

EUT: Cardbus 10/100M Ethernet PC Card

FCC ID:MQ4FE2KB

ABOCOM SYSTEMS INC.

USER'S MANUAL

FEDERAL COMMUNICATIONS COMMISSION

NOTE

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection. This equipment generates, uses and can radiated radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

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

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About This Manual

This manual will explain how to install and use your 10/100Mbps dual speeds Fast Ethernet PC Card. The following guideline will help you through the installation process.

Chapter 1 presents you the basic information about the CardBus technology. It also provide some methods to ensure your notebook are CardBus equipped and correctly configured.

After you already make sure your mobile computer is ready to run CardBus 10/100M Ethernet PC Card. You can go on the Chapter 2 to know how to install the PC Card and Connect it to network.

The CardBus 10/100M Ethernet PC Card provides wide range of drivers software to meet your need. You can pick up the section within Chapter 3 to install and configure the network driver.

The Questions and Answers listed in the Chapter 4 give you some solutions when you encounter problem during installation the network drivers.

Finally you can find the detail specification of this innovative product in the Appendix A.

System Requirement

- An IBM compatible notebook computer with 486 or faster processor with CardBus supported socket.
- Drivers and utilities provided with this product

- PCMCIA PC Card compliant Card Services and Socket Services

- 100Base-TX Fast Ethernet or 10BaseT Ethernet connectivity to your local area network.

Operating Environments

- Windows 95, Windows 95 OSR2, Windows 98
- Novell Netware 3.x, 4.x
- Microsoft Windows NT 3.51, NT 4.0
- Microsoft LAN Manager
- Packet Driver Applications
- Microsoft Windows for Workgroups 3.11
- Microsoft Windows 3.1
- Lanlastic 6.0

Contents in the Package

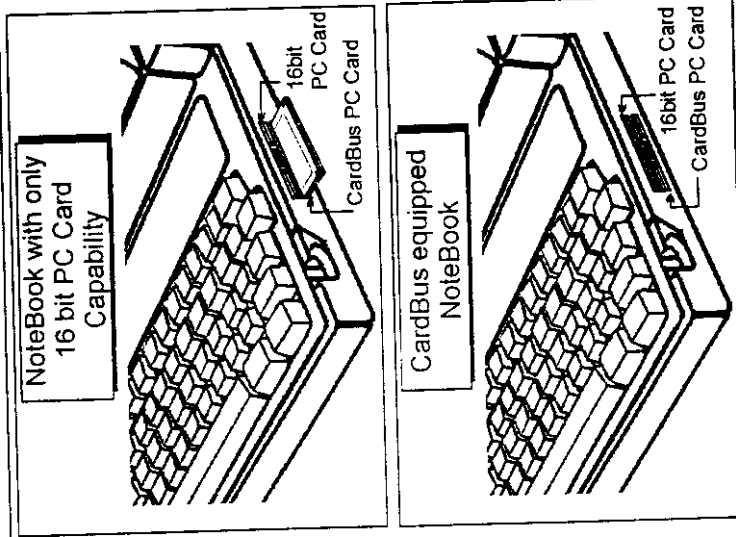
- CardBus 10/100 Ethernet PC Card Adapter
- Media coupler with single RJ-45 connector for 10BASE-T and 100BASE-TX network.
- 3.5" driver diskette
- User's Manual
- Plastic protection case for base PC Card

INTRODUCTION TO CARDBUS

Cardbus is the next generation 32-bit version issued by PCMCIA PC Card standard. In addition to support a wider bus (32 bits instead of 16 bits), CardBus also supports bus mastering and operation speeds up to 33 MHz. The 132MBytes bus transfer rate (compares with legacy 16-bit I/O PC Card, 20MByte) provides the mobil user to enjoy the high-bandwidth network connection.

A mobil computer which equipped with CardBus and properly configured is the fundamental requirement to use the CardBus 10/100M PC Card. To make sure about this point, please follow the guideline listed below:

- ◆ Cardbus is designed to support both 16-bit and Cardbus Card. But the legacy 16-bit PC Card slot couldn't accept the CardBus PC Card. In order to prevent the wrong operation, CardBus is developed with particular mechanical consideration to prevent it fit into the legacy 16-bit PC Card Slot. If you can't insert the CardBus 10/100 PC Card into the slot firmly reaching the bottom, your notebook probably hasn't the capability to support CardBus technology. Please check your notebook manual for detail information.



- ◆ Due to variant design of notebook computers, some models implement a setting in the Computer's BIOS to switch between Cardbus and 16-bit PC Card modes. You could consult the User's Guide of your notebook and properly set on the **CardBus** or **Auto_Detect** mode.

HARDWARE INSTALLATION

This chapter describes how to install the CardBus 10/100M dual-speed PC Card in your notebook computer and connect it to network. It's referred to "the PC Card" in this manual.

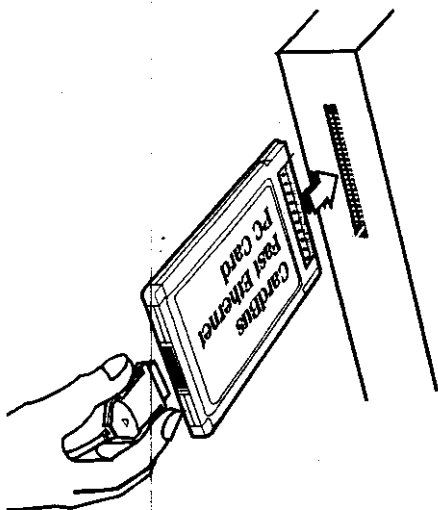
The PC Card could be connected to either 100Mbps Fast Ethernet or 10Mbps Ethernet over unshielded twisted pair (UTP) cable. The PC Card have the ability of automatic sensing and operating on either speed without manual reconfiguration.

After finishing the installation of PC Card into your Notebook, please refer to **Chapter.3 Software Installation** on how to install network drivers using menu driven installation utility.

Inserting the CardBus Dual-Speed PC Card

1. Hold the CardBus PC Card with wide connector toward the slot and the brand label facing upward.
2. Insert the CardBus PC Card and push it firmly into the bottom.
(Please see the figure on the next page for reference)

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Removing the CardBus Dual-Speed PC Card

It's quite different for various computer mechanical design. Please refer to the PC Card removal instruction in the document for your notebook computer.

Connecting and Removing the Cable of Media Coupler to the CardBus PC Card

Grasp the PC Card 15-pins connector at the end of the media coupler with the pointing triangle facing upward. Gently insert it into the mating connector on the PC Card until it clicks in place at both sides.

Attention should be paid when removing the 15-pins connector. Please press the both sides of the

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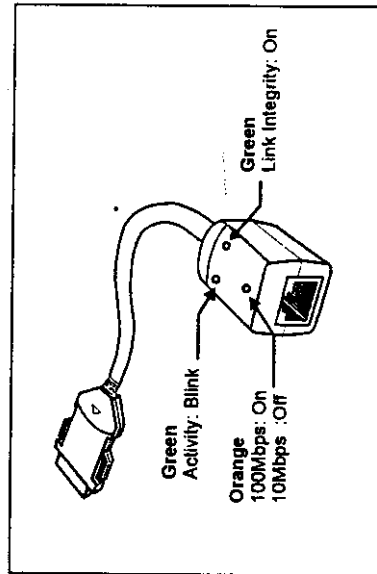
connectors before dragging it out of the PC Card.

Connecting to the Network

Connect unshielded twisted pair (UTP) cable to the RJ-45 connector of media coupler before loading any network driver.

- For operation in the 100Mbps (100Base-TX) Ethernet network, a Category 5 unshielded twisted pair (UTP) cable should be used to connect between media coupler and 100Mbps hub or switch.
- For operation in the 10Mbps (10Base-T) Ethernet network, Category 3, 4 or 5 unshielded twisted pair (UTP) cable could be used to connect between the media coupler and a 10Mbps hub or switch.

LED Indicators



SOFTWARE INSTALLATION

Extensive software drivers have been developed for CardBus 10/100M PC Card including DOS-Mode, Microsoft Windows 3.x, Windows 95, Windows NT. Some of the Operating Systems and PC Card/Socket Services haven't been well implemented to support new CardBus technology at the present time. Our unique drivers and utility enable the CardBus 10/100M Ethernet PC Card to run almost all the major environments.

This Chapter consists four main parts: Windows 95, Windows NT 4.0, Windows NT 3.5x and various configuration in DOS-mode. The user could refer to specific section for installation.

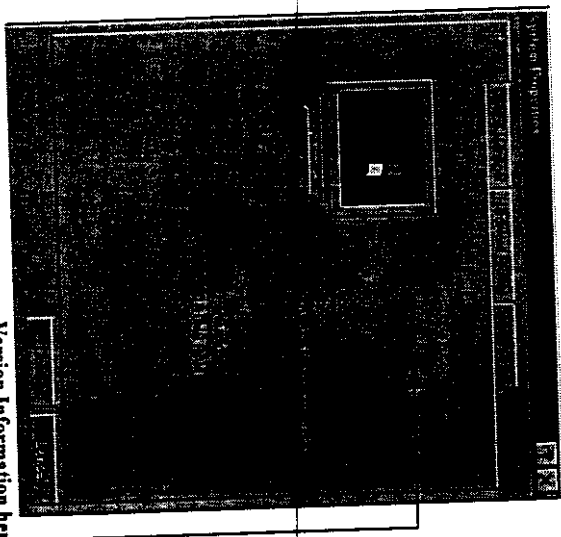
Windows 95 Installation

Windows 95 released two major versions at the time when this manual is written. The first version (refer to "Native Windows 95" afterward) supports for 16-bit PC Card but not for CardBus PC Card. The latest version Windows 95 with OEM Service Release #2 (refer to *OSR2 Windows 95 or later*) supports both 16-bit and CardBus PC Card. The CardBus 10/100M Ethernet PC Card could operates in either Native or OSR2 version Windows 95 environments. However, the installation procedures are different. The section will presents you how to identify your version of Windows 95 first. Then you could decide which kind of installation process should be followed:

Determining the Version of Windows 95

1. After successfully booting and login the Windows 95. Click on the **Start Button**.
2. Select the **Settings**.
3. Select **Control Panel**.
4. Within the Control Panel, double-click the **System icon**.
5. Select the **General** Tab, this system information will displayed like the following figure.

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Version Information here!

- > 4.00.950 or 4.00.950a is first released Windows 95 which don't support CardBus. Refer to Native Windows 95 section for installation.
- > 4.00.950B is Windows 95 with OEM Service Release #2 which support both PC Card and CardBus PC Card. Refer to *OSR2 Windows 95 or Later* section for installation.

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Native Windows 95

Though Non-OSR2 Windows 95 doesn't support CardBus PC Card, you could use our driver to run the CardBus 10/100M Ethernet PC Card.

1. Insert the Cardbus 10/100M Ethernet PC Card into the socket.
 2. Click on the **Start** button.
 3. Select **Setting**
 4. Select **Control Panel**
- And the Control Panel show up.
5. Double-click the **Network** icon.
- And the Network Menu prompt up.
6. Click the **Add** button.

And Select Network Components Type Menu shows.

7. Double-click the **Adapter**.

The Select Network Adapters Menu opens.

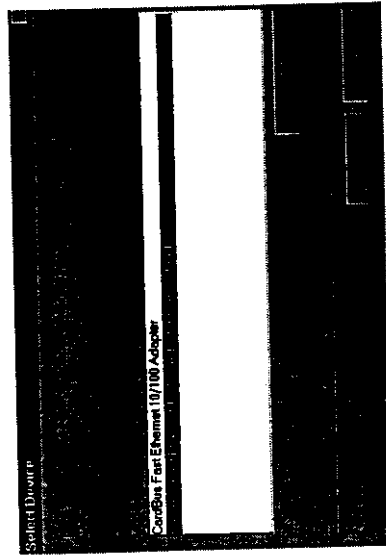
8. Click the **Have Disk** button.

The Install From Disk Menu shows.

9. Insert the Drive Disk.

10. Give A:\ in the input box. Click **OK**
(Or type the path name wherever you place the driver programs)

11. Select the "CardBus Fast Ethernet 10/100 Adapter manual load"



12. Click **OK**

A dialog box will appear to adjust the driver's settings. The resources assignment to adapter should be unique in the system.

13. The **Network** window reopens.

14. Click **OK**

15. Insert your original Windows 95 CD or disk set. Input the drive which contain the source.

Click **OK**

16. After the copy file process is complete, the system will prompt you to restart the Computer.

17. For the first time installation, you need to go to the Network in the Control Panel to setup the protocols, clients and services properly according to your need.

Note: If you start the computer without the CardBus 10/100 Ethernet PC Card installed in the socket, the native Windows 95 system will prompt you the warning message "Your Network Adapter CardBus Fast Ethernet 10/100 Adapter manual load" [0001] is not working properly. You may need to set it up again. For more information see the network troubleshooter in the windows Help".

If you don't need to use the CardBus 10/100 PC Card at this time, you can just ignore the message. Otherwise, you need to insert the CardBus 10/100 Ethernet PC Card into the CardBus socket and just restart the native Windows 95 again to make the Card working functionally.

OSR2 Windows 95 and Later

Windows 95 OSR2 and later versions support both CardBus and 16-bit PC Card. That is, you

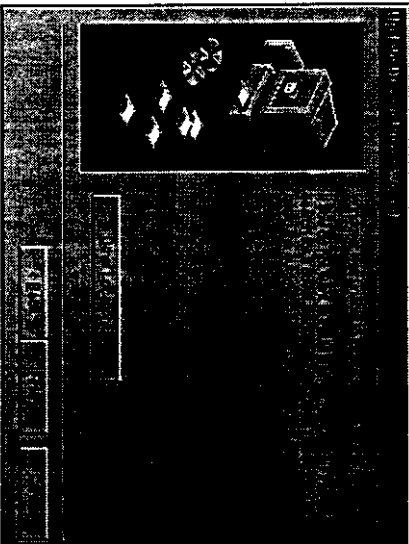
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could run the 16-bit PC Card and CardBus 10/100M Ethernet PC Card simultaneously with the plug-n-play support. In addition to the plug-n-play support of both types of PC Card, the user also could perform the Hot Swap function provided by the Card and Socket Service built in the OSR2 Windows 95 or later.

1. After the Windows 95 OSR2 have successfully boot, insert the CardBus 10/100 Ethernet PC Card with media coupler attached into the CardBus Socket.

2. Click **Next** on Update Device Drivers Wizard

3. Click The **Others Locations** button



4. Insert driver diskette into the floppy disk.

5. Type A:\. The driver will be installed and you may be asked for the original Windows 95

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CD/disks.

6. For the first time installation, please click **Network** icon in **Control Panel** to add **Protocols**, **Client and Service** if you needed
7. Reboot the machine and the card will be fully functional.

Windows NT 4.0 Installation

Assumed that the **Network Services** already installed in the NT 4.0 system.

1. Insert the **Cardbus 10/100M Fast Ethernet PC Card** into any one of **PC Card Slots** in system.
2. Power up **Windows NT 4.0**
3. Open **My Computer**
4. Open **Control Panel** icon
5. Double-click the **Network** icon
6. Select **Adapters** tab.
7. Press **Add** to add network adapter
8. Press **Have Disk** button
9. Insert the driver disk into floppy drive
10. Specify the path to "A:\ and press **OK**
(Or type the path name wherever you place the driver programs)
11. A dialog box will appear to adjust the driver's settings. The resources assignment to the adapter must be unique in the system.
12. Press **OK** when all setting are completed.
13. Press **Close** to complete network setting

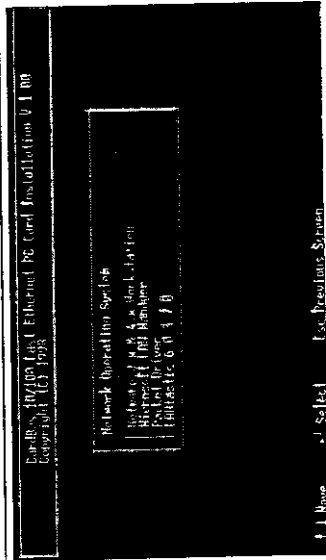
Windows NT 3.5x Installation

1. In Main Group of NT 3.5x, open Control Panel and click on **Network** icon.
2. In Network Settings dialog box, push **Add Adapter...** button. The Add Network Adapter dialog box will appear.
3. Choose **<Other>** ~~requires~~ **disk** from manufacturer" from the network adapter card list and press **Continue**.
4. When Windows NT prompts for manufacturer disk, insert driver diskette and press **OK** until the Network Setting Change dialog box appears.
5. Restart now to have the card take effect.

DOS Mode Installation

The pure DOS mode, not the DOS prompt under the Windows 95 or Windows NT, doesn't support any PC Card device. Many BIOS vendors develop the Card services and Socket Services for DOS. Because the CardBus technology is new to market, all the current shipping versions of Card and Socket Services don't support CardBus PC Card. We implements the DOS driver sets with this acknowledge in mind. All our DOS modes drivers were built to include the Direct Enabler in them to fulfill the essential of DOS mode Card Service and Socket Service program.

Besides, We provide a menu driven installation utility to help you install the various driver in the DOS mode. Just plug the driver diskette into the floppy drive and set the current drive to the floppy drive. Then run *INSTALL* to install the real mode drivers such as ODI or NDIS 2.x or Packet Drivers into the target disk.



Novell Network

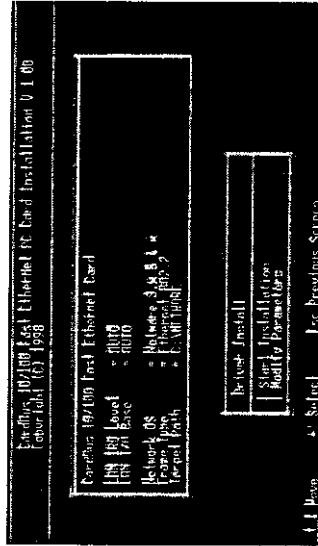
There are two methods to install the Network client ODI driver, the menu installation and Network 3.12 or 4.x Client installation.

Menu Installation

1. Run **INSTALL.EXE** from the root directory of driver diskette.
2. Select **Network 3.x and 4.x Workstation** item from menu.
4. Move cursor to focus on the setting you want to make change and press <Enter> to select a fit value. When the configurations are set completely, press <Enter> on the **OK** field to exit the screen and go back to step 3.
5. Installation program starts copying related files from diskette to the destination directory and modifies **AUTOEXEC.BAT** and

NET.CFG under user's agreement

6. Now, the installation is completed. Please reboot the computer to make your Network connection.



If you wanted to install the ODI driver by manual, you may follow the instructions list below.

1. Copy the files **CB100.COM** and **NET.CFG** from the path **\NETWORK** in the driver diskette into the Network client directory containing Novell's **LSL.COM**, **IPXODI.COM** and **NETX.COM** files.
2. Using a text editor to edit the **NET.CFG** for setting the default frame type. In the Network server the frame type is set to 802.3 for NW3.11 and 802.2 for NW3.12 and NW4.x. The frame type must be set to the same with the

server or the client couldn't login to the server.

3. Follow Novell's instructions on using ODI programs. You can substitute the CB100.COM whenever a reference is made to the Hardware Specific Module.

4. A typical ODI workstation startup batch file includes:

```
>LSL      ;Link Support Layer Module provided by
Novell
>CB100    ;Hardware Specific Module
>IPXODI   ;IPX Protocol Stack Module provided by
Novell
>NETx     ;Shell Support Module provided by
Novell
>LOGIN
```

Novell Client Installation

1. Run the NetWare Client Install V1.21

-Get the 4 Client disks from the network administrator, or

-Run the \NWCLIENT\INSTALL.EXE in a previous Installation

2. A message appears on the screen asking you whether or not you want the program to perform modifications on your AUTOEXEC.BAT and CONFIG.SYS files.

3. Answer "Yes". The program then modifies your AUTOEXEC.BAT and CONFIG.SYS files accordingly and creates backup copies.

4. The following message appears:

-Install support for MS Windows? (Y/N):

5. Answer accordingly and provide a path if necessary.

6. The program displays the following:

-Configure your workstation for backup by a NetWare server running software such as BACKUP? (Y/N):

7. Answer accordingly and provide a path if necessary.

8. Select a driver for your network board.

9. From the driver list, select **Other Drivers**.

10. Go to the Insert the Driver Disk dialog box and specify the path where the ODI driver and INS files reside. For example: C:\ODI.DOS.

11. Press Enter and select the target ODI driver.

12. Specify the driver's optional settings.

13. Press F10 to save to new configuration.

14. Highlight "Install press here" and press <Enter> to install.

The program copies the necessary files for NetWare Client. Continue the installation procedure to completion. Upon completion, a new NET.CFG file will be created in your DOS directory. Typically, this file contains the following lines:

Link Driver CB100
#FRAME Ethernet_802.3
FRAME Ethernet 802.2

16. An **STARTNET.BAT** for the ODI workstation performs as the following

SET NWLANGUAGE=ENGLISH

--Set NetWare 4.X to English language

LSL
--Link Support Layer Module
provided by Novell

CB100
--Hardware Specific Module

IPXODI --IPX Protocol Stack Module
provided by Novell

VLM
--DOS Support Module provided
by Novell

F: --Change to connected device

```
LOGIN xxx --Login to file server as user xxx
```

17.Run STARTNET to access the Novell network.

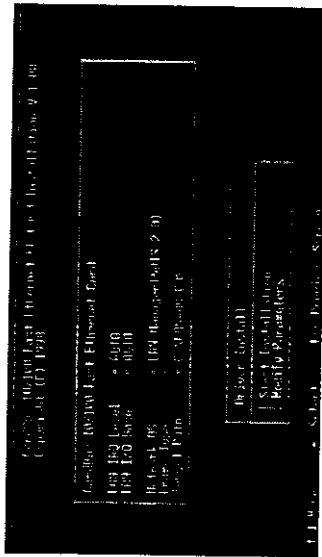
MS LAN Manager

1. View the **README.TXT** on the installation diskette in the **NDIS2** directory. Before installing the drivers, please ensure that the **Microsoft LAN Manager** has been installed in the target path. The installation program will check and modify the **PROTOCOL.INI** file for LAN Manager.

2.Run *INSTALL.EXE* from root directory of

driver diskette.

3. Select *Microsoft LAN Manager* item on the menu screen.



4. If current settings are acceptable, select **Start Installation** and go to step 6. Otherwise, select **Modify Parameters** to make setting changed.

5. Move cursor to each field you want to make a change and press <Enter> to select a preferable path name. When the configuration are set completely, press <Enter> on the OK field to exit the screen and go back to step 4.

6. Installation program starts to copy related files from driver diskette to the destination directory and modifies CONFIG.SYS and PROTOCOL.INI under user's agreement.

7. Please reboot the computer to load driver and start LAN Manager in batch.

Example of PROTOCOL.INI: used by LAN

Manager

```
[PROTMAN]
DRIVERNAME = PROTMAN$
DYNAMIC = YES
PRIORITY = NETBEUI
```

```
[NETBEUI_XIF]
Drivername = netbeui$
SESSIONS = 6
```

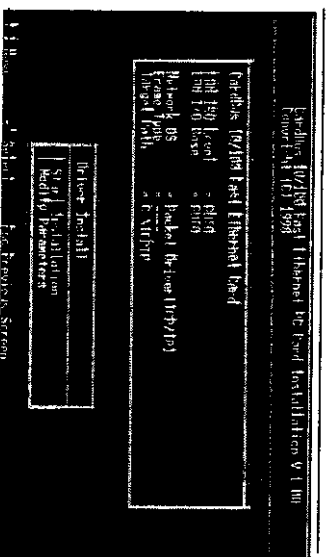
```
NCBS = 12
BINDINGS = "CB100_NIF"
LANABASE = 0
```

```
[CB100_NIF]
; protocol.ini session for LAN driver.
DRIVERNAME = CB100$
```

Packet Driver

1.Run INSTALL.EXE from root directory of driver diskette.

2.Select **Packet Driver** item on the menu screen.



3.Installation program starts to copy related files from diskette to the destination directory and modifies AUTOEXEC.BAT under user's agreement.

4.Please reboot the computer to load the driver.

Windows for Workgroups 3.11

NDIS2 Driver for Workgroups

1.Run *Windows for Workgroups* and click *Network Setup* icon in "Network" group.

2.In Network Settings dialog box, click Networks... button to select the network operating system.

3.In Networks dialog box, check the radio button before install *Microsoft Windows Network* and *No Additional Network*". Press OK to go back the Network Settings" screen.

4. Click "Drivers..." button to select network driver.

5. In Network Drivers dialog box, press **Add Adapter...** button to enter *Add Network Adapter* dialog box. Select *Unlisted or Updated Network Adapter* and press **OK**.

6. Windows will prompt a *Install Driver* dialog box. In this time, put the driver diskette into floppy drive and press **OK**.

7. Select the **CardBus Fast Ethernet 10/100 PC Card** string and press **OK**.

8. Follow Windows instructions to complete the installation and exit Windows.

Artisoft Lantastic 6.0 Installation

1. Install LANTASTIC 6.0 first.

2. Run *INSTALL.EXE* from root directory of driver diskette.

3. Select *LANTASTIC 6.0* in Network Operating System screen.

4. If current settings are acceptable, select *Start Installation* and go to step 6. Otherwise, select *Modify Parameters* to make settings changed.

5. Move cursor to focus on each field you want to make a change and press <Enter> to select a fit value. When the configuration is set completely, press <Enter> on the **OK** field to

exit the screen and go back the step 4.

6. Installation program starts to copy the related files from diskette to the destination directory and modifies *CONFIG.SYS*, *PROTOCOL.INI*, and *STARTNET.BAT* under user's agreement.

7. Please reboot the computer to have the driver take effect.

QUESTIONS & ANSWERS

This chapter provides a number of examples of Questions (Q?), Causes (C?), and Answers (A.). If your LAN is not functioning properly, look up the problem here, or ask your dealer for technical assistance.

Q: When I run the DOS real mode driver, it reports that "CardBus PC Card are not present", but I did install the CardBus PC Card in the slot?

A: Currently, there are no PC Card/Socket Service which supports CardBus socket in the DOS mode. We already built the direct enabler into each DOS mode drivers to active the CardBus PC Card. Following check list could help you identify the problem.

1. If you install some other DOS mode Card/Socket Service from AMI, Award, Phoenix or SystemSoft...etc, please disable them by comment out these drivers in the CONFIG.SYS file.
2. If memory management software e.g. EMM386 has been installed, you have to reserve some area in upper memory (C000:0 -- EFFF:F) for attribute memory of PCMCIA card during enabling the card. Example:
Device=C:\DOS\EMM386.EXE RAM
X=D000-D3FF. Reserve D000 - D3FF for

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attribute memory.

Q: When I run the DOS real mode driver, it reports that "PCI-to-CardBus bridge are not present", but my notebook is equipped with the CardBus socket?

A: Some notebook computer, for example Toshiba, need to enable the System's BIOS setting to support CardBus environment. Please check your user manual to find the detail information.

Q: How come I see the message "Unknown PCI-to-CardBus bridge" when I try to load the driver in DOS mode?

A: The CardBus controller are rolling out from time to time. The driver set of CardBus 10/100M Ethernet PC Card support all the CardBus controllers on the current market. We will continue to revise our driver to support any new CardBus controller come to the market. If you encounter this message, please contact your local dealer to get the newest driver set. If you still have problem with it, please contact us to further support.

Q: The ODI driver is run successfully but

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fail to login to the Netware server

C: Frame type incompatible with server or Interrupt miss match.

A: The default frame type for Netware 3.11 and before is 802.3 but it is changed to 802.2 in Netware 4.x and 3.12. You may check the content of NET.CFG to see if the frame type is acceptable by the server. If the frame type cannot accept by server, please edit NET.CFG to change the frame type at client site or add the frame type can be accepted at sever site driver.

SPECIFICATIONS

Network Interface Specifications

- ◆ 10Mbps Ethernet: IEEE 802.3 standard 10BaseT baseband CSMA/CD local area network.
- ◆ 100Mbps Ethernet: IEEE 802.3u standard 100Base-TX baseband CSMA/CD local area network.
- ◆ 20/200Mbps full duplex support
- ◆ Autonegotiation between all four operation modes.

Host Interface and Physical Specifications

- ◆ Cardbus PC Card Standard compliant.
- ◆ Type II PC Card form factor
- ◆ 3.37" x 2.128" x 0.197" (86mm x 54mm x 5.0mm)
- ◆ 40gw in weight

Operating Environments

- Novell Netware 3.x, 4.x
- Microsoft LAN Manager
- Packet Driver Applications
- Microsoft Windows for Workgroups 3.11, Windows 3.1
- Microsoft Windows NT 3.5x, NT 4.0
- Windows 95, 98
- Lantastic 6.0

Specifications

Power Requirements:

- ♦ Normal Operation: +3.3V DC, 380mA max
- ♦ Sleep Mode : +3.3V DC, 80mA max

General Specification

LEDs: Link, Activity, 10/100Mbps

Environments Ranges:

Operating: 32°F to 140°F (0°C to 60°C)
Storage: -4°F to 158°F (0°C to 70°C)
Humidity: 10% - 90%, noncondensing

Certifications: FCC, Part 15, Class B

CE Mark (EN55022, Class B, EN50082-1)