◆ **BLACK BOX**®
NETWORK SERVICES

PCI Fiber Adapters 10BASE-T/10BASE-FL with ST or SC and RJ-45 Connectors
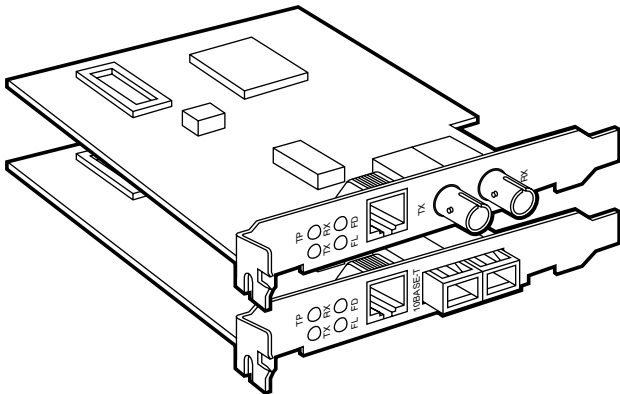
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FEDERAL COMMUNICATIONS COMMISSION
AND
INDUSTRY CANADA
RADIO FREQUENCY INTERFERENCE STATEMENTS

This equipment generates, uses, and can radiate radio frequency energy and if not installed and used properly, that is, in strict accordance with the manufacturer's instructions, may cause interference to radio communication. It has been tested and found to comply with the limits for a Class A computing device in accordance with the specifications in Subpart B of Part 15 of FCC rules, which are designed to provide reasonable protection against such interference when the equipment is operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference, in which case the user at his own expense will be required to take whatever measures may be necessary to correct the interference.

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

This digital apparatus does not exceed the Class A limits for radio noise emission from digital apparatus set out in the Radio Interference Regulation of Industry Canada.

Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de classe A prescrites dans le Règlement sur le brouillage radioélectrique publié par Industrie Canada.

$\mathsf{C}\,\mathsf{E}$

The equipment described in this document is CE certified.

NORMAS OFICIALES MEXICANAS (NOM)
ELECTRICAL SAFETY STATEMENT

INSTRUCCIONES DE SEGURIDAD

1. Todas las instrucciones de seguridad y operación deberán ser leídas antes de que el aparato eléctrico sea operado.

2. Las instrucciones de seguridad y operación deberán ser guardadas para referencia futura.

3. Todas las advertencias en el aparato eléctrico y en sus instrucciones de operación deben ser respetadas.

4. Todas las instrucciones de operación y uso deben ser seguidas.

5. El aparato eléctrico no deberá ser usado cerca del agua—por ejemplo, cerca de la tina de baño, lavabo, sótano mojado o cerca de una alberca, etc..

6. El aparato eléctrico debe ser usado únicamente con carritos o pedestales que sean recomendados por el fabricante.

7. El aparato eléctrico debe ser montado a la pared o al techo sólo como sea recomendado por el fabricante.

8. Servicio—El usuario no debe intentar dar servicio al equipo eléctrico más allá a lo descrito en las instrucciones de operación. Todo otro servicio deberá ser referido a personal de servicio calificado.

9. El aparato eléctrico debe ser situado de tal manera que su posición no interfiera su uso. La colocación del aparato eléctrico sobre una cama, sofá, alfombra o superficie similar puede bloquea la ventilación, no se debe colocar en libreros o gabinetes que impidan el flujo de aire por los orificios de ventilación.

10. El equipo eléctrico deber ser situado fuera del alcance de fuentes de calor como radiadores, registros de calor, estufas u otros aparatos (incluyendo amplificadores) que producen calor.

11. El aparato eléctrico deberá ser connectado a una fuente de poder sólo del tipo descrito en el instructivo de operación, o como se indique en el aparato.

12. Precaución debe ser tomada de tal manera que la tierra fisica y la polarización del equipo no sea eliminada.

13. Los cables de la fuente de poder deben ser guiados de tal manera que no sean pisados ni pellizcados por objetos colocados sobre o contra ellos, poniendo particular atención a los contactos y receptáculos donde salen del aparato.

14. El equipo eléctrico debe ser limpiado únicamente de acuerdo a las recomendaciones del fabricante.

15. En caso de existir, una antena externa deberá ser localizada lejos de las lineas de energia.

16. El cable de corriente deberá ser desconectado del cuando el equipo no sea usado por un largo periodo de tiempo.

17. Cuidado debe ser tomado de tal manera que objectos liquidos no sean derramados sobre la cubierta u orificios de ventilación.

18. Servicio por personal calificado deberá ser provisto cuando:

    A: El cable de poder o el contacto ha sido dañado; u

    B: Objectos han caído o líquido ha sido derramado dentro del aparato; o

    C: El aparato ha sido expuesto a la lluvia; o

    D: El aparato parece no operar normalmente o muestra un cambio en su desempeño; o

    E: El aparato ha sido tirado o su cubierta ha sido dañada.

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Contents

1. Specifications

Transmission Speed—10 Mbps

Interface—10BASE-T: (1) RJ-45 modular jack;
  10BASE-FL: LE1352C-ST: (2) ST® connectors,
  LE1353C-SC: (2) SC connectors

Cable Distance—10BASE-T: 328 ft. (100 m);
  10BASE-FL: 656 ft. (200 m)

Temperature—Operating: 32 to 122°F (0 to 50°C);
  Storage: -13 to 185°F (-25 to +85°C)

Humidity—Up to 90% noncondensing

EMI/Safety—FCC, CE, ETL

Power—5 VDC

Size—4.7" x 3.9" (1.2 x 1 cm)

Weight—0.19 lb. (0.86 kg)

2. Introduction

The PCI Fiber Adapters are IEEE 802.3 compliant
network adapters for use in PCI bus personal computers.
Each of the two NICs supports a 10BASE-FL interface,
and also supports a 10BASE-T interface. Available
models include the following:

- 10BASE-T/10BASE-FL with ST and RJ-45
  Connectors (LE1352C-ST)

- 10BASE-T/10BASE-FL with SC and RJ-45
  Connectors (LE1353C-SC)

No hardware jumpers or switches are required to
configure the Adapters. Models with two interfaces will
automatically select the interface that has an active link
attached.

3. Installation

3.1 Installing the Drivers

3.1.1 NIC SOFTWARE

Installing the software drivers for the environments listed below is described in this section. Other operating environments are also supported. You should also refer to the manual for the operating environment in which the NIC is going to be used.

- Novell Netware 3.12, 4.1x (Server ODI, DOS ODI Client)

- Microsoft Windows for Workgroups 3.11 (NDIS 2.01/NDIS 3.x)

- Microsoft Windows 95 (NDIS 3.x, NDIS4.x)

- Microsoft Windows NT 3.1, 3.5 (NDIS 3.x), 3.51, 4.0 (NDIS 3.x/NDIS4.x)

- Universal Boot ROM for Novell NetWare 3.1x, 4.x

3.1.2 WINDOWS 95

For new and replacement installations, we recommend that you upgrade the configuration file (Netamd.inf) before installing the network interface card. Using the PCI Fiber Adapters Installation Diskette, follow these instructions:

1. If replacing an existing network interface card, first remove the network drivers currently installed; otherwise skip to step 2. To remove existing network interface card drivers, click on Startup, choose Settings, Control Panel, then System. Under Device Manager select the network interface card to be removed and click on the remove button. When prompted to re start your computer select NO.

2. In the c:\windows\inf directory, rename the file netamd.inf to netamd.sav.

NOTE

c:\windows\inf is a hidden directory.

3. From the Adapter Installation Diskette, copy the file Netamd.inf from <drive>:\win95\ndis3 to c:\windows\inf.

NOTE

If supported by the installed version of Windows, you may use the NDIS4 driver. In this case, copy the Netamd.inf file from <drive>:\win95\ndis4.

4. Shut down the system and install the PCI Fiber Adapter. If replacing a network interface card, remove the existing card at this time.

5. On reboot, Windows 95 should detect the network interface card installed in the system and prompt the user for the path on the distribution floppy.

   For example: a:\win95\ndis3

6. Other files required by Windows 95 will then be copied from the Windows 95 Distribution disks or CD-ROM.

7. When installation is complete, you will be prompted to shut down the system. When the system comes up again, the network should be up and running.

NOTE

You may elect not to shut the system down at this time but rather continue to install and configure other networking components (e.g. protocols, adapters) before shutting down and rebooting the system.

3.1.3 WINDOWS NT 3.1 AND 3.5

NOTES

Only x86-based Windows NT platforms are supported. For additional information, refer to your Microsoft Windows NT OS documentation.

To lnstall the PCI Fiber Adapter Driver in a Windows NT 3.1 or 3.5 environment, follow the steps listed below.

1. Insert the Driver diskette into the floppy drive.

2. From the Control Panel in the Windows NT Main window, double-click on the Network icon.

3. In the Network Settings window, choose Add Adapter.

4. In the Add Network Adapter window, pull down the adapter card list menu and select "<Other> Requires disk from manufacturer" from the list and continue.

5. In the next window, enter: A:\WINNT350

6. A Select OEM Option window will be presented, from which BLACK BOX PCI NIC should be selected. Click on OK.

7. A configuration window will then be presented in which the advanced features of the NIC may be selected. For normal/default operation of the NIC, simply click on OK. See **Appendix B** for information on the advanced configuration options supported by the NIC.

NOTE

The default bus type ALL may not work on some PCI-based systems. In this case, try selecting PCI1 or PCI2.

8. The Network Settings window will appear next. Choose Bindings, then configure the remaining network components.

9. When configuration is completed, choose Close to restart the system and activate the new configuration.

3.1.4 WINDOWS NT 3.51

NOTES

Only x86-based Windows NT platforms are supported. For additional information, refer to your Microsoft Windows NT OS documentation. To install the Driver in a Windows NT 3.51 environment, follow the steps listed on the next page.

1. Insert the PCI Fiber Adapters Driver diskette into the floppy drive.

2. From the Control Panel in the Windows NT Main window, double-click on the Network icon.

3. In the Network Settings window, choose Add Adapter.

4. In the Add Network Adapter window, pull down the adapter card list menu and select "<Other> Requires disk from manufacturer" from the list and continue.

5. In the next window, enter: A:\WINNT\NDIS3

6. A Select OEM Option window will be presented from which you should select PCI Fiber Adapter. Click on OK.

7. A configuration window will then be presented from which the advanced features of the NIC may be selected. For normal/default operation of the NIC, simply click on OK. See **Appendix B** for information on the advanced configuration options supported by the NIC.

8. The Network Settings window will appear next. Choose Bindings, then configure the remaining network components.

9. When configuration is complete, choose Close to restart the system and activate the new configuration.

3.1.5 WINDOWS NT 4.0 NDIS3

NOTE

Only x86-based Windows NT platforms are supported. For additional information, refer to your Microsoft Windows NT OS documentation.

To install the PCI Fiber Adapter using the NDIS3 driver, follow the steps listed below.

1. Insert the Adapter Driver diskette into the floppy drive.

2. From the Control Panel in the Windows NT Main window, double-click on the Network icon, then click on the Adapters tab and choose Add.

3. In the Add Network Adapter window, click on the Have Disk button and in the next window, enter: A:\WINNT\NDIS3

4. From the adapter list in the Select OEM Option window, select PCI Fiber Adapter and click on OK.

5. A configuration dialog box will then be presented in which the advanced features of the NIC may be selected. For normal/default operation of the NIC, simply click on OK. See **Appendix B** for information on the advanced configuration options supported by the NIC.

6. To continue configuration of other network components, click on the appropriate tabs beginning with Bindings. When finished configuring the network components, click on Close. You will then be prompted to restart the computer.

3.1.6 WINDOWS NT 4.0 NDIS

NOTE

Only x86-based Windows NT platforms are supported. For additional information, refer to your Microsoft Windows NT OS documentation.

To install the PCI Fiber Adapter Driver in a Windows NT 4.0 environment using the NDIS4 driver, follow the steps listed below.

1. Insert the PCI Fiber Adapter Driver diskette into the floppy drive.

2. From the Control Panel in the Windows NT Main window, double-click on the Network icon, then click on the Adapters tab and choose Add.

3. In the Select Network Adapter window, click on the Have Disk button and in the next window, enter: A:\WINNT\NDIS4

4. From the adapter list in the Select OEM Option window, select PCI Fiber Adapter and click on OK.

5. To configure the advanced features of the NIC, click on Properties. For normal operation of the NIC, no advanced configuration is necessary. See **Appendix B** for information on the advanced configuration options supported by the NIC.

6. To continue configuration of other network components, click on the appropriate tabs beginning with Bindings. When finished configuring the network components, click on Close. You will then be prompted to restart the computer.

3.1.7 WINDOWS FOR WORKGROUPS

Microsoft Windows for Workgroups 3.11 supports both NDIS2.01 and NDIS3 drivers. Both of these NDIS drivers are provided on the PCI Fiber Adapters Driver diskette.

To lnstall the PCI Fiber Adapter Driver in a Windows for Workgroups 3.11 environment, follow the steps listed below,

1. Insert the PCI Fiber Adapter Driver diskette into the floppy drive.

2. In the Windows for Workgroups 3.11 Program Manager, double click on the Windows Setup icon.

3. From the Options Menu, select Change Network Settings.

4. From the Network Setup window, select the Drivers... button to install the NDIS2.01 and NDIS3 drivers.

5. In the Network Drivers window, select the Add Adapter to install the device drivers.

6. In the Add Network Adapter window, choose the "Unlisted or Updated Network Adapter" from the menu and then click on OK.

7. The Install Driver window will appear. Enter the drive and path to the Windows for Workgroups 3.11 directory: A:\WFW311 Then select OK.

8. From the Network Adapters list, select PCI Fiber Adapter, then click on OK to continue.

9. A Network Drivers window will be presented from which other network components and the advanced features of the NIC may be selected. For normal/default operation of the NIC, simply click on Close. To configure the advanced features, click on Setup, then Advanced. See **Appendix B** for information on the advanced configuration options supported by the NIC.

10. Select OK to exit. Windows for Workgroups 3.11 will prompt you to reboot the computer.

3.1.8 NOVELL NETWARE ODI

Open Datalink Interface (ODI) is a driver specification developed by Novell to offer a standard driver interface

for Novell NetWare. Driver support is provided for the following environments:

- NetWare DOS ODI Client

- NetWare Server ODI 3.12

- NetWare Server ODI 4.1x

Installation procedures for each of the above drivers are described in the following sections.

Novell NetWare DOS ODI Client

You can install the NetWare DOS ODI client driver using the Novell Installation utility. Follow the steps below.

1. Insert the Netware Client for DOS and MS Windows Installation Diskette #1 lnto the floppy drive.

2. Change to the drive containing the installation diskette and run the installation program by entering: INSTALL

3. Follow the installation instructions presented by the program. When instructed to load the driver,

insert the PCI Fiber Adapters Driver diskette into the drive and enter the path:
A:\NOVELL\CLIENT\DOSODI

4. Select PCI Fiber Adapter in the Network Board Window.

5. Exit the utility. For normal operation of the NIC, no further configuration is necessary. See **Appendix B** for information on the advanced configuration options supported by the NIC.

6. Restart the computer.

Novell NetWare Server 3.12

For a NetWare Server 3.12 configuration, a NetWare 3.12 Server ODI driver is provided on the PCI Fiber Adapter Driver Diskette.

The LOAD and BIND commands are used to load the NetWare 3.12 ODI server driver as described on the next page. For more information on these commands, refer to the Novell NetWare 3.12 LAN Driver Installation documentation.

Follow the steps listed below:

1. Install NetWare 3.12 on your system.

2. Copy the ODI Server driver (PCNTNW.LAN) from the PCI Fiber Adapter Driver Diskette to the hard-disk directory where the NetWare 3.12 system files are located. The following path should be used to access the files from the Installation Diskette:

   A:\NOVELL\SERVER\3.12\PCNTNW.LAN

3. Boot NetWare by executing SERVER.EXE. Refer to the appropriate Novell NetWare documentation on loading disk drivers and mounting volumes for more information.

4. To load the driver automatically on startup of the server, you must first edit the AUTOEXEC.NCF file.

a. Type "LOAD INSTALL" at the server prompt (":") to access the Install Utility.

NOTE

You will need to specify the DOS path if the driver is located in a DOS partition.

b. Open the SYSTEM OPTIONS menu to access EDIT AUTOEXEC.

c. Add the following command lines to the AUTOEXEC.NCF file.

LOAD C:\PCNTNW LED0=c4 LED1=90 LED2=180

BIND IPX TO PCNTNW NET=xxxx (Bind to IPX or any other protocol stack; where e.g. xxxx=1234)

NOTE

In the LOAD command, the keywords LED0, LED1, and LED2 must be included with the values shown for proper operation of the NIC diagnostic LEDs. See the Novell NetWare 3.12 Installation manual for information on the use of other keywords with the LOAD and BIND commands (e.g. FRAME, BOARD, NET, etc.).

The installation of the NetWare Server 3.12 driver is now complete.

Novell NetWare Server 4.1x

For a NetWare Server 4.1x configuration, a NetWare 4.1x Server ODI driver is provided on the PCI Fiber Adapter Driver Diskette.

To load the NetWare 4.1x ODI server driver, the appropriate LOAD and B IND commands must be added to the server startup procedure. For more infor mation on these commands, refer to the Novell NetWare LAN Driver Installation documentation. The Novell INETCFG utility may be used to add these com mands. Follow the steps listed below:

1. Install Novell NetWare Server 4.1x on your system.

2. Start the server by executing SERVER.EXE.

3. Insert the PCI Fiber Adapter Driver diskette into the floppy drive.

4. At the server prompt (:), enter: LOAD INETCFG

5. From the Internetworking Configuration window, select Boards.

6. Press the Insert key to obtain a list of available network card drivers. If the Black Box driver is in the list, skip to step 8.

7. Hit Insert a second time to add the driver. In the New Drive window, enter:
   a:\novell\server\4.lx\blackbox.lan

8. Select the appropriate driver From the Available Drivers list. For the Black Box NIC select BLACKBOX.

9. A Board Configuration window will be presented. Only the Board Name needs to be specified for normal operation of the NIC. The NIC may be configured with more advanced features (such as TP Only or Duplex) at this time. See **Appendix B** for information on the advanced configuration options supported by the NIC.

10. Hit the escape key to save the configuration and return to the Configured Boards window. If more than one NIC is to be configured, return to step 6. Otherwise, hit the escape key a second time to continue with configuration of the server from the Internetworking Configuration window. See the Novell Installation Manual for server configuration details.

11. When server configuration is complete, hit escape to exit INETCFG and restart the server for the new configuration to take effect.

3.2 Installing a Universal Boot ROM

Remote booting of a workstation from a Novell server is supported by the NIC when a boot ROM in installed on the NIC. Follow the steps below to install and set up a workstation for remote booting.

NOTE

You will need to order a Boot ROM; call Technical Support for details.

The boot ROM code is supplied on the PCI Fiber Adapters Driver Diskette for users who wish to supply and install their own boot ROM. Any 250 ns or faster EEPROM 16k or greater in size may be used. The boot ROM code is in Intel MCS-86 hex format.

1. Insert the Boot ROM into the 28-pin socket.

2. Follow the Boot ROM installation procedure outlined in the Novell Installation Manual to prepare the server to support remote booting.

3. Next, perform a remote boot from the server. The diskless workstation will display some sign-on messages followed by:

To boot from Novell Server, press s1. To boot from IBM LAN Server 2x and 3x, press s2. To boot from IBM LAN Server 4x, press s3. To boot from Microsoft LAN Manager, press s4. To boot from the first available server, press s5.

If no selection within 30 seconds, will use choice 5 Please, make your choice now!

You may now make a selection by pressing the appropriate number. If nothing is selected within 30 seconds, the appropriate server be selected by auto-detect. This is also used to support works without a keyboard and monitor. After the selection is made, the remote-boot process is started.

NOTE

This version of Boot ROM does not display the "Boot from Network (Y/N)" message. Make sure you do not have a bootable device in the system (i.e., no A or C drive). In a diskless system with a bootable device, this Boot ROM will take over the boot process.

3.3 Cable Requirements

3.3.1 FIBEROPTIC CABLE REQUIREMENTS

The Adapters use 62.5/125-µm multi-mode fiberoptic

cable. With standard cable (3.75 dB/km loss), the link segment can be at least 1.2 miles (2 km) long. With low-loss cable, you can get even greater distances. You can also use other multi-mode cables, such as 50/125-, 85/125-, and 100/140-µm. Cable distances will depend on the fiber characteristics. The receiver requires a minimum of -33.0 dBm average received power to operate. The transmitter will launch -14.0 dBm (±2.0 dB) into 62.5/125-µm fiber. Keep this in mind when budgeting the link-segment distance.

3.3.2 TWISTED-PAIR CABLE REQUIREMENTS

The Adapter accepts a standard 8-position RJ-45 modular plug terminated to shielded or unshielded twisted pair cable that meets IEEE 802.3 10BASE-T

requirements. Use cables rated as Category 3, 4, 5, or higher.

4. Diagnostics

Four LEDs indicate various conditions:

	Indication	Off solid	On solid	Blinking
TP/RX	10BASE-T link/ Receive data on 10BASE-FL interface	No link signal detected on 10BASE-T interface	Link signal detected on 10BASE-T interface or NIC configured to force use the 10BASE-T interface	Data received on 10BASE-FL interface
TX	Data trans-mission on 10BASE-FL or 10BASE-T interface	No data being transmitted	N/A	Data transmission in progress
FL	10BASE-FL link	No link signal detected on 10BASE-FL	Link signal detected 10BASE-FL interface	N/A

		interface		
FD	Duplex Operation	Half-duplex mode	Full-duplex mode	N/A

Appendix A: Error Messages

A.1 Novell DOS ODI Driver

Message: PCNTNW-DOS-1: The LSL is not loaded.

Meaning: The Link Support Module program (LSL.COM) is not loaded.

Action: Load the LSL.COM before loading the driver.

Message: PCNTNW-DOS-2: The LSL has no more room for a board using Frame <string>

Meaning: The maximum number of boards, whether virtual or physical, has been registered with the Link support layer. The DOS ODI LSL can support up to eight boards.

Action: Reduce the number of active boards in the systems by unloading a board or by decreasing the number of frame types activated by MLID.

Message: PCNTNW-DOS-3: Could not find PCNTNW

MLID to unload

Meaning: A request was made to unload PCNTNW MLID, but the MLID is not loaded.

Action: None

Message: PCNTNW-DOS-4: A TSR is loaded above the PCNTNW MLID.

Meaning: You tried to unload the PCNTNW MLID from memory, but the PCNTN MLID detected another Terminate-and-Stay-Resident program load above the MLID. For the PCNTNW MLID to safely unload, TSRs that were loaded after it must be unloaded first.

Action: Either load the other TSR before loading the PCNTNW MLID or unload the TSR before trying this operation.

Message: PCNTNW-DOS-5: PCNTNW MLID could not be unloaded; the operation was aborted.

Meaning: The PCNTNW MLID was attempting to remove the resident PCNTNW MLID from memory. The PCNTNW MLID was unable to successfully shut

down the resident PCNTNW MLID. A hardware failure has probably occurred.

Action: Verify that the NIC is correctly installed in the computer.

Message: PCNTNW-DOS-7: You need another PCNTNW MLID Section Heading in the NET.CFG file in order to load the MLID again.

Meaning: You tried to load the PCNTNW MLID a second time. Normally, you would do this so that you could use two or more boards in the workstation. When two or more of the same type of network boards are installed in the workstation, an associated PCNTNW MLID section heading must be specified in the NET.CFG file.

Action: Create a NET.CFG file and add the commands for both PCNTNW MLI boards to the file. Then reboot the workstation.

Message: PCNTNW-DOS-8: A NET.CFG is required to load the MLID again.

Meaning: You tried to load the PCNTNW MLID a

second time. Normally, you would do this so that you could use two or more boards in the workstation. When two or more of the same type of network boards are installed in the workstation, an associated PCNTNW MLID section heading must be specified in the NET.CFG file.

Action: Create a NET.CFG file and add the commands for both PCNTNW MLI boards to the file. Then reboot the workstation.

Message: PCNTNW-DOS-9: The NET.CFG entry has been ignored.

Meaning: The PCNTNW ignored the NET.CFG entry.

Action: You may want to modify the NET.CFG file to delete or change the entry in question.

Message: The PCNTNW MLID has been successfully removed.

Meaning: A request was made to unload an PCNTNW MLID, and the PCNTNW MLID was removed from memory.

Action: None

Message: PCNTNW-DOS-11: The MLID does not support frame <string>. The protocol keyword has been ignored.

Meaning: The "PROTOCOL" option was specified in the NET.CFG for an PCNT NW MLID. The specified frame type is not supported by the PCNTNW MLID.

Action: Check the "PROTOCOL" line in the NET.CFG file for possible omisslons of required dashes and underscores or any misspellings.

Message: PCNTNW-DOS-12: The protocol keyword must have a frame type. Entry ignored.

Meaning: The "PROTOCOL" option was specified in the NET.CFG for an PCNT NW MLID. The entry failed to specify the associated frame type for the protocol ID addition. An entry in the NET.CFG file for the "PROTOCOL" should look similar to the following:

```
LINK DRIVER PCNTNW
PROTOCOL IPX 8137 ETHERNET_II
```

Action: Specify a frame with the "PROTOCOL" option.

Message: PCNTNW-DOS-13: The MLID could not register Protocol <string> for protocol stack <string> for frame type.

Meaning: The PCNTNW MLID could not register the specified Protocol ID.

Action: Verify the protocol information in the NET.CFG file.

Message: PCNTNW-DOS-14: This version of LSL is not supported.

Meaning: The PCNTNW MLID cannot run correctly using this version of the LSL.

Action: Update your LSL.COM to a newer version.

Message: PCNTNW-DOS-15: The frame type is already activated for frame <string>. The NET.CFG entry has been ignored.

Meaning: Two "Frame" keywords under the same main section heading specified the same frame type. A frame

type may be specified only once per driver.

Action: Remove the duplicate "Frame" keyword entry.

Message: PCNTNW-DOS-16: The node address was incorrectly specified in NET.CFG.

Meaning: You used the "NODE ADDRESS" option in the NET.CFG file to override the node address on the network board. The number specified was not a valid Ethernet node address. An Ethernet address is six bytes long. This error occurs if Bit 0 of the first address byte is a 1. This bit must always be 0. For example, if the first byte has the following address, an invalid Ethernet address is generated.

0	7	6	5	4	3	2	1
1	0	0	0	0	0	0	0

This byte will produce node addresses in the 0100 0000 0000 to 01FF FFFF FFFF range, all of which will be invalid.

Action: Change the NET.CFG file so that a valid node address is specified.

Message: PCNTNW-DOS-17: An invalid keyword was

specified in NET.CFG on line xx.

Meaning: The keyword specified in NET.CFG file is incorrect.

Action: Check the keyword in question. Make sure that the keyword is correctly spelled.

Message: PCNTNW-DOS-18: The frame type specified in NET.CFG is not supported.

Meaning: The "PROTOCOL" option was specified in the NET.CFG for an PCNT NW MLID. The specified frame type is not supported by the PCNTNW MLID.

Action: Check the "PROTOCOL" line in the NET.CFG file for possible omissions of required dashes and underscores or any misspellings.

Message: PCNTNW-DOS-19: An invalid Ethernet node address is specified in NET.CFG. The MLID modified the incorrect address bits.

Meaning: The NET.CFG has an invalid node address. The PCNTNW MLID modified and corrected the address.

Action: You may want to correct the node address line in the NET.CFG file.

Message: PCNTNW-DOS-50: The board cannot be found.

Meaning: The board is either not physically present or not configured correctly.

Action: Make sure that the board is physically present in the system. Remove I/O, IRQ, and DMA settings int the NET.CFG file. If this message still appears, replace the board.

Message: PCNTNW-DOS-54: The board did not respond to the initialization command.

Meaning: The board initialization failed.

Action: Replace the board.

Message: PCNTNW-DOS-58: The board did not respond to the initialization command.

Meaning: The EEPROM may be corrupted.

Action: Replace the board.

Message: PCNTNW-DOS-59: Buffers could not be locked.

Meaning: An attempt was made to lock buffers for direct access. The attempt failed.

Action: Check the memory manager's documentation and make sure that it supports a memory manager VDS

(Virtual DMA Server). If in doubt, either use another memory manager or do not use it.

Message: PCNTNW-DOS-61: PCI device IRQ number mismatch.

Meaning: The IRQ number specified in NET.CFG mismatches with the IRQ number assigned by the PCI BIOS.

Action: Remove the IRQ number in NET.CFG.

Message: PCNTNW-DOS-64: Device not found.

Meaning: The driver cannot find the NIC.

Action: Verify that the NIC is installed or replace the existing NIC.

Message: PCNTNW-DOS-65: Device not found at IOADDRESS.

Meaning: The device cannot be found at the IO Address specified in NET.CFG.

Action: Verify that the IO Address in NET.CFG matches with the board. Otherwise, remove the PORT keyword from NET.CFG.

Message: PCNTNW-DOS-66: PCI scan can only execute on a 386 and higher processor.

Meaning: The PCI bus is not available on your system. The PCI bus is only supported on a 386 or higher processor.

Action: Do not specify PCI for BUSTYPE with your current system setup.

Message: PCNTNW-DOS-67: PCI scan specified, device not found.

Meaning: The driver cannot locate the NIC on the PCI bus. Actlon Verify that the NIC is physically installed properly. Use the BUSTYPE keyword to specify PCI1 or PCI2 values if the PCI mechanism is known for your system. Otherwise, replace the NIC.

Message: PCNTNW-DOS-73: PCI BIOS not present.

Meaning: The PCI system does not have PCI BIOS support. The driver will try to scan the bus to find AMD's PCI driver.

Action: None.

Message: PCNTNW-DOS-75: Unsupported bus ID specified.

Meaning: The bus ID number specified in NET.CFG is not supported by Nov ell.

Action: Correct the bus ID number in the NET.CFG.

Message: PCNTNW-DOS-76: Wrong bus ID specified.

Meaning: The bus ID number specified in NET.CFG is different from the bus type found in the system.

Action: Correct the bus ID number in the NET.CFG.

Message: PCNTNW-DOS-77: Driver does not support slave mode.

Meaning: The hardware is configured as a slave board.

Action: Change to a bus master board.

Message: PCNTNW-DOS-80: DMA number is not necessary for PCI device.

Meaning: The NIC does not require a DMA setting.

Action: Remove DMA from NET.CFG.

A.2 Novell Server ODI Driver Error Messages

Message: PCNTNW-NW-054: The board did not respond to the initialization command.

Meaning: The board did not respond when the software tried to initialize it.

Action: Make sure that the board is physically present in the system. If present, the board may be defective.

Message: PCNTNW-NW-58: The board did not respond to the initialization command.

Meaning: The EEPROM may be corrupted.

Action: Replace the NIC.

Message: PCNTNW-NW-59: Buffers could not be locked.

Meaning: An attempt was made to lock buffers for direct access. The attempt failed.

Action: Check the memory manager's documentation and make sure that it supports a memory manager VDS (Virtual DMA Server). If in doubt, either use another memory manager or do not use it.

Message: PCNTNW-NW-071: The matching virtual adapter could not be found.

Meaning: You tried to load another instance of the driver with a different I/O address. This new board could not be found. Action Make sure that the board is physically present. Also check the I/O settings of the board with the settings supplied to the driver.

Message: PCNTNW-NW-072: A resource tag in unavailable.

Meaning: The driver tried to allocate some resources. These resources were unavailable.

Action: Try to add and/or free some memory in the system. Reboot and restart the system.

Message: PCNTNW-NW-073: Unable to allocate memory.

Meaning: The driver failed to allocate the memory needed for normal operation.

Action: Add more memory in the system or else free some memory resources in the system and reboot the machine.

Message: PCNTNW-NW-074: The hardware interrupt cannot be set.

Meaning: An attempt was made to initialize a given hardware interrupt. The attempt was not successful.

Action: Check the hardware system to make sure that no other device is using this interrupt in the system.

Message: PCNTNW-NW-075: The MLID cannot be registered with the LSL.

Meaning: An error occurred while the driver was trying to register with Link Support Layer.

Action: Check the version of NetWare operating system. Make sure that this driver is for the version of NetWare you are running. Restart the complete system.

Message: PCNTNW-NW-076: The polling procedure cannot be added.

Meaning: An error occurred while the driver was adding polling procedure to the NetWare operating system polling routines.

Action: Check the version of NetWare operating system. Make sure that this driver is for the version of NetWare you are running. Restart the complete system.

Message: PCNTNW-NW-077: The event notification

cannot be registered.

Meaning: The driver failed to register its event notification routines with the NetWare operating system.

Action: Check the version of NetWare operating system. Make sure that this driver is for the version of NetWare you are running. Restart the complete system.

Message: PCNTNW-NW-078: The firmware file cannot be read.

Meaning: The driver tried to read a firmware file. The read process failed.

Action: Make sure that the support files accompanying the driver are present. Reboot and restart the complete system.

Message: PCNTNW-NW-079: The MLID did not initialize MSMTx Free Count.

Meaning: The MSMTx Free Count is not initialized correctly.

Action: Restart the system. If error is still present,

replace the NIC.

Message: PCNTNW-NW-084: Unable to allocate memory below the 16-megabyte boundary.

Meaning: A request was made to allocate memory below 16 megabytes. The request failed to complete successfully.

Action: Free some memory below 16 megabytes or add some more memory below the 16-megabyte boundary.

Message: PCNTNW-NW-086: The driver parameter block is too small.

Meaning: The driver parameter block is too small.

Action: Restart the system. If the error is still present, replace the NIC.

Message: PCNTNW-NW-087: The media parameter block is too small.

Meaning: The driver media parameter block is too small.

Action: Restart the system. If error is still present,

replace the NIC.

Message: PCNTNW-NW-091: The hardware configuration conflicts.

Meaning: You tried to load a new frame type for the existing adapter. The hardware assumptions made in doing so are incorrect.

Action: Check the manual of your card and also check the physical hard ware. Make sure that your hardware configuration matches the software settings.

Message: PCNTNW-NW-092: Cannot schedule AES without an HSM routine.

Meaning: The NetWare operating system needs a Hardware Support Module routine before it can schedule an AES event.

Action: Restart the system. If the error is still present, replace th e NIC.

Message: PCNTNW-NW-093: Cannot schedule interrupt time call back without an HSM routine.

Meaning: The driver needs a Hardware Support Module routine before it can schedule an interrupt time call back.

Action: Restart the system. If the error is still present, replace the NIC.

Message: PCNTNW-NW-094: Cannot set hardware interrupt without an HSM routine.

Meaning: The driver needs a hardware interrupt call back routine before it sets the interrupt.

Action: Restart the system. If the error is still present, replace the NIC.

Message: PCNTNW-NW-095: Cannot add polling without an HSM routine.

Meaning: The driver needs an HSM polling routine before it can start the polling process.

Action: Restart the system. If the error is still present, replace the NIC.

Message: PCNTNW-NW-026: The MSM in unable to

parse a required custom keyword.

Meaning: An incorrect parameter keyword was entered by the user.

Action: Check the manual and make sure the keyword entered is correctly spelled. Reload the driver.

Message: PCNTNW-NW-126: The group bit in the node address override was cleared.

Meaning: The IEEE address has a group bit indicating that an address belongs to a group of stations. This bit is only used for destination address and not source address. You tried to enter a source address with this bit set. The driver cleared the group bit of the source address.

Action: None.

Message: PCNTNW-NW-127: The local bit in the node address override was set.

Meaning: The local bit in the IEEE address format indicates that the addresses are being managed locally. If you use the node address override capabilities of this

driver to enter a new address, then the local bit should be set. You entered an address without the local bit set. The driver has set the local bit.

Action: None

Message: PCNTNW-NW-164: Device not found.

Meaning: The driver cannot find the NIC.

Action: Verify that the NIC is installed. Replace the NIC.

Message: PCNTNW-NW-165: Device not found at IOADDRESS.

Meaning: The device cannot be found at the IO Address specified in NET.CFG file.

Action: Remove the PORT keyword from NET.CFG file.

Message: PCNTNW-NW-167: PCI scan specified, device not found.

Meaning: The driver cannot locate the NIC on the PCI bus.

Action: Verify that the PCI board is physically installed

properly. Use the BUSTYPE keyword to specify PCI1 or PCI2 values if the PCI mechanism is known for your system. Otherwise, replace the card.

Message: PCNTNW-NW-180: DMA number is not necessary for PCI device.

Meaning: The NIC does not require a DMA setting in the NET.CFG file.

Action: Remove DMA from NET.CFG file.

A.3 NDIS 2.01 Driver Error Messages

Message: PCNTND-DOS-1: Unable to open Protocol Manager.

Meaning: The NDIS stack is not configured correctly.

Action: Check and correct your configuration.

Message: PCNTND-DOS-6: Out of memory while allocating buffers.

Meaning: The driver failed to allocate buffers.

Action: Check your system configuration, including

TX/RX Buffers in PROTOCOL.INI file.

Message: PCNTND-DOS-7: Protocol Manager device error.

Meaning: The NDIS stack is not configured correctly.

Action: Check and correct your configuration.

Message: PCNTND-DOS-8: Bad status for Protocol Manager.

Meaning: The NDIS stack is not configured correctly.

Action: Check and correct your configuration.

Message: PCNTND-DOS-9: Cannot find PROTOCOL.INI entry.

Meaning: The NDIS stack is not configured correctly.

Action: Check and correct your configuration.

Message: PCNTND-DOS-10: Protocol Manager ioctl failed.

Meaning: The NDIS stack is not configured correctly.

Action: Check and correct your configuration.

Message: PCNTND-DOS-11: Protocol Manager registration failed.

Meaning: The NDIS stack is not configured correctly.

Action: Check and correct your configuration.

Message: PCNTND-DOS-15: Device not found.

Meaning: The driver cannot find the NIC.

Action: Verify that the NIC is installed or replace the NIC.

Message: PCNTND-DOS-16: PCI scan specified, device not found.

Meaning: The driver cannot locate the NIC on the PCI bus.

Action: Verify that the NIC is physically installed properly.

Message: PCNTND-DOS-17: PCI scan can only execute on a 386 and higher processor.

Meaning: The PCI bus is not available on your system. The PCI bus is only supported on systems with a 386 or higher processor.

Action: Do not specify PCI for BUSTYPE with your current system.

Message: PCNTND-DOS-21: Board failed checksum test.

Meaning: The driver cannot find the NIC.

Action: Verify that the NIC is installed or replace the existing NIC.

Message: PCNTND-DOS-22: PCNET DMA doesn't match protocol.ini.

Meaning: The DMA setting in PROTOCOL.INI does not match the setting of the NIC.

Action: Remove the DMA setting from PROTOCOL.INI.

Message: PCNTND-DOS-23: WARNING: PCNET IRQ found =

Meaning: The IRQ setting in PROTOCOL.INI does not match the setting of the NIC.

Action: Remove the IRQ setting from PROTOCOL.INI.

Message: PCNTND-DOS-24: PCNET IRQ doesn't match protocol.ini

Meaning: The IRQ setting in PROTOCOL.INI does not match the setting of the NIC.

Action: Remove the IRQ setting from PROTOCOL.INI.

Message: PCNTND-DOS-25: PCI scan specified, PCI bus not found!

Meaning: The driver cannot locate the NIC on the PCI bus.

Action: Verify that the NIC is physically installed properly.

Message: PCNTND-DOS-29: WARNING: DMA number is not necessary for PCI device.

Meaning: The NIC does not require a DMA setting.

Action: Remove the DMA setting in PROTOCOL.INI.

Message: PCNTND-DOS-32: IRQ number is already in

use by another device.

Meaning: The specified IRQ number is already in use by another device.

Action: Remove the IRQ setting in PROTOCOL.INI.

Message: PCNTND-DOS-33: PCNET device with specified IOBASE is already in use.

Meaning: The specified IO Address number is in use by another device. Action Remove the IO Address setting in PROTOCOL.INI.

A.4 NDIS 3.0 Driver

NOTE

Windows NT error messages are logged into a log file. You can view the file with the Event Viewer. Error messages appear with the "PCNTN 3" prefix followed by a "Missing Configuration Parameter" message and several hex numbers. The hex numbers must be converted to decimal in order to correspond to the error numbers used in this manual.

Message: PCNTN3-9: IO base address is already in use by another PCNET device.

Meaning: The specified IO Address number is in use by

another device.

Action: Remove the IO Address setting in the setup dialog box.

Message: PCNTN3-13: IRQ and/or DMA number is already in use by another PCNET device.

Meaning: The specified IRQ and/or DMA is already specified by another device.

Action: Remove the IRQ and/or DMA settings in the setup dialog box.

Message: PCNTN3-17: PCI scan specified, PCI bus not found.

Meaning: PCI scan specified on a non-PCI system.

Action: The NIC and driver may only be installed in a PCI bus computer.

Message: PCNTN3-18: PCI scan specified, device not found.

Meaning: The driver cannot locate the NIC on the PCI bus.

Action: Verify that the PCI board is physically installed properly.

Message: PCNTN3-21: Device not found.

Meaning: The driver cannot find the NIC.

Action: Verify that the NIC is installed or replace the NIC.

Appendix B: Configuration Options

PCI NIC Configuration Options

Under the factory-default configuration, both models will operate in half duplex mode with automatic port selection enabled. Automatic port selection allows use of either the 10BASE-T or the 10BASE-FL port without hardware or software configuration. The port on which link signal is sensed becomes the active port. If link signals are detected on both ports, the 10BASE-T port will become the active port. The configuration of the port selection and duplex operation may be changed as described below.

PORT-SELECTION CONFIGURATION

For backwards compatibility with older versions of Ethernet that do not support a link signal, you may configure the NIC to force use of the 10BASE-T port. Under this configuration, data can be transmitted and received using the 10BASE-T port in the absence of a link signal. Automatic port selection is disabled and the 10BASE-FL port is no longer functional. While under this conflguration, the TP LED will always be lit.

   In the Windows environments, the port-selection option is set in the Advanced configuration window for the NIC. This can be found under the Networks application in Control Panel.

   In the Novell Client environment the keyword TP must be included in the NET.CFG file to configure the NIC to force use the 10BASE-T port. This keyword can be added automatically if this option is selected while using the Novell Install utility. To add this option after installation, the NET.CFG file must edited manually. Simply add a new line which contains only "TP" in the LINK DRIVER section.

   In a Novell Server 3.12 environment, the keyword TP

must be included in the driver LOAD command. For example: LOAD PCNTNW TP

In a Novell Server 4.1x environment, port selection may be configured using the INETCFG utility.

DUPLEX OPERATION

The NIC may be configured for half (default) or full duplex operation.

In the Windows environments, duplex operation is set in the Advanced configuration window for the NIC. This can be found under the Networks application in Control Panel.

In the Novell Client environment the keyword FDUP with the appropriate value must be included in the NET.CFG. This keyword can be added automatically if this option is selected while using the Novell Install utility. To add this option after installation, the NET.CFG file must edited manually. Simply add a new line which contains only "FDUP = ***" in the LINK DRIVER section, where *** is OFF or AUI. For example:

Enable full duplex operation: FDUP = AUI
Disable full duplex: FDUP = OFF

In a Novell Server 3.12 environment, the keyword FDUP with the appropr iate value must be included in the driver LOAD command. For example:

Enable full duplex operation: FDUP = AUI
Disable full duplex: FDUP = OFF

In a Novell Server 4.1x environment, port selection may be configured using the INETCFG utility.

NOTE

If FDUP = AUI then the TP (Twisted Pair) keyword is void. For full duplex operation to function properly, a full duplex port must be attached at the far (hub) end of the link.

BUS TYPE TO SCAN

For backwards compatibility, it may be necessary to specify the type of PCI bus used in the system in which the NIC is installed. By default, the system will search ALL bus types for the NIC. However, if on older systems, the NIC cannot be found, the type of bus may need to be specified.

Possible types include PCI, PCI1 and PCI2.

In the Windows 3.11 environment, the bus type is set

in the Advanced configuration window for the NIC. This can be found under the Networks application in Control Panel.

In the Novell Client environment the keyword BUSTYPE with the appropriate value must be included in the NET.CFG. To add this option, the NET.CFG file must edited manually. Simply add a new line which

contains only BUSTYP *** in the LINK DRIVER section, where *** is PCI, PCI1, or PCI2.

In a Novell Server 3.12 environment, the keyword BUSTYPE with the appropriate value must be included in the driver LOAD command. For example: LOAD PCNTNW BUSTYPE=PCI2

NOTE

If the PCI Configuration Access mechanism is known for the PCI system, you can use PCI1 or PCI2 with the BUSTYPE keyword. However, using PCI with the BUSTYPE keyword will cause the driver to attempt to determine the proper mechanism in the PCI system.