

Help Contents

IBM 100/10 PCI Ethernet Adapters

This help file explains how to configure and test IBM 100/10 PCI Ethernet Adapters in Windows NT*.

Choose one of these topics:



[Configuration](#)



[Diagnostics](#)



[Troubleshooting](#)

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Configuration

IBM 100/10 PCI Ethernet Adapters

Lets you set the speed of your adapter.

When you install IBM 100/10 PCI adapters, your PCI computer automatically detects the adapter and assigns conflict-free settings. The only configuration option you can set is speed.

Configuration options:

[Network Speed](#)

To change your adapter's advanced settings, click the *Advanced...* button.

[See also](#)

[Advanced Configuration](#)

[Troubleshooting](#)



Advanced Configuration

IBM 100/10 PCI Ethernet Adapters

The advanced configuration options for 100/10 PCI adapters vary from version to version. To get specific help on your adapter, click one of the icons below.

Alternatively, you can go to the Advanced Configuration screen and click Help. This will get you help on the advanced options for your particular adapter.

My adapter has these features:



- Model number: EILA**8265**, PILA**8465**
- SW Release 1.x, 2.x
- First generation 100 Mbps adapter



- Model number: PILA**8465B**
- Model B SW Release 1.0
- Second generation 100 Mbps adapter
- Full Duplex support

The model number is on the sticker on the edge of the original box.



Advanced Configuration

IBM 100/10 PCI Ethernet Adapters

Lets you fine-tune your 100/10 PCI ETHERNET adapter.



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

Parameter

[Transmit Threshold](#)

[Map Registers](#)

[FIFO Depth](#)

[Coalesce Buffers](#)

[Receive Buffers](#)

[Transmit Control Blocks](#)

[Off Timer](#)

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Advanced Configuration

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Parameter

[Duplex Mode](#)

[Map Registers](#)

[Coalesce Buffers](#)

[Receive Buffers](#)

[Transmit Control Blocks](#)

See also

[Configuration](#)

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Diagnostics

IBM 100/10 PCI Ethernet Adapters

Lets you test your adapter's hardware, its cable connection, and its connection to the network.



If the driver isn't loaded, the diagnostics test the adapter's hardware directly and your network connection. You can run more extensive network tests by clicking the *Advanced...* button.

If the driver is loaded, the diagnostics test the functionality of the adapter's driver. This is a real-time test that indirectly verifies the adapter's hardware and network connection. Be aware that you can't run advanced diagnostics with the driver loaded.

Configuration

Lists the current I/O address and interrupt settings for your adapter.

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](#)

[Advanced Diagnostics](#)

[Configuration](#)



Diagnostics

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Driver Information

Lists the name of the Windows NT driver (NDIS 3.0), its version number, and its registry name.

Test Status

Displays test progress and the number of packets sent and received. The status also shows send/receive failures, which fluctuate depending on network traffic.

Remember that Ethernet is a collision-based architecture, so collisions are expected. Due to the driver being active, simply accessing the driver for the purposes of this test can induce some collisions and send/receive failures.

Results

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

[See also](#)

[Configuration](#)



Advanced Diagnostics

IBM 100/10 PCI Ethernet Adapters

Lets you test your adapter extensively across a network.



You cannot run advanced diagnostics with the driver loaded (if this is a first-time setup, the driver won't be loaded).

To unload the driver, click the Remove button in the Network Settings dialog box and reboot Windows NT. Then click the Add Adapter button in the Network Settings dialog box to run the IBM 100/10 adapter setup program again.

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** Sends packets continuously to the network. Click 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 100/10 PCI ETHERNET adapter 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). Click 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. The adapter will simply send packets to itself. Note: Simulating a Responder PC isn't a thorough test.

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

[Configuration](#)

[Diagnostics](#)

[Troubleshooting](#)



Troubleshooting

IBM 100/10 PCI Ethernet Adapters

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](#)



Can't find the adapter

Windows NT should be able to recognize a newly installed network adapter. The IBM 100/10 adapter setup program then lists all the IBM 100/10 adapters that it found in your computer. If you've installed an adapter and it isn't listed:

- Make sure it's an IBM 100/10 adapter you're trying to install.
- Make sure the adapter is seated firmly in the slot.
- Try a different slot.
- Check the [Event Viewer](#) to see if it recognized the adapter's driver during system startup.
- Shut down Windows NT, turn off your computer's power, then turn it back on and restart Windows NT. Then try adding the adapter again.
- Try a different adapter.

If Windows NT 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:

- 1 Restart Windows NT.
- 2 Double-click the Network icon from the NT Control Panel.
- 3 Select the IBM 100/10 adapter from the Installed Adapter Cards list and click Configure.

This launches the IBM 100/10 adapter setup program that automatically scans your computer's resources and determines what resources were assigned to the adapter. If you still have problems:

- Make sure the network cable is connected to your IBM 100/10 adapter and not to some other adapter.
- Make sure all adapters and devices are seated firmly in their slots.
- Check the [Event Viewer](#) for adapter or device errors.

If problems persist, contact your network services supplier.

Multiple adapters

To install multiple adapters, you must go through the "Add" or "Add Adapter" process.

While the IBM 100/10 Adapter setup program can list all the IBM 100/10 adapters in your computer, this doesn't mean the OS is necessarily aware of the adapter. You still need to "add" the adapter to the OS.

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.

Windows NT Diagnostics

Windows NT Diagnostics let you view your system settings and software versions. Use Windows NT Diagnostics to check for active Drivers, IRQ/Port Status, Environment settings, and more.

Setup

SETUP.EXE is the DOS configuration program for IBM 100/10 PCI Ethernet Adapters. It's available on the IBM Configuration and Drivers disk.

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 100/10 PCI ETHERNET adapter, select it from the Installed Adapter Cards list and click *Configure*.
- If you're adding a new 100/10 PCI ETHERNET adapter, click *Add Adapter* and from the Network Card list select "<Other> Requires disk from manufacturer." Then use the IBM Configuration and Drivers disk when prompted.

Network Speed

The speed at which your adapter operates. The default is Auto-detect. Other options are 10 or 100 Mbps.

When set to Auto-detect, the 100/10 PCI ETHERNET driver automatically senses the network speed (which the network hub determines).

You'll need to set the speed to either 10 or 100 Mbps if you don't have a hub that supports duplex mode auto-negotiating (most don't) and you want to configure the adapter for full-duplex support. See the [Duplex Mode](#) advanced configuration option for more information on duplexing.

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

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 NT's WINDOWSYSTEM32 directory). See your OS 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 an IBM 100/10 PCI 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 NT's 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 MapRegisters 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

Recommended Value: Duplex Mode = Auto-Negotiate

A performance option that lets you choose how the adapter sends and receives packets over the network.

Duplex modes:

- **Auto-negotiate** – the adapter negotiates with the hub how to send/receive packets, either full or half duplex.
- **Full duplex (requires a full-duplex hub)** – the adapter sends and receives packets at the same time. This improves the performance of your adapter.



You must set the Speed option to either 10 Mbps or 100 Mbps when setting the duplex mode to Full duplex. Don't leave the Speed set to Auto.

- **Half duplex** – the adapter performs one operation at a time – it either sends or receives.

A regular adapter can perform only one operation at a time (half-duplexing). The 100/10 PCI ETHERNET adapter has the ability to send and receive packets at the same time (full-duplexing). Configuring for full duplex requires a full duplex hub.

The 100/10 PCI ETHERNET adapter has the added ability to "talk" to the hub and determine at which mode to communicate (either full or half duplex). This is called auto-negotiation. However, if you have a full-duplex hub that doesn't support auto-negotiation (most don't), you'll need to set Duplex Mode = Full duplex to configure the adapter for full duplex.

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

On Timer

Recommended Value: ON Timer = 272

Limits the number of clock cycles an IBM 100/10 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 an IBM 100/10 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.

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: 1-128

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 IBM 100/10 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.

Error messages

[100/10 PCI Ethernet adapters](#)

Choose the error message you'd like to view.

100/10 PCI ETHERNET ADAPTER configuration messages

[4000 No available interrupts](#)

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100/10 PCI ETHERNET ADAPTER diagnostic failures

[5000 I/O address conflict](#)

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[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 100/10 PCI ETHERNET 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 100/10 PCI ETHERNET 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 100/10 PCI ETHERNET 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](#)

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4050 Internal loopback failure

Problem: This setup program has detected an internal loopback failure with the 100/10 PCI ETHERNET 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](#)

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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](#)

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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 [Windows NT 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](#)



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](#)

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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](#)

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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](#)

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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](#)

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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](#)

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4060 Not a bus mastering slot

Problem: Your computer's PCI BIOS doesn't have bus mastering enabled for the slot that the 100/10 PCI ETHERNET 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 "IBM 100/10 PCI Ethernet Driver."
- Make sure the driver is bound to the adapter and the light bulb icon is yellow.

[See also](#)

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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](#)

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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](#)

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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](#)

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IDS_IOTEST_FAILED "\tProblem:\t There may be a conflict between this adapter \r\n \t \t and another card in your computer.\r\n\r\n\tSolution:\t Use your computer's EISA configuration utility or PCI \r\n \t \t setup utility and move this adapter to another I/O address."

IDS_FLASH_TEST_FAIL "\tProblem:\t The adapter's flash chip failed diagnostics.\r\n \t \t There may be a configuration conflict.\r\n\r\n\tSolution:\t Use your PC's EISA configuration utility to select a different flash chip address.\r\n\r\n \t \t Click [Help](#) for details."

IDS_CABLE_TEST_FAILED "\tProblem:\t The cable isn't attached, is damaged, or is the wrong type.\r\n\r\n\r\n\tSolution:\t Make sure the cable is attached to the adapter.\r\n \t \t Try a different cable.\r\n \t \t Try a different interrupt.\r\n\r\n \t \t Click [Help](#) for details."

IDS_NETWORK_TEST_FAILED "\tProblem:\t Adapter failed network diagnostics. The problem may be with\r\n \t \t the cable, network, or computer.\r\n\r\n\r\n\tSolution:\t Make sure the cable is attached.\r\n \t \t Test the adapter in another PC.\r\n\r\n \t \t Click [Help](#) for details."

IDS_NO_TRANSMITS "\tProblem:\t The driver didn't send any packets. This may be caused\r\n \t \t by not having protocols bound to the driver.\r\n\r\n\r\n\tSolution:\t Verify protocol bindings from the Network Settings dialog box.\r\n\r\n \t \t Click [Help](#) for details."

IDS_TRANSMIT_FAILURES "\tProblem:\t The driver experienced a high number of transmit failures.\r\n\r\n\r\n\tSolution:\t Make sure the cable is securely attached to the adapter\r\n \t \t and run this test again.\r\n\r\n \t \t Click [Help](#) for details."

IDS_NO_RECEIVES "\tProblem:\t The driver didn't receive any packets at all.\r\n \t \t This may be caused by a bad or missing cable.\r\n\r\n\r\n\tSolution:\t Make sure the cable is securely attached and run\r\n \t \t this test again.\r\n\r\n \t \t Click [Help](#) for details."

IDS_RECEIVE_FAILURES "\tProblem:\t The driver experienced excessive receive failures.\r\n \t \t This may be due to a bad or out of spec cable,\r\n \t \t or a hub/repeater problem.\r\n\r\n\r\n\tSolution:\t Check your cabling and your hub.\r\n\r\n \t \t Click [Help](#) for details."

IDS_EXCESSIVE_COLLISIONS "\tProblem:\t The driver experienced excessive collisions.\r\n \t \t This may be due to a very busy network, a bad cable, or a\r\n \t \t hub/repeater problem.\r\n\r\n\r\n\tSolution:\t Check your cabling and your hub.\r\n\r\n \t \t Click [Help](#) for details."

