USER'S GUIDE

DURALAN FAST ETHERNET NICS

ANA™-69000/62000 FAMILY

©adaptec

DuraLAN Fast Ethernet NICs
ANA™-69000/62000 Family

User's Guide

Cadaptec®

Adaptec Technical Support and Services

If you have questions about installing or using your Adaptec product, check this user's guide first—you will find answers to most of your questions here. If you need further assistance, please contact us. We offer the following support and information services:

Electronic Support

Technical information, including product literature, answers to commonly asked questions, information on software upgrades and other topics is available electronically through the following:

- Adaptec World Wide Web (WWW) site at http://www.adaptec.com.

- File Transfer Protocol (FTP) server at ftp.adaptec.com.

- Adaptec USA Bulletin Board Service (BBS) at 408-945-7727; supports up to 28,800 bps (bits per second), 8 data bits, 1 stop bit, no parity. No product literature is available on the Adaptec BBS.

- Interactive Fax System at 303-684-3400; available 24 hours a day, 7 days a week.

Technical and Product Support

- For technical support and information about many of Adaptec's electronic support services, call 800-959-7274 or 408-945-2550, 24 hours a day, 7 days a week. The system prompts you with questions regarding your problem and then provides step-by-step troubleshooting instructions.

- To submit your electronic mail message to Adaptec Technical Support use the product support information Webmail form at http://www.adaptec.com/support/webmail.html.

- To speak with a product support representative, call 408-934-7274, M–F, 6:00 A.M. to 5:00 P.M., Pacific Time. After hours, on weekends, and on holidays, product support is also available for a fee at 800-416-8066.

Sales and Ordering Information

- For sales information, call 800-959-7274 or 408-945-2550, M–F, 6:00 A.M. to 5:00 P.M., Pacific Time.

- To order Adaptec software and SCSI cables, call 800-442-7274 or 408-957-7274, M-F, 6:00 A.M. to 5:00 P.M., Pacific Time.

- To request additional documentation for Adaptec products, call 800-934-2766 or 510-732-3829, M–F, 6:00 A.M. to 5:00 P.M., Pacific Time.

Class A Device Certification Statements

Federal Communications Commission Radio Frequency Interference Statement

WARNING: Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy, and if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his or her own expense.

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.

Canadian Compliance Statement

This Class A digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

Cet appareil numérique de la classe A respecte toutes les exigences du Règlement sur le matérial brouilleur du Canada.

European Compliance Statement

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

Class B Device Certification Statements

Federal Communications Commission Radio Frequency Interference Statement

WARNING: Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

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. 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 instruction manual, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. However, if this equipment does cause interference to radio or television equipment 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 equipment and receiver.

■ Connect the equipment to an outlet on a circuit different from that to which the receiver is connected.

■ Consult the dealer or an experienced radio/television technician for help.

■ Use a shielded and properly grounded I/O cable and power cable to ensure compliance of this unit to the specified limits of the rules.

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.

Adaptec, Inc.   ANA-62011
ANA-69011

FCC

Tested To Comply With FCC Standards
FOR HOME OR OFFICE USE
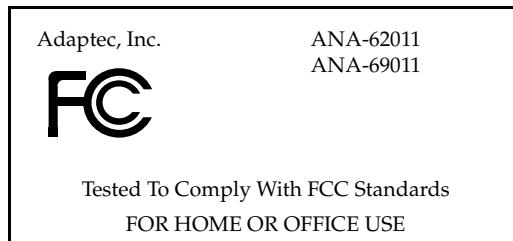
Canadian Compliance Statement

This Class B digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

Cet appareil numérique de la classe B respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada

European Compliance Statement

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

Safety Standards

These products meet the following national and international regulations:

- UL 1950 Standard for Safety of Information Processing and Business Equipment
- IEC 950 Safety of Information Technology Equipment in Electrical Business Equipment
- CAN/CSA-C22.2 # 950 Safety of Information Technology Equipment including Electrical Business Equipment

To ensure safe operating conditions, it is recommended that these products be installed in UL Listed computers.

Limited Warranty

SOFTWARE. Adaptec, Inc. warrants to you that for a period of ninety (90) days from the date you receive this software Product the magnetic media contains an accurate reproduction of the Software. This limited warranty covers only the original user of the Product. If the Product media should become defective within the warranty period, Adaptec at its option, will repair or replace the Product media, provided it is delivered at your expense to Adaptec as provided below. Adaptec does not warrant that the product will be free from error or will meet your specific requirements. Except for the warranties set forth above, the Product is licensed "AS IS", and ADAPTEC DISCLAIMS ALL OTHER WARRANTIES, EITHER EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

HARDWARE. Adaptec, Inc. warrants to the original purchaser of this hardware Product that it will be free from defects in workmanship and materials, under normal use and service, for the lifetime of the personal computer in which it is installed from the date of purchase from Adaptec or its authorized dealer. In order for this warranty to be valid, this Product must remain in its original personal computer and be registered with Adaptec within one year of purchase. Otherwise, Adaptec warrants to the original purchaser of this Product that it is to be free from defects in workmanship and materails, under normal use and service, for a period of five (5) years from the date of purchase from Adaptec or an authorized dealer. Should this Product, in Adaptec's opinion, fail to meet this warranty during the applicable warranty period, Adaptec will, at its expense and option, repair the defective Product or part or replace the defective item with an equivalent product or part, or refund the purchase price. All returned Products will become the property of Adaptec. At Adaptec's option, replacement Products or parts may be new or reconditioned. Any replaced Product or part has a ninety (90) day warranty or the remainder of the initial warranty period, whichever is longer. Such remedy is your sole and exclusive remedy for breach of the above warranty.

LIMITED WARRANTY SERVICE. Products requiring limited warranty service during the applicable warranty period should be delivered to Adaptec's U.S. headquarters with proof of purchase. Products returned to Adaptec must be pre-authorized with a Return Material Authorization (RMA) number marked on the outside of the package, and packaged in the original (or equivalent) packaging material. If the delivery is by mail, you agree to insure the Product or assume the risk of loss or damage in transit. You also agree to prepay shipping charges to Adaptec. The repaired or replaced item, or refund, will be shipped to the Customer, at Adaptec's expense, not later than thirty (30) days after receipt by Adaptec.

GENERAL. This limited warranty does not extend to any Product which has been damaged as a result of accident, misuse, abuse, or as a result of unauthorized service or parts. Incidental or consequential damages, including without limitation loss of data, arising from breach of any express or implied warranty are not the responsibility of Adaptec and, to the extent permitted by law, are hereby excluded both for property damage, and, to the extent not unconscionable, for personal injury damage. Some states do not allow the exclusion or limitation of incidental or consequential damages for consumer products, so the above limitation or exclusion may not apply to you. This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

For more information on how to obtain warranty service, write or telephone Adaptec at 691 South Milpitas Boulevard, Milpitas, CA 95035, (800) 959-7274.

▾▾▾▾ Contents

4   NetWare

Part 3 Installing the Duralink Failover Driver

5   Network Configuration Examples

6 Duralink Failover for Windows NT

7 Duralink Failover for NetWare

Part 4 Appendices

A   Cables and LEDs

B   Troubleshooting

C   Note on Ports in NetWare

▼ ▼ ▼ ▼ **1**

Getting Started

In this Chapter

This document contains information about installing and configuring the Adaptec® DuraLAN Fast Ethernet network interface cards (NICs).

The following describes the sections in this manual:

- Part 1, *Installing the DuraLAN NIC*, describes how to install your Adaptec DuraLAN NIC.

- Part 2, *Installing the DuraLAN Standard Driver*, describes how to install and configure the DuraLAN Standard NIC driver in NetWare® and Windows® environments.

- Part 3, *Installing the Duralink Failover Driver*, describes how Duralink™ Failover works and adds value to your network. It provides instructions for installing the Duralink Failover driver for Windows® NT-based servers and NetWare-based servers.

Fast Ethernet

Fast Ethernet is a networking standard defined by the Institute of Electrical and Electronic Engineers (IEEE) in their IEEE 802.3u Specification. Fast Ethernet runs at 100 Mbps or at 200 Mbps in Full Duplex mode.

Fast Ethernet uses the same Carrier Sense Multiple Access with Collision Detection (CSMA/CD) architecture used on 10BASE-T and 10BASE-2 10 Mbps network specifications, which allows for easy integration with existing networks.

Duralink Failover

Duralink Failover provides protection from network-link failures on Fast Ethernet servers running mission-critical applications. During a port failure, Duralink Failover keeps the connection to the server established by moving all traffic on the affected segment to a standby NIC or port. When a failure is detected on the primary port, that port is disabled and a secondary port takes over to carry the load, and keeps the network running without interruption.

This Failover operation occurs when any of the following conditions exist:

- An Ethernet link loss

- A watchdog timer expires

- An abnormal hardware interrupt occurs

- Abnormal Send/Receive counters, such as too many collisions or errors, occur on the segment

Supported Platforms and NICs

Duralink Failover is supported for Windows NT 4.0 and 3.51, and Novell NetWare 4.11-based servers.

Duralink Failover is compatible with Adaptec ANA™-69011 single port NICs, ANA-62011 single port NICs, ANA-62022 dual port NICs, and ANA-62044 quad port NICs.

Adaptec DuraLAN NICs

The following Adaptec PCI Ethernet and Fast Ethernet NICs support Duralink Failover protection:

■ **ANA-69011**—a single port 32-bit NIC supporting autosensing between 10 and 100 Mbps line speeds.

Single RJ-45 Port
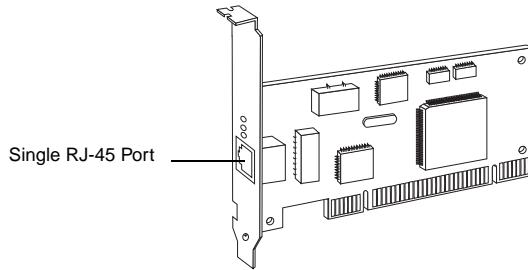
Figure 1-1. ANA-69011 DuraLAN NIC

■ **ANA-62011**—a single port 64-bit NIC supporting autosensing between 10 and 100 Mbps line speeds.

Single RJ-45 Port
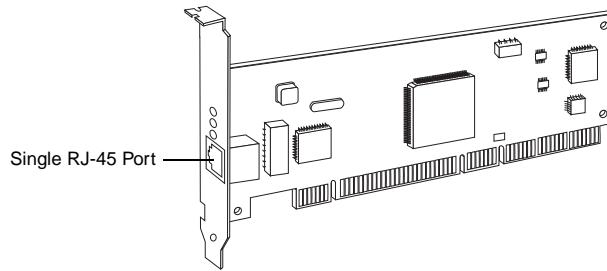
Figure 1-2. ANA-62011 DuraLAN NIC

■ **ANA-62022**—a dual port NIC that offers two high performance Ethernet/Fast Ethernet ports on a single 64-bit NIC. Each port runs at independent speeds for maximum flexibility. This NIC supports Full Duplex to deliver speeds up to 400 Mbps cumulative throughput.
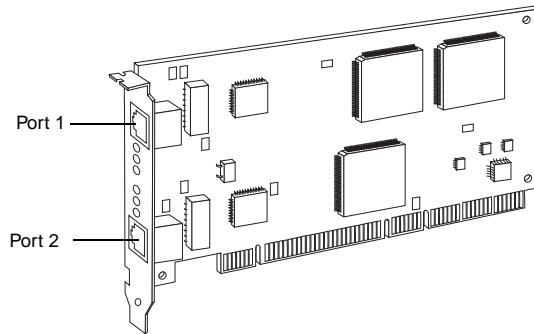
Figure 1-3. ANA-62022 DuraLAN NIC

■ **ANA-62044**—a quad port NIC that provides four Fast Ethernet ports on a single 64-bit NIC. Each port runs at independent speeds for maximum flexibility. This NIC supports Full Duplex to deliver speeds up to 800 Mbps cumulative throughput.
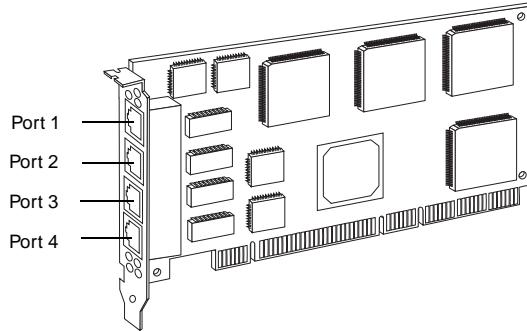
Figure 1-4. ANA-62044 DuraLAN NIC

System Requirements

Hardware Requirements

The minimum hardware system requirements for using the Adaptec DuraLAN NIC are as follows:

System Component	Requirements
NIC	■ Available bus mastering PCI slot. ■ The most recent PCI system BIOS is recommended. ■ Intel x86 platform with single or multiprocessor. ■ 16 MByte RAM.
Dual and Quad Port NICs	■ System BIOS supporting PCI-to-PCI bridge chip. ■ Multi-port NICs require PCI 2.1 compliant bus.

Software Requirements

The minimum software system requirements are as follows:

- **Windows**—Windows NT 3.51 or 4.0 (Workstation or Server), Windows® 95, or Windows® 98.

- **NetWare**—NetWare 4.11.

Advisories Found in this User's Guide

This document includes three kinds of advisories.

Note: Notes are reminders, tips, or suggestions that might simplify the procedures included in this document.

Caution: Cautions alert you to actions that might cause damage to your system or your data.

WARNING: Warnings alert you to actions that might cause injury to you or someone else.

To avoid injury to people or damage to equipment and data, be sure to follow the cautions and warnings in this document. Adaptec does not claim to have included in this document every condition or situation that might require a caution or warning notice. Be sure to consult the documentation for your computer and any connected equipment when you are installing the equipment or changing its configuration.

WARNING: *Always* use caution when handling electrical equipment!

❐

▼▼▼▼ Part 1

Installing the DuraLAN NIC

▾▾▾▾ 2

DuraLAN NIC Installation

In this Chapter

This chapter provides instructions for installing your Adaptec DuraLAN NIC. If you're a Windows 95 user, please read *Important Note for Windows 95 Users!* before proceeding with this installation.

Important Note for Windows 95 Users!

Before you begin this hardware installation, verify which version of Windows 95 is installed. (You either have OSR1 or OSR2.) Use the following instructions for help. Otherwise, continue to *Installing the DuraLAN NIC*.

1 Start Windows 95.

2 Click the Start menu, point to Settings, and then click **Control Panel**.

3 Double-click the **System** icon. The General tab displays your version of Windows 95.

Windows 95 Versions	
4.00.950	OSR1
4.00.950a	OSR1
4.00.950b	OSR2
4.00.950c	OSR2

4 Click **OK** to exit the General tab.

5 Shut down the system, and then turn OFF power.

6 Continue to *Installing the DuraLAN NIC*.

Installing the DuraLAN NIC

WARNING: Before you begin, turn OFF power to the PC, and disconnect the power cord!

1 Ground yourself by touching an unpainted surface of the PC case.

2 Remove the cover from your computer. Refer to the manufacturer's documentation for help.

3 Carefully remove the DuraLAN NIC from its antistatic container.

4 Verify the model name on the NIC (such as, ANA-69011/TX, ANA-62011/TX, etc.).

5 Check the NIC for any visible signs of damage which may have occurred during shipment. If you find a problem, immediately notify your network supplier and the shipping service which delivered your NIC.

6 Locate an unused PCI expansion slot.

– For best performance, install the 64-bit DuraLAN NIC in a 64-bit PCI expansion slot. (32-bit PCI expansion slots can be used also.)

– Some non-compliant 32-bit PCI expansion slots *do not* support 64-bit NICs. This is because the slot's outside notch is not deep enough to allow the bus contacts to fit around the slot. If the 64-bit DuraLAN NIC does not fit in the slot, contact Adaptec to purchase a 32-bit DuraLAN NIC.

7 Unscrew the bracket screw, and then remove the expansion slot bracket cover.

Note: PCI slots and NICs come in two varieties: 3.3-volt, and the more common 5-volt. All Adaptec PCI NICs support 5-volt and 3.3-volt slots.

8 Insert the NIC into the expansion slot, pressing down firmly until the bus contacts are seated in the slot.

9   Replace the screw that was removed in step 7.
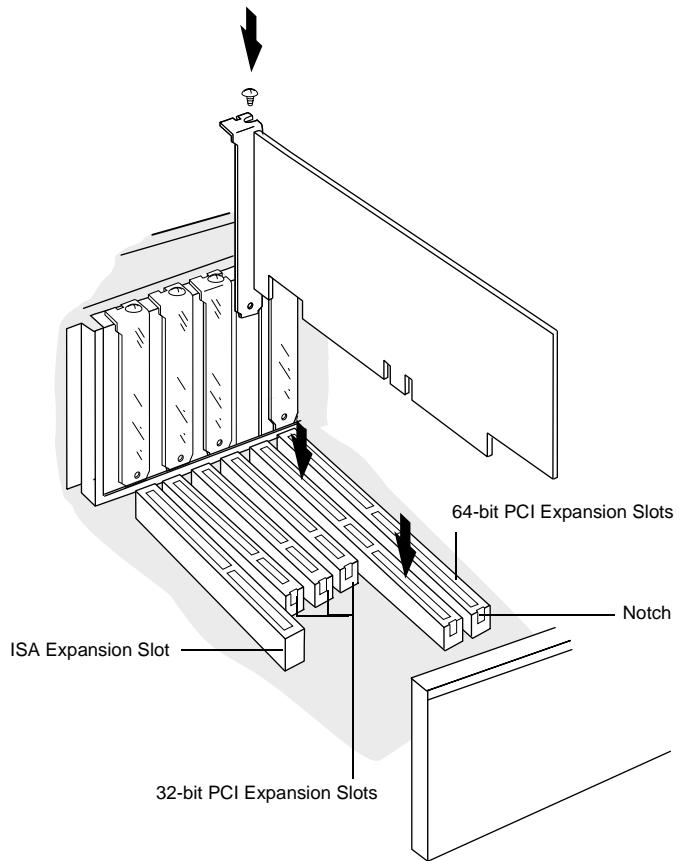
Figure 2-1. Install the DuraLAN NIC in a 64-bit PCI expansion slot.

10   Replace the computer cover.

11   Continue to *Connecting the Network Cable*.

Connecting the Network Cable

Cable requirements for Adaptec DuraLAN NICs vary according to network speed, cabling standard, and the connector to be used. See Appendix A, *Cables and LEDs* for detailed information on cabling.

1 Determine the appropriate cabling for your network.

2 Connect the cable to the NIC connector. (For multi-port NICs, connect a cable to each port.)

> **Note:** If you install a Quartet or Duo network driver on a port that does not have a cable attached, you may receive a start-up message on your server. This is normal and does not affect performance.

3 Connect the other end of the cable to your hub, switch, or client.

4 Continue to *Installing the Appropriate Driver*.

Installing the Appropriate Driver

After installing the DuraLAN NIC, you must install the DuraLAN NIC driver. Adaptec DuraLAN NICs support two types of drivers. Read the following descriptions to decide which driver type is suitable for your installation. You may install one type only.

- **DuraLAN Standard Driver**

    To use the DuraLAN NIC port(s) separately, instead of pairs for network redundancy, continue to Part 2, *Installing the DuraLAN Standard Driver*.

    Note: Windows 95 and Windows 98 *do not* support Duralink Failover. Install the DuraLAN Standard driver for these operating systems.

- **Duralink Failover Driver**

    To use the DuraLAN NIC port(s) for Duralink Failover, see Part 3, *Installing the Duralink Failover Driver*. (*Duralink Failover* on page 1-2 describes this software.)

Disks 1 and 2 provide the following drivers:

Disk 1	Disk 2
Windows NT 4.0	NetWare
Windows NT 3.51	Client32
Windows 95	NetWare Failover
Windows 98	
Windows NT 4.0 Failover	
Windows NT 3.51 Failover	

Always use the latest driver version available for your DuraLAN NIC. Drivers are updated regularly on Adaptec's World Wide Web, FTP, and BBS sites to provide enhanced performance and new features. See *Technical and Product Support* on page iii.

▾▾▾▾ Part 2

**Installing the
DuraLAN Standard Driver**

3

Windows

In this Chapter

This chapter describes how to install the DuraLAN Standard driver
for Windows.

Windows NT

Windows NT 3.51

For instructions on installing the DuraLAN Standard Driver, see the Adaptec Support Web site.

Windows NT 4.0

The following instructions are provided if you intend to use the DuraLAN NIC(s) independently. However, to use the NIC ports for network redundancy, install the Duralink Failover driver described in Chapter 6, *Duralink Failover for Windows NT*.

Installing the DuraLAN Standard Driver

1   Start Windows NT 4.0.

2   Double-click **My Computer**.

3   Double-click **Control Panel**.

4   Double-click **Network**.

5   In the Network window, click the **Adapters** tab.

6   In the Adapters tab, click **Add**.

7   In the Select Network Adapter window, click **Have Disk**.

8   Insert the LAN AND DURALINK FAILOVER DRIVERS WINDOWS DISK (disk 1 of 2) into the floppy disk drive.

9   In the Insert Disk window, type **a:** and then click **OK**.

10   From the Select OEM Option window, click the DuraLAN NIC model or **Adaptec DuraLAN Fast Ethernet NIC**, and then click **OK**.

11   Continue to *Configuring the Ports*.

Configuring the Ports

1   In the Adaptec DuraLAN NIC Configuration window, click the appropriate connection type for your network, and then click **OK**.

> ◢ **Note:** Use **Autodetect Default Connection** if you do not know the connection type. (*Connection Types* on page A-2 provides descriptions.)

Adaptec DuraLAN NIC Configuration ☒

Connection Type: | Autodetect Default Connection | ▼ | OK

Choose the proper connection type for the network adapter. Select [Help] for a detailed description of the available options.

Cancel

Help
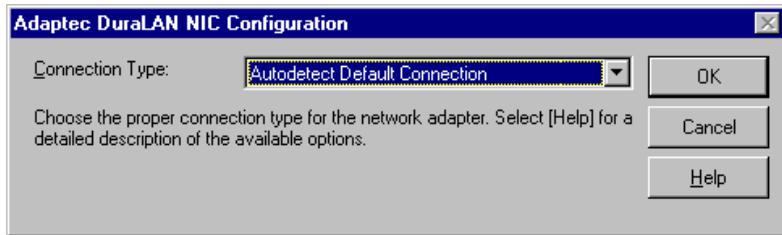
Figure 3-1. Adaptec DuraLAN NIC Configuration Window

2   Repeat step 1 for each additional port.

3   **OPTIONAL.** If SNMP is not set up on the server, you'll receive a message which you may ignore in this installation. Click **OK**.

4   In the Adapters tab, click **Close**.

5   Consult your Microsoft® Windows NT 4.0 documentation for help configuring the protocol (for example, entering TCP/IP values).

6   When you're done, click **Close** in the Network window.

7   Remove the floppy disk from the floppy disk drive.

8   Restart the system.

> ◢ **Note:** If you were required to insert the Windows NT CD, you must re-install the Microsoft Windows NT Service Pack 3, and then restart the system.

Windows 95

Before You Begin

Be sure you know which version of Windows 95 is installed. (You either have OSR1 or OSR2.) Please see *Important Note for Windows 95 Users!* on page 2-2.

Installing the DuraLAN Standard Driver

This section is divided into two subsections. Use the instructions appropriate for your version of Windows 95.

Windows 95 OSR1 Installation

1 Start Windows 95. The New Hardware Found wizard opens.

2 In the wizard, click **Driver from disk provided by hardware manufacturer**, and then click **OK**.

3 Insert the LAN AND DURALINK FAILOVER DRIVERS WINDOWS DISK (disk 1 of 2) into the floppy disk drive.

4 In the Install from Disk window, type **a:\win95a** and then click **OK**.

> ⚠ **Caution:** If you skip this step and accept the default path **a:** , all files will be copied from the floppy disk and may cause errors on a system running the OSR1 version of Windows 95.

5 In the Insert Disk window, insert the Windows 95 CD, and then click **OK**.

6 Enter the path to the Windows 95 directory, and then click **OK**. (For example, **d:\win95**.[1] Consult your Microsoft Windows 95 documentation for help.)

7 Remove the floppy disk from the floppy disk drive.

---

[1] In this example, d:\ represents the CD-ROM drive letter.

8   If the System Setting Change window appears, click **Yes** to restart the system.

> **Note:** At system start-up, Windows 95 detects any other ports that are not configured and installs the driver automatically.

9   **OPTIONAL**. To verify the driver installation, see *Tips* on page 3-6.

10   Continue to *Configuring the Ports* on page 3-8.

Windows 95 OSR2 Installation

1   Start Windows 95. The Update Device Driver wizard opens.

2   In the wizard, click **Next**.

3   In the second window, click **Other Locations**.

4   Insert the LAN AND DURALINK FAILOVER DRIVERS WINDOWS DISK (disk 1 of 2) into the floppy disk drive.

5   In the Select Other Location window, type **a:** and then click **OK**. The system indicates that it has found the Adaptec Fast Ethernet NIC driver.

6   Click **Finish**.

7   In the Insert Disk window, click **OK**.

8   Type **a:** and then click **OK**.

9   In the Insert Disk window, insert the Windows 95 CD, and then click **OK**.

10   Enter the path to the Windows 95, and then click **OK**. (For example **d:\win95**.[1] Consult your Microsoft Windows 95 documentation for help.)

11   Remove the floppy disk from the floppy disk drive.

12   Restart the system, if prompted.

13   **OPTIONAL**. To verify the driver installation, see *Tips* below.

---

[1] In this example, d:\ represents the CD-ROM drive letter.

> ![Note icon] **Note:** At system start-up, Windows 95 installs the driver files for any other port it detects.

14 Continue to *Configuring the Ports* on page 3-8.

Tips

How do I verify that the DuraLAN NIC driver is installed properly?

1 From the Start menu, point to Settings, then click **Control Panel**.

2 In the Control Panel, double-click **System**.

3 In the Device Manager tab, look under Network adapters.
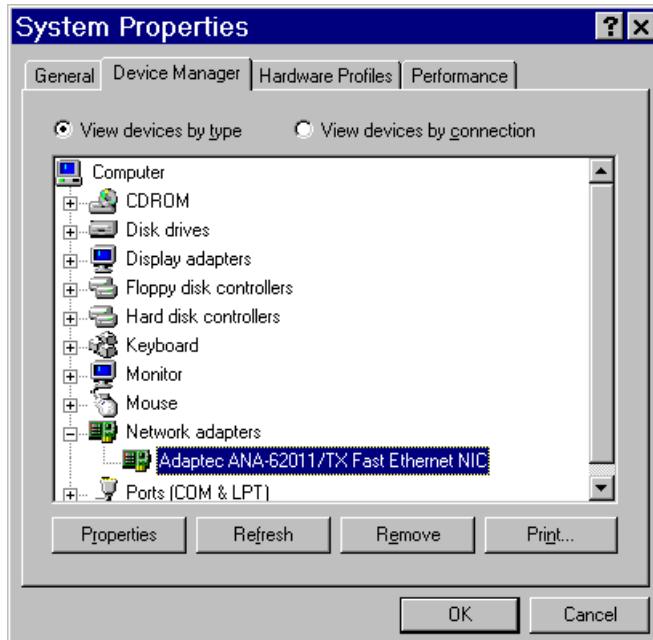
Figure 3-2. The DuraLAN NIC appears under Network adapters.

4 The DuraLAN NIC appears under Network Adapters. Click **OK**.

A yellow explanation ! appears beside the DuraLAN NIC. What should I do?

If you find a yellow! or red X, the driver is not properly installed. Depending on your version of Windows, do one of the following:

OSR2

In OSR2, you can either remove or update the DuraLAN Standard driver.

To remove the driver

1   In Device Manager, click the DuraLAN NIC, and then click **Remove**.

2   Reinstall the DuraLAN Standard driver.

To update the driver

See *Updating the DuraLAN Driver* on page 3-13.

OSR1

Remove the DuraLAN Standard driver.

1   In the Device Manager, click the DuraLAN NIC, and then click **Remove**.

2   Open an MS-DOS command line box, and then type one of the following commands:

– To update an existing OSR1 driver, type **erase %windir%\inf\adpts95a.inf**

– To correct an OSR2 driver installed under OSR1, type **erase %windir%\inf\adptsf9x.inf**

3   Restart the system.

4   Reinstall the updated/correct driver described in *Installing the DuraLAN Standard Driver* on page 3-4.

Configuring the Ports

1 From the Start menu, point to Settings, and then click **Control Panel**.

2 In the Control Panel, double-click **Network**.

3 In the Network window, click the appropriate DuraLAN NIC, and then click **Properties**.
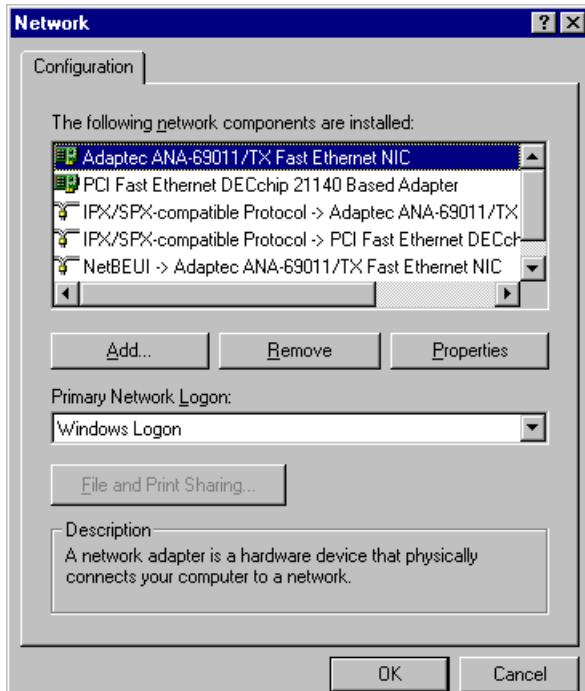
Figure 3-3. Windows 95 Configuration Tab

4 In the Properties window, click the **Advanced** tab.

5 In the Property box, click **Connection Type**.

6 In the Value list, click the appropriate connection type. (*Connection Types* on page A-2 provides descriptions.)
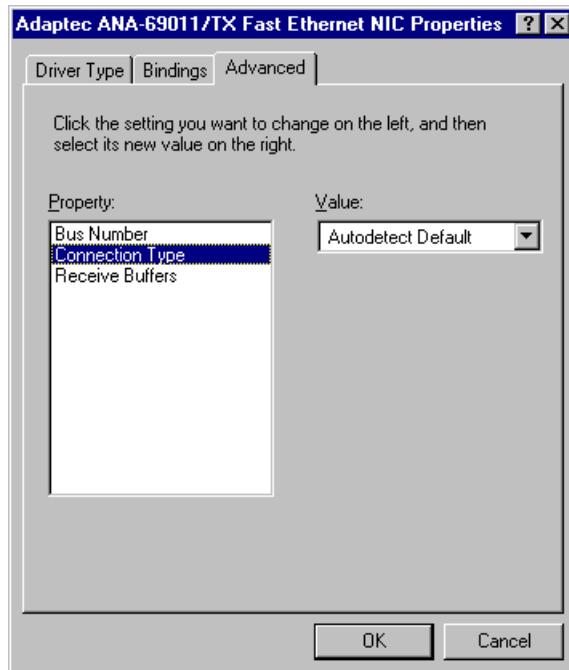
Figure 3-4. Advanced Tab

7 Click **OK**.

8 In the Configuration tab, click **OK**.

9 Restart your system.

Windows 98

Installing the DuraLAN Standard Driver

1 Start Windows 98. The Add New Hardware wizard opens. (If it doesn't, see *Troubleshooting Tip* on page 3-11.)

2 In the first screen, click **Next**.

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

4 In the next window, click **Floppy Disk Drives**.

5 Insert the LAN AND DURALINK FAILOVER DRIVERS WINDOWS DISK (disk 1 of 2) into the floppy disk drive, and then click **Next**.

> **Note:** If you don't insert the floppy disk, this message appears: Windows was unable to locate a driver for this device. If you do not want to install a driver now, click Next. To search again, click Back.

6 The system indicates that the driver file was found. Insert the same Windows 98 CD you used to install Windows 98, and then click **Next**.

> **Note:** If the Version Conflict window displays: A file being copied is older than the file currently on your computer. It is recommended that you keep your existing file. Do you want to keep the file? Click **Yes**.

7 Click **Finish**.

8 Remove the floppy disk.

9 If the System Settings Change window appears, click **Yes** to restart the system.

10 Continue to *Configuring the Ports* on page 3-11.

Troubleshooting Tip

How do I access the Add New Hardware wizard if it doesn't open?

1 Click the Start menu, point to Settings, and then click the **Control Panel**.

2 In the Control Panel, double-click **Add New Hardware**.

Configuring the Ports

1 In Windows 98, click the Start menu, point to Settings, and then click **Control Panel**.

2 In the Control Panel, double-click **Network**.

3 In the Configuration tab, click the appropriate DuraLAN NIC, and then click **Properties**.
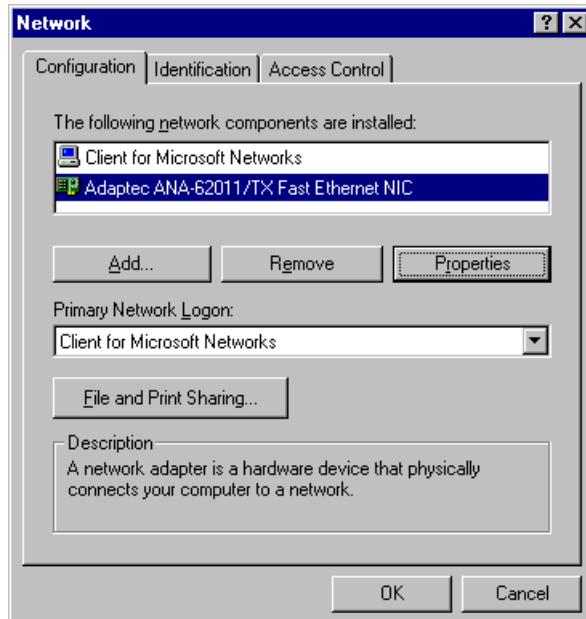
Figure 3-5. Windows 98 Configuration Tab

4 In the Adaptec DuraLAN NIC Properties window, click the **Advanced** tab.

5 In the Property box, click **Connection Type**.
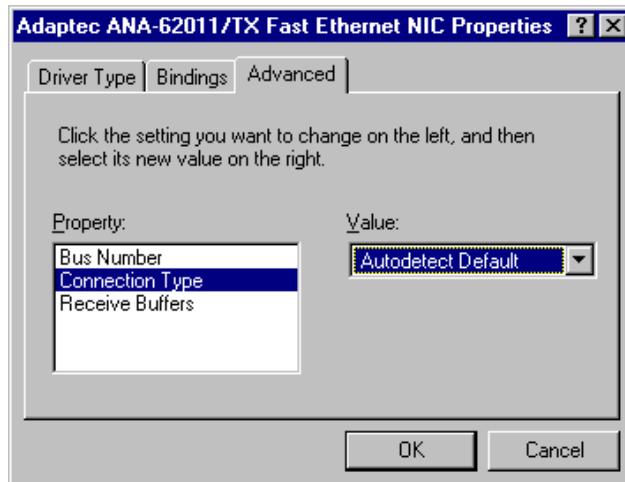
Figure 3-6. Advanced Tab

6 In the Value list, click the appropriate connection type. (*Connection Types* on page A-2 provides descriptions.)

7 Click **OK**.

8 In the Configuration tab, click **OK**.

Updating the DuraLAN Driver

Windows NT 4.0

1 Double-click **My Computer**.

2 Double-click **Control Panel**.

3 Double-click **Network**.

4 In the Network window, click the **Adapters** tab.

5 In the Network Adapters list, click the Adaptec DuraLAN NIC, click **Remove**, and then click **OK**.

6 Repeat step 5 until all Adaptec DuraLAN drivers are removed.

7 When you're done, click **OK**.

8 Click **Close** to close the Network window.

9 Click **Yes** to restart your computer.

> **Note:** When you restart Windows NT, a message may indicate that at least one service failed to start. This message will not appear after you add the new drivers. Click **OK**.

To install a new DuraLAN Standard driver, see *Installing the DuraLAN Standard Driver* on page 3-2.

Windows 95 (OSR2 Only)

1 Start Windows 95.

2 From the Start menu, point to Settings, and then click **Control Panel**.

3 In the Control Panel, double-click the **System** icon.

4 Click the Device Manager tab, and then expand the Network Adapters list.
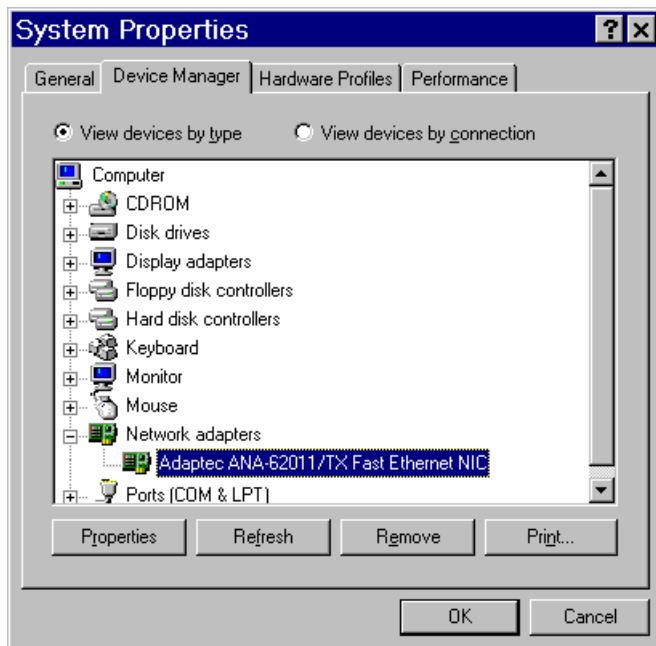
Figure 3-7. Available Network Adapters

5 Click the appropriate NIC, and then click **Properties**.

6 In the Properties window, click the **Driver** tab.

7 Click **Update Driver** or **Change Driver.**

8 Click **No, select driver from list**, and then click **Next**.

9 Insert the LAN AND DURALINK FAILOVER DRIVERS WINDOWS DISK (disk 1 of 2) into the floppy disk drive.

10 Click **Have Disk**, and then type **a:**.

11 Click **OK**.

12 Click the appropriate new driver, and then click **OK**.

13 If prompted, insert the Windows 95 CD.

    a Type the path to Windows 95 directory (for example, **d:\win95**. Consult your Microsoft Windows 95 documentation for help).

    b Click **OK**.

14 In the Network window, click **Close**.

15 In the System Properties window, click **Close**.

16 Remove the floppy disk from the floppy disk drive.

17 Restart the system.

Troubleshooting Tip

In the Device Manager, the new NICs replace the older NICs, but the Network window lists both. What should I do?

Remove the old NIC(s):

1 In the Network window, click the old NIC and then click **Remove**. Repeat this step for each appropriate NIC.

2 Click **OK** when you're done.

Windows 98

1   Start Windows 98.

2   From the Start menu, point to Settings, and then click **Control Panel**.

3   In the Control Panel, double-click **System**.

4   Click the **Device Manager** tab.

5   In the Device Manager, click **Network Adapters**, and then click the DuraLAN NIC to be upgraded.

6   Click **Properties**.

7   Click the **Driver** tab.

8   In the Driver tab, click **Update Driver** or **Change Driver.**

9   The Update Device Driver wizard opens. Click **Next**.

10   In the next window, click **Search for a better driver than the one your device is using now. (Recommended)**, and then click **Next**.

11   Insert the LAN AND DURALINK FAILOVER DRIVERS WINDOWS DISK (disk 1 of 2) into the floppy disk drive.

12   In the next window, click **Floppy Disk Drivers**, and then click **Next**.

13   Follow the instructions in each screen.

14   When you're done, remove the floppy disk from the floppy disk drive.

15   Restart the system, if prompted.

❒

4
▼▼▼▼

NetWare

In this Chapter

This chapter provides instructions for installing and configuring the DuraLAN Standard driver for NetWare 4.11. To install Duralink Failover drivers see Chapter 7, *Duralink Failover for NetWare*.

> **Note:** An Adaptec DuraLAN NIC cannot be used as a MSL NIC in an SFT-III environment.

Before You Begin

You will use inetcfg to complete this installation. However, before you begin, be sure to check the following:

■ Verify that all system, memory, and NIC requirements are met, see *System Requirements* on page 1-5.

■ Verify that the DuraLAN NIC is installed properly in the server.

■ Verify that your system has no other DuraLAN driver currently installed for ANA-69011, ANA-62011, ANA-62022, or ANA-62044.

– If the DuraLAN Standard driver is installed, it must be removed. See *Removing the DuraLAN Standard Driver* on page 4-12.

– If the Duralink Failover driver is installed, see *Removing Duralink Failover* on page 7-16.

> **WARNING:** This procedure is critical because two or more DuraLAN drivers may not coexist in a system.

■ If you're installing NetWare on a new server, do not add the DuraLAN NIC at this time. When prompted to add the NIC, select **No**, and then continue with the NetWare installation.

■ Verify that IntraNetWare Service Pack 5 or later is installed.

> **Note:** You can download this pack from http://support.novell.com

■ If inetcfg Version 3.10b is installed on the server, download the *Special Instructions for DuraLAN Fast Ethernet NICs User's Guide* from the Adaptec Support Web site.

Installing the DuraLAN Driver

The figures in this chapter are based on screens from inetcfg Version 3.3 and may differ slightly from other versions of inetcfg.

1   At the server prompt, type **load inetcfg** and then press **ENTER.**

2   From the Internetworking Configuration menu, select **Boards**, and then press **ENTER.**

```
┌─────────────────────────────────────┐
│    Internetworking Configuration     │
│                                      │
│    Boards                            │
│    Network Interfaces                │
│    WAN Call Directory                │
│    Backup Call Associations          │
│    Protocols                         │
│    Bindings                          │
│    Manage Configuration              │
│    View Configuration                │
│    Reinitialize System               │
│    Go to Fast Setup                  │
│                                      │
└─────────────────────────────────────┘
```
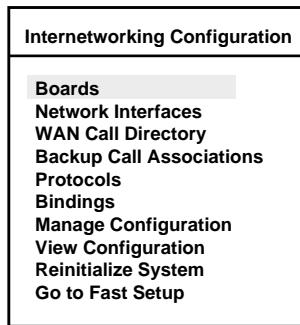
Figure 4-1. Internetworking Configuration Menu

3   In the Configured Boards screen, press **INS**. A list of drivers appears.

```
┌─────────────────────────────────────┐
│           Select a Driver            │
│                                      │
│    Driver      Description           │
│    ADPTSF    Adaptec DuraLAN Adapter │
│                                      │
└─────────────────────────────────────┘
```
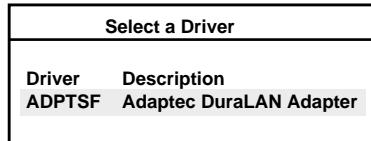
Figure 4-2. Select a Driver Box

4   In the Select a Driver box, press **INS**.

5   Insert the LAN & DURALINK FAILOVER DRIVERS NETWARE 4.X DISK (disk 2 of 2).

6   In the New Driver box, type

   <floppy disk drive letter>**:\nwserver\adptsf.lan**

and then press **ENTER**.

New Driver
> a:\nwserver\adptsf.lan
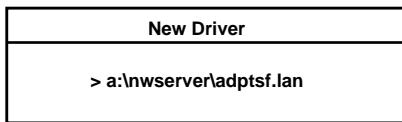
Figure 4-3. a:\ represents the floppy disk drive.

7   In the Select a Driver box, select **Adptsf**, and then press **ENTER**. (**Adptsf** may appear at the end of the list.)

8   Continue to *Configuring the Ports*.

Configuring the Ports

The NetWare Board Configuration screen does not distinguish single-port NICs from multi-port NICs.

1 Select the **Slot** field. (See Appendix C, *Note on Ports in NetWare*.)

– **SINGLE-PORT NIC.** Type the port slot number, and then press **ENTER**.

– **MULTI-PORT NIC.** Type the port slot number, and then press **ENTER**. You will return to the Board Configuration screen for each additional port.

```
┌───────────────────────────────────────────────────────────┐
│                   Board Configuration                     │
├───────────────────────────────────────────────────────────┤
│                                                           │
│  Board Name:                                              │
│  Slot:                  1002                              │
│  Connection Type:       [1] Autodetect Connection (default)│
│  IOMAP:                 0                                 │
│                                                           │
│  Comment:               Unspecified                      │
│  Board Status:          Enabled                          │
│                                                           │
│  Driver Info:                                            │
│          This driver supports the following DuraLAN adapters │
│          62011-Single Port, 69011-Single Port, 62022-Dual Port, │
│          62044-Quad Port                                 │
│                                                           │
└───────────────────────────────────────────────────────────┘
```

Figure 4-4. This single-port NIC is physically seated in Slot 2. The valid slot number for this system happens to be 1002.

Note: If an invalid slot number is assigned, a list of valid slot numbers will be displayed at reboot. At that time, you may reassign the slot number.

2 Select the **Board Name** field. This field is used to identify the port. Reference the slot number to better identify the port later.

– **SINGLE-PORT NIC.** Type the Port name, and then press **ENTER**.

– **MULTI-PORT NIC.** Type the Port name, and then press
ENTER. You will return to the Board Configuration screen for
each additional port.

3 In the Connection Type field, the **Autodetect Connection**
default is recommended. However, to select a different
connection type, follow these steps:

a In the Connection Type field, press **ENTER** to access the
Connection Type box.

b In the Connection Type box, select the appropriate type, and
then press **ENTER.** For Connection Type descriptions, see
page A-2.

Connection Type:
[1] Autodetect Connection (default)
[2] 10 Mbps Half Duplex
[3] 10 Mbps Full Duplex
[4] 100 Mbps Half Duplex
[5] 100 Mbps Full Duplex
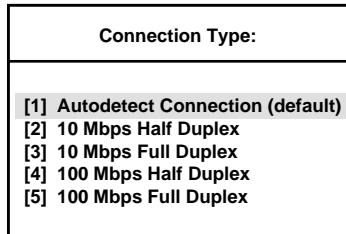
Figure 4-5. Connection Type Box

4 **OPTIONAL.** In the Comment field, enter a comment up to 50
characters, and then press **ENTER.**

5 This completes the port configuration. Press **ESC.**

6 In the Save Changes box, select **Yes**, and then press **ENTER.** The
Configured Boards screen displays the new configuration
settings, as shown in Figure 4-6.

NOTE ON MULTI-PORT NICS. The Configured Boards screen
displays each port name under Board Name.

Configured Boards							
Board Name	Driver	INT	IOAddr	MemAddr	Slot	Status	Comment
NIC-1002	ADPTSF	--	--	--	1002	Enabled	--

Figure 4-6. Example of a configured single-port NIC.

7 To enable or disable the port, select it, and then press **TAB.**

8 **OPTIONAL**. To configure another single or multi-port NIC:

    a Press **INS** in the Configured Boards screen.

    b In the Select a Driver box, select **ADPTSF**, and then press **ENTER**.

    c Repeat steps 1-8.

9 When you're done, press **ESC** to return to the Internetworking Configuration menu.

10 Continue to *Configuring the Protocols*.

Configuring the Protocols

You can configure one or more protocols for each port.

1 From the Internetworking Configuration menu, select **Protocols**, and then press **ENTER**.

2 In the Protocol Configuration box, select the appropriate protocol, and then press **ENTER**.

Protocol Configuration

Protocol	Status
AppleTalk	Disabled
IPX	Enabled
Source Route Bridge	Disabled
Source Route End Stn	Unconfigured
TCP/IP	Disabled
User Specified Protocol	Unconfigured

Figure 4-7. Protocol Configuration Box

---

3 In the configuration box of the specified protocol enter the value for each appropriate field.

4 When you're ready to save and exit the settings in the configuration box, press **ESC**.

5 To configure another protocol, repeat steps 2-4.

6 Press **ESC** to return to the Internetworking Configuration menu.

7 Continue to *Binding Protocol(s) to the Ports*.

Binding Protocol(s) to the Ports

Binding instructions for inetcfg Version 3.1 are available on the Adaptec Web site.

1 From the Internetworking Configuration menu, select **Bindings**, and then press **ENTER**.

2 In the Protocol to Interface/Group Bindings screen, press **INS**.

```
┌─────────────────────────────────────────────────┐
│      Protocol to Interface/Group Bindings        │
├─────────────────────────────────────────────────┤
│                                                  │
│  Protocol   Int./Group        Status    Identifier│
│  <Empty List>                                    │
│                                                  │
└─────────────────────────────────────────────────┘
```

Figure 4-8. Protocol to Interface/Group Bindings Screen

3 In the list of configured protocols, select the protocol you want to bind to the port, and then press **ENTER**.

```
┌─────────────────────────────────────────────────┐
│     Select from the list of Configured Protocols │
├─────────────────────────────────────────────────┤
│                                                  │
│   Protocol                    Status             │
│   AppleTalk                   Disabled           │
│   IPX                         Enabled            │
│   Source Route Bridge         Disabled           │
│   TCP/IP                      Enabled            │
└─────────────────────────────────────────────────┘
```

Figure 4-9. This screen displays available protocols.

4 In the Bind To? box, select **A Network Interface**, and then press **ENTER**.

```
┌─────────────────────────────────────┐
│  Bind To?                           │
├─────────────────────────────────────┤
│   A Network Interface               │
│   Each Interface In a Group         │
└─────────────────────────────────────┘
```

Figure 4-10. Bind To? Box

5 In the Configured Network Interface box, select the appropriate port, and then press **ENTER**.

NOTE ON MULTI-PORT NICS. Port names are listed under Board Name.

Select a Configured Network Interface				
Board Name	**Inteface**	**Group**	**Media**	**Status**
NIC-1002	DuraLAN	--	Ethernet	Enabled

Figure 4-11. Configured Network Interface Box

6 In the next screen, select the binding settings for the selected protocol.

7 Press **ESC** when you're finished, and then save the current changes.

8 In the Update <Protocol> Configuration box, select **Yes**, and then press **ENTER**.

9 **OPTIONAL**. To bind multiple protocols or frame types to the port, repeat steps 2-8.

10 When you're finished, press **ESC** to return to the Internetworking Configuration menu.

11 To bind protocols to another port, repeat steps 1-10.

12 Continue to *Viewing the Configuration* to verify the NIC configuration.

Viewing the Configuration

Before exiting inetcfg and restarting the server, you should review the NIC configuration. To modify the configuration, refer to the appropriate section(s) in this chapter for help.

1 In the Internetworking Configuration menu, select **View Configuration**, and then press **ENTER**.

2 In the View Configuration menu, select **All INETCFG Commands**, and then press **ENTER**.

```
┌─────────────────────────────────────┐
│          View Configuration         │
├─────────────────────────────────────┤
│                                     │
│  All INETCFG Commands               │
│  LAN Board Commands                 │
│  WAN Board Commands                 │
│  Protocol Commands                  │
│  Protocol Binding Commands          │
│  Configuration Summary              │
│  Console Messages                   │
│                                     │
└─────────────────────────────────────┘
```
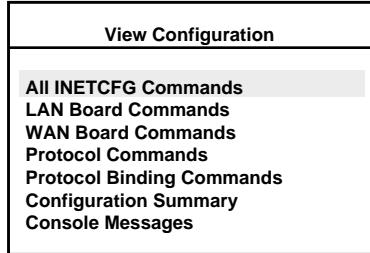
Figure 4-12. View Configuration Menu

3 In the View All INETCFG Generated Commands screen, you can review all the "load" and "bind" commands. Press **ESC** when you're done.

4 Use the View Configuration menu to review any other areas of the NIC configuration.

5 When you're ready to exit the View Configuration menu, press **ESC**.

6 Continue to *Restarting the Server*.

Restarting the Server

1 In the Internetworking Configuration menu, press **ESC**.

2 In the Exit INETCFG box, select **Yes**, and then press **ENTER**.

3 In the Add Initialize Commands to autoexec.ncf box, select **Yes**, and then press **ENTER**.

4 The next screen indicates that the configuration will be activated. Press **ENTER**.

5 At the server console type **down** and then press **ENTER**.

6 Type **restart server** and then press **ENTER**.

7 After the server is restarted, type **config** at the console prompt, and then press **ENTER**.

Troubleshooting Tip

At system reboot, I receive a message that the NIC configuration contains invalid settings. What should I do?

1 Follow the instructions at the server prompt.

2 Document each of your selections.

3 Return to inetcfg.

4 Use the Internetworking Configuring menu to access those screens you must modify.

Removing the DuraLAN Standard Driver

1 At the server prompt, type **load inetcfg** and then press **ENTER**.

2 In the Internetworking Configuration menu, select **Boards**, and then press **ENTER**. A list of NICs appears.

3 In the Configured Boards screen, delete all existing Adaptec NICs drivers by selecting the NIC(s) and pressing **DEL**.

4 When you're finished, press **ESC**.

5 In the Internetworking Configuration menu, select **Manage Configurations**, and then press **ENTER**.

6 To save changes, select **Yes**.

7 Press **ESC** twice.

8 To exit inetcfg, select **Yes**.

9 Continue to *Installing the DuraLAN Driver* on page 4-3.

❐

▾ ▾ ▾ ▾ Part 3

**Installing the
Duralink Failover Driver**

Network Configuration Examples

In this Chapter

This chapter describes the benefits of using Duralink Failover and some typical network configurations. The primary and backup Adaptec DuraLAN Fast Ethernet NICs or ports reside in the server. Duralink Failover operates on these NICs to provide redundancy on the server.

Network Without Duralink Failover Protection

This configuration uses one NIC connected to a hub or switch on an Ethernet segment. If the NIC fails, all network traffic is stopped.
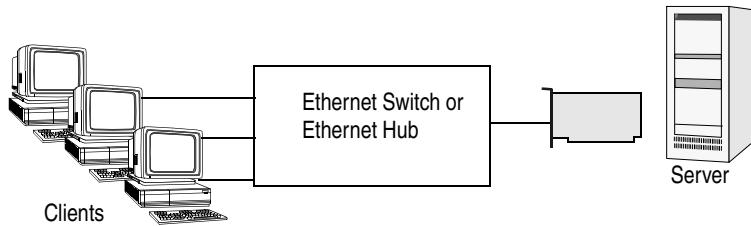
Figure 5-1. Network without Duralink Failover protection.

Single Hub or Switch on an Ethernet Segment

This configuration uses two NICs connected to a hub or switch on an Ethernet segment. Duralink Failover provides failover capability if one NIC fails.
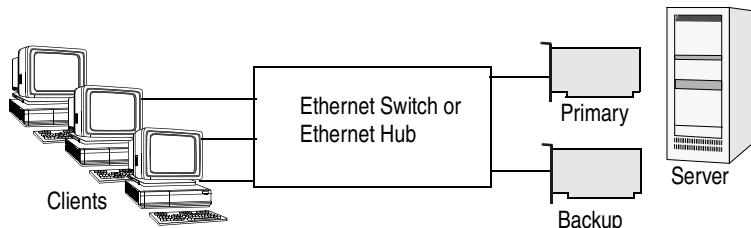
Figure 5-2. Single hub or switch on an Ethernet segment.

Dual Hubs

In this example, each NIC is connected to a separate hub to provide redundancy. If the hub port being used by the primary NIC fails, the backup NIC becomes active and all network traffic is immediately directed through it.
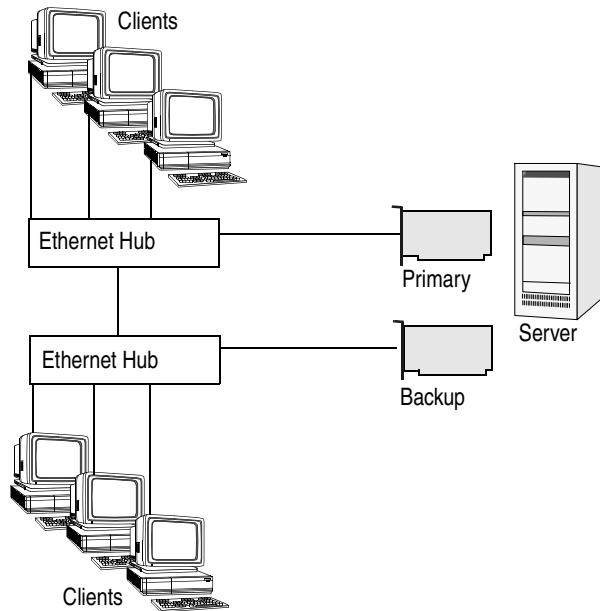
Figure 5-3. Two NICs connected to separate hubs.

Dual Hubs with an Ethernet Switch

This example shows how Duralink Failover provides network redundancy to a switched network. Ethernet switches provide network traffic segmentation.
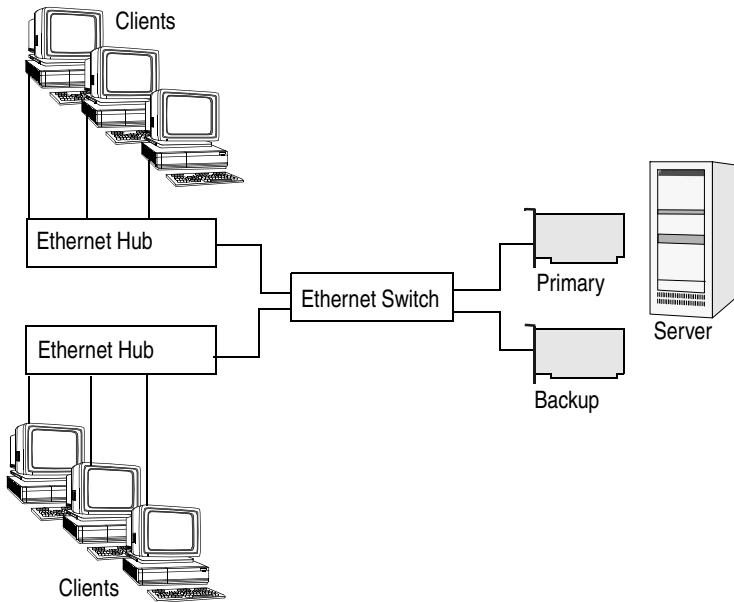
Figure 5-4. Duralink Failover on a network with
dual hubs and an Ethernet switch.

Dual Hubs with Routers

The following example shows how to set up Duralink Failover in a
network configuration using routers. Routers provide WAN and
LAN connectivity and allow physical network protocol redundancy.
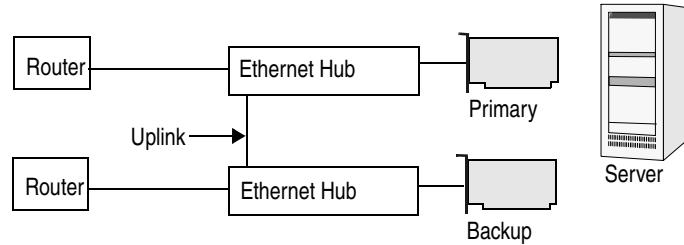
Figure 5-5. Duralink Failover in a netwrok configuration using routers.

Dual Hubs with a Quartet NIC

This example shows port redundancy, using Duralink Failover, within a single 4-port Quartet NIC. As shown in the illustration below, ports 1 and 3 are used as the primary ports to each Ethernet hub. Ports 2 and 4 are backup ports connected to each hub.
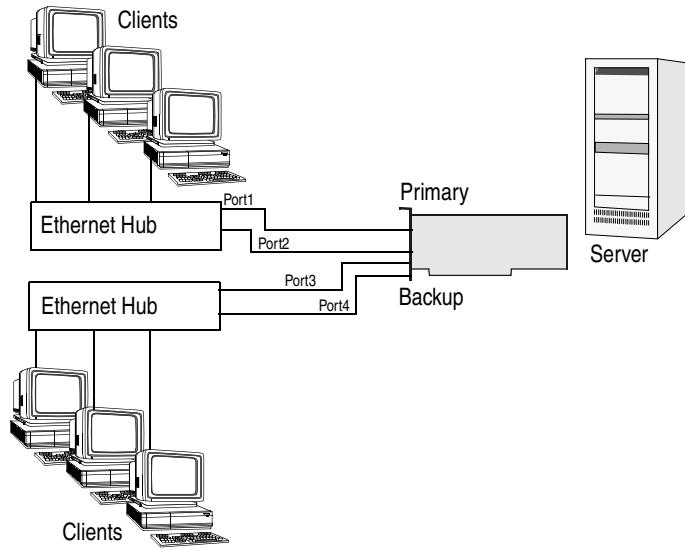
Figure 5-6. A single 4-port Quartet NIC provides port redundancy.

▼▼▼▼ **6**

Duralink Failover for Windows NT

In this Chapter

This chapter provides instructions for installing Duralink Failover on a server running Windows NT 4.0. To install Duralink Failover on Windows NT 3.51, download the instructions from the Adaptec Support Web site.

Before You Begin

- Verify that all system, memory, and NIC requirements are met, see *System Requirements* on page 1-5.

- Verify that the new Adaptec DuraLAN NIC is installed properly in the server.

- If a version of the DuraLAN Standard driver or Duralink Failover driver exists, it must be replaced before you continue this installation. See *Removing the Duralink Failover Driver* on page 6-9.

> **WARNING:** This procedure is critical because two or more DuraLAN drivers may not coexist in a system.

Tip

Installation, configuration, and optional parameters for the software are updated regularly. The file path a:\NtFailover\i386\readme.txt contains supplemental installation instructions, as well as up-to-date software information, and should be read prior to installing Duralink Failover.

Installing the Duralink Failover Driver

1   Start Windows NT 4.0.

2   From the Start menu, point to Settings, and then click **Control Panel**.

3   In the Control Panel, double-click **Network**.

4   In the Network window, click the **Adapters** tab.

5   In the Adapters tab, click **Add**.

6   Insert the LAN AND DURALINK FAILOVER DRIVERS WINDOWS DISK (disk 1 of 2) into the floppy disk drive.

7   In the Select Network Adapter window, click **Have Disk**.
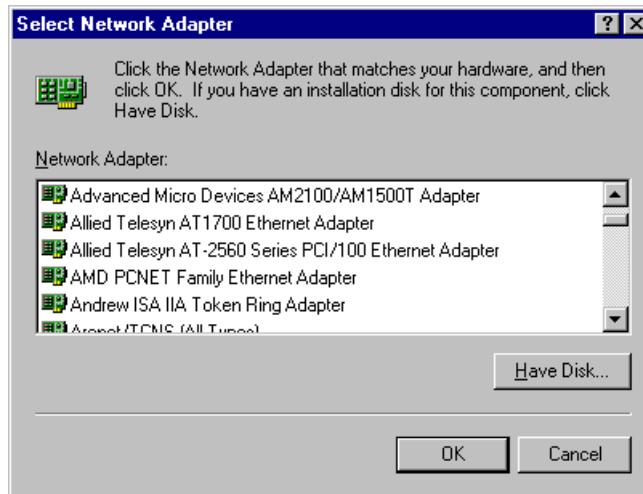
Figure 6-1. Select Network Adapter Window

8   In the Insert Disk Window, type **a:\ntfailover\i386** and then click **OK**.

9 In the Select OEM Option window, select **Adaptec DuraLAN Fast Ethernet NIC** or the appropriate NIC model, and then click **OK**.
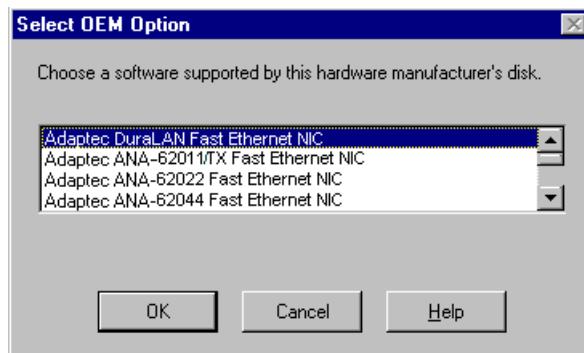
Figure 6-2. Select OEM Option Window

10 Continue to *Configuring the Ports*.

Configuring the Ports

In the Adaptec New Hardware Found window, each port is assigned to the **Autodetect** default connection type. This default always detects what a port is connected to and adjusts the port to a compatible speed and transmission mode.

1 In the Adaptec New Hardware Found window, make sure you know which port names are assigned to the actual ports on the DuraLAN NIC.
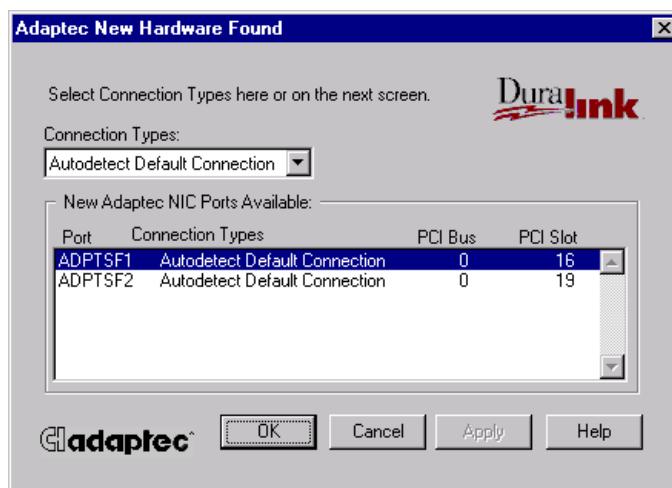
Figure 6-3. This window identifies the port's bus and PCI slot.

2 In the New Adaptec NICs Ports Available box, click the appropriate port.

3 In the Connection Types list, click the connection type for your network or use **Autodetect Default Connection**. *Connection Types* on page A-2 provides descriptions.

4 Click **Apply**.

5 Repeat steps 1-4 for each existing port.

6 When you're done, click **OK**.

7 Continue to *Creating the Failover Pair*.

Creating the Failover Pair

You can create Failover pairs in the Configuration tab. The Failover pair consists of two ports only—the primary port and the backup port.

1 From the Available Adaptec Ports box, click the port to be the primary port.
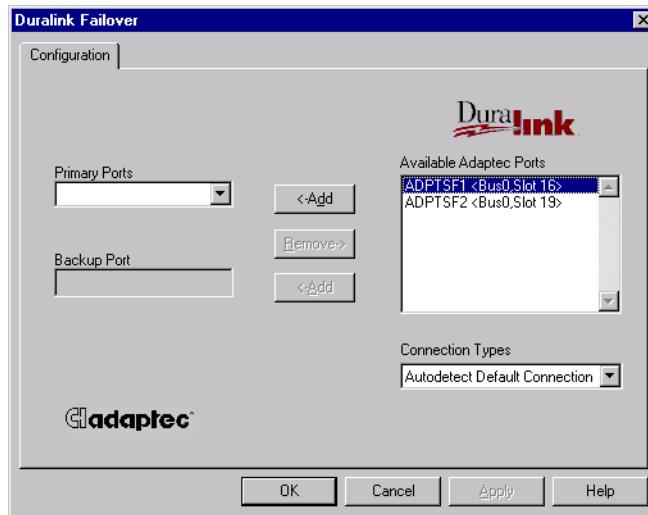
Figure 6-4. Configuration Tab

2 Click **Add**. The port is added to the Primary Ports list.

3 To create the backup port, click the appropriate port from the Available Adaptec Ports box.

4 Click **Add**. The port is added to the Backup Ports list.

5 Click **Apply**.

6 OPTIONAL. Repeat steps 1-5 to create another Failover pair.

7 **OPTIONAL**. To remove a Failover pair

    a Click the port from the Primary Ports list, and then click **Remove**. Both ports return to the Available Adaptec Ports box.

    b Click **Apply**.

8 When you're done, click **OK**. You'll return to the Adapters tab.
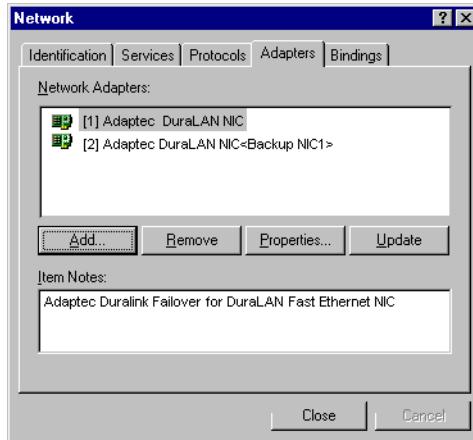
Figure 6-5. <Backup NIC1> indicates that
Port 2 is the backup port for Port 1.

> **Note:** The Adapters tab identifies one model only, even if you installed more than one DuraLAN NIC model. The displayed DuraLAN NIC model is the same as the first model you chose in step 9 from *Installing the Duralink Failover Driver* on page 6-3.

9 OPTIONAL. If SNMP is not set up, you'll receive the Setup Message below. Click **OK**.

Setup Message ⊠

⚠ SNMP Service is not installed. To activate SNMP and Adaptec network management features on this system, install the NT SNMP Service. On the network management station, use the configure option to configure Server related MIBs.

[OK]
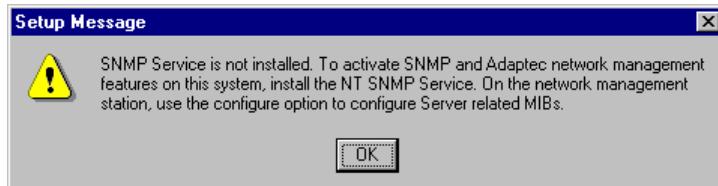
Figure 6-6. This message may be ignored during this installation.

10 In the Adapters tab, click **Close**.

11 Consult your Microsoft Windows NT 4.0 documentation for help configuring the protocol (such as entering values for TCP/IP).

12 When you're done, remove the floppy disk from the floppy disk drive.

13 Restart the system.

> ✓ **Note:** If you were required to insert the Windows NT CD, you must re-install the Microsoft Windows NT Service Pack 3, and then restart the system.

Removing the Duralink Failover Driver

1   Double-click **My Computer**.

2   Double-click **Control Panel**.

3   In the Control Panel, double-click **Network**.

4   In the Network window, click the **Adapters** tab.

5   In the Network Adapters box, click the DuraLAN NIC, and
then click **Remove**.
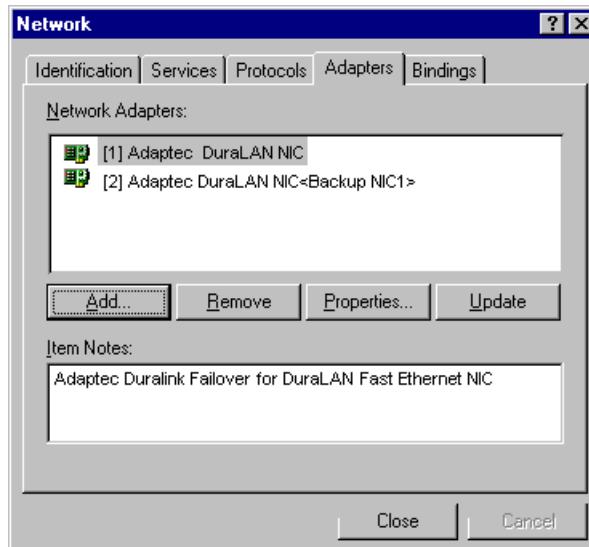
Figure 6-7. In this example, both
DuraLAN NICs must be removed.

6   In the warning message that displays: This will be permanently
removed from the system. Click **Yes**.

7   Repeat step 5 for each additional DuraLAN NIC.

8   When you're done, click **Close**.

9 Restart your computer if prompted.

10 To install the Duralink Failover driver, continue to *Installing the Duralink Failover Driver* on page 6-3.

> **Note:** When the system restarts, you may receive a message that at least one service failed to start. Click **OK**. (This message does not appear after you add the new Duralink Failover drivers.)

Monitoring Failover Pairs

There are two ways to monitor the status of Failover Pairs:

- SNMP Manager—when failover occurs SNMP traps are sent to network management stations and error logs are updated through the operating system event log. In order to manage SNMP agents, compile the following MIB file on the SNMP management station:

  a:\SNMPMIBS\DURALINK.MIB

- Event Viewer Dialog Box—the local event viewer dialog box will log failover problems.

▼▼▼▼ 7

Duralink Failover for NetWare

In this Chapter

This chapter provides instructions for installing Duralink Failover on a server running NetWare 4.11.

Before You Begin

■ Verify that all system, memory, and NIC requirements are met, see *System Requirements*, page 1-5.

■ Verify that the new Adaptec DuraLAN NIC(s) have been installed properly in the server.

■ Verify that your system has no other DuraLAN driver currently installed for ANA-69011, ANA-62011, ANA-62022, or ANA-62044.

  – If the DuraLAN Standard driver is installed, it must be removed. See *Removing the DuraLAN Standard Driver*, page 4-12.

  – If the Duralink Failover driver is installed, see *Removing Duralink Failover*, page 7-16.

> **WARNING:** This procedure is critical because two or more DuraLAN drivers may not coexist in a system.

■ If you are installing NetWare on a new server, do not add a LAN or Ethernet NIC at this time. When prompted to add the LAN or Ethernet NIC, select **No**, and then continue with the NetWare installation.

■ Verify that the latest IntraNetWare Support Pack is installed.

> **Note:** You can download this pack from http://support.novell.com

Tips

■ After you've installed Duralink Failover, use focfgsf to reconfigure the drivers when necessary (see *Managing the NICs by SNMP*, page 7-16).

■ Installation, configuration, and optional parameters for Duralink Failover are updated regularly. The readme file contains supplemental installation instructions.

Installing the Duralink Failover Driver

✔ Note: F1 provides on-line help for each screen. **F10** allows you to abort any change made within the program and exit the utility.

1 Insert the DURALINK FAILOVER DRIVERS NETWARE 4.X (disk 2 of 2).

2 At the system console prompt, type **load a:\nwserver\fosetsf** and then press **ENTER**.

3 In the message indicating that new Adaptec NICs are detected, press **ENTER**.

4 Continue to *Configuring the Ports*.

Configuring the Ports

1 In the Main Menu, select **Configure Ports**, and then press **ENTER**.

```
┌─────────────────────────────────────────────────────────────┐
│ Duralink Failover Setup              Netware Loadable Module  │
│                                                              │
│                                                              │
│                ┌──────────────────────────┐                  │
│                │         Main Menu         │                  │
│                │                          │                  │
│                │   Configure Ports        │                  │
│                │   Set Failover Pairs     │                  │
│                │   Configure Protocols    │                  │
│                │   View Configuration     │                  │
│                │   Install Software       │                  │
│                │   Uninstall Software     │                  │
│                └──────────────────────────┘                  │
│                                                              │
│        ┌────────────────────────────────────────────┐       │
│        │ Use arrow keys to move, <Enter> to Select, <ESC> to Exit. │
│        └────────────────────────────────────────────┘       │
│                                                              │
│ © Copyright 1998, Adaptec Inc.   < F1> Help   < F10> Abort Setup │
└─────────────────────────────────────────────────────────────┘
```
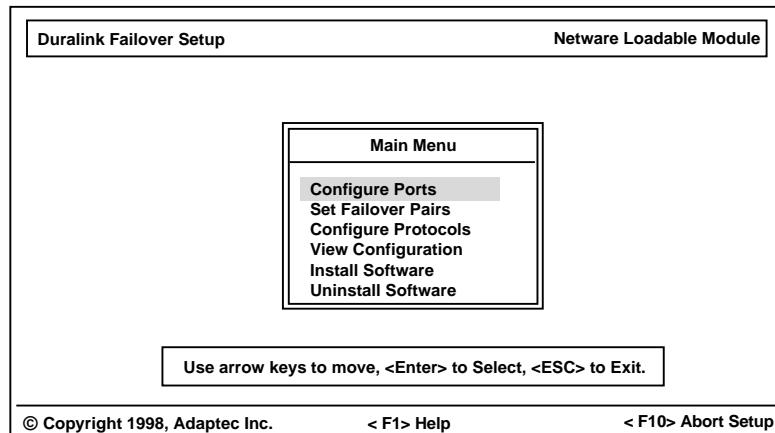
Figure 7-1. Duralink Failover Setup Main Menu

2 In the Ports screen, make sure you know which port names are assigned to the actual ports on the NIC. (See Appendix C, *Note on Ports in NetWare* for information on identifying multiple ports.)

No.	Port Name	NIC	Connection Type	Status
1	Adptsf1	ANA-62044/TX:[1]	Autodetect (default)	Enabled
2	Adptsf2	ANA-62044/TX:[2]	Autodetect (default)	Enabled
3	Adptsf3	ANA-62044/TX:[3]	Autodetect (default)	Enabled
4	Adptsf4	ANA-62044/TX:[4]	Autodetect (default)	Enabled
5	Adptsf5	ANA-62044/TX:[1]	Autodetect (default)	Enabled
6	Adptsf6	ANA-62044/TX:[2]	Autodetect (default)	Enabled
7	Adptsf7	ANA-62044/TX:[3]	Autodetect (default)	Enabled
8	Adptsf8	ANA-62044/TX:[4]	Autodetect (default)	Enabled

Figure 7-2. The port names (Adptsf1, Adptsf2, etc) do not correspond to the physical PCI slot numbers on the motherboard.

3 OPTIONAL. The **Autodetect** default detects which device the port is connected to and adjusts the port speed and transmission mode appropriately. **Autodetect** is recommended; however, to change the connection type(s):

a Select the port, and then press **ENTER**. (To select multiple ports, select the port, and then press **F5** one at a time.)

b In the Type of Connection menu, select the type, and then press **ENTER**. (*Connection Types*, page A-2 provides descriptions.)

No.	Port Name	NIC	Conne	Type of Connection
				Autodetect (default)
1	Adptsf1	ANA-62044/TX:[1]	Autode	10 Mbps/Half Duplex
2	Adptsf2	ANA-62044/TX:[2]	Autode	10 Mbps/Full Duplex
3	Adptsf3	ANA-62044/TX:[3]	Autode	100 Mbps/Half Duplex
4	Adptsf4	ANA-62044/TX:[4]	Autode	100 Mbps/Full Duplex
5	Adptsf5	ANA-62044/TX:[1]	Autode	
6	Adptsf6	ANA-62044/TX:[2]	Autodetect (default)	Enabled
7	Adptsf7	ANA-62044/TX:[3]	Autodetect (default)	Enabled
8	Adptsf8	ANA-62044/TX:[4]	Autodetect (default)	Enabled

Figure 7-3. Type of Connection Menu

4 OPTIONAL. **Enabled** is the default status. To disable a port, select the port, and then press **TAB**.

5 Press **ESC** when you're done.

6 Continue to *Creating the Failover Pairs*.

Creating the Failover Pairs

The Failover pair consists of two ports only: the primary port and the backup port.

1 In the Main Menu, select **Set Failover Pairs**, and then press **ENTER**.

2 In the List of Existing Pairs box, press **INS**.

```
┌─────────────────────────────────────┐
│      List of Existing Pairs         │
├─────────────────────────────────────┤
│  No Failover Pairs currently exist  │
└─────────────────────────────────────┘
```
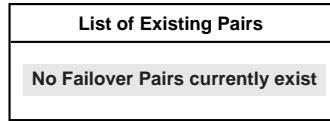
Figure 7-4. List of Existing Pairs Box

3 Select the pair, and then press **ENTER**.

```
┌─────────────────────────────────────┐
│      List of Existing Pairs         │
├─────────────────────────────────────┤
│   1.  Pair1                          │
│                                     │
└─────────────────────────────────────┘
```
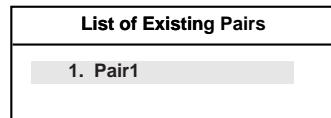
Figure 7-5. A default pair name uses the naming convention: first pair= Pair1, second pair=Pair2, third pair=Pair3, etc.

4 In the Failover Pair Configuration menu, select **Add/Remove Ports**, and then press **ENTER**.

```
                              ┌──────────────────────┐
              List of Existing Pairs  │  Failover Pair Name  │
                              ├──────────────────────┤
                   1.  Pair1          │        Pair1         │
 ┌─────────────────────────────┐      └──────────────────────┘
 │  Failover Pair Configuration│
 ├─────────────────────────────┤
 │   Add/Remove Ports          │
 │   Set Failover Pair Name    │
 │   Display Existing Ports    │
 └─────────────────────────────┘
```
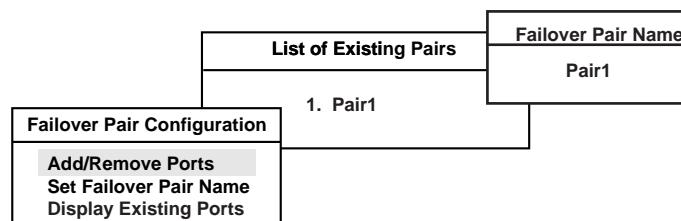
Figure 7-6. Failover Pair Configuration Menu

5 In the Existing Ports box, press **INS**.

Existing Ports
No Ports Present

Figure 7-7. This message
appears the first time you
add a new pair.

6 In the Available Ports box, select the primary port, and then
press **ENTER**.

Available Ports
1. Adptsf1
2. Adptsf2
3. Adptsf3
4. Adptsf4
5. Adptsf5
6. Adptsf6
7. Adptsf7
8. Adptsf8
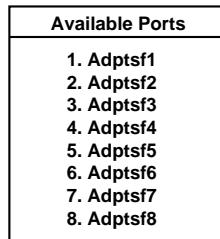
Figure 7-8. Available Ports Box

7 Press **INS** to return to the Available Ports box.

8 Select the secondary port, and then press **ENTER**.

9 **OPTIONAL.** In the Existing Ports box, ✔ indicates the primary
port. To change the primary port, select the second port, and
then press **ENTER**.

10 Press **ESC** to apply the ports.

Existing Ports
1. Adptsf1 ✓
2. Adptsf2
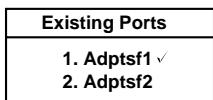
Figure 7-9. The selected ports appear
in the Existing Ports box.

11 **OPTIONAL.** To rename the default Failover pair name

a From the Failover Pair Configuration menu, select **Set
Failover Pair Name**, and press **ENTER**.

b In the Failover Pair Name box, type the pair name, and then press **ENTER.**

Pair Name
pair1

List of Existing Pairs	
1	pair1
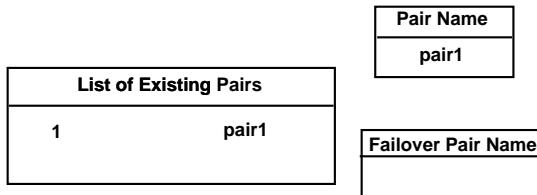
Failover Pair Name

Figure 7-10. Enter the new name in
the Failover Pair Name box.

Pair Name
Marcom

List of Existing Pairs	
1	Marcom
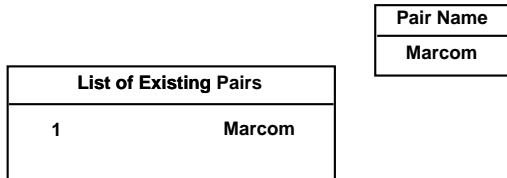
Figure 7-11. The new name appears
in the Pair Name box.

12 To review the ports assigned to the pair, select **Display Existing Ports** from the Set Failover Pairs menu, and then press **ENTER.**

Existing Ports
1. Adptsf1 ✓
2. Adptsf2
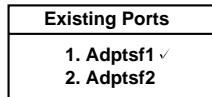
Figure 7-12. When you select
Display Existing Ports, this box
is displayed as read-only.

13 Press **ESC** until you return to the Main Menu.

14 To create more pairs, repeat Steps 1-13.

15 Continue to *Assigning the Protocols*.

Assigning the Protocols

You can assign IP or IPX protocols to Failover pairs and stand-alone ports.

> **Note:** The IPX protocol supports all four frame types and multiple frame types simultaneously. IP supports either Ethernet_II or Ethernet_SNAP, but never both at the same time.

1 In the Main Menu, select **Configure Protocols**, and then press **ENTER**.

2 In the List of Ports/Failover Pairs box, select the Failover pair or port, and then press **ENTER**.

P = Stand-alone Port

F = Failover Pair

List of Ports / Failover Pairs		
1	P	Adptsf4
2	P	Adptsf5
3	P	Adptsf6
4	P	Adptsf7
5	P	Adptsf 8
6	F	Marcom
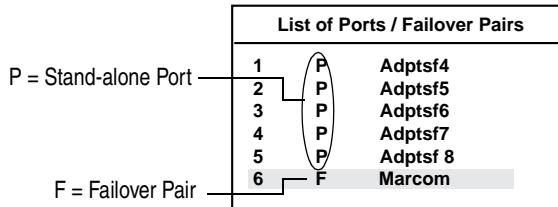
Figure 7-13. List of Ports/Failover Pairs Box

3 In the List of Protocols box, select the protocol for the selected Failover pair or port, and then press **ENTER**.

List of Protocols
IPX
IP
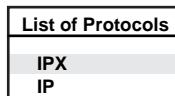
Figure 7-14. List of Protocols Box

Configuring IPX

a In the List of Frame Types box, select the frame type, and then press **ENTER**.

```
┌──────────────────────┐
│ List of Frame Types  │
├──────────────────────┤
│  ETHERNET_802.2      │
│  ETHERNET_802.3      │
│  ETHERNET_II         │
│  ETHERNET_SNAP       │
└──────────────────────┘
```
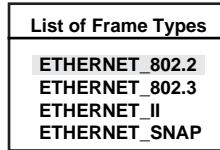
Figure 7-15. List of Frame Types Box

b In the IPX Network Number box, type the network number, and then press **Enter**.

```
┌──────────────────────┐
│  IPX Network Number  │
├──────────────────────┤
│      00000001        │
└──────────────────────┘
```
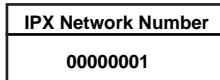
Figure 7-16. IPX Network Number Box

c Repeat steps a and b for each frame type you wish to use.

```
┌──────────────────────┐
│ List of Frame Types  │
├──────────────────────┤
│  ETHERNET_802.2 ✔    │
│  ETHERNET_802.3      │
│  ETHERNET_II         │
│  ETHERNET_SNAP       │
└──────────────────────┘
```
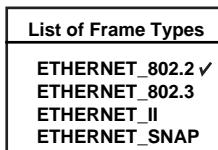
Figure 7-17. ✔ indicates enabled frame types.

d Press **ESC** to return to the List of Protocols box.

Configuring IP

a In the List of Frame Types box, select the frame type, and then press **ENTER**.

b In the IP Parameters box, select **Enter IP Address**, and then press **ENTER**.

```
        IP Parameters
      Enter IP Address
      Enter Subnet Mask
```
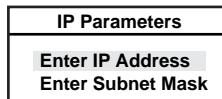
Figure 7-18. IP Parameters Box

c In the IP Address box, type the address number, and then press **ENTER**.

```
        IP Address
        1.1.1.2
```
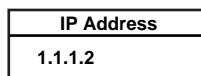
Figure 7-19. IP Address Box

d In the IP Parameters box, select **Enter Subnet Mask**, and then press **ENTER**.

e In the Subnet Mask box, type the corresponding subnet mask, and then press **ENTER**.

```
        Subnet Mask
        ff.ff.ff.0
```

Figure 7-20. Subnet Mask Box

f Press **ESC**.

g Repeat Steps a-f for each appropriate port or pair.

h Press **ESC** until you return to the List of Ports/Failover Pairs box.

4 Repeat Steps 1-3 for any other port or pair you wish to configure.

5 Press **ESC** until you return to the Main Menu.

6 Continue to *Viewing the Configuration*.

Viewing the Configuration

It is important to verify the current port configurations before saving them to the server.

1 From the Main Menu, select **View Configuration**, and press **ENTER**.

```
┌─────────────────────────────────────────────────────────────────────┐
│ Duralink Failover Setup                      Netware Loadable Module │
│ ─────────────────────────────────────────────────────────────────── │
│ Interfaces          Protocol      Frame      Network      IP Address │
│ ─────────────────────────────────────────────────────────────────── │
│  Adptsf4 P                                                        ▲  │
│ ─────────────────────────────────────────────────────────────────── │
│  Adptsf5 P                                                           │
│  Adptsf6 P                                                           │
│  Adptsf7 P                                                           │
│  Adptsf8 P                                                           │
│  Marcom F            IPX           E_802.2    00000001               │
│    ↳ Adptsf1 (Primary)                                               │
│    ↳ Adptsf2                                                      ▼  │
│ ─────────────────────────────────────────────────────────────────── │
│              ┌──────────────────────────────────────────┐           │
│              │ <ESC> to go back to the previous menu.    │           │
│              └──────────────────────────────────────────┘           │
│ © Copyright 1998, Adaptec Inc.    < F1> Help      < F10> Abort Install│
└─────────────────────────────────────────────────────────────────────┘
```
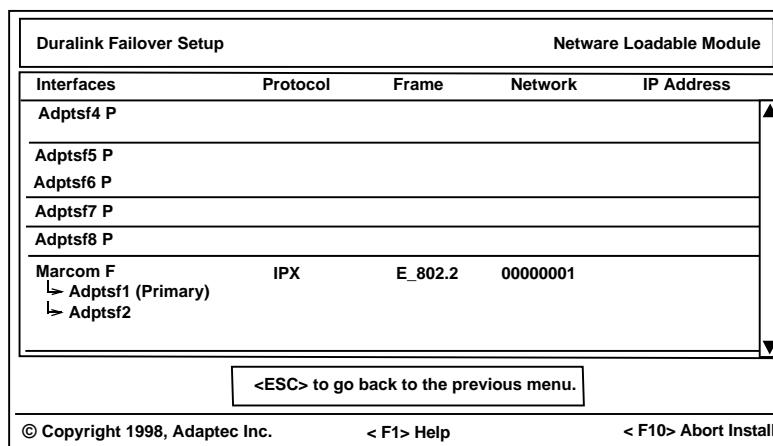
Figure 7-21. View Configuration Screen

2 Press **ESC** to return to the Main Menu.

3 Continue to *Copying and Saving the Configuration*.

Copying and Saving the Configuration

After verifying all port and group configurations, you can install the program and configuration-related files to the server.

1 From the Main Menu, select **Install Software**, and then press **ENTER**.

2 When prompted to copy new files, select **Yes**, and then press **ENTER**.

```
┌─────────────────────────┐
│    Copy New Files?      │
├─────────────────────────┤
│          No             │
│          Yes            │
└─────────────────────────┘
```
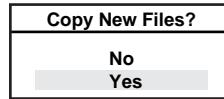
Figure 7-22. Copy New Files Box

3 From the Main Menu, press **ESC** to exit the program.

4 In the Save Configuration box, select **Save and Quit**. The configuration data is saved in sys:\etc\focfgsf.ncf.

– If you'd rather not save changes, select **Quit Without Saving**, and then press **ENTER**.

– To return to the Main Menu, select **Return to Previous Menu**, and then press **ENTER**.

5 At the system console prompt, type **Down** and then press **ENTER**.

6 Type **Restart Server**, and then press **ENTER**. The server restarts and opens the Failover Status screen, which must appear before logging on clients or using the server console.

7 Continue to *Viewing the System Status*.

Viewing the System Status

After installing Duralink Failover through fosetsf, you can view the system status. This program automatically opens whenever you restart the server.

To manually enter status, at the system console prompt, type

load status

```
┌─────────────────────────────────────────────────────────────────┐
│ ┌───────────────────────────────────────────────────────────────┐ │
│ │ Duralink Failover Status                  Netware Loadable Module│ │
│ └───────────────────────────────────────────────────────────────┘ │
│  Failover Pairs/Ports      NIC      Transmit Kbps   Receive Kbps   Status │
│  Adptsf3          ANA-62044      10234        5250      ACTIVE │
│  Adptsf4          ANA-62044          0           0      DOWN   │
│  Adptsf5          ANA-62044      12367        6150      ACTIVE │
│  Adptsf6          ANA-62044          0           0      IDLE   │
│  Adptsf7          ANA-62044      10151        5045      ACTIVE │
│  Adptsf8          ANA-62044       8305        4055      ACTIVE │
│  Marcom                                                       │
│     >Adptsf1      ANA-62044       5798        2708      ACTIVE │
│     >Adptsf2      ANA-62044          0           0      STANDBY│
│                                                               │
│   ┌───────────────────────────────────────────────────────┐ │
│   │  < F1> Help      <F8> Refresh Interval   <ESC> to  Exit.│ │
│   └───────────────────────────────────────────────────────┘ │
│  © Copyright 1998, Adaptec Inc.         Server Name --> [NAME] │
└─────────────────────────────────────────────────────────────────┘
```

Figure 7-23. Duralink Failover Status Screen

Note: This requires that the Failover software be loaded or an error will occur. If you have not rebooted since you installed the software, reboot and the above screen will appear automatically.

This module can be used to identify the physical ports by determining the status when unplugging network connections. Refer to Appendix C, *Note on Ports in NetWare* for more information.

Element Descriptions

A status screen is provided, showing the following information:

- NIC model number.

- Transmit Kbps (Kilobits per second) per port.

- Receive Kbps per port.

- The present status of all ports and Failover Pairs.

    - **ACTIVE**: This port is currently used for data transfer, and is connected with data being sent and/or received.

    - **IDLE**: This port is currently used for data transfer, and is connected with no data being sent or received.

    - **STANDBY**: This port currently not used for data transfer, and is connected with no data being sent or received.

    - **DOWN**: Port is not connected, or the link is down.

F Keys

F1— provides on-line help for each screen.

F8— Changes the refresh interval. Refresh interval is a user-selectable refresh cycle in seconds (default is 1 second). This is the interval by which the utility will refresh the status.

Modifying the Driver Configuration

After installing Duralink Failover for NetWare, use focfgsf to add, remove, or change a configuration for Adaptec NIC drivers. You'll be familiar with the screens in this program since they're similar to the ones in fosetsf.

1 At the system console prompt, type **load focfgsf** and then press **ENTER**.

2 In the message screen indicating that ports were added/removed, press **ESC**.

3 Refer to *Installing the Duralink Failover Driver*, page 7-3 for instructions.

Increasing the Receive Buffer Number

As the present driver uses 32 receive buffers for each port, you may need to increase the number of receive buffers.

1 Type **load edit c:\nwserver\startup.ncf**

2 Insert the following commands at the *end* of the file:

SET MINIMUM PACKET RECEIVE BUFFERS = 512

SET MAXIMUM PACKET RECEIVE BUFFERS = 1024

Connecting the Network Client to the Server

To connect DOS or VLM clients to a server with Duralink Failover, type the following lines in net.cfg for each client. (The second line must be indented!)

protocol ipx
ipx retry count 255

For Netware Client32 support enter **iomap=1** on the load line. If this command is not entered the system will page fault. In Windows 95 and NT, enter 255 under the IPX retry count in the "IPX 32-bit Protocol for the Novell IntranetWare Clients" in the Network Control Panel.

Managing the NICs by SNMP

The duralink.mib file must be compiled on the SNMP Management station to manage the NICs. This file is located on the LAN and Duralink Failover Drivers Disk 1 in the snmpmibs directory. Please refer to the Duralink Manager Server User's Guide.

Removing Duralink Failover

1 Insert the DURALINK FAILOVER DRIVERS NETWARE 4.X DISK (disk 2 of 2) for the version of Duralink Failover that is currently installed in the system.

2 At the system console prompt, type **load a:\nwserver\fosetsf** and then press **ENTER**.

3 In the Main Menu, select **Uninstall Software**, and then press **ENTER**.

4 In the Uninstall the Software box, select **Yes**, and then press **ENTER**.

5 In the Main Menu, press **ESC** to exit fosetsf.

❐

▾▾▾▾ Part 4

Appendices

▼▼▼▼A
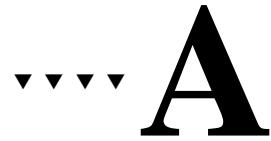
Cables and LEDs

This section is not intended to be an exhaustive explanation of connecting Ethernet networks but will provide some useful information on cabling suitable for Adaptec DuraLAN NICs.

The following table outlines the three cable specifications of IEEE 802.3u: 100BASE-T4, 100BASE-TX, and 100BASE-FX.

	100BASE-TX	100BASE-FX
Cable supported	CAT 5 UTP	62.5/125 multimode fiber
Number of cable pairs	2	1
Node-to-repeater cabling distance	100 meters	137 meters
Node-to-switch to full duplex	100 meters	2000 meters

Connection Types

Here are some of the possible connection type options given when configuring NICs. The options vary depending which operating system the NIC is being configured on.

■ Autodetect Default

Detects the cable type, optimal line speed, and duplexity for the specific Adaptec PCI NIC model in use. This is the default and recommended connection type.

■ 10 Mbps UTP/Half Duplex/ UTP_Link_Off

Forces the connection to 10 Mbps in Half Duplex mode.

■ 100 Mbps/Half Duplex

Forces the connection to 100 Mbps in Half Duplex mode.

■ 10 Mbps UTP/Full Duplex/ UTP_FDE

Forces the connection to 10 Mbps in Full Duplex mode.

■ 100 Mbps/Full Duplex

Forces the connection to 100 Mbps in Full Duplex mode.

Full Duplex Support

To implement Full Duplex on your network, you need both a NIC and a switch that supports Full Duplex. Full Duplex support allows a NIC to send and receive data at the same time, doubling available bandwidth.

Note: Full Duplex can also be enabled point-to-point with a crossover cable instead of a switch.

Installation instructions in this user's guide describe how to enable Full Duplex. Additional information can be found in the readme.txt files. Adaptec PCI TX NICs support Full Duplex at both 10 Mbps and 100 Mbps.

Cable Requirements

Cable requirements for Adaptec DuraLAN NICs vary according to network speed, cabling standard, and the connector to be used. The table below identifies appropriate cabling, based on these variables. The table applies to both Half Duplex and Full Duplex (for selected models) environments.

NIC	Connector	10 Mbps	100 Mbps	Cable Pins Used
TX Adapters	RJ-45	CAT 3,4,5 UTP	CAT 5 UTP,	1,2,3, 6
FX Adapters	ST	N/A	62.5/125 micron multimode fiber	N/A
	SC	N/A	62.5/125 micron multimode fiber	N/A

Twisted Pair Cable Types

Straight-through Cable

The majority of twisted-pair environments use twisted-pair cables that are wired straight-through. This means that each pin of the modular plug connector is wired to the same pin on the opposite end of the cable (i.e., pin 1 is wired to pin 1). Straight-through cables connect workstations and servers to repeaters and switches. Cables for 100BASE-TX use two pair (pins 1, 2, 3, and 6).

Pins used for TX
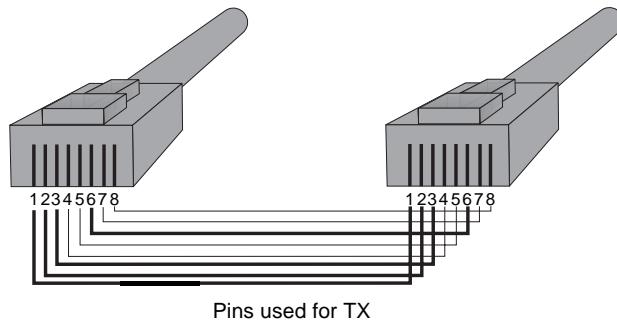
Figure A-1. Straight-through Cable

Crossover Cable

If you do not wish to use a repeater or switch to connect servers and workstations together, you can use a crossover cable.

Note: When using crossover cables, we recommend you override line speed autosensing by selecting either 10 Mbps or 100 Mbps in your driver configuration.

A crossover cable connects the transmit, or TX, pins on one end of the cable to the receive, or RX, pins on the other end of the cable. Crossover cables connect workstations and servers directly, without the use of a repeater or switch. You will generally need to make your own crossover cables, or custom order them from your supplier. Cables for 100BASE-TX use two pairs (pins 1, 2, 3, and 6).

**Note:** All pins must be connected even if they are not used to transfer data.
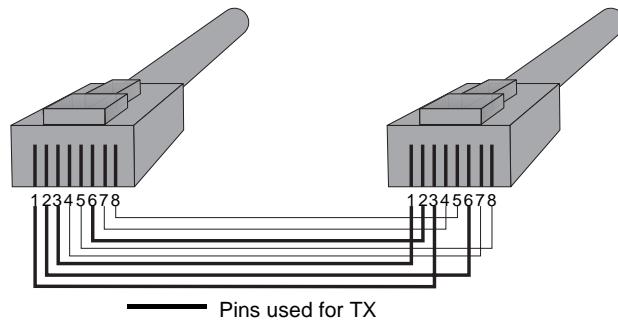
Figure A-2. Crossover Cable Example

Pinout and Color Requirements

The following tables provide cable pinout and color information.

Straight-through Cable - 10BASE-T or 100BASE-TX	
Pin	**Colors - Both Ends**
1	Orange White
2	Orange
3	Green White
4	Blue
5	Blue White
6	Green
7	Brown White
8	Brown

Crossover Cable - 10BASE-T or 100BASE-TX		
	Pinout	
	End One	**End Two**
	Pin 1	Pin 3
	Pin 2	Pin 6
	Pin 3	Pin 1
	Pin 4	Pin 7
	Pin 5	Pin 8
	Pin 6	Pin 2
	Pin 7	Pin 4
	Pin 8	Pin 5
	Color	
Pin	**End One**	**End Two**
1	Orange White	Green White
2	Orange	Green
3	Green White	Orange White
4	Blue	Brown White

Crossover Cable - 10BASE-T or 100BASE-TX		
	Pinout	
	End One	**End Two**
5	Blue White	Brown
6	Green	Orange
7	Brown White	Blue
8	Brown	Blue White

Diagnostic LEDs

Diagnostic Light Emitting Diodes (LEDs) provide information about link status and network activity. The figure below shows the locations of LEDs for each board. See the descriptions on the following page for details on each LED display.
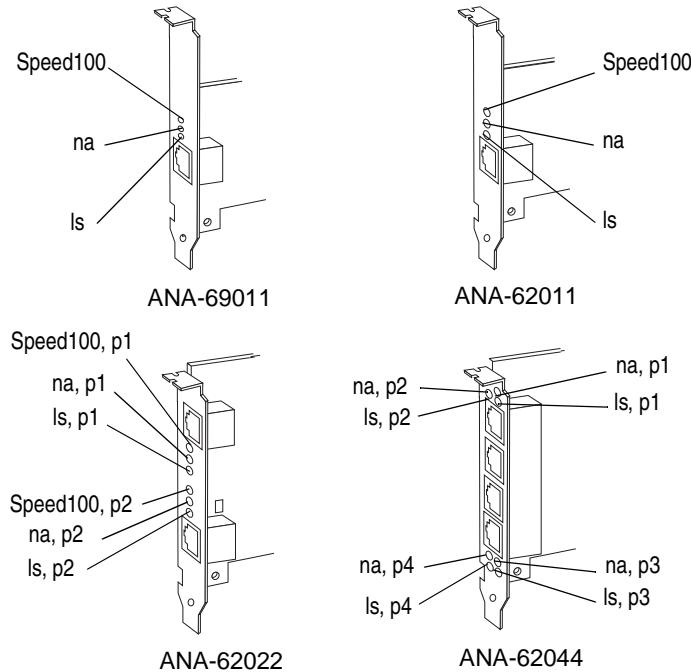
Figure A-3. na = network activity
ls = link status
p = port

■ Link Status (ls)

Link status LED lights when the NIC's driver is loaded, and indicates that an electronic link exists between the NIC and the repeater or switch.

Speed	Ports	Color
10 Mbps	RJ-45	Green, with the exception of the Quartet, where it is yellow.
100 Mbps	RJ-45	Green.

■ Network Activity (na)

Network activity LEDs light up to signal the presence of incoming or outgoing traffic.

Speed	Ports	Color
10 Mbps	RJ-45, BNC	Yellow
100 Mbps	RJ-45, BNC	Yellow

■ Speed100

The Speed100 LED is green. When ON, it indicates 100Mbps, when OFF, it indicates 10Mbps.

❒

▼▼▼▼ B

Troubleshooting

This appendix explains how to troubleshoot problems with your DuraLAN NIC. If your NIC is not functioning properly, first make sure that it was set up according to instructions in this User's Guide.

1 Verify that your NIC is installed properly and configured correctly (see Chapter 2, *DuraLAN NIC Installation*).

2 Verify that your network is properly cabled and the NIC is properly connected (see *Connecting the Network Cable* on page 2-5 and Appendix A, *Cables and LEDs*).

3 Verify that the DuraLAN driver is installed correctly (see Part 1, *Installing the DuraLAN Standard Driver*, or Part 3, *Installing the Duralink Failover Driver*).

4 Verify that you are using the latest BIOS for your computer, and the latest DuraLAN driver.

5 Verify that your cable, terminators, and connectors are functioning properly, or install the NIC in a different slot.

6 See *Adaptec Technical Support and Services* on page ii if you still have trouble.

Isolating Faulty Hardware

If the problem persists, try the following:

- Replace the NIC with the same type of Adaptec NIC which is known to work. If the new NIC functions properly, the problem is related to the original NIC.

- Install the NIC in another functioning computer and run the tests again. If the NIC works in this machine, the problem is related to one of three areas:
  - The computer is faulty
  - There is a hardware conflict
  - There are problems with the cables or connectors

Frequently Asked Questions

Use the following table to help answer common questions.

| Symptom	Solution
NetWare workstation cannot connect to server.	Make sure workstation and server are using the same frame type.
The Adaptec network NIC does not work with a PCI SCSI NIC installed.	Try moving the Adaptec network NIC to the lowest numbered PCI slot.
Network performance is extremely slow.	If you are using a TX NIC for 100 Mbps, be sure to use CAT 5 UTP. Is your NIC configured for Full Duplex? If so, make sure the switch is configured for Full Duplex.
Link status light does not light when connected to the cable.	Make sure the NIC's network driver is loaded.
System hangs upon boot up.	Determine if the problem is a memory conflict by booting again with no memory manager present. If the system now boots up, you may need to upgrade to EMM386 (PCI systems).

Configuring the NIC

Your computer's BIOS *may* determine available NIC resources and configure the Adaptec PCI NICs automatically. However, depending on your system, you may need to configure the PCI BIOS. To do this, enter your computer BIOS Setup and select **Advanced Settings** from the Main Menu. Make sure the following settings are made (your BIOS may not match the following options exactly):

Option	Setting
PCI Slot Enabled	Enable all PCI slots in your system.
Bus Mastering	Enable PCI bus mastering for the slot(s) to be used by the NICs.
PCI INTA	For the 6x011, assign an ISA interrupt (10, 11, 12, etc.) to PCI Interrupt Vector A.
PCI INTA-B	For the 6x022, assign an ISA interrupt (10,11, 12, etc.) to PCI Interrupt Vector A or B.
PCI INTA-D	For the 6x044, assign an ISA interrupt (10,11, 12, etc.) to PCI Interrupt Vector A - D.
PCI Bus Latency	Set to a value between 40 and 80.

Note: Quartet and Duo NICs use a PCI-to-PCI bridge chip. If your system's BIOS does not support the PCI-to-PCI bridge chip these NICs will not be configured properly. Contact your computer manufacturer to obtain a new BIOS version that supports the PCI-to-PCI bridge chip.

▼▼▼▼ C

Note on Ports in NetWare

When you're installing Adaptec NICs, it's a good idea to document where each port physically resides in the server, especially when two or more identical NICs exist. This is important because ports are identified by generic port names, such as Adptsf1, Adptsf2, Adptsf3, etc.

Port names are assigned to ports in the order that the system scans these ports at boot time. Consequently, whenever you physically rearrange the network cards, the port names change as well.

❒