User's Guide

Duralink Failover

adaptec®

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691 South Milpitas Boulevard
Milpitas, CA 95035

Printed in Singapore
STOCK NO.: 511650-00, Rev. B KM 2/98

▼▼▼▼ Duralink Failover

User's Guide

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Product Features

Duralink™ Failover is a utility that provides protection from system 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 Network Interface Card (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:

- There is a 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 Adapters

Duralink Failover is available for Windows NT and Novell Netware-based servers.

The Duralink Failover utility is compatible with Adaptec ANA™-6911A single port NIC, ANA-6922A dual port NIC, and ANA-6944A quad port NIC.

How to Use This Manual

This User's Guide has been organized to provide you the necessary information to install, set up, and use Duralink Failover software with Adaptec NICs. The following describes the chapters in this manual.

Chapter 2, *Network Configuration Examples*, describes how Duralink Failover works and adds value to your network.

Chapter 3, *Installing Drivers for Windows NT*, gives installation and setup instructions for installing Duralink Failover to a Windows NT-based server.

Chapter 4, *Installing Drivers for NetWare*, provides installation and stup instructions for installing Duralink Failover to a NetWare-based server.

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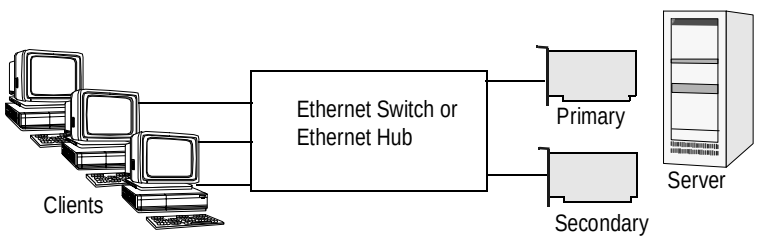
Network Configuration Examples

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

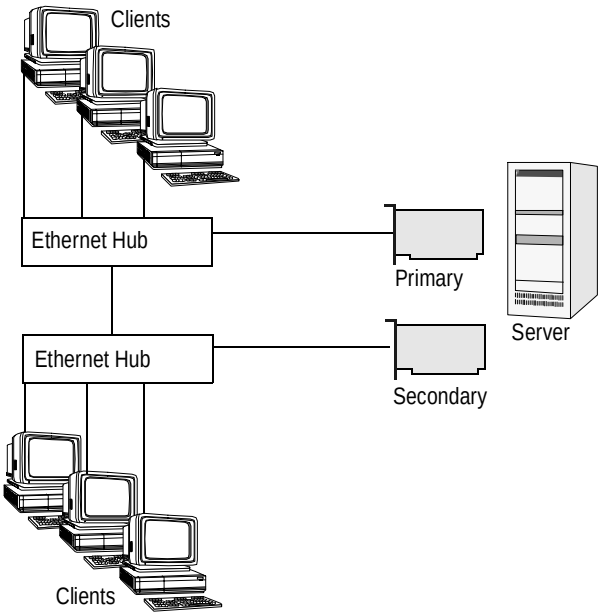
Single Hub or Switch on an Ethernet Segment

This configuration uses two NICs connected to a hub or switch on an Ethernet segment. With this configuration, Duralink Failover provides failover capability if one of the NICs fail.



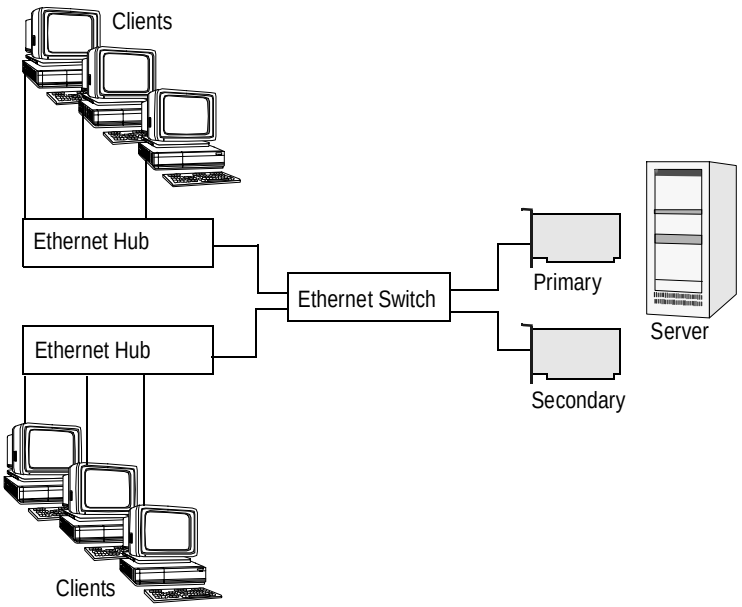
Dual Hubs

In this example, each NIC is connected to a separate hub to provide redundancy. If the hub being used by the primary NIC fails, then the secondary NIC becomes active and all network traffic is immediately directed through it.



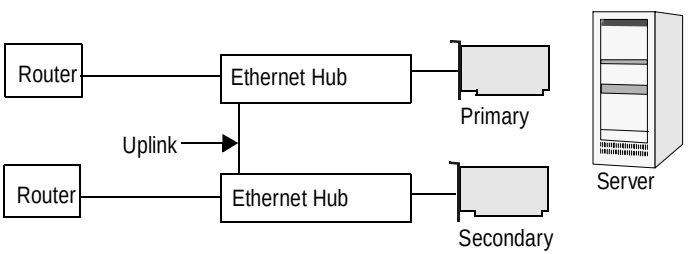
Dual Hubs with an Ethernet Switch

This example shows how Duralink Failover provides network redundancy to a switched network. Ethernet switches provide network traffic segmentation.



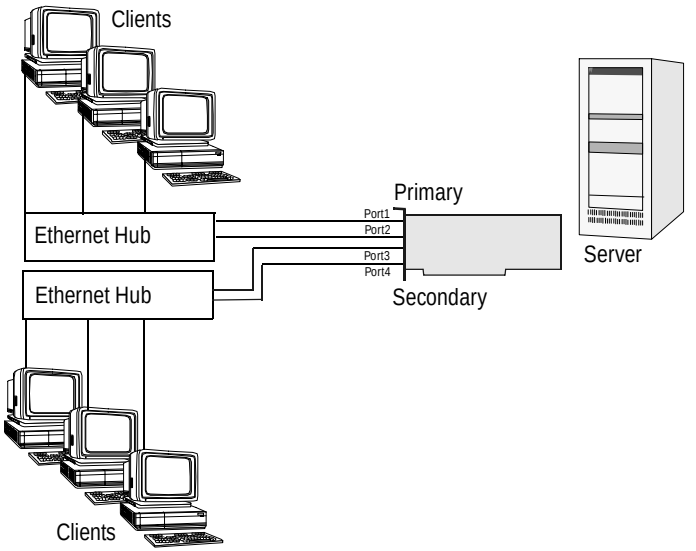
Dual Hubs with Routers

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



Dual Hubs with a Four-Port Single NIC

This example shows port redundancy, using Duralink Failover, within a single four-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 secondary ports connected to each hub.



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Installing Drivers for Windows NT

This chapter describes how to install the Duralink Failover utility for Windows NT 4.0.

Installation Overview

The following procedures are covered in this chapter

- *Removing Existing Adaptec Ethernet NICs* on page 3-2
- *Adding NIC Drivers* on page 3-3
- *Configuring Failover Ports* on page 3-6

Installation, configuration, and optional parameters for the software are updated regularly. The *\readme* subdirectory contains supplemental installation instructions, as well as other up-to-date information pertaining to the software, and should be read prior to installing Duralink Failover.

To install the software:

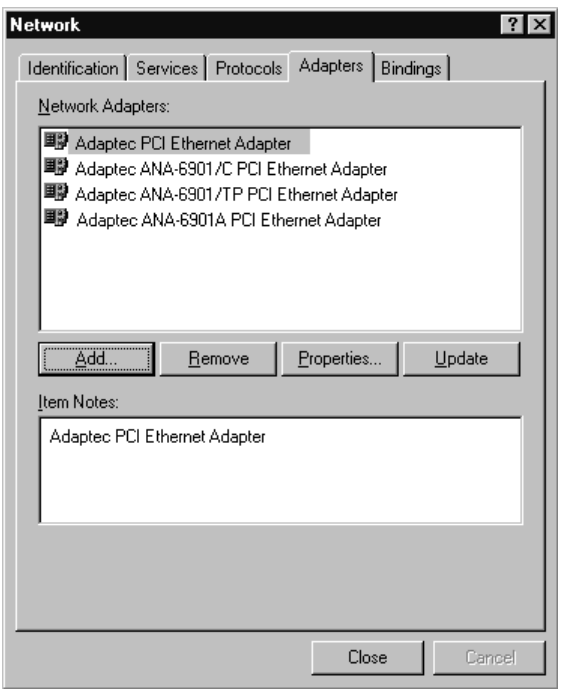
1. Boot your system with Windows NT 4.0.
2. Double-click the **My Computer** icon.
3. Double-click the **Control Panel** icon.
4. Double-click the **Network** icon.

Note: If no drivers are currently installed for Adaptec PCI NICs, skip to *Adding NIC Drivers* on page 3-3.

Removing Existing Adaptec Ethernet NICs

In order to install the Adaptec Duralink Failover drivers, you must remove the Adaptec stand-alone drivers. To do so, follow these steps:

1. Click the **Adapters** tab in the **Network** dialog box.



2. To remove any currently installed Adaptec NICs highlight the name, click **Remove,** then click **OK**. Repeat until all Adaptec NIC drivers are removed.
3. Click **Close** to close the **Network** dialog box.
4. 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 Duralink drivers in the following steps. Click **OK**.

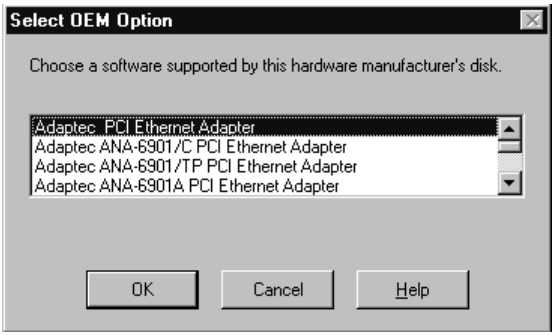
Adding NIC Drivers

1. Double-click the **My Computer** icon.
2. Double-click the **Control Panel** icon.
3. Double-click the **Network Setup** icon.
4. Click the **Adapters** tab in the **Network Setup** dialog box.

Note: Do not allow Network Setup to autodetect the installed NICs.

5. Click **Add**.
6. Click **Have Disk**.
7. At the prompt Insert disk with software provided by the software or hardware manufacturer, insert the EMPCI disk in your floppy drive. Enter the path to the directory where the driver and *oemsetup* file are located (a:\winnt\.386 or b:\winnt\.386). Click **OK**.

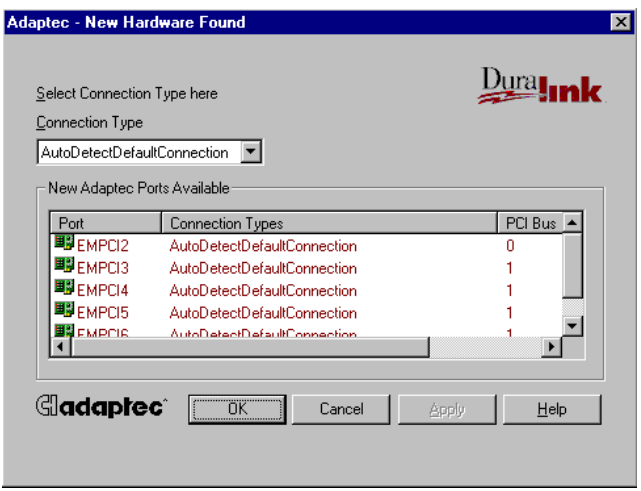
8 From the Select OEM Option list box, select **Adaptec PCI Ethernet Adapter**, and click **OK**.



The program loads the Duralink Failover configuration utility for Windows NT.

Configuring the Ports

Note: The following screen appears when first installing Adaptec NICs.



1 From the **Adaptec New Hardware Found** dialog box, select the port to configure from the New AdaptecPorts Available list box.

2 Choose the appropriate connection type for your network. Use the default, *Autodetect Default Connection*, if you don't know the appropriate connection type. The options are

- **Autodetect Default Connection**: Detects the cable type and optimal line speed for the specific Adaptec PCI NIC model in use. This is the default and recommended connection type. Refer to the Windows NT Help file in the **Adapter Configuration** dialog box for the specific default settings for a NIC.
- **10 Mbps UTP/Half Duplex**: Forces the connection to 10 Mbps in Half Duplex mode.
- **10 Mbps UTP/Full Duplex**: Forces the connection to 10 Mbps in Full Duplex mode.
- **100 Mbps/Half Duplex**: Forces the connection to 100 Mbps in Half Duplex mode.
- **100 Mbps/Full Duplex**: Forces the connection to 100 Mbps in Full Duplex mode.
- **THIN**: Use this when connecting to the BNC port of a Combo NIC. This is a 10 Mbps Half Duplex only connection. Not valid for port aggregation.

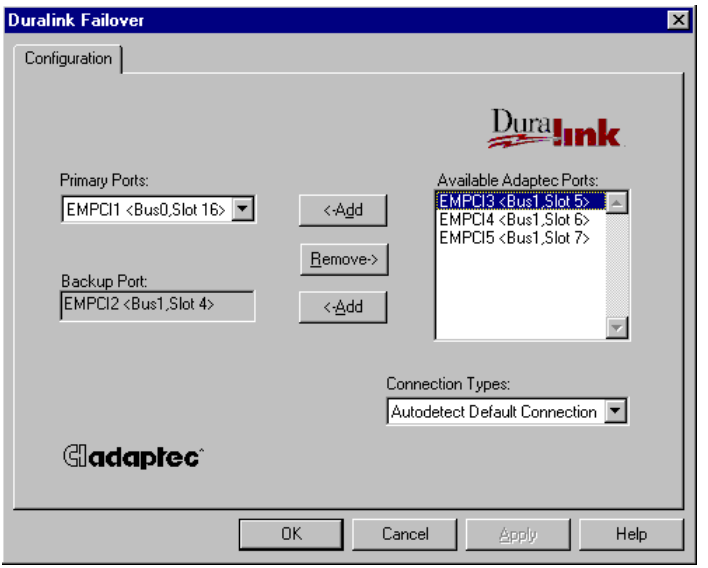
Note: Be sure to select the appropriate cable type for your network.

3 Click **OK**.

Configuring Failover Ports

All available ports are listed in the Available Adaptec Ports list box.

1. Assign a port to the Primary Ports list box by clicking on a port in the Available Adaptec Ports list box to highlight the selection.

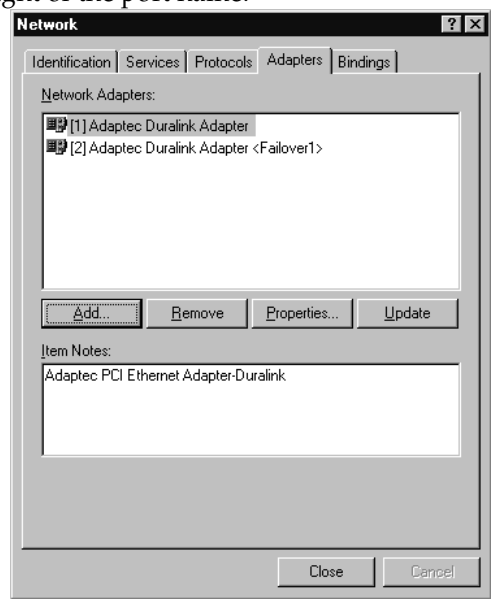


2. When a port has been highlighted, click on the top **Add** button. The port moves to the Primary Ports drop-down list box.
3. Assign a Backup port to the Primary Port by selecting a port from the Available Adaptec Ports list box and clicking on the bottom **Add** button. To remove a failover pair, select the port in the Primary Ports list box, and click **Remove**.
4. When you have completed setup of all failover pairs, click **Apply**.
5. When all changes are complete, click **OK**.

6 If SNMP has not been set up on your computer you will receive the following Setup Message:

7 Click **OK**.

8 The **Network Adapters** dialog box displays the ports and their associated groups. Group names are shown in <brackets> to the right of the port name.



9 Click **Close** to close the **Network** dialog box, and reboot the system.

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Installing Drivers for NetWare

This chapter describes how to install the Duralink Failover utility on a server running NetWare 4.1x/3.1x. Instructions in this section cover both initial installation from the *fosetup.nlm* file contained on the Duralink Installation Diskette, as well as instructions on changing the configuration using the *foconfig.nlm* utility (residing on the server after installation).

Installation Overview

The following procedures are covered in this chapter

Installation, configuration, and optional parameters for the Duralink Failover utility are updated regularly. The *\readme* subdirectory contains supplemental installation instructions, as well as information about optional keywords.

Removing Previously Configured NICs

If you have installed Duralink or Adaptec Ethernet drivers prior to this installation, complete this section. This is to ensure that no conflicts exist between previously installed drivers and Duralink Failover. This is done by following the procedures below:

1. Remove all load and bind commands related to EMPCI from the *autoexec.ncf* or *failover.ncf* or other.*ncf* files (except *fover.ncf*).
2. At the server prompt, type **load inetcfg** and press **Enter**.
3. Select **Boards** and press **Enter**.
4. Delete all existing EMPCI boards by selecting each and pressing **DEL**.
5. Press **ESC** to exit *inetcfg*.

Fresh NetWare Installation

If you are loading NetWare on a new server, do not add a LAN/Ethernet adapter when prompted in the NetWare setup procedures. When prompted to add a LAN adapter, select No and continue with the NetWare installation. Then proceed to the section below.

Initial Installation and Configuration of Duralink Failover

Configuration for Duralink Failover is done through a setup program that is contained on the NetWare Duralink Installation Disk. This program will install the necessary files required for running the program through NetWare onto your hard drive. The setup program allows you to

- Configure ports
- Configure Failover Pairs—assigning names, deleting and adding ports to groups for load balancing
- Configure protocols for stand-alone ports or groups
- Update files

Installing the Utility from fosetup

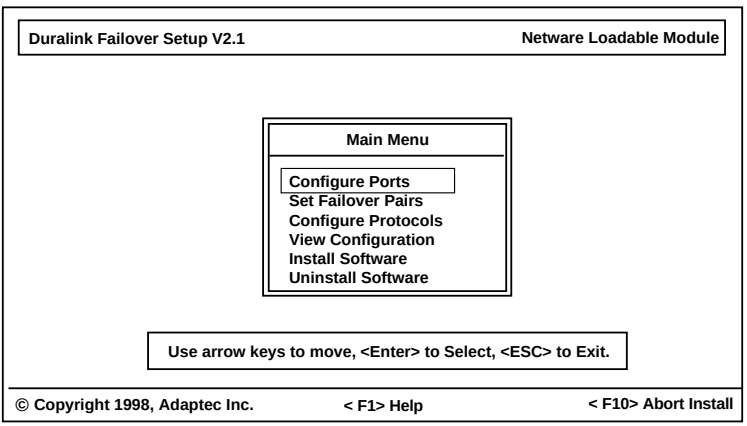
1. Insert the NetWare Duralink Installation disk into Drive A, and type

   search add a:\nwserver or

   load a:\nwserver\fosetup

   This will add the path where the files are.

2. At the prompt, type load fosetup to load the setup module.



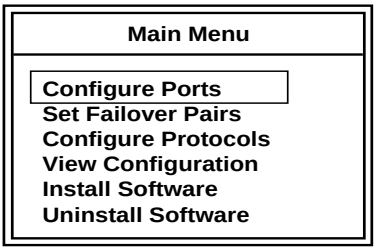
F Keys

F1— provides on-line help for each screen.

F10— allows you to abort any changes you have made from within the program and exit the utility.

Configuring Ports

1 Select the **Configure Ports** option from the Main Menu.



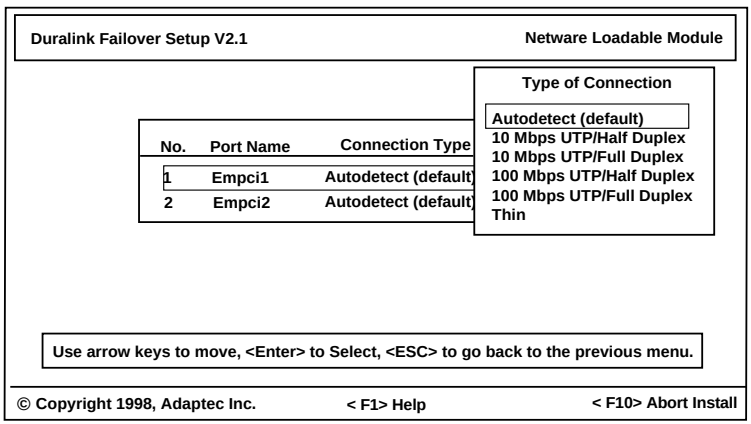
The program automatically adds or removes ports when new hardware is added or removed.

No.	Port Name	Connection Type	Status
1	Empci1	Autodetect (default)	Enabled
2	Empci2	Autodetect (default)	Enabled

Note: It is recommended that you check physical connections against the port information displayed on the screen.

2 To set the connection type, select each port individually and press **Enter**.

Note: If you are unsure of the connection type, the program defaults to Autodetect, which allows it to identify connection type.

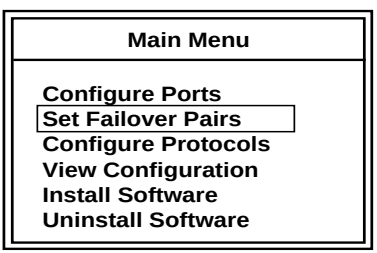


You can set configuration parameters but leave the settings Disabled for use at a later time by pressing **TAB** while the port is selected.

3 Press **ESC** when you have completed port configuration.

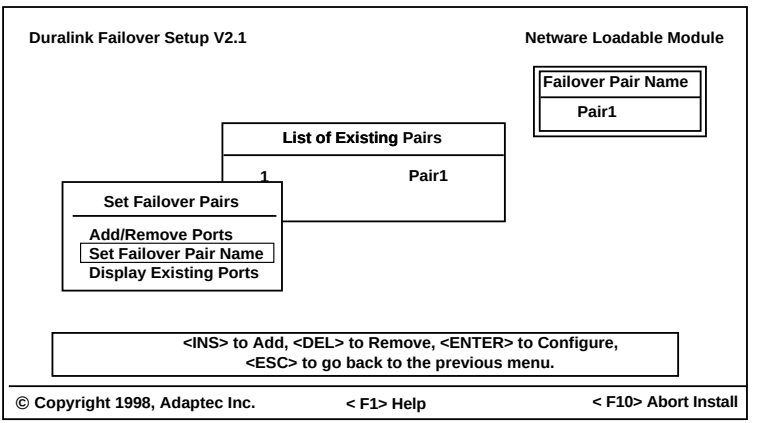
Setting Failover Pairs

1 Select **Set Failover Pairs** from the Main Menu and press **Enter**.



2 Add a Failover Pair by pressing **INS**. The program automatically assigns a default pair name. If previous pairs

have been assigned, the new one is placed last in the list. The default naming convention is as follows: the first pair is assigned to Pair1, the next to Pair2, then Pair3, and so on.



3 **Set Failover Pair Name**— To assign a unique name to the group, select **Set Failover Pair Name** from the Failover Configuration menu and press **Enter**.

Type the group name and press **Enter**. The new name appears at the upper right portion of the screen.

4 **Add/Remove Ports**— Add ports to a Failover Pair by selecting the **Add/Remove Ports** option from the Failover Pair Configuration menu and pressing **Enter**. You can add only two ports to a failover pair.

If the Failover Pair is new, the **Existing Ports** dialog box will show No Ports Present. To add ports to a pair, press **INS**.

Select ports from the **Available Port(s)** dialog and press **Enter**. As ports are selected, they will move from the **Available Port(s)** dialog box to the **Existing Ports** dialog box. The first port selected is the primary port for the pair. To set one of the selected ports as the primary port, select it from the **Existing Ports** dialog box, and press **Enter**.

When all ports have been selected, press **ESC** to complete the change.

5 **Display Existing Ports**— Select this option to view the ports associated with the pair.

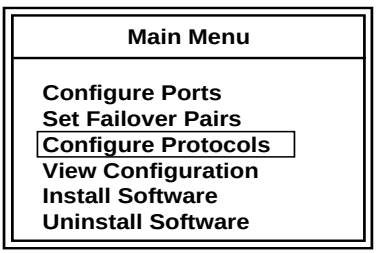
6 Press **ESC** to complete the current pair.

7 To create more groups, follow steps 1 through 8 for each new pair.

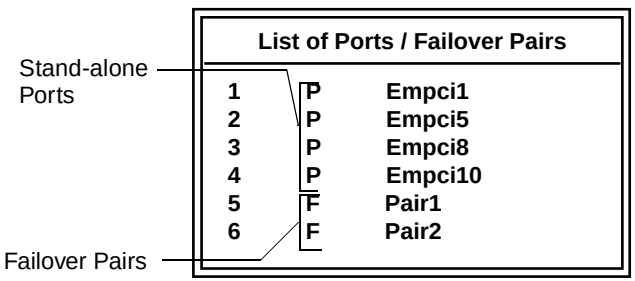
Configuring Protocols

These procedures allow you to configure the IP or IPX protocols for Failover Pairs and ports.

1 Select **Configure Protocols** from the Main Menu.



A list of ports and Failover Pairs are displayed. Ports include a Preference and Failover Pairs include an F reference as shown in the figure below.



2 Select a Failover Pair or port and press **Enter**.

A list of protocols (IPX and IP are the only protocols supported at this time).

3 Select the protocol to assign to the current pair or port and press **Enter**.

A list of frame types is displayed.

IPX supports four types: ETHERNET_802.2, ETHERNET_802.3, ETHERNET_II, and ETHERNET_SNAP.

IP supports two types: ETHERNET_II and ETHERNET_SNAP.

4 If configuring IPX, set a unique IPX Network Number and press **Enter**.

5 If configuring IP, set an IP Address number and IP Subnet Mask number from the IP Parameters menu. Press **Enter** to complete the changes.

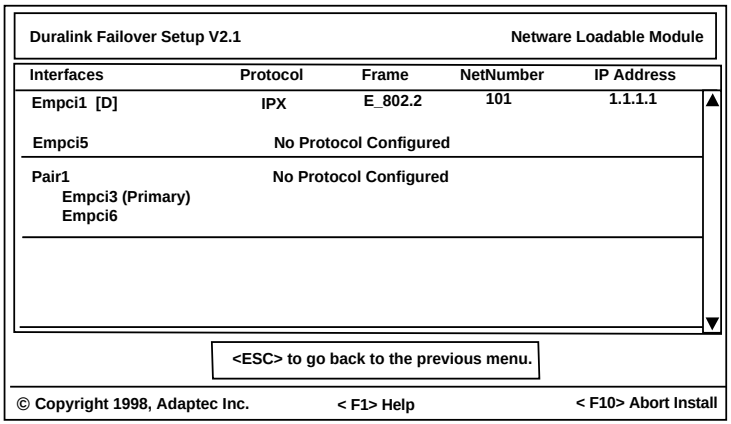
6 Perform steps 1 to 5 for each pair or port you want to configure.

Disable IP or IPX Protocols

IP or IPX protocols can be disabled by deleting the IPX network number or the IP address for a specific frame type.

Viewing Configuration

Selecting View Configuration from the main menu displays all ports and Failover Pairs and their current protocol status.



Installing and Uninstalling Software

This selection copies program and configuration related files to the server. A dialog will appear to warn you of any files that risk being overwritten. To update files select **Install Software** from the main menu and press **Enter**.

If you want to uninstall the Duralink Failover software from your server, select **Uninstall Software**, and press **Enter**. The program will clear Failover files from your Server.

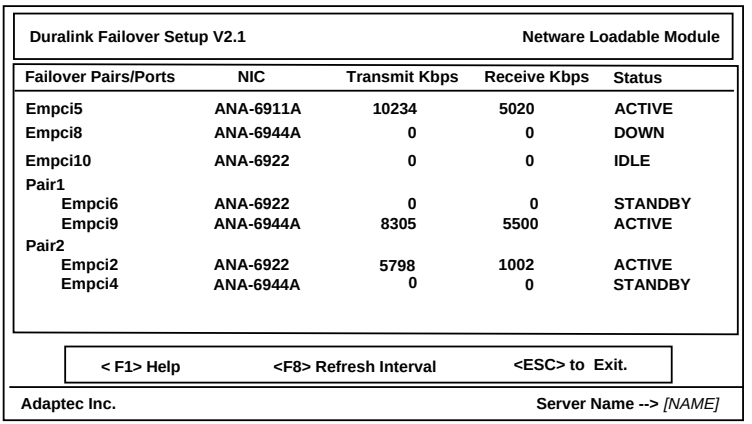
Saving Configuration Changes

1. Press <**ESC**> from the main menu to exit the configuration screen and save changes.
2. From the Save Configuration menu, select **Save** and **Quit**. This saves the current configuration in the *fover.ncf* file and quit the program. Also, *autoexec.ncf* will be modified.
3. If you do not want to save changes, select **Quit without Saving**. This will quit without saving the changes to the *fover.ncf* file.
4. If you want to return to the main menu, select **Return to Previous Menu**.

Viewing System Status from fostatus.nlm

Type the following at the server prompt to load the Failover status module:

```
load fostatus
```



Duralink Failover Setup V2.1 — Netware Loadable Module

Failover Pairs/Ports	NIC	Transmit Kbps	Receive Kbps	Status
Empci5	ANA-6911A	10234	5020	ACTIVE
Empci8	ANA-6944A	0	0	DOWN
Empci10	ANA-6922	0	0	IDLE
Pair1				
Empci6	ANA-6922	0	0	STANDBY
Empci9	ANA-6944A	8305	5500	ACTIVE
Pair2				
Empci2	ANA-6922	5798	1002	ACTIVE
Empci4	ANA-6944A	0	0	STANDBY

<F1> Help <F8> Refresh Interval <ESC> to Exit.

Adaptec Inc. Server Name --> *[NAME]*

Note: This requires that the program 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.

A status screen is provided, showing the following information:

- NIC model number.
- Kbps transmitted 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 is being sent or received.
  - **STANDBY**: This port currently not used for data trandsfer, and is connected with no data being send 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 5 seconds). This is the interval by which the utility will refresh the status.

Network Client Setup

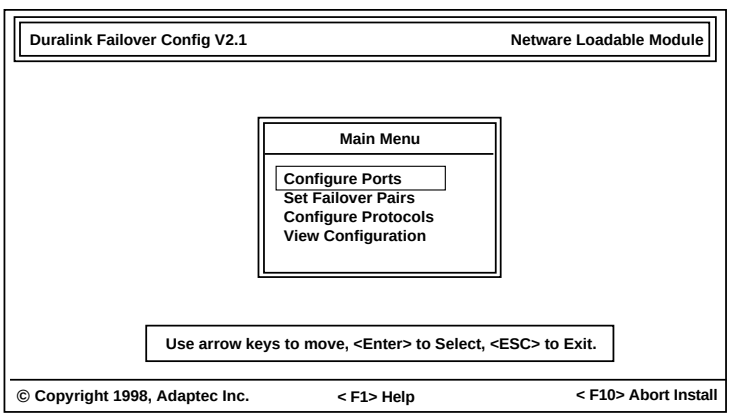
When connecting clients to a server with Duralink Failover, insert the following line into the *net.cfg* file for each client

```
protocol ipx
ipx retry count 255
```

Reconfiguring Using foconfig.nlm

After initial installation of the Duralink Failover software for NetWare, you can reconfigure ports and groups through the *foconfig* program. Type load foconfig at the prompt to load the program.

At the prompt, type load foconfig to load the configuration module. Follow the procedures for configuring ports and Failover Pairs from fosetup described earlier in this chapter.



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