used throughout this guide.

Table 1 Text Conventions

Convention	Description
Text represented as `screen display`	`This typeface` is used to represent displays that appear on your terminal screen, for example: `NetLogin:`
Text represented as **`commands`**	**`This typeface`** is used to represent commands that you enter, for example: **`print autolink.log`**
Keys	When specific keys are referred to in the text, they are called out by their labels, such as "the Return key" or "the Escape key," or they may be shown as [Return] or [Esc]. If two or more keys are to be pressed simultaneously, the keys are linked with a plus sign (+), for example: Press [Ctrl]+[Alt]+[Del].

Table 2 Notice Icons

Icon	Type	Description
	Information Note	Information notes call attention to important features or instructions.
	Caution	Cautions alert you to personal safety risk, system damage, or loss of data.
	Warning	Warnings alert you to the risk of severe personal injury.

1 INTRODUCTION

The 3Com® EtherLink® III Parallel Tasking® adapters described in this guide are members of a family of third-generation Ethernet adapters. This family includes the 32-bit bus master Extended Industry Standard Architecture (EISA)10 Mbps Ethernet network adapters. This guide contains installation and diagnostic information about the following EISA adapters:

- 3C592-COMBO (RJ-45, BNC, AUI connectors)
- 3C592-TPO (RJ-45 connector)

The two adapters are functionally identical; they differ only in the layout of the components on each board and the type of media supported on the backplates, as shown in Figure 1-1. The name "3C592 EISA adapter" is used in this guide to refer to both EtherLink III 10 Mbps EISA adapters unless otherwise specified.

The bus master drivers supplied with this adapter are compatible with the Fast EtherLink 10/100BASE-T EISA adapter. The bus master drivers shipped on the 3C59X *EtherDisk* diskette are compatible with the 3Com 3C59X family of EISA and PCI bus master adapters; they are not backward-compatible with the 3Com 3C5X9 family of EtherLink III adapters.

The 3C592 EISA adapter connects your EISA-compliant personal computer to an Ethernet network wired with IEEE 802.3 standard 10BASE2 or 10BASE5 coaxial cable, or 10BASE-T twisted-pair cable. The cable specification for each adapter type is shown in Table 1-1.

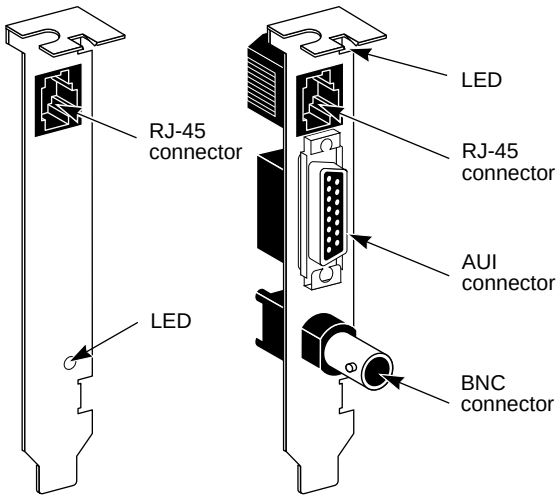

Figure 1-1 3C592 Adapter Backplates

Table 1-1 3C592 EISA Adapter Cable and Connector Specifications

Adapter Type	Cable Specification	Connector Types
3C592-TPO	10BASE-T	RJ-45
3C592-COMBO	10BASE-T Thin coax (10BASE2) Thick coax (10BASE5)	RJ-45 BNC AUI

The 3C592 EISA adapter can only be installed in computers containing EISA expansion slots.

Features

The 3C592 EISA adapter supports the following features:

- AutoLink™ auto installation software, which installs and configures all Novell® NetWare® DOS ODI client software into your operating system
- Automatic adapter recognition for computers running the Windows® 95 network operating system

- Auto Select Media Type capability, which enables drivers to automatically detect the type of media connector that connects the adapter to the network
- Network management support through Transcend® PC Link SmartAgent® software
- The Desktop Management Interface (DMI), which increases the manageability of PCs by standardizing how information relating to PCs is made available and how it is accessed
- LED notification of link integrity and polarity reversal

The procedures described in this guide are shown in Figure 1-2.

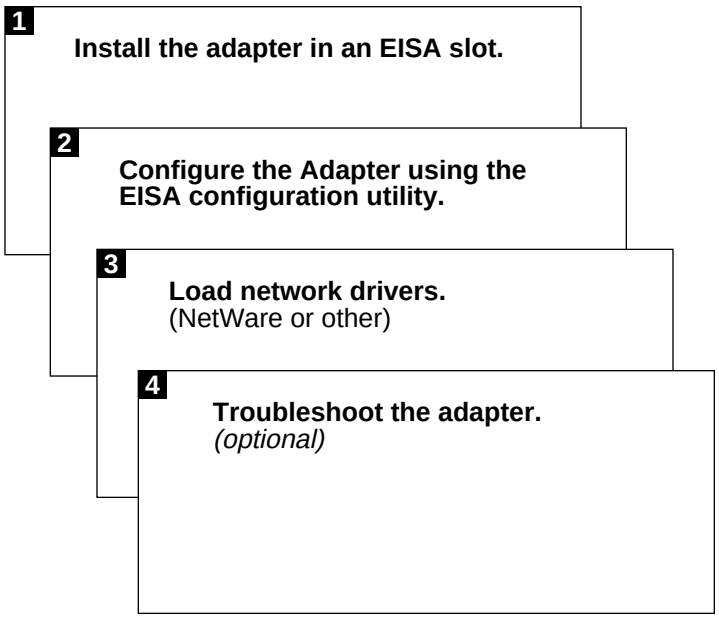

Figure 1-2 Procedure Overview

2 INSTALLING THE EISA ADAPTER

This chapter describes how to install the 3C592 EISA adapter in your computer. An overview of these procedures is shown in Figure 2-1.

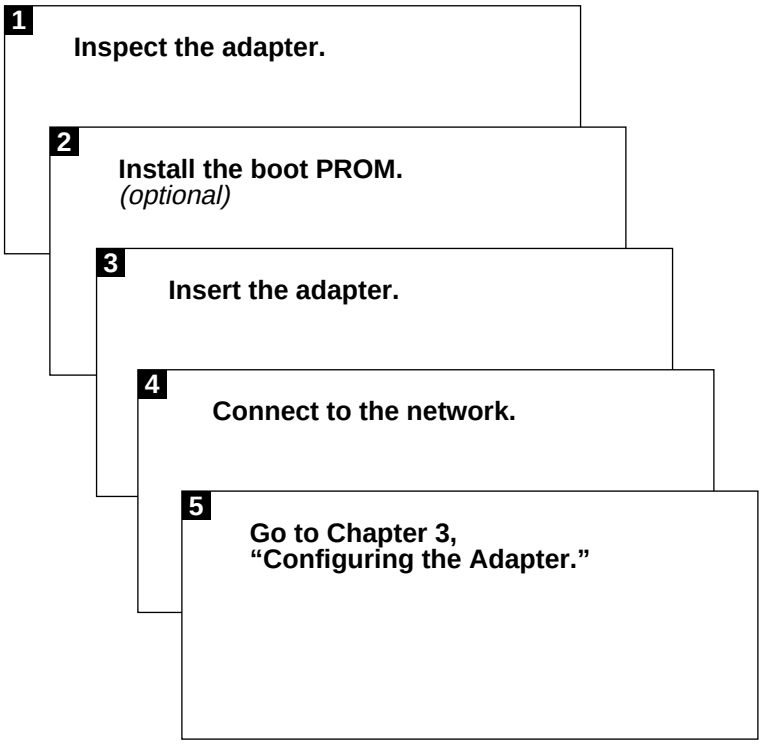

Figure 2-1 Hardware Installation Overview

After installing the adapter, you can load the network drivers, as described in Chapter 4. If necessary, you can change the software option default settings, as explained in Chapter 3.

Inspecting the Adapter

CAUTION: *Each adapter is packed in a clear plastic antistatic container to protect it during shipment. To avoid damaging any static-sensitive components after removal from the container, be sure to reduce any static electricity on your person. One way to do this is to touch the metal chassis of your computer. You can maintain grounding by wearing a wrist strap attached to the chassis.*

1. Open the shipping container and carefully remove its contents.

   The package should contain the following items:

   - 3Com EtherLink III Parallel Tasking EISA bus master adapter
   - *EtherLink III Parallel Tasking EISA Bus Master Network Adapters User Guide*
   - 3C59X *EtherDisk®* diskette

2. Verify that you have received all items, and inspect each item for damage.

   If you find any damage, contact your network supplier and the carrier that delivered the package.

Installing the Boot PROM

The boot PROM is optional and can be purchased separately. If you are installing it onto the adapter, follow the instructions that accompanied the boot PROM.

Inserting the Adapter

To insert the adapter into the computer, follow these steps:

1. Turn off the computer and disconnect the unit from its power source.

2. Remove all jewelry from your hands and wrists.

3 Select an appropriate expansion slot and remove its expansion cover plate.

4 Insert the adapter in the EISA slot and secure the screw.

If you have a computer with slots other than EISA slots, be sure to insert the 3C592 EISA adapter only in an EISA slot. Figure 2-2 compares the size of the slots in an EISA computer that has PCI slots. EISA slots are longer than PCI slots and deeper than ISA slots.

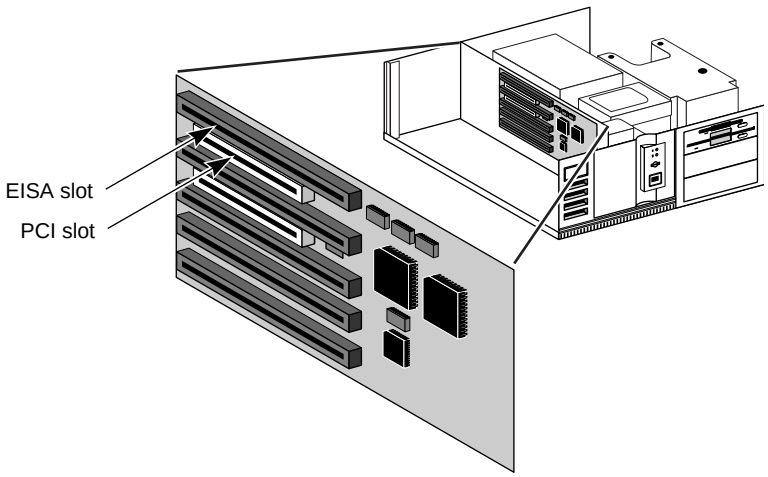

Figure 2-2 PCI and EISA Bus Slots in an EISA Computer

The adapter backplate should be flush with the computer chassis. Be sure that the connector fingers of the adapter are completely seated in the slot.

5 Replace the computer cover and reconnect all previously connected cables.

If you are installing multiple EtherLink EISA adapters in a computer, you must run the EISA configuration program after you install each adapter. See the discussions about installing multiple EISA adapters in Chapter 4.

Confirming Adapter Installation

If you are installing the 3C592 EISA adapter in a computer running Windows 95, you can confirm the adapter's installation by following these steps:

1. After starting Windows 95, double-click the *My Computer* icon.
2. Double-click the *Control Panel* icon.
3. Double-click the *System* icon.

   The System Properties box appears, detailing your system setup.
4. Click the *Device Manager* tab.

   A list of devices appears, arranged by type.
5. Click the *Network Adapters* tab.

   The name of the installed 3Com adapter appears, as shown below:

   ```
   3Com EtherLink III Bus-Master EISA Ethernet Adapter
   ```

   This confirms the adapter's installation.
6. Double-click the adapter's name to display a description of the adapter and its current status.

   The next dialog box confirms that the adapter is working properly.
7. Click the *Cancel* button to leave each dialog box and return to the Control Panel.

For on-line help information about any of the fields in the display boxes, click the question mark (?) in the upper right corner of the box and move the question mark cursor to the field of interest and click again.

Connecting to the Network

You must connect the adapter to the network before installing the drivers.

This section describes how to connect different types of network cables to the 3C592 EISA adapters. Table 2-1 lists the types of network cable connectors that are found on 3C592 EISA adapters.

Table 2-1 Connectors for 3C592 EISA Adapters

Cable Type	Connector	Transceiver Type
Thick coaxial	AUI	External
Twisted-pair	RJ-45	On-board TP
Thin coaxial	BNC	On-board coax

Connecting to the On-board Transceiver

Each 3C592 EISA adapter is equipped with an on-board transceiver to allow easy connection to the network.

Connecting to Thin Ethernet Cable

The 3C592-COMBO adapter is factory-set to use the on-board transceiver as the default with thin Ethernet cable.

1 Connect the T connector to the adapter's BNC connector (see Figure 2-3).

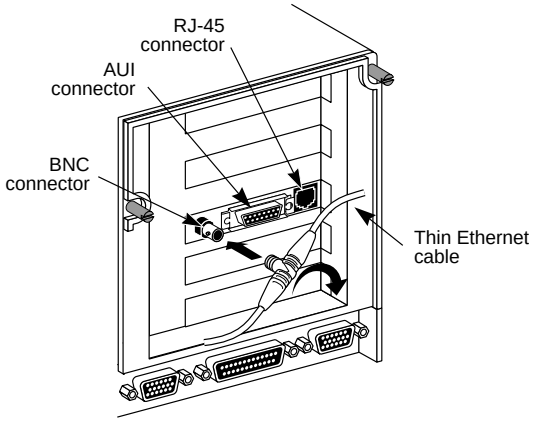

Figure 2-3 Connecting Thin Ethernet Cable

2 Align the T connector's slots with the pegs on the BNC connector.

3 Push the T connector in and twist it clockwise until it stops.

The next step is to load the drivers, as explained in Chapter 3.

Connecting to Twisted-pair Cable

The 3C592-COMBO and 3C592-TPO adapters are both equipped with an on-board transceiver for connection to twisted-pair cable.

1 Make sure that the connector on your cable is wired appropriately for standard 10BASE-T adapter cards.

Refer to Appendix A for RJ-45 connector pin assignments.

2 Align the RJ-45 connector on the end of the twisted-pair cable with the notch on the adapter's plug and insert it into the adapter socket.

The next step is to load the drivers, as explained in Chapter 3.

Connecting to an External Transceiver

You can install AUI-equipped adapters and, by employing an external transceiver, use either thin or thick coax, fiber-optic, or twisted-pair cabling. Follow these steps to connect to an external transceiver:

1 Locate the adapter's AUI connector and move the slide latch to the open position, as shown in Figure 2-4.

2 Connect the AUI cable or transceiver to the AUI connector on the adapter, as shown in Figure 2-5.

3 Move the slide latch to the closed position to lock the cable in place.

4 Connect the other end of the AUI cable to the external transceiver.

The next step is to load the drivers, as explained in Chapter 3.

If you are running Windows 95, you can confirm the network connection by double-clicking the Network Neighborhood icon. The presence of the Entire Network icon in the display box confirms the network connection.

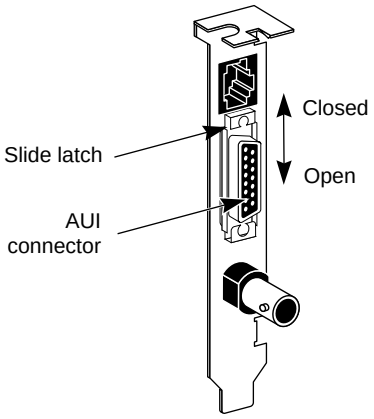

Figure 2-4 Slide Latch

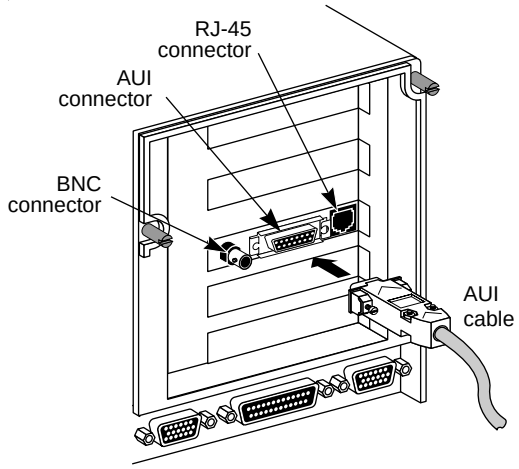

Figure 2-5 Connecting the AUI Cable

Auto Select Media Type

The Auto Select Media Type function is implemented by all drivers contained on the 3C59X *EtherDisk* diskette supplied with the 3C592 EISA adapter. This includes NetWare ODI drivers and NDIS 2.01 drivers. It also includes NDIS 3.0 drivers for Windows for Workgroups, Windows 95, and Windows NT™. The NDIS drivers function with 386 and later processors.

If you have one of these drivers installed, as soon as you connect a network cable to the system, the Auto Select Media Type function will detect the type of cable making the connection and automatically select that media type. If you change the type of network cable connected to the adapter, you must reload the driver in order for the Auto Select Media Type function to detect the cable type.

If the driver is unable to detect what type of cable is connected or whether there is any cable connected, the Auto Select Media Type function defaults to the type of connector that is stored internally in the EEPROM. The default setting for the 3C592-COMBO adapter is 10BASE-T (twisted-pair).

3 CONFIGURING THE ADAPTER

This chapter explains how to configure the 3C592 EISA adapter using the EISA configuration diskette that came with your computer and the *EtherDisk* diskette supplied with the adapter. The configuration process is shown in Figure 3-1.

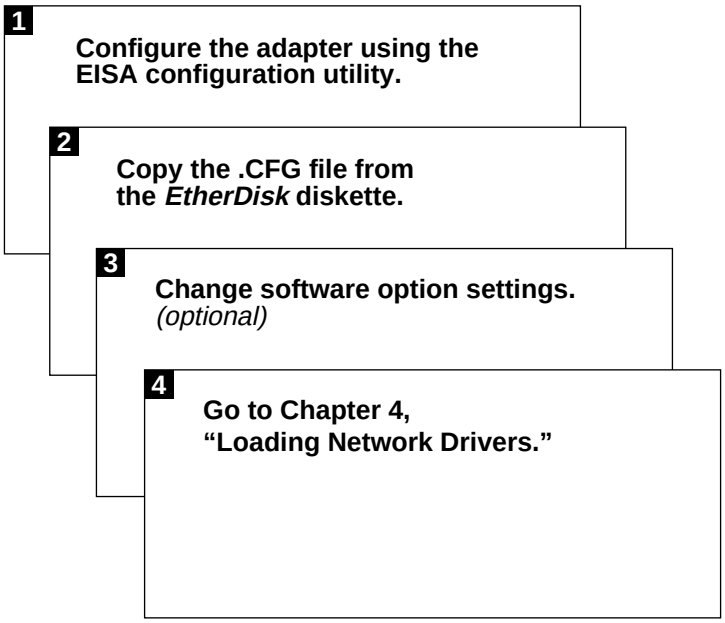

Figure 3-1 Adapter Configuration Overview

EtherDisk Diskette

The *EtherDisk* diskette supplied with the 3C592 EISA adapter contains the following:

- An adapter configuration file (!TCM5920.CGF) used by the EISA configuration utility on the EISA diskette
- The Configuration and Diagnostic Program for running diagnostics on the adapter and changing the Media Type, Network Driver Optimization, or Full Duplex settings (if desired) after initial configuration
- Adapter drivers and instructions for driver installation

Configuring the Adapter

You must run the EISA configuration utility program as part of the adapter configuration process.

If your computer is running Windows 95, skip the next section and follow the instructions in the section "Using Windows 95."

If you are using a network operating system (NOS) other than Windows 95, follow the instructions in the next section.

Using a NOS Other Than Windows 95

To run the EISA configuration utility program, follow these steps:

1. Install the 3C592 EISA adapter in your EISA computer. (Refer to Chapter 2 for instructions.)

   Make sure the adapter is firmly seated in the slot.

2. Insert the EISA configuration diskette provided with your computer into the floppy drive.

   The EISA configuration diskette that came with your computer contains a utility program that automatically configures the EISA adapter.

3. Turn on the power.

4 Follow the on-line prompts and the instructions that accompanied your EISA computer and then run the EISA configuration utility.

The sequence of configuration steps required for some EISA computers may vary from the steps explained here. Consult the EISA configuration utility manual provided by the manufacturer of your computer for more details.

5 When the EISA configuration utility asks for a .CFG file to copy, remove the EISA configuration diskette.

6 Insert the *EtherDisk* diskette and press [Enter].

The configuration file !TCM5920.CFG is copied from the *EtherDisk* diskette.

7 When the adapter has been successfully configured, follow the displayed instructions to save and exit the program. Then proceed to Chapter 4, "Loading Network Drivers."

Using Windows 95

If you are running Windows 95, after installing the adapter run the EISA configuration utility program by following these steps:

1 Turn on the computer.

The computer displays a message notifying you that a new hardware device (the 3Com EtherLink III EISA adapter) has been detected.

The message asks you to run the system (EISA) configuration utility.

2 Follow one of the instructions below:

- If your computer supplies this utility on its hard disk, follow the instructions displayed on the screen to run the utility.
- Alternatively, insert the EISA configuration utility diskette provided with your computer and follow the instructions displayed on the screen.

3 When the adapter has been successfully configured, proceed to Chapter 4, "Loading Network Drivers."

Software Option Settings

The EISA configuration program automatically configures the following parameters on your EISA adapter:

- Slot Number/Port Address
- Interrupt Request Level
- Boot PROM Enable/Disable

If you need to change the factory-set Media Type, Network Driver Optimization, or Full Duplex options, use the *EtherDisk* diskette Configuration and Diagnostic Program.

Table 3-1 lists the default setting and the available settings for the options that you can change. Refer to the on-line help (press [F1] when each option is highlighted) for more information about each of the settings.

When you run the EtherDisk *diskette Configuration and Diagnostic Program to change software options, make sure that network drivers or memory managers have not been loaded. If you are using MS-DOS 6.0 or above, you can avoid loading the drivers by pressing [F5] as soon as DOS loads. If you are using an earlier version of DOS, you must boot from a DOS diskette.*

Table 3-1 Software Configuration Options

Option	Default Setting	Available Settings
Media Type	Auto Select (for 3C592-COMBO)	On-board Coax (BNC) On-board TP (RJ-45) External (AUI) Auto Select
	On-board TP (for 3C592-TPO)	N/A
Network Driver Optimization	Normal	Normal Minimized CPU Utilization Maximized Network Performance
Full Duplex	Disabled	Enabled Disabled

Media Type

A variety of media types are available, depending upon the adapter as indicated in Table 3-1. For information about the Auto Select setting, refer to the section "Auto Select Media Type" in Chapter 2.

Network Driver Optimization

This option specifies whether to optimize the network driver for a normal environment, minimize CPU utilization, or maximize network performance environment. You may choose to use a larger percentage of CPU resources under DOS in order to improve network throughput.

In multitasking environments, choosing the Minimized CPU Utilization option saves the resources of the CPU for other tasks. If no other applications are making major demands on CPU resources, you may choose the Maximized Network Performance option.

Full Duplex

Full duplex refers to data communication sent and received at the same time. Full duplex operation is possible when used in an environment where the switch supports it. Do not enable the Full Duplex option unless your switching hub is set for full duplex.

CAUTION: *Setting the adapter to full duplex in a hub that only supports half duplex may bring down the network.*

Changing the Settings

To change the software option settings, follow these steps:

1. Make sure the 3C592 EISA adapter has been properly installed in your computer.

   CAUTION: *If this computer is an operating server, notify all users of the server to save their work and log out from the network before you begin. The Configuration and Diagnostic Program disrupts the normal operation of servers and workstations, so work that is not saved may be lost.*

2. Boot your computer under DOS, version 3.1 or later.

3. Place the *EtherDisk* diskette in a floppy drive on your computer and make that drive the active drive. For example:

   ```
   A: [Enter]
   ```

4. Type at the prompt:

   ```
   INSTALL [Enter]
   ```

5. The first time you use the *EtherDisk* diskette, a license screen appears. To accept the terms and conditions of the 3Com end-user software license agreement, type the following:

   ```
   Y
   ```

6. When the Auto Installation screen appears, as shown in Figure 3-2, press [Enter].

7. When the main menu appears with a list of options, as shown in Figure 3-3, select *Configuration/Diagnostic/ Troubleshooting*.

8. When the Configuration and Diagnostic screen appears, select *Configuration and Diagnostic Program*.

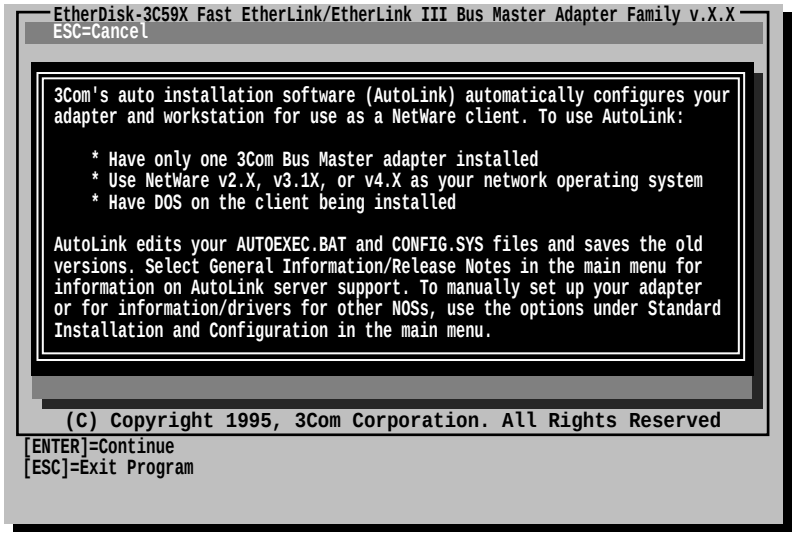

Figure 3-2 Auto Installation Screen

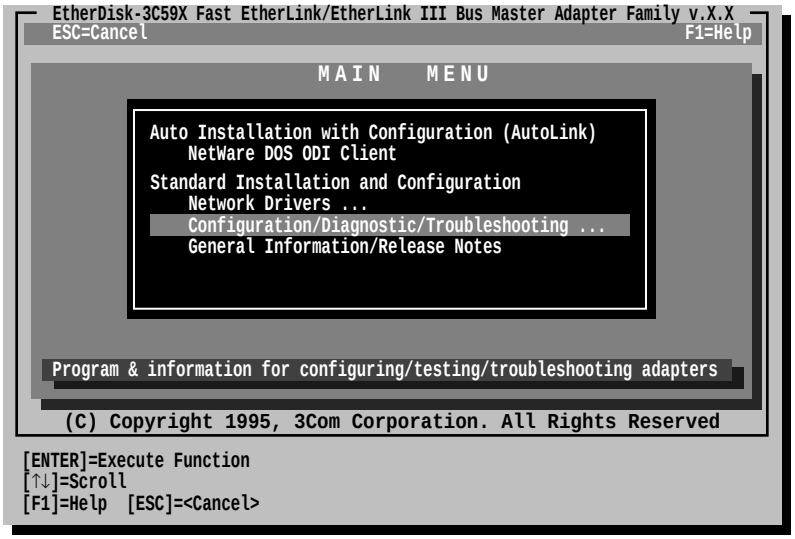

Figure 3-3 Main Menu

9 If you have multiple adapters installed, as shown in Figure 3-4, use the arrow keys to select the desired adapter and press [Enter].

10 If you have a single adapter installed, the *Configure Adapter* option appears already highlighted on the *Install* pull-down menu. Press [Enter].

A screen similar to the one shown in Figure 3-5 appears.

In the value set for the I/O Port Address parameter, the 1000 indicates slot number 1. A setting of 2000 would mean slot number 2; 3000, slot number 3, and so forth.

11 Press [Tab] to highlight the main dialog box, and use the arrow keys to highlight one of the parameter options. Press [Enter].

A second dialog box appears.

The Boot PROM, I/O Port Address, and Interrupt Level parameters are for information only. To change them, you must use the EISA configuration utility that came with your computer.

12 Use the arrow keys to scroll through the list of settings for that option. Select a setting and press [Enter].

13 Continue this procedure with any of the other options.

Refer to the on-line help (press [F1] when the option is highlighted) for more information about each of the settings.

14 Press [Tab] to highlight *OK*. Press [Enter].

You must highlight OK *and press [Enter] to save the settings. If you want to use the same settings on other adapters, you can save the configuration settings to a file. Select* Save *under* File Options *in the Adapter Configuration dialog box. For example, type:*

```
D:\CONFIG\3C592.SET
```

This saves the settings to the default file 3C592.SET in the CONFIG directory in drive D. Refer to the on-line help (press [F1]) for more information.

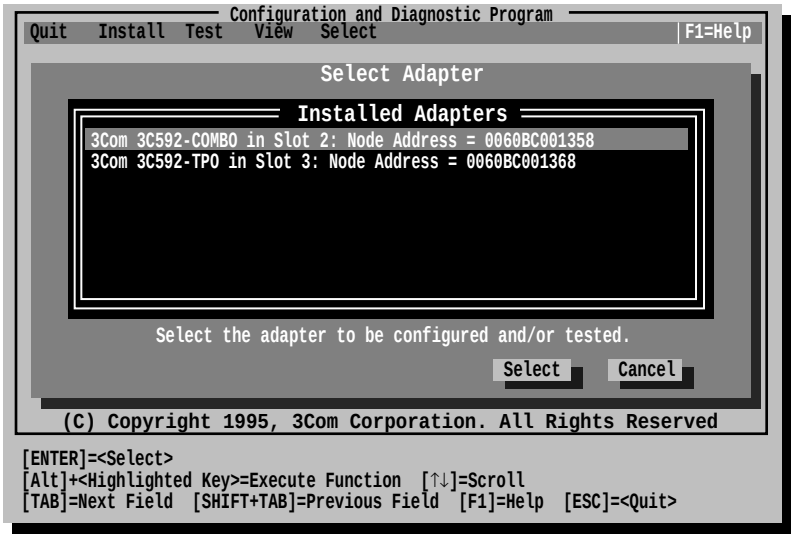

Figure 3-4 Multiple Adapter Option Configuration

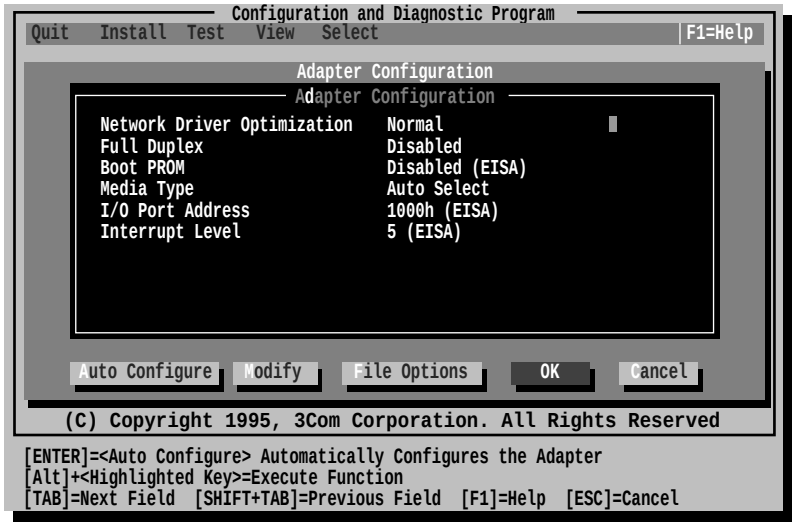

Figure 3-5 Changing Adapter Options

4 LOADING NETWORK DRIVERS

This chapter describes how to load the network drivers required to let the 3C592 EISA adapter operate with your network operating system. Figure 4-1 shows an overview of these procedures.

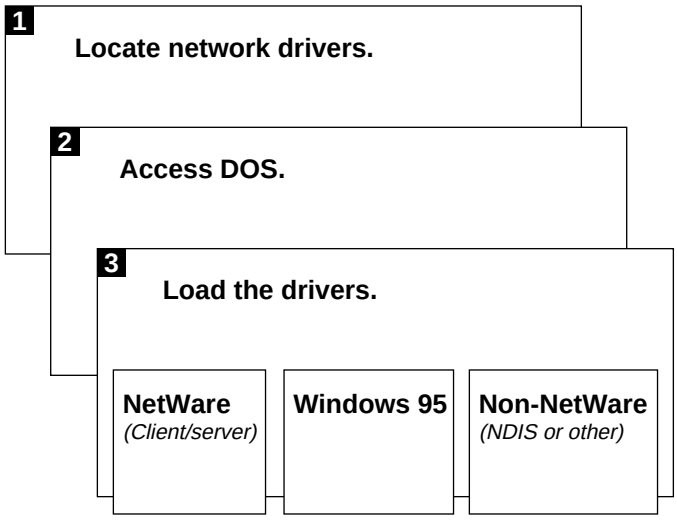

Figure 4-1 Overview of Loading Network Drivers

If you are running NetWare 2.x, 3.1x, or 4.x, you can use 3Com's AutoLink™ auto installation feature, which automatically loads all the NetWare DOS ODI client software, including drivers. Follow the instructions in the section "Loading NetWare ODI Drivers."

If you are running Windows 95, you must import the driver from the *EtherDisk* diskette. Follow the instructions in the section "Loading Windows 95 Drivers" later in this chapter.

If you are running any other network operating system, follow the driver loading instructions in the section "Loading Drivers in Non-NetWare Environments" later in this chapter.

Locating the Network Drivers

The 3C59X *EtherDisk* diskette contains the latest versions of the network drivers available when 3Com shipped the adapter. It also contains other important information concerning the 3C592 EISA adapter.

The drivers on the 3C59X EtherDisk *diskette (3C59X drivers) are compatible with the following bus master adapters: Fast EtherLink EISA 10/100BASE-T (3C597) adapters, Fast EtherLink PCI 10/100BASE-T (3C595) adapters, EtherLink III EISA 10 Mbps (3C592) adapters, and EtherLink III PCI 10 Mbps (3C590) adapters. The 3C59X drivers are not backward-compatible with the 3C5X9 family of EtherLink III adapters (ISA, EISA, or MCA). The latest version of the* EtherDisk *diskette is available on 3Com's Bulletin Board Service (BBS). For information on accessing the BBS, refer to Appendix B, "Technical Support."*

To obtain NOS drivers not included on the 3C59X *EtherDisk* diskette, access Document 9071 in 3Com's 3ComFacts® fax service. Document 9071 provides a list of available drivers and drivers in development along with information on where these drivers can be obtained.

Accessing DOS

The 3Com program for installing drivers is a DOS-based program that loads network drivers, modifies some adapter parameters, and runs diagnostic tests on the adapter. If you are using an operating interface other than DOS, such as OS/2®, Windows 3.x, or Windows 95, you must exit from that interface before installing the drivers. Table 4-1 describes how to access DOS from various operating systems.

Table 4-1 Accessing DOS

Operating System	Procedure
OS/2	**1** Boot your computer from a plain DOS diskette. **2** Type `install` at the DOS command prompt to run the 3Com install program.
Windows 3.x	**1** Exit Windows completely (select File, Exit Windows, OK). **2** Type `install` at the DOS command prompt to run the 3Com install program.
Windows 95	**1** Turn on your computer. **2** Press [F4] as soon as you see this message: `Starting Windows 95` **3** Type `install` at the DOS command prompt to run the 3Com install program.

Loading NetWare ODI Drivers

This section describes the following conditions under which you can use NetWare drivers:

- One adapter in a client
- Multiple adapters in a client
- One adapter in a server
- Multiple adapters in a server

One Adapter in a Client

To load the driver for a single adapter in a NetWare DOS ODI environment, follow the instructions in this section. The 3Com DOS ODI driver is 3C59X.COM.

3Com's AutoLink auto installation software automatically installs all necessary NetWare DOS ODI client software, including drivers. The software also modifies the CONFIG.SYS and AUTOEXEC.BAT files. It automatically logs on to the server and updates the client software if your system administrator has already configured a 3Install account on your server. Instructions for configuring a 3Install account are

contained in the README.TXT file located in the \QINSTALL\SERVER directory on the 3C59X *EtherDisk* diskette.

If no 3Install account exists, the drivers will be loaded from the diskette (rather than from the server). In this case, they may not be the most current versions.

DOS ODI client drivers that support the 3Com EISA adapter support shared interrupts. However, since there is no industry standard to support shared interrupts, other adapters may support them differently, or not at all. If another EISA adapter does not support shared interrupts, contact its manufacturer for a shared interrupt driver.

AutoLink Requirements

To use the AutoLink feature to install the NetWare DOS ODI driver, your computer must meet the following requirements:

- Use the Novell NetWare 2.x, 3.1x, or 4.x network operating system
- Have only one 3C592 EISA adapter installed
- Be intended for use as a NetWare DOS ODI client

If this does not describe your network environment, refer to the appropriate section later in this chapter.

AutoLink Installation

To use the AutoLink program to install NetWare DOS ODI client software on a PC with a single adapter, complete the following steps.

You can use the AUTOLINK.CFG file to modify the AutoLink process. The AUTOLINK.CFG file in the root directory contains default settings and descriptions of other control parameters.

1. Make sure that you have booted the computer under DOS, version 3.1 or later, and that your computer is connected to the network (refer to Chapter 2).

2 Insert the 3C59X *EtherDisk* diskette in a floppy drive on your computer and make that drive the active drive.

For example, if the diskette drive is A, type the following command:

`A: [Enter]`

3 At the prompt, type:

`INSTALL [Enter]`

Alternatively, at the prompt, type:

`AUTOLINK [Enter]`

If you type AUTOLINK instead of INSTALL, you will bypass the EtherDisk diskette *menu program (skipping steps 5 and 6) and advance to step 7.*

4 The first time you use the diskette to install an adapter, a license screen appears. To accept the terms and conditions of the 3Com end-user software license agreement, type the following:

`Y`

To view the full text of the license agreement, press [F1].

Once you have agreed to the terms and conditions of the 3Com license agreement, the license information screen will not appear again.

The Auto Installation Information screen appears, as shown in Figure 4-2.

5 Read the screen and press [Enter].

6 When the main menu screen shown in Figure 4-3 appears, select *NetWare DOS ODI Client*, and press [Enter].

Auto installation may take a few minutes. Several messages appear while the AutoLink program is running. A final message indicating successful installation appears.

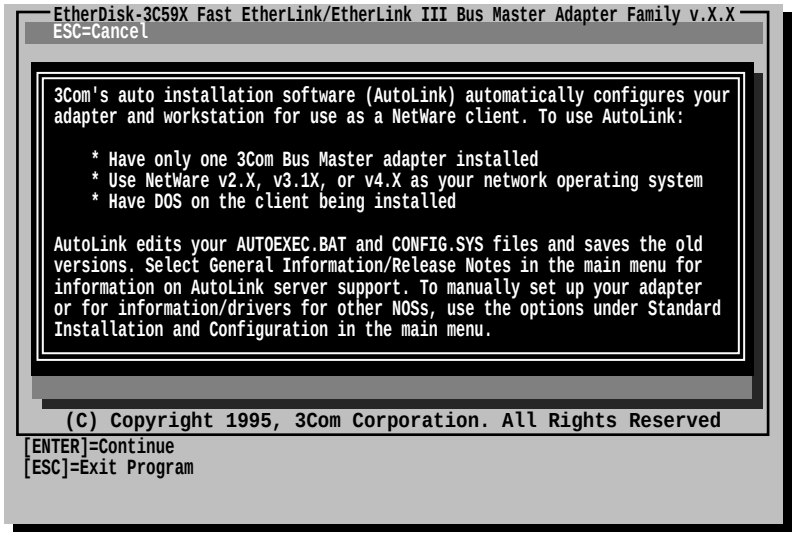

Figure 4-2 AutoLink Information Screen

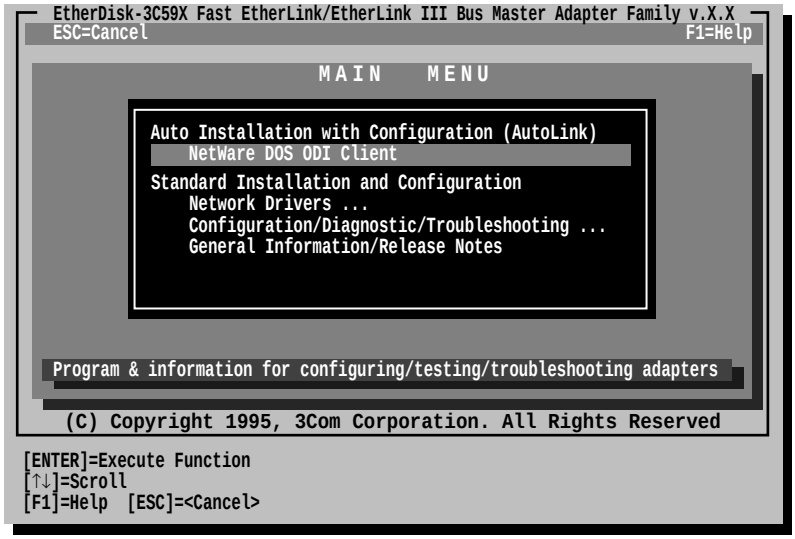

Figure 4-3 Main Menu

If you experience problems that occur only when using the AutoLink program, display or print the AUTOLINK.LOG file. The AUTOLINK.LOG file contains a log of all the events that occurred during the AutoLink installation and configuration process.

a To display the file, type:

```
type autolink.log | more
```

b To print the file, type:

```
print autolink.log
```

7 When the auto installation process is finished, remove the diskette and reboot the computer.

When you do this, the computer will boot as a NetWare DOS ODI client.

This concludes the procedure for installing a single adapter in a NetWare DOS ODI client using the AutoLink feature.

Multiple Adapters in a Client

You can install multiple EISA adapters when you initially set up your EISA computer, or you can add a second EISA adapter to a computer in which a single adapter was previously installed. In either case, you must run the EISA configuration program as an integral part of the EISA adapter installation procedure.

Use multiple adapters in a client only if you plan to run multiple protocols. For information on running multiple protocols, refer to the documentation accompanying your operating system.

Before proceeding, make sure you know each adapter's slot number. Refer to the next section, "Finding the Adapter's Slot Number."

*You must use the adapter's **slot number** when installing one or more adapters in a client.You must use the adapter's **port address** when installing one or more adapters in a server.*

If you are running NetWare and you have installed multiple 3C592 EtherLink EISA adapters in an EISA-compliant computer, follow these steps to install the NetWare ODI client driver:

1. Make sure your computer is turned off. Install the first adapter.
2. Connect the network cable to the adapter.
3. Insert the EISA configuration utility diskette and turn on the computer.
4. Run the EISA configuration program.
5. When the program has finished:
   a. Save the configuration.
   b. Remove the EISA configuration diskette and exit the program.
   c. Restart the computer.
6. Insert the *EtherDisk* diskette and run the AutoLink program.

   Refer to the sections "AutoLink Requirements" and "AutoLink Installation" earlier in this chapter for instructions.
7. When the AutoLink installation is complete, remove the diskette, reboot the computer, and physically connect it to the server if you have not already done so.
8. Turn off the computer, install the second adapter, and connect the network cable to the adapter.
9. Insert the EISA configuration utility diskette and turn on the computer.
10. Run the EISA configuration program.
11. When the program has finished:
    a. Save the configuration.

b Remove the EISA configuration diskette and exit the program.

c Restart the computer.

12 Access the C:\NWCLIENT subdirectory.

13 Edit the NET.CFG file, which is in the NWCLIENT subdirectory, as follows:

a In the LINK DRIVER 3C59X section of the NET.CFG file, add the following:

```
Slot 3
FRAME ETHERNET_802.2
```

b Repeat step 13a for the second adapter:

```
Slot 5
FRAME ETHERNET_II
```

The slot numbers shown above are examples; yours may be different.

Each frame type must be different, as shown in the previous examples. Refer to Novell's DOS ODI client manual for information on the frame types to use.

14 Reboot the computer.

Finding the Adapter's Slot Number

When working in a NetWare environment with multiple adapters in a client computer, you must know each adapter's slot number. To find an adapter's slot number after inserting the adapters, follow these steps.

1 Access the main menu on the *EtherDisk* diskette.

a Boot the computer under DOS.

b Insert the *EtherDisk* diskette in a floppy drive and make that drive the active one.

c At the prompt, type:

```
INSTALL [Enter]
```

The main menu appears.

2 Select *Configuration/Diagnostic/Troubleshooting*, and press [Enter].

3 Select *Configuration and Diagnostic Program* and press [Enter].

4 The next screen lists the installed adapters. Write down their slot numbers.

5 Exit the program.

If you are using an ODI driver with multiple adapters already installed and you have not updated the NET.CFG file, specify which adapter you want the driver to recognize by adding the slot number to the NET.CFG file using the SLOT XXXX parameter, where XXXX is the slot number.

One Adapter in a Server

If you are running NetWare and have installed a single adapter in an EISA computer that is functioning as a server, follow the instructions in this section to load the NetWare 4.x server driver.

The 3C59X *EtherDisk* diskette contains a NetWare 4.x server driver (3C59X.LAN) and the NetWare Loadable Modules (NLMs) that enable the NetWare 4.x driver to be used with NetWare 3.11, 3.12, or 4.0x software. These files are found in the subdirectories in the \NETWARE subdirectory.

Driver Installation with NetWare

To load the 4.x server driver, follow these steps:

1 Copy the contents of the appropriate \NETWARE\SERVER subdirectory to the boot partition of the server's hard disk.

The 3C59X *EtherDisk* diskette contains the NetWare 4.x server driver and the NetWare Loadable Modules (NLMs) that enable the NetWare 4.x driver to be used with NetWare 3.11, 3.12, 4.0x, or 4.1 software.

For complete details on loading the NetWare 4.x server driver for your NetWare version, refer to the README files, which are in the \NETWARE\SERVER subdirectory on the *EtherDisk* diskette. The readme files are named as shown below:

README.40X
README.41
README.311
README.312

2 When you start the server, enter the following commands:

For NetWare 3.11:

```
LOAD C:LSLENH.NLM [Enter]
LOAD C:3C59X.LAN PORT=XXXX [Enter]
BIND IPX TO 3C59X NET=XXXX [Enter]
```

For NetWare 3.12, 4.0x, or 4.x:

```
LOAD C:3C59X.LAN PORT=XXXX [Enter]
BIND IPX TO 3C59X NET=XXXX [Enter]
```

where XXXX is the adapter's port address. (To determine the port address, multiply the slot number by 1000 hex. If the adapter is installed in slot number three, for example, multiply 3 by 1000 hex = 3000 hex.)

When running the 3C59X.LAN driver with NetWare 3.11 you must update the MONITOR.NLM file that accompanied NetWare 3.11 with the MONITOR.NLM file from Novell. For the latest NLMs, contact Novell.

Multiple Adapters in a Server

If you are running NetWare and have installed multiple adapters in an EISA computer that is functioning as a server, follow the instructions in this section to load the NetWare 4.x server driver.

The 3C59X *EtherDisk* diskette contains a NetWare 4.x server driver (3C59X.LAN) and the NetWare Loadable Modules (NLMs) that enable the NetWare 4.x driver to be used with NetWare 3.11, 3.12, or 4.0x software. These files are found in the \NETWARE\SERVER subdirectory.

Finding the Adapter's Port Address for Multiple Adapters

To find the appropriate adapter's port address when installing more than one adapter in a NetWare server, follow these steps.

*You must use the adapter's **port address** when installing one or more adapters in a server. You must use the adapter's **slot number** when installing one or more adapters in a client.*

1. Access the main menu on the *EtherDisk* diskette.
   a. Boot the computer under DOS.
   b. Insert the *EtherDisk* diskette in a floppy drive and make that drive the active one.
   c. At the prompt, type:

      ```
      INSTALL [Enter]
      ```

      The main menu appears.
2. Select *Configuration/Diagnostic/Troubleshooting*, and press [Enter].
3. In the next screen, select *Configuration and Diagnostic Program*, and press [Enter].

   If multiple adapters have been installed, the screen that appears will list them.
4. Select the adapter whose port address you want.
5. Select *View* in the menu bar, and press [Enter].

   The screen that appears contains the desired I/O port address. Make a note of the address.
6. Repeat steps 3 and 4 for each adapter.
7. Exit the program.

Driver Installation with NetWare

To load the 4.x server driver, follow these steps:

1. Copy the contents of the appropriate \NETWARE subdirectory to the boot partition of the server's hard disk.

2. When you start the server, enter the following commands:

   For NetWare 3.11:

   ```
   LOAD C:LSLENH.NLM [Enter]
   LOAD C:3C59X.LAN PORT=XXXX NAME=X [Enter]
   LOAD C:3C59X.LAN PORT=XXXX NAME=Y [Enter]
   BIND IPX TO X NET=XXXX
   BIND IPX TO Y NET=XXXX
   ```

   For NetWare 3.12, 4.0x, or 4.x:

   ```
   LOAD C:3C59X.LAN PORT=XXXX NAME=X [Enter]
   LOAD C:3C59X.LAN PORT=XXXX NAME=Y [Enter]
   BIND IPX TO X NET=XXXX
   BIND IPX TO Y NET=XXXX
   ```

   where XXXX is the adapter's port address and NAME X and Y are names that you assign to help distinguish the multiple adapters. (To determine the port address, refer to the previous section "Finding the Adapter's Port Address for Multiple Adapters.")

   If the load sequence above is not followed, the system will not operate correctly. Make sure that the PORT XXXX parameter is completed for all adapters.

When running the 3C59X.LAN driver with NetWare 3.11, you must update the MONITOR.NLM file that accompanied NetWare 3.11 with the MONITOR.NLM file from Novell. For the latest NLMs, contact Novell.

Loading Windows 95 Drivers

If you have Windows 95 running on your computer, you must load the driver from the *EtherDisk* diskette. Follow these steps:

1. After inserting the 3C592 EISA adapter, connecting it to the network, and running the configuration utility program, reboot your computer.

   Windows 95 will notify you that new hardware has been found and is located in slot number "X."

2. When you are prompted to select the driver you want to install for your new hardware, select this option:

   ```
   Driver from disk by hardware manufacturer
   ```

3. Click OK.

4. You are prompted to insert the manufacturer's disk into the drive selected.

   a. Insert the *EtherDisk* diskette and click *OK*.

   b. In the panel at the bottom of the dialog box, type the drive name and the path name from which Windows 95 should copy the manufacturer's files.

      (An information file on the diskette tells Windows 95 where to find the information it needs, for example A:\.)

5. Click OK.

   This imports the driver from the *EtherDisk* diskette.

For on-line help information about any of the fields in the Windows 95 display boxes, click the question mark (?) in the upper right corner of the box and move the cursor to the field of interest and click once again.

Loading Drivers in Non-NetWare Environments

To load drivers in a non-NetWare environment, follow these steps:

1. Access the main menu as described in the section "AutoLink Installation" earlier in this chapter.
2. Select *Network Drivers* in the main menu.
3. Select the appropriate driver for your network operating system from the menu choices.

   The menu program copies the selected driver to a specified disk drive.
4. Refer to the on-line readme files on the 3C59X *EtherDisk* diskette for information about working in other network operating systems. Refer also to your network operating system manuals for additional information.

NDIS Drivers

If you have loaded NDIS drivers in a computer with multiple 3Com adapters, you must specify the port address for each adapter, as documented in the PROTOCOL.INI file on the 3C59X *EtherDisk* diskette. The file is located on the startup diskette or the hard drive.

To install a second adapter when running Windows NT™, do not change the PROTOCOL.INI file. Instead, repeat the procedure used to install the first adapter.

The 3C59X *EtherDisk* diskette can be used as an OEM import diskette for Windows for Workgroups or Windows NT. The path to the OEM files should point to \NDIS\WFW or \NDIS\WINNT35, respectively.

The NDIS drivers are as follows:

NDIS 2.0x	EL59X.DOS
	EL59X.OS2
NDIS 3.0x	
Windows for Workgroups	EL59X.386
Windows NT, version 3.5	EL59X.SYS
Windows 95	EL59X.VXD

Additional Drivers

Access 3Com's Bulletin Board Service as described in Appendix B, "Technical Support," or contact your 3Com reseller for information on UNIX® and other drivers.

Using Transcend PC Link SmartAgent Software

3Com's SmartAgent driver agents, which provide network management capabilities for adapters and PCs, are available with Transcend PC Link SmartAgent software or on 3Com's bulletin board service (BBS). (For information on 3Com's BBS, refer to Appendix B, "Technical Support.") The driver agents occupy less than 6 KB on client PCs. They are fully SNMP-compliant when used with SmartAgent SoftHub®/DOS or SoftHub/NLM software, one copy of which is included with each copy of Transcend PC Link SmartAgent, Transcend WorkGroup Manager, or Transcend Enterprise Manager software. For more information on WorkGroup Manager software, contact your authorized 3Com representative.

Desktop Management Interface

3Com's support of the Desktop Management Interface (DMI) makes the management of PCs and 3C592 EISA adapters easier. Support of DMI allows any DMI-compatible management application to access 3Com adapter information.

3Com's SmartAgent driver agents can take full advantage of the Management Information File (MIF) that is included with the DMI software. DMI supports NetWare ODI DOS and NDIS DOS drivers.

For information about DMI software and instructions on how to install it, access 3Com's BBS, as described in Appendix B.

5 PERFORMING TROUBLESHOOTING AND DIAGNOSTIC TESTS

This chapter explains how to isolate and solve 3C592 EISA adapter problems. Figure 5-1 illustrates how the procedures in this chapter might be used.

Make sure that the adapter is correctly installed. (See Chapter 2 for installation instructions.)

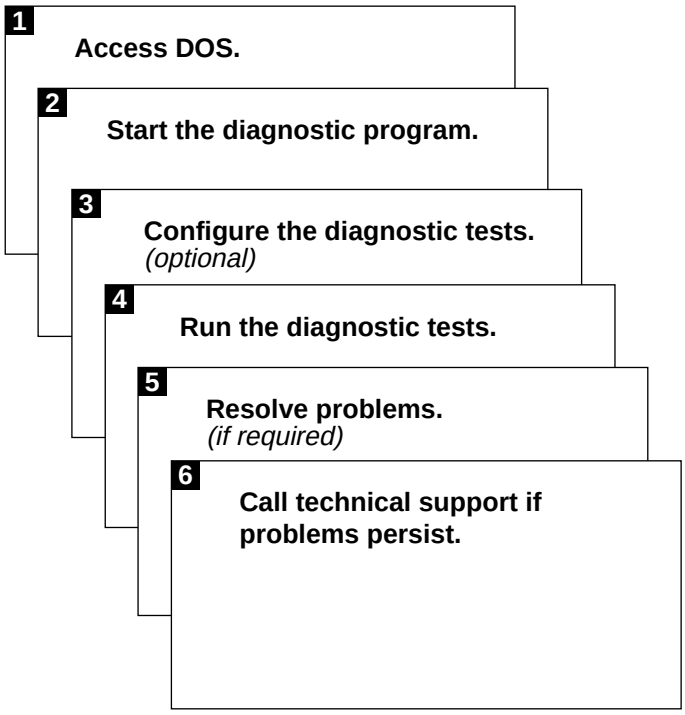

Figure 5-1 Troubleshooting Overview

Troubleshooting with the Diagnostic Tests

The diagnostic tests on the 3C59X *EtherDisk* diskette check the adapter's operation and permit the isolation of faults. You can run the diagnostic tests after installing one or more 3C592 EISA adapters, or when a fault is suspected. If the tests in their default configuration do not isolate the problem, you can change the test parameters to meet specific situations.

When the DOS operating system first loads, it executes the AUTOEXEC.BAT and CONFIG.SYS files. These files are user-definable files that set up the computer environment. They may also load memory managers and drivers into memory.

Always run diagnostic tests with no device drivers or memory managers (EMM386.EXE and HIMEM.SYS) installed. To avoid loading the drivers or memory managers, you can bypass the AUTOEXEC.BAT *and* CONFIG.SYS *files. If you are running under DOS 6.2, pressing [F5] while starting the computer will bypass these two files. If you are using DOS 6.x in a plain DOS environment, you can bypass the* CONFIG.SYS *and* AUTOEXEC.BAT *files by holding down the right [Shift] key while starting the computer. If you are using an earlier version of DOS, you must boot from a DOS diskette.*

The diagnostic tests are divided into three groups, designated Group 1, Group 2, and Group 3.

Group 1 tests check the physical components and circuitry on the adapter.

The Group 2 test (for the 3C592-COMBO adapter only, *not* the 3C592-TPO adapter) checks the adapter's ability to transmit and receive data via the internal transceiver.

The Group 3 test (the Echo Exchange Test) tests the adapter's ability to transmit and receive data while on the network.

If the adapter passes all tests successfully, hardware failure is ruled out. If a problem still remains, look at cabling, software, and other issues that affect functionality on the network.

After running the diagnostic tests, you should reboot your computer to communicate on the network.

Starting the Diagnostic Program

To use the 3C59X *EtherDisk* diskette Configuration and Diagnostic Program, follow these steps:

1 Access the main menu on the *EtherDisk* diskette.

a Boot the computer under DOS.

If you are running Windows 95, reboot the computer and press [F4] when you see the message:

```
Starting Windows 95
```

b Insert the *EtherDisk* diskette in a floppy drive and make that drive the active one.

c At the prompt, type:

```
INSTALL [Enter]
```

The main menu appears.

2 Select *Configuration/Diagnostic/Troubleshooting*, and press [Enter].

3 In the next screen, select *Configuration and Diagnostic Program*, and press [Enter].

If you are testing multiple adapters, a screen listing all installed adapters appears. Highlight the adapter you want to test and press [Enter]. A screen appears, showing the selected adapter with the Install *menu item highlighted.*

4 Continue with the instructions given in the next section, "Running the Group 1 Tests."

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

```
3C59XCFG RUN
```

Running the Group 1 Tests

The Group 1 tests include:

- Register Access Test
- EEPROM Test
- FIFO Loopback Test
- Ethernet Core Loopback Test
- Encoder/Decoder Loopback Test
- Interrupt Test

For a description of each Group 1 test, access help by pressing [F1]. When the help screen appears, tab to the Index *button and press [Enter]. Use the arrow keys to move through the Index listings. Select* Test Definitions *and press [Enter].*

To run the Group 1 tests, follow these steps:

1. Under the *Test* pull-down menu, select *Run Tests*. Press [Enter].

   The Run Tests dialog box appears, with the *Start* button highlighted.

2. Press [Enter] to start the tests.

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

   To run the tests continuously, go to the Repetitions box on the Test Setup screen, and select *Continuous* (and deselect *Halt on Error* in the Errors box). To access the Test Setup screen, select *Test* in the menu bar, and then select *Test Setup* in the drop-down menu. Press [Enter].

Running the Group 2 Test

The Group 2 test is called the Network Loopback Test. It tests the 3C592-COMBO adapter's ability to transmit and receive data via the internal transceiver. This test requires installation of a loopback plug at the adapter's BNC transceiver connection. Or, you can run the test on a nonproduction network on which only the computer being tested is operating.

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 may be able to get one from your authorized network supplier, or you can make your own. To assemble the loopback plug, connect two 50-ohm network cable terminators to a T connector, as shown in Figure 5-2. You can purchase the terminators from your network supplier (3Com part number 3C535).

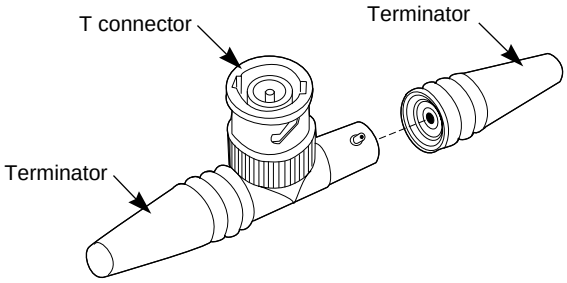

Figure 5-2 Assembling a Loopback Plug

Starting the Group 2 Test

To run the Group 2 test on a 3C592 EISA adapter, follow these steps:

1. Connect the loopback plug to the round BNC connector on the back of the adapter.
2. Start the Configuration and Diagnostic Program, as described earlier in this chapter.

3 Select *Test Setup* from the *Test* menu.

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 Diagnostic Program.

   b Remove the loopback plug.

Running the Group 3 Test

The Group 3 test is called the Echo Exchange Test. It tests the adapter's ability to transmit and receive data while on the network.

CAUTION: *Running the Group 3 test while connected to an active network can cause intermittent failures. To avoid this, connect to an inactive network on which only the computer being tested and the echo server are operating.*

To run the Group 3 test on the network, you need a second computer set up as an echo server. The echo server receives packets from the adapter being tested and echoes them back to the adapter. The second computer must be equipped with a 3Com adapter.

Setting Up an Echo Server

If your echo server contains a 3C592 EISA adapter, select *Echo Server* under the *Test* menu, and click the *Start* button to make the computer an echo server.

If you are setting up an echo server using a 3Com adapter other than a 3C592 EISA adapter, follow these steps:

1 Select a computer to use as an echo server.

2 Insert the *EtherDisk* diskette in a floppy drive.

The diagnostic program comes on the *EtherDisk* diskette that accompanied the adapter.

3 Start the diagnostic program on the echo server.

The diagnostic program that you use depends on the adapter that is installed in the echo server. After the system prompt of the drive containing the Configuration and Diagnostic Program, enter the name of the appropriate program (for example, 3C523) from Table 5-1.

Table 5-1 Diagnostic Programs

Diagnostic Program Name	Adapter 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
3C5X9CFG.EXE	EtherLink III family
3C523.EXE	EtherLink/MC
3C523TP.EXE	EtherLink/MC TP
3C527.EXE	EtherLink/MC 32
3C59XCFG.EXE	EtherLink III EISA, EtherLink III PCI, Fast EtherLink PCI, and Fast EtherLink EISA

The diagnostic programs listed above come on the *EtherDisk* diskette that accompanied the adapter.

4 Select *Echo Server Setup* on the main menu.

The program notifies you that your computer is now set up as an echo server.

Starting the Group 3 Test

To run the Group 3 test on a 3C592 EISA adapter, follow these steps:

1 Start the Configuration and Diagnostic Program.

This program must be on the computer containing the adapter you want to test.

2 Select *Test Setup* from the *Test* menu.

3 Select *Group 3* from the Group Select box.

4 Enable the Group 3 test by selecting the *Enable Group* button.

5 Select *OK* and press [Enter].

6 Go to the Run Tests dialog box and select *Start* to start the tests.

7 After the test is completed:

   a Exit the program on the echo server.

   b Exit the Configuration and Diagnostic Program.

Getting Help If a Test Fails

If any test fails, you can get additional information as follows:

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

If the diagnostic tests fail, the adapter may not be defective. The problem may be incorrect option settings, option settings that conflict with the settings of other adapters, or improper installation. Follow the steps below to test the adapter further.

CAUTION: *Make sure to turn the power off before inserting or removing the adapter from the computer.*

1 Make sure the board is seated correctly in the slot.

Check the adapter installation by reviewing the installation instructions in Chapter 2.

2 Inspect all cables and connections.

If you are using thin Ethernet cable, make sure that you have a T connector attached to the adapter and all other adapters on the network. Make sure that the thin Ethernet segment is terminated at both ends with a 50-ohm terminator.

3 Make sure that you booted your computer under DOS version 3.1 or later, and that no device drivers or memory managers are loaded.

4 If you are running the Group 2 test (only on the 3C592-COMBO adapter), make sure that the loopback plug is securely attached to the adapter's BNC connector and that the adapter is attached to a properly cabled nonproduction network.

If this test fails, try another loopback plug.

5 If you are running the Group 3 test, make sure that the adapter is connected to a properly cabled and inactive network and that an echo server is set up on the network.

6 Make sure that the settings for the adapter's options are not the same settings used in the computer or on any other adapter boards installed in the computer.

If you need help, select *Configuration/Diagnostic/ Troubleshooting* on the 3C59X *EtherDisk* diskette main menu. Then select *Configuration and Diagnostic Program*. When the next screen appears, press [F4] to display the adapter's configuration values.

7 Install the adapter in another EISA slot and run the diagnostic tests again.

The original slot may be defective.

8 Replace the failed adapter with a working adapter and run the diagnostic tests again.

Use the same option settings as those used on the failed adapter. If the working adapter passes all tests, the original adapter is probably defective. For details on repair procedures, refer to Appendix B, "Technical Support."

9 Install the adapter in another functioning computer and run the tests again.

Your computer may be defective. If the adapter passes the tests in the second computer, contact the reseller or manufacturer of the original computer.

10 If you experience problems that occur only when using the AutoLink program, display or print the AUTOLINK.LOG file. The AUTOLINK.LOG file contains a log of all the events that occurred during the AutoLink installation and configuration process.

a To display the file, type:

```
type autolink.log | more
```

b To print the file, type:

```
print autolink.log
```

Changing the Test Setup

To change the test parameters, follow these steps:

1 Choose *Test Setup* from the *Test* menu in the main window of the Configuration and Diagnostic Program, or choose the *Test Setup* button in the Run Tests dialog box.

2 Press [Tab] to highlight any of the fields within the Test Setup dialog box.

3 To change a setting in any field, follow these steps:

a In the Group Select box, use the arrow keys to select a test group.

For more information on the Group 2 or Group 3 tests, refer to the appropriate sections earlier in this chapter.

b In the Group *X* Tests box, use the arrow keys to highlight a test. Press the [Space Bar] to enable or disable an individual test.

c In the Repetitions box, specify the number of times you want to run the tests, or use the arrow keys to select the Continuous option.

d In the Errors box, press the [Space Bar] to select or deselect the *Halt on Error* parameter.

4 When you are satisfied with the new test setup, select the *OK* button and press [Enter].

5 To run the tests, choose *Run Tests* from the *Test* menu and select the *Start* button.

CAUTION: *Do not use an active network to run the Group 2 or Group 3 tests.*

Miscellaneous Checks

Check for specific hardware problems, such as broken traces or loose and/or broken solder connections.

If you have installed the adapter correctly and you still experience problems, check the software.

Make sure that you have installed the correct drivers for the network operating system you are running (refer to Chapter 4, "Loading Network Drivers").

If any problem persists, refer to Appendix B, "Technical Support."

Link Beat LED

The 3C592 EISA adapters have an LED for the link beat (see Figure 1-1). The link beat LED confirms that there is an active connection between the adapter and the hub.

When you first install the adapter and power up the computer, the LED lights, but the link beat is inactive. For the link beat to be active (enabled), you need to have run the Group 3 test or have loaded the network drivers.

If you are experiencing any problems, first make sure that your hub complies with the 10BASE-T specifications and then check the LED. The meaning of LED activity is given below:

- If the LED is on, the link beat is working.
- If the LED is off, the link beat has not been established or there is a problem with the connection between the adapter and the hub.
- If the LED is blinking, the cable polarity is reversed.

SPECIFICATIONS

This appendix lists the specifications, connector pin assignments, and cable requirements for the 3C592 EISA adapters.

Adapter Specifications

Network Interface

3C592-TPO	Ethernet IEEE 802.3i 10BASE-T industry standard for a 10 Mbps baseband CSMA/CD local area network
3C592-COMBO	IEEE 802.3i 10BASE-T and Ethernet IEEE 802.3 industry standard for a 10 Mbps CSMA/CD local area network

Physical Dimensions

Length:	18.2 cm (7.1 in)
Height:	10.76 cm (4.2 in)

Environmental Operating Range

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

Power Requirements

Operating voltage:	+12 V @ 400 mA and +5 V @ 250 mA

RJ-45 Connector Pin Assignments

Figure A-1 shows the RJ-45 connector pin assignments.

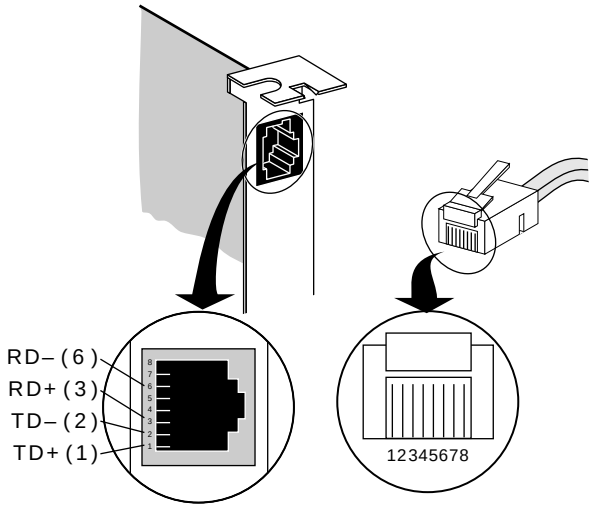

Figure A-1 RJ-45 Connector Pin Assignments

AUI Connector Pin Assignments

Table A-1 lists the pin assignments for the AUI (attachment unit interface) connector.

Table A-1 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		

Cable Requirements

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. Examples of supported cable types are shown below:

For unshielded twisted-pair (UTP) connections (100 ohm):

- Level 3 LAN and high-speed data cable, for example, Anixter® CM-00424BAG-3 or equivalent
- Level 4 extended distance LAN cable, for example, Anixter CM-00424BAG-4 or equivalent
- Level 5 data grade media cable, for example, AT&T® type 2061, 1061, or equivalent

For thin coax connections:

- RG58 A/U or C/U (50 ohm ± 4)

For thick coax connections:

- RG59 B/U (50 ohm)

B TECHNICAL SUPPORT

3Com provides easy access to technical support information through the variety of services described in this appendix.

On-line Technical Services

3Com offers worldwide product support seven days a week, 24 hours a day, through the following on-line systems:

- 3Com Bulletin Board Service (3ComBBS)
- World Wide Web site
- ThreeComForum on CompuServe®
- 3ComFacts℠ automated fax service

3Com Bulletin Board Service

3ComBBS contains patches, software, and drivers for all 3Com products, as well as technical articles. This service is available via modem or ISDN seven days a week, 24 hours a day.

Access by Modem

To reach the service, 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 14400 bps	(61) (2) 955 2073
France	up to 14400 bps	(33) (1) 69 86 69 54
Germany	up to 9600 bps	(49) (89) 627 32 188 **or** (49) (89) 627 32 189
Hong Kong	up to 14400 bps	(852) 537 5601
Italy (fee required)	up to 9600 bps	(39) (2) 273 00680
Japan	up to 14400 bps	(81) (3) 3345 7266
Singapore	up to 14400 bps	(65) 534 5693
Taiwan	up to 14400 bps	(886) (2) 377 5838 **or** (886) (2) 377 5840
U.K.	up to 14400 bps	(44) (144) 227 8278
U.S.	up to 14400 bps	(1) (408) 980 8204

World Wide Web Site

Access the latest networking information on 3Com's World Wide Web site by entering our URL into your Internet browser:

`http://www.3Com.com/`

This service features news and information about 3Com products, customer service and support, 3Com's latest news releases, selected articles from 3TECH™, 3Com's award-winning technical journal, and more.

ThreeComForum on CompuServe

ThreeComForum is a CompuServe-based service containing patches, software, drivers, and technical articles about all 3Com products, as well as an interactive forum for technical questions. To use ThreeComForum, you need a CompuServe account.

To use ThreeComForum:

1. Log on to CompuServe.
2. Enter **`go threecom`**
3. Press [Return] to see the ThreeComForum main menu.

3ComFacts Automated Fax Service

3Com Corporation's interactive fax service, 3ComFacts, provides data sheets, technical articles, diagrams, and troubleshooting instructions on 3Com products 24 hours a day, seven days a week.

Call 3ComFacts using your touch-tone telephone. International access numbers are:

Country	Fax Number
Hong Kong	(852) 537 5610
U.K.	(44) (1442) 27 8279
U.S.	(1) (408) 727 7021

Local numbers are available within the following countries:

Country	Fax Number
Australia	800 123853
Belgium	0800 71279
Denmark	800 17319
Finland	98 001 4444
France	05 90 81 58
Germany	0130 8180 63
Italy	1678 99085

Country	Fax Number
Netherlands	06 0228049
Norway	800 11062
Portugal	05 05 442607
Russia (Moscow Only)	956 0815
Spain	900 964445
Sweden	020 792954
U.K.	0800 626403

Support from Your Network Supplier

If additional assistance is required, 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:

- Diagnostic error messages
- A list of system hardware and software, including revision levels
- Details about recent configuration changes, if applicable

If you are outside the U.S. and Canada, contact your local 3Com sales office to find your authorized service provider:

Country	Telephone Number
Australia (Sydney)	(61) (2) 959 3020
(Melbourne)	(61) (3) 653 9515
Belgium	(32) (2) 7164880
Brazil	(55) (11) 546 0869
Canada	(905) 882 9964
France	(33) (1) 69 86 68 00
Germany	(49) (89) 6 27 32 0

Country	Telephone Number
Mexico	(525) 531 0591
Netherlands	(31) (3) 402 55033
Singapore	(65) 538 9368
South Africa	(27) (11) 803 7404
Spain	(34) (1) 3831700
Sweden	(46) (8) 632 91 00
Taiwan	(886) (2) 577 4352

(continued)

Country	Telephone Number
Hong Kong	(852) 868 9111
Italy	(39) (2) 273 02041
Japan	(81) (3) 33457251

Country	Telephone Number
United Arab Emirates	(971) (4) 349049
U.K.	(44) (1628) 897000

Returning Products for Repair

A product sent directly to 3Com for repair must first be assigned a Return Materials Authorization (RMA) number. A product sent to 3Com without an RMA number will be returned to the sender unopened, at the sender's expense.

To obtain an RMA number, call or fax:

Country	Telephone Number	Fax Number
U.S. and Canada	(800) 876 3266, option 2	(408) 764 7120
Europe	(44) (1442) 278000	(44) (1442) 236824
Outside Europe, U.S. and Canada	(1) (408) 492 1790	(1) (408) 764 7290

GLOSSARY

10BASE2

The IEEE standard for a 10 megabit per second baseband network on thin coaxial cable.

10BASE5

The IEEE standard for a 10 megabit per second baseband network on thick coaxial cable.

10BASE-T

The IEEE standard for a 10 megabit per second baseband network on twisted-pair cable.

AUI

Attachment Unit Interface Connector. Also called the DIX (DEC®-Intel®-Xerox®) connector. This is a female 15-pin D connector used with an external transceiver.

AUI cable

Also known as the transceiver cable. The AUI cable is used to connect an external transceiver to a computing device.

AutoLink

3Com autoinstallation and autoconfiguration software for NetWare DOS clients. It automatically configures the adapter by selecting the correct interrupt level and I/O Base Address, checking for the network connection, and detecting the correct frame type.

Auto Select Media Type

A 3Com utility that detects the type of network cable connected to the adapter and automatically selects that connection for data transmission. This function is implemented by all NetWare ODI, Windows for Workgroups, NDIS 2.01, and Windows NT and Windows 95 drivers.

Backbone

The main transmission medium used to interconnect the workgroup areas of a network. It is usually coaxial or fiber-optic.

Backplane

A motherboard assembly in a PC with connectors and printed circuit traces into which printer circuit boards are inserted.

Bus

An electronic pathway along which signals are transmitted from one area of a computer to another.

Bus master adapter

An adapter that contains its own processor, which allows the adapter to operate independently of the computer's main processor.

Coaxial cable

An electrical wire consisting of two primary electrical elements: an outer braided wire that acts as a ground and an inner one used to carry signals.

Configuration

The software settings that allow different hardware components of a computer system to communicate with one another.

Driver

A program, usually resident in server or workstation memory, that controls the network hardware (such as adapters or controllers) or implements the protocol stacks through which higher-level applications communicate with the network hardware.

Echo server

A computer set up to function as an "echo" to the primary computer. An echo server receives packets from the adapter being tested and echoes them back to the adapter.

EISA

Extended Industry Standard Architecture. The EISA 32-bit extended AT personal computer bus architecture is backward-compatible with the 16-bit ISA architecture.

EMM386

Expanded Memory Manager. A dual-purpose memory manager that comes with MS-DOS. It provides access to the upper memory area, which enables you to free conventional memory by running device drivers in upper memory. EMM386 also uses extended memory to simulate expanded memory. Refer to Microsoft documentation for additional information.

Ethernet

A local area network standard defining a physical medium and its method of placing data, or packet signaling, on a cable. Access to the cable is based on CSMA/CD (carrier sense multiple access with collision detection).

ISA

Industry Standard Architecture. A 16-bit extension of the original IBM® PC bus architecture. The IBM Personal Computer AT® bus.

Loopback

A type of diagnostic test in which the transmitted signal is returned to the sending device after passing through all, or a portion of, a data communications link or network. A loopback test permits the comparison of a returned signal with the transmitted signal.

NDIS

Network Driver Interface Specification. Defines the LAN Manager network driver architecture and interfaces that let a DOS or OS/2 system support network adapters. This architecture provides a standardized way to write drivers for network adapters.

NetWare

A series of network operating systems and related products made by Novell, Inc.

ODI driver

Open Data-Link Interface. A MAC-level specification developed by Novell and Apple®. Drivers complying with this specification can work with NetWare 2.x, 3.x, and 4.x. Like NDIS, ODI drivers support multiple protocols and adapters, and can be unloaded from memory to conserve conventional DOS RAM space.

Parallel Tasking

Third-generation Ethernet adapter architecture. Parallel Tasking technology accelerates data transfer by processing data packets simultaneously instead of sequentially. For example, when transmission is the task, the Parallel Tasking architecture begins to write data to the network even before an entire frame has been loaded into the adapter's buffer memory. This permits complete parallelism in all data transfers.

Server

In a client-server computing environment, a device that provides access to network services, such as printers or applications.

Transceiver

A hardware device that links a node to a network cable and functions as both a transmitter and a receiver.

Twisted-pair

Wiring similar to that found in the telephone system, consisting of two insulated wires loosely twisted around each other to help cancel out induced noise in balanced circuits.

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FCC CLASS B CERTIFICATION STATEMENT

3Com Corporation
Model Nos: 3C592-TPO and 3C592-COMBO
FCC ID: DF63C592
Made in U.S.A.

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.

CISPR B COMPLIANCE

This device complies with the EMC directive of the European Community and meets or exceeds the following technical standard:

EN 55022 – Limits and Methods of Measurement of Radio Interference Characteristics of Information Technology Equipment.

This device complies with the CISPR Class B standard.

***WARNING*:** This is a Class B product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

CE NOTICE

Marking by the symbol CE indicates compliance of this equipment to the EMC directive of the European Community. Such marking is indicative that this equipment meets or exceeds the following technical standards:

- EN 55022—"Limits and Methods of Measurement of Radio Interference Characteristics of Information Technology Equiment."
- EN 50082-1—"Electromagnetic compatibility —Generic immunity standard Part 1: Residential, commercial, and light industry."
- IEC 801-2—"Electromagnetic compatibility for industrial-process measurement and control equipment Part 2: Electrostatic discharge requirements."—Severity level 3.
- IEC 801-3—"Electromagnetic compatibility for industrial-process measurement and control equipment Part 3: Radiated electromagnetic field requirements."—Severity level 2.
- IEC 801-4—"Electromagnetic compatibility for industrial-process measurement and control equipment Part 4: Electrical fast transient/burst requirements."—Severity level 2.
- A "Declaration of Conformity" in accordance with the above standards has been made and is on file at 3Com Corporation.