

Wireless LAN Card

User Guide

Before operating the unit, please read this manual and retain it for future

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Chapter 1 Introduction

This chapter describes the package contents, PC Card description, system requirements, features & benefits, applications and network configurations of our wireless LAN products.

1-1 Package Contents

The PC Card package contains the following items as shown in

Figure 1-1

1. One PC Card
2. One Installation CD
3. One Quick Installation Guide



Figure 1-1

1- 2 PC Card Descriptions

The PC Card is a standard PC Card that fits into any PCMCIA Card Type II slot. The PC Card has a LED indicator and an integrated built-in diversity antenna as shown in **Figure 1-2**.



Figure 1-2

1. Integrated, with built-in diversity Antenna
2. Link LED
 - Peer-to-Peer – Blinking, no matter the wireless is connected or not
 - Access Point – Solid GREEN when the wireless is connected
 - Off – No wireless activity

1- 3 System Requirements

Installation of the PC Card requires:

1. PC/AT compatible computer with PCMCIA Type II slot.
2. Windows 98//ME/NT 4.0/2000/XP operating system environment.
3. Minimum 1.3M bytes free disk space for installing the PC Card driver and utility program.

1- 4 Features and Benefits

11Mbps data transfer rate	High-speed data transmission
High transmit output power (Long Range PC Card Only)	Long operating range, up to three times range of standard products
IEEE 802.11b compliant	Fully interoperable with IEEE 802.11b compliant products
Automatic data rate scaling at 11, 5.5, 2 and 1 Mbps	Optimized throughput, range And connectivity
Improved 64/128-bit WEP Engine	Significantly improved throughput
Wide coverage range up to 600/1200(Long Range PC Card only) meters in open space	Wireless connectivity for all your computers
Advanced Power Management	Extended battery life
Plug and Play PC Card interface	Easy installation
Significantly improved indoor multipath distortion	Higher link quality in indoor environment

1- 5 Applications

The wireless LAN products are easy to install and highly efficient. The following list describes some of the many applications made possible through the power and flexibility of wireless LANs:

1. Difficult-to-wire environments

There are many situations where wires cannot or not easily be laid. Historic buildings, older buildings, open areas and across busy streets make the installation of LANs either impossible or very expensive.

2. Temporary workgroups

Consider situations in parks, athletic arenas, exhibitions, disaster-recovery, temporary office and construction sites where one wants a temporary WLAN established and removed.

3. The ability to access real-time information

Doctors/nurses, point-of-sale employees, and warehouse workers can access real-time information while dealing with patients, serving customers and processing information.

4. Frequently changed environments

Show rooms, meeting rooms, retail stores, and manufacturing sites where frequently rearrange the workplace.

5. Small Office and Home Office (SOHO) networks

SOHO users need a cost-effective, easy and quick installation of a small network.

6. Wireless extensions to Ethernet networks

Network managers in dynamic environments can minimize the overhead caused by moves, extensions to networks, and other changes with wireless LANs.

7. Wired LAN backup

Network managers implement wireless LANs to provide backup for mission-critical applications running on wired networks.

8. Training/Educational Facilities

Training sites at corporations and students at universities use wireless connectivity to ease access to information, information exchanges, and learning.

1- 6 Network Configurations

To better understand how the wireless LAN products work together to create a wireless network, it might be helpful to depict a few of the possible wireless LAN PC card network configurations. The wireless LAN products can be configured as:

1. Ad-hoc (or peer-to-peer) for departmental or SOHO LANs.
2. Infrastructure for enterprise LANs.
3. IP Sharing for 56K/ISDN TA/Cable/DSL Modem – Connect Internet and your SOHO network.

Ad-Hoc (peer-to-peer) Mode

This is the simplest network configuration that several computers equipped with the PC Cards that form a wireless network whenever they are within range of one another (**Figure 1-3**). In ad-hoc mode, each client, is peer-to-peer, would only have access to the resources of the other client and requires no the access point. This is the easiest and least expensive way for the SOHO to set up a wireless network.

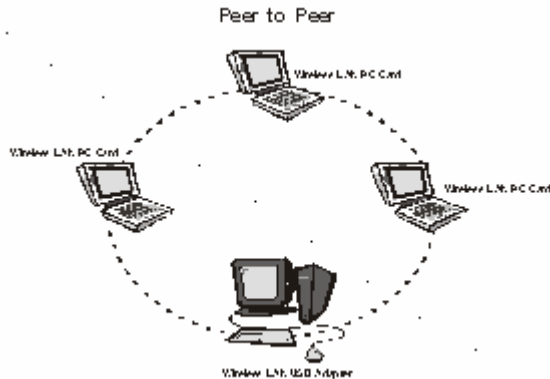
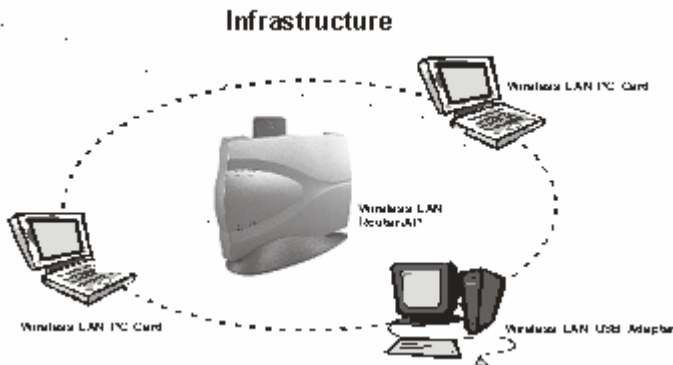


Figure 1-3 A wireless Ad-hoc network

Infrastructure Mode

The infrastructure mode requires the use of an access point (AP). In this mode, all wireless communications between two computers have to be via the AP no matter the AP is wired to Ethernet network or stand-alone. If used in stand-alone, the AP can extend the range of independent wireless LANs by acting a repeater, which effectively doubling the distance between wireless stations as shown in **Figure 1-4**.

Figure 1-4



Extended-range independent WLAN using AP as repeater

If wired to an Ethernet network as shown in **Figure 1-5**, the AP serves

as a bridge and provides the link between the server and the wireless clients. The wireless clients can move freely throughout the coverage area of the AP while remaining connected to the server. Since the AP is connected to the wired network, each client would have access to server resources as well as to other clients.

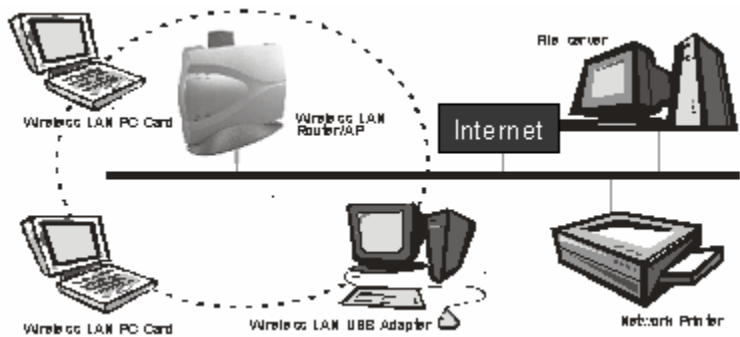


Figure 1-5 Single AP bridge

Access points have a finite range, on the order of 50 meters indoor and 100 meters outdoors. In a very large facility such as an enterprise, a warehouse, or on a college campus, it will probably be necessary to install more than one access point to cover an entire building or campus, as shown in Figure 1-6. In this scenario, access points hand the client off from one to another in a way that is invisible to the client, ensuring the connectivity. Wireless clients can roam seamlessly between different coverage areas and remain connected to the network.

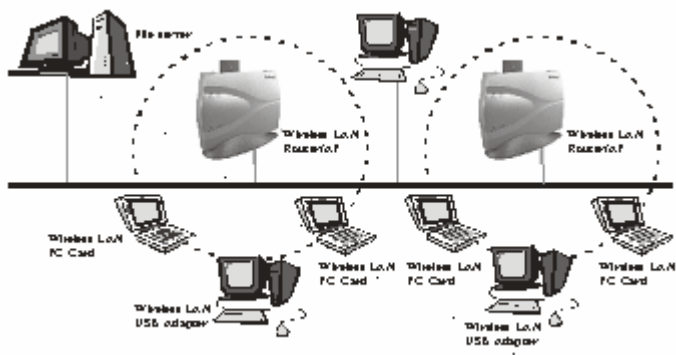


Figure 1-6 Multiple-AP and roaming

Wireless Router and IP Sharing

In infrastructure mode, in addition to acting as a bridge between an Ethernet and wireless network, the AP can be configured as a wireless router and IP sharing device for Internet access as shown in **Figure 1-7**. You don't have to buy an expensive router. Nor you have to buy several modems and setup phone lines. Just share one AP, one Modem, single dial-up account, and one phone line, dozens of network users can go surfing the Internet concurrently.

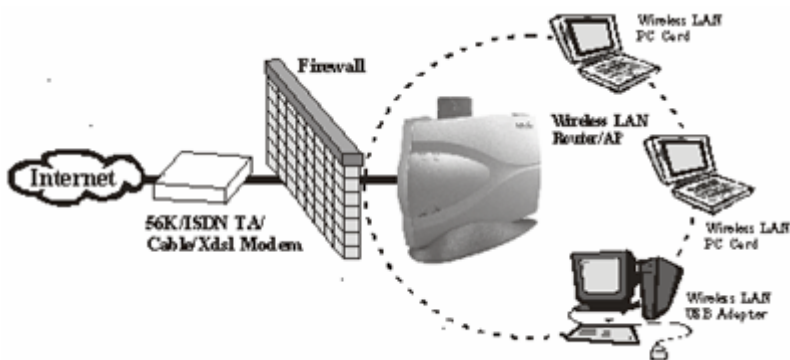


Figure 1-7 Wireless router and IP Sharing

Chapter 2 Installing Drivers & Client Utility

This chapter describes how to install the PC Card Drivers and Client Utility under Windows 98/ME/2000/XP.

2-1 Installation for Windows 98/ME/2000/XP

During the installation, Windows 98/ME/2000/XP may need to copy Windows systems files from the Windows 98/ME/2000/XP installation diskette or CD-ROM. Therefore you will need a copy of the Windows 98/ME/2000/XP installation diskette or CD-ROM at hand before installing the driver. On many systems, instead of a CD, the necessary installation files are archived on the hard disk in C:\WINDOWS\OPTIONS\CABS directory.

Installation Procedure:

Before installing this new driver in you PC, you need to remove all of the Wireless LAN PC Card's drivers that you had installed in you PC (Please refer to page 9). Please follow the installation procedures below.

© Install Wireless PC Card Driver

Turn on your computer.

Be sure that there is no Wireless LAN PC Card has been inserted yet. Insert the **Wireless LAN Installation** CD into your CD-ROM drive.

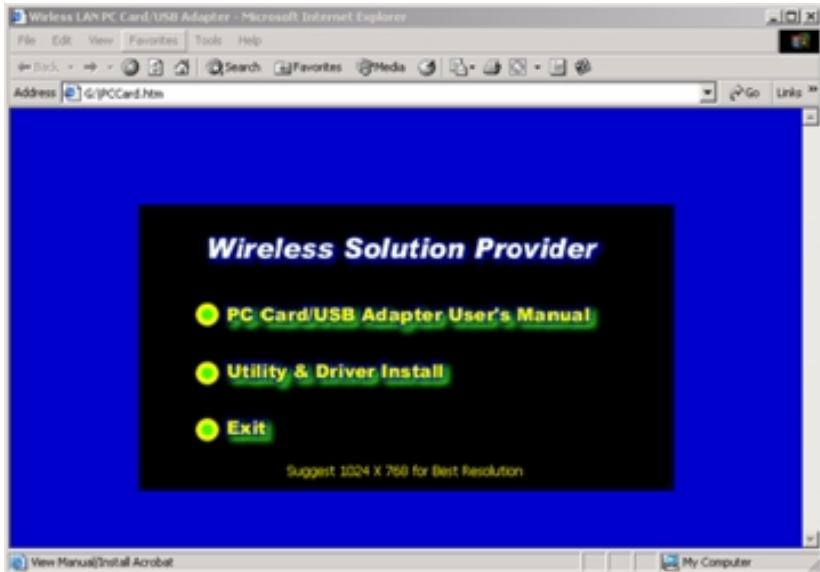


Figure 2-1-1

1. The setup program should start automatically as shown in **Figure 2-1-1**. If it does not start, you can run it manually by selecting RUN from the Start menu and running **Setup.htm** from CD-ROM drive.
2. From Wireless LAN Installer, select **Utility & Driver Install**. The driver and utility of Wireless LAN PC Card will be installed automatically.
3. Insert the PC Card into the PCMCIA slot of your computer.
4. The Wireless LAN PC Card will be found and installed without restart the computer.
5. Make sure that the network protocol parameters are set correctly for your computer. These include the IP address, subnet mask, gateway and DNS. If you are unfamiliar with how to set network protocol parameters, refer to Chapter 3 Connection to Network for details.

◎ **Remove Wireless PC Card Driver**

1. Turn on your computer.
2. Right-click on **My Computer** icon on the Windows desktop to choose **Properties** and the **System Properties** window will pop out.
3. Click on the tab **Device Manager** and then move the mouse to **Network Adapters** node to expend the tree list by clicking on the plus sign.
4. Remove Wireless LAN PC Card that you have installed already.
5. Uninstall the Old Driver
6. You must remove the old existing driver before installing the new driver.
7. Click **Start** icon on the tool bar and select **Control Panel** from **setting** item.
8. Double click the **Add/Remove Programs** icon to open up Add/Remove Programs window the choose the tab **Install/Uninstall**, pick up the utility that you have installed for Wireless LAN PC Card and press the button **Add/Remove**.
9. The dialog box will show up to confirm if you want to remove the driver and all of its components. Please click on **OK** button to complete the uninstall procedure of the old driver.
10. Restart the computer and remove the Wireless LAN PC Card.
11. Follow the **Install Wireless PC Card Driver** to complete the Installation Procedure.
12. If the computer still use the old driver, please follow the step below,
 - a. Right click the **My Computer** icon on the desktop and choose **Properties** (Windows 98/ME) or **Manage** (Windows 2000/XP).
 - b. In the **Device Manager** window, right click the **Wireless LAN PC Card** from the Network adapters' tree list and choose the Properties as shown in **Figure 2-1-2**.

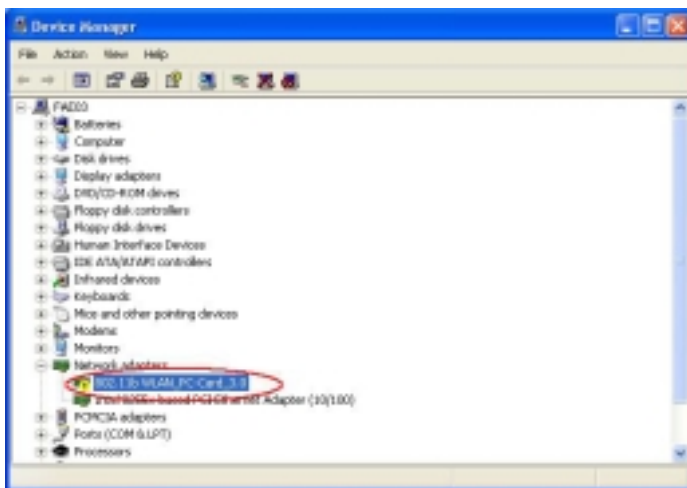


Figure 2-1-2

- c. Click **Update Driver** button from the Driver tab as shown in **Figure 2-1-3**.



Figure 2-1-3

- d. Choose ***Install from a list or specific location (Advanced)*** and click ***Next*** as shown in ***Figure 2-1-4***.



Figure 2-1-4

- e. In the Hardware Updated Wizard, choose ***Don't search. I will choose the driver to install*** and then click ***Next*** as shown in ***Figure 2-1-5***.

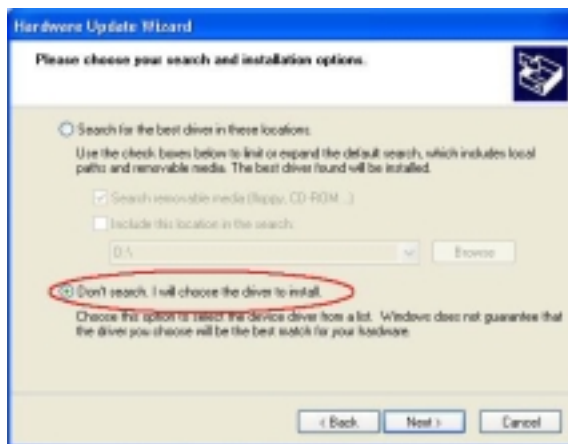


Figure 2-1-5

- f. Select the network adapter for 802.11b WLAN_PC-Card_3.0 and then click **Next** as shown in **Figure 2-1-6**.

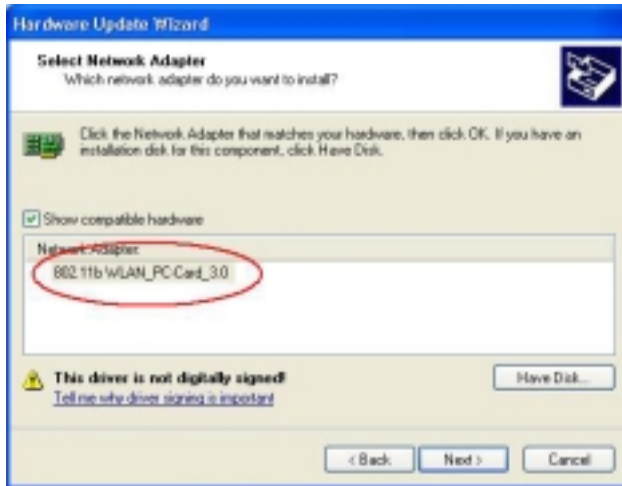


Figure 2-1-6

- g. Click **Yes** to continue the installation procedure.

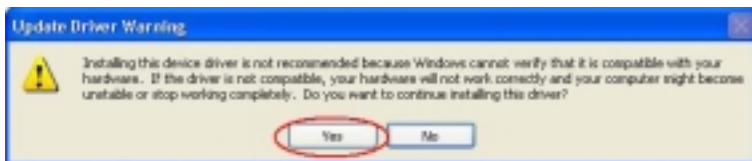


Figure 2-1-7

- h. Click **Continue Anyway** as shown in **Figure 2-1-8**. (There is a message shows up if you use a generic version driver.)



Figure 2-1-8

- i. Click **Finish** to complete the installation procedure.

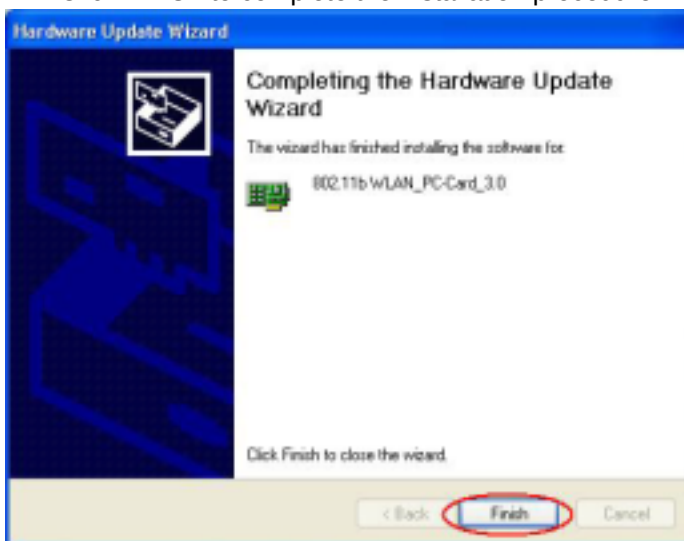


Figure 2-1-9

2- 2 Checking after Installation

After installing the driver and utility, follow the steps below to check that the PC Card is operating correctly.

1. Click the **Start** button, select **Settings**, and then click **Control Panel**.
2. In the **Control Panel** window, double-click the **System** icon, and then select the **Hardware** tab. Then click **Device Manager** button.
3. Double-click **Network adapters**, and then select **802.11b WLAN_PC-CARD** as shown in **Figure 2-2-1**.

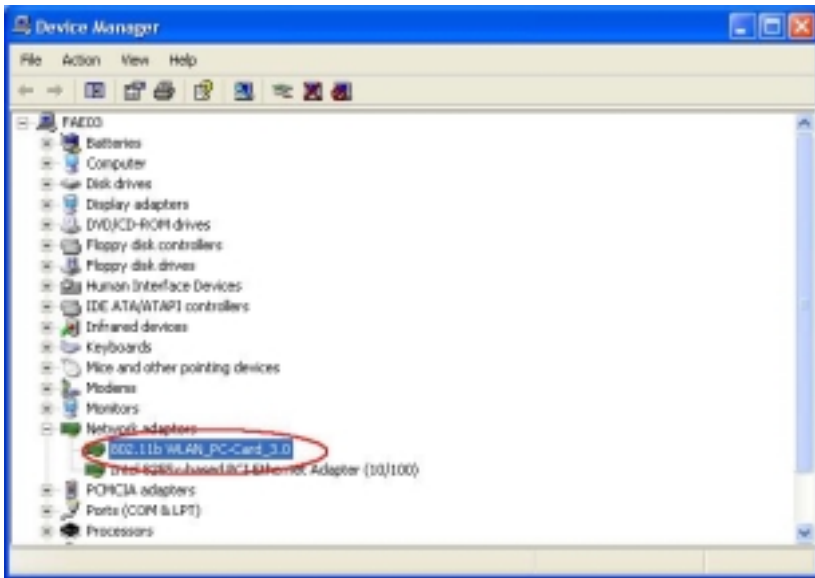


Figure 2-2-1

4. Double-Click the **802.11b WLAN_PC-CARD_3.0** button, and then check the message. This device is working properly is displayed for Device status as shown in **Figure 2-2-2**.

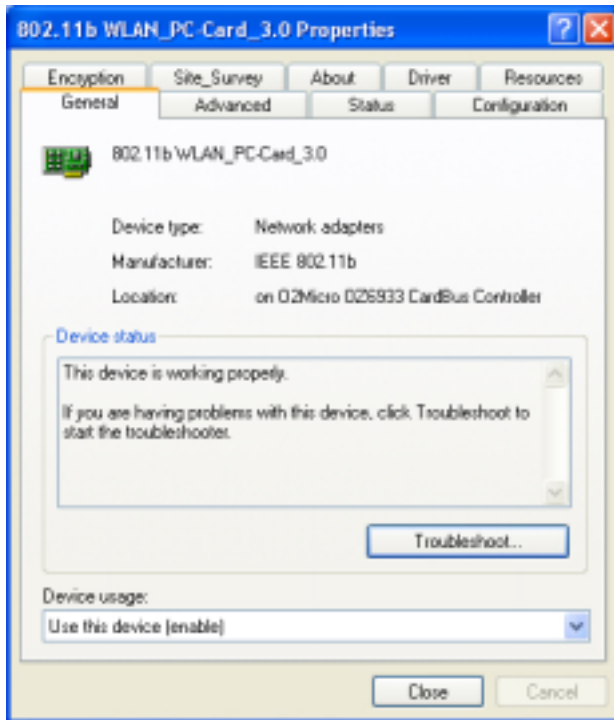


Figure 2-2-2

5. If you find the Yellow (?) sign on the adapter or the above message is not displayed, it shows the installation is not successful or the Wireless LAN PC Card is not operating properly. Uninstall and re-install the driver, referring to **Chapter 2-4 Uninstalling Driver and Utility**.

2- 3 Wireless LAN Client Utility

Wireless LAN Client Utility is used to display or change the PC Card information about link, configuration, encryption, and utility/driver/firmware version information. The client utility will also help you with site selection. The client utility will be installed automatically after installing the driver and utility. The PC Card Utility icon will appear in the System Tray in the bottom right corner on your screen as shown in the **Figure 2-3-1** and **Table 2-3-1**.



Figure 2-3-1

	Green indicates good or excellent link status
	Yellow indicates fair link status
	Red indicates no or poor link status

Table 2-3-1

After finishing installing the driver and utility, the client utility will automatically be executed and show a small green **radio** icon at the right corner of **Taskbar** whenever the PC Card is inserted into the PC Card slot of your computer. Double-click the **radio** icon to open the **Wireless LAN Client Utility** window as shown in **Figure 2-3-2**. You can click the tabs on the top of the windows to select various screen messages. Below we explain the use and meanings of the various screen messages.

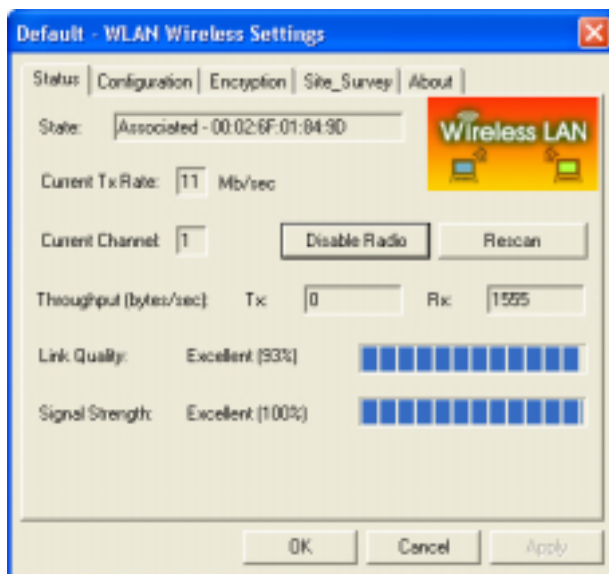


Figure 2-3-2

1. Menu of System Icon

Right-click on the system tray icon, the icon menu will display as shown in **Figure 2-3-3**. Below is the introduction to this icon menu.



Figure 2-3-3

- Wireless Radio On/ Wireless Radio Off

The first two items in the icon menu are used to turn on/off the wireless radio. When the wireless radio is turned off, a red cross is placed on the system tray icon as shown in **Figure 2-3-4**. When the wireless radio is turned on, the icon will vary in colors depending on the link quality as described in the **Table 2-3-1**.



Figure 2-3-4

- Remove Status Icon

This item allows you to set the System Tray Icon to appear or disappear. Once you choose this item, the system will display the dialog box to confirm if you want to remove the System Tray Icon. You can also set the System Tray Icon to disappear permanently by checking the box **Remove Status Icon Permanently** as shown in the **Figure 2-3-5**. When the computer is restarted, the System Tray Icon will come back if you have removed the System Tray Icon before but not checked the box **Remove Status Icon Permanently**.



Figure 2-3-5

- Wireless Network Status

This item launches the PC Card Utility with the tab **Status** that displays the information about link status to users.

- Advanced Configuration

This item launches the PC Card Utility with the tab **Configuration** that allows users to configure PC Cards to suit their specific network settings.

- WEP Encryption

This item launches the PC Card Utility with the tab **Encryption** that allows users to set up the Encryption Key which is used in their network environment.

- SITE Survey

This item launches the PC Card Utility with the tab **Site_Survey** that allows users to browser the available active access points which users can connect to by pressing the **Connect** button.

- Version Information

This item launches the PC Card Utility with the tab **About** that displays the information about driver version, utility version, and firmware version.

2. Status

State

Shows status information about the radio link, as shown in **Figure 2-3-6**.

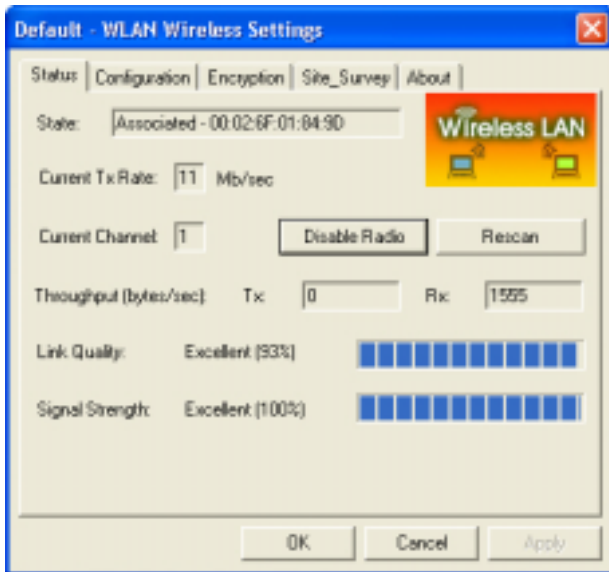


Figure 2-3-6

- Associated BSSID – means the wireless client is connected to an access point. BSSID is shown in the form of six hex digits which is the MAC address of the access point.
- Scanning – means the wireless client is searching for an available access point in infrastructure mode.
- Disconnected – means there are no access points or other wireless clients (if communicating in Ad-hoc mode), or the PC Card is unplugged in your computer.

Current Tx Rate (Mbits/s)

The data speed that wireless client is transmitting.

Current Channel

The operation radio frequency channel that wireless client is using in infrastructure mode. In infrastructure mode, wireless client will always go the same channel as their Access Point.

Throughput (Bytes/sec)

- Tx: shows the outgoing (sent) data speed.
- Rx: shows the incoming (received) data speed.

Link Quality

In infrastructure mode, this bar displays the transmission quality between a WLAN station (Access Point) and Wireless LAN PC Card. In Peer-to-Peer mode (Ad-Hoc), this bar displays the link quality between two Wireless LAN PC Cards.

Signal Strength

This bar displays the signal strength level. The higher bar is the more powerful radio signal is received by the PC Card.

Disable/Enable Radio

This button is used like a switch that allows users to turn off the wireless radio by clicking this button and turn it on again.

Rescan

The radio will rescan all available channels by pressing this button. You can push this button to rescan the channels for better link quality when the link quality is poor.

3. Configuration

Make configuration changes by specifying the proper configuration parameters on this configuration tab as shown in **Figure 2-3-7**.

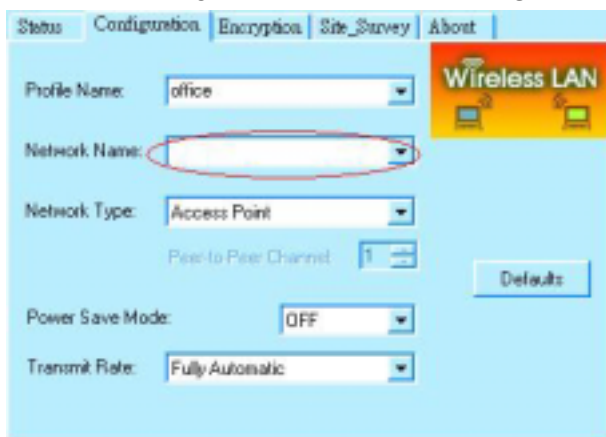


Figure 2-3-7

Profile

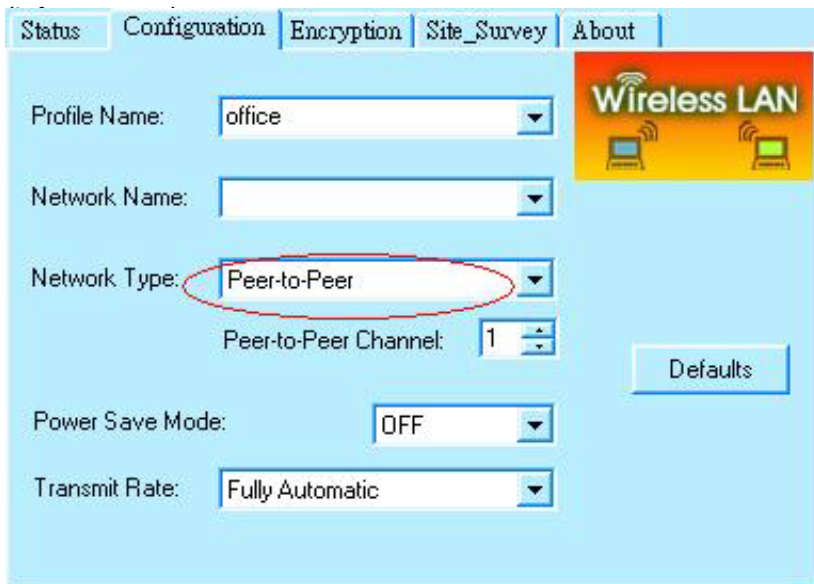
You can give a name for this field to a setting of configuration parameters, such as Network Name, Network Type, Transmit Rate, Encryption (WEP Security), etc. It makes much easier for users to change WLAN configuration settings who need to switch working places frequently. Suppose that a user has to work between the two different offices where there are different network settings. In this case, this user just needs to setup two profiles for the two offices and simply selects the proper profile when the user switches to the different office.

Network Name

For infrastructure mode, you need to type in the SSID of the access point to which your computer connects. For Ad-Hoc (peer-to-peer) mode, you need to type in the virtual SSID of the Ad-Hoc network to which your computer attaches.

Network Type

There are two types of network modes in this drop-down list as shown in **Figure 2-3-8**, Peer-to-Peer and Access Point



The screenshot shows a 'Wireless LAN' configuration window with a light blue background. At the top, there are five tabs: 'Status', 'Configuration', 'Encryption', 'Site_Survey', and 'About'. The 'Configuration' tab is selected. Below the tabs, there are several configuration fields: 'Profile Name' with a dropdown menu showing 'office'; 'Network Name' with an empty dropdown menu; 'Network Type' with a dropdown menu showing 'Peer-to-Peer', which is circled in red; 'Peer-to-Peer Channel' with a numeric spinner set to '1'; 'Power Save Mode' with a dropdown menu showing 'OFF'; and 'Transmit Rate' with a dropdown menu showing 'Fully Automatic'. On the right side, there is a 'Wireless LAN' logo featuring two laptops with signal waves, and a 'Defaults' button at the bottom right.

Figure 2-3-8

- Peer to Peer: If two or more stations exchange data directly

without an access point, you need to select Peer-to-Peer mode. Each station in a Peer-to-Peer (Ad-Hoc) network must specify the same **network name (SSID)** and **peer-to-peer channel**.

- Access Point: If at least one access point involves in the communications in a group of stations, you need to select Infrastructure mode. Each station needs to specify the same **network name (SSID)** as the access point. Please refer to the section 1-6 for more details about peer-to-peer mode and Access Point (infrastructure) mode.

Peer-to-Peer Channel

This option is just for Peer-to-Peer (Ad-Hoc) mode. You need to specify a channel on which the communications are established. Each station in a Peer-to-Peer (Ad-Hoc) network must specify the same **channel** and **network type (SSID)**.

Power Save Mode

Power Save function as shown in **Figure 2-3-9**. This function can conserve more battery energy and extend the battery life. This function has three options for power save mode. Below is detailed description as shown in **Table 2-3-2**.

On	Enable Power Save function.
Off	Disable Power Save function.
Auto	Utility will automatically detect what kind of power supply a machine uses and then determine to enable or disable Power Save function. If device uses battery, Power Save Mode is set to on. If device uses AC Power, Power Save Mode is set to off.

Table 2-3-2

The screenshot shows the 'Configuration' tab of a Wireless LAN interface. It contains several configuration options: Profile Name (set to 'office'), Network Name (empty), Network Type (set to 'Peer-to-Peer'), Peer-to-Peer Channel (set to '1'), Power Save Mode (set to 'OFF', which is circled in red), and Transmit Rate (set to 'Fully Automatic'). A 'Defaults' button is located on the right side of the configuration area. A 'Wireless LAN' logo with two laptop icons is also present in the top right corner of the configuration area.

Figure 2-3-9

Transmit Rate

The transmission rate on which the data packets are transmitted by the client can be specified in this drop-down list as shown in **Figure 2-3-10**. Below are the available transmission rates as shown in **Table 2-3-3**.

1 Mbps	allows only 1 Mbps operation
2 Mbps	allows only 2 Mbps operation
Auto 1 or 2 Mbps	allows only 1 or 2 Mbps operation
5.5 Mbps	allows only 5.5 Mbps operation
11 Mbps	allows only 11 Mbps operation
Full Automatic	PC Card chooses the highest available transmission rate

Table 2-3-3

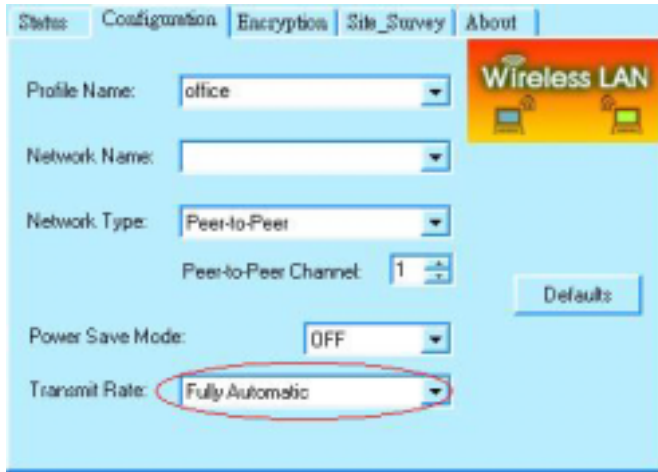


Figure 2-3-10

Defaults

Once this button is pressed, all the settings will be set back to the default settings.

4. Encryption

Encryption is designed to make the data transmission more secure. you can select 64 or 128-bit WEP (Wired Equivalent Privacy) key to encrypt data (Default setting is **Disable**) as shown in **Figure 2-3-11**. WEP encrypts each frame transmitted from the radio using one of the Keys from this panel. When you use WEP to communicate with the other wireless clients, all the wireless devices in this network must have the same encryption key or passphrase.

Choose one of the encryption key (64 bit or 128bit) from the **Encryption (WEP Security)** drop-down list to create encryption key. Click either on **Create Keys Manually** radio button or on **Create Keys with Passphrase** radio button. There are two ways, **Alphanumeric** and **Hexadecimal**, to set the different characters as shown in **Table 2-3-4**.

- **Create Keys Manually→Alphanumeric**

Type 5/13 alphanumeric characters in the key field

- **Create Keys Manually→Hexadecimal**

Type a 10/26 hexadecimal numbers (1-9; A-F) in the key field

- **Use WEP Key**

This drop-down list allows you to specify which of the four encryption keys that you want to use.

- **Create Keys with Passphrase**

Type a character string in the field Passphrase.

- **Disabled**

Select **Disabled** item in the Encryption (WEP security) drop-down list allows you to disable the encryption function.

Data Mode	Alphanumeric	Hexadecimal
64 bit	5	10
128 bit	3	26

Table 2-3-4

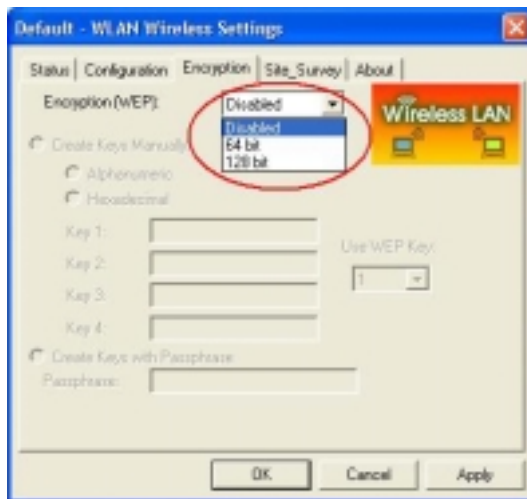


Figure 2-3-11

5. Site Survey

Browse the available access points in your network environment by clicking the **Rescan** button and make a connection to one of them by pushing the **Connect** button in the **Site Survey** tab as shown in **Figure 2-3-12**.

SSID	The Network Type (SSID) of an access point
BSSID	The MAC address of an access point
Channel	The operating channel number of an access point
Link Quality	The quality of link status
WEP	“Y” indicates the WEP function enabled in an access point “N” indicates the WEP function disabled in an access point
Mode	Indicates which mode does the access points use (Infrastructure or Peer to Peer)

Table 2-3-5

The screenshot shows a software interface with a light blue background. At the top, there are five tabs: 'Status', 'Configuration', 'Encryption', 'Site_Survey', and 'About'. The 'Encryption' tab is currently selected. Below the tabs, the text 'Selected AP:' is displayed. Underneath this text is a table with the following headers: 'SSID', 'LQ', 'C', 'BSSID', 'W', 'Mode', and an empty header cell. The table body is currently empty. At the bottom of the window, there are two rows of labels and two buttons. The first row contains the labels 'C' : Channel and 'W' : WEP Enable, followed by a 'Connect' button. The second row contains the labels 'Mode' : AP or STA and 'LQ' : Link Quality, followed by a 'Scan' button.

SSID	LQ	C	BSSID	W	Mode	

'C' : Channel 'W' : WEP Enable

'Mode' : AP or STA 'LQ' : Link Quality

Figure 2-3-12

6. About

About tab shows the product/driver/utility/PC Card firmware version as shown in **Figure 2-3-13**. Users have to use this version number when reporting their problems to technical support.

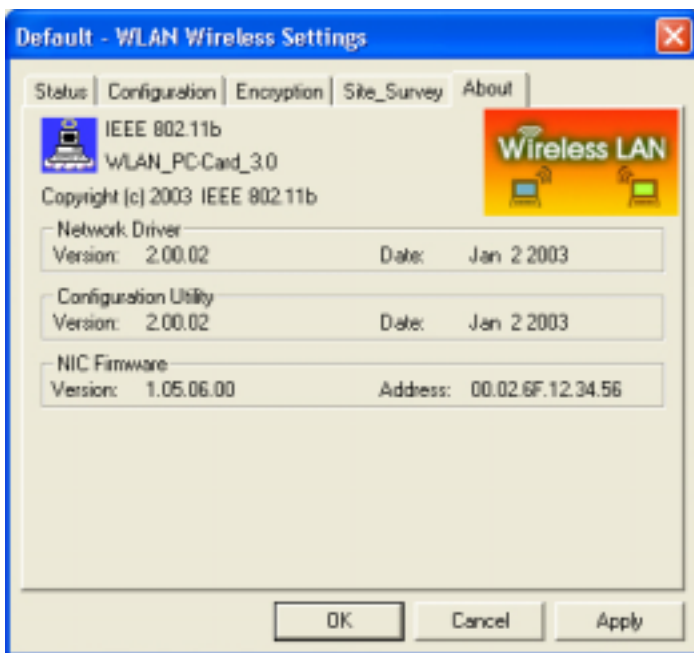


Figure 2-3-13

2- 4 Uninstalling Driver and Utility

If the PC Card installation is unsuccessful for any reason, the best way to solve the problem may be to completely uninstall the PC Card and its software and repeat the installation procedure again.

1. Insert the Wireless LAN PC Card into the PCMCIA slot.
2. Right click **My Computer**--->Select **Properties**.
3. On the Hardware tab, choose Device Manager, and click **Network Adapter**.
4. Choose **Wireless LAN PC Card** and remove it (Please refer the procedure in **Figure 2-1-2**).
5. After removing the **Wireless LAN PC Card**, restart your computer.
6. Click the **Start** button, select **Control Panel** from **Settings**. Double click the **Add/Remove Programs** icon on the Control Panel. In the Change or Remove Programs dialog window, choose the **802.11b WLAN_PC-Card_3.0 for Windows** and click **Change/Remove** button to uninstall this programs as shown in **Figure 2-3-14**.

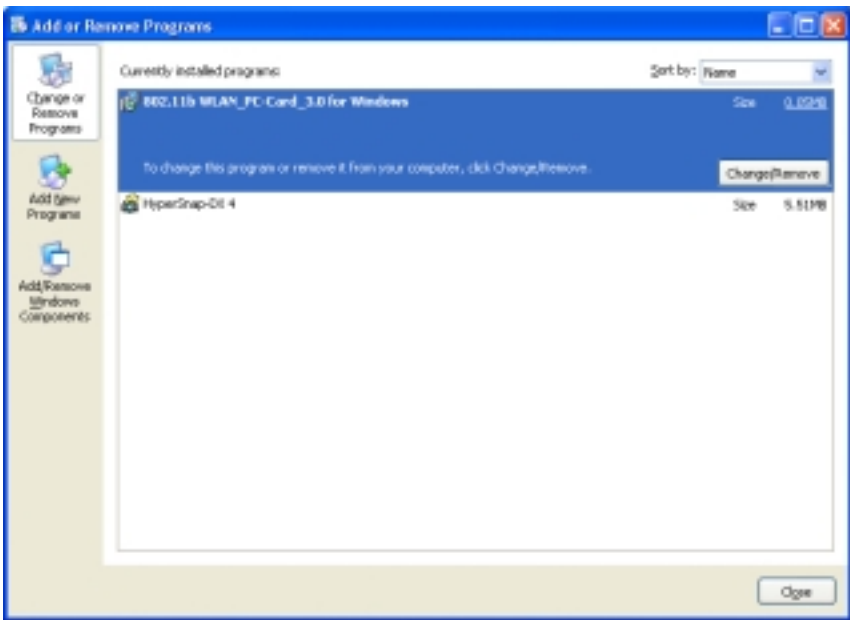


Figure 2-3-14

Chapter 3 Connecting to a Network

This chapter describes how to prepare for connection to network after install the PC Card drivers and utility.

The following is required for all computers if you want to connect to a network.

1. Check **Client for Microsoft Networks** is installed.
2. Check **NetBEUI -> Wireless LAN PC Card** installed. (Only for Windows 98)
3. Check **TCP/IP -> Wireless LAN PC Card** is installed.
4. Check file and printer sharing for Microsoft Networks.
5. Check computer name and workgroup name.

3-1 Checking and Adding Client for Microsoft Networks

The Client for Microsoft Networks enables you to connect to other Microsoft Windows computers and servers and use the files and printers shared on them. If you work on Microsoft network environment, you need to set up *Client for Microsoft Networks*.

1. After finishing installing the driver & utility and rebooting the computer as described in Chapter 2. The computer will show a dialog box titled **Enter Network Password** dialog box. Enter your password if it had been set or just click **Cancel**.
2. Click **Start** button, select **Settings** and then click **Control Panel** to open the **Control Panel** window.
3. In the **Control Panel** window, double-click the **Network** icon to open the **Network** dialog box.
4. Select **Configuration** tab to check **Client for Microsoft Networks** is installed as shown in **Figure 3-1**. If no, click the **Add** button. Select **Client** and click the **Add** button.

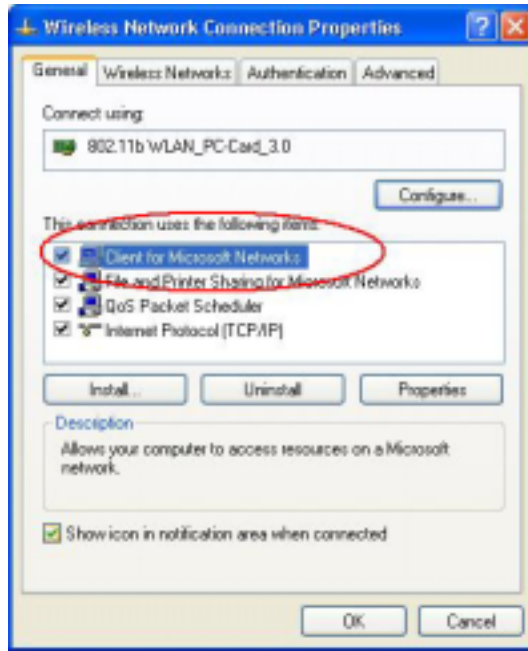


Figure 3-1

5. Select **Microsoft** for Manufacturer and **Client for Microsoft Networks** for Network Client, and then click **OK**.

3-2 Checking and Adding NetBEUI (for Windows 98)

NetBEUI is a protocol you can use to connect to Windows NT, Windows for Workgroups, or LAN Manager servers. If you work on Microsoft network environment, you need to set up NetBEUI protocol.

1. Repeat the step 2 and 3 of Chapter 3-1 Checking and Adding Client for Microsoft Networks.
2. Select **Configuration** tab to check **NetBEUI -> Wireless LAN PC Card** is installed. If no, click the **Add** button. Select **Protocol** and click the **Add** button.

3. Select **Microsoft** for Manufacturer and **NetBEUI** for Network Protocol, and then click **OK**.

3-3 Checking and Adding TCP/IP

TCP/IP is the protocol you use to connect to the Internet and wide-area networks. If you want to connect to Internet, you need to set up TCP/IP protocol.

1. Repeat the step 2 and 3 of Chapter 3-1 Checking and Adding Client for Microsoft Networks.
2. Select **Configuration** tab to check **TCP/IP -> Wireless LAN PC Card** is installed. If no, click the **Add** button. Select **Protocol** and click the **Add** button.
3. Select **Microsoft** for Manufacturer and **TCP/IP** for Network Protocol, and then click **OK**.
4. If yes, double-click **TCP/IP -> Wireless LAN PC Card** to open **TCP/IP properties** as shown in **Figure 3-2**. Due to different network applications there are many different settings here. You can select either **Obtain an IP address automatically** or **specify an IP address**. If you use the **Specify and IP address**, then you need to enter an **IP address**, **Subnet Mask**, **Gateway** IP address, and **DNS Server** IP address for connecting to Internet.

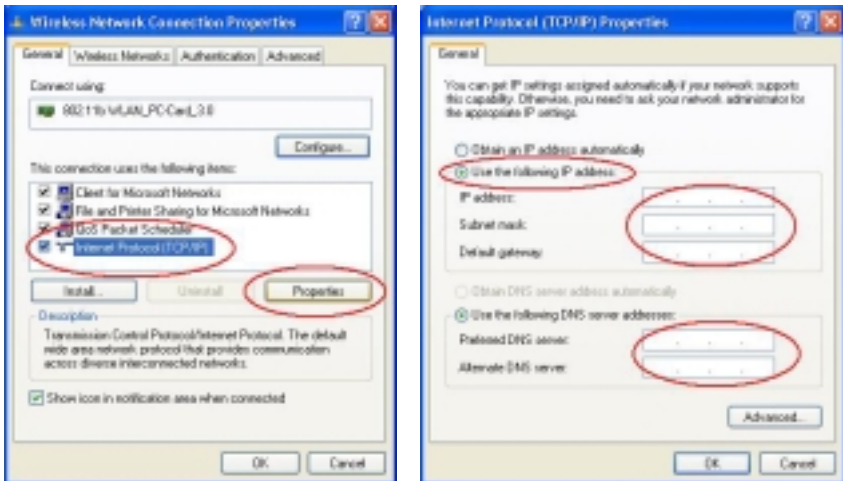


Figure 3-2

3-4 Checking and Adding File and Printer Sharing for Microsoft Networks (for Window 98)

File and printer sharing for Microsoft networks gives you the ability to share your files or printers with Windows NT and Windows for Workgroups computers. If you want to share your files or printers with Microsoft networks, you need to set up this service.

1. Repeat the step 2 and 3 of Chapter 3-1 Checking and Adding Client for Microsoft Networks.
2. Select **Configuration** tab to check **File and printer sharing for Microsoft Networks** is installed. If no, click the **File and Printer Sharing** button.
3. In the **File and Print Sharing** window, select what you need, and click **OK**. **File and printer sharing for Microsoft Networks** and then click **OK**.

3-5 Checking and Adding Computer Name & Workgroup Name

Windows uses the computer name and workgroup name to identify your computer on the network. Please enter a unique name for your computer, the workgroup it will appear in, and a short description of the computer.

1. Repeat the step 2 and 3 of Chapter 3-1 Checking and Adding Client for Microsoft Networks.
2. Select **Identification** tab (Windows 98/ME) or User Information tab to check the computer name, workgroup and computer description are entered. If no, enter a computer name, a workgroup name and then click **OK**. The description field may be left blank. If you want to share data with other persons, make sure you have the same workgroup name.

Chapter 4 Troubleshooting

This chapter describes the problems and corresponding solutions that may occur when installing a PC Card.

Symptom	Solution
Windows does not detect the PC Card when installed.	Verify that the PC Card is properly inserted into the PC Card slot. Check whether the computer has a Plug and Play BIOS. Windows 98/ME/2000/XP might not detect the PC Card if a previous installation of the PC Card was cancelled before it was finished. Remove the previous driver, and redo the installation again.
Driver fails to load	A resource conflict could exist. For Windows 98/ME/2000, use the Device Manager to resolve resource conflicts. Select System from the Control Panel, and then click on the Device Manager tab.

Device conflict on a Windows system	A device conflict under Windows 98/ME/2000 may be related to the PC Card. For Windows 98/ME/2000, use the Computer properties to identify the used I/O port addresses and IRQ values. If there is a device conflict, select alternative settings for I/O Base Address or IRQ values. If you know which device is conflicting with the PC Card, you have the option of changing that device's I/O address or IRQ instead of changing the PC Card.
No resource conflicts were detected, but the wireless station does not attach to the network	Verify that the SSID of the PC Card matches that of the access point. Use the Network Configuration Properties Application in the Control Panel to modify the SSID. Verify that the Network Mode of the PC Card is configured correctly.

Nonfunctioning card LED	The PC Card is not powered on. The cause may be: • No Driver loaded or installed. • Card – Driver mismatch, which prevented the driver from loading. • Device conflict, which prevented the driver from loading. Actions: • Verify that a driver has been installed. • Determine if there is a conflict with another device.
Weak signal or intermittent connection.	Try reorienting the antenna. The PC Card antenna is attached to the end of the PC Card. For best use of the antenna: Keep the area around the antenna clear from materials that could block radio transmission, such as metal objects, electronic devices, and cordless telephones. If your signal is weak, change the direction of the antenna slightly. If necessary, move your notebook computer a few inches to find a better signal. Use the Link Quality and Signal Strength display in the <i>Client Utility</i> to determine the best location and orientation for a network connection.

Appendix A Product Specifications

General

Radio Data Rate	11, 5.5, 2 and 1 Mbps, Auto Fall-Back
Range (open environment)	11 Mbps – 150m 450m(Long Range PC Card)
	5.5 Mbps – 200m 600m(Long Range PC Card)
	2 Mbps – 250m 750m(Long Range PC Card)
	1 Mbps – 400m 1200m(Long Range PC Card)
Operating Voltage	3.3V/5V
Regulation Certifications	FCC Part 15/UL, ETSI 300/328/CE
Compatibility	Fully interoperable with IEEE802.11b compliant products
LED Indicator	RF Link activity

Network Information

Network Architecture	Support ad-hoc, peer-to-peer networks and infrastructure communications to wired Ethernet networks via Access Point
Drivers	Windows 98/ME/NT 4.0/2000/XP/CE3.0
Access Protocol	CSMA/CA
Roaming	IEEE802.11b compliant
Security	64/128-bit WEP data encryption

Radio

Frequency Band	2.4 – 2.484 GHz
Radio Type	Direct Sequence Spread Spectrum (DSSS)
Modulation	CCK (11, 5.5Mbps) DQPSK (2Mbps) DBPSK (1Mbps)
Operation Channels	11 for North America, 14 for Japan, 13 for Europe, 2 for Spain, 4 for France
RF Output Power	15 dBm 20 dBm (Long Range PC Card for CE) 23 dBm (Long Range PC Card for FCC)
Antenna	Integrated, with built-in diversity
Sensitivity @FER=0.08	11 Mbps < -85dBm <-87dbm(Long range PC Card) 5.5 Mbps < -88dBm <-90dbm(Long range PC Card)

	2 Mbps < -91dBm <-93dbm(Long range PC Card) 1 Mbps < -93dBm <-95dbm(Long range PC Card)
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Environmental

Temperature Range	0 to 50 C (operating) -20 to 80 C (storage)
Humidity (non-condensing)	5% to 95% typical

Physical Specifications

Form Factor	PCMCIA Type II PC Card
Dimensions	118(L) mm x 54(W) mm x 7.5(H) mm
Weight	40 g

Appendix B

Regulatory Compliance Information

Radio Frequency Interference Requirements

This device complies with Part 15 of FCC Rules and Canada RSS-210.

Operation is subject to the following conditions:

1. This device may not cause harmful interference.
2. This device must accept any interference received, including interference that may cause undesired operation.
3. To comply with RF safety requirements, you must maintain a distance of 20 cm from the antenna when operating the device.
4. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

Interference Statement

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 against harmful interference in a residential installation. This equipment generates, uses and can radiate 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 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.

FCC Caution: To assure continued compliance, (example – use only shielded interface cables when connecting to computer or peripheral devices). Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.