IEEE 802.11a/b/g

Atheros Wireless USB 2.0 Adapter

User's Manual

Version: 1.0

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Revision History

Version	Date	Notes
1.0	June 20, 2005	Initial Version

1 Introduction

This is a wireless USB 2.0 adapter that supports dual-band 802.11a/b/g (2.4GHz & 5GHz) radio operation. It provides a high-speed wireless connection with data rate up to 108Mbps.

To protect your wireless connectivity, the high-speed wireless USB adapter can encrypt all wireless transmissions through 64/128/152-bit WEP data encryption and also supports WPA. Dynamic Frequency Selection (DFS) puts your network on the cleanest channel in your location. With the high-speed wireless USB adapter, you will experience the best wireless connectivity available.

This chapter describes the features & benefits, package contents, applications, and network configuration.

1.1 Features & Benefits

Features	Benefits
High Speed Data Rate up to 108Mbps (Super A/G)	Capable of handling heavy data payloads such as MPEG video streaming.
High Output Power up to 23 dBm	More high power can advance the distance.
Standard (AES), Temporal Key Integrity Protocol (TKIP) and Wired and Equivalent Privacy (WEP)	Powerful data security (802.11i).
IEEE802.1x Client Support	Enhances authentication and security.
Support for 802.11e standard	Quality of Service support (QoS) for wireless multimedia enhancements
Advanced Power Management	Low power consumption (up to 98%)in power saving mode
Support eXtended Range technology	eXtended Range technology offers Wi-Fi products twice the range of existing designs

1.2 Package Contents

Open the package carefully, and make sure that none of the items listed below are missing. Do not discard the packing materials, in case of return; the unit must be shipped in its original package.

- One Wireless LAN USB Adapter
- One USB Cable
- One Quick Installation Guide
- One CD-ROM with User's Manual Included

1.3 USB Adapter Description

The USB adapter is a standard USB adapter that fits into any USB interface. The USB adapter has a LED indicator and an external high-sensitivity dipole antenna.

1.4 System Requirements

The following are the minimum system requirements in order to use the USB adapter.

- PC/AT compatible computer with a USB interface.
- Windows 98SE/ME/ /2000/XP operating system.
- 20 MB of free disk space for installing the USB adapter driver and utility program.

1.5 Applications

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

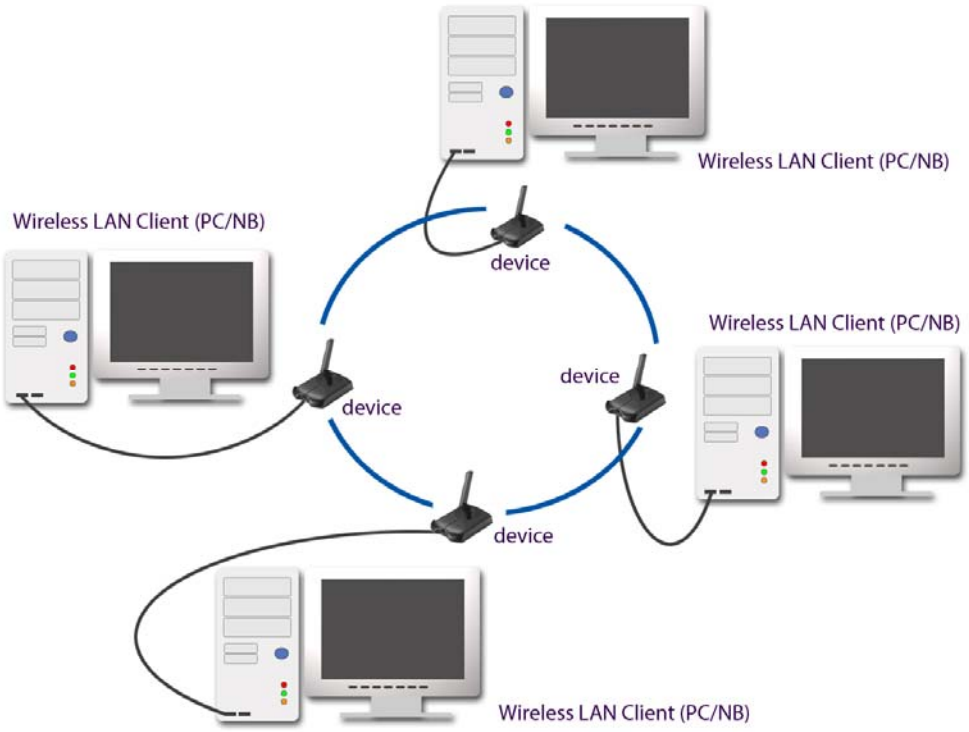
a) **Difficult-to-wire environments**
   There are many situations where wires cannot be laid easily. Historic buildings, older buildings, open areas and across busy streets make the installation of LANs either impossible or very expensive.
b) **Temporary workgroups**
   Consider situations in parks, athletic arenas, exhibition centers, disaster-recovery, temporary offices and construction sites where one wants a temporary WLAN established and removed.
c) **The ability to access real-time information**
   Doctors/nurses, point-of-sale employees, and warehouse workers can access real-time information while dealing with patients, serving customers and processing information.
d) **Frequently changed environments**
   Show rooms, meeting rooms, retail stores, and manufacturing sites where frequently rearrange the workplace.
e) **Small Office and Home Office (SOHO) networks**
   SOHO users need a cost-effective, easy and quick installation of a small network.
f) **Wireless extensions to Ethernet networks**
   Network managers in dynamic environments can minimize the overhead caused by moves, extensions to networks, and other changes with wireless LANs.
g) **Wired LAN backup**
   Network managers implement wireless LANs to provide backup for mission-critical applications running on wired networks.
h) **Training/Educational facilities**
   Training sites at corporations and students at universities use wireless connectivity to ease access to information, information exchanges, and learning.

1.6 Network Configuration

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

a) Ad-hoc (or peer-to-peer) for departmental or SOHO LANs.
b) Infrastructure for enterprise LANs.

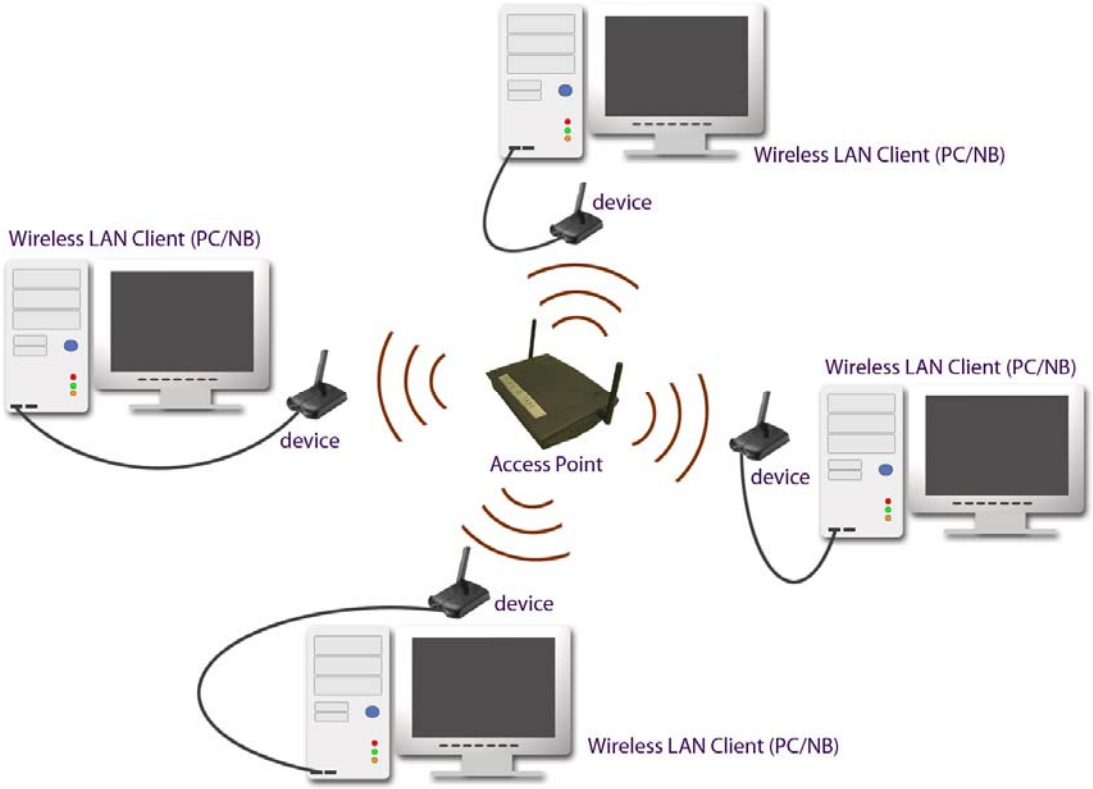
a) Ad-hoc (peer-to-peer) Mode



This is the simplest network configuration with several computers equipped with the PC Cards that form a wireless network whenever they are within range of one another. In ad-hoc mode, each client is peer-to-peer, would only have access to the resources of the other client and does not require an access point. This is the easiest and least expensive way for the SOHO to set up a wireless network. The image below depicts a network in ad-hoc mode.

b) Infrastructure Mode

The infrastructure mode requires the use of an access point (AP). In this mode, all wireless communication between two computers has to be via the AP. It doesn't matter if the AP is stand-alone or wired to an Ethernet network. If used in stand-alone, the AP can extend the range of independent wireless LANs by acting as a repeater, which effectively doubles the distance between wireless stations. The image below depicts a network in infrastructure mode.



2 Install Drivers & Client Utility

2.1 Before You Begin

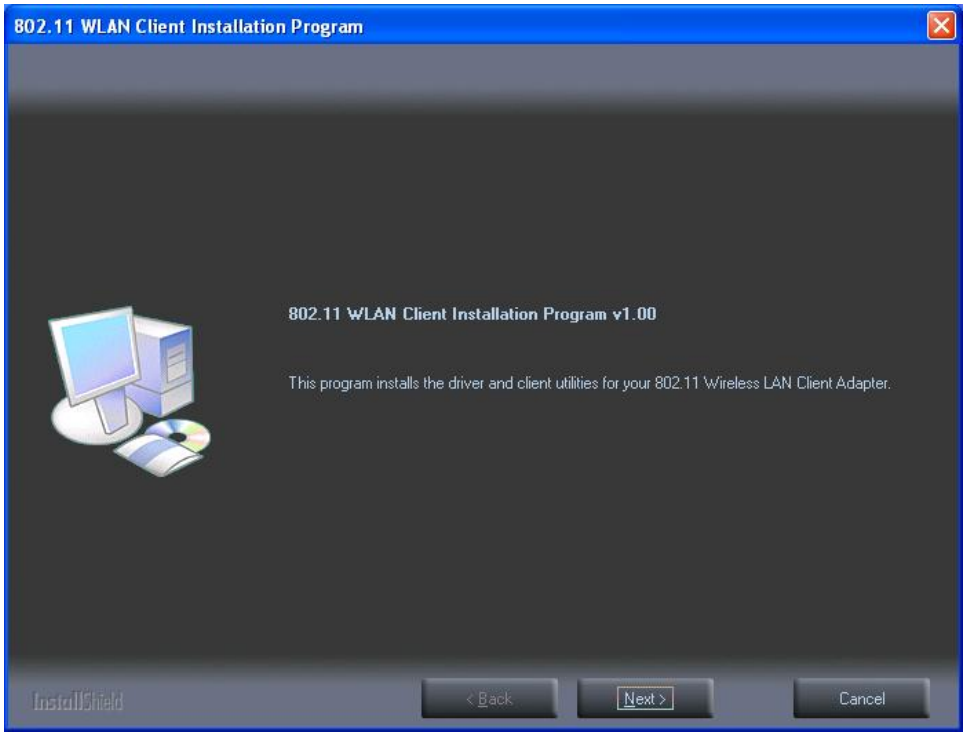
Before installing the new drivers of your USB adapter, you need to disable all of the Wireless LAN drivers that you have installed.

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

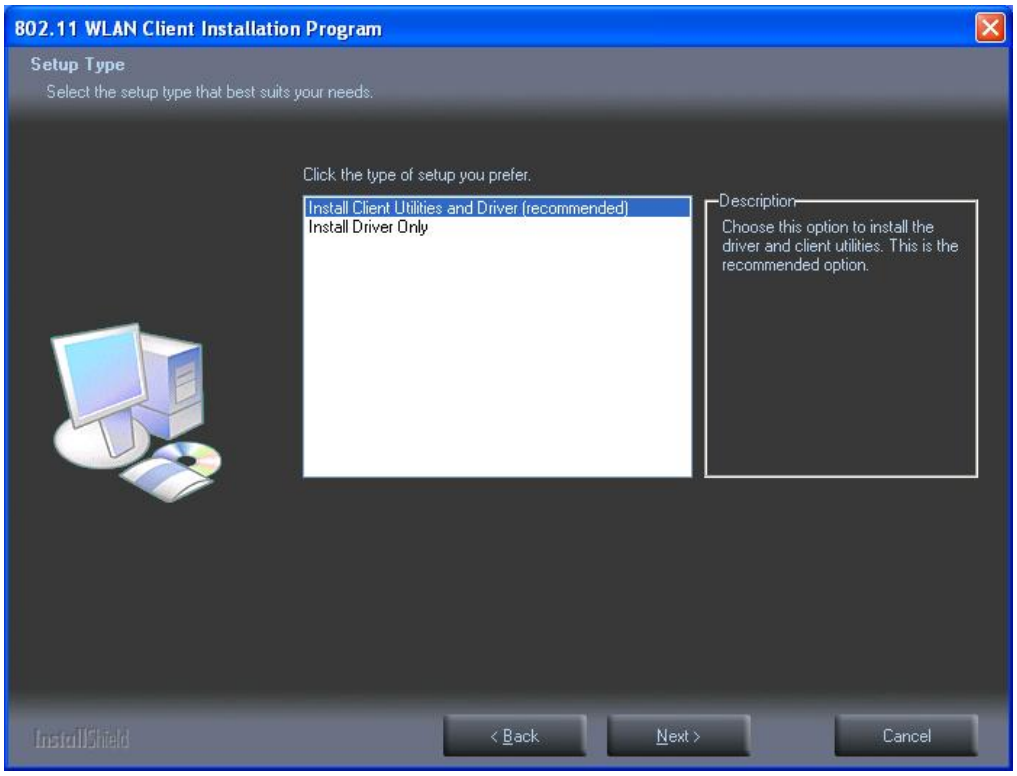
2.2 Installing the Drivers

Follow the steps below in order to install the USB adapter drivers:

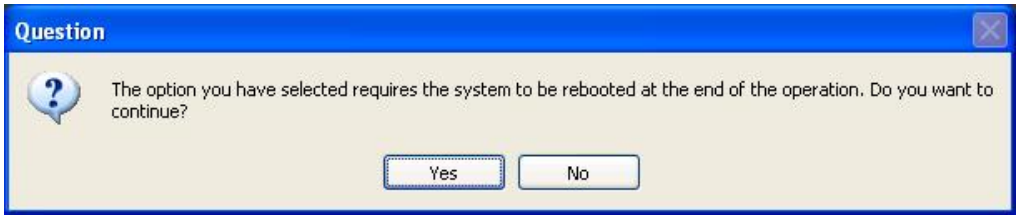
1. Insert the CD-ROM that was provided to you in this package. The setup should run automatically. If the setup does not run automatically, then you must manually select the **setup.exe** file from the CD-ROM drive.
2. Once the setup begins you will see the **Install Shield Wizard**, as the image depicts below.



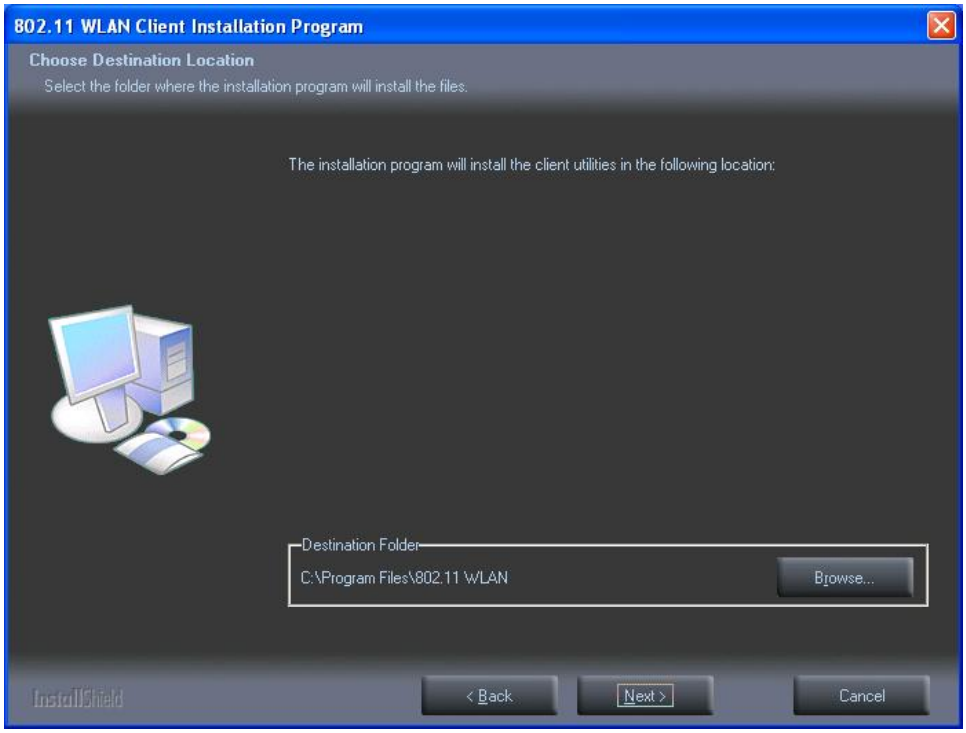
3. Click on the **Next** button to continue.
4. The Setup Wizard will then allow you to install the driver & utility or just the driver. Select the first option: **Install Client Utilities and Driver**.



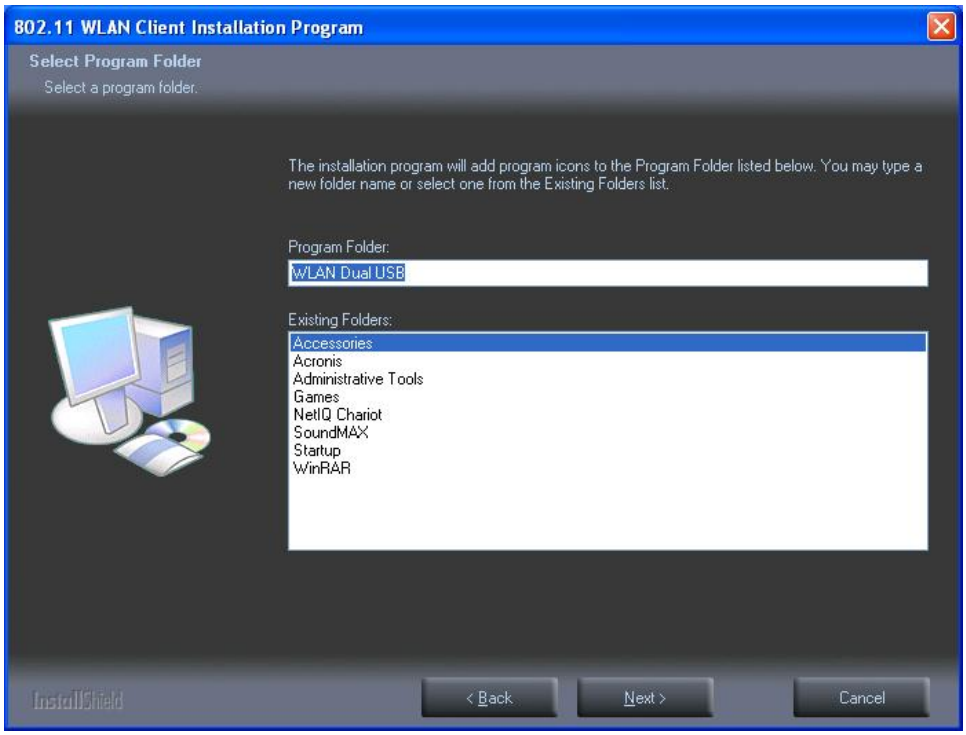
5. Click on the **Next** button to continue.
6. This message informs you that the system must be restarted after the installation is complete.



7. Click on the **Yes** button to continue.

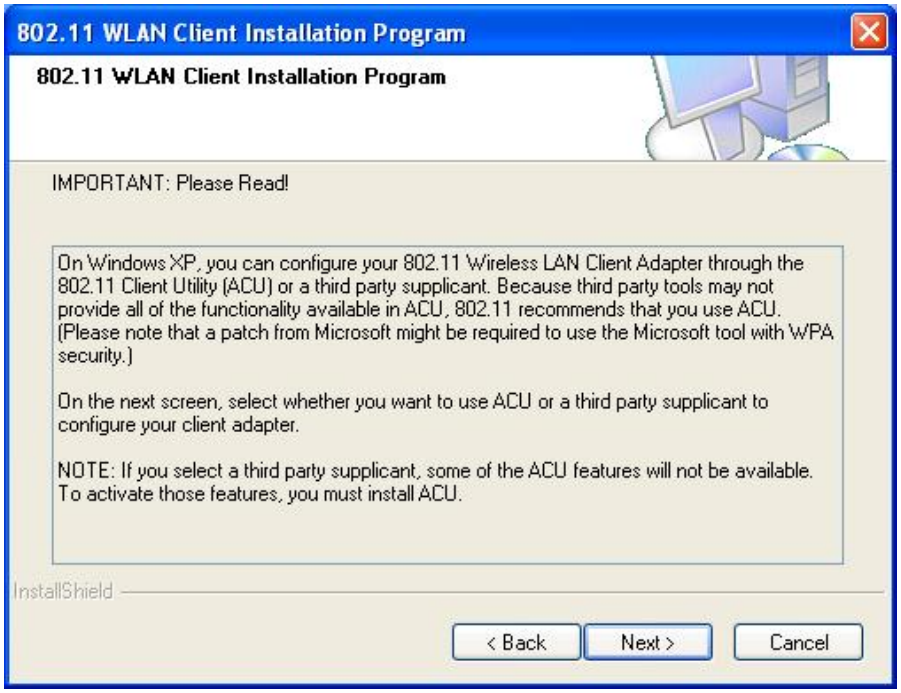


8. Click on the **Browse** button to select another drive or folder to install the drivers, and then click on the **Next** button. If you would like to use the default destination folder, click on the **Next** button.

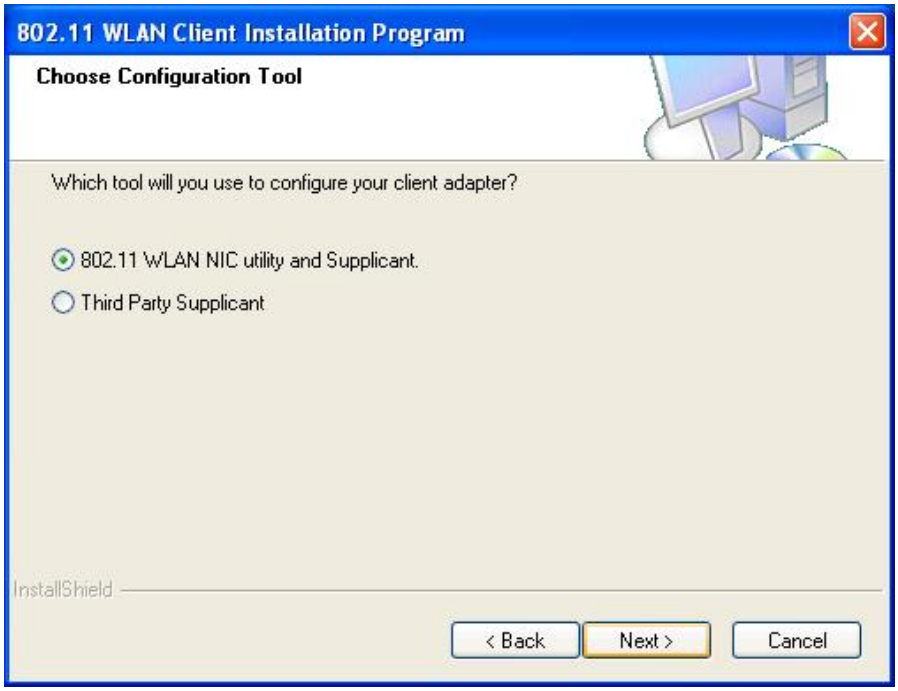


9. Select a program folder for the Start menu, or use the default setting: **802.11**

WLAN. Click on the **Next** button to continue.



10. The message depicted above informs you about configuring this device through the 802.11 Client Utility (ACU) or a third party supplicant. If you choose to use a third party supplicant, some of the ACU features will not be available. Click on the **Next** button to continue.



11. Select one of the options. However, it is recommended to select the first option: **802.11 WLAN Client Utility and 802.1x Supplicant**. Click on the **Next** button to continue.

12. At this point, carefully insert the device into the PCMCIA slot of your computer, and click on the **OK** button.

13. Windows will automatically detect the device and display the **Found New Hardware Wizard**, as the image depicts below. It will ask you to connect to the Windows Update website, to search for software. Select **No, not this time**, and click on the **Next** button.

14. Once again the **Found New Hardware** Wizard will ask you to install software. Click on the **Cancel** button to continue.

15. If you are using Windows XP, you will see a message regarding Windows Logo Testing, click on the **Continue Anyway** button to continue.

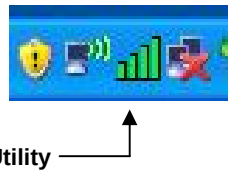
16. Once again, you will see a message regarding Windows Logo Testing, click on the **Continue Anyway** button to continue.

17. A message will then appear indicating that the installation process is complete Click on the **OK** button to reboot the system.

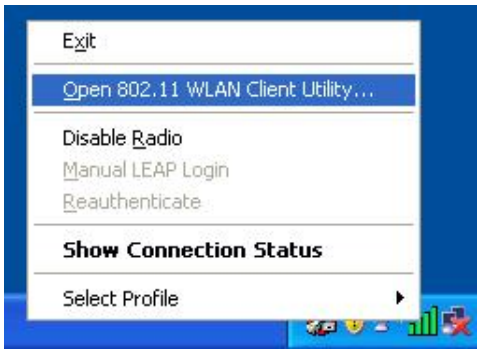
3 Using the Client Utility

After a successful installation you will see the Cardbus adapter **Client Utility** in the Windows Program group called **802.11 WLAN.**

To run the Client Utility click **Start > Programs > WLAN DUAL USB**. You will then see the Client Utility icon in the system tray of your computer.

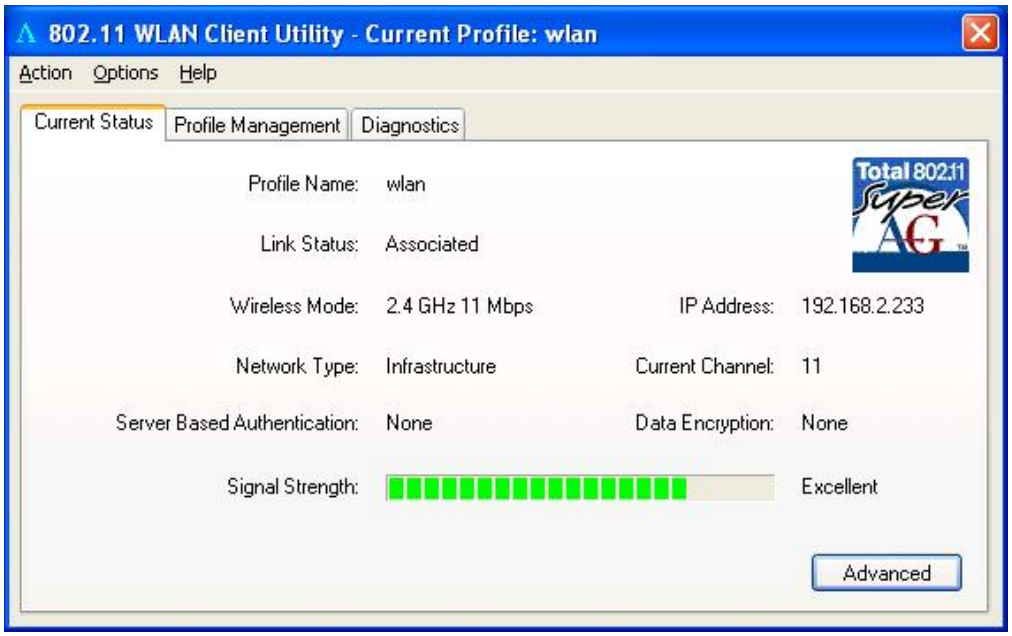


To open the Client Utility, right click on the icon in the system tray, and then select **Open 802.11 WLAN Client Utility**.



3.1 Current Status

The **Current Status** tab displays the current status of the wireless radio. The following information is included in this tab, as the image depicts below.

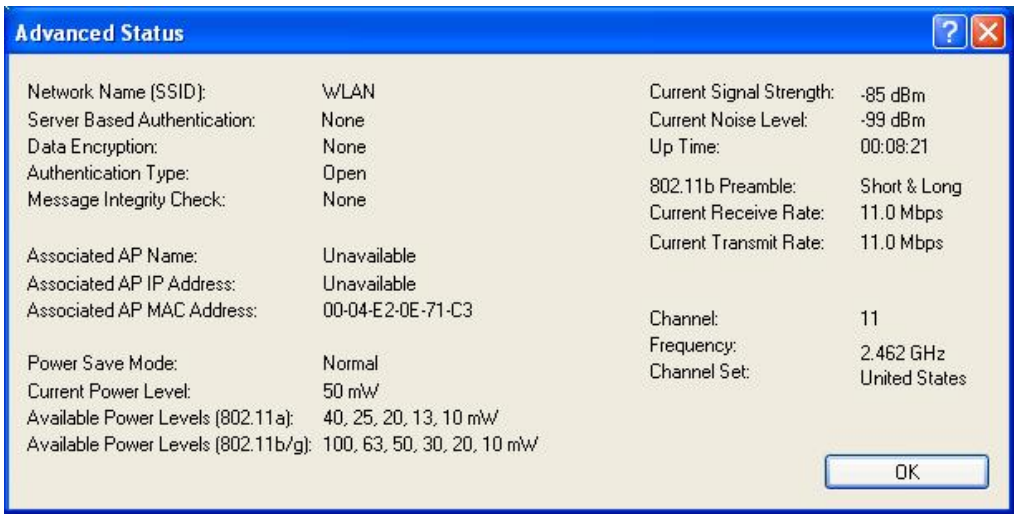


- **Profile Name:** Displays the name of this profile. One device can have many profiles, but only one profile can be loaded at a time.

Note: The profile name and network name (SSID) are not the same.

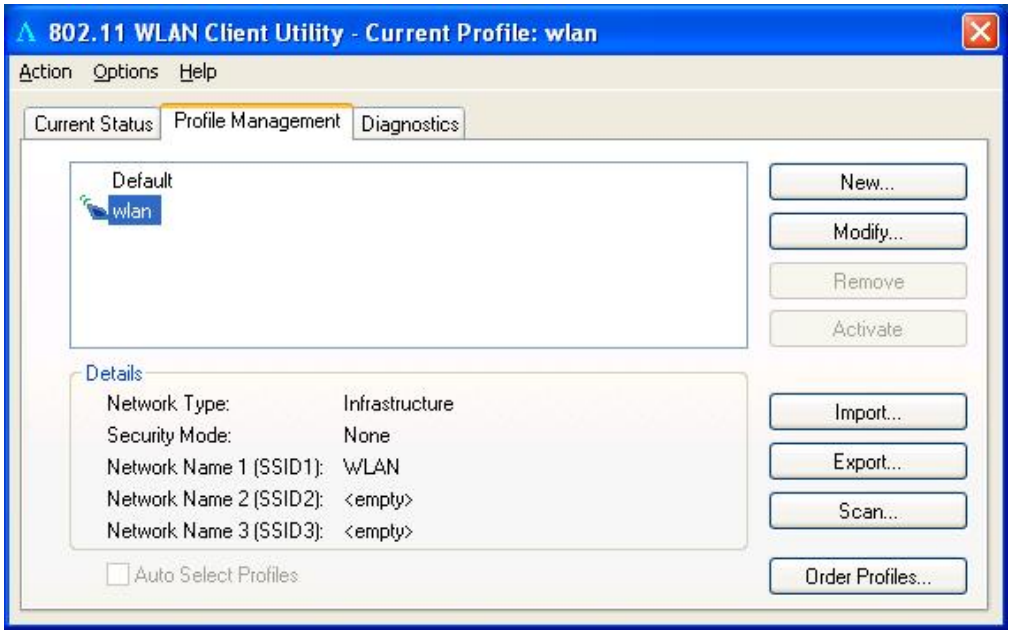
- **State:** This indicates the state of the client, associated or not associated.
- **Wireless Mode**: Displays the 802.11 mode such as: 2.4GHz 11 Mbps, 2.4GHz 54 Mbps, 2.4GHz 108Mbps, 5GHz 54Mbps or 5GHz 108Mbps.
- **Network Type**: Displays the type of network, such as: Infrastructure or Ad-hoc.
- **Server Based Authentication**: Displays information about the authentication method.
- **IP address**: Displays the IP address of this device.
- **Current Channel**: Displays the channel at which this device is connected.
- **Current Channel**: Displays the type of encryption used.
- **Signal Strength**: Displays the strength of the signal.

Click on the **Advanced** button to view more details about the current status. This window includes information such as: network name (SSID), AP MAC address, power save mode, power levels, signal strength, noise level, channel, frequency, and channel set (country). Click on the **OK** button to close the window.



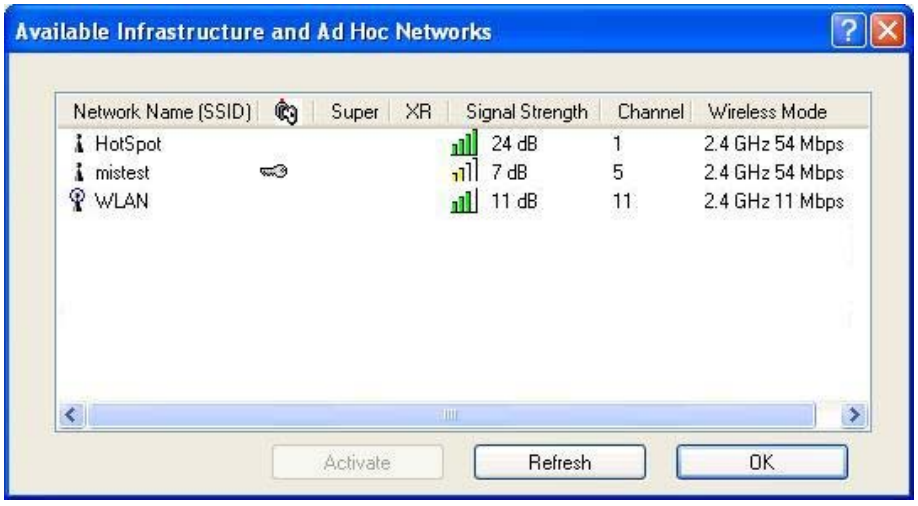
3.2 Profile Management

The second tab displayed is the **Profile Management** tab. This tab is used to create a new profile, modify an existing profile, remove an existing profile, and activate an existing profile.



3.2.1 Scan for available networks

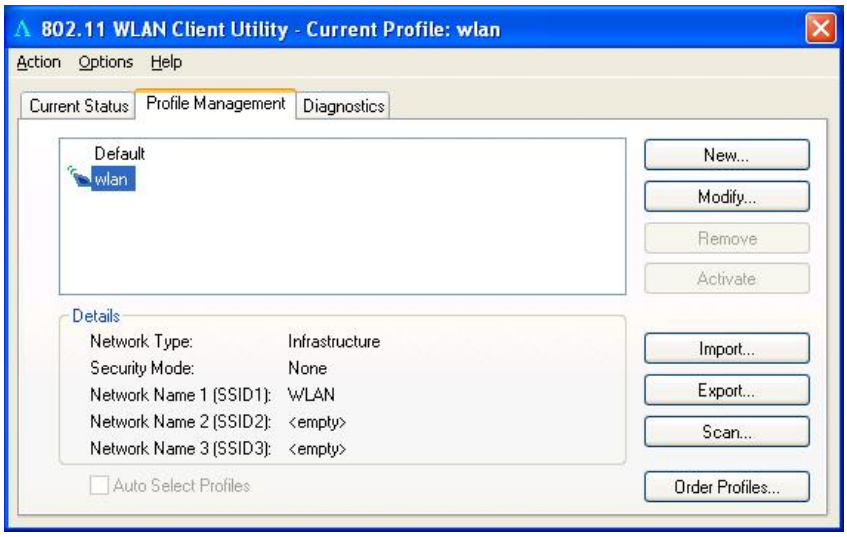
Click on the **Scan** button to view a list of available infrastructure and ad-hoc networks. This table lists the network name, encryption key if required, signal strength, channel, and wireless mode.



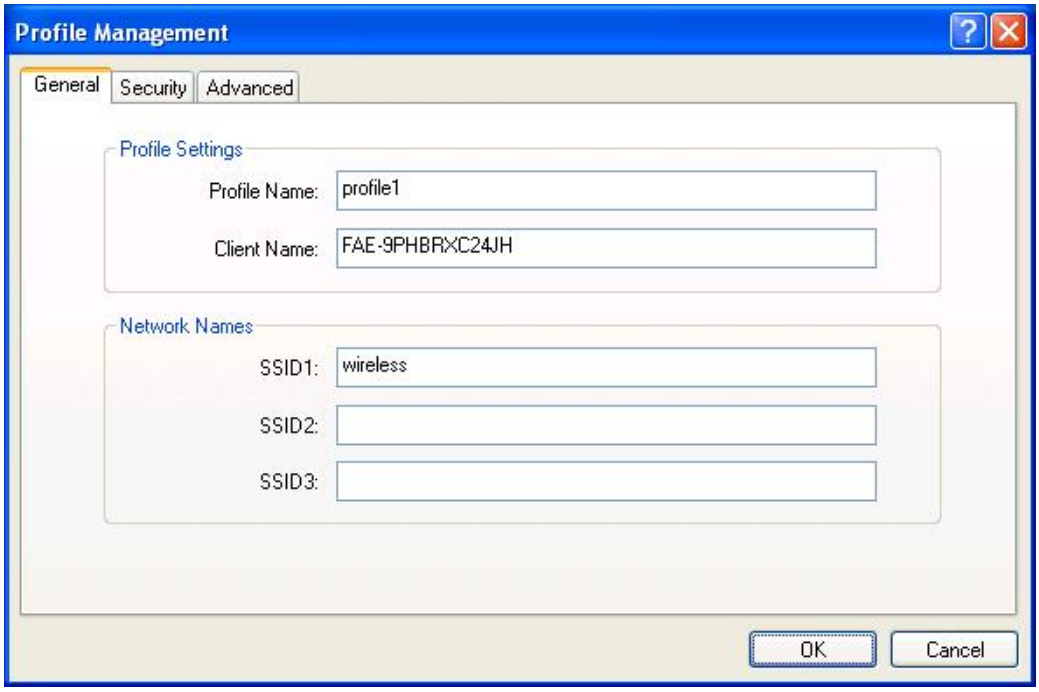
If you would like to associate with a specific network, select the network name (SSID) and then click on the **Activate** button. You will then get connected to the network if you have the correct permission keys.

3.2.2 Create a New Profile

Multiple profiles can be created for different Network Names (SSIDs). This allows a user to quickly associate with another network, instead of entering the credentials each time.



Click on the **New** button to create a new profile. You will then see the **General** tab of the profile management window.



- **Profile Name:** Enter a name for this profile; this can be any name that

you may associate with your network. This feature comes in handy when you need to work at several locations where there are different network settings. Using this you can configure a different profile for each of your networks.

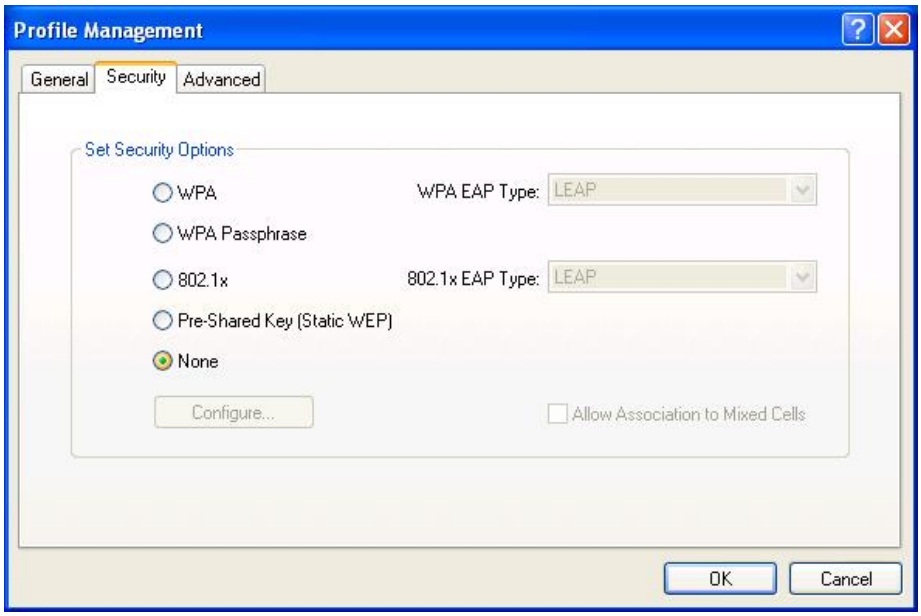
- **Client Name:** Enter any name to describe the profile.
- **SSID1:** Enter the SSID of the network. The SSID is a unique name shared among all points in your wireless network. The SSID must be identical for all points in the network, and is case-sensitive.
- Click on the **OK** button to continue.

3.2.3 Security

The next tab displayed is the **Security** tab. Here you can configure the authentication and encryption method that is used on your network. There are five types of security methods available: none, WPA, WPA-PSK, 802.1x, Pre-shared WEP key. The configuration steps for each method are described below.

3.2.3.1 Security Disabled

If your network does not require any security methods, then select **None** in the security tab, and then click on the **OK** button.

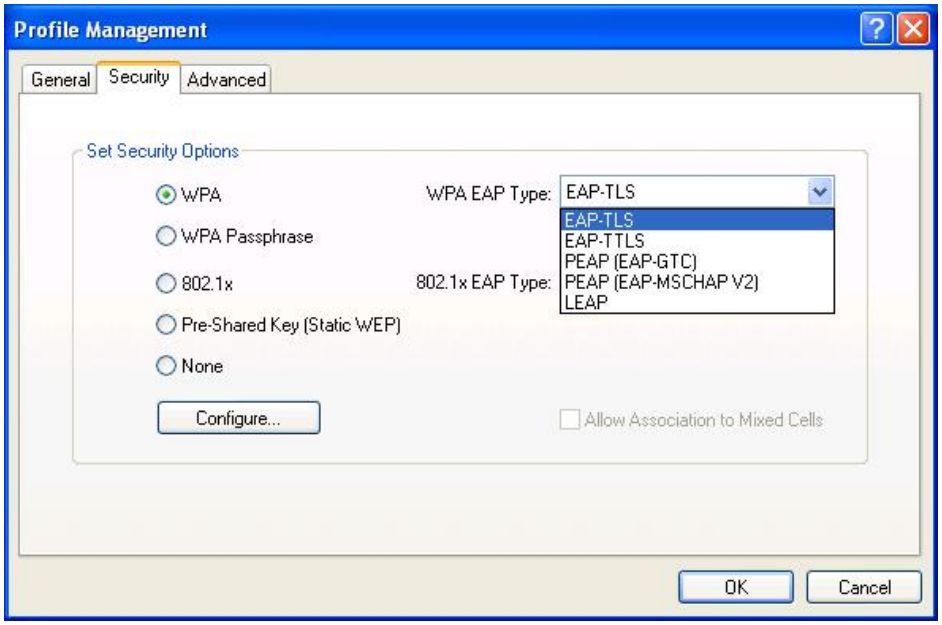


3.2.3.2 WPA – TLS, TTLS

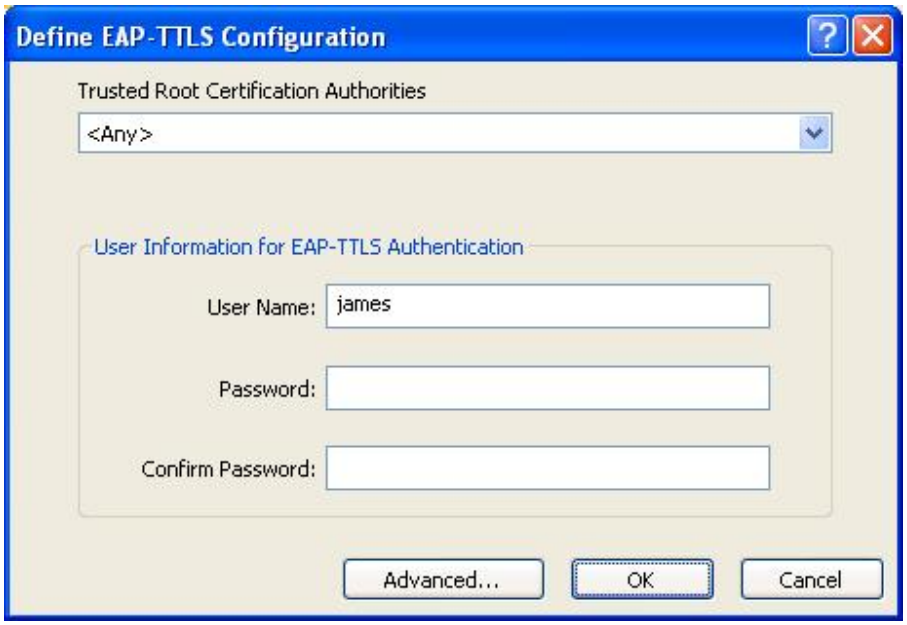
WPA (Wi-Fi Protected Access) was designed to improve upon the security features of WEP (Wired Equivalent Privacy). The technology is designed to work with existing Wi-Fi products that have been enabled with WEP. WPA provides improved data encryption through the Temporal Integrity Protocol (TKIP), which scrambles the keys using a hashing algorithm and by adding an integrity-

checking feature which makes sure that keys haven't been tampered with.

Select the **WPA** radio button, and then select **EAP – TLS** or **EAP – TTLS** from the drop-down list. TLS (Transport Layer Security) is an IETF standardized authentication protocol that uses PKI (Public Key Infrastructure) certificate-based authentication of both the client and authentication server.



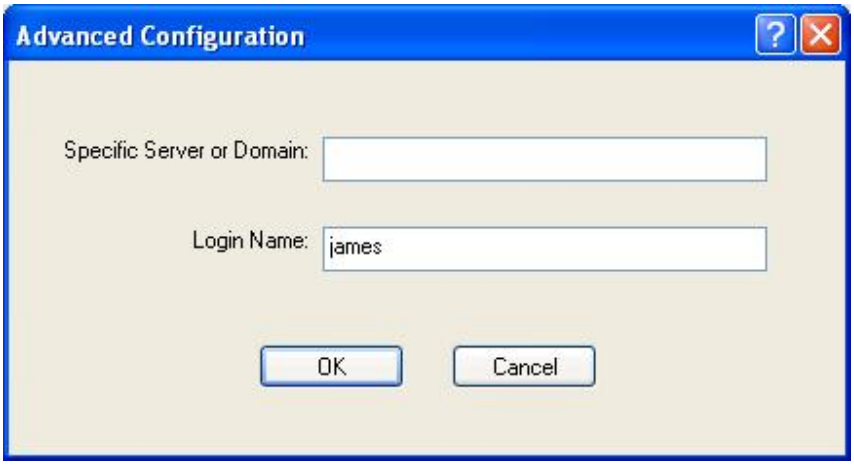
Click on the **Configure** button to configure the TTLS settings.



- **Trusted Root Certification Authorities:** Select the appropriate certificate authority from the drop-down list.

- **User Name:** Enter the user name for the certificate authority.
- **Password:** Enter the password that corresponds with the user name for the certificate authority.
- **Confirm Password:** Re-type the password.

Click on the **Advanced** button.



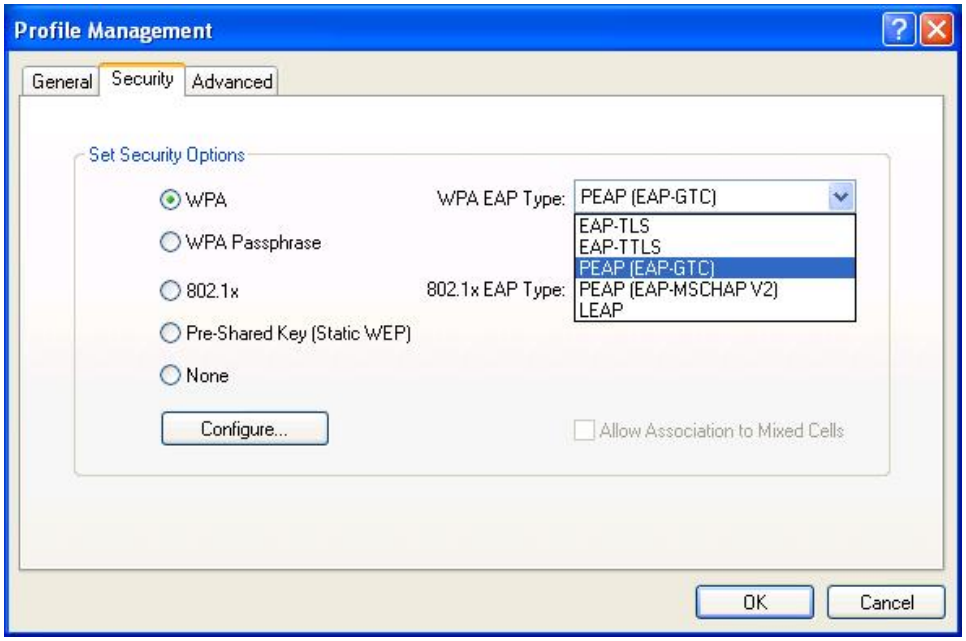
- **Specific Server or Domain:** Leave the server name blank for the client to accept a certificate from any server with a certificate signed by the authority listed in the Network Certificate Authority drop-down list. (Recommended). You can also enter the domain name of the server from which the client will accept a certificate.
- **Login Name:** Enter the login name if required.

Click on the **OK** button to return to the previous window. Once again, click on the **OK** button to return to the Profile Management window.

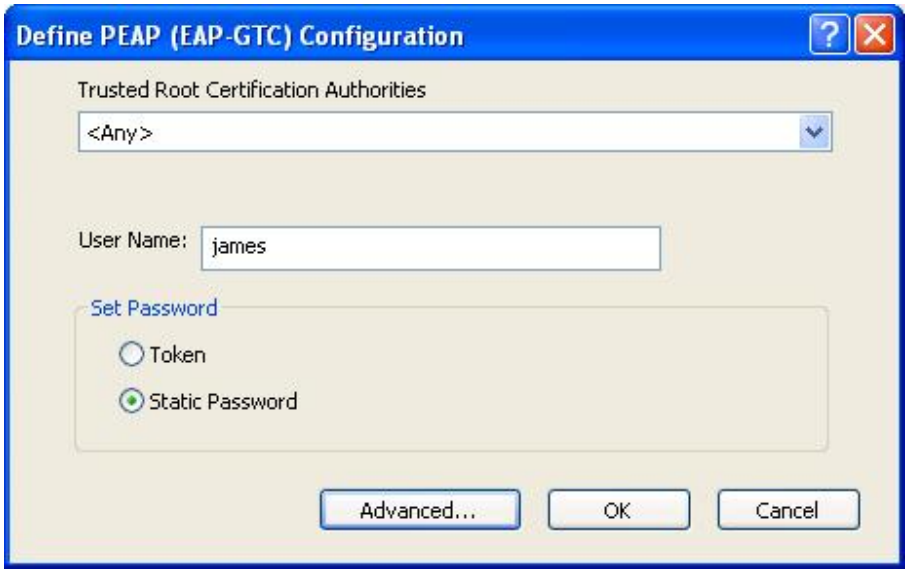
3.2.3.3 WPA – PEAP (EAP-GTC)

PEAP (EAP-GTC) was standardized along with EAP in RFC 2284. EAP-GTC allows the exchange of clear text authentication credentials across the network. The GTC method does provide a way to move a simple username and password from client to server using an EAP method, so it can be used to provide an authentication method. Naturally, if EAP-GTC is used to transport reusable passwords, it must be used inside a tunnel for protection and server authentication. EAP-GTC can be used with both TTLS and PEAP.

Select the **WPA** radio button, and then select **PEAP (EAP-GTC)** from the drop-down list.

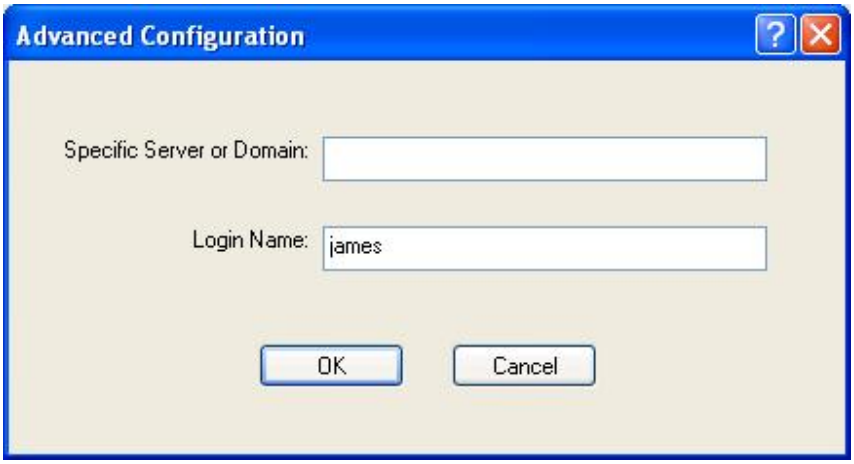


Click on the **Configure** button to configure the PEAP (EAP-GTC) settings.



- **Trusted Root Certification Authorities:** Select the appropriate certificate authority from the drop-down list.
- **User Name:** Enter the user name for the certificate authority.
- **Set Password:** Select **Token** or **Static Password** radio button. The default setting is Static Password.

Click on the **Advanced** button.



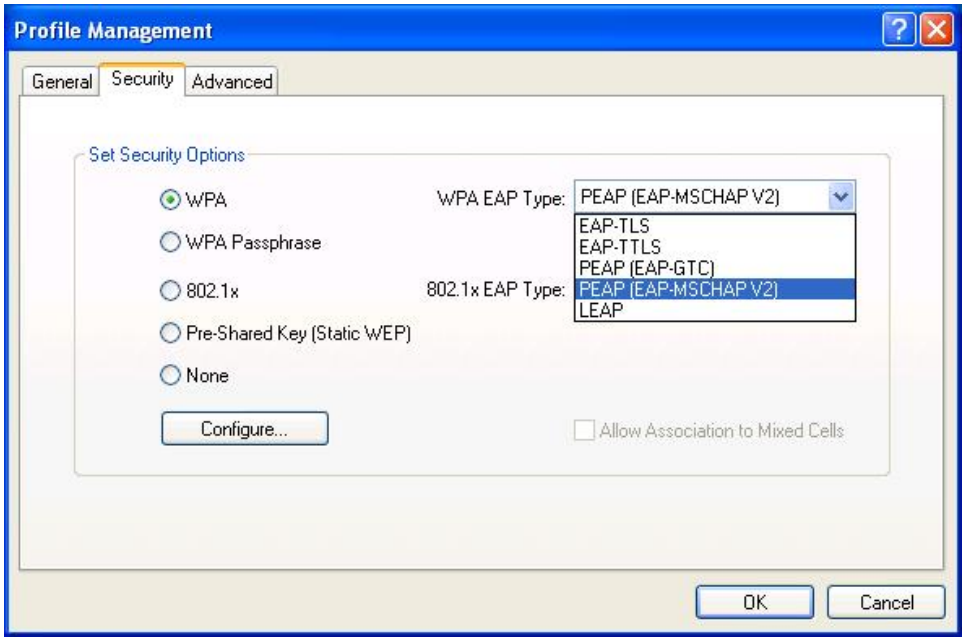
- **Specific Server or Domain:** Leave the server name blank for the client to accept a certificate from any server with a certificate signed by the authority listed in the Network Certificate Authority drop-down list. (Recommended). You can also enter the domain name of the server from which the client will accept a certificate.
- **Login Name:** Enter the login name if required.

Click on the **OK** button to return to the previous window. Once again, click on the **OK** button to return to the Profile Management window.

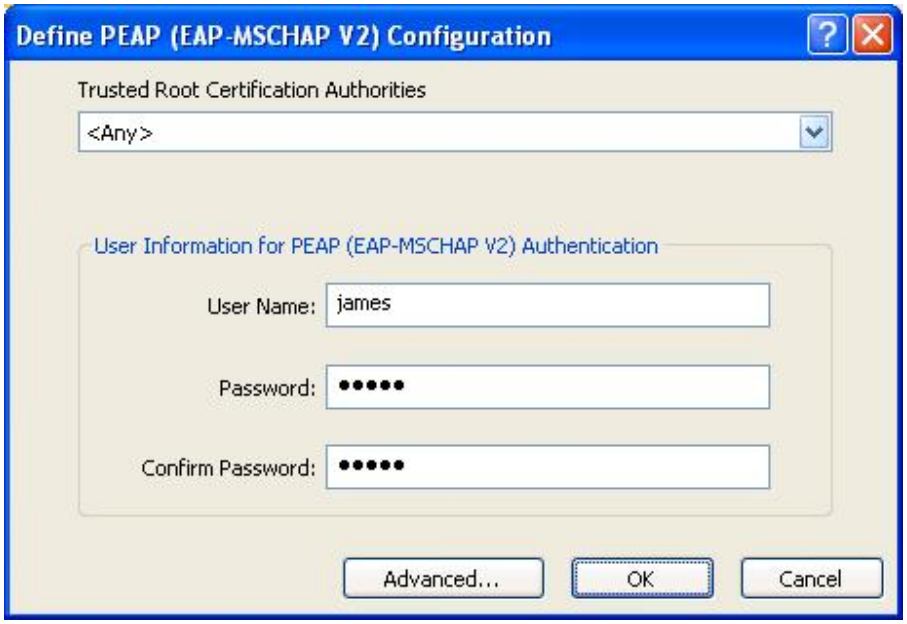
3.2.3.4 WPA – PEAP (EAP-MSCHAP-V2)

The PEAP (EAP-MSCHAP V2) authentication type is based on EAPTLS authentication, but uses a password instead of a client certificate for authentication. PEAP (EAP-MSCHAP V2) uses a dynamic session-based WEP key, which is derived from the device and RADIUS server, to encrypt data.

Select the **WPA** radio button, and then select **PEAP (EAP-MSCHAP-V2)** from the drop-down list.

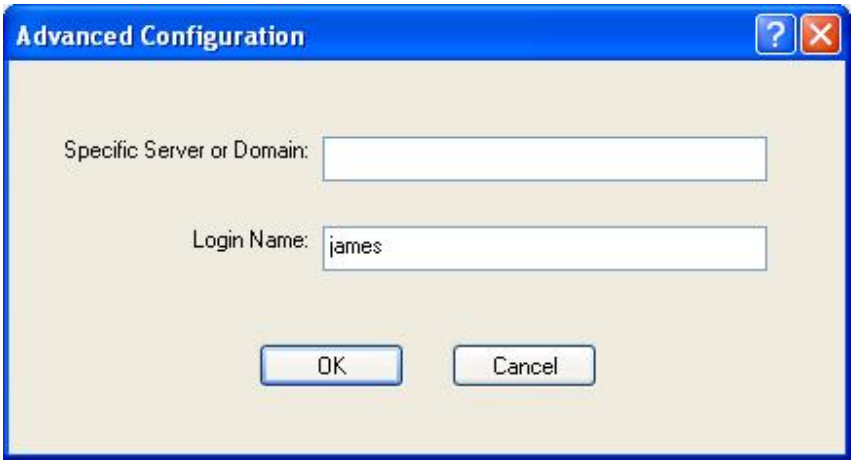


Click on the **Configure** button to configure the PEAP (EAP-MSCHAP-V2) settings.



- **Trusted Root Certification Authorities:** Select the appropriate certificate authority from the drop-down list.
- **User Name:** Enter the user name for the certificate authority.
- **Password:** Enter the password that corresponds with the user name for the certificate authority.
- **Confirm Password:** Re-type the password.

Click on the **Advanced** button.



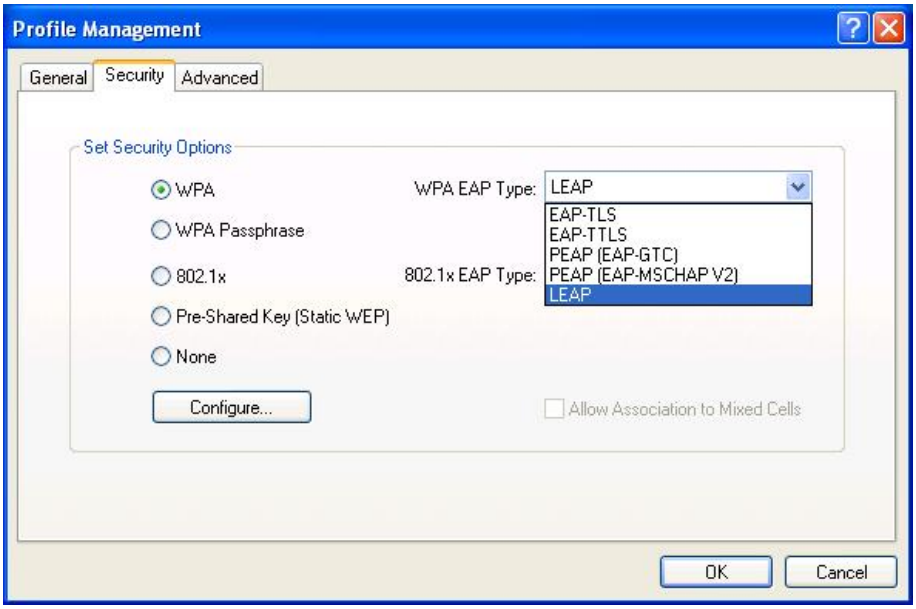
- **Specific Server or Domain:** Leave the server name blank for the client to accept a certificate from any server with a certificate signed by the authority listed in the Network Certificate Authority drop-down list. (Recommended). You can also enter the domain name of the server from which the client will accept a certificate.
- **Login Name:** Enter the login name if required.

Click on the **OK** button to return to the previous window. Once again, click on the **OK** button to return to the Profile Management window.

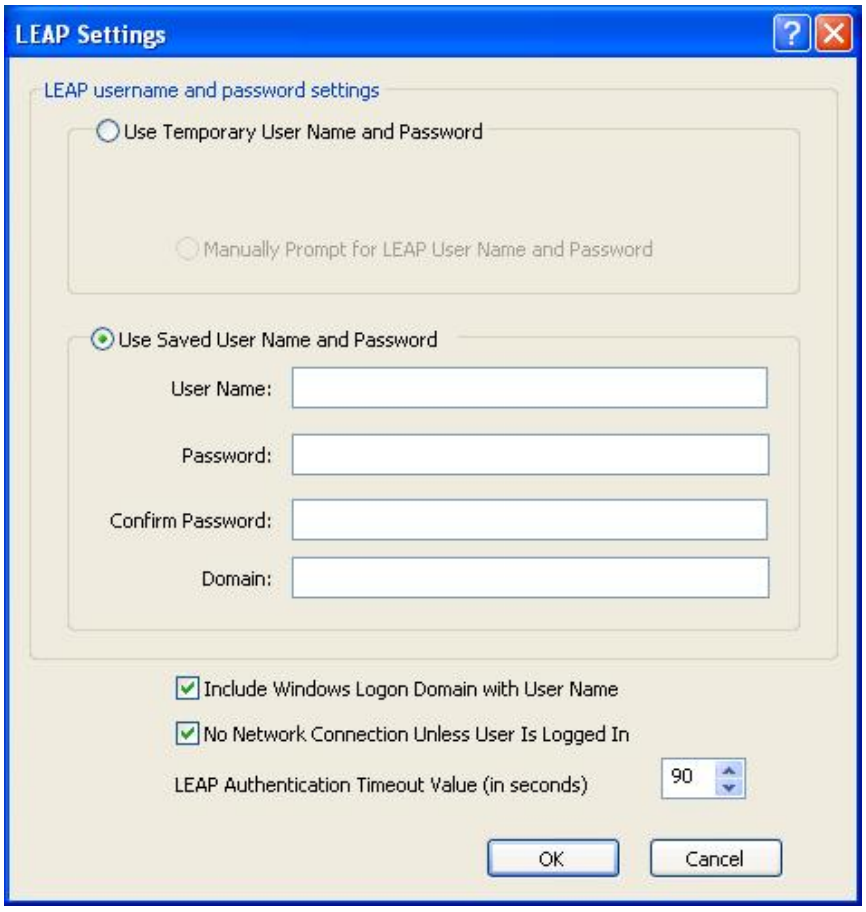
3.2.3.5 WPA – LEAP

LEAP (Lightweight Extensible Authentication Protocol) also known as Cisco-Wireless EAP provides username/password-based authentication between a wireless client and a RADIUS server. LEAP is one of several protocols used with the IEEE 802.1X standard for LAN port access control. LEAP also delivers a session key to the authenticated station, so that future frames can be encrypted with a key that is different than keys used by others sessions. Dynamic key delivery eliminates one big vulnerability; static encryption keys that are shared by all stations in the WLAN.

Select the **WPA** radio button, and then select **LEAP** from the drop-down list.



Click on the **Configure** button to configure the LEAP settings.



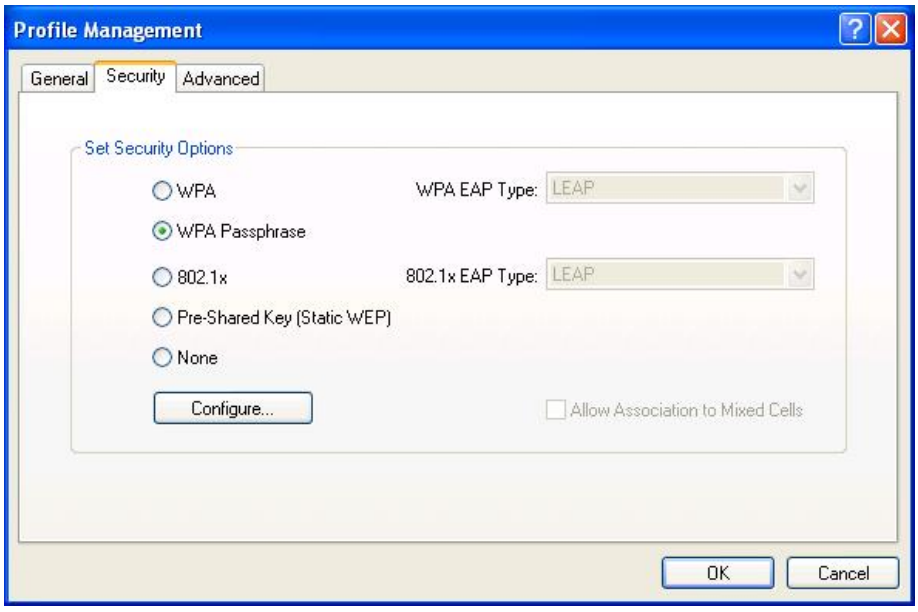
- **Use Temporary User Name and Password:** Select this radio button for

a temporary user name and password. This will manually prompt for the user name and password.

- **Use Saved User Name Password:** Select this radio button if the user name and password will be saved in this profile.
- **User Name:** Enter the user name for the certificate authority.
- **Password:** Enter the password that corresponds with the user name for the certificate authority.
- **Confirm Password:** Re-type the password.

Click on the **OK** button to return to the previous window

3.2.3.6 WPA – Passphrase



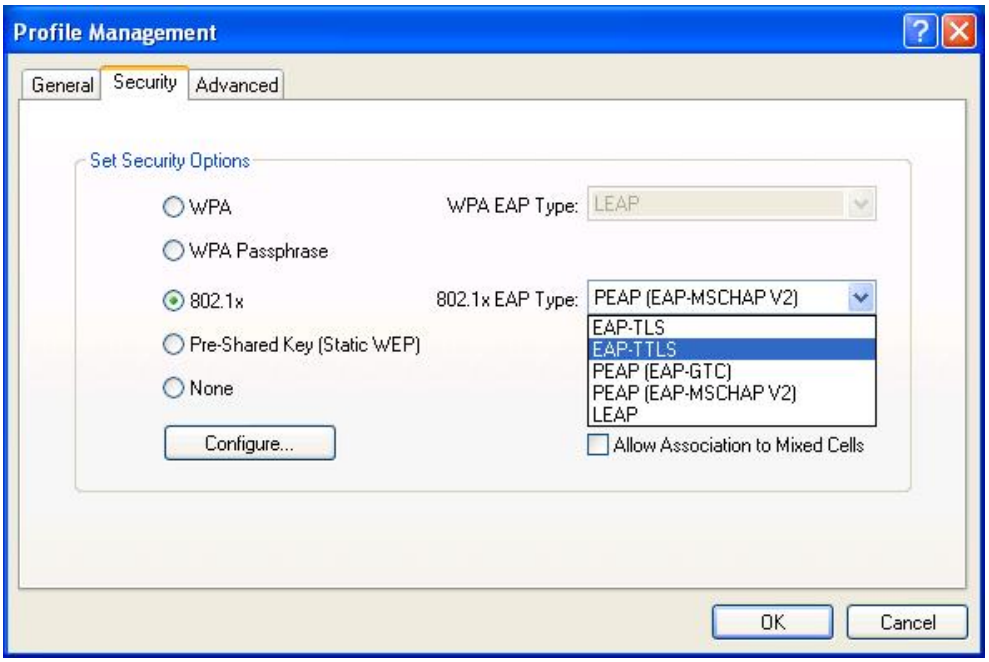
Select the **WPA Passphrase** radio button and then click on the **Configure** button.

- Enter a WPA passphrase. For ASCII text, enter 8-63 characters, for hexadecimal enter 64 characters).

Click on the **OK** button to return to the previous window. Once again, click on the **OK** button to return to the Profile Management window.

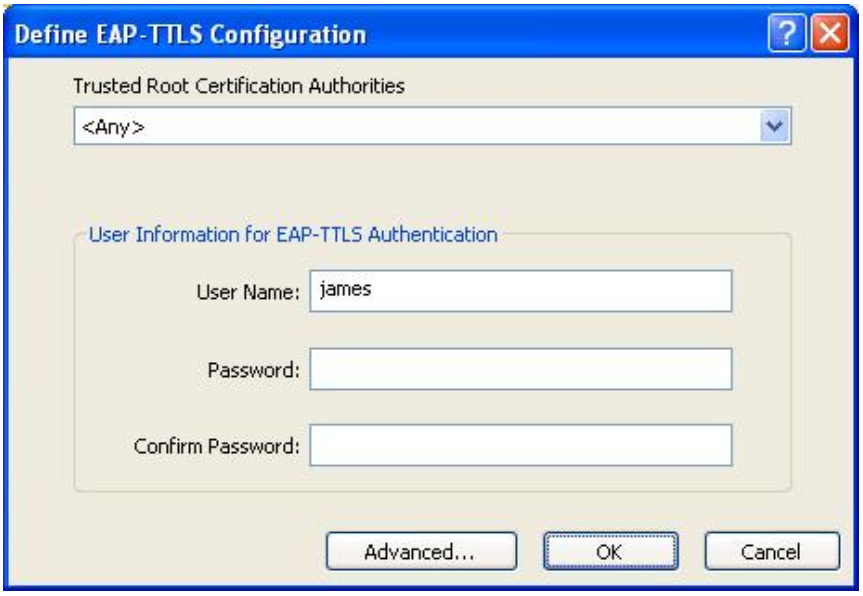
3.2.3.7 802.1x – TLS, TTLS

802.1X provides an authentication framework for wireless LANs allowing a user to be authenticated by a central authority. 802.1X uses an existing protocol called EAP. EAP (Extensible Authentication Protocol) is an extension to the PPP protocol that enables a variety of authentication protocols to be used. It passes through the exchange of authentication messages, allowing the authentication software stored in a server to interact with its counterpart in the client.



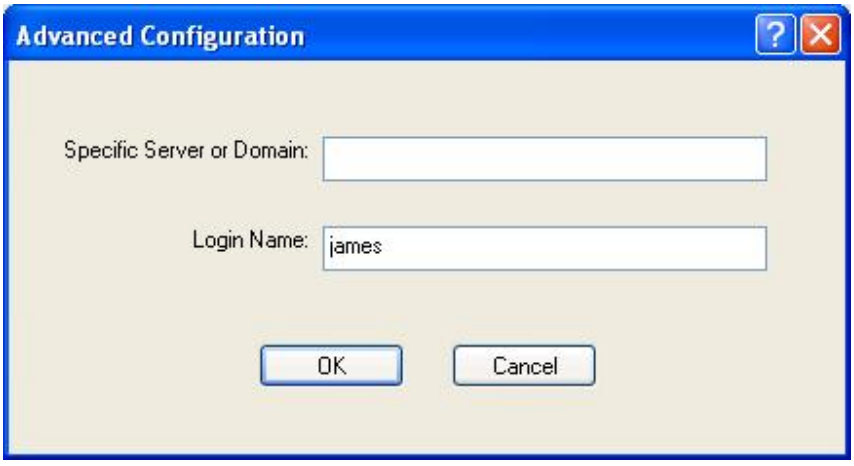
Select the **802.1x** radio button, and then select **EAP – TLS** or **EAP – TTLS** from the drop-down list. TLS (Transport Layer Security) is an IETF standardized authentication protocol that uses PKI (Public Key Infrastructure) certificate-based authentication of both the client and authentication server.

Click on the **Configure** button to configure the TTLS settings.



- **Trusted Root Certification Authorities:** Select the appropriate certificate authority from the drop-down list.
- **User Name:** Enter the user name for the certificate authority.
- **Password:** Enter the password that corresponds with the user name for the certificate authority.
- **Confirm Password:** Re-type the password.

Click on the **Advanced** button.



- **Specific Server or Domain:** Leave the server name blank for the client to accept a certificate from any server with a certificate signed by the authority listed in the Network Certificate Authority drop-down list. (Recommended). You can also enter the domain name of the server from which the client will accept a certificate.
- **Login Name:** Enter the login name if required.

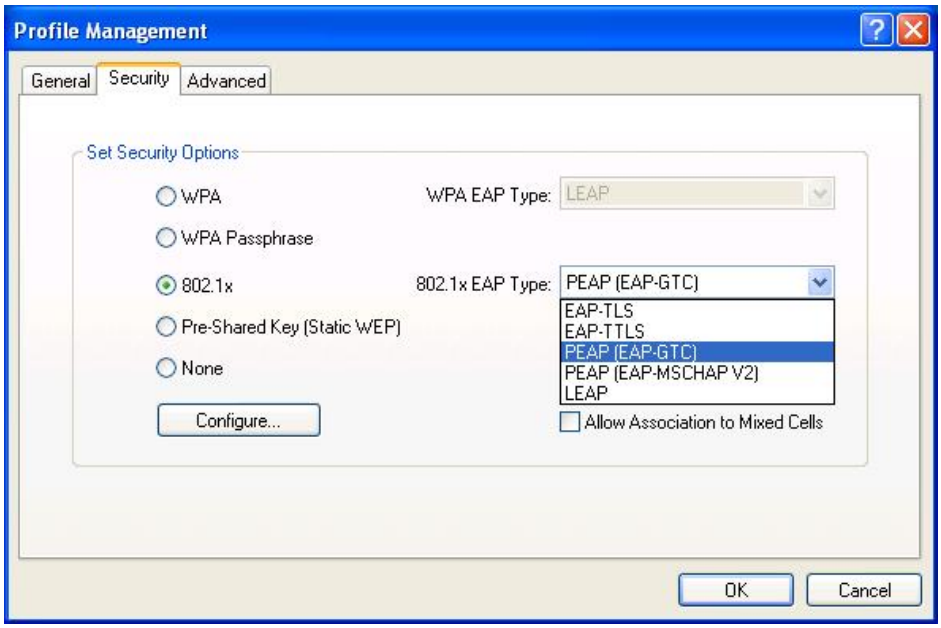
Click on the **OK** button to return to the previous window. Once again, click on

the **OK** button to return to the Profile Management window.

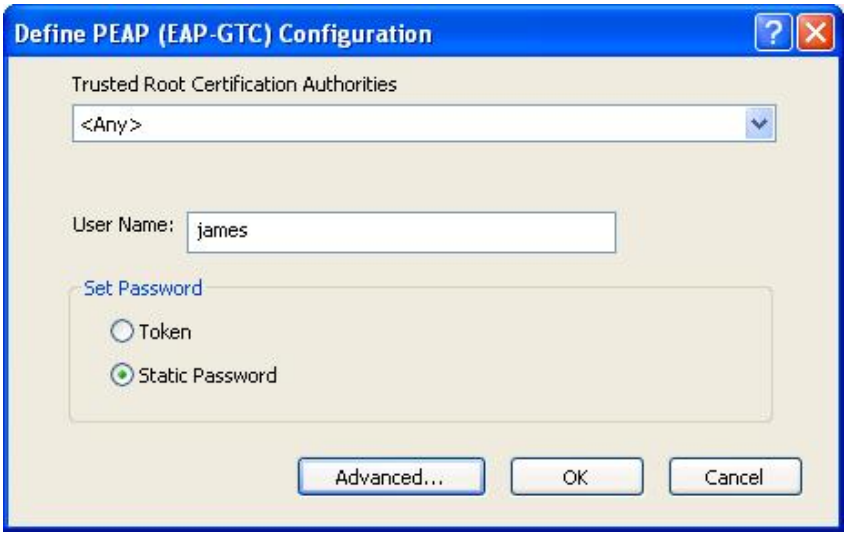
3.2.3.8 802.1x – PEAP (EAP-GTC)

PEAP (EAP-GTC) was standardized along with EAP in RFC 2284. EAP-GTC allows the exchange of clear text authentication credentials across the network. The GTC method does provide a way to move a simple username and password from client to server using an EAP method, so it can be used to provide an authentication method. Naturally, if EAP-GTC is used to transport reusable passwords, it must be used inside a tunnel for protection and server authentication. EAP-GTC can be used with both TTLS and PEAP.

Select the **802.1x** radio button, and then select **PEAP (EAP-GTC)** from the drop-down list.

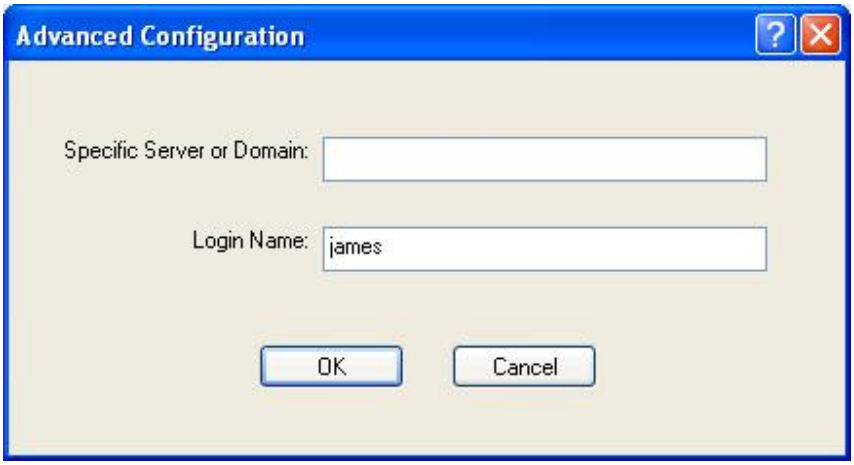


Click on the **Configure** button to configure the PEAP (EAP-GTC) settings.



- **Trusted Root Certification Authorities:** Select the appropriate certificate authority from the drop-down list.
- **User Name:** Enter the user name for the certificate authority.
- **Set Password:** Select **Token** or **Static Password** radio button. The default setting is Static Password.

Click on the **Advanced** button.



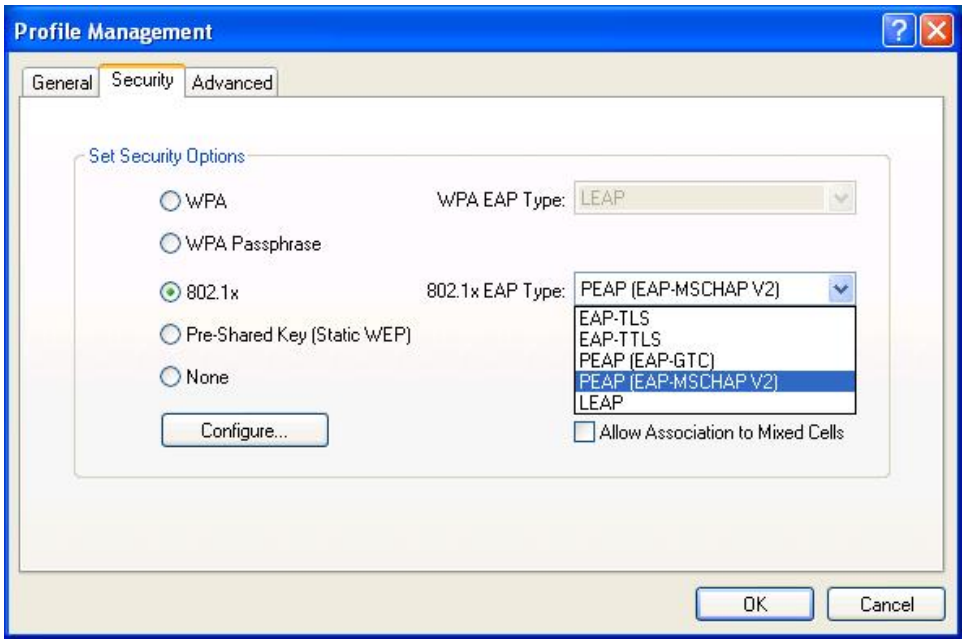
- **Specific Server or Domain:** Leave the server name blank for the client to accept a certificate from any server with a certificate signed by the authority listed in the Network Certificate Authority drop-down list. (Recommended). You can also enter the domain name of the server from which the client will accept a certificate.
- **Login Name:** Enter the login name if required.

Click on the **OK** button to return to the previous window. Once again, click on the **OK** button to return to the Profile Management window.

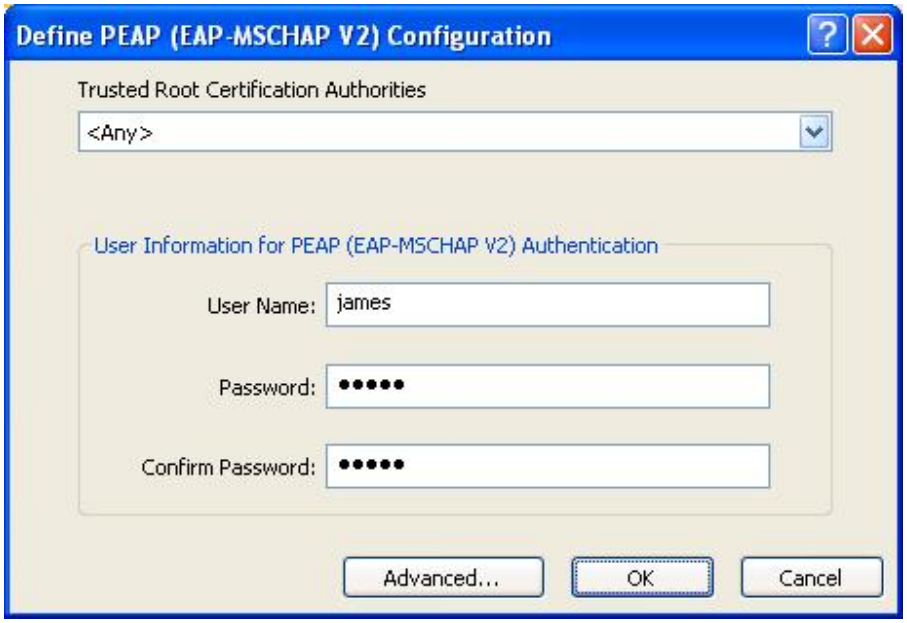
3.2.3.9 802.1x – PEAP (EAP-MSCHAP-V2)

The PEAP (EAP-MSCHAP V2) authentication type is based on EAPTLS authentication, but uses a password instead of a client certificate for authentication. PEAP (EAP-MSCHAP V2) uses a dynamic session-based WEP key, which is derived from the device and RADIUS server, to encrypt data.

Select the **802.1x** radio button, and then select **PEAP (EAP-MSCHAP-V2)** from the drop-down list.

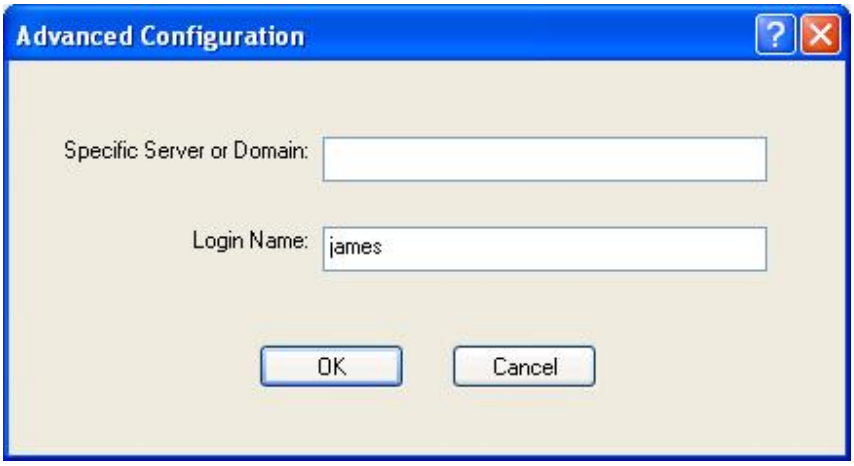


Click on the **Configure** button to configure the PEAP (EAP-MSCHAP-V2) settings.



- **Trusted Root Certification Authorities:** Select the appropriate certificate authority from the drop-down list.
- **User Name:** Enter the user name for the certificate authority.
- **Password:** Enter the password that corresponds with the user name for the certificate authority.
- **Confirm Password:** Re-type the password.

Click on the **Advanced** button.



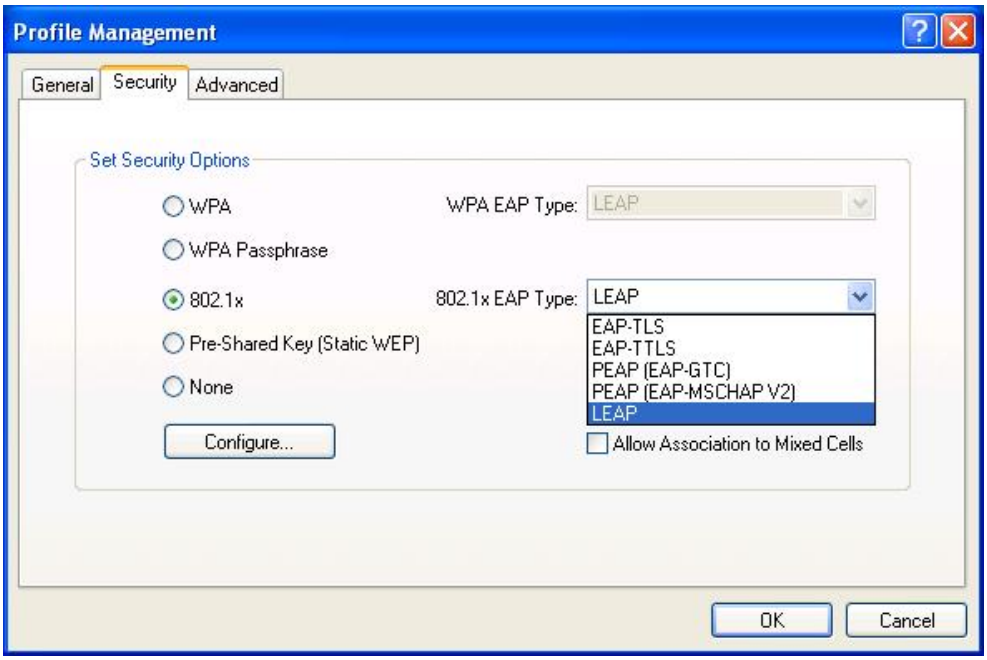
- **Specific Server or Domain:** Leave the server name blank for the client to accept a certificate from any server with a certificate signed by the authority listed in the Network Certificate Authority drop-down list. (Recommended). You can also enter the domain name of the server from which the client will accept a certificate.
- **Login Name:** Enter the login name if required.

Click on the **OK** button to return to the previous window. Once again, click on the **OK** button to return to the Profile Management window.

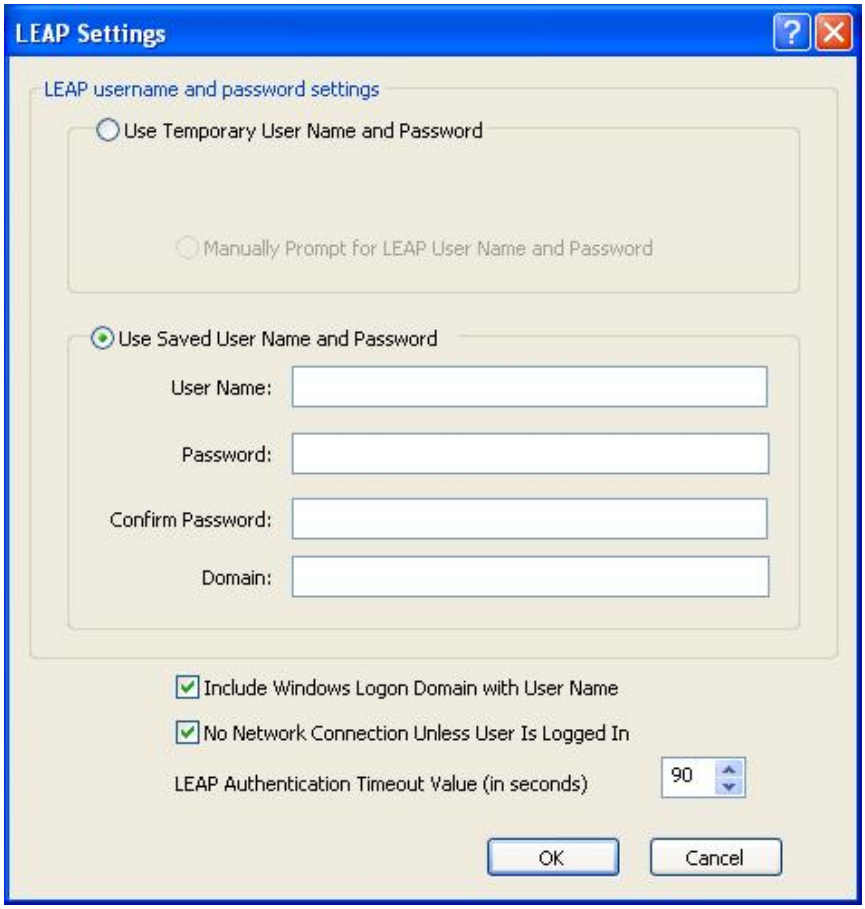
3.2.3.10 802.1x – LEAP

LEAP (Lightweight Extensible Authentication Protocol) also known as Cisco-Wireless EAP provides username/password-based authentication between a wireless client and a RADIUS server. LEAP is one of several protocols used with the IEEE 802.1X standard for LAN port access control. LEAP also delivers a session key to the authenticated station, so that future frames can be encrypted with a key that is different than keys used by others sessions. Dynamic key delivery eliminates one big vulnerability; static encryption keys that are shared by all stations in the WLAN.

Select the **802.1x** radio button, and then select **LEAP** from the drop-down list.



Click on the **Configure** button to configure the LEAP settings.

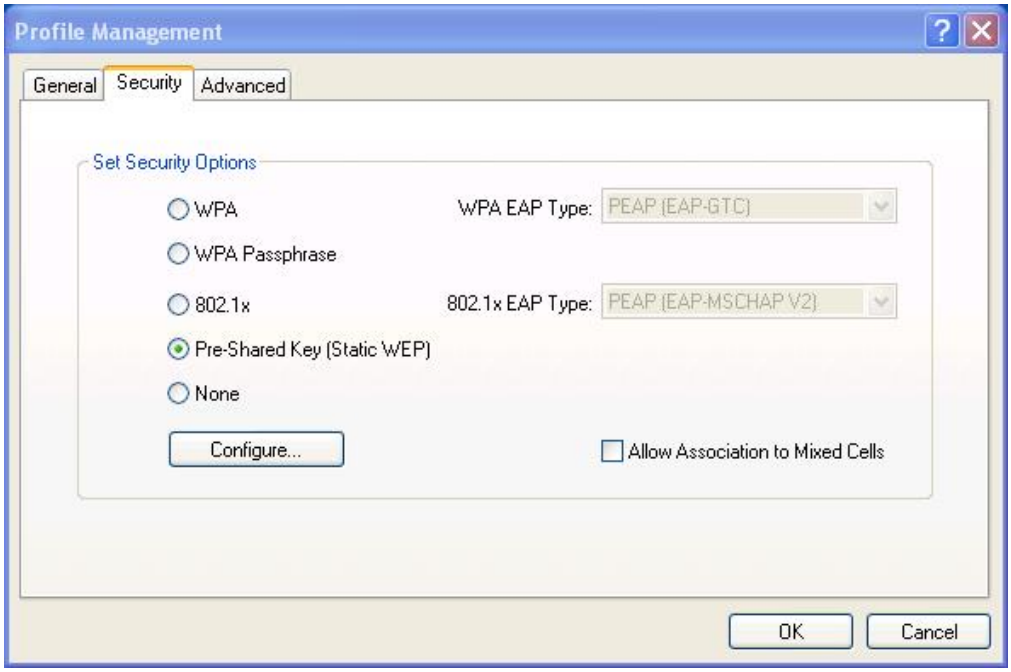


- **Use Temporary User Name and Password:** Select this radio button for a temporary user name and password. This will manually prompt for the user name and password.
- **Use Saved User Name Password:** Select this radio button if the user name and password will be saved in this profile.
- **User Name:** Enter the user name for the certificate authority.
- **Password:** Enter the password that corresponds with the user name for the certificate authority.
- **Confirm Password:** Re-type the password.

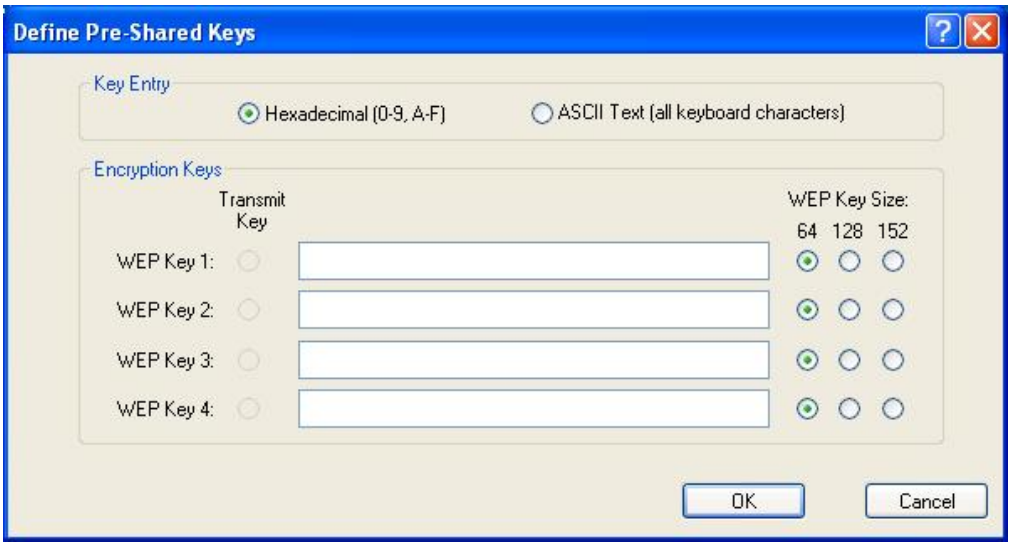
Click on the **OK** button to return to the previous window

3.2.3.11 Pre-Shared Key (Static WEP)

You may select 64, 128 or 152 bit WEP (Wired Equivalent Privacy) key to encrypt data (Default setting is Disable). WEP encrypts each frame transmitted from the radio using one of the Keys from a panel. When you use WEP to communicate with the other wireless clients, all the wireless devices in this network must have the same encryption key or pass phrase.



Select the **Pre-Shared Key (Static WEP)** radio button and click on the **Configure** button.



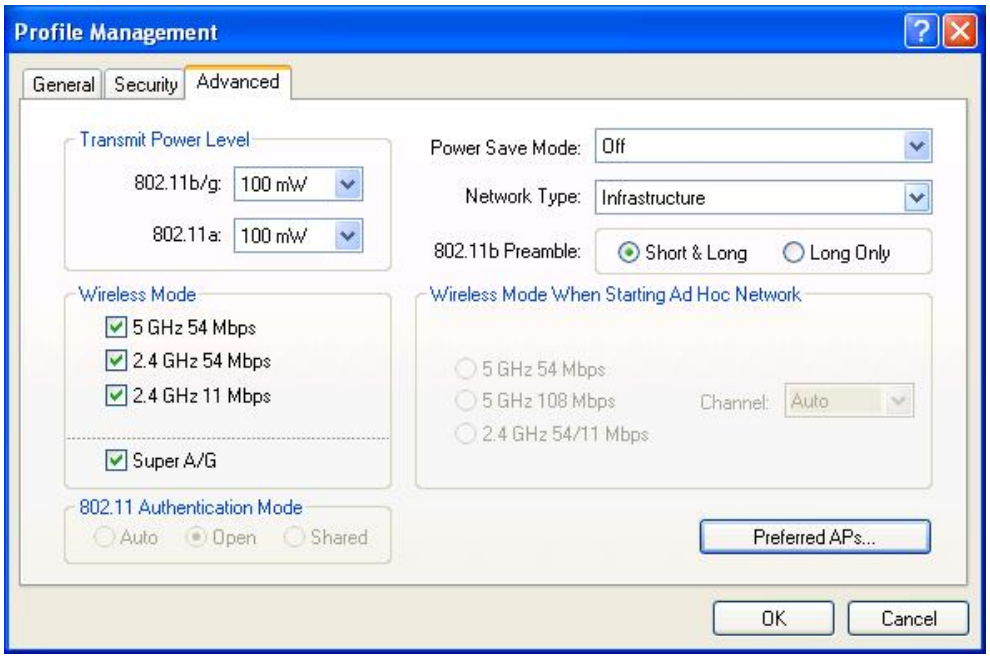
- **Key Entry:** Select **Hexadecimal** or **ASCII** depending on the WEP key that is used.
- **WEP Key Size:** Select **64**, **128**, or **152** bit WEP key size.
- **Transmit Key:** Enter the WEP key in the four WEP key text boxes.

Click on the **OK** button to return to the previous window

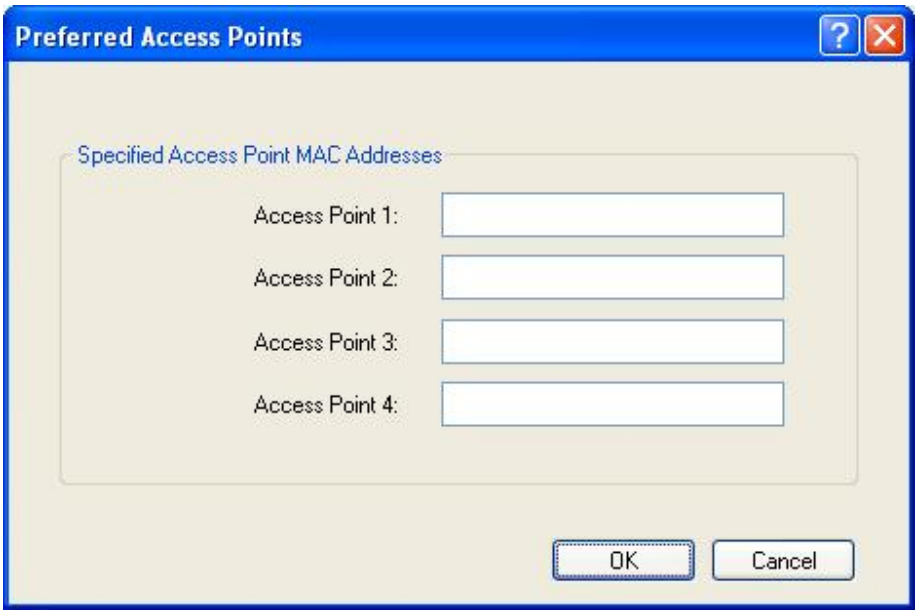
3.2.4 Advanced Settings

Click on the **Advanced** tab in the Profile Management section. Here you can configure the transmit power level, wireless mode, power save mode, and network type.

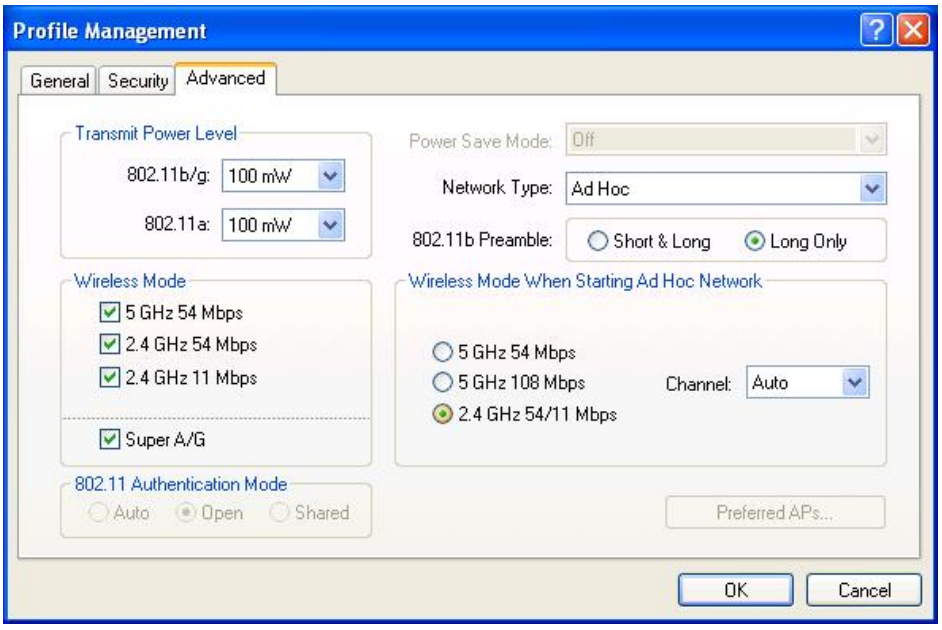
3.2.4.1 Infrastructure Settings



- **Transmit Power level:** Select a transmit power level from the drop-down list for the 802.11 a/b/g radio.
- **Wireless Mode:** Place a check in the preferred frequency and data rates.
- **Power Save Mode:** Select **Maximum**, **Normal**, or **Off** from the drop-down list. Selecting Maximum will save the most power; this is recommended if using a laptop running on battery. For other instances, use the Normal of Off setting.
- **Network Type:** Select Infrastructure from the drop-down list.
- **802.11 Preamble:** This setting should be the same as the access point. If you are not sure of that setting, select Short & Long.
- **Preferred APs:** Click on this button to add specific access points to this profile. Then enter the MAC addresses of the specific access points and then click on the **OK** button to return to the previous window.



3.2.4.2 Ad Hoc Settings

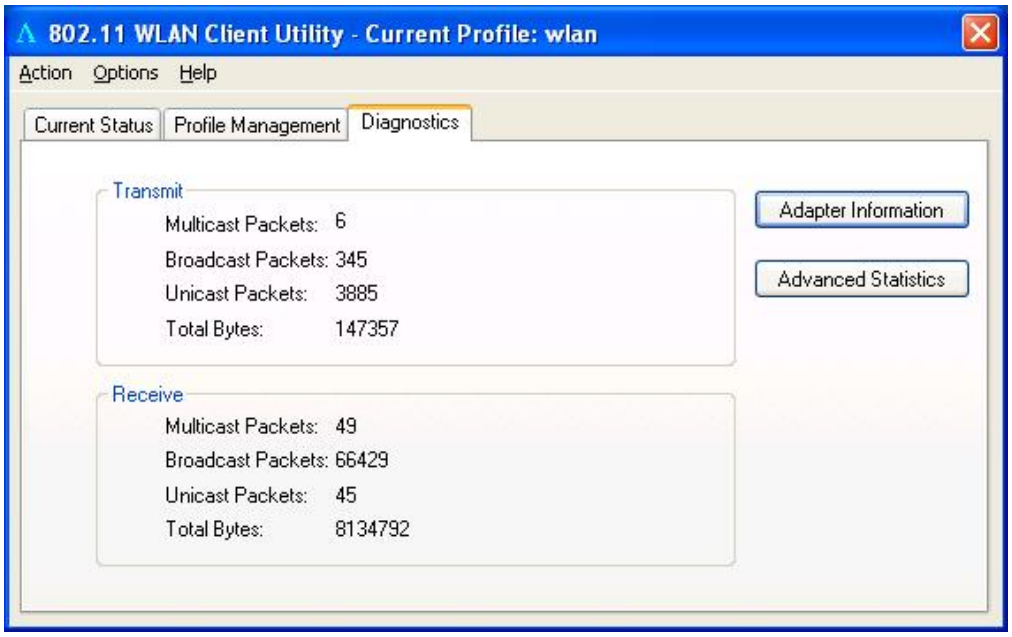


- **Transmit Power level:** Select a transmit power level from the drop-down list for both the 802.11 b/g and 802.11a radios.
- **Wireless Mode:** Place a check in the preferred frequency and data rates.
- **Network Type:** Select Ad hoc from the drop-down list.
- **802.11 Preamble:** This setting should be the same as the access point. If you are not sure of that setting, select Short & Long.

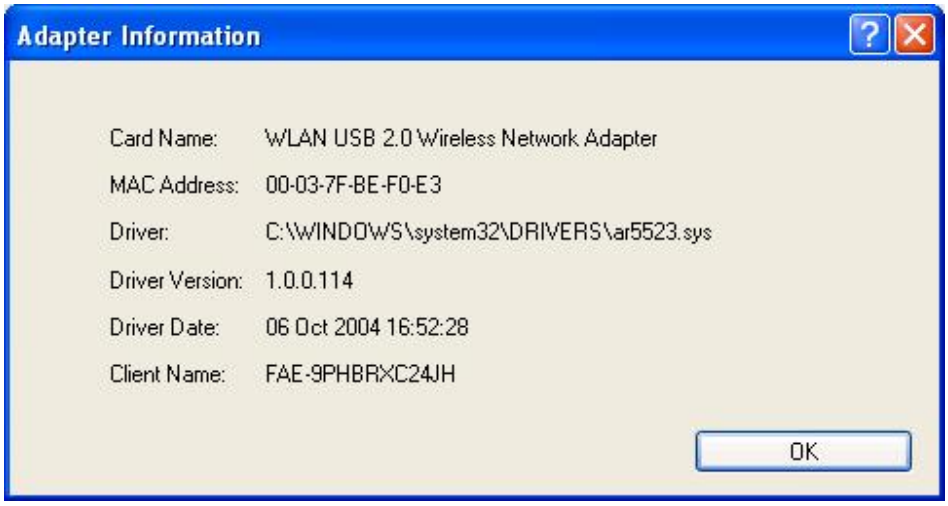
Click on the **OK** button to return to the previous window

3.3 Diagnostics

The third tab displayed is the **Diagnostics** tab. This tab displays the number of transmitted and received packets.

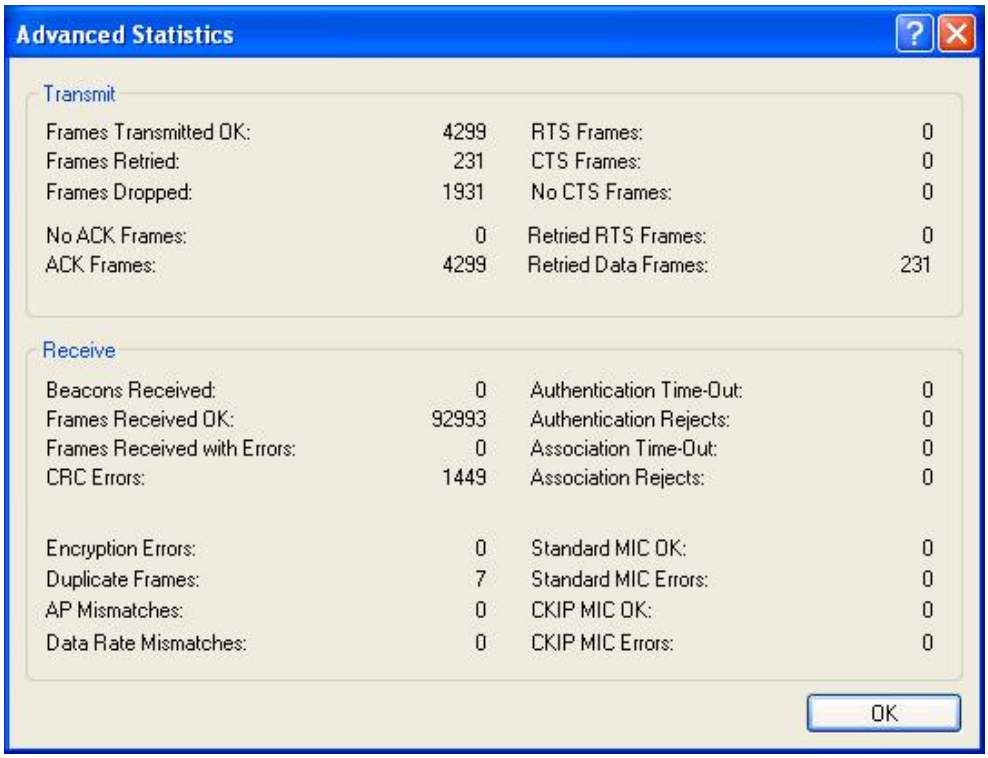


Click on the **Adapter Information** button to view information about the Cardbus adapter such as: card name, MAC address, driver name, driver version, and driver date.



Click on the **OK** button to return to the previous window

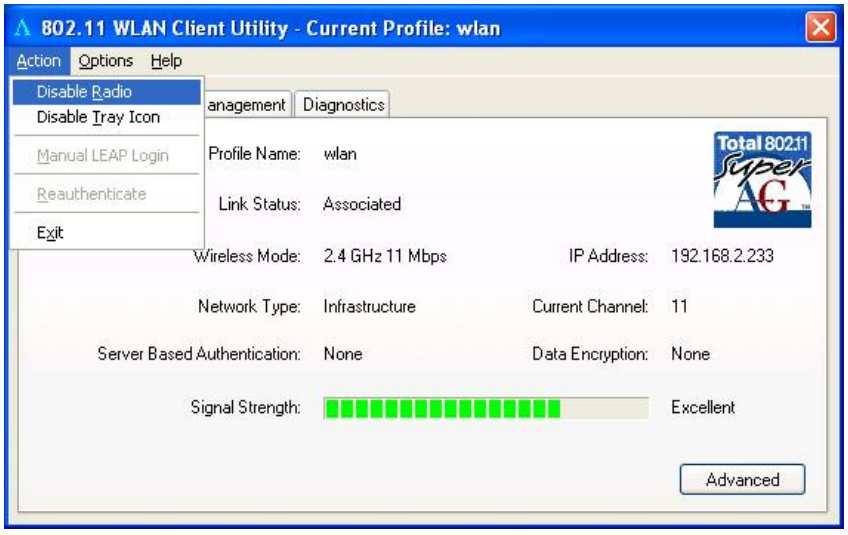
Click on the **Advanced Statistics** button to view detailed statistics about transmit and receive frames.



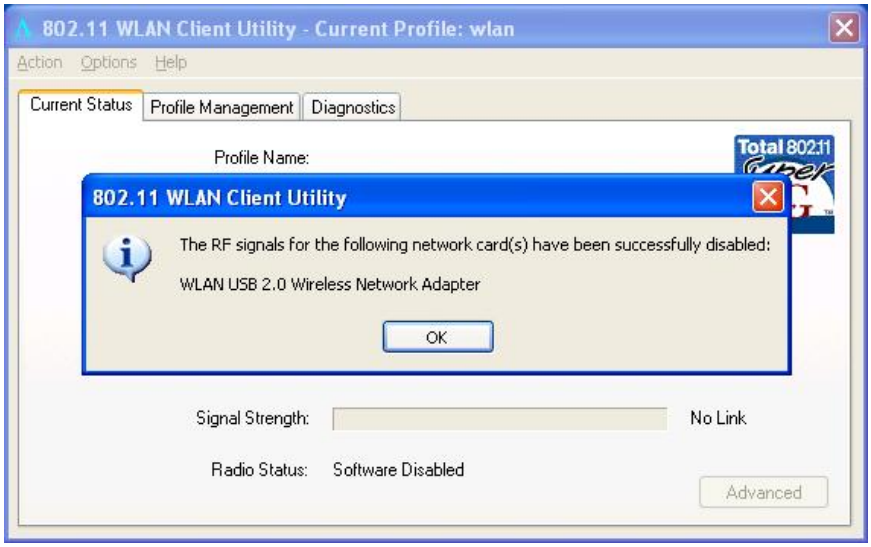
Click on the **OK** button to return to the previous window

3.4 Enable / Disable Radio

To **disable** the radio, click on **Action** in the menu bar, and then click on **Disable Radio**.

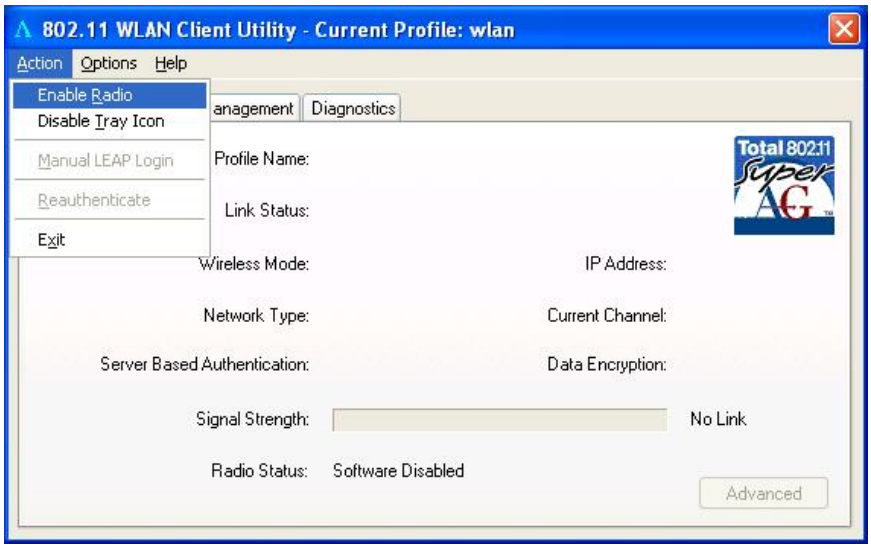


You will then see a confirmation message “The RF signals for the following network card(s) have been successfully disabled”.

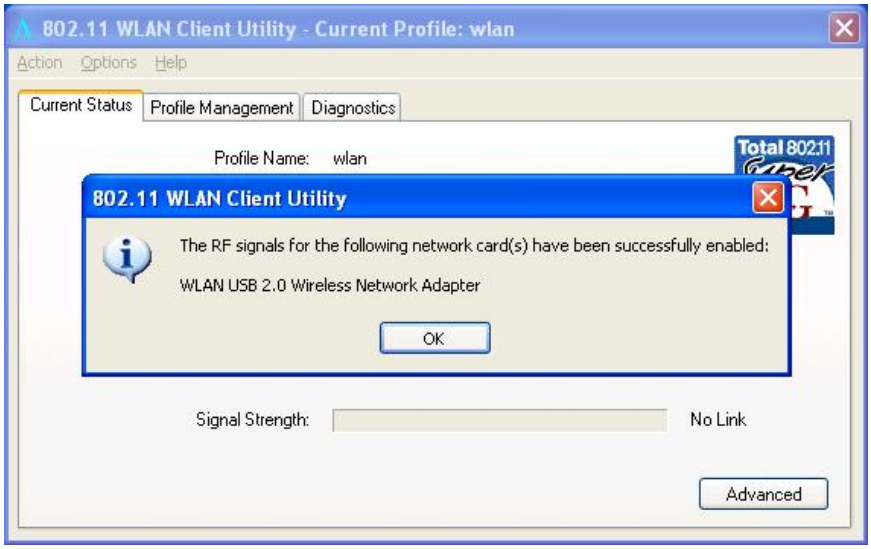


Click on the **OK** button to continue.

To **enable** the radio, click on **Action** in the menu bar, and then click on **Enable Radio**.



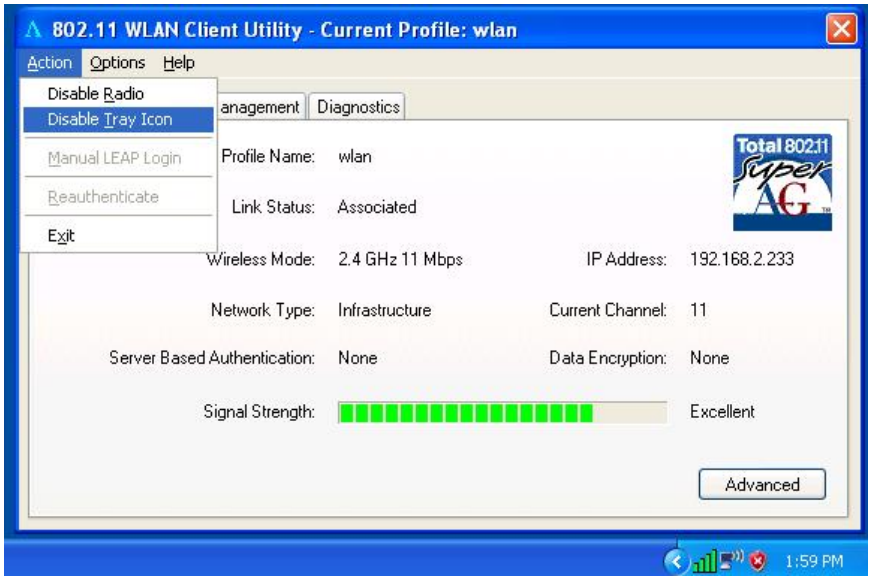
You will then see a confirmation message “The RF signals for the following network card(s) have been successfully enabled”.



Click on the **OK** button to continue.

3.5 Disable Tray Icon

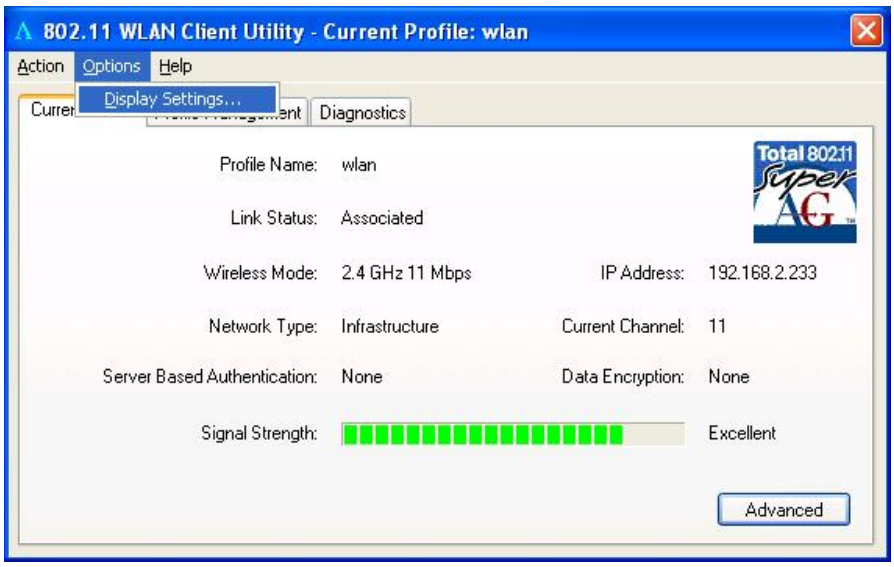
To disable the tray icon, click on **Action** in the menu bar, and then click on **Disable Tray Icon**.



You will then notice that the tray icon has disappeared from the system tray.

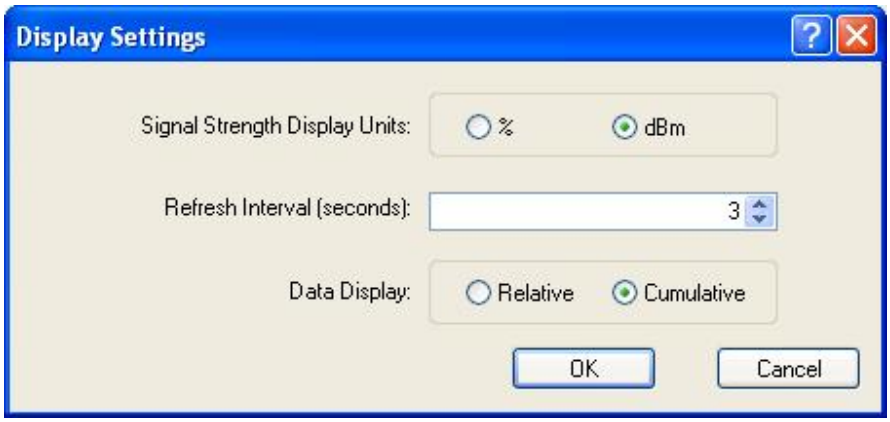
3.6 Display Settings

To change the display settings, click on **Options** in the menu bar, and then click on **Display Settings**.



In this window you can change the Signal Strength Display Units from dBm to %,

and increase or decrease the refresh interval rate, as well as displaying the data in a cumulative or relative fashion.



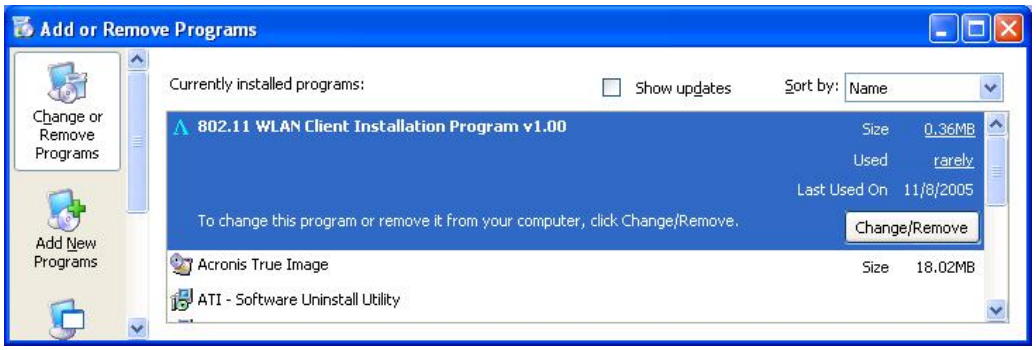
Click on the **OK** button to return to the previous window.

4 Uninstall the Drivers & Client Utility

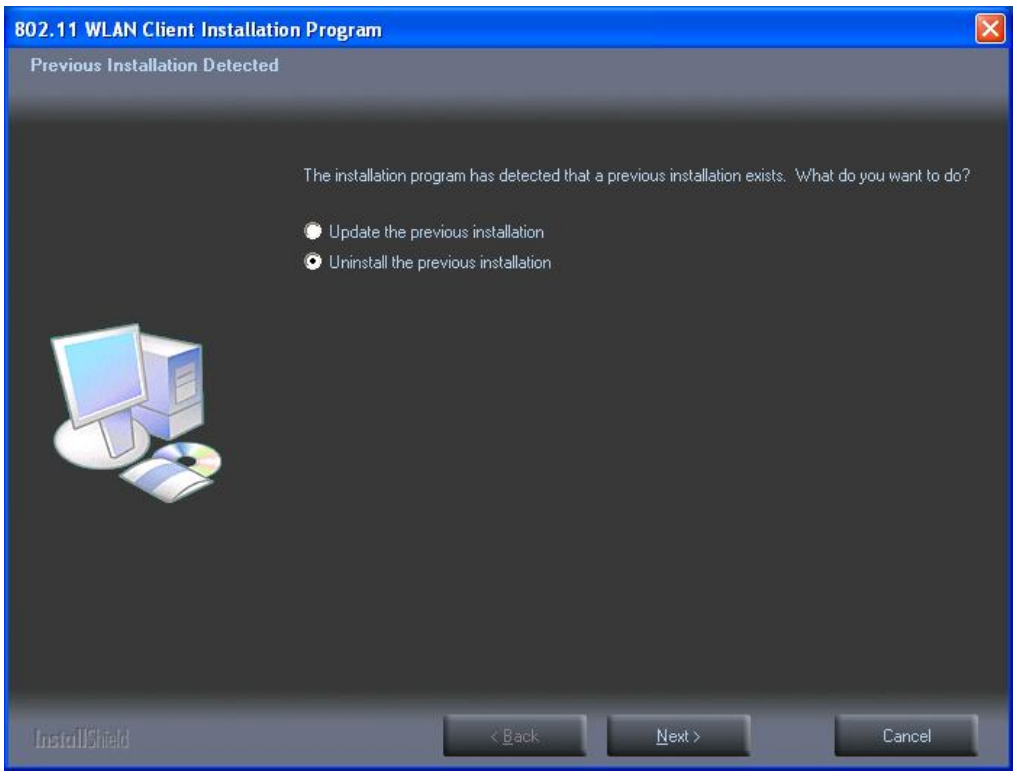
If the device installation is unsuccessful for any reason, the best way to solve the problem may be to completely uninstall the device and its utility and repeat the installation procedure again.

Follow the steps below in order to uninstall the Drivers and Client Utility:

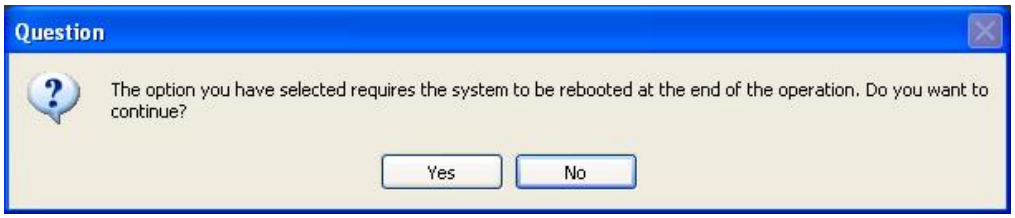
1. Click on **Start > Settings > Control Panel > Add or Remove Programs**
2. You will then see the following window. Select the Atheros Utility and then click on **Change/Remove**.



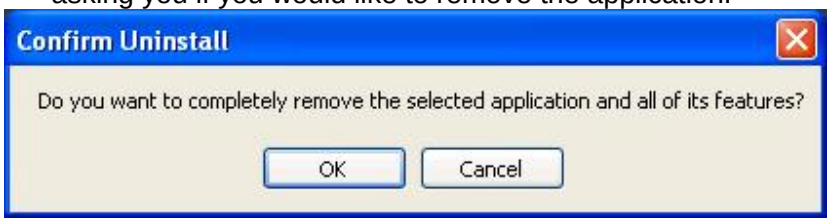
3. Click on **Uninstall the previous installation** radio button.



4. Click on the **Next** button to continue. You will then see the following message informing you that you must restart the system after installation. .



5. Click on the **Yes** button to continue. You will then see the following message asking you if you would like to remove the application.



6. Click on the **OK** button to continue. You will then see the following message asking you if you would like to remove the driver and all the existing profiles.

7. Click on the **Yes** button to continue. You must then restart your system to complete the Uninstallation.

8. Remove the device form your computer and then click on the **OK** button. The Uninstallation process is complete.

Appendix A – Specifications

Data Rates

802.11a: 6, 9, 12, 18, 24, 36, 48, 54, 72, 96 & 108 (Super A) Mbps

802.11g: 6, 9, 12, 18, 24, 36, 48, 54, 72, 96 & 108 (Super G) Mbps

802.11b: 1, 2, 5.5, 11Mbps

Standards / Compliance

IEEE802.11, IEEE802.11a, IEEE802.11g, IEEE802.11b, draft IEEE 802.11e, f, h, and i standards, IEEE802.1x

Regulation Certifications

FCC Part 15/UL, ETSI 300/328/CE

Operating Voltage

5 V ± 0.25V

Status LEDs

RF link activity

Drivers

Windows 98SE/ME/2000/XP

RF Information

Frequency Band

802.11a: 5.15~5.25GHz, 5.25~5.35GHz, 5.47~5.725GHz, 5.725~5.825GHz

802.11b/g: U.S., Europe and Japan product covering 2.4 to 2.484 GHz, programmable for different country regulations

Media Access Protocol

Carrier Sense Multiple Access with Collision Avoidance (CSMA/CA)

Modulation Technology

802.11a/g: OFDM (64-QAM, 16-QAM, QPSK, BPSK)

802.11b: DSSS (DBPSK, DQPSK, CCK)

Operating Channels

11 for North America, 14 for Japan, 13 for Europe, 2 for Spain, 4 for France

Receive Sensitivity (Typical)

5.15~5.825GHz

6Mbps@ -90dBm;
54Mbps@ -74dBm

2.412~2.472GHz (IEEE802.11g)

6Mbps@ -92dBm;
54Mbps@ -76dBm

2.412~2.472GHz (IEEE802.11b)

11Mbps@ -92dBm;
1Mbps@ -96dBm

Available transmit power

5.15~5.35 GHz

20 ± 1dBm @6~24Mbps
19 ± 1dBm @36Mbps
18 ± 1dBm @48Mbps
17 ± 1dBm @54Mbps

5.47 ~ 5.725GHz

19 ± 1dBm @6~24Mbps
18 ± 1dBm @36Mbps
17 ± 1dBm @48Mbps
16± 1dBm @54Mbps

5.725 ~ 5.825GHz

18 ± 1dBm @6~24Mbps
17 ± 1dBm @36Mbps
16 ± 1dBm @48Mbps
15 ± 1dBm @54Mbps

2.412~2.472GHz (IEEE802.11g)

23 ± 1dBm @6~ 24Mbps
22 ± 1dBm @36Mbps
21 ± 1dBm @48Mbps
20 ± 1dBm @54Mbps

2.412~2.472GHz (IEEE802.11b)

23 ± 1dBm @1~11Mbps

Antenna

Dipole antenna

Networking

Topology

Ad-Hoc, Infrastructure

Security

IEEE802.1x support for LEAP/PEAP
WPA – Wi-Fi Protected Access (AES, 64,128,152-WEP with shared-key authentication)

Physical

Form Factor

USB 2.0

Dimensions

75.2(L) mm x 53.9(W) mm x 14(H) mm

Weight

40 g/ 1.5oz

Environmental

Temperature Range

Operating: -0°C to 55°C
Storage: -20°Cto 75°C

Humidity (non-condensing)

5%~95% Typical

Package Contents

One USB Adapter
One USB Cable
One Quick Start Guide
One CD-ROM with User's Manual and Drivers

Appendix B – FCC Interference Statement

Federal Communication Commission Interference Statement

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

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

This device complies with Part 15 of the FCC Rules. 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.

IMPORTANT NOTE:
FCC Radiation Exposure Statement:

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment.
This device complies with FCC RF Exposure limits set forth for an uncontrolled environment, under 47 CFR 2.1093 paragraph (d)(2).
This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.