

Help Contents

PROSet Configuration Utility for Adapters

This help file explains how to configure and test PRO/100+ adapters in Microsoft Windows NT* and Windows* 95.

Choose one of these topics:



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PROSet Main Window

This window displays information about the adapter and serves as a starting point for running diagnostics and changing basic adapter settings.

Adapters:

Shows name and type of adapters installed. If multiple adapters are installed, they are listed. To view configuration information for a specific adapter, click on it.

Configuration:

Memory Address

I/O Address

Interrupt

Ethernet Address

Speed/Duplex

Adapter Mode

Buttons:

To change an adapter's basic settings, click the **Settings** button.

To run diagnostics on the adapter or driver, click the **Test** button.

To set up Adapter Teaming, click the **Adapter Teaming** button.

To return to your operating system, click the **OK** button.

To get help on a topic, click the **Help** button.

See also

[Adapter Settings](#)

[Assign Adapters to a Team](#)

[Advanced Adapter Settings](#)

[Troubleshooting](#)

Adapter Teaming

A way of directing PRO/100+ Server adapters to work together to provide such services as Adapter Fault Tolerance, Adaptive Load Balancing and Fast EtherChannel.

Advanced Adapter Settings - Identify Model

Here you can find advanced settings information for the:

[PRO/100+ PCI Adapter](#)

[PRO/100+ Server Adapter](#)

[PRO/10+ PCI Adapter](#)

If you are not sure which adapter you have, go to Intel's support web site (support.intel.com) and search on Adapter Identification. You'll find a document that describes each adapter model and helps you identify yours.

Advanced Adapter Settings

Lets you fine-tune your PRO/100+ adapter advanced settings.



These parameters should be altered by experienced users only. Use the default values unless you're having problems.

Parameter

[Coalesce Buffers](#)

[Receive Buffers](#)

[Transmit Control Blocks](#)

[Transmit Threshold](#)

[Adaptive Technology*](#)

[Adaptive Inter-Frame Spacing](#)

[Locally Administered Address \(LAA\)](#)

[Map Registers](#)

See also

[Adapter Settings](#)

[Troubleshooting](#)

* Windows NT only.

Advanced Settings for PRO/10 PCI Adapter

This version of PROSet was designed for use with the PRO/10+ PCI adapter only. It will not work on prior versions of the adapter, such as the PRO/10 PCI adapter (non-plus version).

If you are trying to configure prior versions of the adapter, use the Configuration and Drivers disk that came with the adapter. If you cannot locate this disk, download the file from Intel's World Wide Web site or the BBS. Click on Customer Support for more information on these sites.

See also

[Customer Support](#)

Adapter Diagnostics

Lets you test your adapter hardware, cable connection, and connection to the network. From the Adapter Diagnostics window, you can also run [Advanced Diagnostics](#).



If Adapter Diagnostics is running, and you click Cancel, a short delay occurs before diagnostics halts. When diagnostics halts, the OK button becomes available.

Configuration Information

Interrupt

A unique value the adapter uses to request attention from the computer. When your computer starts, it assigns an IRQ number to the adapter.

I/O Address

The I/O block the adapter uses to communicate with the computer. When your computer starts, it selects an I/O address for the adapter.

Basic Diagnostics

Adapter diagnostics provides you the flexibility of testing one or multiple items. Select or deselect the items you want to test, and click Run Tests.

Control Registers

Tests the registers the software uses to configure and send commands to the 82557 or 82558 controller.

Interrupts

Tests that the adapter interrupts are working properly.

82557 (or 82558) Controller

Runs built-in tests on the 8255x controller, confirming that it's working properly.

Loopback

Tests the adapter's ability to send and receive packets.

Cable Test

Checks the cable connection and the adapter's send and receive functionality by sending 1000 proprietary packets out on the network and retrieving those same packets.

Results

For a summary of the test results, click Summary when the tests are complete.

See also

[Diagnostics for Windows NT](#)

[Advanced Diagnostics](#)

[Adapter Settings](#)

Advanced Diagnostics

Lets you test your adapter extensively across a network.

Advanced diagnostics requires two PCs: one to send packets continuously to the network (the Sender) and another to echo the packets back (the Responder).

You can set up this PC as a Sender or Responder:

Sender

Sends packets continuously to the network. Select Start to begin sending packets.

Before you start sending packets, you need to set up a Responder somewhere else on the network. Go to another computer with an Intel adapter installed and use the diagnostic program for that adapter to set it up as a Responder.

Responder

Echoes packets back to the Sender PC (the one sending packets). Select Start to have this PC act as a Responder.



In Windows 98, when running a sender/responder diagnostics test with the adapter as the sender, you may see failures listed in the test report even when the adapter is operating correctly.



If you don't want to set up a Responder PC, advanced diagnostics can simulate one at 10 Mbps. The adapter will simply send packets to itself. Note: Simulating a Responder PC isn't a thorough test at 10 Mbps and isn't possible at 100 Mbps.

Although not designed for it, this test can be used to test network segment cabling and network configuration. When testing a new LAN segment, set up a Responder on one end and test with a Sender on the other.

See also

[Adapter Settings](#)

[Troubleshooting](#)

Troubleshooting

The most common network adapter problems are covered in the following topics:

[Your computer can't find the adapter](#)

[The adapter stopped working](#)

Get additional troubleshooting information from Customer Support via

- World Wide Web and Internet FTP server
- Bulletin Board System (BBS)

See also

[Customer Support](#)

[Error messages](#)

Your computer can't find the adapter

Windows NT or Windows 95 should be able to recognize a newly installed network adapter. The PROSet utility then lists all the adapters that it found in your computer. If you've installed an adapter and it isn't listed,

- Make sure it's an Intel PRO/100+ adapter you're trying to install.
- Make sure the adapter is seated firmly in the slot.
- Try a different slot.
- If you're using Windows NT, check the [Event Viewer](#) to see if it recognized the adapter's driver during system startup.
- Shut down Windows NT or Windows 95, turn off your computer's power, then turn it back on and restart. Then try adding the adapter again.
- Try a different adapter.

If Windows NT or Windows 95 still can't find the adapter, contact your network services supplier.

The adapter stopped working

If the adapter suddenly stopped working, it's most likely the result of adding another adapter or changing resource settings. Either action can put adapters into conflict with each other. To resolve most conflicts:

In Windows NT

1. Restart Windows NT.
2. Double-click the PROSet icon (or the Network icon) from the Control Panel.
3. The PROSet utility analyzes your configuration. If you have multiple adapters installed, click the "Display All Adapters" box in the window that appears. (If you started from the Network Icon, select the adapter from the Installed Adapter Cards list and click Configure).
4. Click OK in each opened window and then restart Windows NT when prompted.

In Windows 95

1. Restart Windows 95.
2. Double-click the PROSet icon in the Control Panel.
3. The PROSet utility analyzes your configuration. From the window that appears, click OK and then restart Windows 95 when prompted.

The PROSet utility automatically scans your computer's resources and assigns conflict-free settings. If you still have problems:

- Make sure the network cable is connected to the adapter you are currently installing.
- Make sure all adapters and devices are seated firmly in their slots.
- If you're using Windows NT, check the [Event Viewer](#) for adapter or device errors.
- Try running [Adapter Diagnostics](#).

If problems persist, contact your network services supplier.

Multiple Adapters

To install multiple adapters in either Windows NT or Windows 95, you must go through the "Add Adapter" process for each adapter. You need to restart your computer each time you install an additional adapter and go through the "Add Adapter" process. Refer to the adapter *Installation Guide* for more information on how to install multiple adapters.

While PROSet can list all adapters in your computer, this doesn't mean the operating system is aware of the adapter. You still need to add each adapter to the operating system according to the procedures given.

Event Viewer

The Windows NT Event Viewer is an intelligent system log that monitors system startups and shutdowns as well as changes to system settings and resources.

The Event Viewer is accessible from the Administration Tools program group.

Diagnostics for Windows NT

The first time you install a new adapter, you can optionally run [Adapter Diagnostics](#) as part of the installation and configuration process. Adapter diagnostics checks several critical hardware components on the adapter as well as the cable and network connection.

Once you complete the installation and restart Windows NT, the next time you run PROSet and click the Test button [Driver Diagnostics](#) runs. To run Adapter Diagnostics again on an installed adapter, follow the procedure in [Running Adapter Diagnostics Under Windows NT](#). You can also run the DOS-based diagnostics called SETUP.EXE from the Configuration and Drivers disk.

See also

[Running Adapter Diagnostics Under Windows NT](#)

[Running DOS-based Diagnostics Under MS-DOS](#)

Setup

SETUP.EXE, version 3.0 or newer is the DOS configuration program for PRO/100+ adapters. It's available on the Configuration and Drivers disk. Note: prior versions of SETUP.EXE or SOFTSET will not properly configure this adapter.

If you're running Windows NT or Windows 95, however, you don't need to run SETUP to configure your adapter. Instead, double-click the Network icon from the Control Panel:

- If you're configuring an existing PRO/100+ adapter, select it from the Installed Adapter Cards list and click Configure.
- If you're adding a new adapter, click Add Adapter and from the Network Card list select "<Other> Requires disk from manufacturer." Then use the Configuration and Drivers disk when prompted.

Interrupt (IRQ)

A unique value the adapter uses to request attention from the computer. When your computer starts, it assigns an IRQ number to the adapter.

Memory Address

The memory block the adapter uses to communicate with the computer. When your computer starts, it selects a memory address for the adapter.

I/O Address

The I/O block the adapter uses to communicate with the computer. When your computer starts, it selects an I/O address for the adapter.

FIFO Depth

Recommended Value: FIFO Depth = 12

Defines the FIFO threshold for requesting bus access.

For computers with high bus latency, you can increase this setting. For computers with very low latency, you can reduce this setting.

For best performance, set as low as possible without causing DMA over/underruns.

FIFO Depth range: 0-15

Map Registers

Recommended Values:

Windows NT 3.51: Map Registers = 64

Windows NT 4.0: Map Registers = 64

Windows 95: Map Registers = 64

Map registers are system resources used in physical to virtual address conversion with bus mastering cards. The Map Registers parameter specifies how many registers should be allocated to the driver.

As a rule, more map registers mean better performance. However, map registers are system resources. If too many are allocated, the driver will fail to load or your computer may behave erratically.

Map Registers range: 0-64

Speed/Duplex

Network Speed

The speed at which your adapter operates. The default is **Auto**. PROSet displays the choices that are available for the adapter you selected in the PROSet Main Window.

When set to Auto, your adapter automatically senses the network speed (switch or hub speed) and operates at that speed.

Duplex Mode

A performance option that lets you choose how the adapter sends and receives packets over the network when connected to the Twisted Pair Ethernet (TPE) connector. The default setting is **Auto**. PROSet displays the correct choices for the adapter you selected in the PROSet Main Window.

Duplex modes in the PROSet menu:

- **Auto** - the PRO/100+ adapters negotiate with the switch or hub to determine the best mode. Note that your switch or hub must also support auto-negotiation. If it doesn't support auto-negotiation, the adapter defaults to half duplex.
- **Half duplex** - the adapter performs one operation at a time – it either sends or receives. Note that all adapters default to half duplex if an auto-negotiating switch or hub is not attached to the adapter (even when set to Auto).
- **Full duplex** - the adapter sends and receives packets at the same time. This can improve the performance of your adapter. Set duplex mode to full duplex **ONLY** if you have a full duplex switch.



Incorrectly forcing a specific duplex mode may actually result in poor performance. For example, if you configure the adapter to full duplex when attached to a half duplex switch or hub, performance could be worse than at half duplex. If unsure, leave these settings on the defaults.

If you don't know what kind of switch or hub you are attached to, contact your LAN Administrator.

Connector Type

Applies to PRO/10+ PCI adapter with AUI, BNC, and TPE connectors. The adapter automatically senses which connector type is in use.

Remote Boot

A configuration option that sets this computer to boot from a network server. If this computer boots from its hard drive, leave remote boot set to NONE. The default is NONE. (Remote boot is available only on PRO/10+ PCI adapters with all three Ethernet connectors.)

The remote boot program (NDIS or NetWare ODI) identifies which type of network server you want this computer to boot from. To use this feature, your server must be running the appropriate remote boot software (RPLs) and your adapter must have a flash chip.

This option won't appear if you don't have a flash adapter or your flash address is disabled.

On Timer

Recommended Value: ON Timer = 272

Limits the number of clock cycles a PRO/100A PCI adapter holds the bus for data transfers. For best performance, set high enough to fill the Transmit FIFO or empty the Receive FIFO in a single bus access.

Off Timer

Recommended Value: OFF Timer = 2

Specifies the minimum number of clock cycles a PRO/100A PCI adapter remains off the bus between data transfers.

For best performance, set this parameter to a minimum, allowing the adapter access as needed.

Coalesce Buffers

Recommended Value: Coalesce Buffers = 8

Specifies the number of memory buffers available to the driver in case the driver runs out of available Map Registers. This buffer area is also used when a packet consists of many fragments.

If no coalesce buffers or map registers are available, the driver will be forced to queue the packet for later transmission. The preferred method of transmitting data is to use map registers since it's the most efficient method.

Coalesce Buffers range: 1-32

Receive Buffers

Recommended Value: Receive Buffers = 32

Specifies the number of buffers used by the driver when copying data to the protocol memory.

In high network load situations, increasing receive buffers can increase performance. The tradeoff is that this also increases the amount of system memory used by the driver.

If too few receive buffers are used, performance will suffer. If too many receive buffers are used, the driver will unnecessarily consume memory resources.

Receive Buffers range: 1-1024

Transmit Control Blocks

Recommended Value: Transmit Control Blocks = 16

Specifies how many transmit control blocks the driver allocates for adapter use. This directly corresponds to how many outstanding packets the driver can have in its "send" queue.

If too few transmit control blocks are used, performance will suffer. If too many transmit control blocks are used, the driver will unnecessarily consume memory resources.

Transmit Control Blocks range: 1-80

Transmit Threshold

Recommended Value: **Transmit Threshold = 16**

Specifies the number of bytes before the PCI adapter empties its internal transmit FIFO onto the wire. The value is multiplied by 8 to produce the number of bytes.

For example, if Transmit Threshold = 200, the number of bytes is 1600. This is greater than the maximum packet size for Ethernet. Consequently, the adapter won't attempt early transmits. Although this is the safest setting, the best performance is achieved when the threshold parameter is as low as possible (without producing underruns).

To experiment, set the parameter to 16 and then incrementally increase it if performance drops significantly.



Don't set the transmit threshold parameter below 200 for computers with multiple busmastering cards, or computers with otherwise high latency.

Adaptive Inter-Frame Spacing

This is a performance setting that compensates for excessive Ethernet packet collisions on your network. The default setting works best for most computers and networks by dynamically adapting to the network traffic conditions. However, in some rare cases you may obtain better performance by manually setting the spacing value. Setting a value forces a static gap between packets.

Increasing the value increases the delay between frames being transmitted.

Default: 1

Range: 1 - 255

Ethernet Address

This is the unique physical Ethernet node address contained in the adapter's on-board read-only memory. The 12-digit, hexadecimal address is also located on a small label on the adapter.

i82557/8-based Ethernet Adapter

PROSet may detect non-Intel network adapters or computers with built-in network capability. These adapters or computers use an chip called the [82557 or 82558 Ethernet Controller](#) to provide networking capability.

If PROSet displays an adapter named

i82557-based Ethernet Adapter

or

i82558-based Ethernet Adapter

you should use the configuration and diagnostics program that came with your computer or non-Intel network adapter.

Intel Adapters

For a complete list of Intel adapters, visit the networking web site at www.intel.com/network.

Adapter Settings

This window displays basic adapter choices for your particular adapter model. PROSet displays only the choices that are supported by the adapter you have selected in the PROSet main window. Choices include network speed and duplex mode.



You must have your operating system configured to load the NDIS driver in order for PROSet to access these functions.

For more information on basic settings, see the [network speed and duplex mode](#) information.

See also

[Advanced Adapter Settings](#)

[Troubleshooting](#)

Diagnostics for Windows 95/98

There are two testing options. The first option [Driver Diagnostics](#), tests with the NDIS driver only and does not test the adapter hardware. The second option, [Adapter Diagnostics](#) tests the adapter hardware only and does not test the NDIS driver. Read both sections below before testing.

Option 1: Test the network driver - Driver Diagnostics.

You do not need to unload the NDIS (Windows) driver when running Driver Diagnostics. You will not need to restart after testing. This test does not check hardware components on the adapter.

1. Click Test NDIS.
2. When the test is complete, click OK to exit.
3. If this test fails, unload NDIS. Adapter Diagnostics will run (see option 2).

Option 2: Test the adapter hardware only - Adapter Diagnostics (recommended).

This test unloads the NDIS (Windows) driver. It then more thoroughly tests hardware components on the adapter. You will need to restart after testing. You can also perform [Advanced Diagnostics](#) after completing diagnostics in this mode.

1. Click Unload NDIS.
2. After the NDIS driver unloads, click OK to continue.
3. When the test is complete, click OK to exit or click Advanced for more testing. Click Help in the Advanced Diagnostics window for more information.
4. Restart the computer. You must restart the computer before accessing any network drives.

See also

[Advanced Diagnostics](#)

Driver Diagnostics

This test checks the general operation of the network driver currently in use. This test does not test the adapter or the actual network connection. To check the adapter and network connection, run [Adapter Diagnostics](#).

When the test begins, the following information displays:

Driver Information:

Name - Filename of the adapter driver loaded and under test.

Version - Version number of the driver. Useful when downloading new versions from the Intel web site or BBS.

Registry - Name used by the Windows NT or Windows 95 registry.

Driver Statistics:

Packets Sent - Number of packets sent by the driver since it started.

Packets Received - Number of packets received by the driver since it started.

Errors - Number of errors noted since the driver started.

Driver Analysis:

Progress - this bar indicates progress of the driver analysis.

Results - this box displays messages about the driver analysis.

Running Adapter Diagnostics Under Windows NT

If you need to run Adapter Diagnostics on an installed adapter, you must disable the adapter driver before running diagnostics. Use the following procedure:

- 1.** In the Control Panel, double-click the Devices icon. An alphabetical list of installed devices appears.
- 2.** Scroll down to the "Intel 82557 (or 82558)-based PRO Adapter" driver.
- 3.** Click Startup.
- 4.** Click Disabled.
- 5.** Click OK and then Close.
- 6.** Restart Windows NT.

Windows NT starts without loading the adapter driver. You can now run Adapter Diagnostics by starting PROSet and clicking Test. When done testing, use the following procedure to re-enable the adapter driver:

- 1.** In the Control Panel, double-click the Devices icon. An alphabetical list of installed devices appears.
- 2.** Scroll down to the "Intel 82557 (or 82558)-based PRO Adapter" driver.
- 3.** Click Startup.
- 4.** Click Automatic.
- 5.** Click OK and then Close.
- 6.** Restart Windows NT.

Running DOS-based Diagnostics Under MS-DOS

To run the DOS-based diagnostics from disk, use the following procedure:

- 1.** Restart your computer in MS-DOS mode.
- 2.** Insert the Configuration and Drivers disk in the appropriate drive and switch to that drive.
- 3.** At the DOS prompt type SETUP and press Enter.
- 4.** When the Main Menu appears, select Test Adapter.
- 5.** Follow screen prompts for testing options.
- 6.** Exit SETUP when done and restart your computer.

82557/8 Ethernet Controller

The 82557 or 82558 is a high-performance Ethernet controller for PCI computers.

Adaptive Technology Setting

Recommended Value: On

This parameter either enables or disables the [Adaptive Technology](#) performance enhancement feature. To enable the feature, click ON. To disable the feature, click OFF. For best performance and maximum CPU utilization, leave this parameter ON.

Adaptive Technology

Adaptive Technology is a new capability developed by Intel which allows users to keep up with ever-changing network technology easily and inexpensively, without changing the adapter cards. Adaptive Technology uses a driver update mechanism to alter the reloadable microcode on Intel 82557 and 82558 Ethernet controllers, which are the foundation of Intel PCI-based adapters. Through simple software updates, new drivers will deliver reloadable microcode updates that tune the adapter for maximum throughput and minimum CPU utilization, while adapting to specific environments such as Windows NT, Windows 95, and DOS ODI .

For more information, visit our web site at:

<http://www.intel.com/network>

Transmit Threshold

Recommended Value: On

This parameter enables or disables the adaptive/dynamic transmit threshold feature. To enable the feature, click ON. To disable the feature, click OFF. When set to ON, the adapter dynamically adjusts the point at which it will execute early transmit cycles. This can result in higher performance in most computers. When set to OFF, the adapter disables early transmit capabilities.

Adapter Fault Tolerance

Adapter Fault Tolerance provides the safety of an additional backup link between the server and hub or switch. In the case of hub or switch port, cable, or adapter failure, you can maintain uninterrupted network performance.

Adapter Fault Tolerance is implemented with a primary adapter and a backup, or secondary, adapter. During normal operation, the backup adapter will have transmit disabled. If the link to the primary adapter fails, the link to the secondary adapter automatically takes over.

To use Adapter Fault Tolerance, you must have two PRO/100+ adapters installed in your server.

Setting Up Adapter Fault Tolerance

Requirements:

To use Adapter Fault Tolerance (AFT) you must have two or more PRO/100 Server adapters installed in your server.

Note: Windows NT 4.0 Service Pack 3 or later, with the NDIS driver hotfix (NDISFIXI), is required for implementing Adapter Teaming properly. Install these prior to configuring Adapter Teaming.

To set up AFT in Windows NT 4.0:

1. Double-click the Network icon in the Control Panel.
2. On the Adapters tab, select a PRO/100+ adapter that will be in the team and click Properties. (Don't use an adapter that is on a VLAN.)
3. Click Adapter Teaming in the PROSet window.
4. Click OK when prompted. The Adapter Teaming Configuration window appears.
5. Follow the instructions for assigning adapters to a team. AFT supports four adapter teams, two to four adapters per team.
6. Select AFT only in the Team Function window. Note that the Load Balancing and Fast EtherChannel features also include AFT.
7. Click OK to finish. When prompted, restart your computer.

See also

[Adapter Fault Tolerance Team Properties](#)

Assign Adapters to a Team

General:

In this window, individual adapters are assigned to a team. Instructions for adding adapters to a team are displayed in the Instructions portion of the window. After building a team, identify the type of team in the Team Function portion of the window. Be sure to click OK when done and restart when prompted for your changes to take effect.

Note: Windows NT 4.0 Service Pack 3 or later, with the NDIS driver hotfix (NDISFIXI), is required for implementing Adapter Teaming properly. Install these prior to configuring Adapter Teaming.

Team Function Choices:

AFT Only:

This button selects Adapter Fault Tolerance only

Load Balancing:

This button selects Load Balancing and Adapter Fault Tolerance

Fast EtherChannel:

This button selects Cisco Fast EtherChannel mode and Adapter Fault Tolerance

To assign two PRO/100+ adapters to a team, use the Move Up and Move Down buttons to position the adapters under an Intel Adapter Fault Tolerance Team.

If you don't want an adapter to be part of a fault tolerance team, use the Move Up and Move Down buttons to position the adapter under Installed Adapters in Windows NT.

To see the properties for a selected adapter team, click the **Properties** button.

To move a selected adapter up, click the **Move Up** button.

To move a selected adapter down, click the **Move Down** button.

To finish setting up the adapter team, click the **OK** button.

To exit the adapter teaming process and cancel the team, click the **Cancel** button.

To see the Event Viewer application and review system messages, click the **Event Viewer** button.

See also

[Setting Up Adapter Fault Tolerance](#)

[Setting Up Adaptive Load Balancing](#)

[Setting Up Fast EtherChannel](#)

Adapter Fault Tolerance Team Properties

Team Information

This section identifies the [Adapter Fault Tolerance team](#) you have selected.

Team Network Address

The network address of the primary adapter.

Team Driver Registry Name

The driver registry name of the primary adapter.

Team Properties

This section lists the properties for the selected Adapter Fault Tolerance team. You can change any of these values, or click the **Default** button to use the default values.

Check Time

How often AFT checks the status of the adapters in the Fault Tolerance team.

This value should be between 1-3 seconds. The default is 1.

Probe Time

Amount of time AFT waits to receive a packet before sending out a probe packet to check the status of the teamed adapters.

This value should be between 1-6 seconds. The default is 1.

Primary Timeout

Amount of time AFT waits for the primary adapter to respond before switching to the secondary adapter.

This value should be between 2-7 seconds. The default is 2.

Secondary Timeout

If a secondary adapter does not respond in this amount of time, AFT determines that the adapter is no longer connected to the network.

This value should be between 4-10 seconds. The default is 4.

Adapter Fault Tolerance Team

A team of adapters assigned to work together to provide fail-safe network operation for your server.

Adapter Information

Information about the selected adapter.

Adapter Name

The adapter you selected.

Adapter Driver Registry Name

The driver registry name for the selected adapter.

Permanent Network Address

The network address (also known as node address or Ethernet address) for the adapter.

Member of Fault Tolerance Team

Indicates if the adapter is set up on an Adapter Fault Tolerance team.

Fault Tolerance Member Role

Indicates the adapters role if it is on an Adapter Fault Tolerance team. This role can be primary (currently active) or secondary (backup).

Adapter Mode (Windows NT only)

Indicates whether the adapter is operating in standard mode or fault tolerance mode.

Standard Mode

No Adapter Teaming features are configured.

Fault Tolerance Mode

The PRO/100+ adapters on this server are configured to be on an [Adapter Fault Tolerance](#) team.

Load Balancing Mode

The PRO/100+ adapters on this server are configured to be on an [Adaptive Load Balancing](#) team.

Fast EtherChannel* Mode

The PRO/100+ adapters on this server are configured to be on an [Fast EtherChannel](#) team.

Driver Not Installed

The drivers for this adapter haven't been installed.

See also

[Setting Up Adapter Fault Tolerance](#)

[Setting Up Adaptive Load Balancing](#)

[Setting Up Fast EtherChannel](#)

Driver Detected

There are two methods for testing this adapter:

Testing with the drivers installed.

Performs a general test on the adapter, and checks for network connection and activity. To test with the drivers installed, click **Test NDIS**.

Testing with a special diagnostic driver.

Enables you to run a customized test on the adapter and provides results specific to troubleshooting. You can run basic diagnostics to test:

- Control Registers
- Interrupts
- 82557 or 82558 Controller
- Loopback
- Cable Connection
- Sender/Responder

To test with the diagnostic driver, click **Unload NDIS**. This temporarily unloads the drivers you have previously installed and tests with the diagnostic driver. To reload the adapter drivers and reconnect to the network, you must restart the computer after testing.

Monitoring Driver Activity

To monitor the driver activity, these tests are run with using the drivers installed with the adapter. You can also more fully test the adapter with [special diagnostics drivers](#).

These tests provide you with:

Driver Information

The name of the driver installed for the adapter, the driver version number, and the adapter driver registry name.

Driver Statistics

The number of packets sent by the adapter, the number of packets received, and errors. This data indicates activity on the network.

Driver Analysis

Displays test results. To run more detailed diagnostics on the adapter, return to the main PROSet window, click Test, and choose Unload NDIS.

Adaptive Load Balancing

Adaptive Load Balancing (ALB) is a simple and efficient way to increase your server's transmission throughput. With ALB, as you add adapters to your server, you can group them in teams to provide up to 400 Mbps with a maximum of four PRO/100+ adapters. The ALB software continuously analyzes transmission loading on each adapter and balances those across the adapters as needed. Adapter teams configured for ALB also provide the benefits of Adapter Fault Tolerance (AFT).

To use ALB, you must have two, three, or four PRO/100+ adapters installed in your server and linked to the same network switch.

Fast EtherChannel

Fast EtherChannel (FEC) is a performance technology developed by Cisco to increase your server's throughput. Unlike ALB, FEC can be configured to increase both transmission **and** reception channels between your server and switch. FEC works only with FEC-compatible Cisco switches. With FEC, as you add adapters to your server, you can group them in teams to provide up to 800 Mbps with a maximum of four PRO/100+ adapters per team. Teams can consist of two or four adapters and you can have a maximum of two FEC teams per server. The FEC software continuously analyzes loading on each adapter and balances those across the adapters as needed. Adapter teams configured for FEC also provide the benefits of Adapter Fault Tolerance (AFT).

To use FEC, you must have two or more PRO/100+ adapters installed in your server and linked to the same Cisco switch.

Fast EtherChannel is a trademark of Cisco.

Setting Up Adaptive Load Balancing*

Requirements:

To use [Adaptive Load Balancing](#) (ALB) you must have two, three, or four PRO/100 Server adapters installed in your server, all linked to the same network switch.

Note: For maximum benefit, ALB should not be used under NetBEUI and some IPX environments. For a list of specific IPX environments, contact Customer Support.

Note: Windows NT 4.0 Service Pack 3 or later, with the NDIS driver hotfix (NDISFIXI), is required for implementing Adapter Teaming properly. Install these prior to configuring Adapter Teaming.

To set up ALB in Windows NT 4.0:

1. Double-click the Network icon in the Control Panel.
2. On the Adapters tab, select a PRO/100+ adapter that will be in the team and click Properties.
3. Click Adapter Teaming in the PROSet window.
4. Click OK when prompted. The Adapter Teaming Configuration window appears.
5. Follow the instructions for assigning adapters to a team. ALB supports up to four adapter teams, with two to four adapters per team.
6. Select Load Balancing in the Team Function area.
7. Click OK to finish. When prompted, restart your computer.

Setting Up Fast EtherChannel*

Requirements:

To use [Fast EtherChannel](#) (FEC) you must have two or more PRO/100+ Server adapters installed in your server, all linked to the same FEC-Compatible Cisco switch.



Do NOT specify Fast EtherChannel (FEC) as a teaming option unless you are sure the PRO/100+ Server adapters which are to comprise the team are connected to ports configured for FEC mode, and that these ports are linked to the same FEC-compatible Cisco switch. Misconfiguration can cause severe performance degradation.

Note: For maximum benefit, FEC should only be used under TCP/IP environments.

Note: Windows NT 4.0 Service Pack 3 or later, with the NDIS driver hotfix (NDISFIXI), is required for implementing Adapter Teaming properly. Install these prior to configuring Adapter Teaming.

To set up FEC in Windows NT 4.0:

1. Double-click the Network icon in the Control Panel.
2. On the Adapters tab, select a PRO/100+ adapter that will be in the team and click Properties.
3. Click Adapter Teaming in the PROSet window.
4. Click OK when prompted. The Adapter Teaming Configuration window appears.
5. Follow the instructions for assigning adapters to a team. FEC supports up to two adapter teams, with two or four adapters per team.
6. Select Fast EtherChannel in the Team Function area.
7. Click OK to finish. When prompted, restart your computer.

Locally Administered Address (LAA)

You can optionally override the factory default network address of the adapter. To enter a new network address, type a 12 digit hexadecimal number in this box.

The address entered should be in the range of: 000000000000 - FFFFFFFF

Exceptions:

Do not use a multicast address (LSB of the high byte = 1). For example, in the address 0X123456789AB, "X" cannot be an odd number.

A value of 000000000000 will default to the factory set address.

Intel Customer Support Services

Automated customer support

You can reach Intel's automated support services 24 hours a day, every day at no charge. The services contain the most up-to-date information about Intel Networking products. Use these free, automated customer support services to get troubleshooting information, compatibility notes, and software upgrades:

[World Wide Web and Internet FTP](#)

[Intel BBS](#)

Customer Support Technicians

Intel also has technical support centers world wide, staffed by technicians.

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World Wide Web and Internet FTP

Get support information and download software updates from Intel's World Wide Web server or from the Intel FTP server.

Intel World Wide Web server

Support:
<http://support.intel.com>

Intel News:
<news://cs.intel.com>

Corporate:
<http://www.intel.com>

Navigate to a specific product and then look for support information.

Intel FTP server

<ftp.intel.com>

Navigate to this directory:

[/pub/support/enduser_reseller/etherexpress_lan_adapters](#)

Intel BBS

You can use your modem to get support information and download software updates from Intel's BBS. Set your communications software for 8 data bits, no parity, 1 stop bit, and up to 14.4 Kbps.

Intel BBS numbers

U.S. & Canada
1-503-264-7999

Europe
+44-1793-432955

Worldwide
+1-503-264-7999

Customer Support

Worldwide access: Intel has technical support centers worldwide. Many of the centers are staffed by technicians who speak the local languages. For a list of all Intel support centers, the telephone numbers, and the times they are open, download document 9089 from one of the automated services.

If you don't have access to automated services, contact your local dealer or distributor.

Before you call...

You need to be at your computer with your software running and the product documentation at hand.

The technician may ask for the following:

- Your address and telephone number
- The name and model number of the Intel product you are calling about
- The serial number of your Intel product
- The names and version numbers of the software you are using to operate the Intel product
- The name and version number of the operating system you are using
- The system type (manufacturer and model number)
- Expansion boards or add-in cards in your computer
- The amount of memory in your computer

Customer Support Number: (916) 377-7000

Hours: 07:00 - 17:00 Monday- Friday (U.S. Pacific time)

Error messages

Click on the error message below for more information.

Configuration messages

- [4000 No available interrupts](#)
- [4010 No PCI configuration](#)
- [4030 EEPROM failure](#)
- [4050 Internal loopback failure](#)
- [4060 Not a bus mastering slot](#)
- [4070 Memory mapping not enabled](#)
- [4090 I/O mapping not enabled](#)
- [4095 No network activity or bad cable](#)

Diagnostic failures

- [5000 I/O address conflict](#)
 - [5010 RAM failure](#)
 - [5020 Internal chip failure](#)
 - [5030 Flash chip failure](#)
 - [5040 Cable test failed](#)
 - [5050 Network test failed](#)
-
- [6000 No packets transmitted](#)
 - [6010 Packet transmit failure](#)
 - [6020 No packets received](#)
 - [6030 Packet receive failure](#)
 - [6040 Excessive collisions](#)

See also

[Troubleshooting](#)

4000 No available interrupts

Problem: Your computer's BIOS didn't allocate an interrupt (IRQ) for the PRO adapter. You need to free up one of your computer's IRQs before the adapter's driver can load.

Solutions: Run your computer's BIOS configuration utility and try allocating an interrupt for this adapter.

Try reconfiguring the interrupt of another adapter or device.

Remove any unused devices or adapters.

Contact your computer manufacturer for a possible PCI BIOS upgrade.

See also

[Help Contents](#)

4010 No PCI configuration

Problem: Your PCI computer didn't correctly configure the PRO adapter.

Solutions: Try moving the adapter to another PCI slot.

Remove any unused devices or adapters.

Contact your computer manufacturer for a possible PCI BIOS upgrade.

See also

[Help Contents](#)

4030 EEPROM failure

Problem: This setup program has detected a PRO adapter with an invalid EEPROM. This adapter can't be configured using this setup program.

Solution: Shut down your OS, boot to DOS, and run [Setup](#).

If the problem persists, contact your network services supplier.

See also

[Help Contents](#)

4050 Internal loopback failure

Problem: This setup program has detected an internal loopback failure with the PRO adapter. This adapter can't be configured using this setup program.

Solution: Shut down your OS, boot to DOS, and run [Setup](#).

If the problem persists, contact your network services supplier.

See also

[Help Contents](#)

4070 Memory mapping not enabled

Problem: This setup program has detected that memory mapping is not enabled for the PCI slot the adapter is installed in.

Solution: Move the adapter to a different PCI slot or get a more recent version of the system BIOS from your system manufacturer.

If the problem persists, contact your network services supplier.

See also

[Help Contents](#)

4090 I/O mapping not enabled

Problem: This setup program has detected that I/O address mapping is not enabled for the PCI slot the adapter is installed in.

Solution: Move the adapter to a different PCI slot or get a more recent version of the system BIOS from your system manufacturer.

If the problem persists, contact your network services supplier.

See also

[Help Contents](#)

4095 No network activity or bad cable

Problem: No packets were received or sent during the test. There may be no activity on the network, or this may be caused by a bad or missing cable.

Solutions: Make sure there is activity on the network, the cable is securely attached, and run this test again.

See also

[Help Contents](#)

Close

5000 I/O address conflict

Problem: The I/O address (port address) assigned to this adapter overlaps another device's I/O address.

Solutions: Use your computer's EISA configuration utility (ECU) to select a different I/O address.

If you're using Windows NT, run [Driver Diagnostics](#) and make sure all your devices and adapters have active drivers. Check for I/O address conflicts.

Remove any unused devices or adapters.

See also

[Help Contents](#)

Close

5010 RAM failure

Problem: This setup program can't access the adapter's RAM. Most likely, the I/O address you configured overlaps another device's I/O address. In rare cases, the RAM itself may be bad.

Solution: Use your computer's EISA configuration utility (ECU) to select a different I/O address.

If the problem persists, contact your network services supplier.

See also

[Help Contents](#)

Close

5020 Internal chip failure

Problem: Your adapter's Ethernet controller failed diagnostics. This adapter may conflict with another device in your computer.

Solution: Use your computer's EISA configuration utility (ECU) to select a different I/O address.

If the problem persists, contact your network services supplier.

See also

[Help Contents](#)

Close

5030 Flash chip failure

Problem: Your adapter's flash chip failed diagnostics. The adapter may conflict with another device in your computer.

Solution: Use your computer's EISA configuration utility (ECU) to select a different flash chip address.

If the problem persists, contact your computer's manufacturer.

See also

[Help Contents](#)

Close

5040 Cable test failed

Problem: Your network cable isn't attached to the adapter, or the cable itself is damaged or out of spec.

Solutions: Make sure the cable is securely attached to the adapter and to the hub.

You can test the integrity of your link using the LEDs on the back of the adapter. A solid LED light means you have link integrity.

Make sure that you're using the right type of cable – cross-over or straight-through.

Try replacing the cable with one you know is good.

See also

[Help Contents](#)

Close

5050 Network test failed

Problem: Your adapter failed network diagnostics. The problem may be with the cable, the network, or your computer.

Solutions: Make sure the cable is securely attached.

Install this adapter in a computer with a working network connection and run this test again. If the test passes, the problem is most likely with your computer rather than your adapter. If the test still fails, contact your LAN administrator or network services supplier.

See also

[Help Contents](#)

4060 Not a bus mastering slot

Problem: Your computer's PCI BIOS doesn't have bus mastering enabled for the slot that the PRO adapter is installed in.

Solution: Click the Test button to run the diagnostics program. If the diagnostics program fails to enable the slot for bus mastering, try to enable bus mastering using your computer's BIOS configuration utility. Or, move the adapter to a busmaster enabled slot.

See also

[Help Contents](#)



6000 No packets transmitted

Problem: During driver diagnostics, the driver didn't send any packets.

Solution: Make sure the driver has protocols bound to it. To check protocol bindings:

- Choose *Bindings...* from the Network Settings dialog box.
- In the Show Bindings for list box, select "Intel 82557 Driver."
- Make sure the driver is bound to the adapter and the light bulb icon is yellow.

See also

[Help Contents](#)



6010 Packet transmit failure

Problem: During driver diagnostics, the driver experienced excessive transmit failures.

Solution: Make sure the cable is securely attached to the adapter.

Try a different cable (your cable may be damaged or out of spec).

See also

[Help Contents](#)



6020 No packets received

Problem: During driver diagnostics, the driver didn't receive any packets from the network. This is probably due to a bad or missing cable.

Solutions: Make sure the cable is securely attached to the adapter and to the hub.

Try a different cable (your cable may be damaged or out of spec).

If the problem persists, contact your LAN administrator or network services supplier.

See also

[Help Contents](#)



6030 Packet receive failure

Problem: During driver diagnostics, the driver experienced excessive receive failures. This may be due to a bad or missing cable, or a hub/repeater problem.

Solutions: Make sure the cable is securely attached to the adapter and to the hub.

Try a different cable (your cable may be damaged or out of spec).

If the problem persists, contact your LAN administrator or network services supplier.

See also

[Help Contents](#)



6040 Excessive collisions

Problem: During driver diagnostics, the driver experienced excessive collisions on the network while sending packets. This may be caused by a very busy network, a cable problem, or a hub/repeater problem.

Solutions: Make sure the cable is securely attached to the adapter and to the hub.

Try a different cable (your cable may be damaged or out of spec).

If the problem persists, contact your LAN administrator or network services supplier.

See also

[Help Contents](#)

