11Mbps Wireless LAN Card

User's Manual

Contents

Table of Figures

Chapter 1   Introduction

This Wireless LAN Card is an IEEE 802.11b Wireless LAN PCMCIA adapter. It allows your computer to connect to a wireless network and to share resources, such as files or printers without being bound to the network wires. Operating in 2.4GHz Direct Sequence Spread Spectrum (DSSS) radio transmission, the Wireless LAN Card transfers data at speeds up to 11Mbps. Both Peer-to-Peer Group and Infrastructure mode are supported. For network security concern, 64/128-bit Wired Equivalent Protection (WEP) algorithm is used. In addition, its standard compliance ensures that it can communicate with any 802.11b networks.

This User' s Manual contains information on how to install and configure your Wireless LAN Card. Your Wireless LAN Card will allow you to connect your computer to other Wireless LAN Card equipped computers.

Wireless LAN Basics

This section conations some Wireless LAN basics to help you better understand how the product work together to create a wireless network.

Local Area Network (LAN)

Simply put, a LAN is a network that exists in a relatively limited area. A network is two or more computers connected together sharing files and peripheral devices such as printers.

The Wireless LAN Card allows you to interact with other computers without having to run cables normally associated with networks. This lets you move your computer around while staying connected to your network.

There are two ways to use the Wireless LAN Card. One way is to connect directly to one or more Wireless LAN Card equipped computers, forming an Peer-to-Peer wireless network. The second way is to connect to an Access Point that gives you access to an existing wired LAN, forming an Infrastructure wireless network.

Peer-to-Peer Group

The Peer-to-Peer Group offers peer to peer connections between workstations, allowing communication between computers within range that have an 802.11b DSSS compatible PC card installed. A wireless Peer-to-Peer Group can also access a wired LAN's TCP/IP service (such as e-mail and the Internet) by using a TCP/IP software router on an Ethernet equipped PowerBook or notebook.

Infrastructure Network

The infrastructure network uses an access point (or several access points) as a gateway, linking the wireless network to a wired LAN. As a result, portable workstations or desktops on your wireless network have access to all of the features of your wired LAN including e-mail, Internet access, network printers and files server.

Roaming

Multiple Access Points can be installed to extend the wireless service coverage area for seamless wireless access. Within an extended service area, all Access Points and wireless clients must have the same Service Set Identity (SSID). Roaming among different Access Points is controlled automatically to maintain the wireless connectivity at all times.

Chapter 2   Installing the Wireless LAN Card

This chapter describes the installation process for the driver and software for the Wireless LAN Card. Proper driver installation is to allow the device to operate on your host computer while the utility software, Wireless Client Manager, is to help you configure and monitor your Wireless LAN Card.

The Wireless LAN Card installation as outlined below:

1.   Install the hardware and then driver installation process will be conducted by the Windows PnP (Plug-and-Play) wizard.

2.   Install the Wireless Client Manager using the provided Software Utility CD.

Note: When connecting the hardware, note that this Wireless LAN Card is for use with UL listed I.T.E. computers.

After completing the steps listed above, if you need to set up the TCP/IP protocol to communicate with your network, refer to "Appendix C   Setting Up TCP/IP" for details.

System Requirements

To use the Wireless LAN Card, your computer must meet the following minimum requirements:

- ? Windows 98(SE)/Me/2000/XP
- ? 32 MB of RAM, additional memory recommended
- ? Standard **PCMCIA** slot

Wireless LAN Card Status LEDs

The two LEDs on the Wireless LAN Card indicate connection status and data transfer operation status, as described below:

LED	Color	State	Description
Power	Red	On	The adapter is plugged into the **PCMCIA** slot of your computer.
Activity	Green	Blinking	Transmission mode. The faster the LED blinks, the higher the data exchange rate.

Part 1: PnP Driver Installation

Follow these steps to install the Wireless LAN Card:

1. Close all Windows programs that are running. Insert the provided Software Utility CD into your CD-ROM drive.

2. Insert your Wireless LAN Card into the slot of your computer.

    For PCMCIA model, grasp the Wireless LAN Card by the edges with the label facing upward and the 68-pin connector at the slot. Then insert the card into the PCMCIA slot of your computer and push it in until it is firmly seated.

3. Upon attaching the Wireless LAN Card to your PC, Windows will detect the new device and display a wizard screen requesting for its driver. Follow the instructions below relevant to your operating system to proceed.

For Windows 98

1. When **Add New Hardware Wizard** window appears, click **Next**.

2. Select **Search for the best driver for your device**, then click **Next**.

3. Check **Specify a location** box and click **Browse** to locate the driver: **x:\Driver\Win98** (where x: represents the CD-ROM drive letter) and click **Next**.

4. When the **Add New Hardware Wizard** finds the driver, click **Next**.

5. When prompted for Windows 98(SE) CD-ROM, click **OK**. Then enter the path to your Windows 98(SE) CD (if Windows 98 files are not in you host computer, you need to insert the CD into your CD-ROM at this step) and click **OK**.

6. When prompted to restart Windows, click **Yes**.

For Windows Me

1. When **Add New Hardware Wizard** window appears, select **Specify the location of the driver (Advanced)**, then click **Next**.

2. Select the **Search for the best drive for your device** option and then check **ONLY** the **Specify a location** box. Click **Browse** to locate the driver: **x:\Driver\WinME** (where x: represents the CD-ROM letter) and click **Next**.

3. When the **Add New Hardware Wizard** finds the driver, click **Next**.

4. When Windows has finished installing the new device, click **Finish**.

For Windows 2000

1. When **Found New Hardware Wizard** windows appear, click **Next**.

2. Select **Search for a suitable driver**… and click **Next**.

3. When prompted where to search the driver files, select **Specify a location** and click **Next**.

4. Click **Browse** to locate the driver: **x:\Driver\W2K** (where x: represents the CD-ROM drive letter) and click **OK**.

5. When the **Found New Hardware Wizard** finds the driver, click **Next**.

6. When Windows has finished installing the new device, click **Finish**.

For Windows XP

1. When **Found New Hardware Wizard** windows appear, select **Install from a list or specific location (Advanced)** and click **Next**.

2. With **Search for the best driver…** selected, check ONLY **Include this location in the search**. Click **Browse** to locate the driver: **x:\Driver\WinXP** (where x: represents the CD-ROM drive letter) and click **Next**.

3. If you are prompted with Windows logo compatibility messages, just click **Continue Anyway** to proceed.

4. Click **Finish** to complete the driver installation.

Part 2: Installing Wireless Client Manager

1. Locate and double-click the Wireless Client Manager installation program (setup.exe) in the **Utility** directory of the Software Utility CD. The program will start the installation sequence.

2. When the Welcome screen appears, click **Next**.
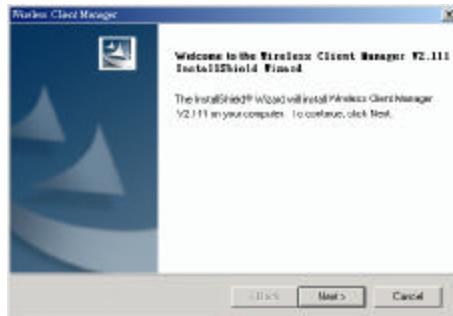
3.   When the **License Agreement** screen appears, click **Yes**.
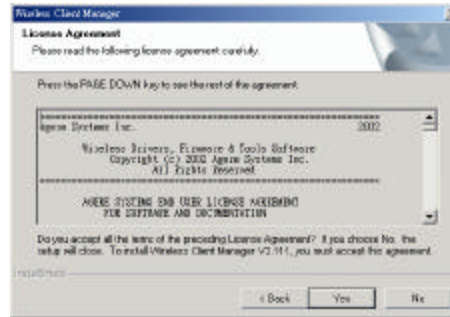
4.   To install the software to the default destination folder, click **Next**. If you are to install the software to a different folder, click **Browse** to select another folder, and then click **Next**.
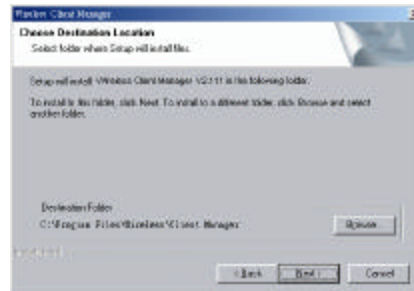
5. If required, you may type a new folder name for the program icons to be added to the Program Folder. Then click **Next** to continue.
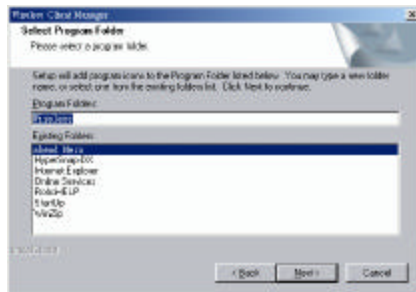
6. Select the language for the Client Manager.
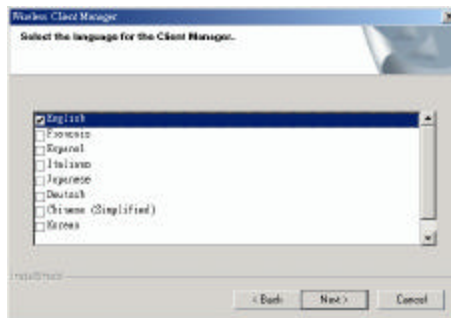
7.   After Windows OS copies the setup files from the Software Utility CD, click **Finish**.
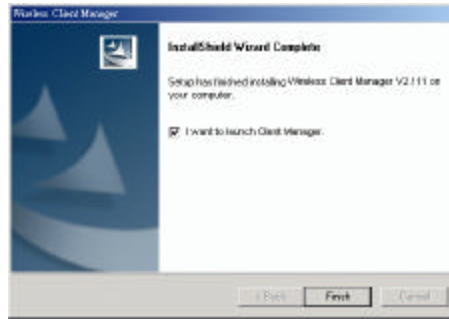
Note: If you need to set up the TCP/IP address or the subnet mask, refer to "Appendix C Setting Up TCP/IP" for details.

Now you are done with the installation procedure. Select **Start** > **Programs > Wireless Client Manager** > **Wireless Client Manager**. You should be able to see the **Wireless Client Manager** icon appearing on the right side of the taskbar. Proceed to following chapter to configure or fine-tune your Wireless LAN Card settings.

Chapter 3   Wireless Client Manager

The configuration of the Wireless LAN Card is done through the **Wireless Client Manager**. This utility also includes a number of tools to display current statistics and status information pertaining to your Wireless LAN Card and to perform link test. See the appropriate subsection as required.

Accessing the Wireless Client Manager

The **Wireless Client Manager** utility is launched automatically with its icon located on the system tray. If the utility is not launched, manually start the monitor by selecting **Start** > **Programs > Wireless** > **Client Manager**. You can access the **Wireless Client Manager** by any of the following methods:

? Double-click the **Atheros Client Utility** tray icon on the system tray
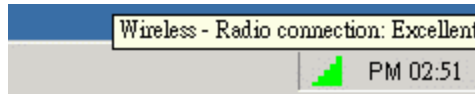
✍ Right-click the tray icon and select **Launch Client Manager** from the context menu.
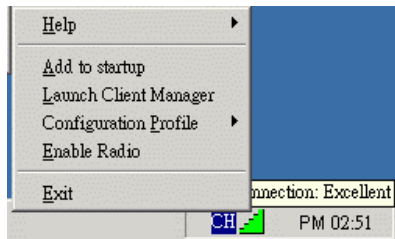
Note to Windows XP Users

Windows XP provides built-in **Wireless Zero Configuration** utility for wireless configuration and monitoring. Windows XP **Wireless Zero Configuration** is enabled by default. When it is active, it will override the management of the **Wireless Client Manager**.

If you want to disable the Windows XP Wireless Configuration Manager and have your device managed only by the **Wireless Client Manager**, please launch the **Wireless Client Manager** and select **File** > **Disable ZeroConfig**.

Configuration for Peer-to-Peer Group

To connecting to other Wireless LAN Card equipped computers to form a Peer-to-Peer group, , please take out the steps below:

1. From **Wireless Client Manager**, select **Actions** > **Add/Edit Configuration Profile**.

2. Click **Add** to add a new profile or select one existing profile from the **Select Profile** drop-down list and then click **Edit** to modify the settings.
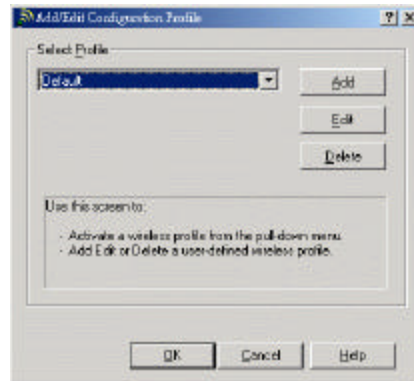
3. Enter these fields and then click **Next**.

? **Profile Name** : Enter a unique name to identify this configuration. A maximum of 32 characters is allowed.

? **Network Type:** Select **Peer-to-Peer Group**.

? **Country:** Select the country where the Wireless LAN Card is using.
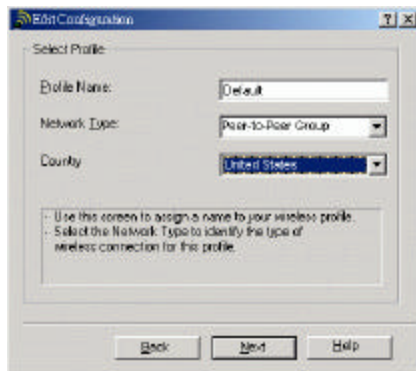
4. In the **Network Name** field, enter a network name with a maximum limit of 32 characters. It is the name of the Wireless LAN group you want to participate in. The network name for all stations in a single Peer-to-Peer Group must be the same.

In the **Channel Number** list, select the channel to be used. In a Peer-to-Peer Group, each Wireless Client Station will automatically adopt the channel of workgroup. If your

computer is the first station to start the workgroup, it will use the channel selected in the active profile.
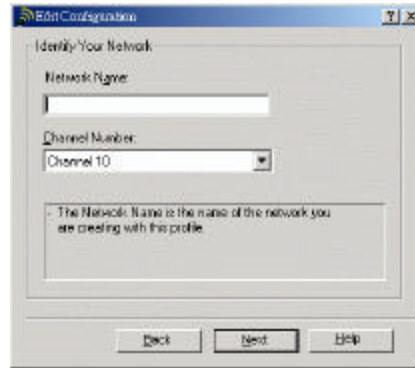
5.   If your are going to set security, check the **Enable Data Security** box and choose to use Alphanumeric characters or Hexadecimal digits format to enter your WEP key. Then enter your WEP key in the **Key** field.

When using **Hexadecimal** format, only digits 0-9 and letters a-f, A-F are allowed. Make sure to enter the character matching the required key format and length as below:

	ASCII characters	Hexadecimal digits
40 bit	5 alphanumeric characters	10 hexadecimal digits
104 bit	13 alphanumeric characters	26 hexadecimal digits

6. To renew IP address when using this profile, check the **Renew IP Address when selecting this profile** box.
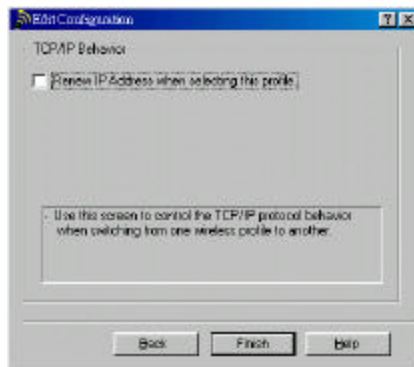
Configuration for Base Station Connection

To connect to a wired/wireless network through an Access Point, please take out the steps below:

1. From **Wireless Client Manager**, select **Actions** > **Add/Edit Configuration Profile**.

2. Click **Add** to add a new profile or select one existing profile from the **Select Profile** drop-down list and then click **Edit** to modify the settings.
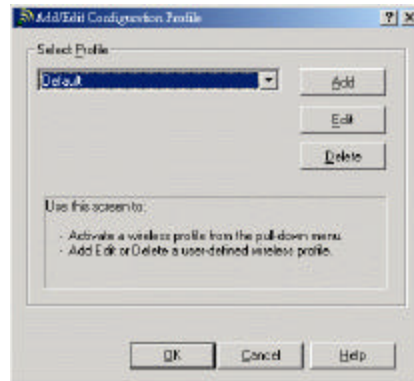
3.   Enter these fields and then click **Next**.

   ? **Profile Name** : Enter a unique name to identify this configuration. A maximum of 32 characters is allowed.

   ? **Network Type:** Select **Base Station Connection**.

   ? **Country:** Select the country where the Wireless LAN Card is using.
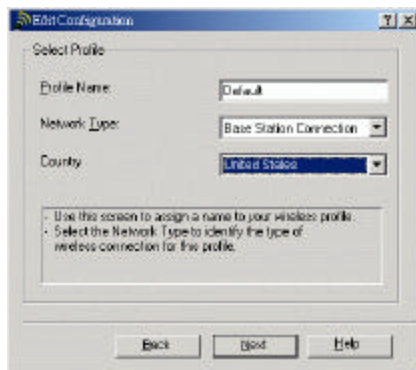
4.   In the **Network Name** field, enter a network name with a maximum limit of 32 characters. It is the name of the Wireless LAN group you want to participate in. The network name for all stations in a single Base Station network must be the same.

Clicking the **Scan** button will pop up a separate window to display the available network in the air. You can quickly select the desired network name by double-clicking the network you want to connect to.
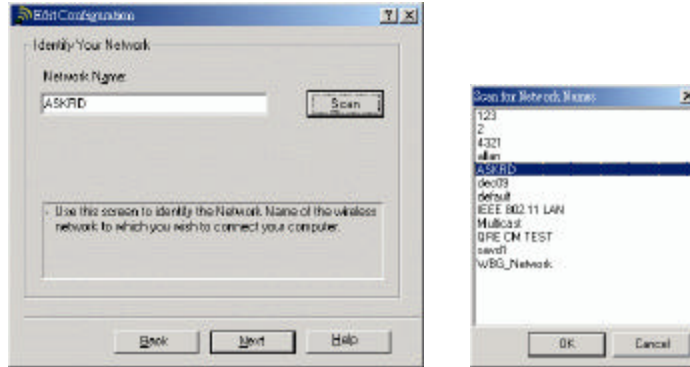

5. If your are going to set security, check the **Enable Data Security** box and choose to use Alphanumeric characters or Hexadecimal digits format to enter your WEP key. Then enter your WEP key in the **Key 1** to **Key 4** fields.

When using **Hexadecimal** format, only digits 0-9 and letters a-f, A-F are allowed. Make sure to enter the character matching the required key format and length as below:

	ASCII characters	**Hexadecimal digits**
40 bit	5 alphanumeric characters	10 hexadecimal digits
104 bit	13 alphanumeric characters	26 hexadecimal digits

After entering the keys, in the **Encrypt Data with** list, select one of the four keys to encrypt the data you are going to transmit.

6. Select whether to enabled Power Management to adjust the power consumption behavior of the Wireless Client Adapter. Subject to the type of network traffic power management may have some impact on network performance.

When enabled, the station will go to 'sleep mode' whenever activity is low to minimize power consumption. At regular intervals it will wake up to verify whether there is network traffic addressed to the wireless station.
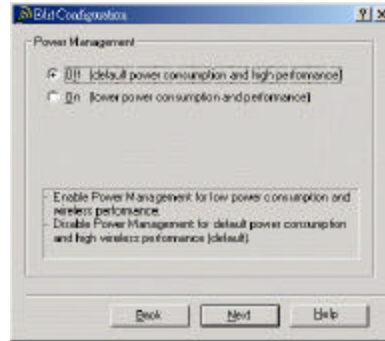
7. To renew IP address when using this profile, check the **Renew IP Address when selecting this profile** box.
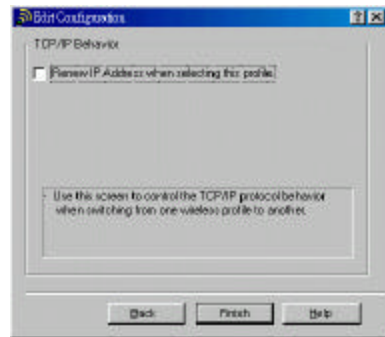
Site Monitor

You can use the Site Monitor to display the communications quality of your computer with multiple Base Station devices in its vicinity. The Site Monitor allows you to conduct a site survey to:

? Determine the overall wireless coverage of your LAN network.

? Optimize placement of your Base Station devices, to provide seamless connectivity to mobile stations.

? Roam throughout the wireless network environment with your Client Manager station, you will be able to identify areas that may not have adequate coverage, or that suffer from interference by other (wireless) equipment such as microwave ovens or photo copiers.

To use the Site Monitor:

1. Launch the Site Monitor by selecting **Advanced** > **Site Monitor** from the Wireless Client Manager main window. The **Site Monitor** tab is displayed first.

2. To monitor other Infrastructure networks, click the **Selection** tab and select a desired Infrastructure from the **Observed networks** list. Then click the **Scan Now** button to start the scan process. This will open the **Site Monitor** tab.

   Note: The **Observed networks** list will only display "open" Base Stations.

3.   The scan results are displayed in the **Site Monitor** tab. To tailor the display of the Site Monitor window, refer to next section.
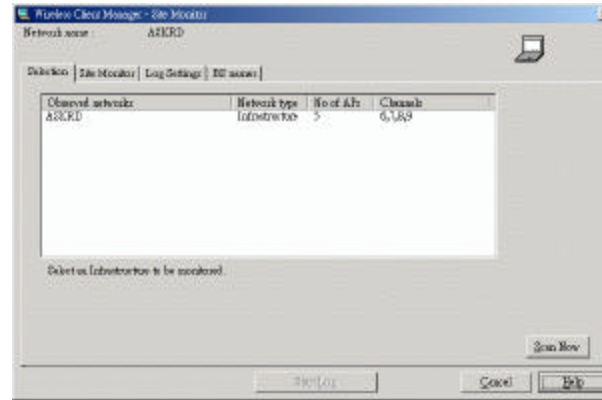
Figure 3-1   Site Monitor – Selection Tab

Customizing the Display of the Site Monitor

To tailor the display of the Site Monitor window, use the pull-down menus to select a preferred set of indicators. The menu provided the following indicator options:

?   **MAC Address**

The MAC address for the Wireless Network Interface of the Base Station.

? **SNR**

The Signal-to-Noise Ratio (SNR) is the primary diagnostic counter to diagnose wireless performance. SNR indicates the relative strength of the received Signal Level compared to the Local Noise Level.

In most environments, SNR is a good indicator for the quality of the radio link between transmitter and receiver. A higher SNR value means a better quality radio link. The color coding of the SNR-bar indicates the link quality.

? **AP Names**

The **AP Names** allows you to recognize the Base Station devices in your network more easily, instead of identifying the units by the MAC Address of the Base Station devices. To assign an AP names to the observed MAC address, refer to "Modifying or Adding a Name to the Base Stations List ".

? **Frequency Channel**

Your wireless network uses a 2.4 GHz radio that supports multiple channels.

In a Base Station network, each Wireless Client Station will automatically adopt the same channel.

In a Peer-to-Peer Group, each Wireless Client Station will automatically adopt the channel of workgroup. If your computer is the first station to start the workgroup, it will use the channel selected in the active profile.

? **Signal Level**

Signal Level indicates the strength of the wireless signal as received at the Wireless Client Adapter. As the wireless system may perform quite well even when the signal level is low, the primary indicator to diagnose the communications quality is the level of SNR.

? **Noise Level**

Noise Level reflects the level of radio interference as measured at the Wireless Client Adapter. Noise can be indicated as Local Noise or Remote Noise.

? Local Noise: The level of radio interference as measured in the vicinity of your wireless computer.

? Remote Noise: The level of radio interference as measured in the vicinity of the remote station (for example your 'Link Test Partner' or the Base Station).

You can sort the list of Base Station devices by the item selected in the first column, by clicking the **Sort** button at the lower-left side of the Site Monitor screen. Optionally you can click **Freeze** to temporarily stop the update of the counters or click **Reset** to reset the diagnostic counters to zero.
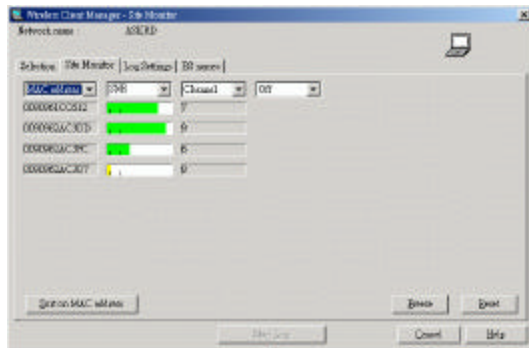
Figure 3-2   Site Monitor – Site Monitor Tab

Modifying or Adding a Name to the Base Stations List

The **BS Names** tab in Site Monitor window enables you to create a user-defined list of Base
Station names (the "AP Names") for the Base Station devices that are displayed in the **Site
Monitor** tab. This will allow you to recognize the Base Station devices in your network more
easily. You may want to complete the Base Station list due to:

? When walking throughout the wireless networking environment, you notice that new
   MAC Address values appear and you want to assign them user-defined names.
? When you spot a Base Station in the Site Monitor window that is identified as
   "unknown" and you want to assign it a user-defined name.

To use the Base Station list, take out these steps:

1. Click the **BS Names** tab in the **Site Monitor** window.

2. From the list of **Observed MAC Addresses**, double-click the value to which you would like to assign a user-defined name.

    You will see that the value is copied to the **MAC Address** field on the right side of the **BS Names** panel.

3. Enter the name of your choice in the **BS Name** field.

4. Click the button **Add to table** to append this name to the list of Base Station names.

    If no list was available yet, the Client Manager program will create an ASCII text file called "aplist.txt" to store the user-defined names.

5. When finished, select the tab **Site Monitor** to return to the panel with the dynamic indicators.
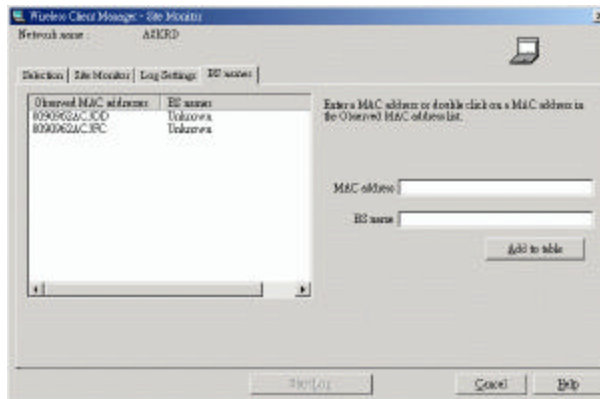
Figure 3-3   Site Manger – BS Names Tab

Link Test

In a Peer-to-Peer Group, you can use the Link Test feature to analyze your link quality with another peer in the same group. In Link Test Mode, your computer will actively exchange messages with your Link Test Partner at an interval of 4 messages per second. The Link Test mode will analyze the messages as received on your adapter and the test partner of the link to determine:

? Radio Quality, comparing the Signal Level to the Noise Level and calculate the SNR.

? Throughput Efficiency, by comparing:

? the total number of Sent Messages to Received Messages, and calculate the number of Messages Lost.

? the number of messages transmitted at the supported Transmit Rates

To start the Link Test:

1. Select **Advanced** > **Link Test** from the Wireless Client Manager main window.

2. In the **Selection** tab, available peers are listed and identified by their computer name and MAC address. Select a Test Partner and click **Explore Now** to start the link test.
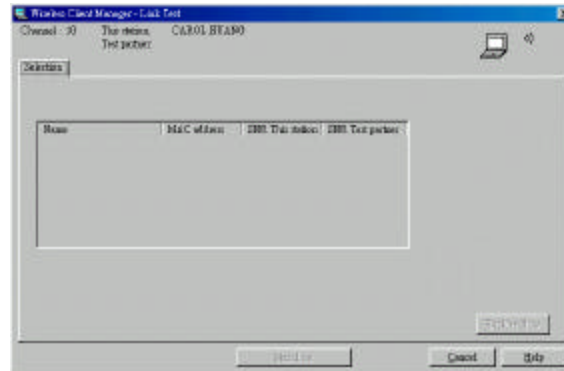
Figure 3-4   Link Test – Selection Tab

Viewing Liink Test Results

The Link Test results are displayed in the **Test Results** tab for both Link Test Partners, which are identified by their universal MAC Address. To analyze a specific situation in more detail, you can:

?   Click the **Freeze** button to temporarily stop the dynamic update of the diagnostic counters.

?   Click the **Reset** button to reset the diagnostic counters to zero.

?   Click the **Advice** button to assess possible impact on your network performance, or explore suggestions to improve communications quality.
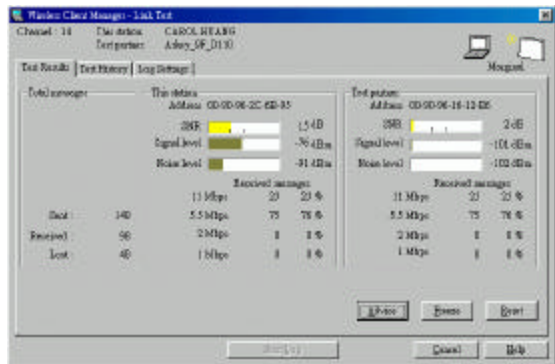
Figure 3-5   Link Test – Test Results Tab

Displaying Link Test History in Graphical Line-Chart

Use the **Test History** tab to display the Link Test measurement results in a graphical line-chart.

It is typically used in situations where you would like to analyze communications quality between two specific stations over a longer period of time without actively monitoring the Test Results.

The **Type of display** drop-down list allows you to display the measurement results for the following types of history:

- ? SNR
- ? Signal Level / Noise Level
- ? SNR Range
- ? Signal Range
- ? Noise Range

Note: To save measurement results, set the **Log Settings** to save the data to a file (*.log). This option will not save the line-chart itself, but you can import the file into a spreadsheet program to create a line-chart tailored to your specific demands.

You can use the **Time Window** parameter to set the time interval for Link Test History measurements. You can set the time interval to log measurement data at an interval of:

? 1 minute

? 1 hour

? 24 hours
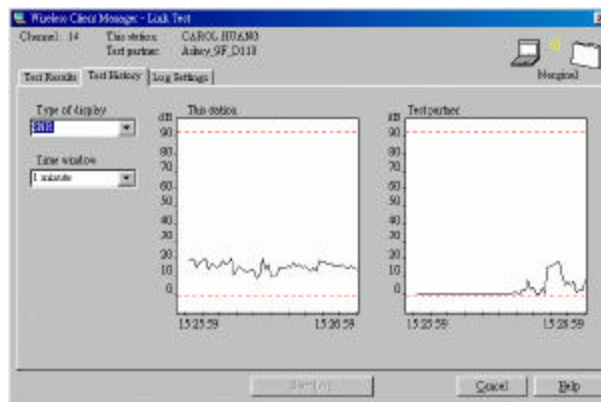
Figure 3-6 Link Test – Test History Tab

Creating Measurements Log File

The **Log Settings** tab in Site Monitor/Link Test window enables you to save Site Monitor/Link Test measurement data to log file. Log files will be stored in the same directory you selected to install the Wireless Client Manager program. The default name of the log files are:

? log.log: For log files based on Link Test measurements.

? monitor.log: For log files based on Site Monitor measurements

The **Log file name** field allows you to:

? Create a new log file

In this case, in the **Log filename** field enter a path to store the log file followed by a new log filename. If you do not identify a path, the program will store the file in the same directory as the one that you selected to install your Client Manager program.

? Append to existing log file

To append data to an existing file, enter the path and the existing file name in the **Log filename** field.

Q

The Log Settings tab provides a couple of logging mode choices. The number and type of available options may differ, subject to the diagnostics mode you selected.

- **Data logging off**

  Allows to deactivate the logging mode.

- **Manual (Manual Logging Mode)**

  The **Manual Data Logging** option enables you to create log entries upon user-command. When this option is enabled, you can manually create log file by clicking the **Log Once** button. After clicking **Log Once**, you will be prompted to choose whether to overwrite or append to the existing log file.

  The **Manual Data Logging** option can be used in combination with the option **Add comments to log** to add your description on specific event or location to allow easy identification of the event or location afterwards. If **Add comments to log** is checked, each time you click the **Log Once** button you will be prompted to enter a description as the log information. The description will be appended to the end of the log file.

- **Automatic (Automatic Every n Seconds)**

  Using this Log option, you can create log entry automatically at regular intervals you specified in the **Log every …seconds** field. You can enter the value in the range of '0 to 999999'

Each time the Client Manager appends data measurements to the selected log file, it will also reset the Test Results tab sheet.

? **Continuous (Log History in Seconds)**

This option will make a log entry each second or minute as specified. It will store history information for a later playback analysis.

To start the logging process, you have to click the **Start Log** button. While logging process is activated, you can click the **Stop Log** button to stop the logging process just.
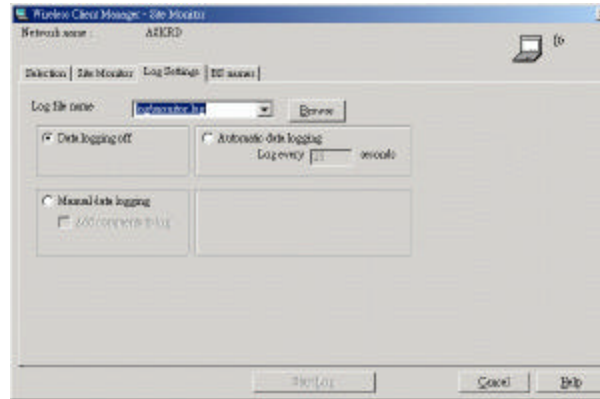
Figure 3-7 Log Settings Based on Site Monitor Measurement
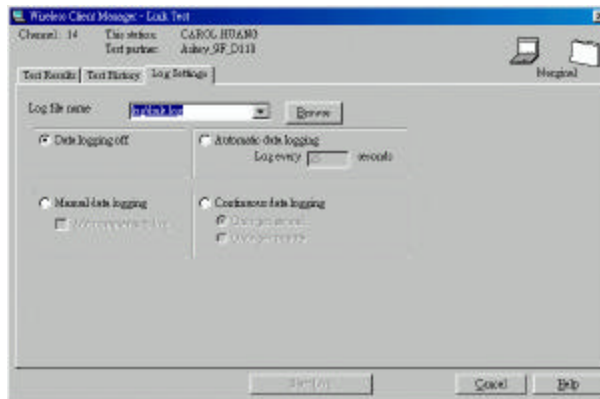
Figure 3-8 Log Settings Based on Link Test Measurement

Card Diagnostics

When you suspect a malfunctioning of your Wireless Client Adapter, you can use the Card Test information to investigate the operation of your hardware and the installed driver.

To perform a test on the status of your adapter, click the "Test Card Now" button.

? If the Card Diagnostics report an error, click the **Advice** button for more details.

? In case you need to contact Technical Support click the **Generate Report** button to retrieve information about your system that will help us helping you.
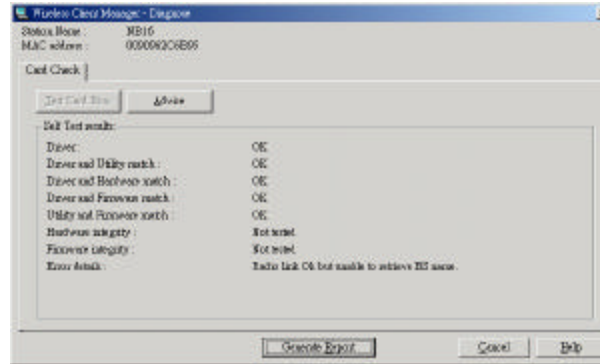
Figure 3-9   Diagnstic Window

Verifying Software Components Version

To verify the version of individual software components, select **Help**> **Version Info** from the Wireless Client Manager main window. The screen displays the version information about the utility, driver, card and firmware.
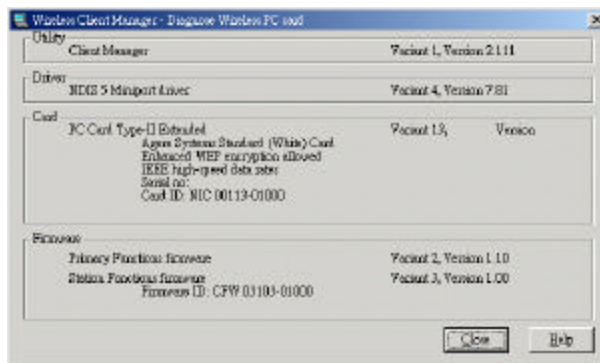
Figure 3-10   Version Information

Checking Connection Status

You can check your wireless link quality via the Client Manager icon on your Windows taskbar. The communications quality is expressed in Signal-to-Noise Ratio (SNR) to indicate different levels of communications quality. The color coding of the SNR-bar an the corresponding link quality are given in the table below.

Note: The SNR indicator does not work and the icon is always blank in Peer-to-Peer Group.

Indicator	Color	SNR Value	Radio Connection Quality
	Green	20 dB or higher	Excellent radio connection Your Wireless Client Adapter has an excellent radio connection with the network, allowing excellent network communication at the highest Transmit Rate.
	Green	20 dB or higher	Good radio connection Your Wireless Client Adapter has a good radio connection with the network, allowing normal network communication.
	Yellow	10 to 20 dB	Marginal radio connection The radio signal is weak. Your Wireless Client Adapter has a marginal radio connection with the

45

Indicator	Color	SNR Value	Radio Connection Quality
			network. This connection does allow network communication, but you might observe a degradation of the network response times due to (re)transmissions at a lower Transmit Rate. Move closer to the Wireless LAN Base Station.
	Red	0 to 10 dB	Poor radio connection or no radio connection. The radio signal is very weak, you are Out of Range. Save your files and move closer to the Wireless LAN Base Station.
	Red	0 dB	No network connection Looking for initial connection or you have moved out of range of the network.
	Blank	N/A	No Connection The Wireless Client Manager program could not detect the presence of the Wireless Client Adapter or your network interface has been set to operate in Peer-to-Peer Group mode.

While connected in Infrastructure mode, you can place your cursor over the icon to see the pop-up text that gives link quality information about the current wireless connection.

Wireless - Radio connection: Excellent

PM 02:51
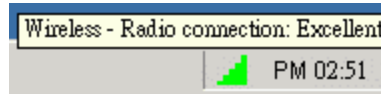
PART 2. Configuration Utility for Windows XP

Windows XP provides built-in **Wireless Zero Configuration** utility for wireless configuration and monitoring. You can choose to configure your wireless network via either the **Wireless Client Manager** as described in preceding section, or to use the Windows XP **Wireless Zero Configuration** utility.

This section only provides the essential instructions on using Windows XP wireless utility to get your wireless network established. For more information please refer to Windows XP on-line help.

Connecting to an Access Point or Wireless LAN Card

Windows XP **Wireless Zero Configuration** utility can be quickly accessed via the network connection icon on the system tray. If your computer is not connected to any Access Point/Wireless LAN Card yet, the icon should appear as below:

To connect to an existing Access Point/Wireless LAN Card (Peer-to-Peer Group), do the following:

1. Double-click the network connection icon on the system tray.

2. When the **Connect to Wireless Network** window pops up, you will see all the Access Points or Wireless LAN Cards (Peer-to-Peer Group) that are available in the air. Select the wireless network you want to connect to.
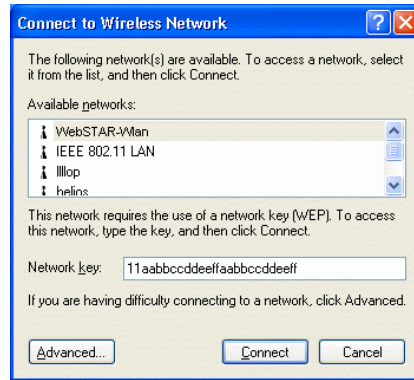
Figure 3-11 Windows XP Configuration Utility-Connect to Wireless Network

3. If the target Access Point/Wireless LAN Card (Peer-to-Peer Group) has been set with WEP key, you must enter the same WEP key in the **Network key** field. Otherwise, leave it blank.

4. Click **Connect**, then you will join the target network and this dialog window will disappear. When your wireless connection is established, the connection icon appears as below:

Note: If the wireless connection can' t be established, double-click the connection icon and then click **Properties**. Go to **Authentication** tab first to make sure that you use the correct authentication type for the Wireless LAN Card. For more information, refer to "Authentication" on page 56.

Viewing Wireless Connection Status

After you successfully connect to the Access Point or Wireless LAN Card (Peer-to-Peer Group), double-click the icon in the system tray again. This will open the **Wireless Network Connection Status** window where you can see the general data of the Wireless LAN Card, such as Status, Duration, Speed, Signal Strength, etc.
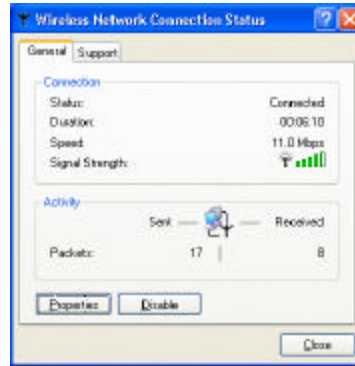
Figure 3-12   Windows XP- Connection Status

Configuring Your Wireless Properties

To configure your wireless properties, open the **Wireless Network Connection Status**
window as described above, and then click the **Properties** button. This will open the **Wireless
Network Connection Properties** window which allows you to configure more detailed items
of the Wireless LAN Card. The following describes each tab of the properties window to help
you do more settings of the Wireless LAN Card.

General

This tab allows you to specify the network methods to be used with your Wireless LAN **PCMCIA** Card. The network policy depends on your wireless network. For TCP/IP protocol, you should configure its properties as instructed by your network administrator. For more information on TCP/IP setting, please refer to "Appendix C Setting Up TCP/IP" on page 75.
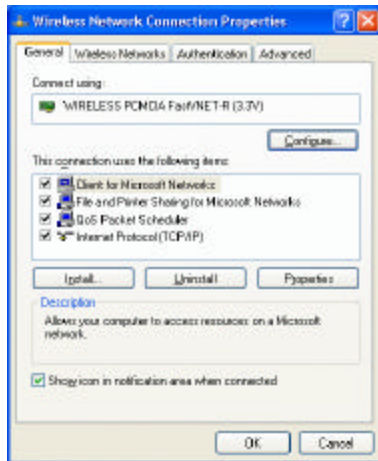
Figure 3-13 Windows XP Connection Properties -General

Wireless Networks

This tab contains two sections: **Available networks** and **Preferred networks** described as below.

Under **Available networks** section, you can also see all the Access Points and Wireless LAN Cards (Peer-to-Peer Group) available in the air. Clicking **Refresh** will update the list of Access Points and Wireless LAN Cards (Peer-to-Peer Group).

Figure 3-14 Windows XP Connection Properties-Wireless Networks

Under **Preferred networks** section, you can add any wireless networks that you wish to connect to. To do this, just click **Add** to add more Access Points or Wireless LAN Cards (Peer-to-Peer Group) to the list.

After you click the **Add** button, the **Wireless Network Properties** window pops up. Type your network name (SSID) and, if needed, the wireless network WEP settings. Once the Access Point or Wireless LAN Card (Peer-to-Peer Group) that you want to connect to has been set with WEP key, you must type the same WEP key as the Access Point' s or Wireless LAN Card' s.

Figure 3-15 Windows XP-Add Preferred Networks

After you add several profiles into **Preferred networks,** you can change the order in which connection attempts to preferred networks are made. Just select the target wireless network and click **Move up** or **Move down** to move it to a desired position.

To Access Certain Wireless Network Only

If you just want to access certain wireless network type, click the **Advanced** button on the Wireless Networks tab (Figure 3-12) to open the **Advanced** window. You can choose to connect to the following networks:

- ? Any available network (access point preferred)
- ? Access point (infrastructure)
- ? Computer-to-computer (Peer-to-Peer Group)

The default network type is **Any available network (access point preferred)**. In this network type, your device will connect to any Access Points or Wireless LAN Cards (Peer-to-Peer Group) available in the air but Access Point always demands higher connection attempt priority.

Once you finish the advanced setting, your wireless station will then connect to your desired network and the connected network will be listed under **Available networks**.
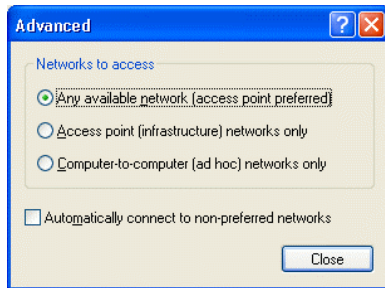
Figure 3-16 Windows XP Configuration Utility-Set up Network to Aceess

Authentication

This tab allows you to configure the authentication settings of your Wireless LAN Card. The most important setting for the Wireless LAN Card is to disable **Enable network access control using IEEE802.1X** to ensure successful connection between the Wireless LAN Cards and Access Points or other Wireless LAN Card (Peer-to-Peer Group). You must disable this function for any reason. Otherwise, there may be some problems happening during connection. For other settings, we recommend you keep the default settings to minimize the problems during connection.
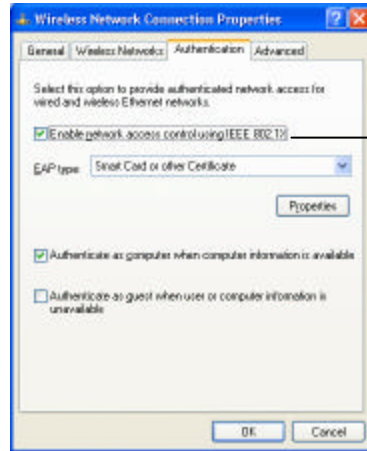
Make sure to clear the **Enable network access control using IEEE802.1X** check box to ensure successful connection.

Figure 3-17 Windows XP Connection Properties -Authentication

Chapter 4 Uninstalling the Wireless LAN Card

Should you need to uninstall the Wireless LAN Card and application software for any reason,, you should uninstall the associated software and then remove the hardware from your computer. Please proceed as follows.

Part 1: Uninstalling the Wireless Client Manager

1. Double-click the **Add/Remove Programs** (or **Add or Remove Programs** for Windows XP) icon under **Control Panel**.

2. Highlight **Wireless Client Manager V2.111** from the list and then click **Add/Remove** or **Change/Remove**.

3. When confirmation message appears, click **OK** to remove the components.
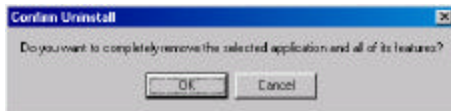
4. You will find that the **Wireless Client Manager V2.111** has been removed. The software uninstallation is complete.

Part 2: Removing the Wireless LAN Card

The Wireless LAN Card complies with the PCMCIA standard that allows devices to be inserted into and removed from the computer's PCMCIA slot when the computer is power on. To permanently remove the wireless adapter, please follow the standard Windows procedure for removing a PCMCIA device from your computer.

1. On the system tray, click the PCMCIA icon, and then click **Stop Wireless PC Card 0110**.

2. Launch the **Device Manager** as below:

   ? For Windows 98/Me: Under **Control Panel**, click **System** > **Device Manger**.

   ? For Windows 2000/XP: Under **Control Panel**, click **System** > **Hardware** > **Device Manager**.

3. In **Device Manager** window, double-click **Network adapters** to display the adapter **Wireless PC Card Model 0110**.

4. Right-click the **Wireless PC Card Model 0110** and select **Uninstall** from the context menu.

5. When warning message appears, click **Yes**. Now you can safely remove the wireless adapter from the PCMCIA slot.

Chapter 5   Updating the Device Driver

Periodically, you may need to upgrade the Wireless LAN Card' s driver when a newer version is available. Check our website for information about the latest driver upgrades. When you have finished the download procedure, please follow as below to update the device driver.

1. Uninstall the Wireless LAN Card as described in Chapter 4. Follow the steps to remove the Wireless LAN Card and then uninstall the software.

2. Install the new driver you have downloaded. Refer to Chapter 2 for detailed instructions.

Once you finish installing the new driver, the updating is complete.

Chapter 6   Troubleshooting

Radio Interference

You may be able to eliminate any interference by trying the following:

- ? Reseat the Wireless LAN Card.
- ? Increase the distance between the wireless computers and the device causing the radio interference.
- ? Plug the computer equipped with the Wireless LAN Card into an outlet on a different branch circuit from that used by the affecting device.
- ? Consult the dealer or an experienced radio technician for help.
- ? Keep the computer with the Wireless LAN Card away from the microwave oven and large metal objects.

Card Not Detected

If the Wireless LAN Card is not detected by Windows, try the following:

- ? Make sure the Wireless LAN Card is properly inserted in the **PCMCIA** slot.
- ? Make sure the **PCMCIA** slot in your computer is working.
- ? Contact your dealer for additional testing if there is a hardware problem with the Wireless LAN Card.

Cannot Connect to Another Wireless LAN Card

If you cannot make a connection to another Wireless LAN Card from your computer, it could be due to one of the following reasons:

- ? Incorrect SSID. Make sure the SSID is the same for all computers that have a Wireless LAN Card.
- ? Changes are not being recognized by your computer. Restart your computer.
- ? If in Peer-to-Peer Group, make sure the **Log on to Windows NT domain** check box is not selected in the **Client for Microsoft Networks Properties** dialog box in the **Network Configuration** tab.
- ? Incorrect IP Address or Subnet Mask. Check these settings in the **TCP/IP Properties** dialog box in the **Network Configuration** tab.

Poor Link Quality

If the Link Quality display stays in the Poor range, it could be due to one of the following reasons:

? Radio interference.

? Distance between Wireless LAN Card and Access Point is too far. Decrease the distance between the Wireless LAN Card and Access Point (or another card).

Cannot Connect to Access Point

If you cannot make a connection to the Access Point, it could be due to one of the following reasons:

? Make sure the Wireless LAN Card and Access Point have no physical connection problems.

? Make sure the SSID for the Wireless LAN Card is the same as the Access Point.

? Make sure the privacy type is the same as that of Access Point. Also, make sure the Default Key is the same for both computers.

Appendix A   Limited Warranty

Wireless LAN Hardware

The seller warrants to the end user ("Customer") that this hardware product will be free from defects in workmanship and materials, under normal use and service, for 1 year from the date of purchase from the seller or its authorized reseller. The seller' s sole obligation under this express warranty shall be, at the seller' s option and expense, to repair the defective product or part, deliver to Customer an equivalent product or part to replace the defective item, or if neither of the two foregoing options is reasonably available, The seller may, in its sole discretion, refund to the Customer the purchase price paid for the defective product. All products that are replaced will become the property of the seller. Replacement products may be new or reconditioned.

Wireless LAN Software

The seller warrants to Customer that each software program licensed from it , except as noted below, will perform in substantial conformance to its program specifications, for a period of 1 year from the date of purchase from the seller or its authorized reseller. The seller warrants the media containing software against failure during the warranty period. No updates are provided. The seller' s sole obligation under this express warranty shall be, at the seller' s option and expense, to refund the purchase price paid by Customer for any defective software product, or to replace any defective media with software which substantially conforms to applicable seller published specifications. Customer assumes responsibility for the selection of the appropriate application programs and associated reference materials. The seller makes no warranty or representation that its software products will meet Customer' s requirements or work in combination with any hardware or software applications products provided by third parties, that the operation of the software products will be uninterrupted or error free, or that all defects in the software products will be corrected. For any third party products listed in the seller software product documentation or specifications as being compatible, the seller will make reasonable efforts to provide compatibility, except where the non-compatibility is caused by a defect in the third party' s product or from use of the software product not in accordance with the seller' s published specifications or user manual.

Appendix B   Regulatory Compliance

FCC Part 15 Declaration of Conformity (DoC)

The following equipment:

Product Name: Wireless LAN Card

is herewith confirmed to comply with the requirements of FCC Part 15 rules. The operation is subject to the following two conditions:

1. This device may not cause harmful interference, and

2. This device must accept any interference received, including interference that may cause undesired operation.

FCC Rules and Regulations - Part 15

Warning: This device has been tested and found to comply with the limits for a Class B digital device pursuant to Part 15 of the Federal Communications Commissions Rules and Regulation. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, 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 and correct the interference by one or more of the following measures:

Relocate your WLAN equipped laptop computer.

Increase the separation between the WLAN equipped laptop computer and other electronics.

Connect the WLAN equipped laptop computer into an outlet on a circuit different from that of other electronics.

Consult the dealer or an experienced radio/TV technician for help.

FCC Radiation Exposure Statement

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment.

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

This device complies with FCC RF exposure limits set forth for an uncontrolled environment, under 47 CFR 2.1093 paragraph (d)(2).

FCC Caution: Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

Appendix C   Setting Up TCP/IP

This section contains instructions for configuring the TCP/IP protocol of the Wireless LAN PCMCIA Card. The IP address policy depends on your wireless network. You should configure your TCP/IP protocol as instructed by your network administrator.

1.   On the taskbar, select **Start** > **Settings** > **Control Panel**, double-click the **Network** icon.

2.   Click the **Configuration** tab of the **Network** dialog box.

3.   In the network components list, select the TCP/IP protocol of your Wireless LAN Card, e.g., **TCP/IP** ->**IEEE 802.11b Wireless LAN PC Card**, and then click **Properties**.
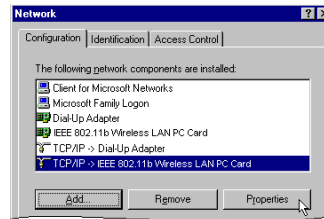
For correct IP address information for your wireless LAN installation, contact your network administrator.

For more information on IP addresses, see the Network Working Group Specification RFC 1918 on the Internet.

4. On the **IP Address** tab, choose one of the methods as required:

Option A: Click **Specify an IP address**.

In the **IP Address** box, enter a valid four-component IP address, either a public or private one as required. If private IP address is used, the following three blocks of IP addresses are available for private networks:

10. 0 . 0. 0 — 10.255.255.255

172. 16. 0. 0 — 172. 31.255.255

192.168. 0. 0 — 192.168.255.255

In the **Subnet Mask** box, enter a valid four-component IP address.
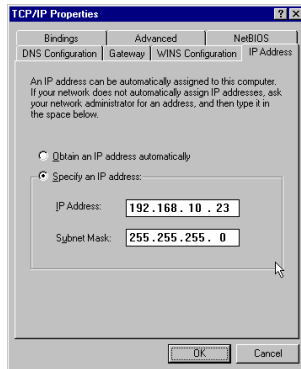
Option B: Select **Obtain an IP address automatically**.

An IP address will be automatically assigned to your computer.
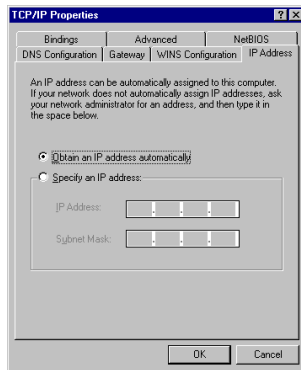
5.   Click **OK** to return to **Network** dialog box and click **OK** again to finish configuration. If your TCP/IP properties have been modified, you will be prompted to restart your computer. Click **Yes** to have new settings take effect.

Glossary

10BaseT	An IEEE standard (802.3) for operating 10 Mbps Ethernet networks (LANs) with twisted pair cabling and a wiring hub.
Access Point	An internetworking device that seamlessly connects wired and wireless networks. Access Points combined with a distributed system support the creation of multiple radio cells that enable roaming throughout a facility.
Peer-to-Peer Group	A network composed solely of stations within mutual communication range of each other (no Access Point connected).
BSS	*Basic Service Se*t. A set of stations controlled by a single coordination function.
Channel	A medium used to pass protocol data units that can be used simultaneously in the same volume of space by other channels of the same physical layer, with an acceptably low frame error ratio due to mutual interference.
Encapsulated	An Ethernet address mode that treats the entire Ethernet packet as a whole and places it inside an 802.11 frame along with a new header.

ESS	*Extended Service Se*t. A set of one or more interconnected Basic Service Sets (BSSs) and integrated Local Area Networks (LANs) can be configured as an Extended Service Set.
Ethernet	The most widely used medium access method, which is defined by the IEEE 802.3 standard. Ethernet is normally a shared media LAN; i.e., all the devices on the network segment share total bandwidth. Ethernet networks operate at 10Mbps using CSMA/CD to run over 10BaseT cables.
Gateway	A network component that acts as an entrance to another network.
IEEE 802.11	The IEEE 802.xx is a set of specifications for LANs from the Institute of Electrical and Electronic Engineers (IEEE). Most wired networks conform to 802.3, the specification for CSMA/CD-based Ethernet networks or 802.5, the specification for token ring networks. 802.11 defines the standard for wireless LANs encompassing three incompatible (non-interoperable) technologies: Frequency Hopping Spread Spectrum (FHSS), Direct Sequence Spread Spectrum (DSSS), and Infrared. IEEE standards ensure interoperability between systems of the same type.
Infrastructure	A wireless network centered about an Access Point. In this environment, the Access Point not only provides communication with the wired network but also mediates wireless network traffic in the immediate neighborhood.
IP	*Internet Protoco*l. The standard protocol within TCP/IP that defines the basic unit of information passed across an Internet connection by breaking down data messages into packets, routing and transporting the packets over network connections, then reassembling the packets at their destination. IP corresponds to the network layer in the ISO/OSI model.

IP Address   An IP address is a 32-bit number that identifies each sender or receiver of information sent across the Internet. An IP address has two parts: the identifier of a particular network on the Internet and an identifier of the particular device (which can be a server or a workstation) within that network.

ISP   *Internet Service Provide*r. An organization that provides access to the Internet. Small ISPs provide service via modem and ISDN while the larger ones also offer private line hookups (T1, fractional T1, etc.).

LAN   *Local Area Networ*k. A communications network that serves users within a defined geographical area. The benefits include the sharing of Internet access, files, and equipment, such as printers and storage devices. Special network cabling (10BaseT) is often used to connect the PCs together.

NAT   *Network Address Translatio*n. The translation of an Internet Protocol address (IP address) used within one network to a different IP address known within another network. One network is designated the internal network and the other is the external. The internal network then appears as one entity to the outside world.

Radio Frequency	*R*F, Terms: GHz, MHz, Hz —The international unit for measuring frequency is Hertz (Hz), equivalent to the older unit of cycles per second. One megahertz (MHz) is one Million-Hertz. One giga hertz (GHz) is one Billion-Hertz. The standard U.S. electrical power frequency is 60 Hz, the AM broadcast radio frequency band is 0.55–1.6 MHz, the FM broadcast radio frequency band is 88–108 MHz, and wireless 802.11 LANs operate at 2.4GHz.
SSID	*Service Set I*D. A group name shared by every member of a wireless network. Only client PCs with the same SSID are allowed to establish a connection.
Subnet Mask	A value that defines whether your computer communicates only within your LAN or communicates outside of your LAN, where it is routed out to the rest of the Internet. A Subnet Mask that has the same first three components (for example, 255.255.255.0) is the routing pattern for a Class C address.
TCP	*Transmission Control Protoco*l. The standard transport level protocol that provides the full duplex, stream service on which many applications' protocols depend. TCP allows a process on one machine to send a stream of data to a process on another. Software implementing TCP usually resides in the operating system and uses the IP to transmit information across the network.
WEP	*Wired Equivalent Privac*y. The optional cryptographic confidentiality algorithm specified by 802.11. The algorithm is being used to provide data confidentiality that is subjectively equivalent to the confidentiality of a wired LAN medium that does not employ cryptographic techniques to enhance privacy..