

### 3-4 Set up Wireless LAN PC Card for Windows 98/ ME

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**Step 1:** After inserting the 11Mbps Wireless LAN PC Card into the PCMCIA slot on your notebook, Windows will auto-detect new hardware and will display an “Add New Hardware Wizard” window. Click **Next** to continue.



**Step 2:** Select “Search for the best driver for your device (Recommended)” and click **Next**.



**Step 3:** Insert the Product CD-ROM into the CD-ROM drive. Select the “**CD-ROM drive**” check box and click on **Next** to install the driver.



**Step 4:** The Windows will find “**IEEE 802.11 Wireless LAN/PC Card**”. Click **Next** to continue.



**Step 5:** Once the [Please insert the disk labeled 'Windows 98 Second Edition CD-ROM/ME CD-ROM', and then click OK] window appears, insert the disk corresponding to the appropriate drives and click **OK**. Usually these files can be found at C:\Windows or C:\Windows\system.



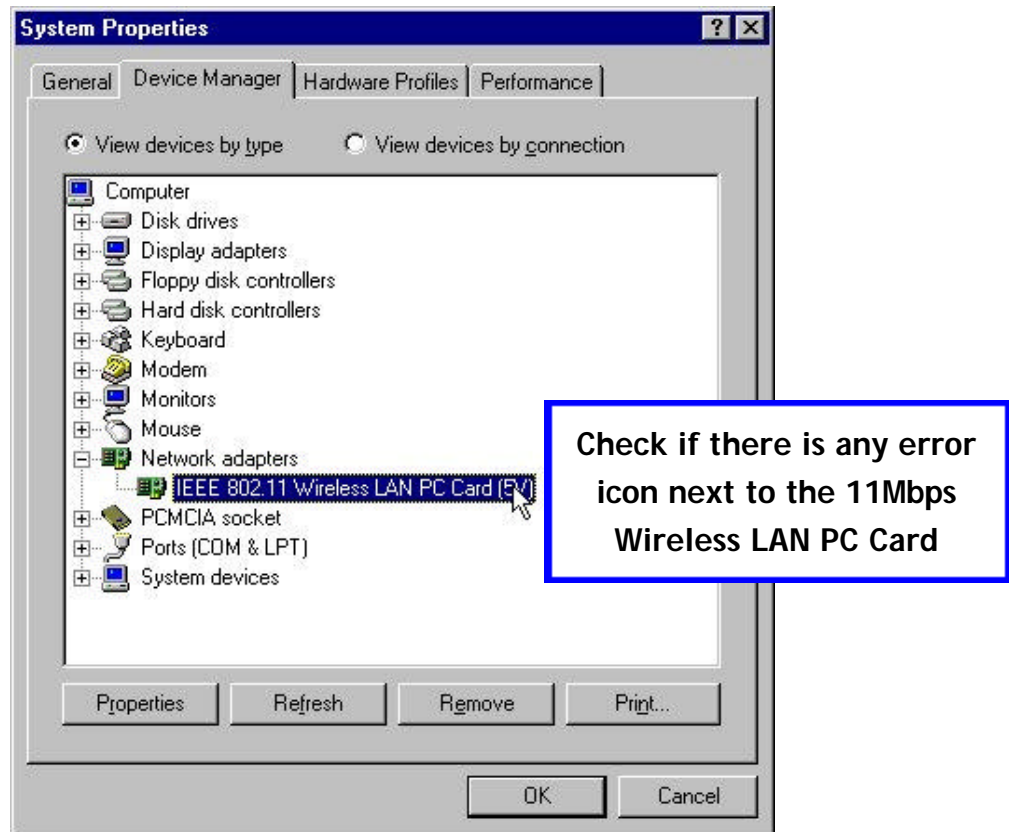
**Step 6:** Click **Finish** to complete the software installation.



**Step 7:** Restart the computer.




**Step 8:** Open **Control Panel/System/Device Manager**, and check **Network Adapters** to see if any error icon appears next to the IEEE 802.11 Wireless LAN PC Card. If no, your 11Mbps Wireless LAN PC Card is working well.



### ***3-5 Remove the Wireless LAN PC Card***

If you do not need the wireless connectivity of your 11Mbps Wireless LAN PC Card, it is advised that you remove the card from its slot as described below:

 **Note:** When removing the 11Mbps Wireless LAN PC Card, you will lose your connection to the network. Prior to removing the PC Card, make sure you have closed all files and network applications (such as e-mail).

You are advised to always disable the PC Card **prior** to removing the card from the PC Card slot. This will allow the Windows operating system to:

- Log off from the network server.
- Disable the 11Mbps Wireless LAN PC Card driver.
- Disconnect power to the PC Card slot (which will extend battery life for mobile computers)

To stop using the 11Mbps Wireless LAN PC Card, do the following steps:

1. Click once on the PC Card icon on the right side of the Windows task bar.



2. Select the option “**Stop IEEE 802.11 Wireless LAN/PC Card (5V)**”.



3. Wait a few seconds until the operating system displays a pop-up message to indicate you can safely remove the PC Card. Click **OK** and you may then take out the 11Mbps Wireless LAN PC Card.



# Configure the Wireless LAN PC Card 4

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This chapter gives you assistance with detailed configuration for the 11Mbps Wireless LAN PC Card under Windows XP/2000/NT/98/ME.

## 4-1 Install the WLAN Utility

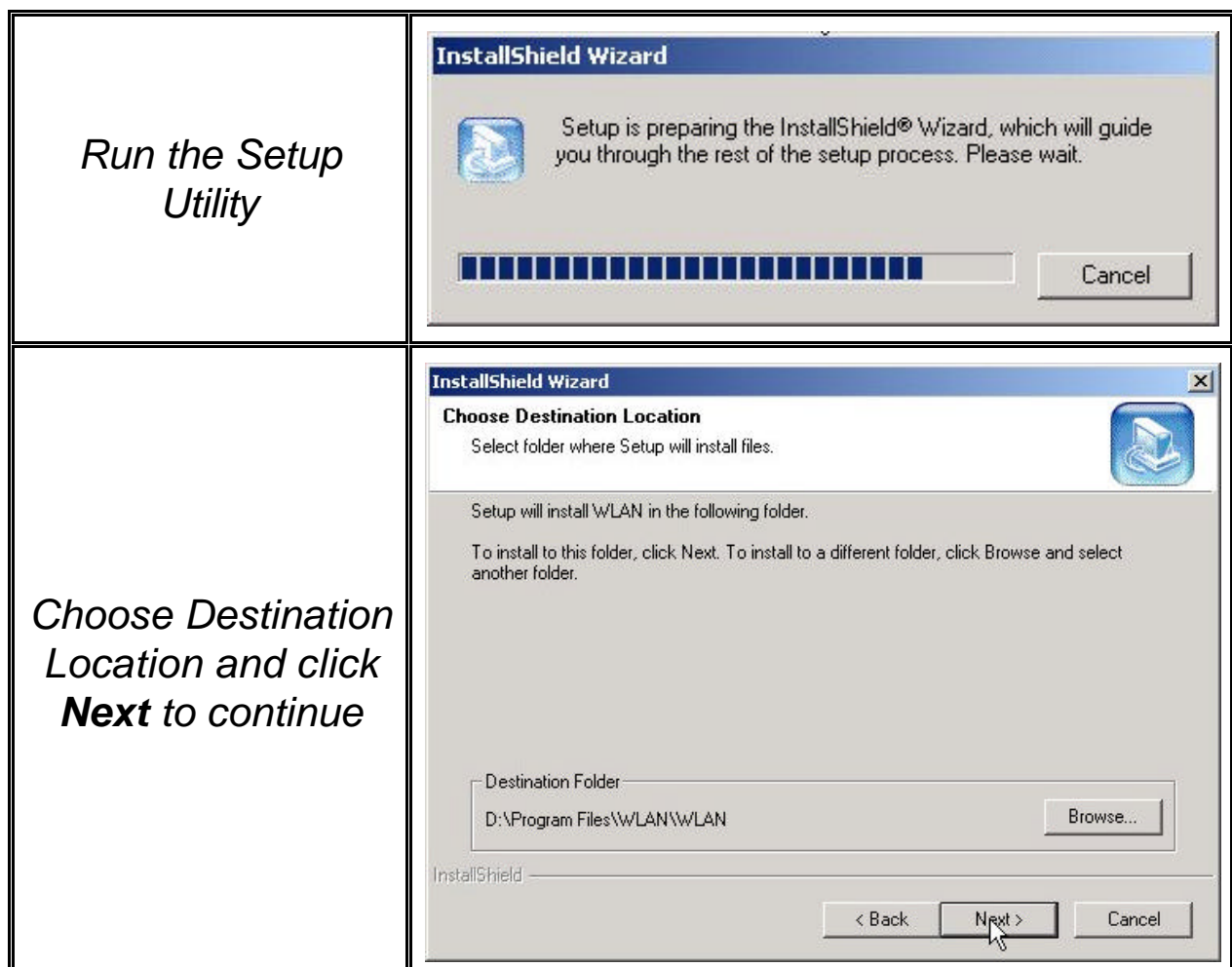
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To install the WLAN Utility, follow these steps:

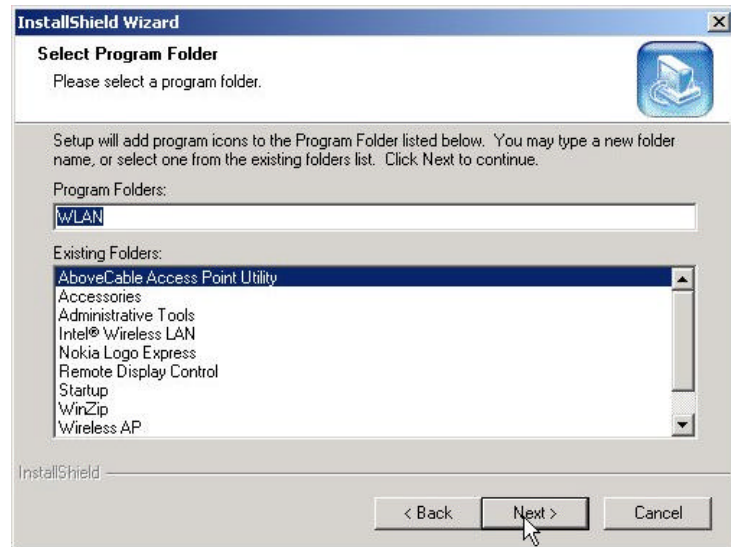
**Step 1:** Insert the Product CD-ROM or floppy disk again.

**Step 2:** Go to the **utility** folder and run **setup.exe**.

**Step 3:** The InstallShield Wizard will show up and guide you through the rest of the setup process.



*Select a program folder and click **Next***



*You may add a shortcut in the startup folder as desired*



Upon completion, go to **Program Files** and run the WLAN Utility and its icon will appear in the **System Tray** in the bottom right corner of your task bar. Clicking on the icon will open the configuration window. When you minimize the window, the system tray icon will be loaded in the System Tray again.



The color behind the system tray icon indicates the link status:



Blue indicates a good or excellent link.



Yellow indicates a usable but weak link.



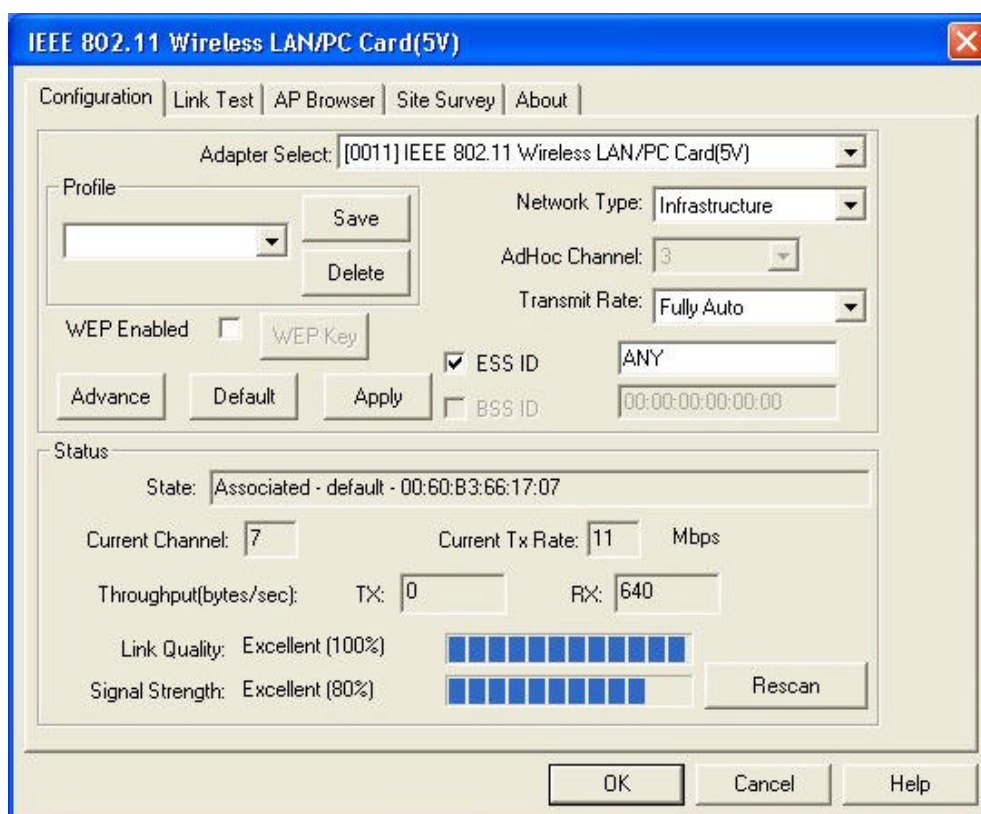
Red indicates no or very poor link quality. When you minimize the window, the system tray icon will be loaded in the **System Tray** again.

## 4-2 Use the WLAN Utility

The WLAN Utility enables you to make configuration changes and perform user-level diagnostics on your 11Mbps Wireless LAN PC Card in the Windows XP/2000/NT/98/ME operating system environments. The WLAN Utility consists of window with 5 items for you to monitor and configure the 11Mbps Wireless LAN PC Card: **Configuration**, **Link Test**, **AP Browser**, **Site Survey** and **About**.

### Configuration:

The **Configuration** item allows you to modify the configuration parameters for the 11Mbps Wireless LAN PC Card such as **Profile**, **Network Type**, **Ad-Hoc Channel**, **Transmit Rate**, **ESSID**, **WEP**, **RTS/CTS**, **Fragment Threshold**, and **Power Save** mode. Furthermore, you may monitor the current status of the Wireless LAN PC Card such as **State**, **Current Channel**, **Current Tx Rate**, **Throughput**, **Link Quality** and **Signal Strength**.

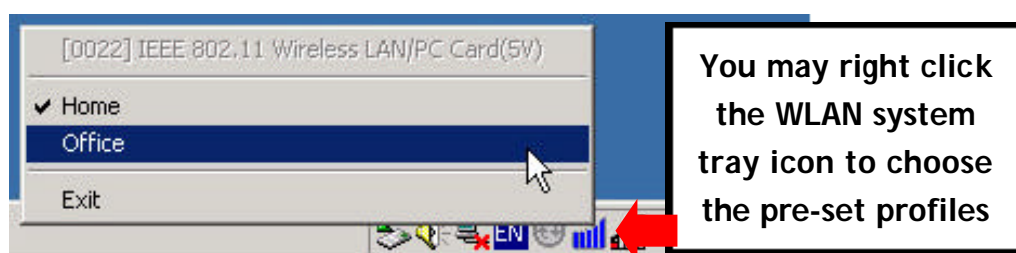


## Profile

The **Profile** field allows you to set values for all parameters by selecting a previously defined profile. To create the profile, go to the **Profile** field, type a profile name and set the corresponding parameters. If one of the profiles is no longer used, you may remove it by clicking the **Delete** button. After changing parameters, save the profile and click the **Apply** button to take effect. You can have multiple profiles and modify the profile at any time.

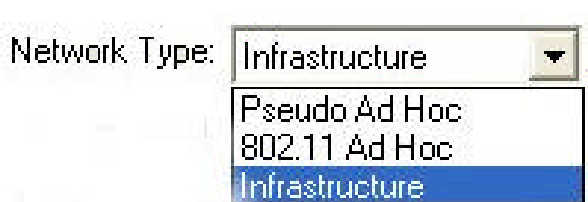


Alternatively, you may choose the profile by right clicking the system tray icon on the task bar, making the configuration more friendly and efficient.



## Network Type

There are 3 network types for the 11Mbps Wireless LAN PC Card to operate. If you need to access company network or Internet via Access Point, select “**Infrastructure**”. To set up a group of wireless stations for file and printer sharing, select “**Pseudo AdHoc**” or “**802.11 AdHoc**” (without Access Point). If **Pseudo Ad-Hoc (without access point)** is selected, you need to set wireless stations with the same channel. For **802.11 AdHoc**, the same ESS ID is required to the wireless stations.



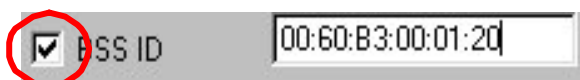
## ESSID

The ESS ID is the unique ID used by Access Points and stations to identify a wireless LAN. Wireless clients associating to any Access Point must have the same ESSID. The default setting is ANY, which allows your Wireless LAN PC Card to automatically associate to any Access Point (Infrastructure mode) in the vicinity of your wireless adapter. Alternatively, you may check the **ESS ID** check box to specify the ESS ID. It will then attempt to associate with Access Points or stations with the same ESS ID. The ESS ID can be set up to *32 characters* and is case sensitive.



Check here before entering the ESS ID

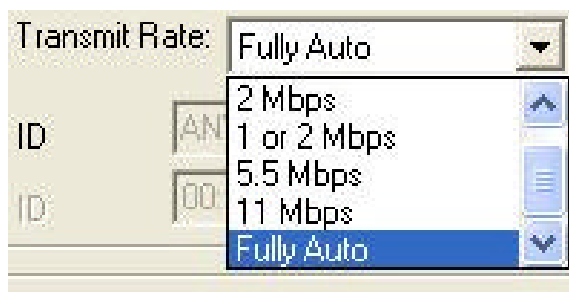
If there two Access Points with the same ESSID, you may check the BSS ID check box and enter the MAC address of the Access Point you desire to connect to.



Check here before entering the BSS ID

## Transmit Rate

The 11Mbps Wireless LAN PC Card provides various data rate options for you to select. Data rates options include **Fully Auto**, **2 Mbps**, **1 or 2 Mbps**, **5.5 Mbps**, and **11 Mbps**. In most networking scenarios, you will see that the factory-set default “**Fully Automatic**” will prove the most efficient. This setting will allow your 11Mbps Wireless LAN PC Card to operate at the maximum data rate. When the communications quality drops below a certain level, the PC Card will automatically switch to a lower data rate. Transmission at lower data speeds are usually more reliable. However, when the communications quality improves again, the 11Mbps Wireless LAN PC Card will gradually increase the data rate again, until it has reached the highest available transmit rate.



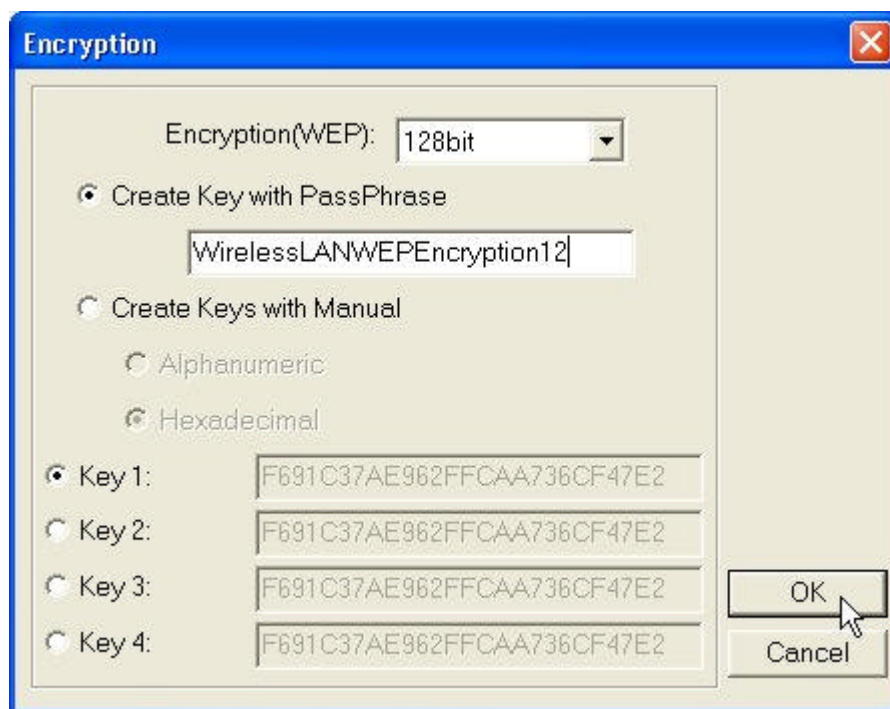
## WEP

To prevent unauthorized wireless stations from accessing data transmitted over the network, the WLAN Utility offers highly secure data encryption, known as WEP, making your data transmission over air more secure. To activate the WEP Encryption, check the **WEP Enabled** check box. An Encryption window will then appear. The instructions are as follows:

- Pull down the **Encryption (WEP)** menu and select either **64bit** or **128bit** encryption method.
- Specify the encryption keys. There are two methods to set the WEP keys, as described below:

### Create Encryption Keys by Using a Passphrase

To create encryption keys by using a passphrase, click the **Create Key with Passphrase** check box and type a character string in the **Passphrase** field. As you type, the utility uses an algorithm to generate 4 keys automatically. Select either the **64bit** or **128bit** encryption first, and type a string in the **Create Key with Passphrase** field. Select one key from the 4 WEP keys and click **OK**. Then click the **Apply** button on the **Configuration** tab to make the setting take effect.



Create Encryption Keys Using a Passphrase (128bit)

### Create Encryption Keys Manually

You can also create encryption keys manually by clicking the **Create Keys Manually** check box.

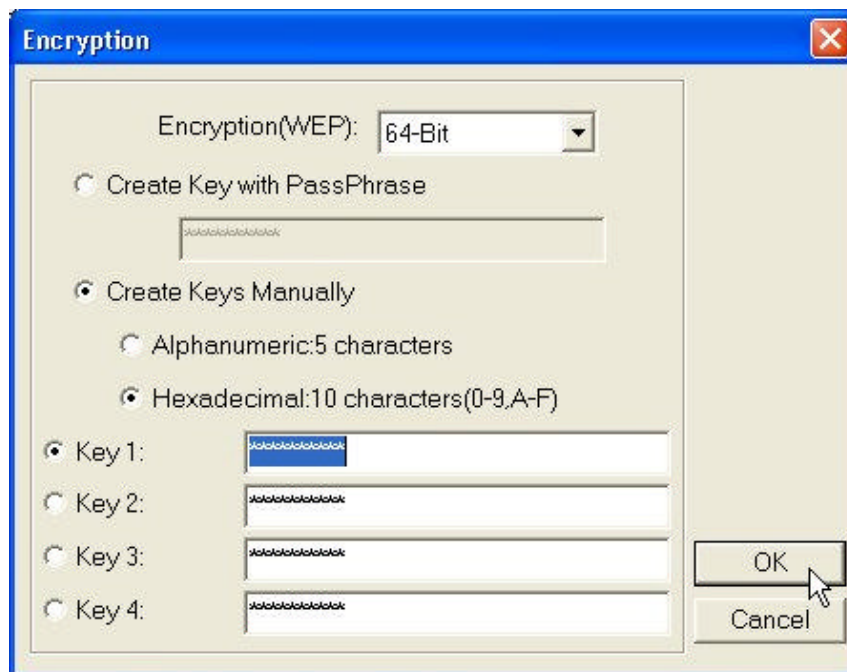
For 64bit encryption you may choose:

- **Alphanumeric: 5 characters** (case sensitive) ranging from “a-z”, “A-Z” and “0-9” (e.g. MyKey)
- **Hexadecimal: 10 hexadecimal digits** in the range of “A-F”, “a-f” and “0-9” (e.g. 11AA22BB33)

For 128bit encryption you may choose:

- **Alphanumeric: 13 characters** (case sensitive) ranging from “a-z”, “A-Z” and “0-9” (e.g. MyKey12345678)
- **Hexadecimal: 26 hexadecimal digits** in the range of “A-F”, “a-f” and “0-9” (e.g. 00112233445566778899AABBCC).

After entering the WEP keys in the key field, select one key as active key, click the **OK** button and then click the **Apply** button on the **Configuration** tab to make the setting take effect.



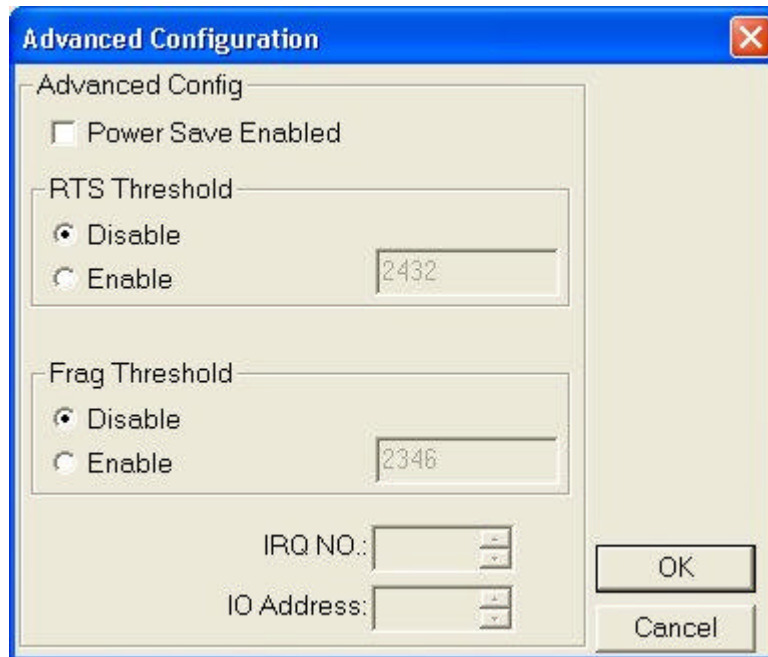
Create Encryption Keys Manually (64bit)



**Note:** The WEP key must be set up exactly the same on the Wireless LAN stations as they are on the wireless Access Points. If you set “MyKey” for the Wireless LAN PC Card, the same WEP Key “MyKey” must be assigned to the Access Point or other stations.

## Advance

The WLAN Utility also offers the advanced configuration for user to set the 11Mbps Wireless LAN PC Card under certain network environment. These advanced options include Power Management, RTS/CTS and Fragmentation Threshold. To enable the advanced configuration, go to the Configuration tab and click the **Advance** button.



### Power Management

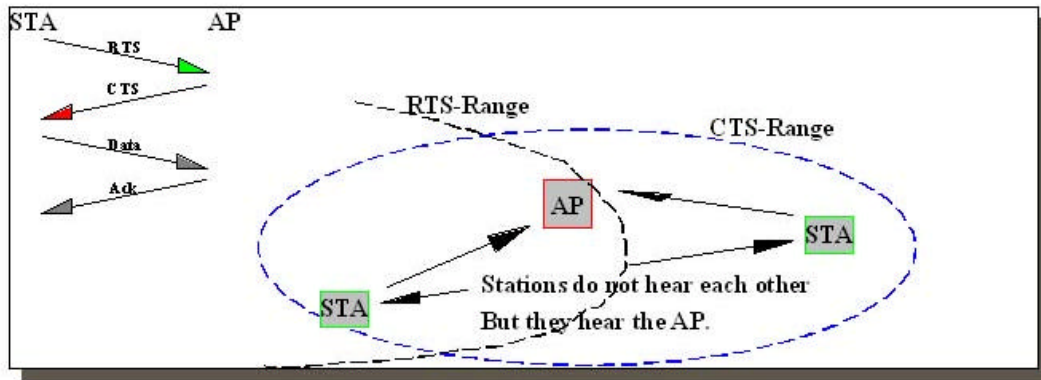
The Power Save option is designed to conserve battery life of your computer. When Power Save is enabled, your 11Mbps Wireless LAN PC Card will go into sleep mode to minimize power consumption.



**Note:** When power saving mode is enabled, the Access Points you use need to support power saving as well so that the communication can be established.

### RTS Threshold

RTS Threshold is a mechanism implemented to prevent the “Hidden Node” problem. “Hidden Node” is a situation in which two stations are within range of the same Access Point, but are not within range of each other. The following figure illustrates an example of the “Hidden Node” problem. Both stations (STA) are within range of the Access Point, however, they cannot hear each other. Therefore, they are hidden nodes for each other. When a station starts data transmission with the Access Point, it might not notice that the other station is already using the wireless medium. When these two stations send data at the same time, they might collide when arriving simultaneously at the Access Point. The collision will most certainly result in a loss of messages for both stations.



Thus, the RTS Threshold mechanism provides a solution to prevent data collisions. When you enable RTS Threshold on a suspect “hidden station”, this station and its Access Point will use a Request to Send/Clear to Send protocol (RTS/CTS). The station will send an RTS to the Access Point, informing that it is going to transmit the data. Upon receipt, the Access Point will respond with a CTS message to all station within its range to notify all other stations to defer transmission. It will also confirm the requestor station that the Access Point has reserved it for the time-frame of the requested transmission.

If the “Hidden Node” problem is an issue, please specify the packet size. The RTS mechanism will be activated if the data size exceeds the value you set. It is highly recommended that you set the value ranging from 0 to 1500. The default value is **Disable**.



**Note:** Enabling RTS Threshold would cause redundant network overhead that could negatively affect the throughput performance instead of providing a remedy.

### Frag. Threshold

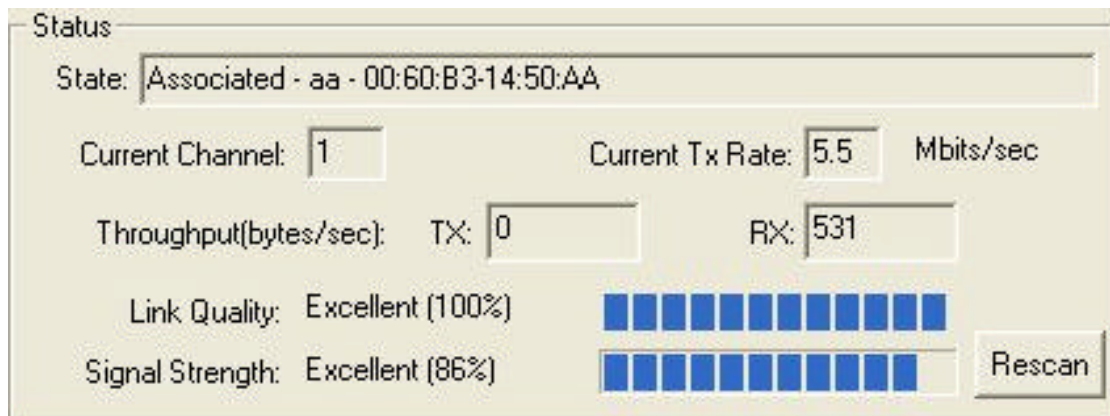
Fragmentation mechanism is used for improving the efficiency when high traffic flows along in the wireless network. If your 11Mbps Wireless LAN PC Card often transmit large files in wireless network, you can enable the Fragmentation Threshold by clicking the **Enable** button and the mechanism will split the packet. The value can be set from 256 to 1500. The default value is **Disable**.

### IRQ NO./IO Address

To avoid device conflict, you may modify the IRQ No. and IO Address for your device (Only available under Windows NT).

### **Status:**

The Status field on the **Configuration** menu provides the following information.



The screenshot shows a 'Status' window with the following fields and values:

- State:** Associated - aa - 00:60:B3-14:50:AA
- Current Channel:** 1
- Current Tx Rate:** 5.5 Mbits/sec
- Throughput(bytes/sec):** TX: 0, RX: 531
- Link Quality:** Excellent (100%) with a bar chart of 10 full blue bars.
- Signal Strength:** Excellent (86%) with a bar chart of 8 full blue bars.
- Rescan** button.

**State:** When operating in Infrastructure mode, this field shows the MAC address of the Access Point with which the Wireless LAN PCMCIA Card is communicating. When operating in Ad-Hoc mode, it shows the virtual MAC address used by computers participating in the Ad-Hoc network.

**Current Channel:** Shows the channel on which the connection is made.

**Current Tx Rate:** Shows the highest transmit rate of the current association.

**Throughput:** Shows the short term transmit and receive throughput in bytes/second, and is continuously updated.

**Link Quality:** Based on the quality of the received signal of the Access Point beacon. There are 5 states of link quality:

100%~80%: Excellent link.

80%~60%: Good link quality.

60%~40%: Fair link quality.

Under 40%: Poor or no connection.

**Signal Strength:** Based on the received signal strength measurement of the baseband processor of the Beacon signal. Same as link quality, there are 5 states of signal strength:

100%~80%: Excellent signal strength.

80%~60%: Good signal strength.

60%~40%: Fair signal strength.

Under 40%: Poor or no signal strength.

You can click the **Rescan** button to force the radio to rescan all available channels. If your link quality or signal strength is poor, rescanning can be used to push the radio off a weak Access Point and search for a better link with another Access Point.

### **Link Test:**

The **Link Test** tool helps you examine data transmission quality between your 11Mbps Wireless LAN PC Card and any workstation on the network. By entering IP address of 2 remote station, setting ping interval and packet size, you may know whether communication has been made successfully or not. Additionally, you may run the loopback test by clicking the **Look back** button to verify the communication quality between your wireless station and Access Point. The **Refresh** button is used for setting the counters back to 0.

The screenshot shows the 'Link Test' tab of the 'IEEE 802.11 Wireless LAN/PC Card(5V)' utility. It is divided into two sections: 'IP Layer' and 'MAC Layer'. The 'IP Layer' section includes fields for Remote Address (192.168.168.254), Local Address (192.168.169.119), Ping Interval (1000), Packet Size (32), Packet Count (12), Failure Count (0), and Percent (0.00%). A status bar shows 'reply from 192.168.168.254: bytes=32 time=0ms TTL=255' and a 'Ping' button. The 'MAC Layer' section includes fields for Remote Address (00:60:83:16:26:01), Test Interval (1000), Packet Size (256), Packet Count (9), Failure Count (0), and Percent (0.00%). A status bar shows 'Packet Sequence=9 Time=10ms' and 'Loop Back' and 'Refresh' buttons. At the bottom are 'OK', 'Cancel', and 'Help' buttons.

### **AP Browser:**

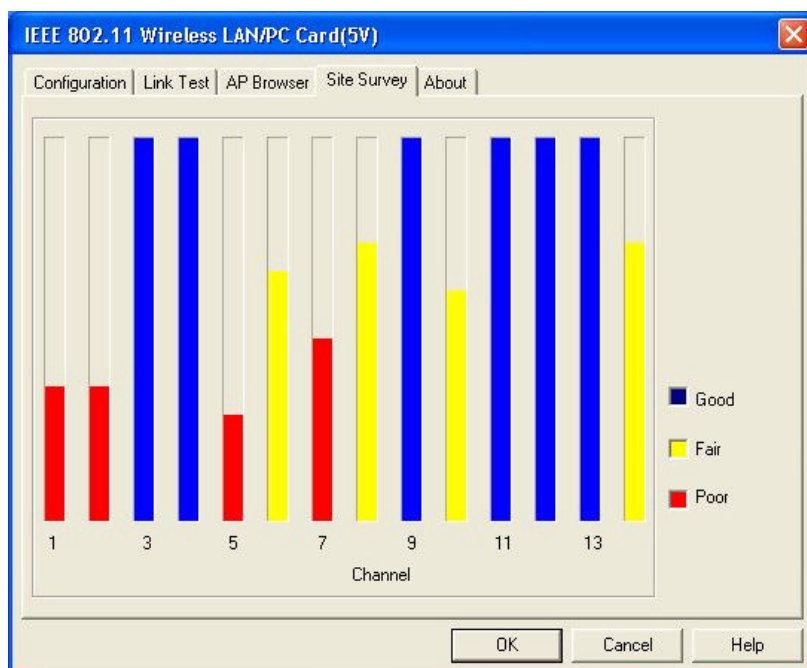
By clicking the **Rescan** button, the AP Browser can display Access Points around the working environment. Besides showing the ESSID of each Access Point, it also displays BSSID, Channel, Signal, Quality and Supported Rates. To join any of the displayed Access Points, highlight the Access Point you desire to connect and then click the **Join BSS** (when there are more than 2 Access Points with the same ESSID), or **Join ESS** button to join the group.

The screenshot shows the 'AP Browser' tab of the 'IEEE 802.11 Wireless LAN/PC Card(5V)' utility. It displays a table of detected Access Points with columns for ESSID, BSSID, Channel, Capability, Signal, Noise, and Rates. The table contains three entries: '101' (BSSID: 00:02:B3:92:67:46, Channel: 11, Capability: BSS, Signal: 31%, Noise: 1%, Rates: Mbps), 'WLAN' (BSSID: 00:60:83:68:05:49, Channel: 10, Capability: BSS, Signal: 31%, Noise: 1%, Rates: 1/2/5), and 'NDTESTWEP0' (BSSID: 00:60:83:16:26:01, Channel: 3, Capability: BSS, Signal: 34%, Noise: 2%, Rates: 1/2/5). To the right of the table are 'Rescan', 'Join BSS', and 'Join ESS' buttons. At the bottom are 'OK', 'Cancel', and 'Help' buttons.

| ESSID      | BSSID             | Channel | Capability | Signal | Noise | Rates |
|------------|-------------------|---------|------------|--------|-------|-------|
| 101        | 00:02:B3:92:67:46 | 11      | BSS        | 31%    | 1%    | Mbps  |
| WLAN       | 00:60:83:68:05:49 | 10      | BSS        | 31%    | 1%    | 1/2/5 |
| NDTESTWEP0 | 00:60:83:16:26:01 | 3       | BSS        | 34%    | 2%    | 1/2/5 |

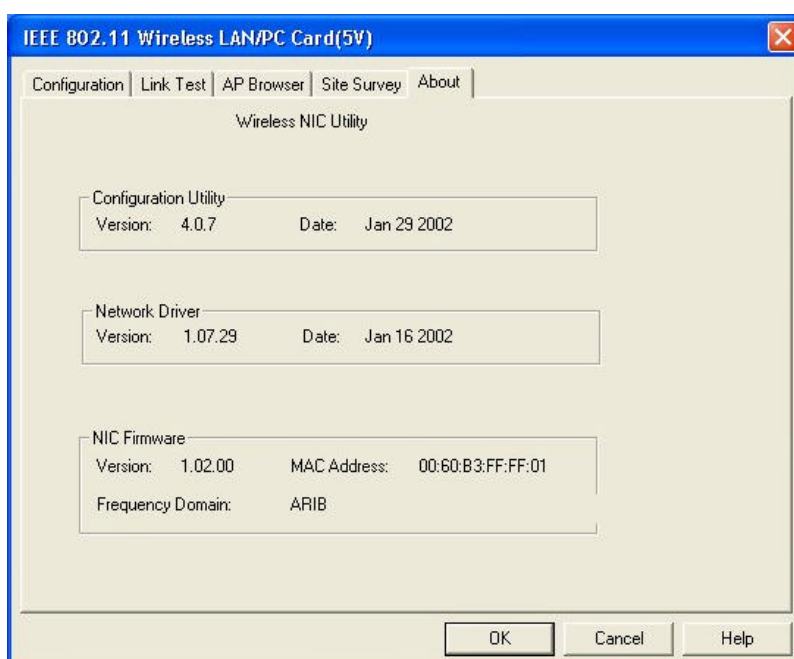
### *Site Survey:*

When the **Site Survey** screen is displayed, the channel quality of all 14 radio channels will be displayed. These channel quality measurements are shown on each gauge for the 14 radio channels. The blue bar indicated the channel quality is clear and good. The **higher** the blue bar is, the **better** quality you have (i.e., less interference). The yellow bar indicates the channel quality is fair and the red bar indicates the channel is busy or having severe interference.



### *About:*

The **About** item shows the versions of the Wireless LAN Utility, driver, firmware of the 11Mbps Wireless LAN PC Card. Also, the MAC address and frequency domain are displayed.



## Limited Warranty

This Warranty constitutes the sole and exclusive remedy of any buyer or reseller's equipment and the sole and exclusive liability of the supplier in connection with the products and is in lieu of all other warranties, express, implied or statutory, including, but not limited to, any implied warranty of merchantability of fitness for a particular use and all other obligations or liabilities of the supplier.

In no even will the supplier or any other party or person be liable to your or anyone else for any damages, including lost profits, lost savings or other incidental or consequential damages, or inability to use the software provided on the software media even if the supplier or the other party person has been advised of the possibility of such damages.

The following are special terms applicable to your hardware warranty as well as services you may use during part of the warranty period. Your formal Warranty Statement, including the warranty applicable to our Wireless LAN products, appears in the Quick Installation Guide which accompanies your products.

### **Duration of Hardware Warranty: One Year**

### **Replacement, Repair or Refund Procedure for Hardware:**

If your unit needs a repair or replacement, return it to your dealer/distributor in its original packaging. When returning a defective product for Warranty, always include the following documents:

- The Warranty Repair Card
- A copy of the invoice/proof of purchase, and
- The RMA Report Form (To receive a Return Materials Authorization form (RMA), please contact the party from whom you purchased the product).

Upon proof-of-purchase we shall, at its option, repair or replace the defective item at no cost to the buyer.

This warranty is contingent upon proper use in the application for which the products are intended and does not cover products which have been modified without the reseller's approval or which have been subjected to unusual physical or electrical demands or damaged in any way.

Please complete the information below and include it along with your products.

|                      |  |
|----------------------|--|
| Name:                |  |
| Title:               |  |
| Company:             |  |
| Telephone:           |  |
| Fax:                 |  |
| Email:               |  |
| City/State/Zipcode:  |  |
| Country:             |  |
| Product Name:        |  |
| Serial Number:       |  |
| MAC Address:         |  |
| Invoice Date:        |  |
| Product Description: |  |

If you have any further questions, please contact your local authorized reseller for support.