U S E R M A N U A L

802.11b/g PC CARD

Table of Content

Chapter 1 Introduction

The PC Card complies with IEEE 802.11b and 802.11g Standard. It combines networking with high-speed Internet access that enables you to connect to the Internet anytime and anywhere.

With seamless roaming, interoperability and advanced security with WEP standard, the PC Card allows user to switch among different vendors' access points in the wireless networks, and to prevent the user from being eavesdropped.

1.1 Wireless LAN Feature Functions

802.11b/g	
Radio Technology	IEEE 802.11b and 802.11g standard compliant
Operating Frequency	2412 ~ 2483.5MHz for ISM band
Spreading	IEEE 802.11b DSSS (Direct Sequence Spread Spectrum) IEEE 802.11g OFDM (Orthogonal Frequency Division Multiplexing)
Channel Numbers	11 channels for United States 13 channels for Europe Countries 14 channels for Japan
Data Rate	802.11g: 54Mbps with fall back rates of 48, 36, 24, 18, 12, 9 and 6Mbps 802.11b: 11Mbps with fall back rates of 5.5, 2, and 1Mbps
Modulation Schemes	802.11g: OFDM 802.11b: CCK (11 Mbps, 5.5Mbps), DQPSK (2 Mbps, 1 Mbps)
Media Access Protocol	CSMA/CA with ACK
Transmitter Output Power	Typical 14 dBm for 54Mbps Typical 18 dBm for 11Mbps
Current Consumption (Typical)	Transmit mode: 500 mA@11g 16dBm and 550mA@11b 18dBm Receive mode: 330 mA@11g and 280mA@11b

1.2 Regulatory Notice

1.2.1 FCC Class B 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 will not occur in a particular installation. If this equipment does cause harmful interference to radio or

television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and the 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.

Notice: (1) Shielded cables, if any, must be used in order to comply with the emission limits. (2) Any change or modification not expressly approved by the grantee of the equipment authorized could void the user authority to operate the equipment.

1.2.2 Canadian Regulatory Wireless Notice

Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

1.2.3 European Union Notice

Products bearing the CE marking comply with the R&TTE Directive (1999/5/EC), EMC Directive (89/336/EEC) and the Low Voltage Directive (73/23/EEC) issued by the Commission of the European Community.

Chapter 2 Wireless LAN Installation

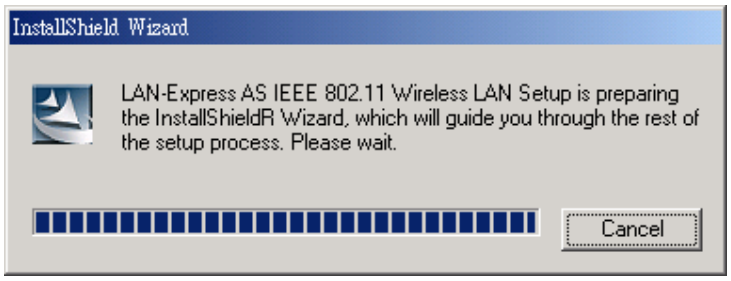
2.1 System Requirements

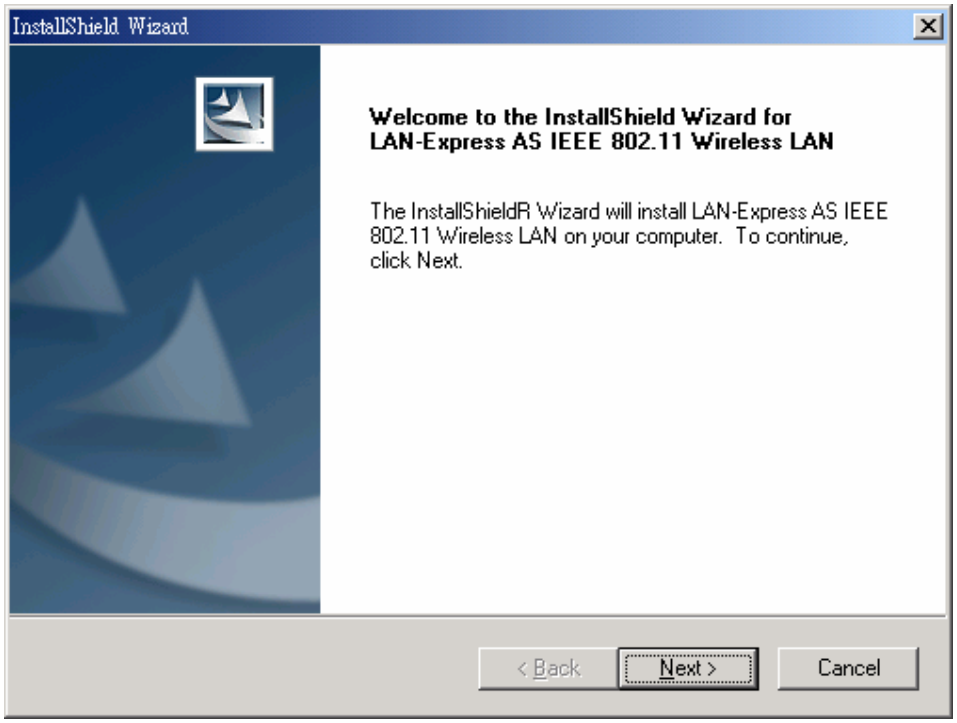
Your notebook system must have Windows 98SE, ME, 2000, or Windows XP OS installed in order to install the Wireless LAN driver and Utility so that you can use the wireless LAN card on your computer:

2.2 Installation and Uninstall Process

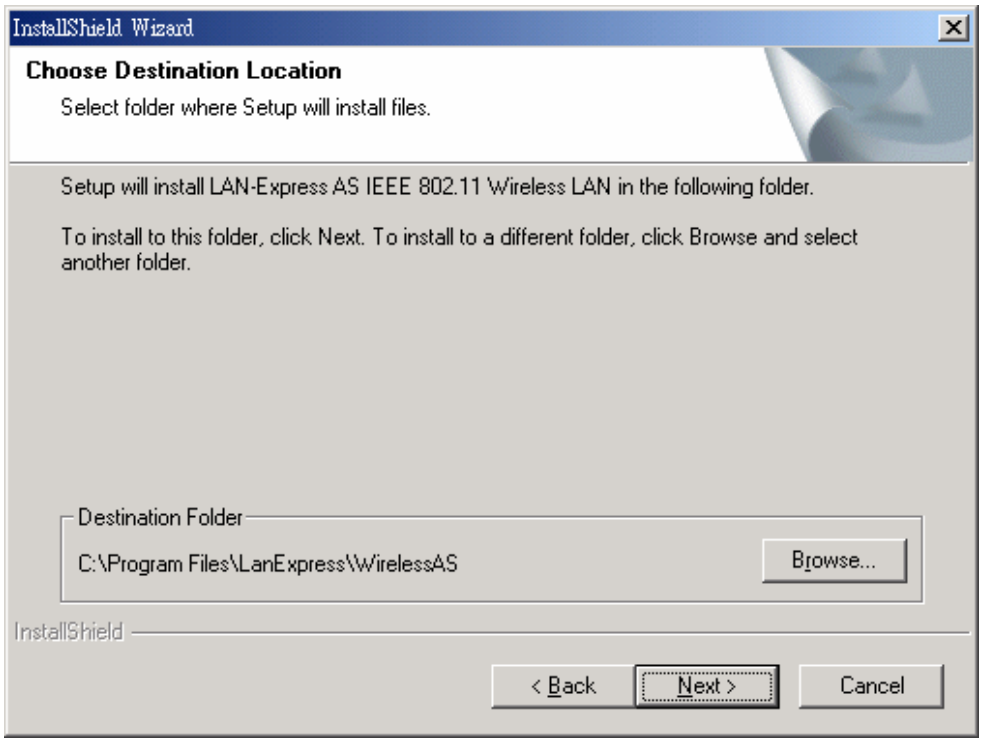
2.2.1 Install Wireless LAN (Windows 98/ME/2000/XP)

1. Execute the program *Setup.exe* in the CD provided. The InstallShield Wizard window appears as below. Click Next to continue.

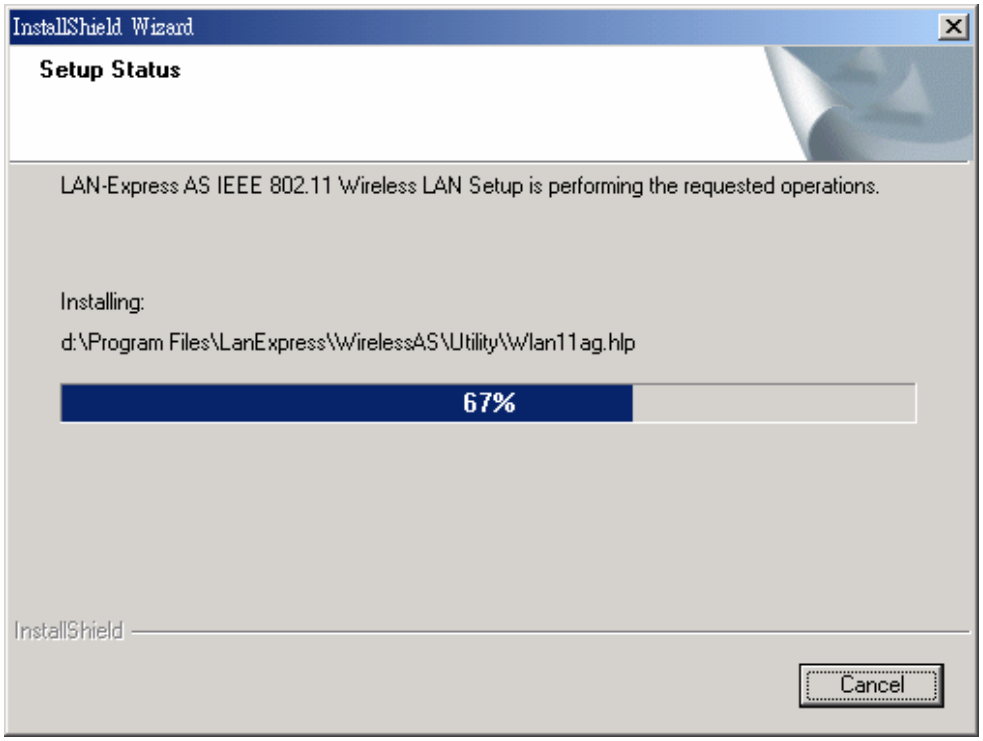




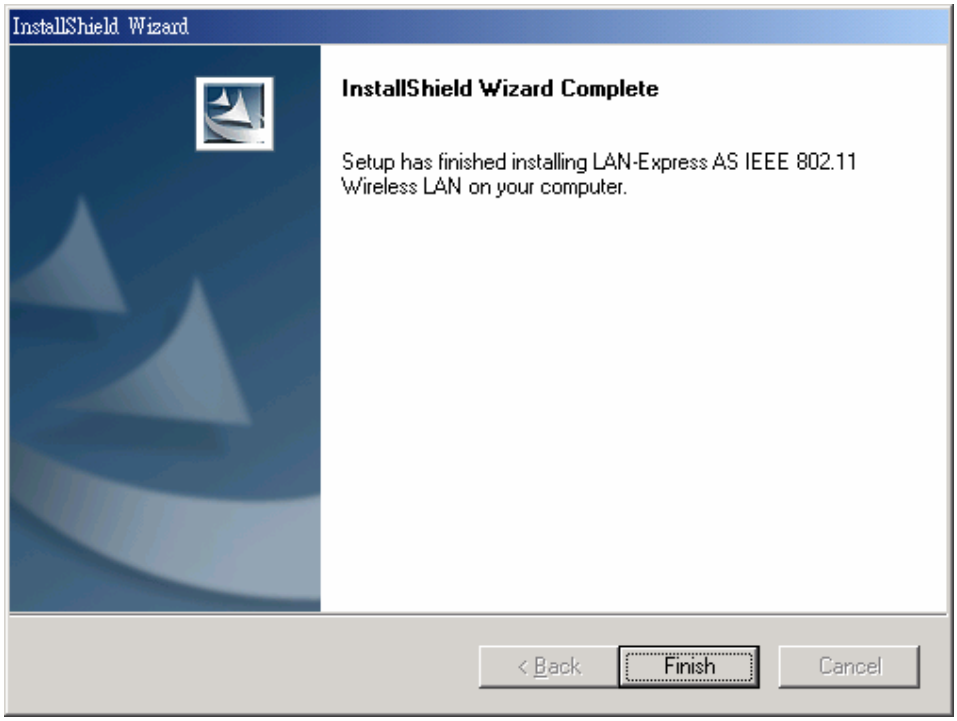
2. Click Browse to select the destination folder where you want to install the files. And then click Next.



3. Wait for the system to complete the installation process.

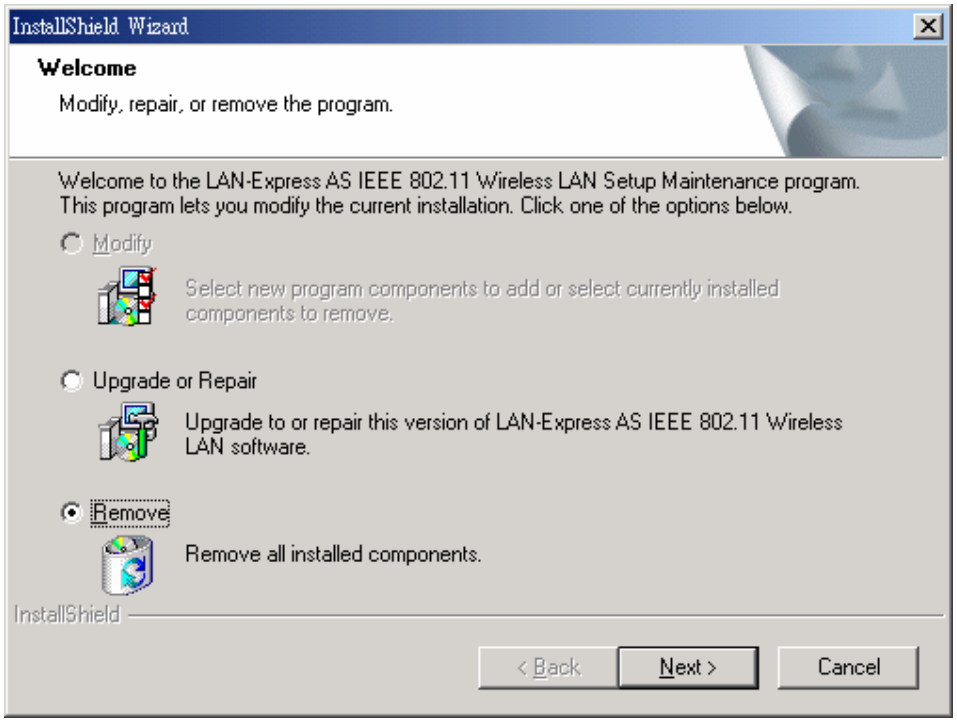


4. The Wireless LAN has been installed successfully. Remove any disk from any drives, and then click Finish to complete the installation process.

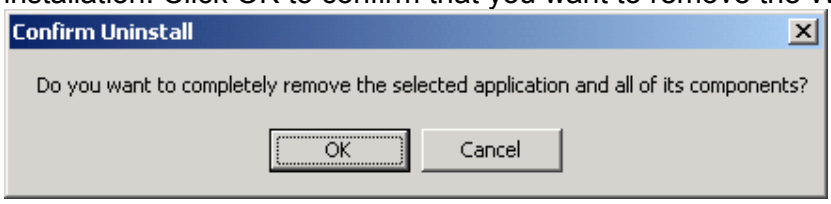


2.2.2 Uninstall Wireless LAN (Windows 98/ME/2000/XP)

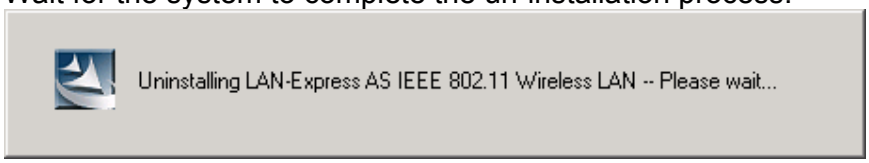
1. In Control Panel, select Wireless LAN, and then click the Add/Remove button. The dialog box appears as below.

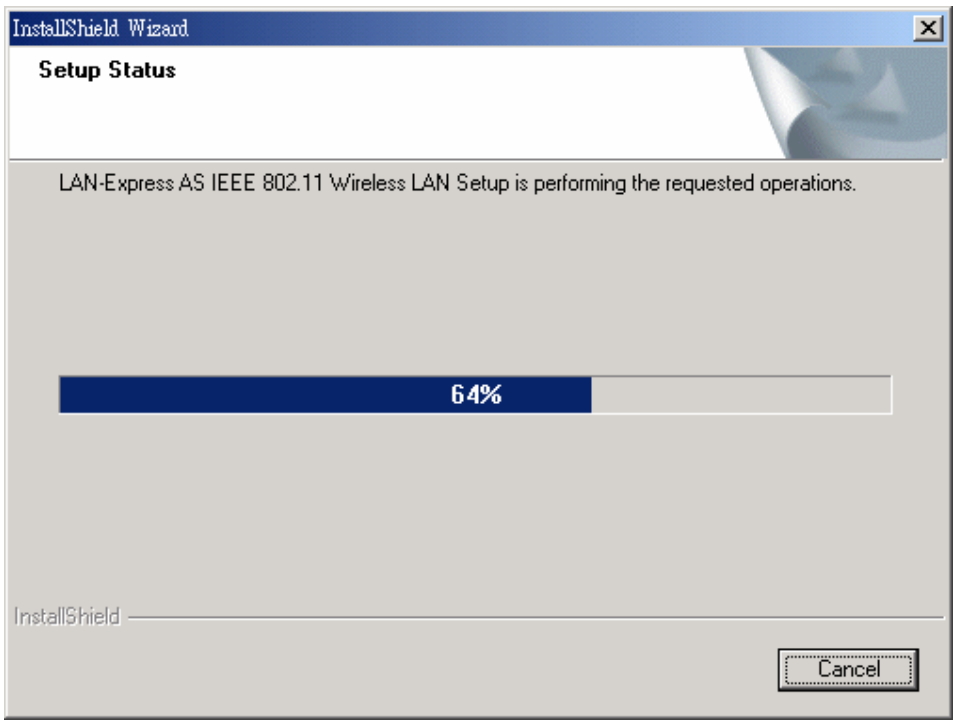


2. Select Remove, and then click the Next button to perform the un-installation. Click OK to confirm that you want to remove the Wireless LAN.

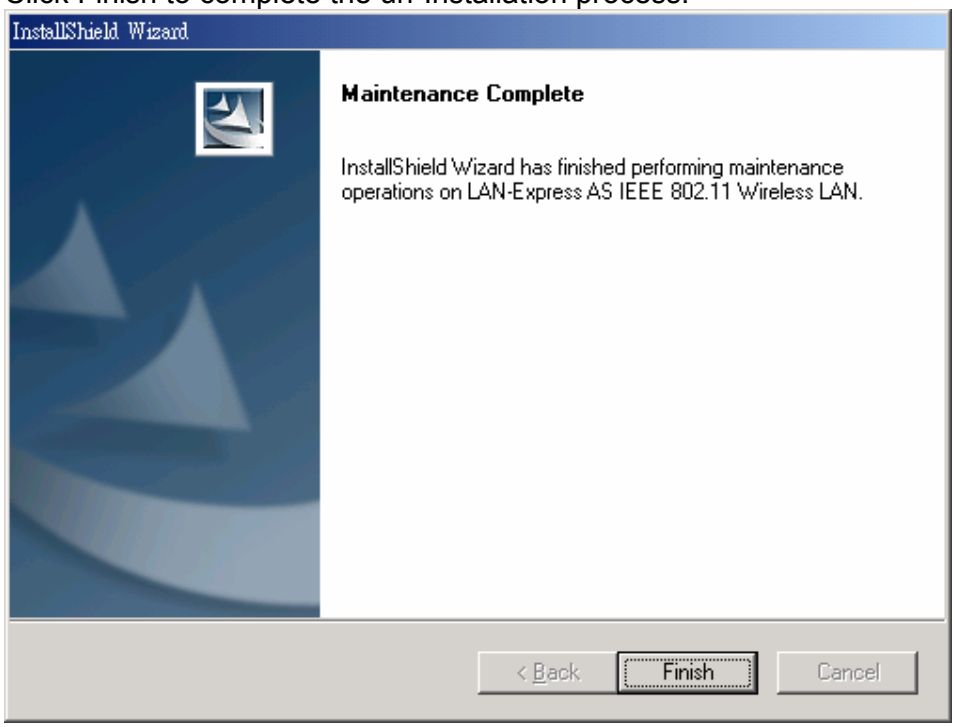


3. Wait for the system to complete the un-installation process.





4. Click Finish to complete the un-Installation process.



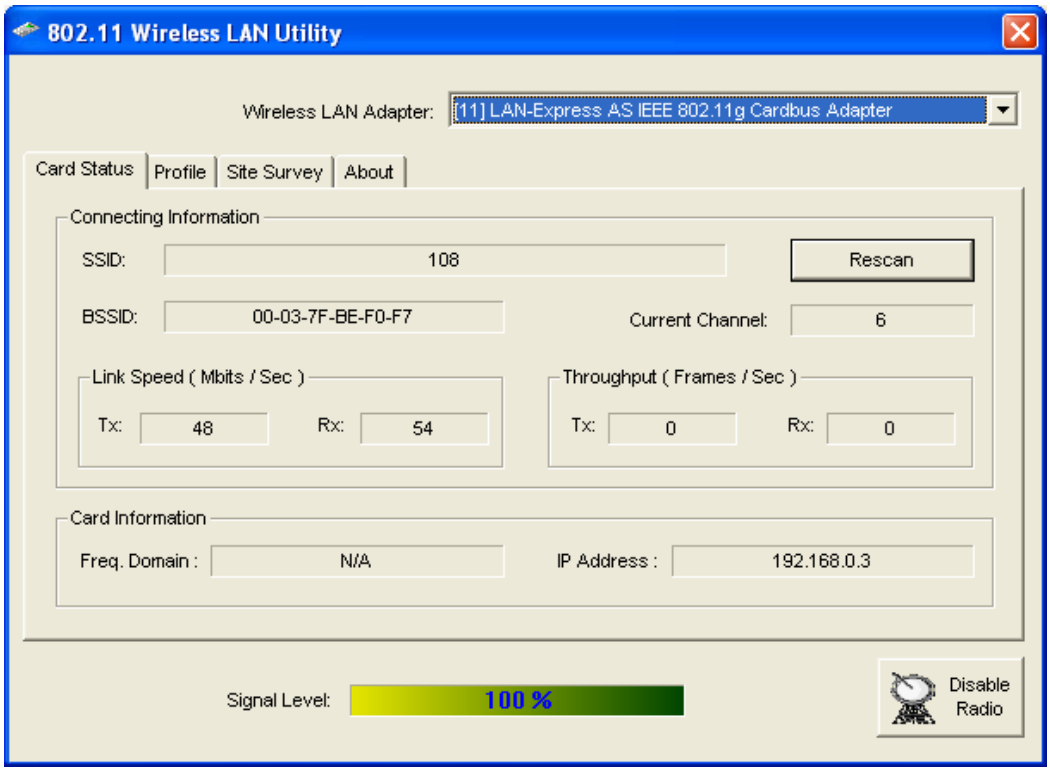
Chapter 3 Wireless Utility and Configuration

The following sections describe the Wireless Network Configuration Utility. This utility provides quick access and friendly interface to configure the PC Card.

3.1 Windows 98/ME/2000/XP Wireless Utility

After the Wireless LAN installation has completed, a Wireless LAN Utility icon appears on the task bar of your Windows system. Click the icon; the 802.11 Wireless LAN Utility window appears as shown below. If you cannot find the icon, click Start>Program>LAN-Express AS 802.11 WLAN.

3.1.1 Card Status

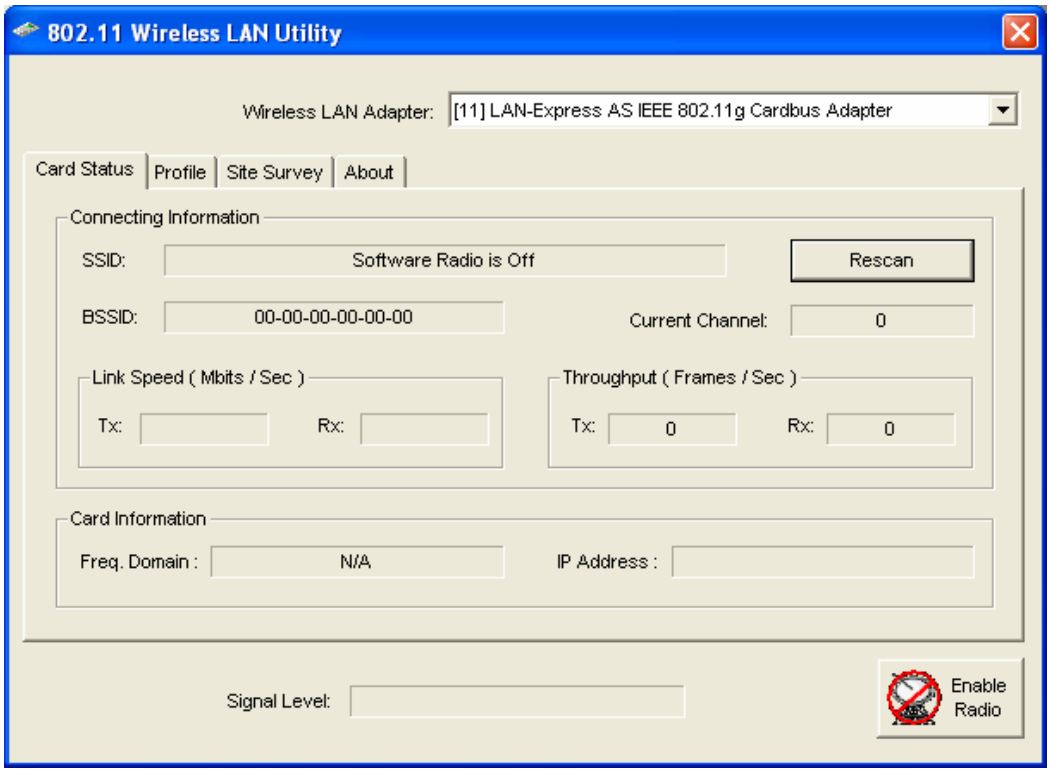


You can see the connection information of your PC Card as well as other information, such as Link Speed, Current Channel, Throughput, IP Address and Frequency Domain.

SSID: An acronym for Service Set Identifier. SSID is the unique name shared among all clients and access points in a wireless network. The SSID must be identical for all clients or Access Points participating in the same network. The

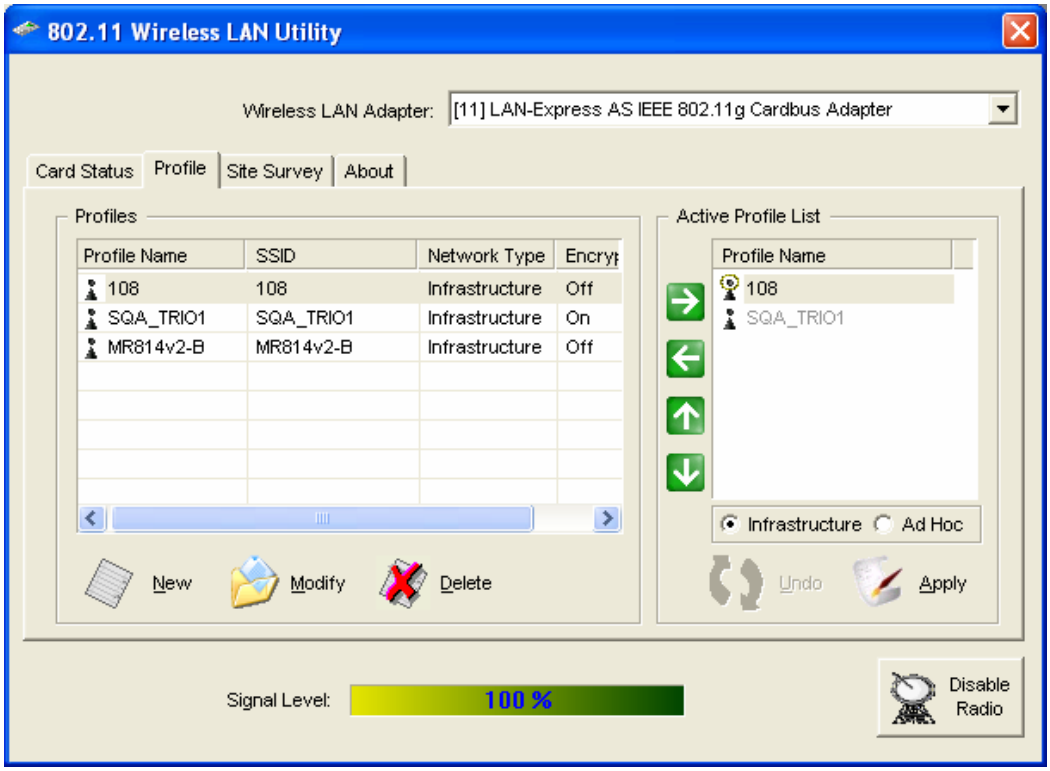
value of SSID is case sensitive and must not exceed 32 characters. Click Rescan to scan for the specified SSID set in your profile. If the SSID is set to be ANY in your profile, the PC Card will scan for the AP in the nearby area and choose the stronger one. The Signal Level shows the quality of the wireless transmission.

Signal Level: displays the signal level of your PC Card.



  Disable/Enable Radio: Click  to disable/enable radio with this utility. Click it again to enable radio.

3.1.2 Profile



- Profiles

The Profiles tab shows all the profiles you set.

- Active Profile List

Select the profiles you wish to activate in the Profiles list. Use the following buttons to set the priority of the selected profiles. Click the radio button of Infrastructure or Ad Hoc to choose to connect to either Infrastructure network or Ad Hoc group, and then click Apply to activate your changes. Or click Undo to cancel the changes and return to the original status.

 Add the specified profile into the Active Profile List.

 Remove the selected profile from the Active Profile List.

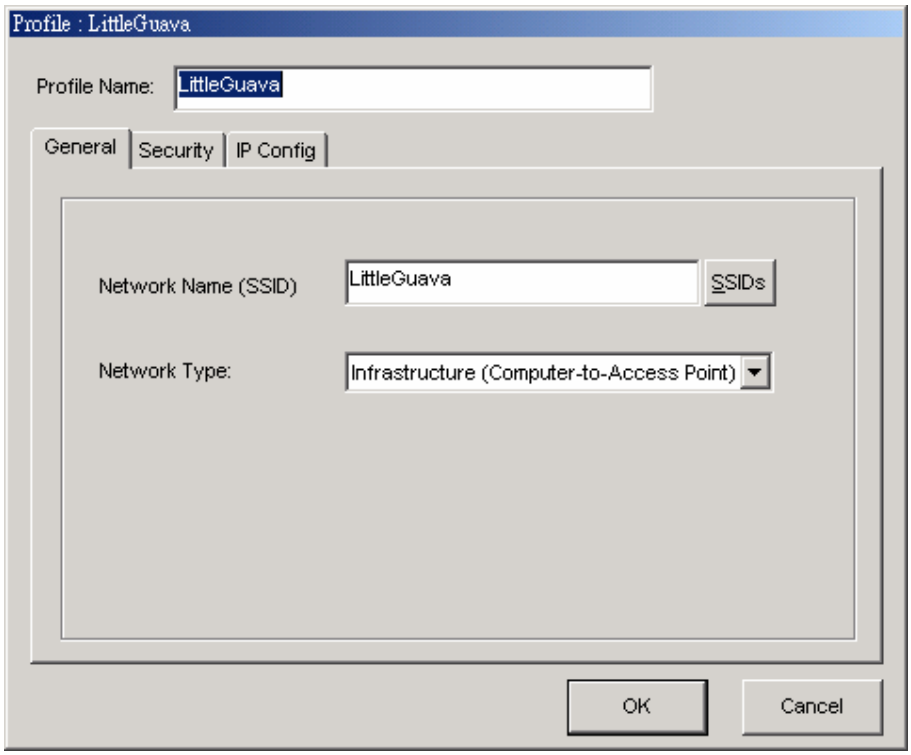
 Use these two buttons to change the scanning priorities.

 Disable Radio/Enable Radio: disable/enable radio.

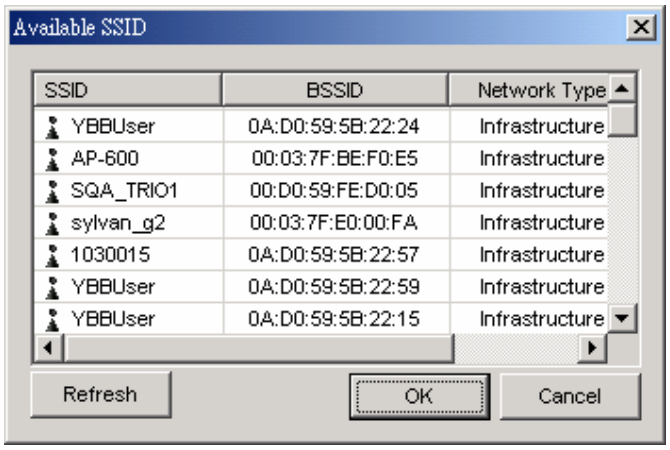
- New/Modify/Delete:

Click New to set up a new configuration of profile. Click Delete to delete an existing profile. Click Modify or double-click one of the profile names in the Profiles list to modify the existing profile configurations. The Profile Setting windows appears as follows.

- General



1. Network Name (SSID): The SSID differentiates one WLAN from another. All access points and all devices attempting to connect to a specific WLAN must use the same SSID. A device will not be permitted to join the BSS unless it can provide the unique SSID. In the Infrastructure Network, a blank SSID field is allowed and it is translated to a null SSID. Thus, the PC Card has the capability to connect to any available access point. You can click the SSID button to view the available network. The Available SSID window appears as shown below:

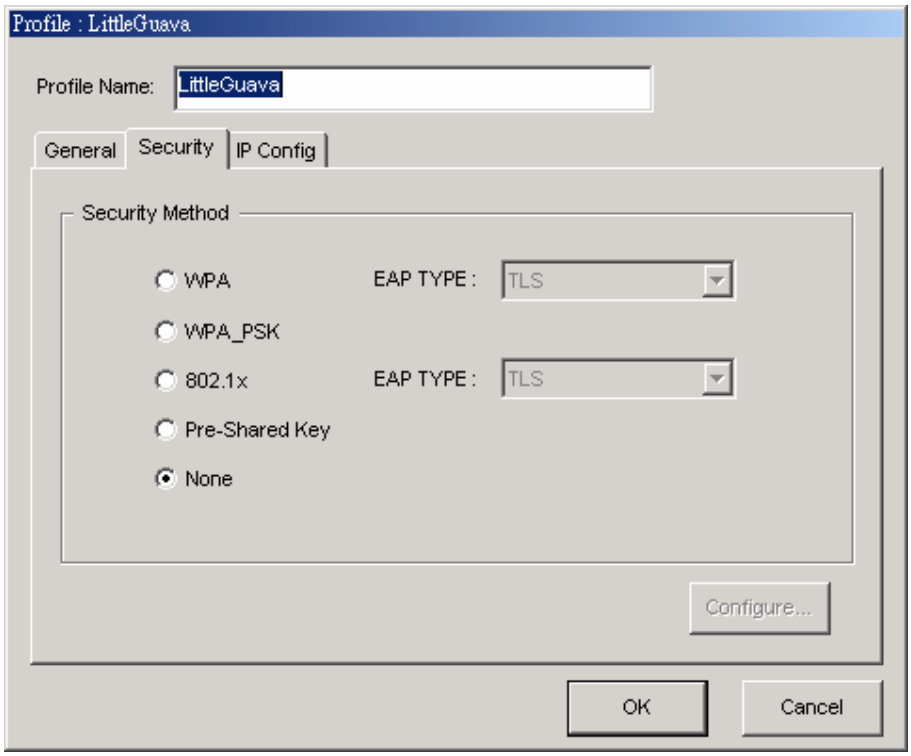


2. Network Type:

Ad-Hoc - Used in a simple peer-to-peer network, it offers the file sharing capability between wireless clients without a wireless access point.

Infrastructure - The Infrastructure mode allows a wireless LAN to be integrated into an existing wired network through an AP. Infrastructure type networks also permit roaming between access points while maintain the connection to all network resources. The Infrastructure mode provides additional features, such as WEP security, power saving, and extended range.

- Security

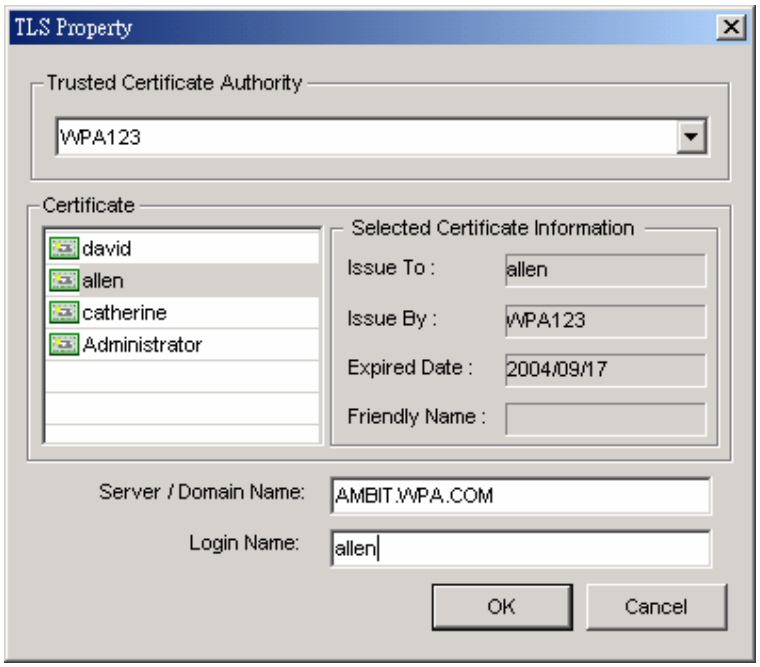


To enable the security service, select one of the security methods by clicking the corresponding radio button. And then click the Configure button to configure the detailed security settings.

1. WPA

The Wi-Fi Protected Access (WPA) mode allows for authentication with networks that support the EAP-TLS or PEAP Extensible Authentication Protocol (EAP) types.

EAP TYPE – TLS



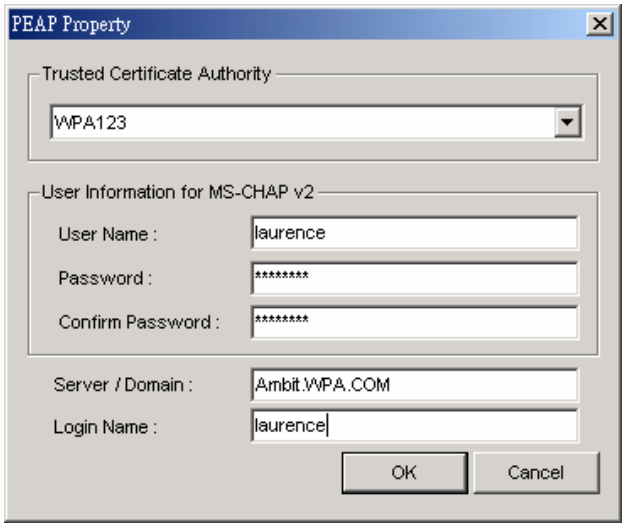
Trusted Certificate Authority - Select a specific Certificate Authority who must be the Trusted Root Certificate Authority for the authentication server's certificate. Select Any to accept any certificate.

Certificate - Select one certificate from the existing certificates stored in the personal certificate list of the current user.

Server / Domain Name - Enter a domain name to only authenticate to the server in that domain.

Login Name - Enter your login name to include your account information in the authentication log file at the server side.

EAP TYPE – PEAP



Trusted Certificate Authority - Select a specific Certificate Authority who must be the Trusted Root Certificate Authority for the authentication server's certificate. Select Any to accept any certificate.

User Name / Password - Enter the user name and password for authentication purpose.

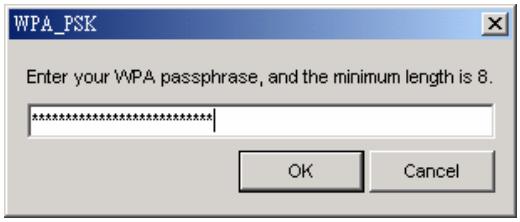
Server / Domain - Enter a domain name to only authenticate to the server in that domain.

Login Name - Enter your login name to include your account information in the authentication log file at the server side.

2. WPA-PSK

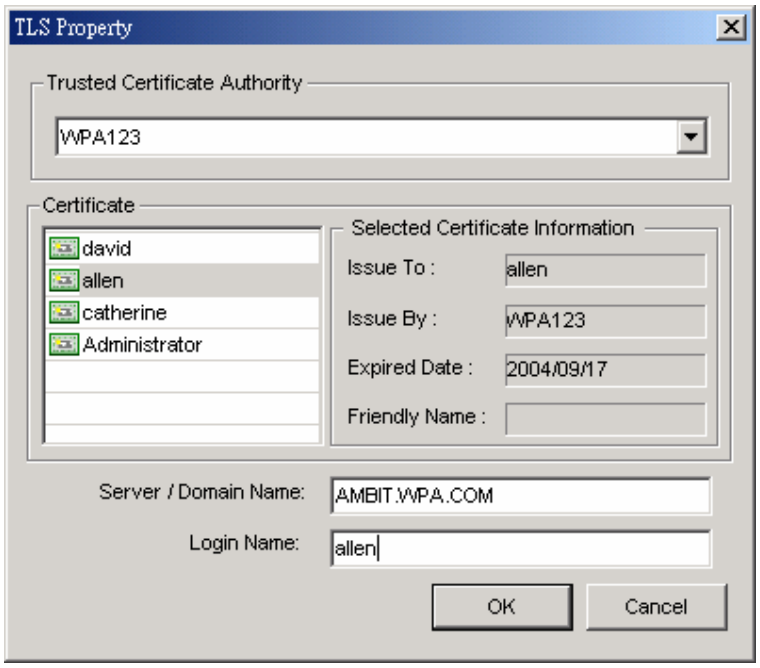
Wi-Fi Protected Access. This mode allows you to use WPA style authentication and encryption in a network that does not support the EAP/802.1x authentication.

Enter the ASCII code based secret pass phrase. The pass phrase must contain at least 8 characters, but no more than 64 characters. And then, click OK.



3. 802.1x

This security mode allows the creation of a dynamic Wired Equivalency Privacy (WEP) key for user and/or station authentication. The LEAP authentication with a Cisco network infrastructure is included in the 802.1x mode. Other EAP types, such as EAP-TLS and PEAP are also supported.



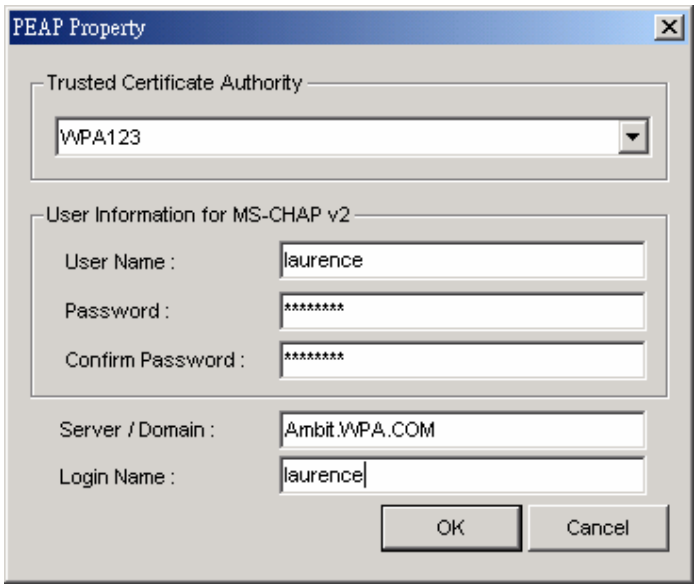
EAP TYPE – TLS

Trusted Certificate Authority - Select a specific Certificate Authority who must be the Trusted Root Certificate Authority for the authentication server's certificate. Select Any to accept any certificate.

Certificate - Select one certificate from the existing certificates stored in the personal certificate list of the current user.

Server / Domain Name - Enter a domain name to only authenticate to the server in that domain.

Login Name - Enter your login name to include your account information in the authentication log file at the server side.



EAP TYPE – PEAP

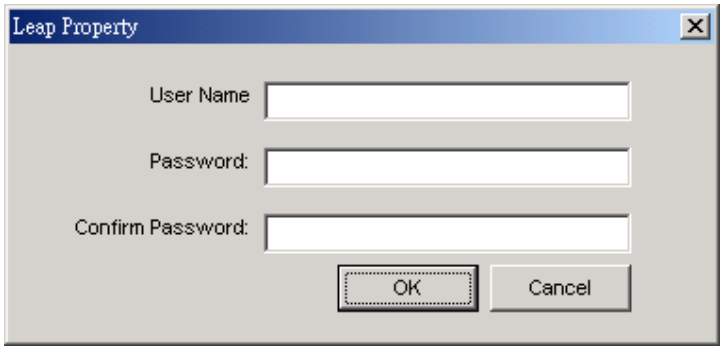
Trusted Certificate Authority - Select a specific Certificate Authority who must be the Trusted Root Certificate Authority for the authentication server's certificate. Select Any to accept any certificate.

User Name / Password –Enter the user name and password for authentication purpose.

Server / Domain - Enter a domain name to only authenticate to the server in that domain.

Login Name - Enter your login name to include your account information in the authentication log file at the server side.

EAP TYPE – LEAP



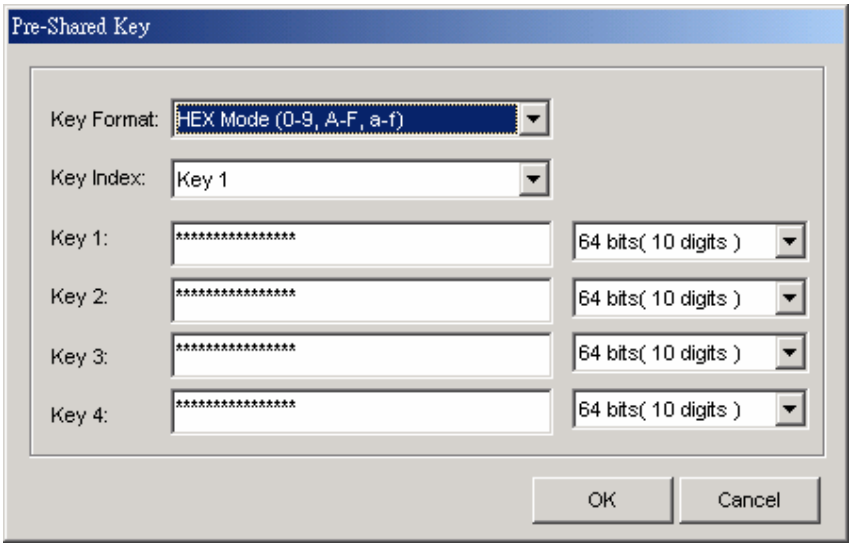
User Name: Enter the user name to log into the LEAP network.

Password: Enter the password to log into the LEAP network.

Confirm Password: Re-enter the password to confirm your password.

4. Pre-Shared Key

This mode is commonly referred to as 802.11 Wired Equivalency Privacy (WEP) encryption.



Key Format: You can enter the key values in either Hex Mode or ASCII Mode. The key value is case-sensitive. The valid key values for Hex Mode and ASCII Mode are listed below.

	Valid Key Value
Hex Mode	0,1,2,3,4,5,6,7,8,9, A, B, C, D, E, F
ASCII Mode	Numeric values in the range of "0~9", Alphabetical characters in the range of "a~z", and alphabetical characters in the range of "A~Z".

Key Index: Select the key you wish to enter.

KEY1~4: Encryption key values. The key length depends on the Key Format selected.

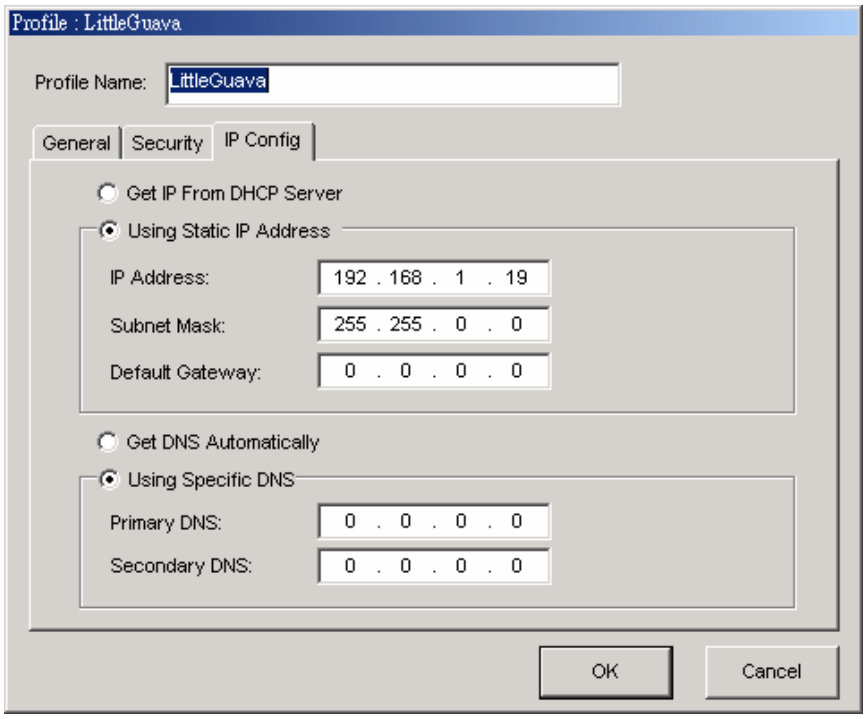
64 bits	5-digit keys in "ASCII Mode" or 10-digit keys in "Hex Mode".
128 bits	13-digit keys in "ASCII Mode" or 26-digit keys in "Hex Mode".
152 bits	16-digit keys in "ASCII Mode" or 32-digit keys in "Hex Mode".

5. None

Select this mode when there is no authentication or encryption enabled on the wireless LAN network.

- IP Config

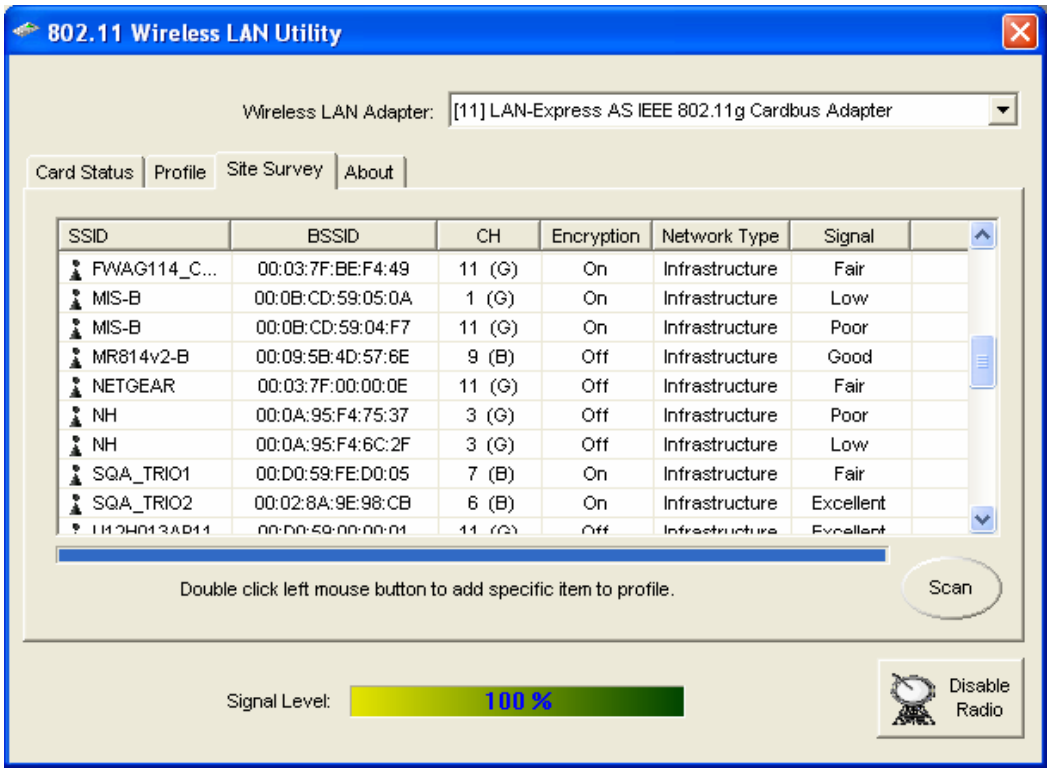
The IP Config tab is hidden as default. To enable the IP Config tab, right-click the Wireless LAN button on your Windows task bar on the right hand corner of your screen, and then click IP Config on the list that appears. The IP Config tab appears as shown below.



Get IP From DHCP Server: Click the radio button to use Dynamic Host Control Protocol (DHCP) to obtain the IP address. And then click the Get DNS Automatically radio button to obtain the Domain Name Server (DNS) IP address from the DHCP server automatically. Or click the Using Specific DNS radio button to specify the DNS IP address.

Using Static IP Address: You can also click the Using Static IP Address radio button to specify the IP address. And then, click the Using Specific DNS radio button to specify the DNS IP address.

3.1.3 Site Survey

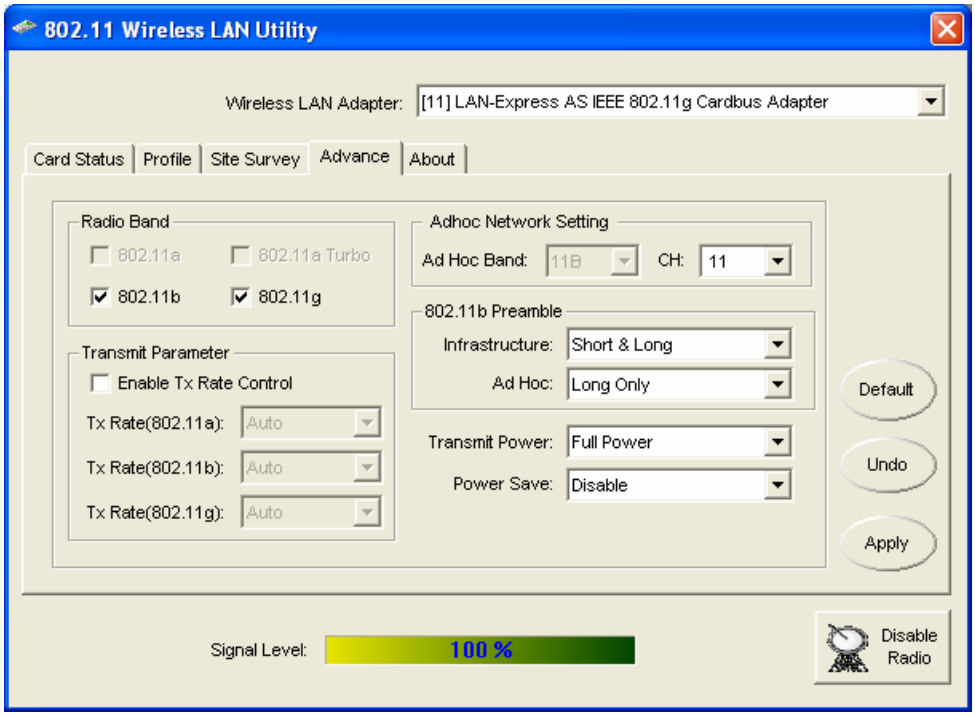


Use the Site Survey tool to view the SSID information, such as MAC Address (BSSID), channel in use, Encryption status, network type, and signal quality.

You can add a new wireless Profile to a SSID by selecting and double-click one of the SSID in the SSID list.

3.1.4 Advance

The Advance tab is hidden as default. To enable the Advance tab, right-click the Wireless LAN button on your Windows task bar on the right hand corner of your screen, and then click Advance from the list that appears. The Advance tab appears as shown below.



1. Radio Band

You can choose the Radio Band you wish to use, such as 802.11b, or 802.11g.

2. Transmit Parameter

You can configure the TX Rate of 802.11b or 802.11g by clicking the Enable TX Rate Control check box. Then choose the TX Rate for 802.11b or 802.11g.

3. Ad Hoc Network Setting

Select the band and channel you wish to use for the Ad hoc network settings. Select Auto if you do not know which channel to use.

4. 802.11b Preamble

Allows setting the preamble support to match up with the specified wireless network.

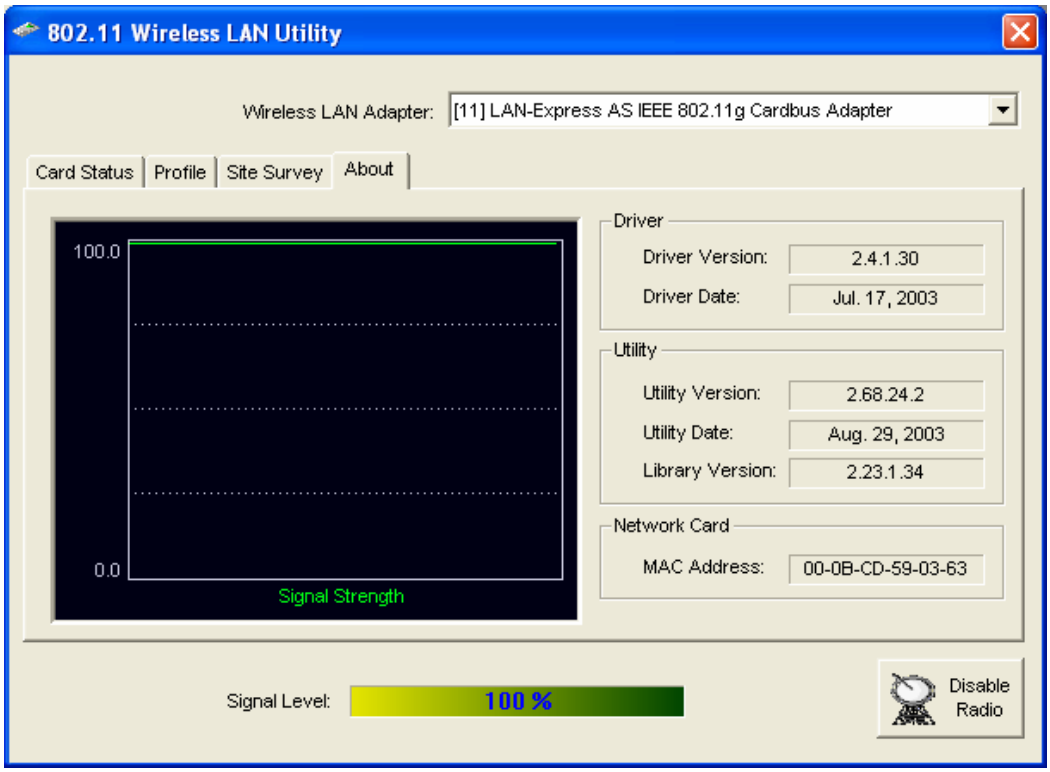
5. Transmit Power

You can select the transmit power of the PC Card from Full Power, 50%, 25%, 12% or Lowest Power according to the distance between your PC Card and the device you wish to associate with. If the device is very close to your PC Card, you can choose to use the lowest output power to conserve the battery life.

6. Power Save

This function controls whether the 802.11 power management is enabled. The Power management is disabled in Ad. Hoc mode.

3.1.5 About



The About tab provides you with the statistic value of link quality and signal strength.

1. Driver

Displays the current driver version of PC Card.

2. Utility

Displays the current wireless configuration utility version for your PC Card.

3. Network Card

Displays the MAC address of your PC Card.

Chapter 4 Glossary

Access Point - An internetworking device that seamlessly connects wired and wireless networks together.

Ad-Hoc - Ad-Hoc is a peer- to-peer wireless network without Access Point. A group of wireless clients consistent an independent wireless LAN.

Backbone - The core infrastructure of a network, the portion of the network that transports information from one central location to another central location. The information is then off-loaded onto a local system.

BSS - Stands for “Basic Service Set.” An Access Point associated with several wireless stations.

ESS - Stands for “Extended Service Set.” More than one BSS can be configured as an Extended Service Set. An ESS is basically a roaming domain.

Infrastructure - An integrated wireless and wired LAN is called an Infrastructure configuration.

Roaming - A function that allows one to travel with a mobile end system (wireless LAN mobile station, for example) through the territory of a domain (an ESS, for example) while continuously connecting to the infrastructure.

Wired Equivalent Privacy (WEP) - To prevent access from the unauthorized wireless stations to the data that is transmitting through the network, the Wireless LAN card provides the WEP (Wired Equivalent Privacy) level of security that was part of the original 802.11 standard. The wireless LAN card supports both 64 bits WEP and 128 bits data encryption based on the RC4 algorithm.

SSID – SSID stands for Service Set Identifier. The SSID differentiates one WLAN from another. All access points and all devices attempting to connect to a specific WLAN must use the same SSID. A device will not be permitted to join the BSS unless it can provide the unique SSID.