

10/100 Fast Ethernet CardBus PC Card

User's Manual

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Quick Start Guide

Thank you for purchasing this 10/100 Fast Ethernet CardBus PC Card.

Installing the 10/100 Fast Ethernet CardBus PC Card

You will be installing the Ethernet card in the CardBus PC card slot in your computer. If you are having trouble locating this slot, refer to your computer user's manual, or consult the manufacturer of your computer.

Gently slide the PC card into the CardBus PC card slot. Make sure the card is firmly slotted into the socket. Now you are ready to setup and install your network drivers.

For connection to a 100 Base-TX Fast Ethernet network, use a Category 5 unshielded twisted pair (UTP) network cable with an RJ-45 connector to connect with the 100Mbps port of your hub or switch.

For connection to a 10 Base-T Ethernet network, use a Category 3, 4 or 5 unshielded twisted pair (UTP) network cable with an RJ-45 connector to connect with the 10Mbps port of your hub or switch.

Win NT4.0 does not support CardBus Controller enablers, and Win 95/98 only supports the CardBus Controller enablers that are listed in **pcmcia.inf** file (in Win 95/98 INF directory). Please follow these steps to check your computer's CardBus controller type.

1. Start **Win95/98**.
2. Click the "**Start**" button and select "**Settings**".
3. Click "**Control Panel**", and double-click the "**System**" icon.
4. Select "**Device Manager**", click "**PCMCIA socket**", then you can find the CardBus controller type.

If you want to install in Win 95/98, please confirm that the pcmcia.inf file supports your notebook's CardBus Controller type. In Win NT4.0, refer to the *Setup for Windows NT4.0* section of the Quick Start Guide.

The IRQ assignment of the 10/100 Fast Ethernet CardBus PC Card is dependent on the allocation of your notebook. If you have any problems, please refer to our compatibility list.

Setup for Windows 95

Windows 95 may come with most of the drivers necessary for accessing your Ethernet card, but only the **OSR2** (OEM Service Release #2) and later versions fully support CardBus adapters. Before installation, please follow these steps to check the version of Windows 95 and CardBus driver.

1. Click the "**Start**" button and select "**Settings**".
2. Click "**Control Panel**", and double-click the "**System**" icon.
3. Select "**General**". The version of Windows 95 will be displayed under the "**system**" field. Remember, only **4.00.950b** and later versions (4.00.950c or 4.00.951) fully support CardBus.
4. Select "**Device Manager**", click "**PCMCIA socket**", then select one CardBus controller and click "**Properties**".
5. Click "**Driver**", and select "**Driver File Details....** "
6. **CBSS.VXD** will be found and its version must be **4.00.1111 or later**. If your CardBus driver is older, please contact your Windows 95 supplier for updating to the latest version.

After getting the correct version, just follow these steps to get up and running:

1. Start the computer.
2. Insert the Ethernet card into a PC Card slot in your computer. Make sure the card is securely inserted into the socket. Windows will display the "**Update Device Driver Wizard**" dialog box. Click "**Next**", select "**Other Locations**" button and type in "A:\:" in the location, where the device information file (.INF file) and the driver (.SYS file) can be found. Insert 10/100 Fast Ethernet CardBus PC Card diskette into drive A and click "**OK**", Windows will find the 10/100 Fast Ethernet CardBus PC Card.
3. Click "**Finish**" to start installing the necessary drivers.
4. Follow the instructions of Windows 95 to insert driver diskette in drive A and "**Windows 95 CD-ROM**" in CD-ROM drive.
5. After installing the desired drivers, the Ethernet adapter will be enabled, and the LED indicator will be turned on if the network is on-line.

Setup for Windows 98

Windows 98 may come with all of the drivers necessary for accessing your Ethernet card. Please follow these steps to get up and running:

1. Start the computer.
2. Insert the Ethernet card into a PC Card slot in your computer. Make sure the card is securely inserted into the socket. Windows 98 will display the "**PCI Ethernet Controller**" dialog box, then show the "**PCI Ethernet Controller**" dialog box, click Next button .
3. Select "**Search for the best driver for your device**", click Next button.
4. Choose "**Floppy disk drives**", click Next button.

5. Select "**The updated driver (Recommended)**", press Next button, then the product information will be displayed, press Next button.
6. Follow the instructions of Windows 98 to insert "**Windows 98 CD-ROM**" in CD-ROM drive.
7. After installing the desired drivers, the Ethernet adapter will be enabled, and the LED indicator will be turned on if the network is on-line.

Setup for Windows 2000/me/XP

1. Start the computer, insert the 10/100 Fast Ethernet CardBus PC Card into a slot, make sure the card is securely inserted into the socket. Windows 2000 will show "**Found New Hardware**".
This PC card uses Realtek RTL8139 IC which has driver built-in Windows 2000.
Windows will automatically install the driver. The driver can run ok, but without the function of ACPI (Advanced Configuration and Power Interface).
If the user is satisfied with this driver, then the installation is completed. The user does NOT need to go through following steps. Please restart the computer and the network function will be ready.
2. If the user wants to accommodate ACPI function into the 10/100 Fast Ethernet CardBus PC Card. Then the user needs to update the driver to which we support in the driver diskette. Please select "**My Computer**" then "**Control Panel**" then "**System**", then "**Hardware**", then "**Device Manager**", then select "**Network adapters**", and select "**Realtek RTL8139(A)-based PCI Fast Ethernet Adapter**".
3. Click "**Action**" and then click "**Properties**".
4. In the properties window, select "**Driver**", and click "**Update Driver**".
5. Windows 2000 will show "**Welcome to the Upgrade Device Driver Wizard**", Click "**Next**".
6. Select "**Search for a suitable driver for my device**" and click "**Next**".
7. Insert the driver disk and select the location where the driver is located, then click "**Next**".
8. Key in the driver location "**A:\Win2000**" and click "**Next**".
9. The windows found the driver, click "**Next**" to continue.
10. Digital signature not found, click "**Yes**" to continue the installation.
11. Windows will automatically copy the driver files and related files into the system. After copying the driver files, the device installation is completed, click "**Finish**".
12. The **Device Manager** window pops up, please check "**Network adapters**", if "**Fast Ethernet CardBus PC Card**" is presented, then the update driver operation is OK.
13. Restart the computer and the 10/100 Fast Ethernet CardBus PC Card will be ready.

Setup for Windows NT4.0

Windows NT4.0 comes with most of the drivers necessary for accessing your Ethernet card, but does not support the CardBus Controller enabler. Basically, our driver supports the mostly CardBus Controller enablers. Please follow these steps to get up and running:

1. After confirming the CardBus Controller type, just follow these steps to get up and running:
2. Insert the card into a PC card slot in your computer, then boot the computer to NT4.0.
3. Double click the "**Control Panel/Network**", select the "**Adapter**",

4. press "**Add**" button, select the "**Have Disk**" option, for required disk from manufacturer. Type in "**A:\WINNT4**", press "**OK**", then card type information will be displayed in the dialog box, press **OK**.
5. Go to next dialog box, select IRQ, I/O address..., press **OK**, then go back to **Network**, select "**Bindings**", press the "**Close**" button.
6. Ask your Windows NT Server administrator for the IP Address setting. Click "**OK**" and restart the computer.

Setup for DOS ODI Drivers

In the driver diskette, the "**NWCLIENT**" directory contains DOS ODI drivers to support Novell's NetWare 3.x and 4.x network operating system. This directory also contains direct enabler programs to enable the CardBus slot. To enter the NetWare network operating system, you need the following files to start up DOS ODI drivers:

- a. RTPCI.EXE: Enables the CardBus Controller
- b. RTBIOS: Intercepts PCI BIOS Function Calls for CardBus
- c. LSL.COM: Supported by Novell
- d. RTSODI.COM: DOS ODI driver
- e. IPXODI.COM: Supported by Novell
- f. NETX.EXE: Supported by Novell
- g. NET.CFG: An optional configuration file
- h. STARTNET.BAT: A sample BATCH file to enter NetWare NOS

Type "**STARTNET**" to execute the above six files, then you can log in to the file server.

Chapter 1 Introduction

This manual describes how to operate 10/100 Fast Ethernet CardBus PC Card. The 10/100 Fast Ethernet CardBus PC Card is a credit-card sized Ethernet Card which works with any Computer, Notebook, Sub-notebook, or Card Reader that supports CardBus slots.

CardBus is a function and performance extension of the PC Card (PCMCIA) standards. The CardBus interface is 32-bit wide and Bus-mastering allowable device. It enhances the overall system throughput.

This Ethernet CardBus PC Card can be connected to either 100Mbps Fast Ethernet or 10Mbps Ethernet network.

- For operating in the 100Mbps (100Base-TX) Fast Ethernet network, a Category 5 unshielded twisted pair (UTP) cable should be used to connect with 100Mbps hubs or switches.
- For operating in the 10Mbps (10Base-T) Ethernet network, a Category 3, 4, or 5 UTP cable can be used to connect with 10Mbps hubs or switches.

FEATURES

1. CardBus form factor for CardBus equipped portable PCs
2. IEEE 802.3 for 10Base-T and IEEE 802.3u for 100Base-TX compliant

3. Automatically negotiates 10 or 100 Mbps connection rate, depending on the speed of the network
4. Provides full-duplex to enhance throughput
5. Brings high performance 100Mbps networking via 32-bit, PCI CardBus slot
6. Complies to PC Card 1995 CardBus standards
7. Switchless design and software-configurable card setting
8. 68-pin connector for attachment to PC's CardBus slot, and 15-pin flat connector to media coupler
9. 3.3V low power consumption
10. LEDs diagnostics and monitoring indicators

NETWORK INTERFACE

RJ-45 to connect with 10BASE-T or 100 BASE-TX Hub

DRIVER SUPPORT

ODI Novell NetWare, 3.X, 4.X

NDIS Microsoft Windows 95, Windows 98, Windows 2000 and Win NT4.0

PHYSICAL CHARACTERISTICS

1. Bus Width: 32-Bit Bus
2. Power: +3.3V / 295mA max. for RJ-45 transceiver
3. Temperature: 0 ~ 50 degree Celsius
4. Humidity: 10% to 90%
5. Distance: 100 m Hub to Node

Chapter 2 Getting Started

Check package contents

- 10/100Base-TX CardBus Ethernet Card
- UTP cable with RJ-45 connector
- Driver diskette

Installing the 10/100 Fast Ethernet CardBus PC Card

You will be installing the 10/100 Fast Ethernet PC Card in the CardBus slot in your computer. If you are having trouble locating this slot, please refer to your computer's user manual or consult the manufacturer of your computer.

Gently slide the PC card into the CardBus slot. Make sure the card is firmly placed in the socket. Now you are ready to install your communication software .

LED Indicators

- **10M LED**

This LED is used to indicate the Ethernet speed: *Green* means "connected with 10 Base-T Ethernet network".

- **100M LED**

This LED is used to indicate the Ethernet speed: *Green* means "connected with 100 Base-TX Ethernet network"

- **ACT LED**

This *Green* indicator is used to indicate the network activity, and will flash on and off intermittently when the PC is transmitting or receiving packets from the network.

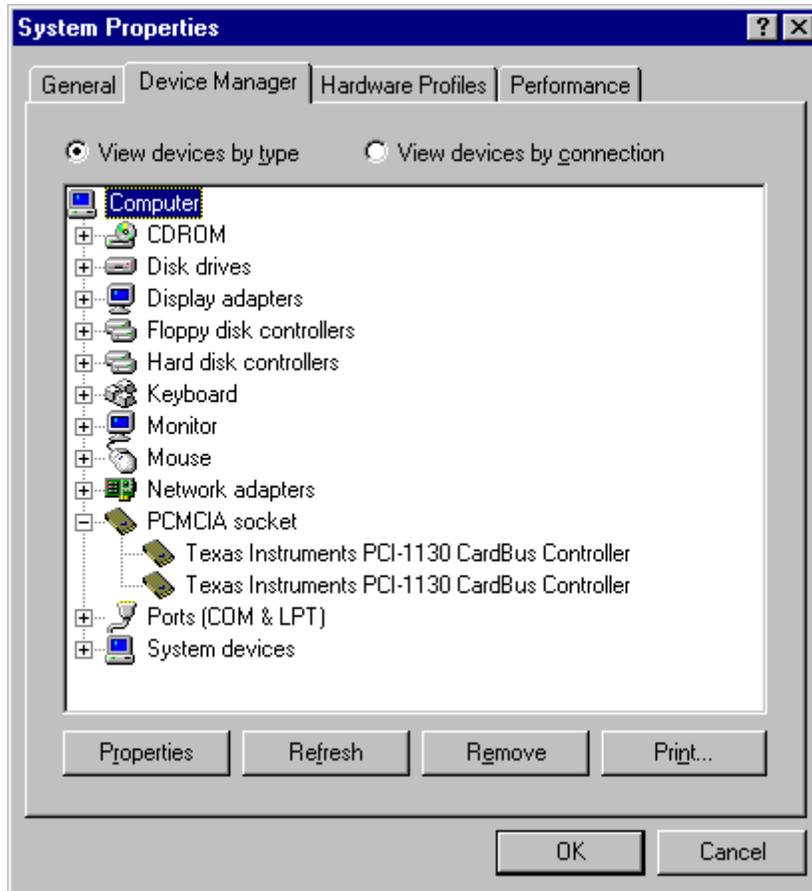
README.TXT File

In your driver diskette, there is one file named README.TXT which provides the information about this Driver Diskette's contents and installation guide. This file is located in the root directory of the diskette.

Checking the CardBus Controller Type

Win NT4.0 does not support CardBus Controller enablers, and Win 95/98 only supports those CardBus Controller enablers that are listed in **pcmcia.inf** (in Win95/98 INF directory). Please follow these steps to check your notebook's CardBus controller type.

1. Start **Win95/98**.
2. Click the "**Start**" button and select "**Settings**".
3. Click "**Control Panel**", and double-click the "**System**" icon.
4. Select "**Device Manager**", click "**PCMCIA socket**", then you can find the CardBus controller type.



If you want to install in Win95/98, please confirm that the **pcmcia.inf** file supports your notebook's CardBus Controller. If your CardBus Controller is not listed in the file, please contact your notebook supplier for updating the CardBus controller driver. In WinNT4.0, refer to Setup for Windows NT4.0 in the menu.

The IRQ assignment of the 10/100Base-TX CardBus Ethernet Card is dependent on the allocation of your particular notebook. If you have any problems, please refer to our compatibility list.

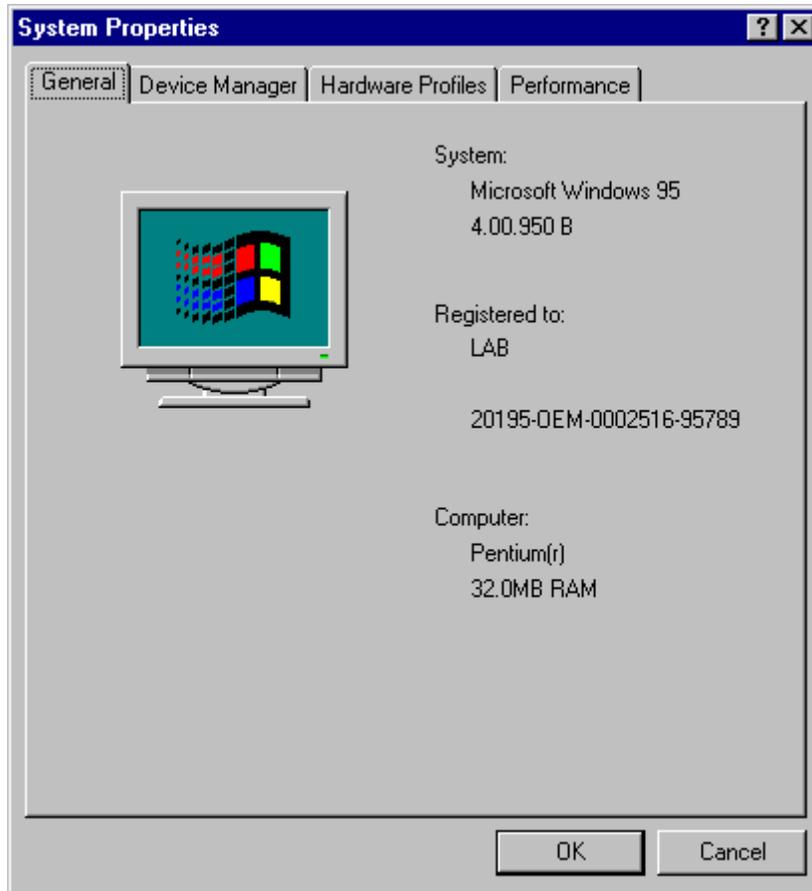
Chapter 3 Setup for Windows 95

System Requirement

Windows 95 may come with most of the drivers necessary for accessing your Ethernet card, but only **OSR2** (OEM Service Release #2) and later versions fully support CardBus adapters. Before installation, please follow these steps below to check the version of Windows 95 and CardBus drivers.

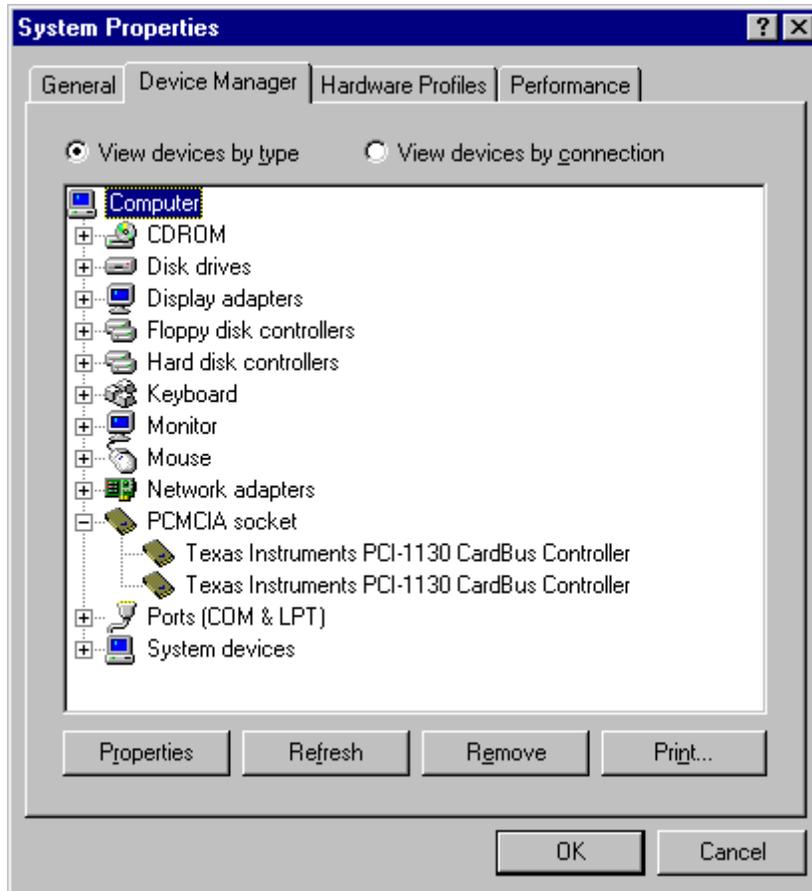
Check Version of Windows 95

1. Click the "Start" button and select "Settings".
2. Click "Control Panel", and double-click the "System" icon.
3. Select "General". The version will be displayed under the "system" field. Remember, only 4.00.950b and later versions (4.00.950c or 4.00.951) fully support CardBus.

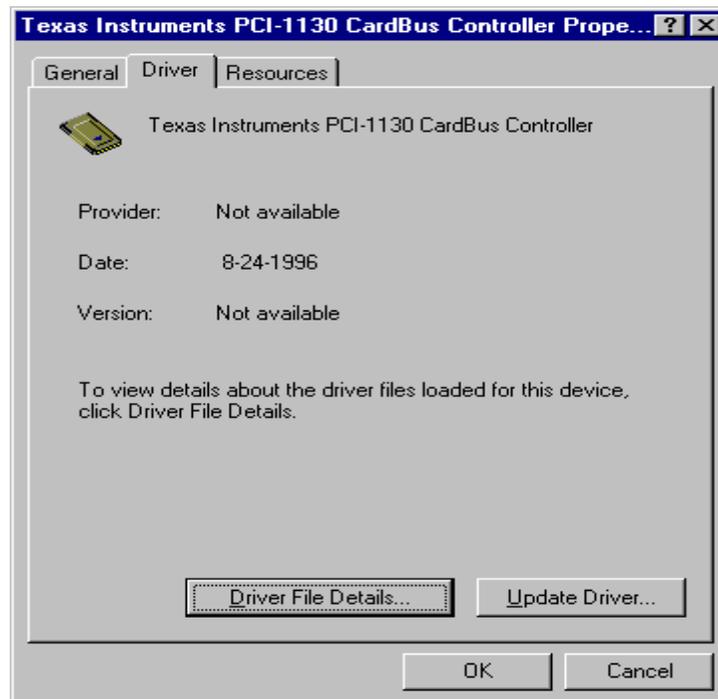


Check Version of CardBus Driver

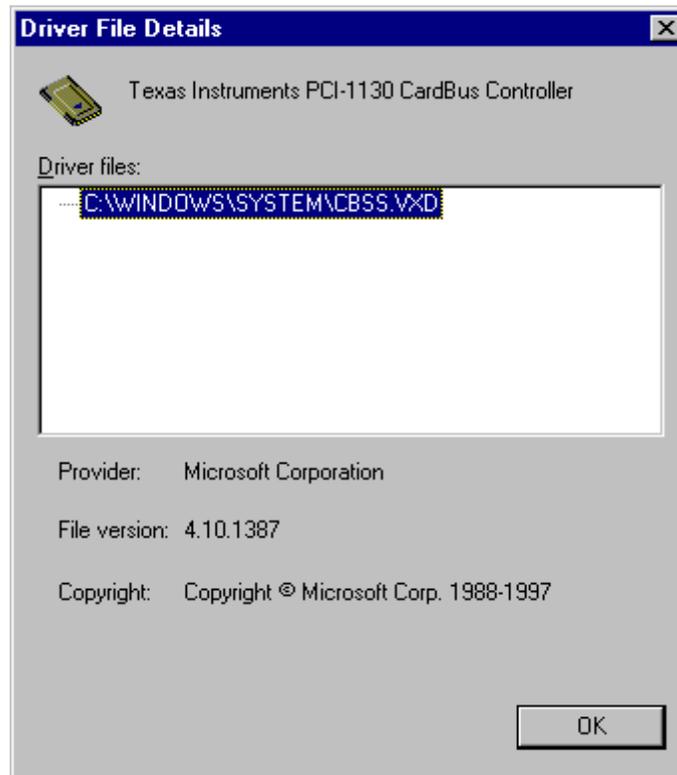
1. Select "**Device Manager**", click "**PCMCIA socket**", then select one CardBus controller, and click "**Properties**". The following diagram is an example for TI PCI-1130 CardBus controller.



2. Click "**Driver**", and select "**Driver File Details....**".

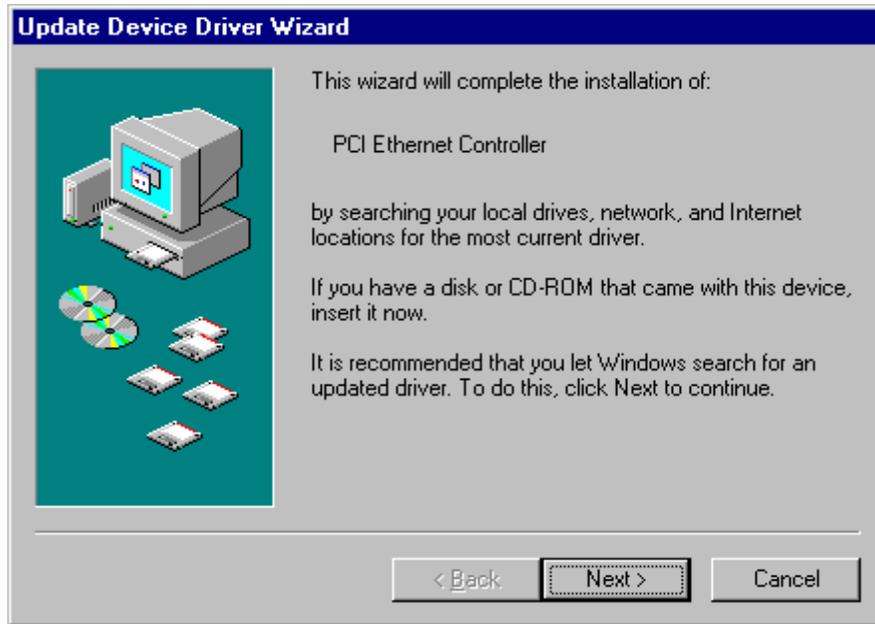


3. **CBSS.VXD** is found and its version must be **4.00.1111 or later**. If your CardBus driver is older, please contact your Windows 95 supplier for updating to the latest driver.



Installation

1. start the computer.
2. Insert the Ethernet PC card into a PC Card slot in your computer and make sure the card is securely seated in the socket.
3. Windows will prompt "**New Hardware Found**" and display the "**Update Device Driver Wizard**" dialog box. Insert driver diskette into Drive A and click "**Next**".



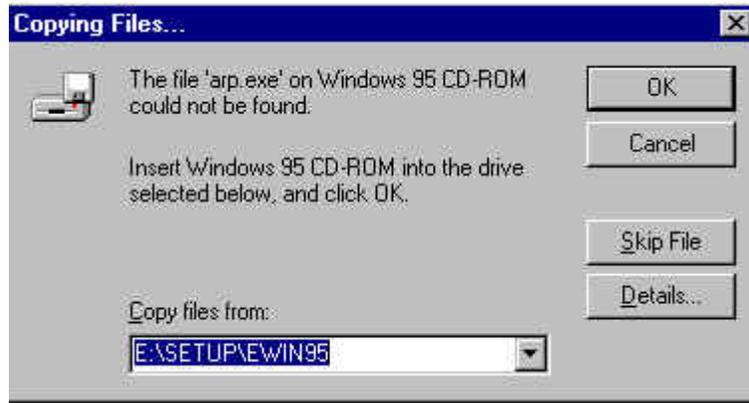
4. Windows will try to find the driver for this card. If it displays "**Windows was unable to locate for this device**", just select "**Other Location**".



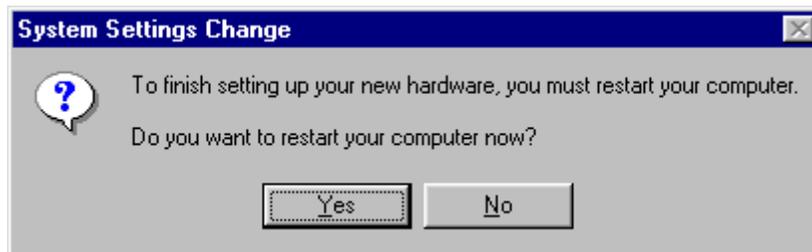
5. When Windows displays "**Select Other LocationA:WIN95B**" and click "**OK**" when the driver diskette is inserted in drive A.
6. After Windows finds the driver, the following prompt will appear: "**Fast Ethernet CardBus PC Card**". Click "**Finish**" to confirm.
7. After the driver is found, Windows will begin to copy all the necessary files to install network function. Windows 95 may ask you to insert the driver diskette, just click "**OK**". If Windows tries

to copy "**FETHCB.SYS**" file and displays the following dialog box, just input "**A:\ WIN95B**" to specify the location of this file.

8. Windows may request you to "**Insert Windows 95 CD-ROM into the driver selected, and click OK**". Follow this instruction and input CD-ROM location, e.g. "**E:\SETUP\EWIN95**".



9. When Windows finishes the installation, the "**System Settings Change**" dialog box will be prompted and ask you "**Do you want to restart your computer now**". Click "**Yes**" to restart your computer.



10. After the computer is restarted, the network function will be ready.

11. User can check whether the card is ready or not. Go to "**System**" of Control Panel, select "**Device Manager**", click "**Network adapters**". If display as "**Fast Ethernet CardBus PC Card**", the card is ready.

Hot Swap

This Ethernet CardBus PC Card has **hot-swap** function. But, before you remove the PC Card from CardBus slot, please click **PCMCIA** icon on *task bar* or in *Control Panel* illustrated as previous diagram and select "**STOP**" to force this adapter to be inactive. When the prompt "**You may safely remove this device.**" appears, click "**OK**" and remove your Ethernet card.

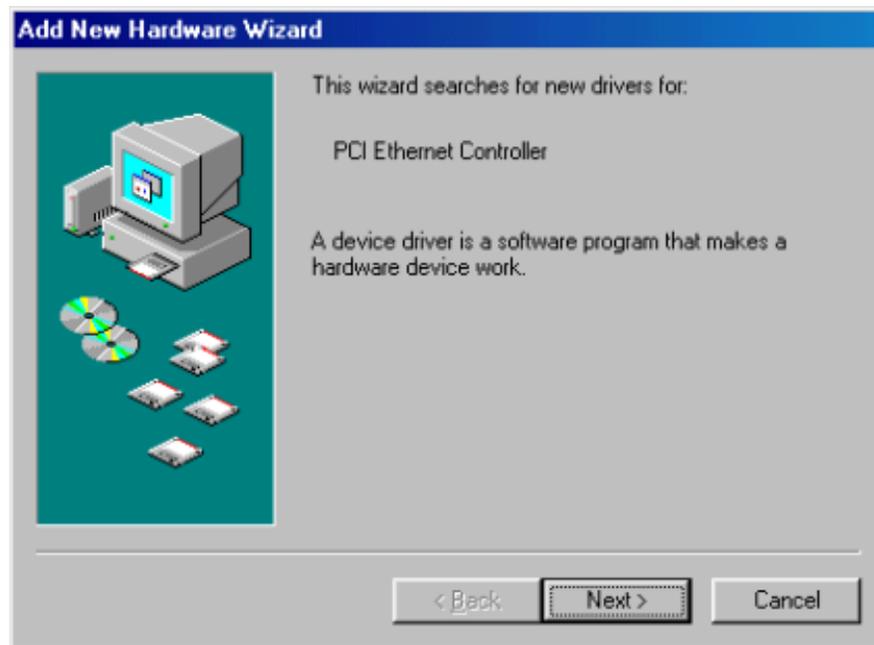
Chapter 4 Setup for Windows 98

System Requirement

Windows 98 may come with most of the drivers necessary for accessing your Ethernet card, but doesn't support all CardBus controller enablers. Please check the pcmcia.inf in Win98's INF directory. If your CardBus Controller is not listed in the file, please contact your notebook supplier for updating the CardBus controller driver.

Installation

1. Start the computer.
2. Insert the Ethernet PC card into a PC Card slot in your computer and make sure the card is securely seated in the socket.
3. Windows will prompt "**PCI Ethernet Controller**" dialog box , click Next Button.



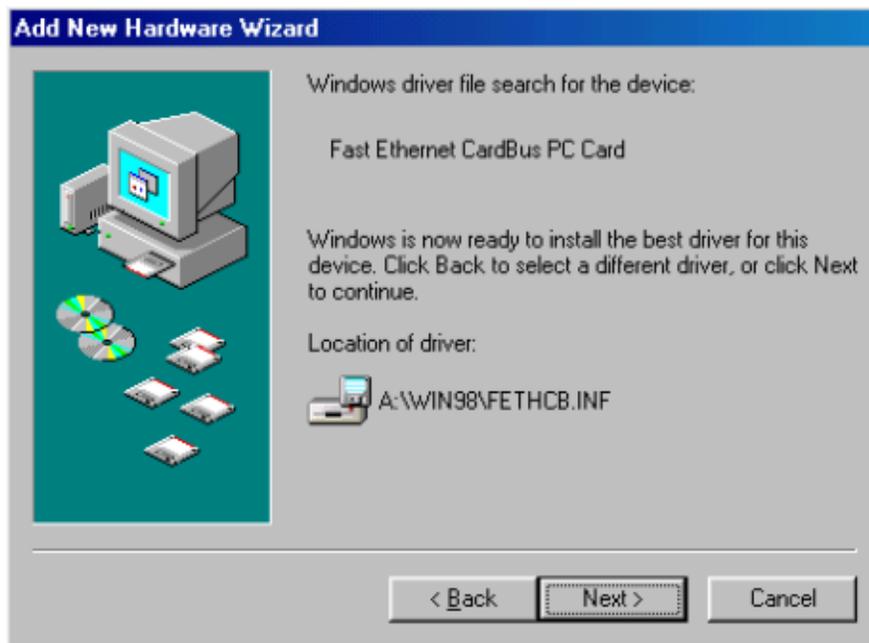
4. Windows will ask installation method, select "**Search for the best driver for your device**", press Next button.



5. Insert driver diskette into drive A , select "**Specify a location:** ", type in "**A:\Win98**", and click "**Next**" button.



6. After Windows finds the driver, the following prompt will appear: "**Fast Ethernet CardBus PC Card**", click "**Next**" button.



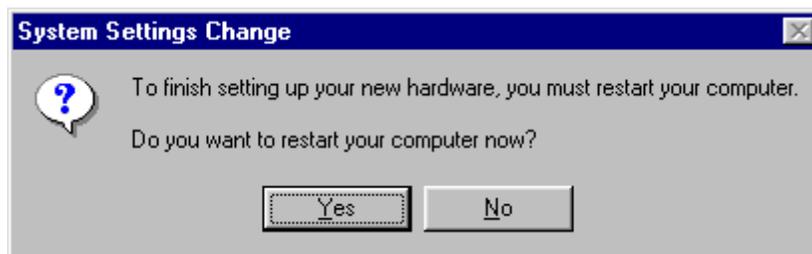
7. After the driver is found, Windows will begin to copy all the necessary files to install network function. If Windows asks to copy "**FETHCB.SYS**" file, just input "**A:\WIN98**" to specify the location of this file.
8. Windows may request you to "**Insert Windows 98 CD-ROM into the driver selected, and click OK**". Follow this instruction and input CD-ROM location , e.g. "**E:\SETUP\EWIN98**".



9. When Windows finishes the installation, the "**Fast Ethernet CardBus PC Card**" message box will be prompted, then click "**Finish**" button .



10. System will ask you "**Do you want to restart your computer now**". Click "**Yes**" to restart your computer.



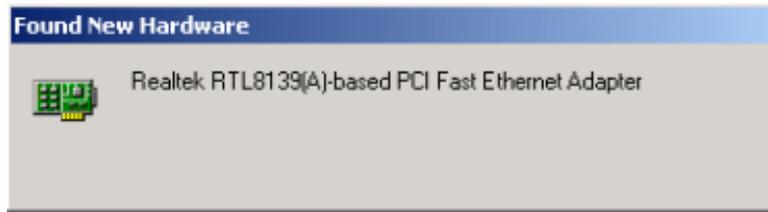
11. After the computer is restarted, the network function will be ready.
12. User can check whether the card is ready or not. Go to "**System**" of Control Panel, select "**Device Manager**", click "**Network adapters**", if display as "**Fast Ethernet CardBus PC Card**", the card is ready.

Hot Swap

This Ethernet CardBus PC Card has **hot-swap** function. But, before you remove the PC Card from the CardBus slot, please click the **PCMCIA** icon on **task bar** or in **Control Panel** (as illustrated in the previous diagram) and select "**STOP**" to force this adapter to be inactive. When the prompt "**You may safely remove this device.**" appears, click "**OK**" and remove your Ethernet card.

Chapter 5 Setup for Windows 2000/me/xp

1. Start the computer, insert the 10/100 Fast Ethernet CardBus PC Card into a slot, make sure the card is securely inserted into the socket. Windows will show "**Found New Hardware**".



This PC card uses Realtek RTL8139 IC which has driver built-in Windows. Windows will automatically install the driver. The driver can run ok, but without the function of ACPI

(Advanced Configuration and Power Interface).

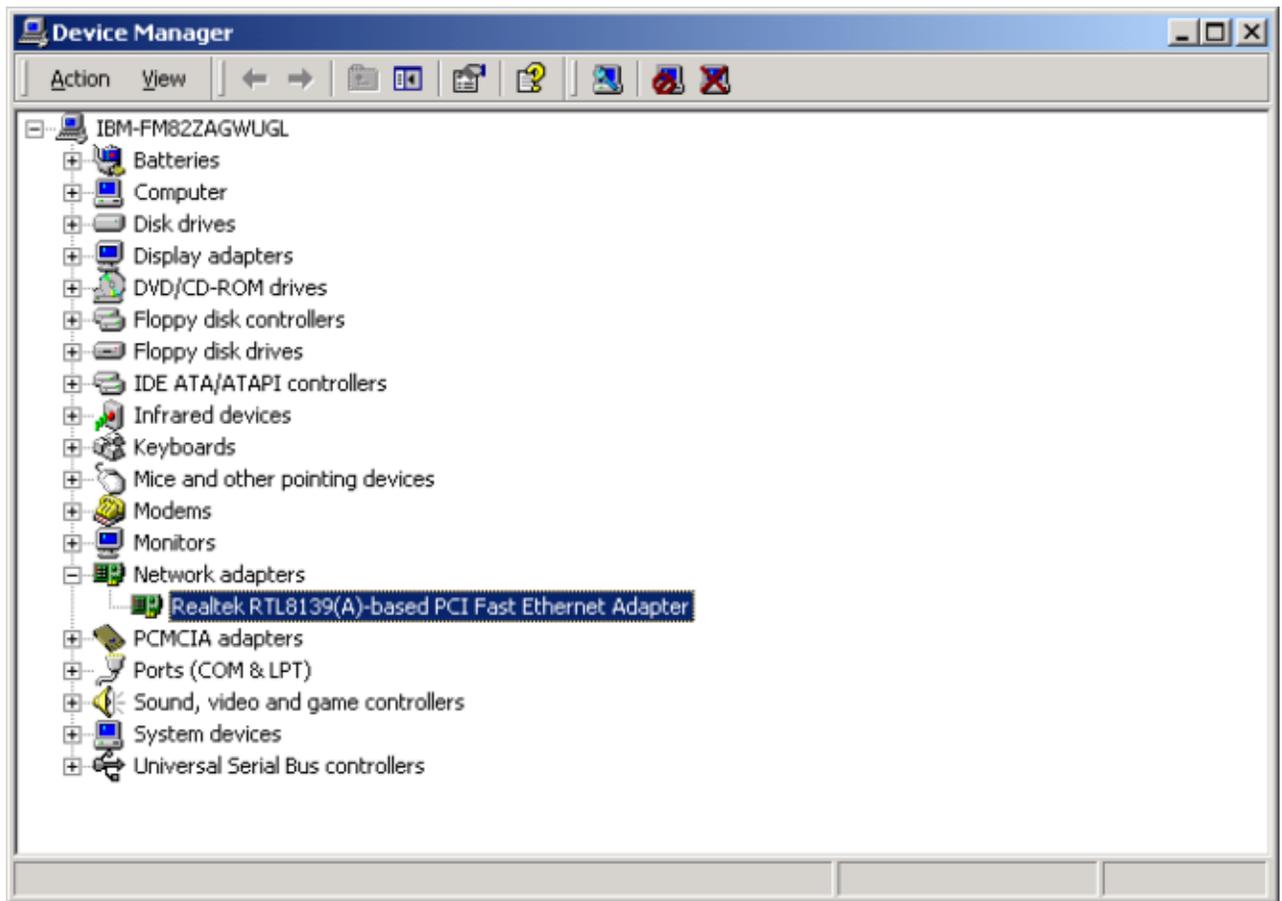
If the user is satisfied with this driver, then the installation is completed. The user does NOT need to go through following steps. Please restart the computer and the network function will be ready.

2. If the user wants to accommodate ACPI function into the 10/100 Fast Ethernet CardBus PC Card. Then the user

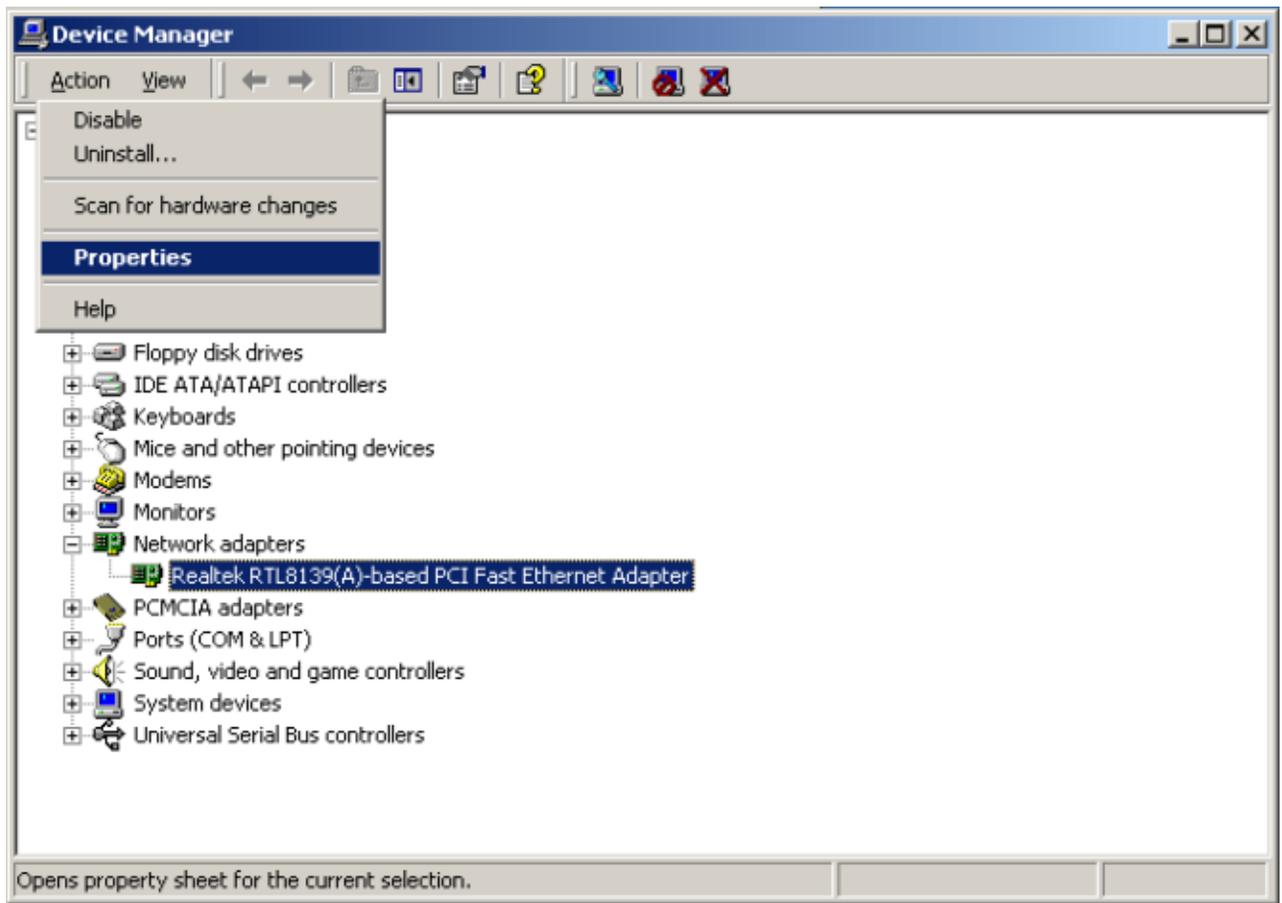
needs to update the driver to which we support in the driver diskette. Please select **"My Computer"** then **"Control**

Panel" then **"System"**, then **"Hardware"**, then **"Device Manager"**, then select **"Network adapters"**, and select

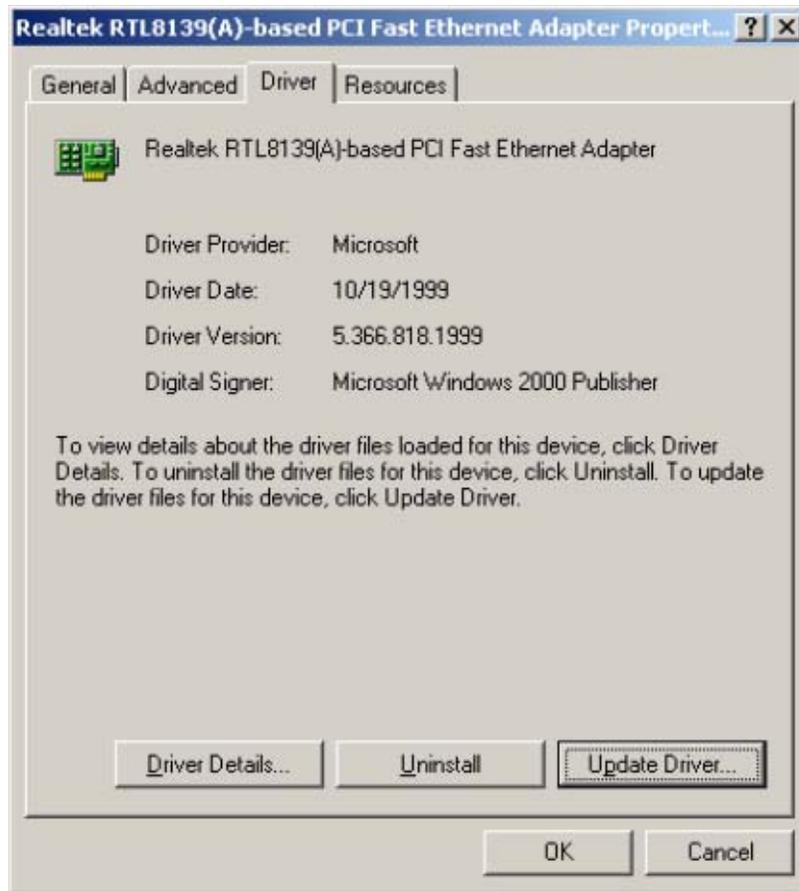
"Realtek RTL8139(A)-based PCI Fast Ethernet Adapter".



3. Click "**Action**" and then click "**Properties**".



4. In the properties window, select "**Driver**", and click "**Update Driver**".



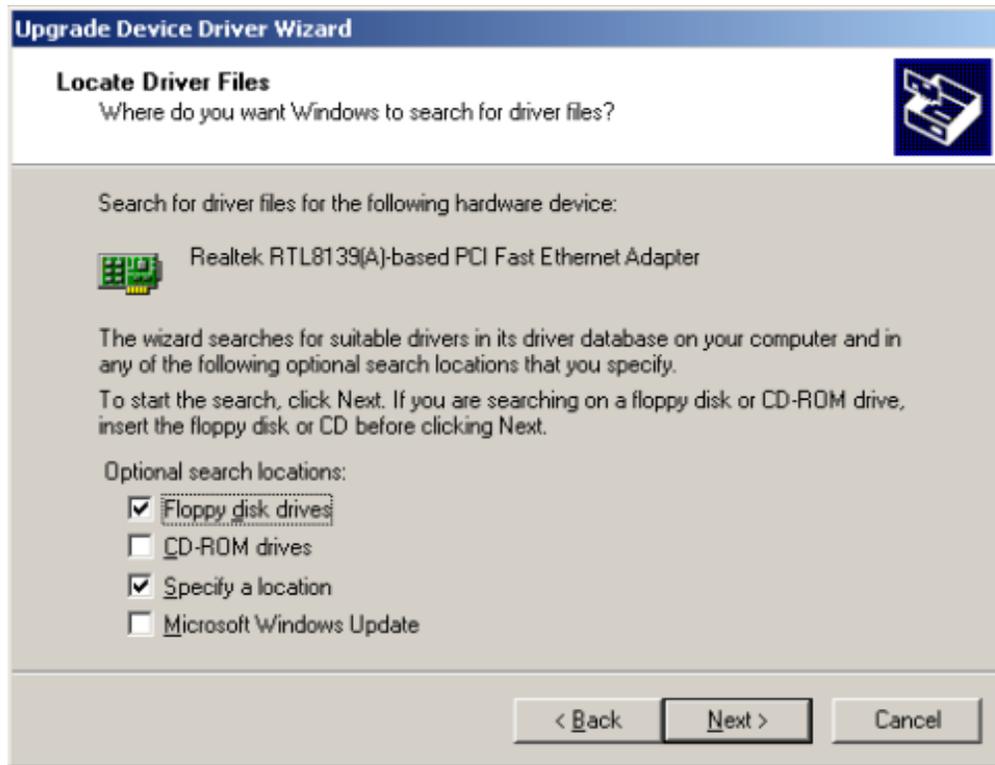
5. Windows will show "Welcome to the Upgrade Device Driver Wizard", Click "Next".



6. Select "Search for a suitable driver for my device" and click "Next" .



7. Insert the driver disk and select the location where the driver is located, then click "Next".



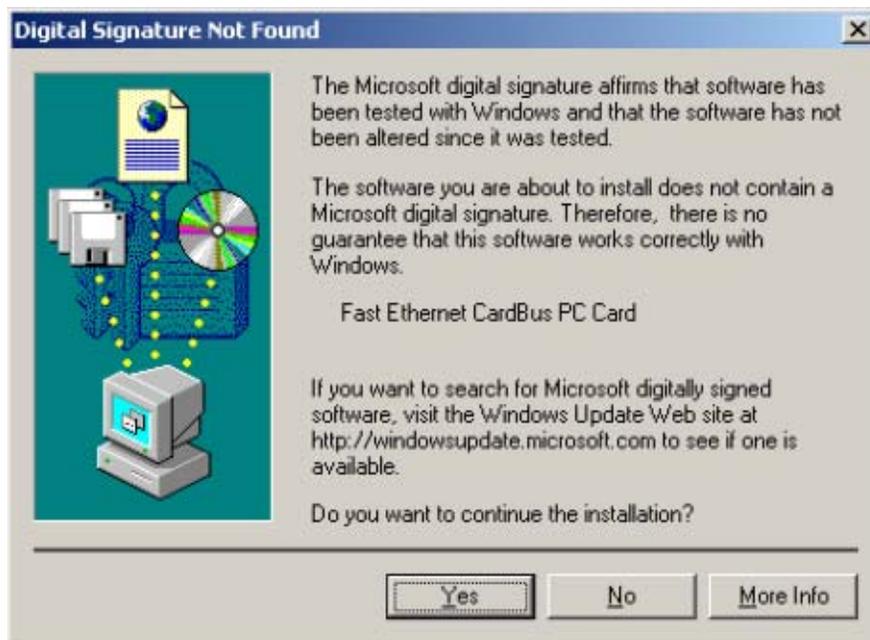
8. Key in the driver location Win2000 driver at A:\win2000, Winme driver at a:\98_me, WinXP driver at:\winxp,and click "OK".



9. The windows found the driver, click "Next" to continue.



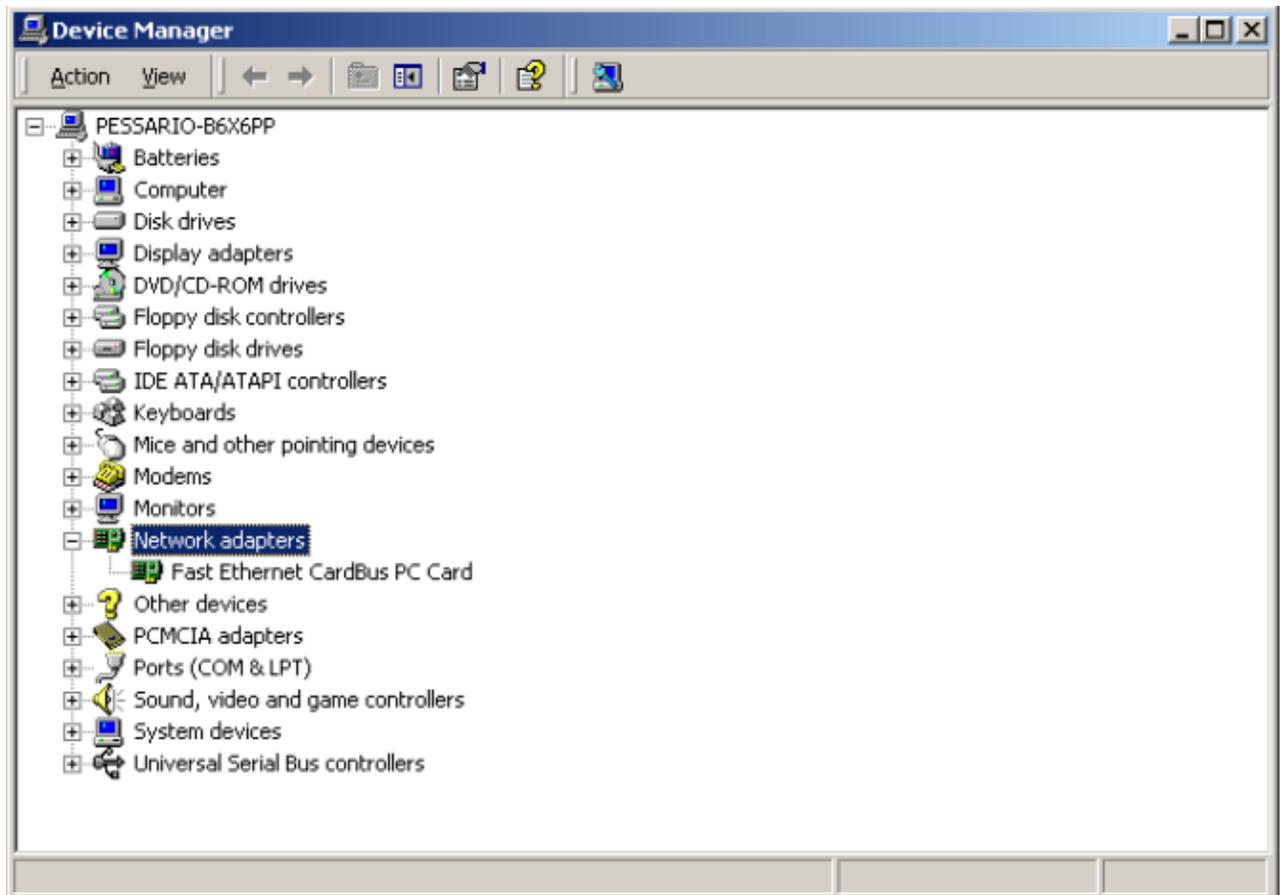
10. Digital signature not found, click "Yes" to continue the installation.



11. Windows will automatically copy the driver files and related files into the system. After copying the driver files, the device installation is completed, click "Finish".



12. The **Device Manager** window pops up, please check "**Network adapters**", if "**Fast Ethernet CardBus PC Card**" is presented, then the update driver operation is OK.



13. Restart the computer and the 10/100 Fast Ethernet CardBus PC Card will be ready.

Hot Swap

This Ethernet CardBus PC Card has **hot-swap** function. But, before you remove the PC Card from the CardBus slot, please click the **PCMCIA** icon on **task bar** or in **Control Panel** (as illustrated in the previous diagram) and select "**STOP**" to force this adapter to be inactive. When the prompt "**You may safely remove this device.**" appears, click "**OK**" and remove your Ethernet card.

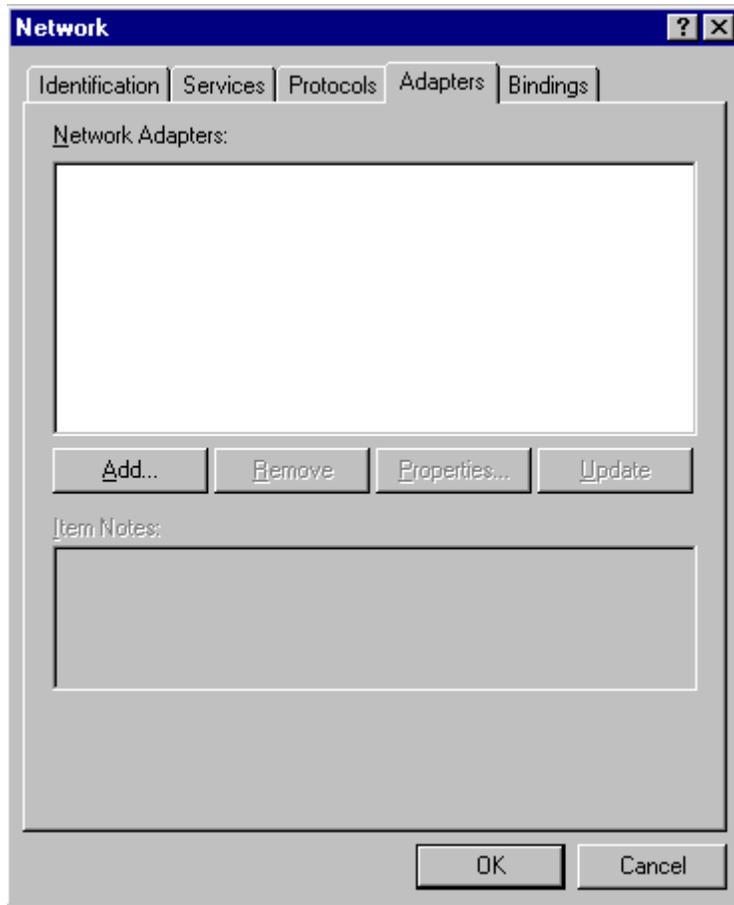
Chapter 6 Setup for Windows NT

System Requirement

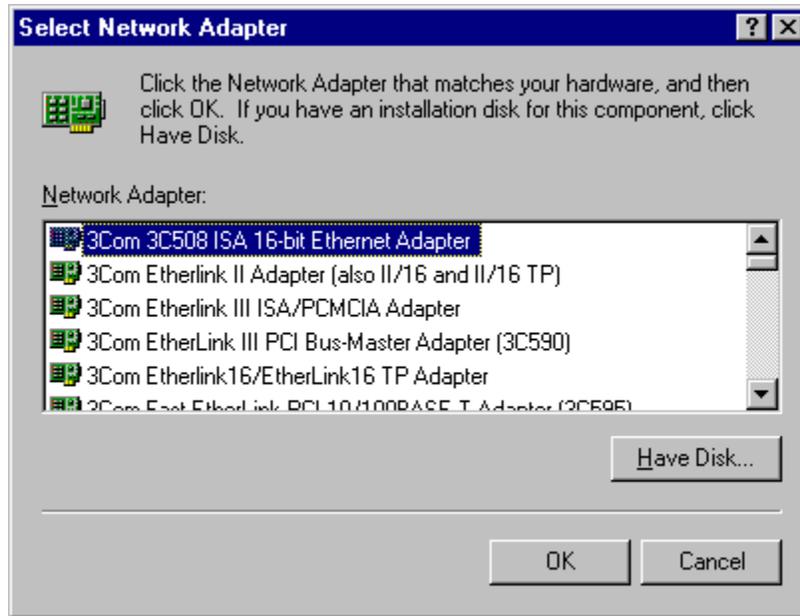
Windows NT4.0 comes with most of the drivers necessary for accessing your Ethernet card, but doesn't support the CardBus Controller enabler. Basically, our driver supports 15 CardBus Controller enablers that include TI1131, TI1250, TI1220, TI1210, TI1221B, TI1251, Topic95, O2 Micro OZ 6832/6833, O2 Micro OZ 6836, O2 Micro OZ 6812, Ricoh RL5C475, and TI1211. If your notebook's CardBus Controller is not in the 12 type controllers, Please contact your notebook manufacturer to request the CardBus enabler.

Installation

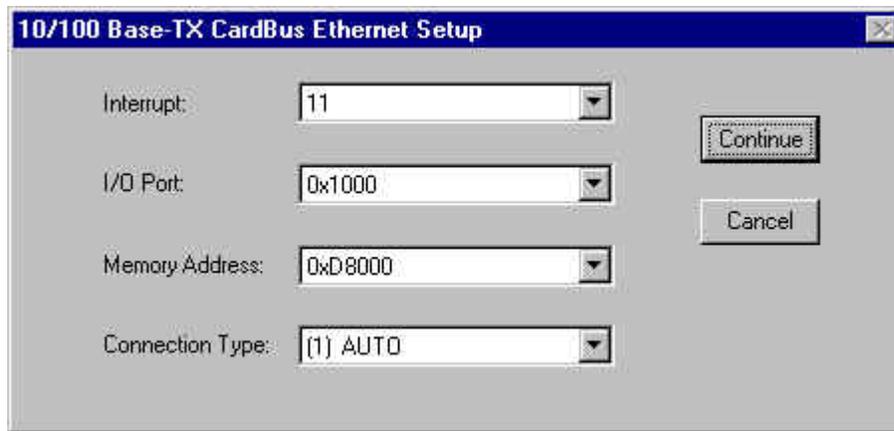
1. Insert the card into a CardBus PC card slot in your computer, then boot the computer to NT4.0..
2. Double click on the "**Control Panel/Network**", select the "**Adapter**" and press "**Add**" button.



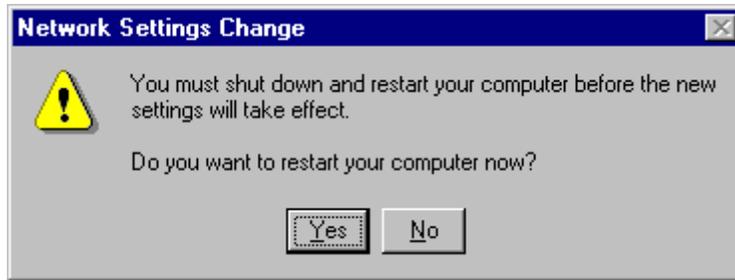
3. In the "**Select Network Adapter**" dialog box, select "**Have Disk**" option.



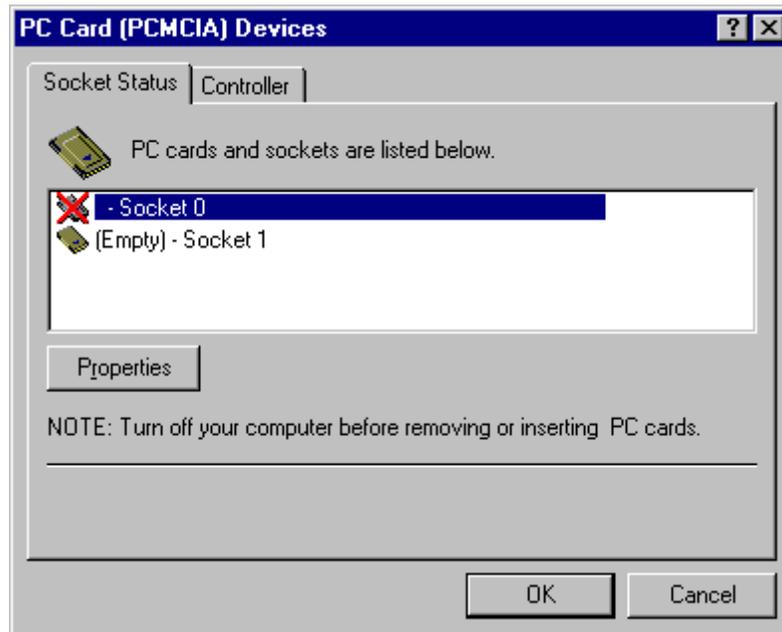
4. **"Insert Disk"** box is prompted. Insert the driver disk in drive A: and type **"A:\Winnt4"**.
5. **"Fast Ethernet CardBus PC Card"** is displayed at **"Select OEM Option"** dialog box. Click **"OK"**.
6. The IRQ of CardBus PC Card is preset for most models of notebook, depending on their PCI design. Please refer our compatible list table. Select the IRQ, I/O Port Address and press **"OK"**.



7. Go back to **"Network"** and select **"Bindings"**. Click **"Close"** button to enable the network function.
8. Ask your Windows NT Server administrator to set the IP Address as Windows requests.
9. Click **"OK"** to finish the network settings. When the prompt **"Network Setting Change"** appears, press **"Yes"** to restart your computer.



10. In the first installation, if the network is on-line, the 10/100 Fast Ethernet CardBus PC Card Driver is started, and the LED 10/100 indicator is turned on, but the network can't be accessed, please change the IRQ or I/O port. Click the "Network" in Control Panel, select "Adapters", and click "Properties". Here you can change the value.
11. Win NT4.0 doesn't support CardBus Controller enablers, so although the CardBus card has been installed successfully, the "PC Card (PCMCIA)" icon of Control Panel will not display the 10/100 Fast Ethernet CardBus PC Card information.



Chapter 7 Setup for DOS ODI Drivers

In the driver diskette, the "NWCLIENT" directory contains DOS ODI drivers to support Novell's NetWare 3.x and 4.x network operating system. This directory also contains direct enabler programs to enable the CardBus slot. To enter the NetWare network operating system, you need the following files to start up DOS ODI drivers:

- a. RTPCI.EXE: Enables the CardBus Controller
- b. RTBIOS.COM: Intercepts PCI BIOS Function Calls for CardBus
- c. LSL.COM: Supported by Novell
- d. RTSODI.COM: DOS ODI driver

- e. IPXODI.COM: Supported by Novell
- f. NETX.EXE: Supported by Novell
- g. NET.CFG: An optional configuration file
- h. STARTNET.BAT: A sample BATCH file to enter NetWare NOS

Enable CardBus

In a DOS environment, this product supports enabler programs to enable the CardBus. Basically, these enabler programs support the following CardBus controllers:

- Texas Instruments TI1210,TI1211,TI1220,TI1221B,TI1131,TI1250,TI1251
- Toshiba ToPIC95
- Ricoh RL5C475
- O2 Micro OZ6836,O2 Micro OZ6832/6833,O2 Micro OZ6812

If your computer's CardBus Controller is not listed above, then please refer Appendix B compatibility List.

You can use RTPCI.EXE to check whether this card can be enabled by this program. Plug your Ethernet adapter into the CardBus slot and run RTPCI.EXE. If the prompt "**Found Ethernet PCI Device!**" appears, it means your CardBus PC Card Slot will be supported by the enabler program.

Installation

There is a sample batch file named "**STARTNET.BAT**" located in the "NWCLIENT" directory of driver diskette. This file runs as:

RTPCI /md000 /i11

RTBIOS

LSL

RTSODI

IPXODI

NETX

Type "**STARTNET**" to execute the above six files, then you can log in to the file server.

Troubleshooting

1. "**ERROR: No CardBus Card was inserted**" shown by RTPCI.EXE
2. **Re-plug the Ethernet adapter and try again, or change to another slot. If neither slot is available, it may be a CardBus controller problem. Make sure the card is firmly placed in the socket before you try again.**
3. **PC hanging up while executing NETX.EXE**
4. **Change to another IRQ for enabler program and try again. The popular IRQ's are 9, 10 and 11. For example, the following command is used for IRQ 11**

RTPCI /md000 /i11

Appendix A Pin Assignment

RJ-45 connector

RJ-45 connector is used to connect with hub or switch.

Pin Number	Description
1	Transmit data +
2	Transmit Data -
3	Receive Data +
6	Receive Data -
4, 5, 7, 8	Reserved

Pin to Pin connection of a straight cable is shown as below.

Hub Adapter

1 RD+ <----> 1 TD+

2 RD- <----> 2 TD-

3 TD+ <----> 3 RD+

6 TD - <----> 6 RD-