

Help Contents

557Set Configuration Utility for the 82557-based 10/100 Ethernet PCI adapter

This help file explains how to configure and test your adapter in Microsoft Windows NT* and Windows* 95.

Choose one of these topics:



[557Set Main Window](#)



[Diagnostics for Windows NT](#)



[Diagnostics for Windows 95](#)



[Troubleshooting](#)

[Trademark and Copyright Information](#)

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557Set Main Window

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

Adapters:

Shows 82557-based adapter installed. If multiple adapters are installed, they are listed. To view configuration information for a specific adapter, click on it.

Configuration:

I/O Address

Interrupt

Ethernet Address

Duplex Mode

Network Speed

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

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

See also

[Adapter Settings](#)

[Advanced Adapter Settings](#)

[Troubleshooting](#)

Advanced Adapter Settings

Lets you fine-tune your 82557-based 10/100 Ethernet PCI adapter.



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](#)

[Advanced Features*](#)

[Transmit Threshold](#)

[Map Registers](#)

See also

[Adapter Settings](#)

[Troubleshooting](#)

* Windows NT only. For Windows 95, contact your network adapter vendor.

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

Lists your adapters current I/O address and interrupt settings.

Adapter Tests

Checks adapter hardware components such as the RAM, flash, and network controller chips.

Network Tests

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

Lists test findings and results. If a problem occurs, you'll find information here on how to fix it.

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:

- 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 another 82557-based 10/100 Ethernet PCI adapter adapter installed and use 557Set to configure it 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.



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

[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](#)

See also

[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 557Set program then lists all the 82557-based 10/100 Ethernet PCI adapters that it found in your computer. If you've installed an adapter and it isn't listed,

- 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 557Set icon (or the Network icon) from the Control Panel.
- 3 The 557Set software analyzes your configuration. If you have multiple adapters installed, click the "Display All Adapters" box in the windows 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 557Set icon in the Control Panel.
- 3 The 557Set software analyzes your configuration. From the window that appears, click OK and then restart Windows 95 when prompted.

If you have problems connecting to the network:

- 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. Refer to the Installation Guide for more information on how to install multiple adapters.

While 557Set can list all 82557-based 10/100 Ethernet PCI 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 82557-based 10/100 Ethernet PCI 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 557Set 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 diskette.

See also

[Running Adapter Diagnostics Under Windows NT](#)

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

SETUP

SETUP (setup.exe) is the DOS and Windows 3.1 configuration program for the PCI adapter. It is located on the Disk Name. Refer to the Installation Guide for complete installation instructions.

If running Windows NT or Windows 95, you don't need to run SETUP to configure your adapter. Refer to the Installation Guide for complete installation instructions.

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.

I/O Address

The memory 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 3.50: Map Registers = 8
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.

Increasing Map Registers in Windows NT 3.50 may cause problems. See [Map Registers: Issues with NT 3.50](#).

Map Registers range: 0-64

Map Registers: Issues with NT 3.50

For Windows NT 3.50, increasing Map Registers can cause erratic behavior (such as problems accessing a floppy drive) in some computers. Also, if you allocate more map registers than the OS has available, the OS will fail to load.



Before you start changing the Map Registers parameter, make a repair disk using RDISK.EXE (in the WINDOW\SYSTEM32 directory). See your Windows NT documentation for information on using RDISK.EXE.

Two factors affect the amount of map registers you can allocate:

- Multiple busmastering devices (for example, SCSI cards, floppy drives, or a network adapter) installed in your computer. The more devices you have, the greater chance of producing underruns or erratic behavior if you increase the Map Registers parameter.
- An NT 3.50 restriction in the Microsoft Hardware Abstraction Layer (HAL) that causes a shortage of map registers when the computer is configured with extra physical memory. If you get an updated HAL.DLL from Microsoft and put it into the SYSTEM32 directory, the Map Register parameter can be increased for improved performance and support of additional network adapters.

Improving performance

To increase the amount of map registers:

- 1 Increase the Map Registers parameter.
- 2 Reboot your computer to NT 3.50.
- 3 Insert a diskette into an available floppy drive and try to access the drive with File Manager.
- 4 If you're unsuccessful, reduce the parameter by 1 and repeat steps 2 and 3. If you are successful, increase the parameter by 1 and repeat steps 2 and 3. However, use caution when increasing this parameter. You can damage your NT 3.50 configuration and be forced to use your repair disk.

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**. 557Set displays the correct choices for the adapter you selected in the 557Set Main Window.

Duplex modes in the 557Set menu:

- **Auto** - The adapter negotiates with the switching hub to determine best mode. Note that your hub must also support auto-negotiation. If the hub does not 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, switching 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 switching hub. To change the adapter to full duplex, first change the speed setting to 10 or 100 Mbps.



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 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 hub you are attached to, contact your LAN Administrator.

Connector Type

Does not apply to this adapter.

Remote Boot

Does not apply to this adapter.

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.

If you are using Windows NT 3.50 and having network performance problems, try increasing the coalesce buffers.

Coalesce Buffers range: 1-16

Receive Buffers

Recommended Value: Receive Buffers = 16

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 an 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.

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.

Network Speed

The speed at which your adapter operates. The default is **Auto**. 557Set displays the choices that are available for the adapter you selected in the 557Set Main Window.

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

When manually changing duplex mode, you must also manually change the speed. See the [Duplex Mode](#) topic for more information.

i82557-based Ethernet Adapter

557Set may detect other network adapters or computers with built-in network capability. These adapters or computers use an Intel chip called the [82557 Ethernet Controller](#) to provide networking capability.

If 557Set displays an adapter named

i82557-based Ethernet Adapter

you should use the configuration and diagnostics program that came with your computer or this network adapter. Do not use the Windows-supplied driver.

Adapter Settings

This window displays basic choices for the adapter model. 557Set displays only the choices that are supported by the adapter you have selected in the 557Set Main Window. Choices include network speed and duplex mode.



You must have your operating system configured to load the NDIS driver in order for 557Set to access these functions.

For more information on basic settings, click a topic below.

[Network Speed](#)

[Duplex Mode](#)

See also

[Advanced Adapter Settings](#)

[Troubleshooting](#)

Diagnostics for Windows 95

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 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 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 installing new versions of the driver.

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. 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 "82557-based PCI Adapter" (or similar) 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 557Set and clicking Test. When done testing, use the following procedure to 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 "82557-based PCI Adapter" (or similar) 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 Adapter Diagnostics from diskette, on a computer with Windows NT, use the following procedure:

- 1 Restart your computer in MS-DOS mode.
- 2 Insert the Disk Name in drive A or B 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 Ethernet Controller

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

Advanced Features

Recommended Value: On

This parameter is used for compatibility on some computers. If you experience network adapter problems, you may need to change this parameter to OFF.

Transmit Threshold

Recommended Value: On

This parameter is used for compatibility on some computers. If you experience network adapter problems, you may need to change this parameter to OFF.

Error messages

82557-based 10/100 TX PCI adapter

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](#)

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 Model. 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 Model.

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 Model 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 Model. 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](#)

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 – crossover 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 Model 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](#)

Close

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 "COMPANY ID Model PCI Adapter Driver."
- Make sure the driver is bound to the adapter and the light bulb icon is yellow.

[See also](#)

[Help Contents](#)

Close

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](#)

Close

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](#)

Close

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](#)

Close

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](#)

