Wireless Adater RNX-N1/N1MAC

User Manual

1. INTRODUCTION

The high-speed wireless USB 2.0 client adapter is the most convenient way to let you put a desktop/notebook computer almost anywhere without the hassle of running network cables. Now you don't need to suffer from drilling holes and exposed cables. Once you are connected, you can do anything, just like the wired network. This USB client adapter operates seamlessly in 2.4GHz frequency spectrum supporting the 802.11b, 802.11g, and 802.11nwireless standards. It's the best way to add wireless capability to your existing wired network or simply surf the web.

To protect your wireless connectivity, the high-speed wireless USB 2.0 client adapter can encrypt all wireless transmissions through 64/128-bit WEP, WPA, WPA-PSK and WPA-AES encryption and authentication allowing you to experience the most secure wireless connectivity available.

The Rosewill 802.11n USB Adapter (RNX-N1/N1MAC) implements the latest 11n 2.0 technology which extremely improves wireless signal for your computer than existing wireless 802.11g technology. It supports the 2T2R MIMO architecture with fully forward compatibility with IEEE802.11n. The incredible speed of RNX-N1/N1MAC USB adapter makes heavy traffic networking activities more flexible and takes the wireless into practical road. You could enjoy the racing speed of wireless connection, surfing on Internet without string wires.

Adding Rosewill RNX-N1/N1MAC to your Notebook or Computer, it provides an excellent performance and cost-effective solution for doing media-centric activities such as streaming video, gaming, and enhances the QoS (WMM) without any reduction of performance. It extends 3 times network coverage and boosts 6 times transmission throughput than existing 11g product. Advanced power management and low power consumption among 11n products.

For more security-sensitive application, RNX-N1/N1MAC supports Hardware-based IEEE 802.11i encryption/decryption engine, including 64-bit/128-bit WEP, TKIP, and AES. Also, it supports Wi-Fi alliance WPA and WPA2 encryption and is Cisco CCX V1.0, V2.0 and V3.0 compliant.

1.1 FEATURES & BENEFITS

Features	Benefits
Racing Speed up to 300Mbps data rate (2.4GHz 11N technology)	Enjoy the Internet connection in crazy-fast speed, without the bottleneck of stringing wires.
Advanced power management	Low power consumption
WPA/WPA2 (IEEE 802.11i), WEP 64/128 Support	Powerful data security.
Support 2Tx * 2Rx Radios	With Intelligent Antenna enables
WMM (IEEE 802.11e) standard support	Wireless Multimedia Enhancements Quality of Service support (QoS) / enhanced power saving for Dynamic Networking
USB 2.0/1.1	USB 2.0 interface and compatible with USB 1.1

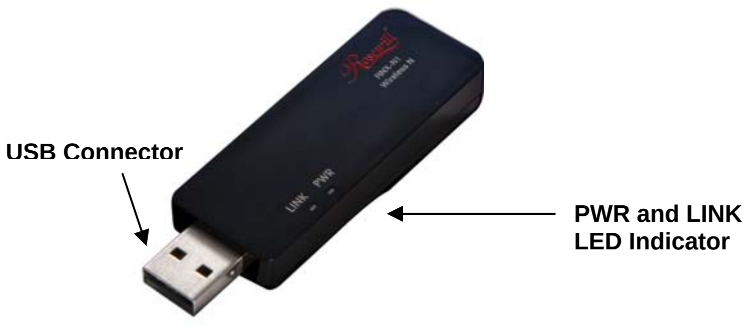
1.2 PACKAGE CONTENTS

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-RNX-N1/N1MAC
- One CD-ROM with Drivers and User's Manual Included
- One Flexible Stainless Steel USB 2.0 Extended Connector

1.3 USB ADAPTER DESCRIPTION

The USB adapter is a standard USB adapter that fits into any USB interface. The USB adapter has two LED indicators and a built-in 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 2000/XP/Vista or MAC OS 10.3/10.4/10.5 operating system.
- 30 MB of free disk space for installing the USB adapter driver and utility program.

2. USB ADAPTER FOR WINDOWS 2000/XP/VISTA

2.1 BEFORE YOU BEGIN

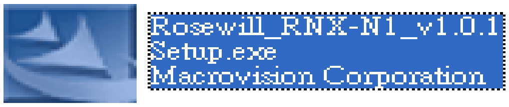
During the installation, Vista may need to copy systems files from its installation CD. Therefore, you may need a copy of the Windows installation CD at hand before installing the drivers.

2.2 INSTALLING THE DRIVERS

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

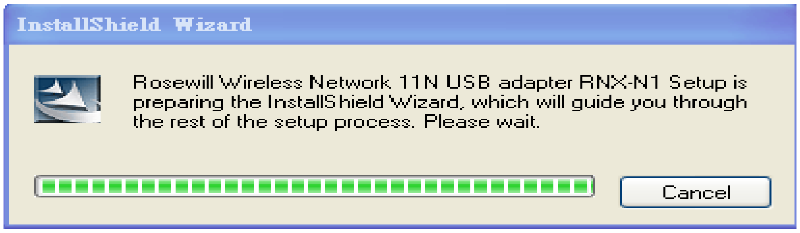
- Insert the CD-ROM that was provided to you in this package. The setup should run automatically. If the setup does not run automatically, then you must manually select the

setup.exe file from the CD-ROM drive.



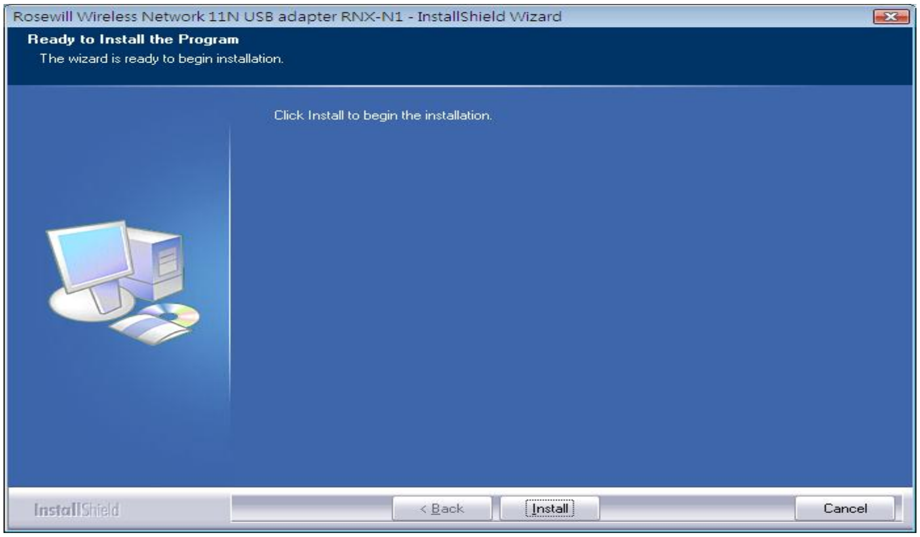
Rosewill_RNX-N1_v1.0.1
Setup.exe
Macrovision Corporation

- Once the setup begins you will see the **InstallShield Wizard**. Select **Rosewill Configuration Tool** and then click on the **Next>** button.



Rosewill Wireless Network 11N USB adapter RNX-N1 Setup is preparing the InstallShield Wizard, which will guide you through the rest of the setup process. Please wait.

- Click on the **Install** button to begin the installation.



Rosewill Wireless Network 11N USB adapter RNX-N1 - InstallShield Wizard

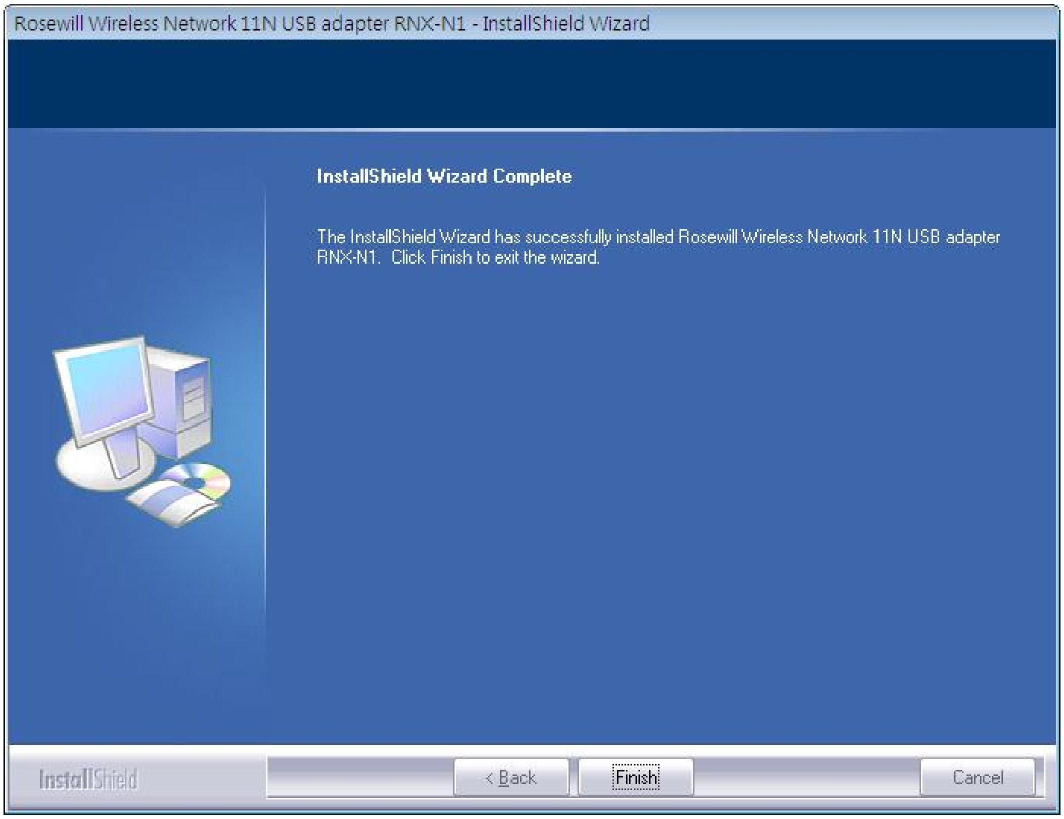
Ready to Install the Program

The wizard is ready to begin installation.

Click Install to begin the installation.

InstallShield
< Back
Install
Cancel

- The installation is complete. Click on the **Finish** button.

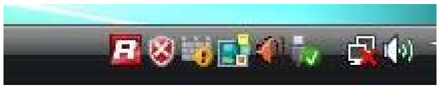


Rosewill Wireless Network 11N USB adapter RNX-N1 - InstallShield Wizard

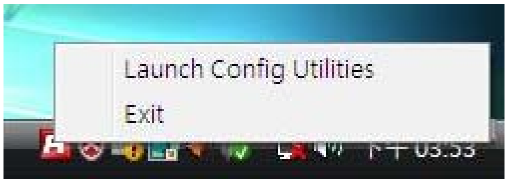
InstallShield Wizard Complete

The InstallShield Wizard has successfully installed Rosewill Wireless Network 11N USB adapter RNX-N1. Click Finish to exit the wizard.

- Carefully insert the USB adapter into the USB port. Windows will then detect and install the new hardware.



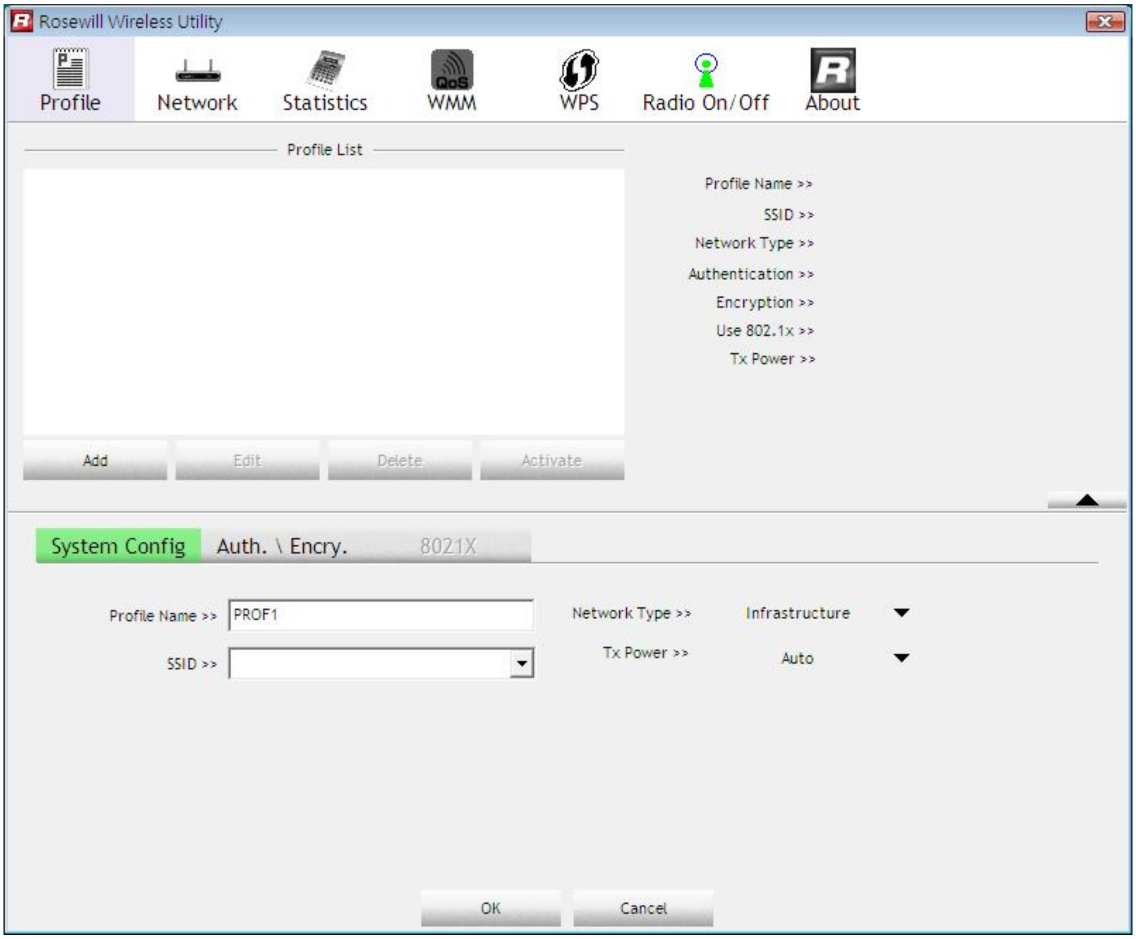
- An **R** icon will then appear in the system tray. Right click on the **R** icon and then click on **Launch Config Utilities.**



Note: Click on **Use Zero Configuration as Configuration Utility** if you would like to use Windows Zero Config.

2.3 PROFILES

The **Profile** tab is used to store the settings of multiple Access Points such as home, office, café, etc. When adding a profile you are required to enter a profile name and SSID as well as configure the power-saving mode, network type, RTS/fragmentation threshold and encryption/authentication settings. A profile can be configured as **Infrastructure** or **Ad-hoc** mode. The configuration settings for each mode are described below.



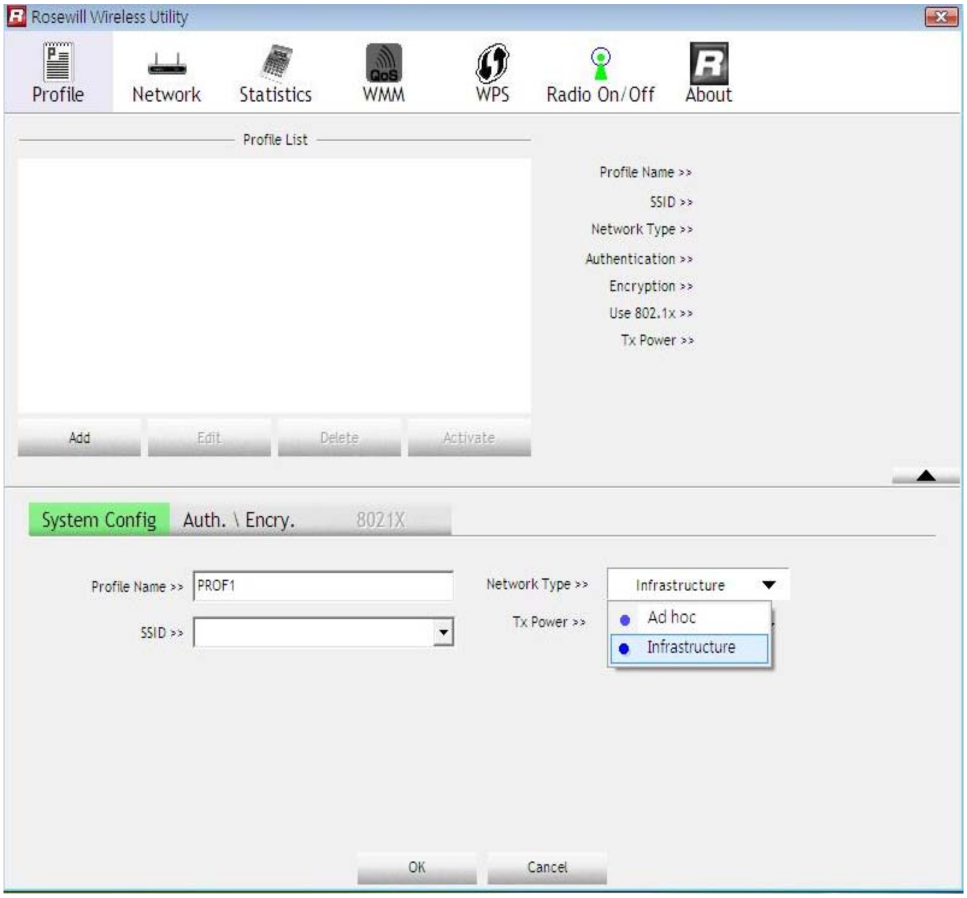
Profile Name >> PROF1

Network Type >> Infrastructure

Tx Power >> Auto

2.3.1 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.



Profile Name >> PROF1

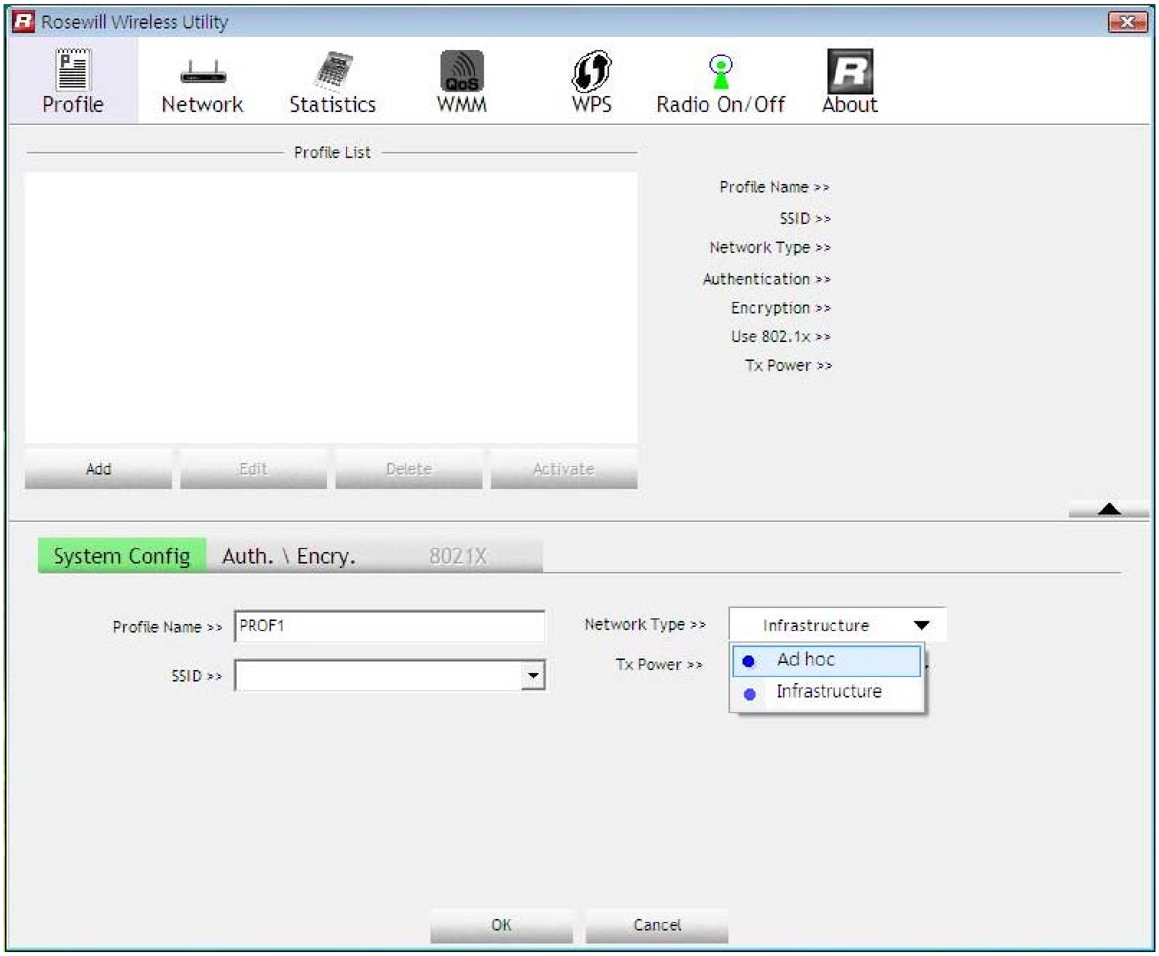
SSID >>

Network Type >> Infrastructure

- **Profile**: Enter a name for the profile; this does not need to be the same as the SSID.
- **SSID**: Enter the SSID of the network or select one from the drop-down list. 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.
- **Network Type**: Select **Infrastructure** from the drop-down list.
- **TX Power**: Select a transmit power from the drop-down list. If your notebook is connected to external power then select **100%** or **auto**, if not, select one of the lower values for power saving.
- Click on the **Apply** button to save the changes.

2.3.2 Ad-hoc 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.



Profile Name >> PROF1

SSID >>

Network Type >> Infrastructure

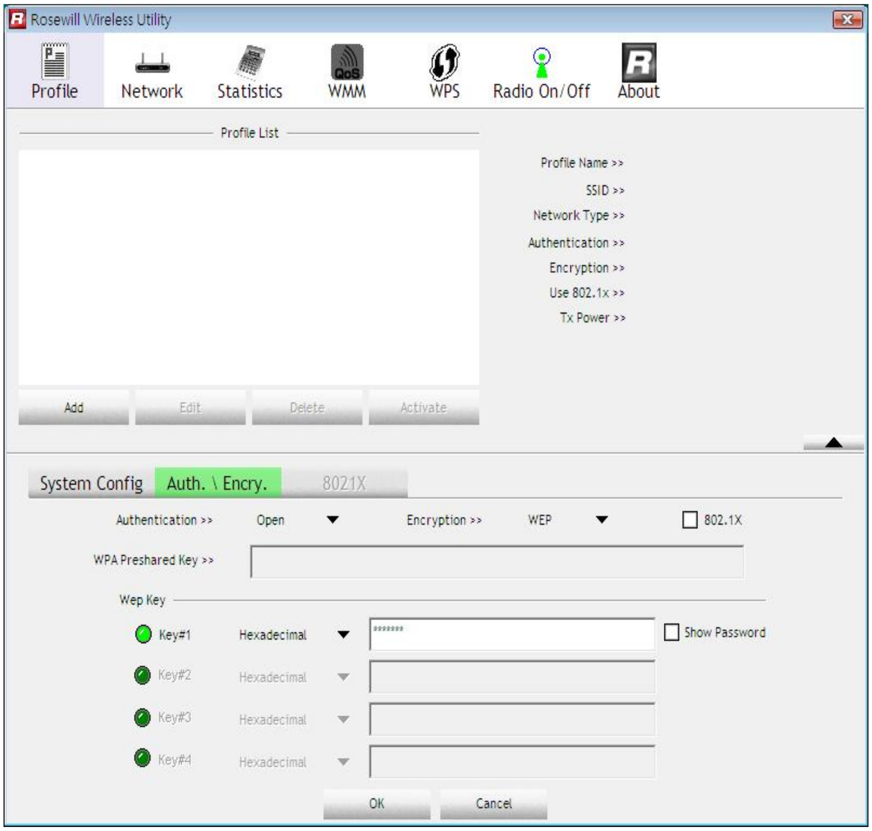
- **Profile**: Enter a name for the profile; this does not need to be the same as the SSID.
- **SSID**: Enter the SSID of the network or select one from the drop-down list. The SSID is a unique name shared among all points in your wireless network. The SSID must be identical for all points in the network, and is case-sensitive.
- **Network Type**: Select **Ad-hoc** from the drop-down list.
- **TX Power**: Select a transmit power from the drop-down list. If your notebook is connected to external power then select **100%** or **auto**, if not, select one of the lower values for power saving.
- Click on the **Apply** button to save the changes.

2.4 AUTHENTICATION AND SECURITY

The **Security** tab allows you to configure the authentication and encryption settings such as: WEP, WPA, WPA-PSK. Each security option is described in detail below.

2.4.1 WEP Encryption

The **WEP** tab displays the WEP settings. Encryption is designed to make the data transmission more secure. You may select 64 or 128-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. The following information is included in this tab, as the image depicts below.



Authentication >> Open Encryption >> WEP □ 802.1X

WPA Preshared Key >>

Wep Key

● Key#1 Hexadecimal ******* □ Show Password

● Key#2 Hexadecimal

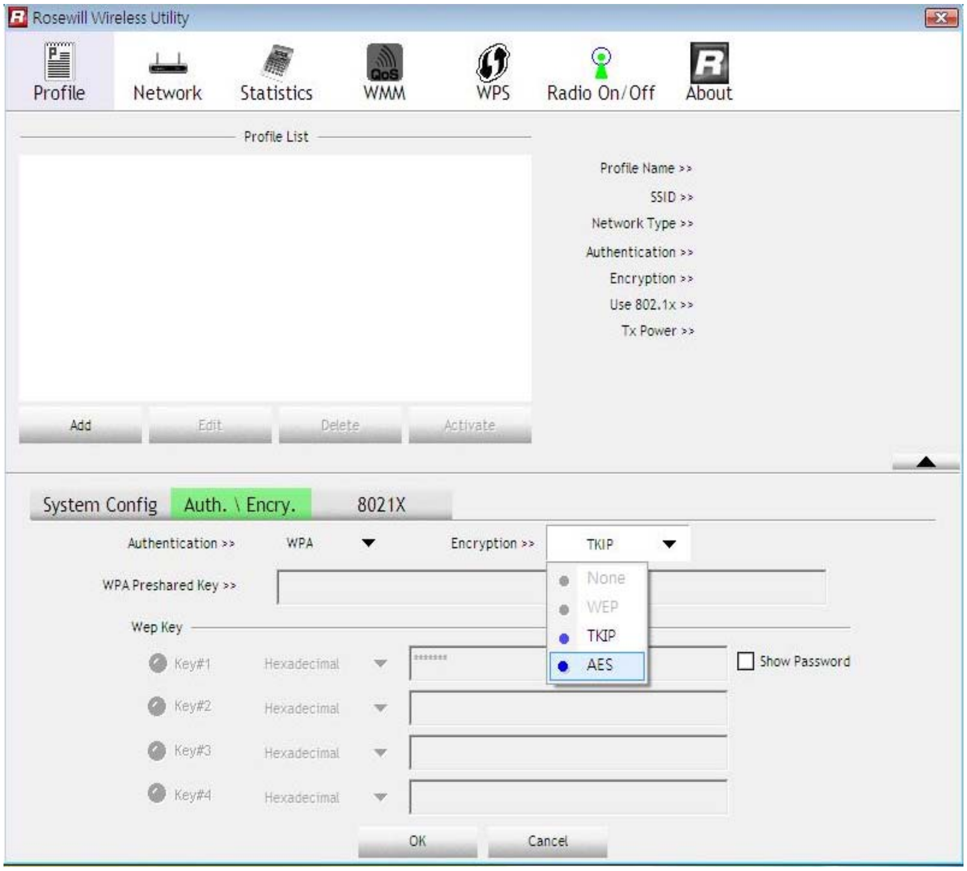
● Key#3 Hexadecimal

● Key#4 Hexadecimal

- **Authentication Type**: Select **Open** or **Shared** from the drop-down list.
- **Encryption**: Select **WEP** from the drop-down list.
- **WEP Key**: Type a character string into the field.
  For 64-bit enter 5 alphanumeric or 10 hexadecimal characters.
  For 128-bit enter 13 alphanumeric or 26 hexadecimal characters.
- Click on the **Apply** button to save the changes.
- **Show Password** check box. If you want to make sure the accuracy of password you type, click the **Show Password** box to check it.

2.4.2 WPA, WPA2 Authentication & TKIP, AES Encryption

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. 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.



Authentication >> WPA

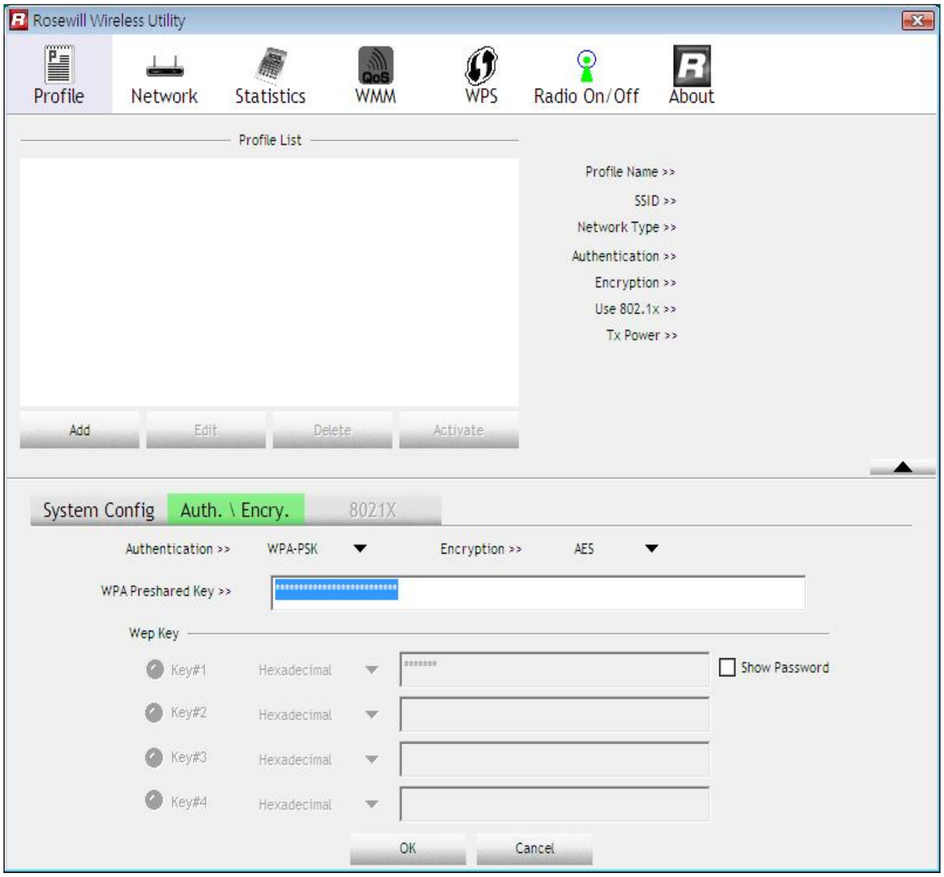
Encryption >> TKIP

WPA Preshared Key >>

- **Authentication Type**: Select **WPA** or **WPA2** from the drop-down list.
- **Encryption**: Select **TKIP** or **AES** from the drop-down list.
- Click on the **Apply** button to save the changes.
- **Show Password** check box. If you want to make sure the accuracy of password you type, click the **Show Password** box to check it.

2.4.3 WPA-PSK Authentication & TKIP, AES Encryption

WPA – PSK (Pre-shared Key) is used in a Pre Shared Key mode that does not require an authentication server. Access to the Internet and the rest of the wireless network services is allowed only if the pre-shared key of the computer matches that of the Access Point. This approach offers the simplicity of the WEP key, but uses stronger TKIP encryption. 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.



Authentication >> WPA-PSK

Encryption >> AES

WPA Preshared Key >> ************************

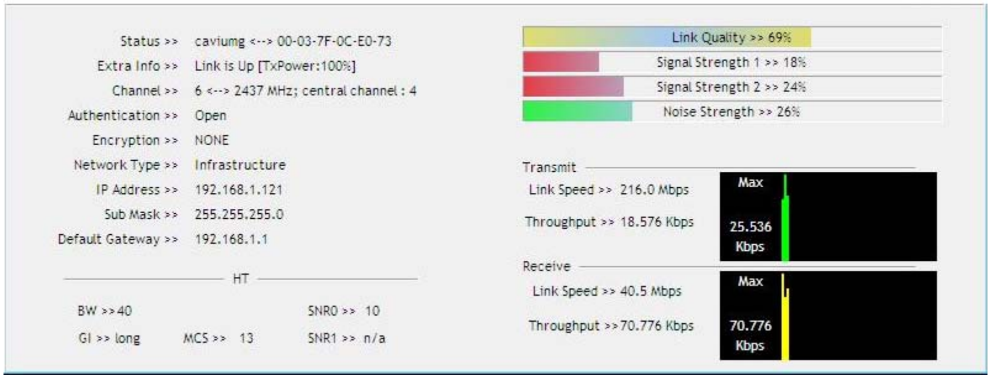
Key#1 Hexadecimal *******

□ Show Password

- **Authentication Type**: Select **WPA** or **WPA2** from the drop-down list.
- **Encryption**: Select **TKIP** or **AES** from the drop-down list.
- **WPA Preshared key**: Enter a pass phrase which is between 8 and 32 characters long.
- Click on the **Apply** button to save the changes.
- **Show Password** check box. If you want to make sure the accuracy of password you type, click the **Show Password** box to check it.

2.5 NETWORK

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



Status >> caviumg <--> 00-03-7F-0C-E0-73
Extra Info >> Link is Up [TxPower:100%]
Channel >> 6 <--> 2437 MHz; central channel : 4
Authentication >> Open
Encryption >> NONE
Network Type >> Infrastructure
IP Address >> 192.168.1.121
Sub Mask >> 255.255.255.0
Default Gateway >> 192.168.1.1

HT
BW >>40 SNR0 >> 10
GI >> long MCS >> 13 SNR1 >> n/a

Link Quality >> 69%
Signal Strength 1 >> 18%
Signal Strength 2 >> 24%
Noise Strength >> 26%

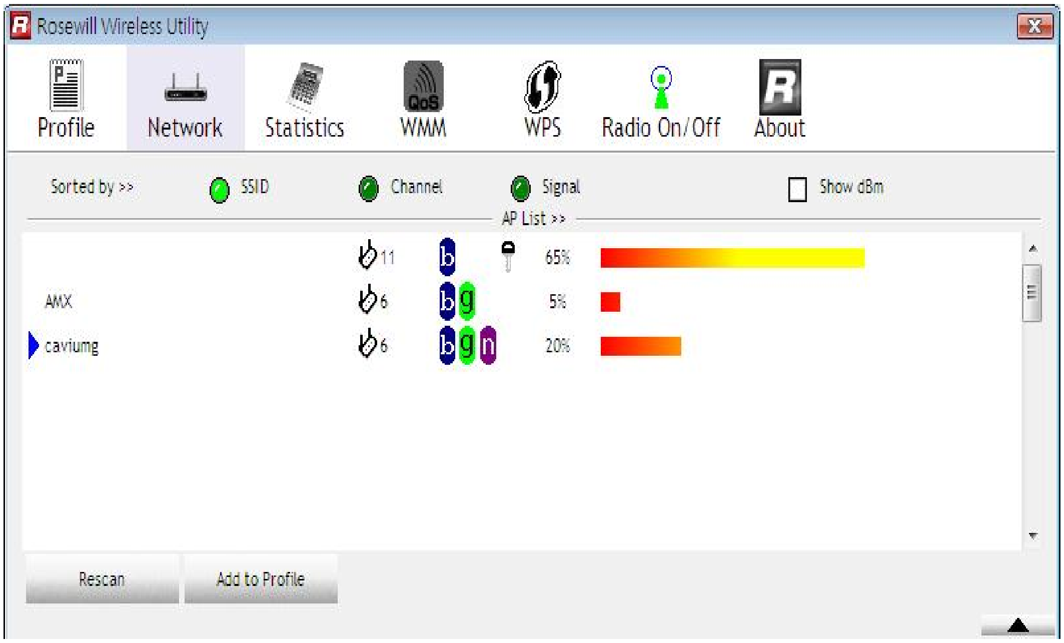
Transmit
Link Speed >> 216.0 Mbps
Throughput >> 18.576 Kbps

Receive
Link Speed >> 40.5 Mbps
Throughput >>70.776 Kbps

- **Status**: This indicates the state of the client. There are three options:
  1. **Associated**: Indicates that the wireless client is connected to an Access Point (AP). The BSSID is shown in the form of 12 HEX digits, which is the MAC address of the AP.
  2. **Scanning**: Indicates that the wireless client is searching for an AP in the area.
  3. **Disconnected**: Indicates that there are no APs or clients in the area.
- **Extra Info**: Displayed here are information about the link stats and the percent of output power.
- **Current Channel**: The operating frequency channel that the client is using (infrastructure mode).
- **Link Speed:** The current rate at which the client is transmitting and receiving.
- **Throughput (bytes/sec)**: Displays the Tx (transmit) and Rx (receive) kilo-bytes per second.
- **Link Quality**: In infrastructure mode, this bar displays the transmission quality between an AP and a client. In Ad-hoc mode, this bar displays the transmission quality between one client, and another.
- **Signal Strength**: This bar displays the strength of the signal received from an AP or client.
- **Noise Level**: Displays the background noise level; a lower level indicates less interference.
- Click on the **OK** button to close this window.
- **dBm Check Box**. When you click on the check box as the drawing below. The signal strength and noise level will be shown as the dBm measurements.

2.6 SITE SURVEY

The **Network** tab also displays a list of Access Points and Stations in the area, and allows you to connect to a specific one. The following information is included in this tab, as the image depicts below.

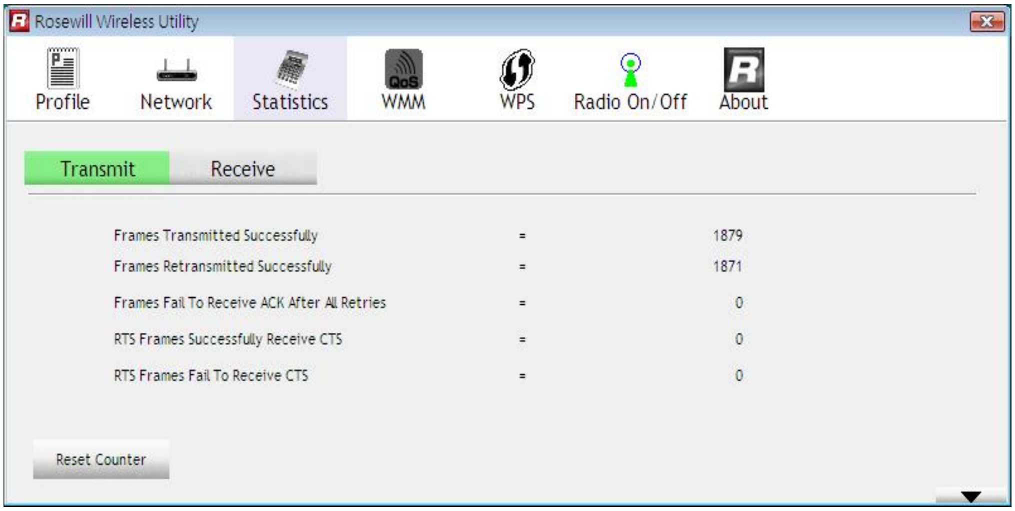


SSID	Channel			Signal
	11	b		65%
AMX	6	bg		5%
caviumg	6	bgn		20%

- **SSID**: Displays the SSID of the Access Point. 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.
- **BSSID**: Displays the MAC address of the Access Point.
- **Signal**: Displays the receiving signal strength from the Access Point.
- **Channel**: Displays the channel number of the Access Point.
- **Encryption**: Displays the encryption on the Access Point, this includes WEP, TKIP, AES or None.
- **Authentication**: displays the authentication on the Access Point, this includes WPA, WPA-PSK, WPA2, or Unknown.
- **Network Type**: Indicates whether the SSID is a Station (Ad-hoc) or Access Point (Infrastructure).
- **Rescan**: Click on this button to view a list of Access Points in the area.
- **Connect**: to connect with a specific Access Point, select the SSID from the list, and then click on the Connect button.
- **Add to Profile**: Click on this button to add the SSID and its associated settings into a profile.
- Click on the **OK** button if you have made any changes.

2.7 STATISTICS

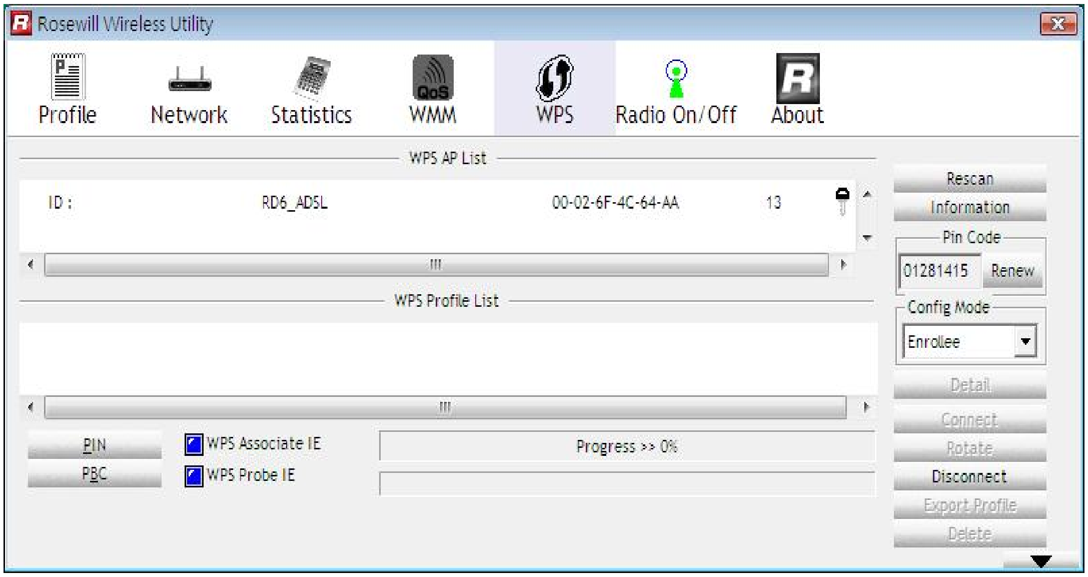
The **Statistics** tab displays transmit and receive packet statistics in real-time. Information included is frames transmitted/received successfully, transmitted successfully without and after retry, received with CRC error, duplicate frames received, etc.



Frames Transmitted Successfully	=	1879
Frames Retransmitted Successfully	=	1871
Frames Fail To Receive ACK After All Retries	=	0
RTS Frames Successfully Receive CTS	=	0
RTS Frames Fail To Receive CTS	=	0

2.8 WPS

Click on the WPS Configuration tab. WPS (Wireless Push Button) is used for WiFi Protected Setup. By pressing this button, the security settings of the device will automatically synchronize with other wireless devices on your network that support Wi-Fi Protected Setup.



ID : RD6_ADSL 00-02-6F-4C-64-AA 13

Pin Code: 01281415

Config Mode: Enrollee

☑ WPS Associate IE

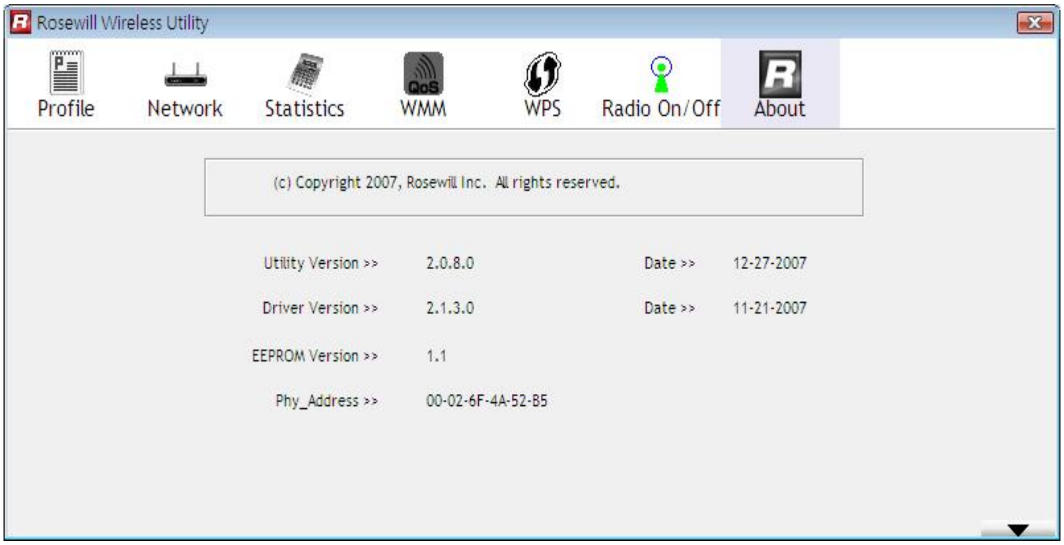
☑ WPS Probe IE

Progress >> 0%

- **Rescan**: Click on this button to view a list of Access Points in the area.
- Click on the **OK** button if you have made any changes.

2.9 ABOUT

The **About** tab displays information about the device, such as: the network driver version and date, configuration utility version and date, and the NIC (Network Interface Card) firmware version and date.



(c) Copyright 2007, Rosewill Inc. All rights reserved.

Utility Version >> 2.0.8.0 Date >> 12-27-2007

Driver Version >> 2.1.3.0 Date >> 11-21-2007

EEPROM Version >> 1.1

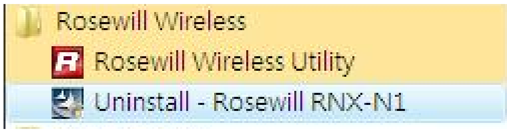
Phy_Address >> 00-02-6F-4A-52-B5

2.10 UNINSTALL THE DRIVERS & CLIENT UTILITY

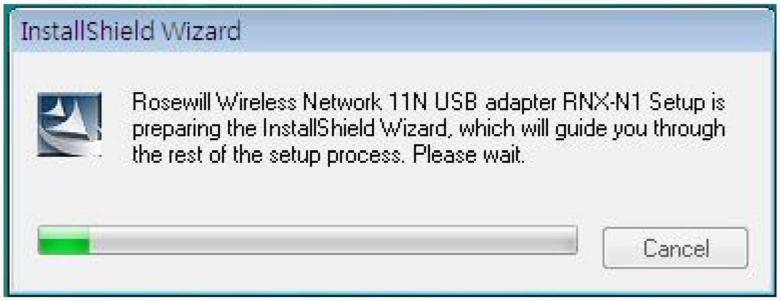
If the USB client adapter installation is unsuccessful for any reason, the best way to solve the problem may be to completely uninstall the USB adapter and its utility and repeat the installation procedure again.

Follow the steps below in order to uninstall the client utility:

Click on **Start > Rosewill Wireless > Uninstall Rosewill RNX-N1**

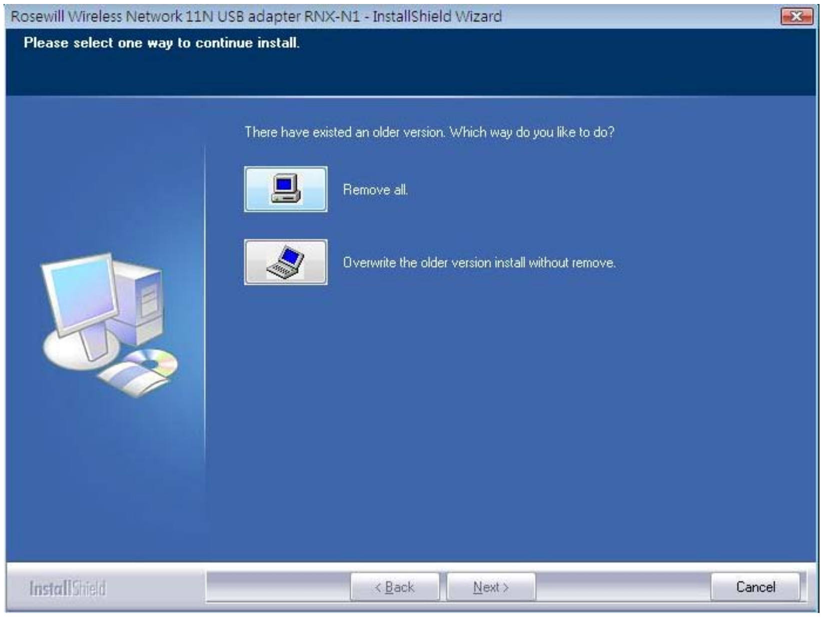


The **un-installation** process will then begin.



Rosewill Wireless Network 11N USB adapter RNX-N1 Setup is preparing the InstallShield Wizard, which will guide you through the rest of the setup process. Please wait.

Select the **Remove all** button and then click on the **Next** button.



Rosewill Wireless Network 11N USB adapter RNX-N1 - InstallShield Wizard

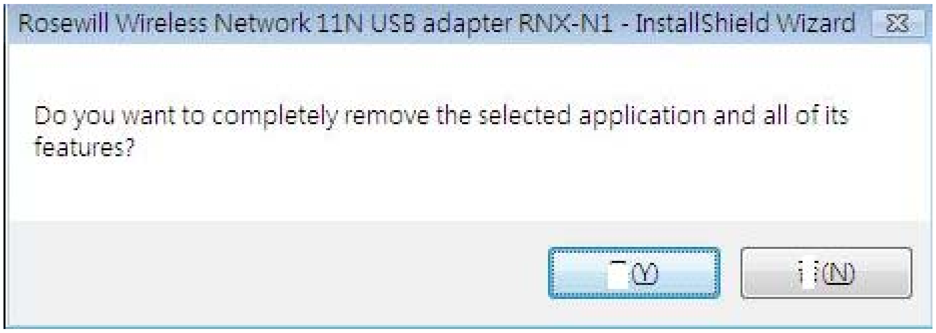
Please select one way to continue install.

There have existed an older version. Which way do you like to do?

Remove all.

Overwrite the older version install without remove.

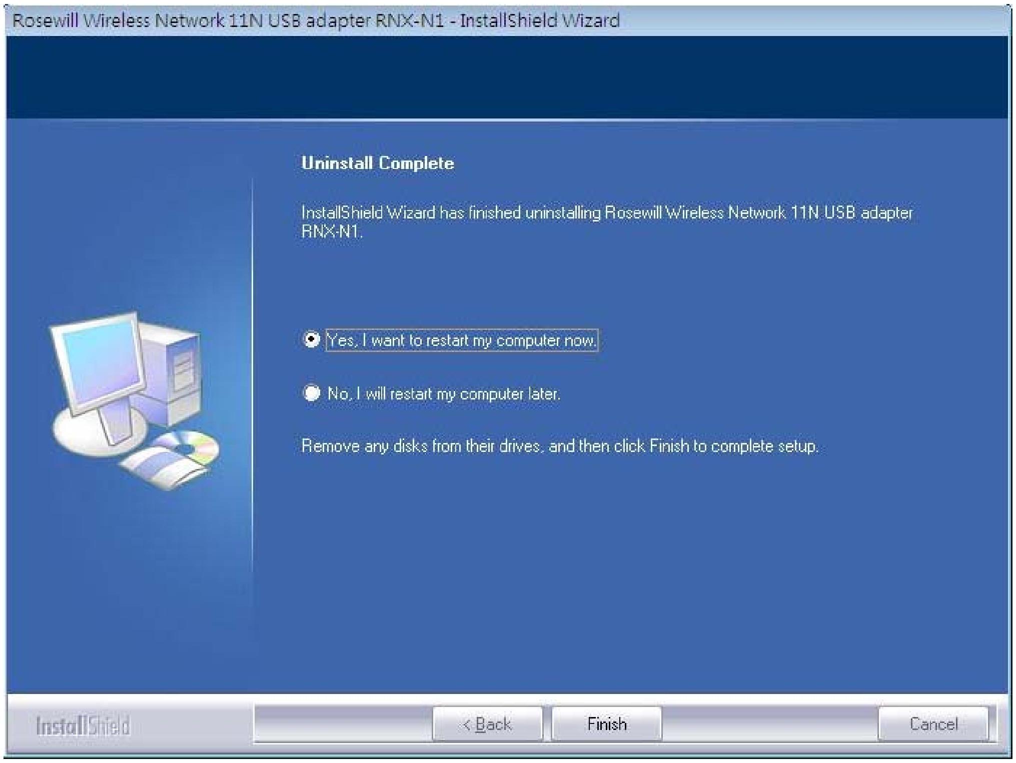
Click on the **Yes** button to confirm the un-installation process.



Rosewill Wireless Network 11N USB adapter RNX-N1 - InstallShield Wizard

Do you want to completely remove the selected application and all of its features?

The un-installation process is complete. Select **Yes, I want to restart my computer now** radio button and then click on the **Finish** button. Then remove the USB adapter.



Rosewill Wireless Network 11N USB adapter RNX-N1 - InstallShield Wizard

Uninstall Complete

InstallShield Wizard has finished uninstalling Rosewill Wireless Network 11N USB adapter RNX-N1.

● Yes, I want to restart my computer now.

○ No, I will restart my computer later.

Remove any disks from their drives, and then click Finish to complete setup.

3. USB ADAPTER FOR WINDOWS 2000/XP

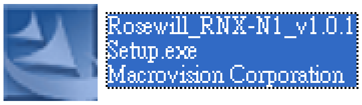
3.1 BEFORE YOU BEGIN

During the installation, 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.

3.2 INSTALLING THE DRIVERS

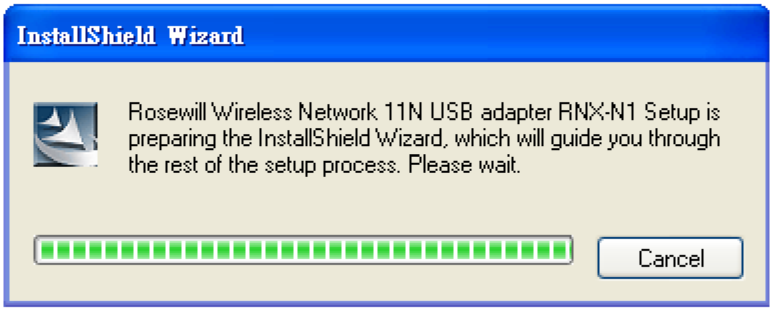
Follow the steps below in order to install the USB adapter drivers:

- 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.



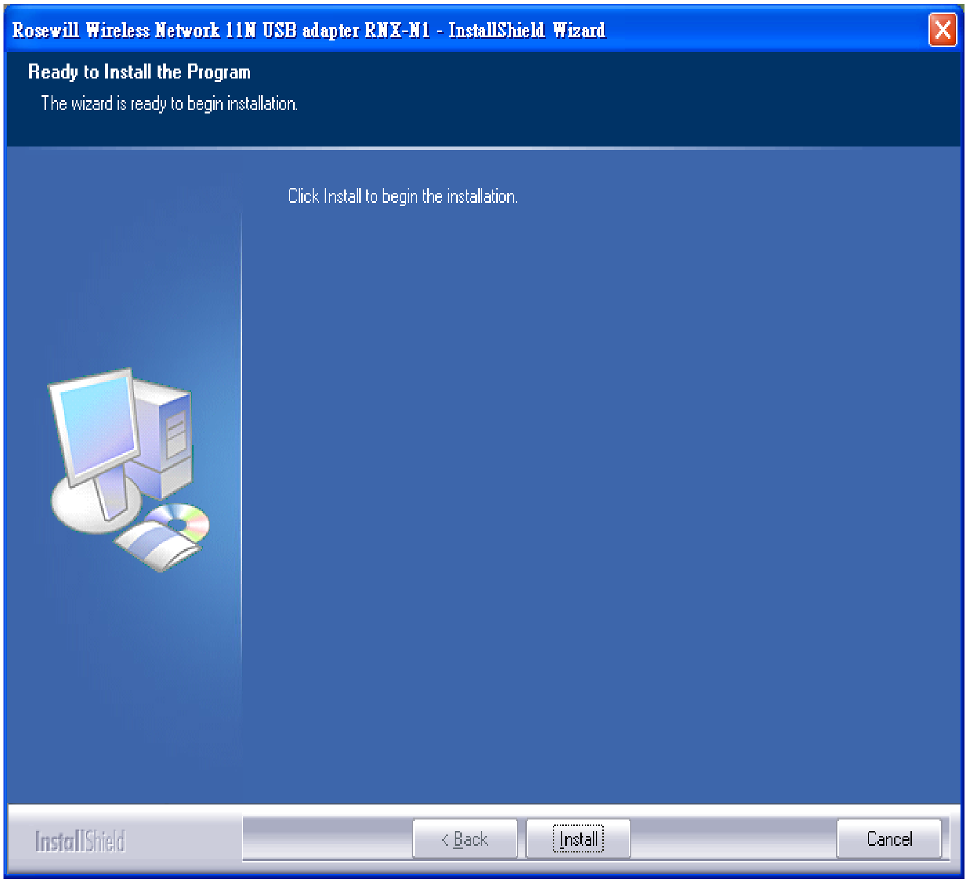
Rosewill_RNX-N1_v1.0.1
Setup.exe
Macrovision Corporation

- Once the setup begins you will see the **InstallShield Wizard.** Select **Rosewill Configuration Tool** and then click on the **Next>** button.



Rosewill Wireless Network 11N USB adapter RNX-N1 Setup is preparing the InstallShield Wizard, which will guide you through the rest of the setup process. Please wait.

- Click on the **Install** button to begin the installation.



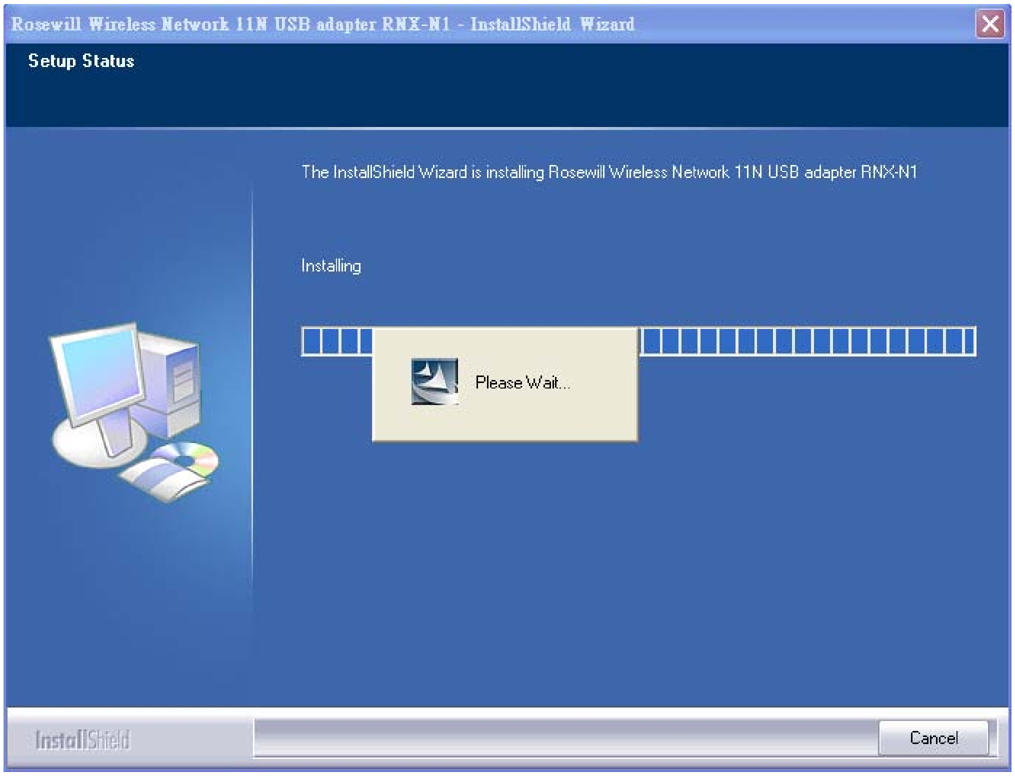
Rosewill Wireless Network 11N USB adapter RNX-N1 - InstallShield Wizard

Ready to Install the Program

The wizard is ready to begin installation.

Click Install to begin the installation.

- Wait for a few seconds until the driver and client utility is installed.



Rosewill Wireless Network 11N USB adapter RNX-N1 - InstallShield Wizard

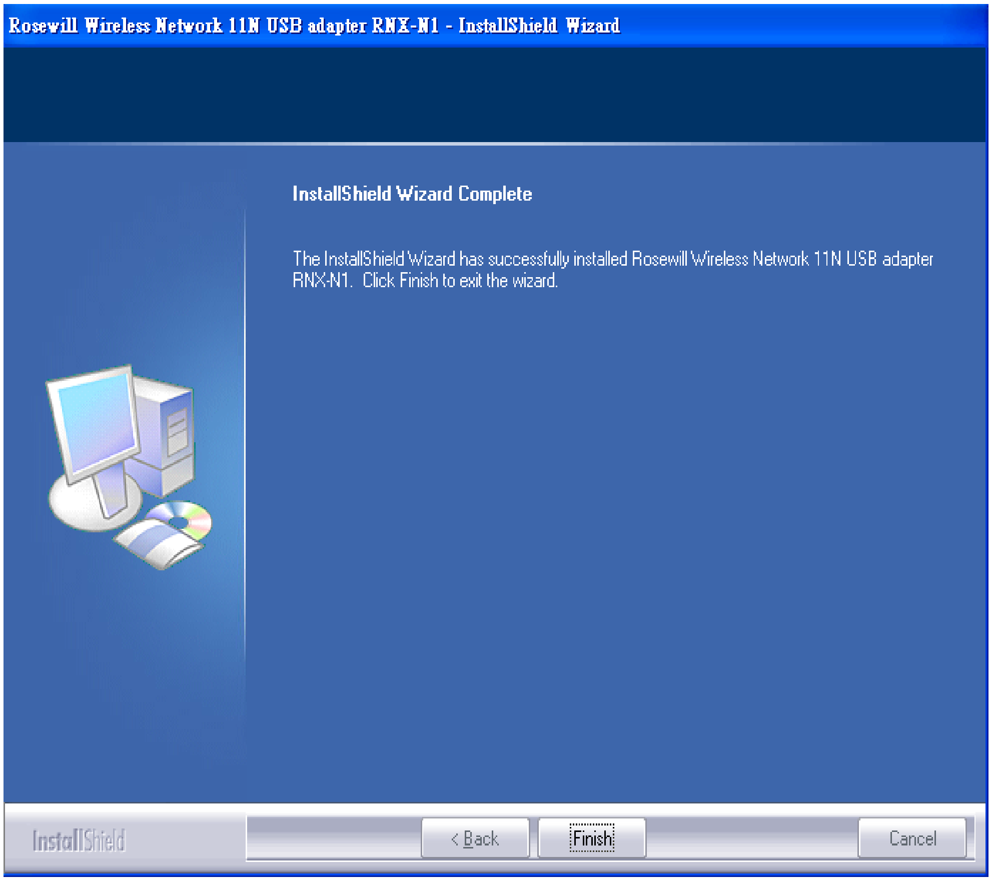
Setup Status

The InstallShield Wizard is installing Rosewill Wireless Network 11N USB adapter RNX-N1

Installing

Please Wait...

- The installation is complete. Click on the **Finish** button.



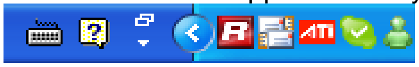
Rosewill Wireless Network 11N USB adapter RNX-N1 - InstallShield Wizard

InstallShield Wizard Complete

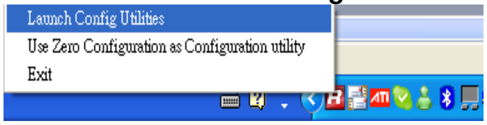
The InstallShield Wizard has successfully installed Rosewill Wireless Network 11N USB adapter RNX-N1. Click Finish to exit the wizard.

- **Carefully insert the USB adapter into the USB port. Windows will then detect and install the new hardware.**

- An **R** icon will then appear in the system tray. Right click on the **R** icon and



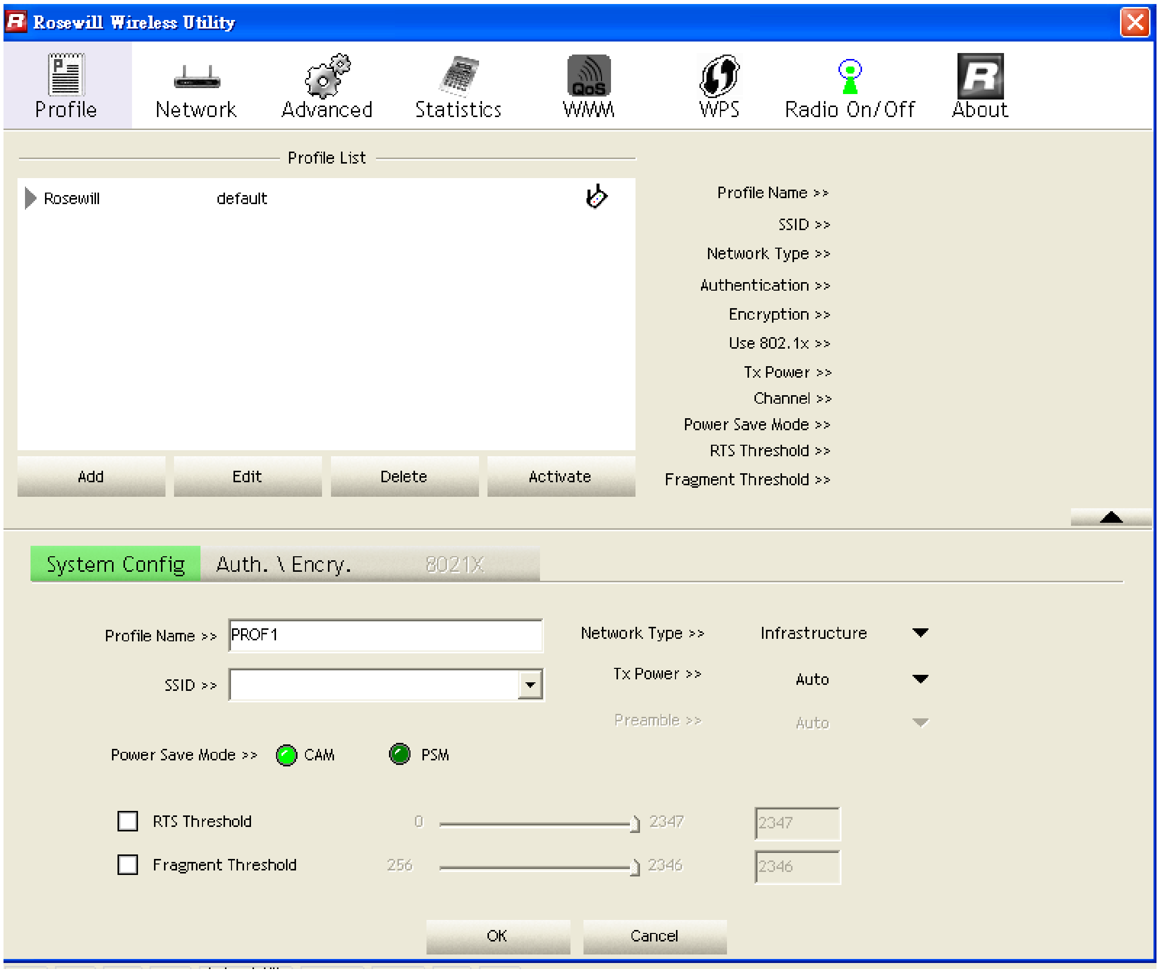
then click on **Launch Config Utilities.**



Note: Click on **Use Zero Configuration as Configuration Utility** if you would like to use Windows Zero Config.

3.3 PROFILES

The **Profile** tab is used to store the settings of multiple Access Points such as home, office, café, etc. When adding a profile you are required to enter a profile name and SSID as well as configure the power-saving mode, network type, RTS/fragmentation threshold and encryption/authentication settings. A profile can be configured as **Infrastructure** or **Ad-hoc** mode. The configuration settings for each mode are described below.



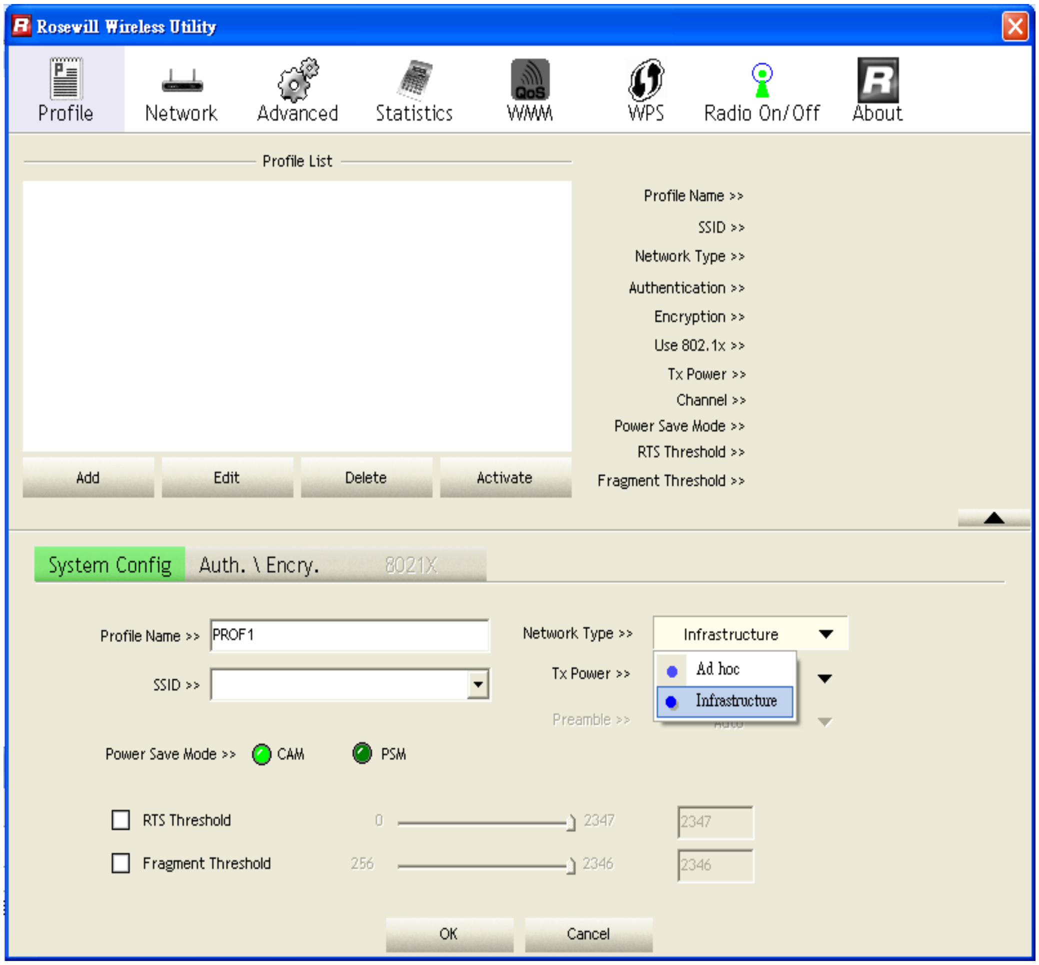
Profile List	
Rosewill	default

Profile Name >>
SSID >>
Network Type >>
Authentication >>
Encryption >>
Use 802.1x >>
Tx Power >>
Channel >>
Power Save Mode >>
RTS Threshold >>
Fragment Threshold >>

Profile Name >> PROF1
SSID >>
Network Type >> Infrastructure
Tx Power >> Auto
Preamble >> Auto
Power Save Mode >> ● CAM ● PSM
□ RTS Threshold 0 2347 2347
□ Fragment Threshold 256 2346 2346

3.3.1 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.



Profile Name >> PROF1

SSID >>

Network Type >> Infrastructure (Ad hoc / Infrastructure)

Tx Power >>

Preamble >> Auto

Power Save Mode >> ● CAM ● PSM

□ RTS Threshold 0 2347 2347

□ Fragment Threshold 256 2346 2346

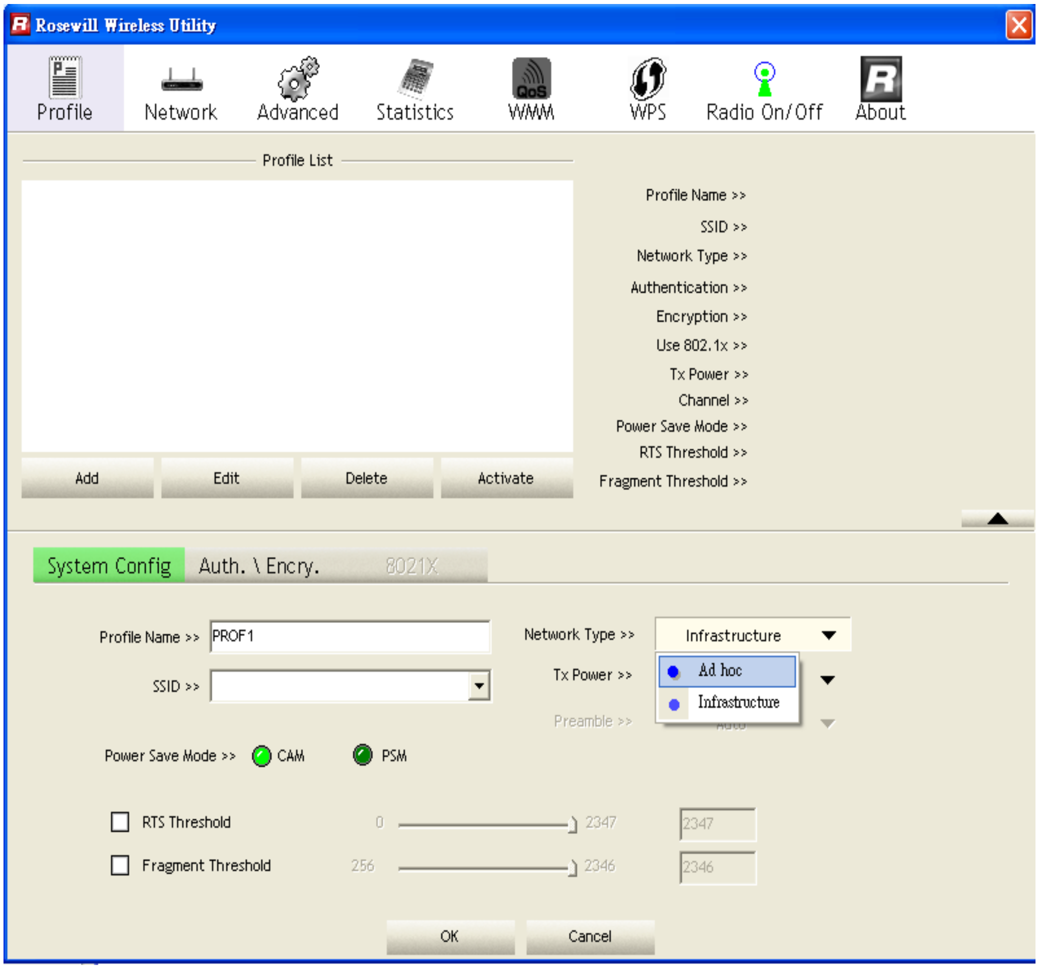
- **Profile**: Enter a name for the profile; this does not need to be the same as the SSID.
- **SSID**: Enter the SSID of the network or select one from the drop-down list. The SSID is a unique name shared among all points in your wireless network. The SSID must be identical for all points in the network, and is case-sensitive.
- **PSM**: Select a power saving mode (PSM) option.

1. **CAM (Continuously Awake Mode)**: Select this option if your notebook is always connected to the power supply.
2. **PSM (Power Saving Mode)**: Select this option if your notebook uses its battery power. This option minimizes the battery usage while the network is idle.

- **Network Type**: Select **Infrastructure** from the drop-down list.
- **TX Power**: Select a transmit power from the drop-down list. If your notebook is connected to external power then select **100%** or **auto**, if not, select one of the lower values for power saving.
- **RTS Threshold**: Place a check in this box if you would like to enable RTS Threshold. Any packet in the RTS/CTS handshake larger than the specified value (bytes) will be discarded.
- **Fragment Threshold**: Place a check in this box if you would like to enable Fragment Threshold. Any packet larger than the specified value (bytes) will be discarded.
- Click on the **OK** button to save the changes.

3.3.2 Ad-hoc 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.



Profile Name >> PROF1

SSID >>

Network Type >> Infrastructure

- Ad hoc
- Infrastructure

Tx Power >>

Preamble >> Auto

Power Save Mode >> ● CAM ● PSM

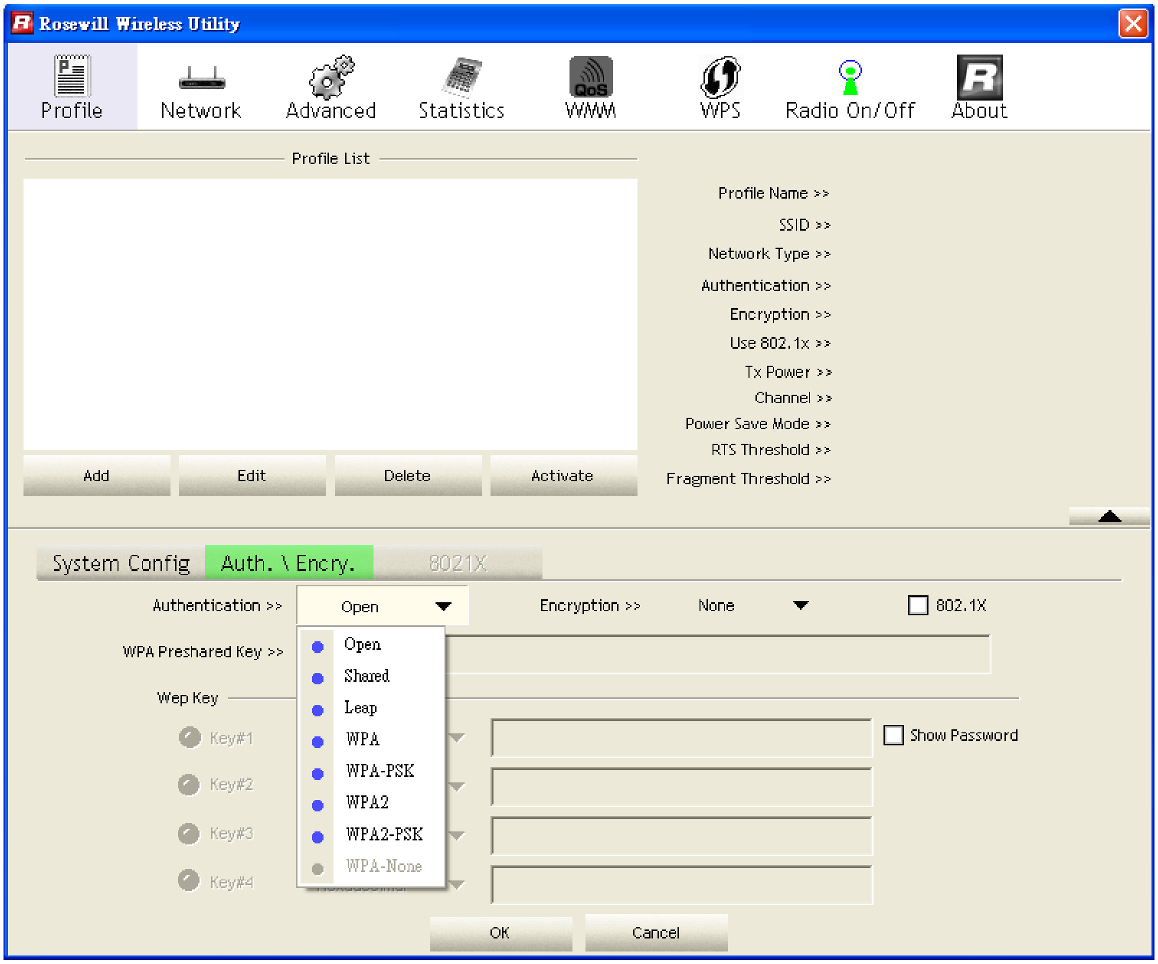
□ RTS Threshold 0 2347 2347

□ Fragment Threshold 256 2346 2346

- **Profile**: Enter a name for the profile; this does not need to be the same as the SSID.
- **SSID**: Enter the SSID of the network or select one from the drop-down list. 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.
- **Network Type**: Select **Ad-hoc** from the drop-down list.
- **TX Power**: Select a transmit power from the drop-down list. If your notebook is connected to external power then select 100% or auto, if not, select one of the lower values for power saving.
- Click on the **OK** button to save the changes.

3.4 AUTHENTICATION AND SECURITY

The **Security** tab allows you to configure the authentication and encryption settings such as: WEP, WPA, WPA-PSK, WPA2, and 802.1x. Each security option is described in detail below.



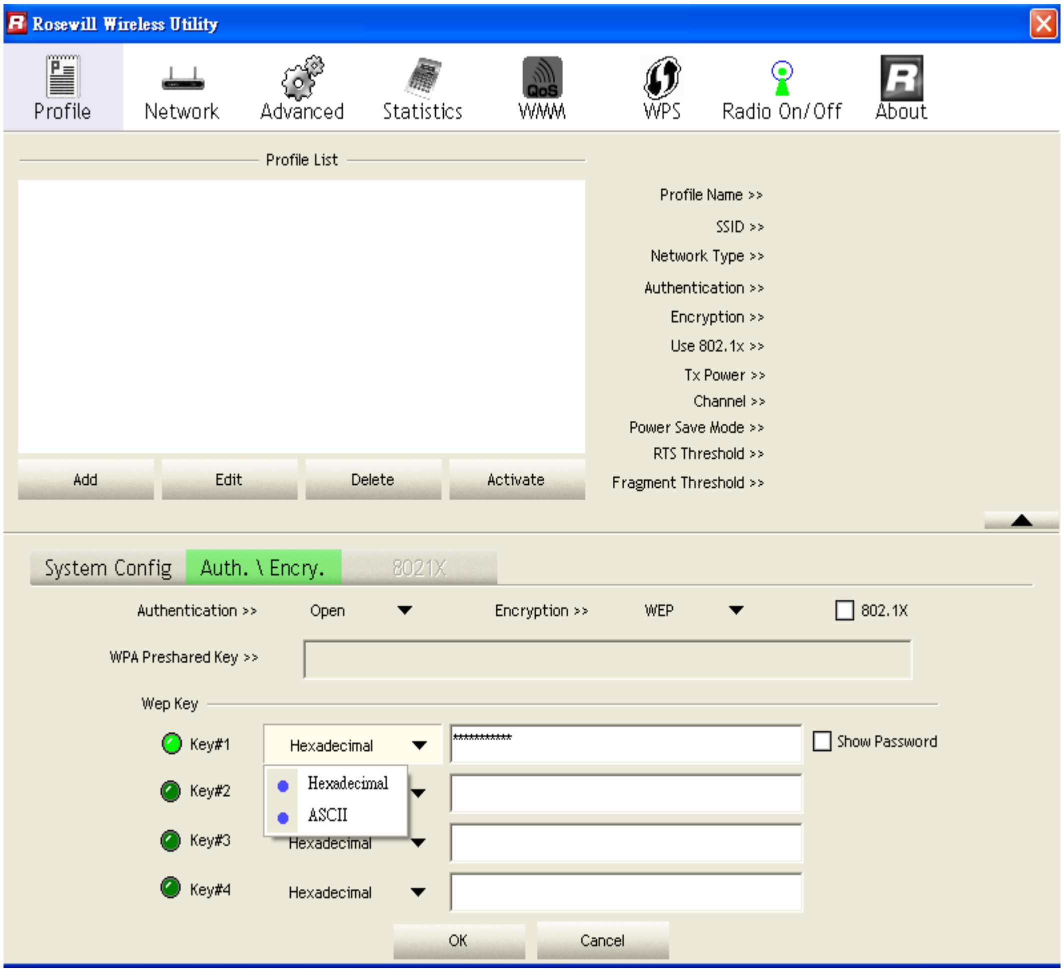
Authentication >> Open

Encryption >> None

□ 802.1X

3.4.1 WEP Encryption

The **WEP** tab displays the WEP settings. Encryption is designed to make the data transmission more secure. You may select 64 or 128-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. The following information is included in this tab, as the image depicts below.



Authentication >> Open

Encryption >> WEP

□ 802.1X

● Key#1 Hexadecimal ***********

○ Key#2 Hexadecimal

○ Key#3 Hexadecimal

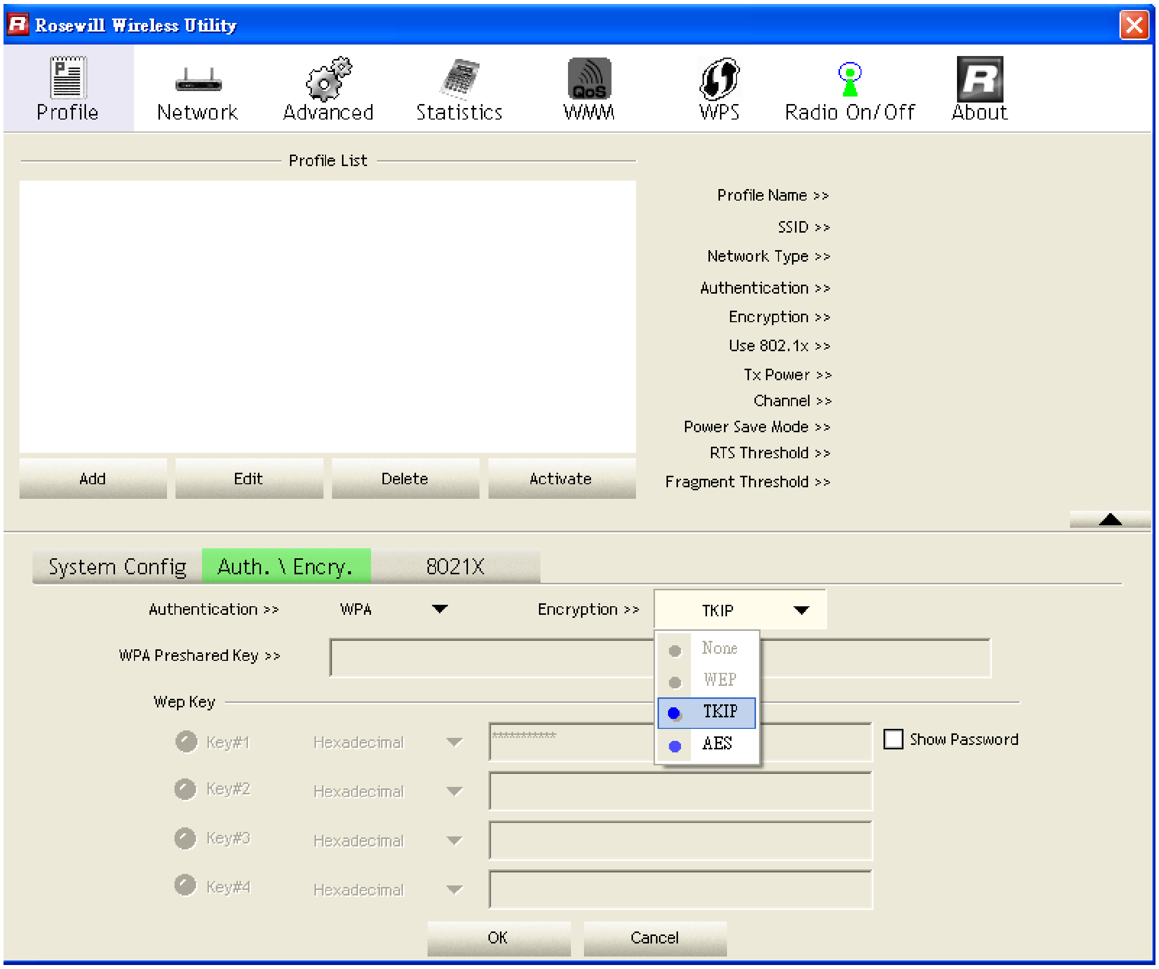
○ Key#4 Hexadecimal

□ Show Password

- **Authentication Type**: Select **Open** or **Shared** from the drop-down list.
- **Encryption**: Select **WEP** from the drop-down list.
- **WEP Key**: Type a character string into the field.
  For 64-bit enter 5 alphanumeric or 10 hexadecimal characters.
  For 128-bit enter 13 alphanumeric or 26 hexadecimal characters.
- Click on the **Apply** button to save the changes.
- **Show Password** check box. If you want to make sure the accuracy of password you type, click the **Show Password** box to check it.

3.4.2 WPA, WPA2 Authentication & TKIP, AES Encryption

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. 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.



Authentication >> WPA

Encryption >> TKIP

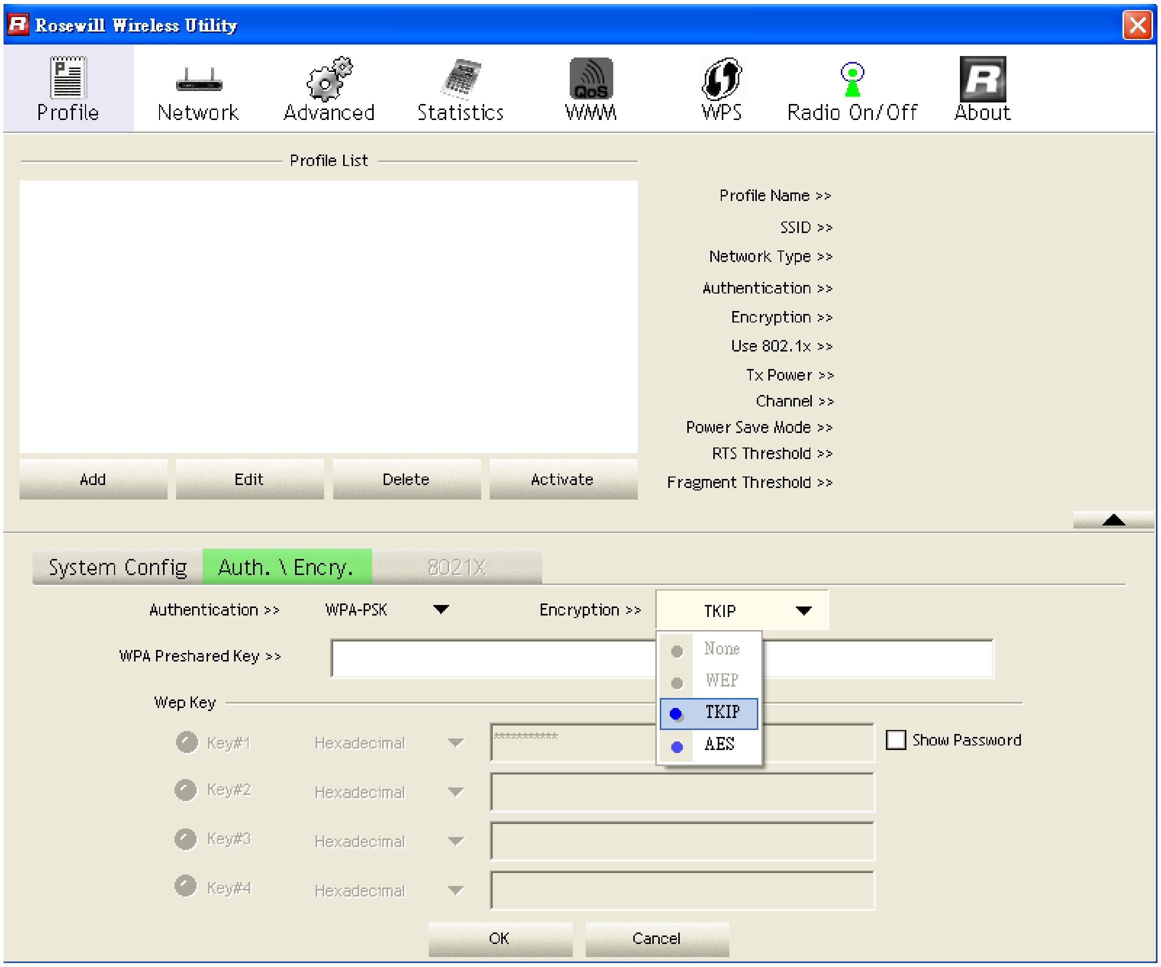
WPA Preshared Key >>

□ Show Password

- **Authentication Type**: Select **WPA** or **WPA2** from the drop-down list.
- **Encryption**: Select **TKIP** or **AES** from the drop-down list.
- Click on the **Apply** button to save the changes.
- **Show Password** check box. If you want to make sure the accuracy of password you type, click the **Show Password** box to check it.

3.4.3 WPA-PSK Authentication & TKIP, AES Encryption

WPA – PSK (Pre-shared Key) is used in a Pre Shared Key mode that does not require an authentication server. Access to the Internet and the rest of the wireless network services is allowed only if the pre-shared key of the computer matches that of the Access Point. This approach offers the simplicity of the WEP key, but uses stronger TKIP encryption. 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.



Authentication >> WPA-PSK

Encryption >> TKIP

WPA Preshared Key >>

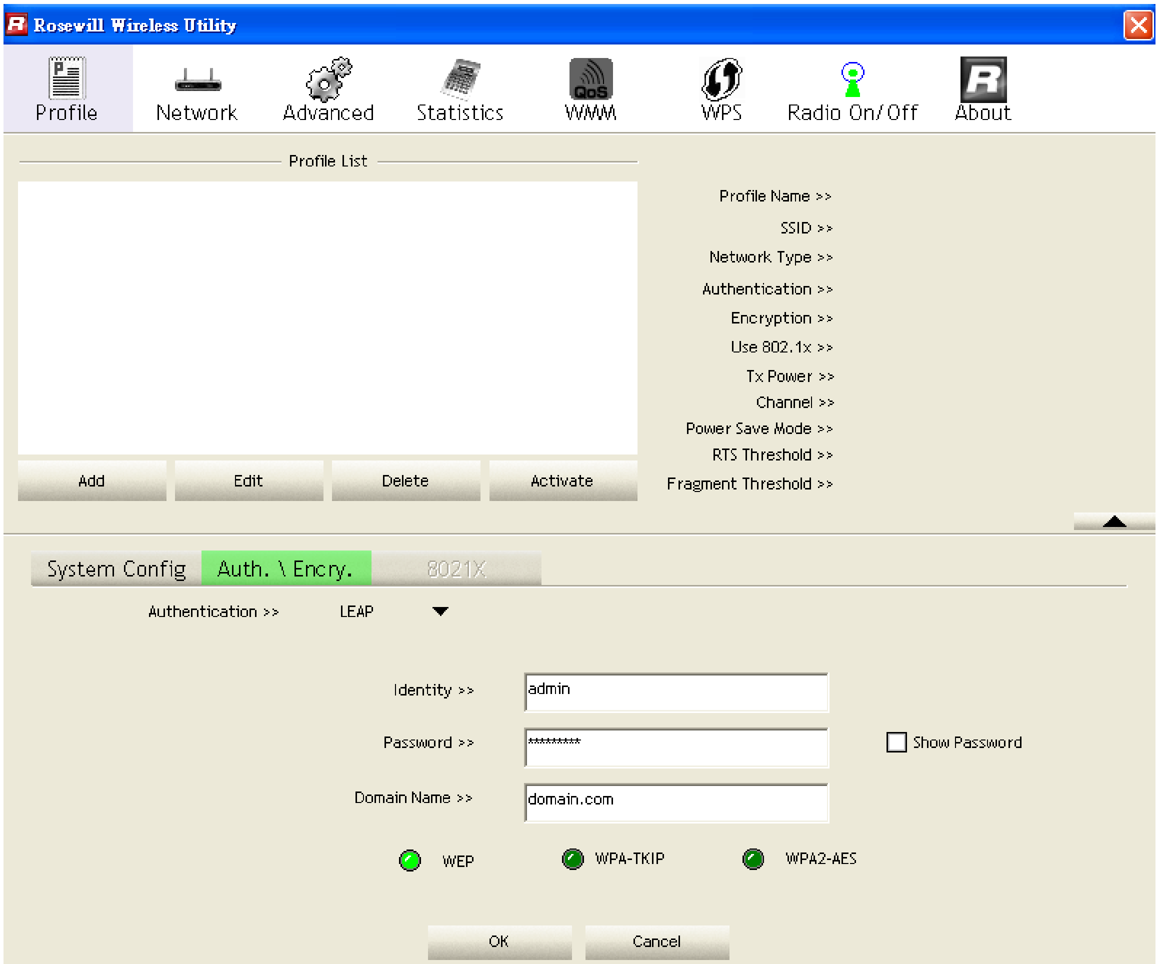
Key#1 Hexadecimal **********

□ Show Password

- **Authentication Type**: Select **WPA** or **WPA2** from the drop-down list.
- **Encryption**: Select **TKIP** or **AES** from the drop-down list.
- **WPA Preshared key**: Enter a pass phrase which is between 8 and 32 characters long.
- Click on the **Apply** button to save the changes.
- **Show Password** check box. If you want to make sure the accuracy of password you type, click the **Show Password** box to check it.

3.4.4 LEAP Authentication

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. 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



Authentication >> LEAP

Identity >> admin

Password >> *********

□ Show Password

Domain Name >> domain.com

● WEP ● WPA-TKIP ● WPA2-AES

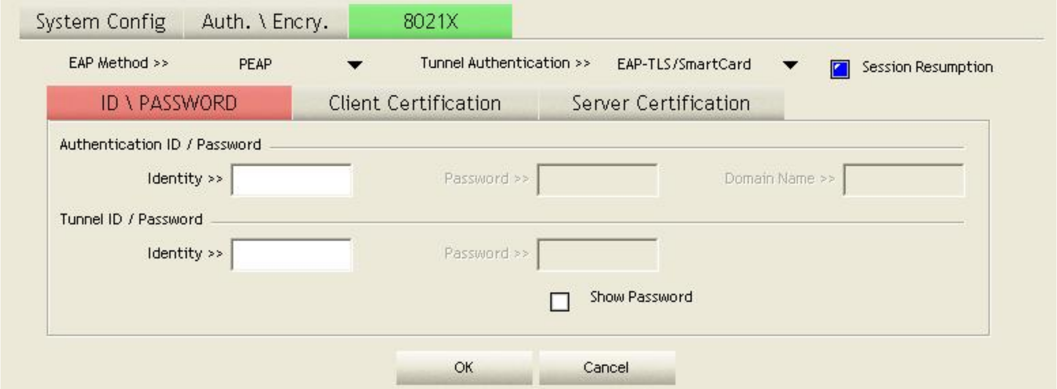
- **Authentication Type**: Select **LEAP** from the drop-down list.
- **Identity**: Enter the user name.
- **Password**: Enter the password.
- **Domain**: Enter a domain name.
- **Encryption**: Select **WEP, WPA-TKIP** or **WPA2-AES** encryption.
- Click on the **OK** button to save the changes.

3.4.5 802.1x with PEAP

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.

3.4.5.1 PEAP AUTHENTICATION WITH EAP/TLS SMARTCARD

EAP/TLS Smartcard provides for certificate-based and mutual authentication of the client and the network. It relies on client-side and server-side certificates to perform authentication and can be used to dynamically generate user-based and session-based WEP keys to secure subsequent communications between the WLAN client and the access point.



EAP Method >> PEAP

Tunnel Authentication >> EAP-TLS/SmartCard

☑ Session Resumption

Authentication ID / Password

Identity >>

Password >>

Domain Name >>

Tunnel ID / Password

Identity >>

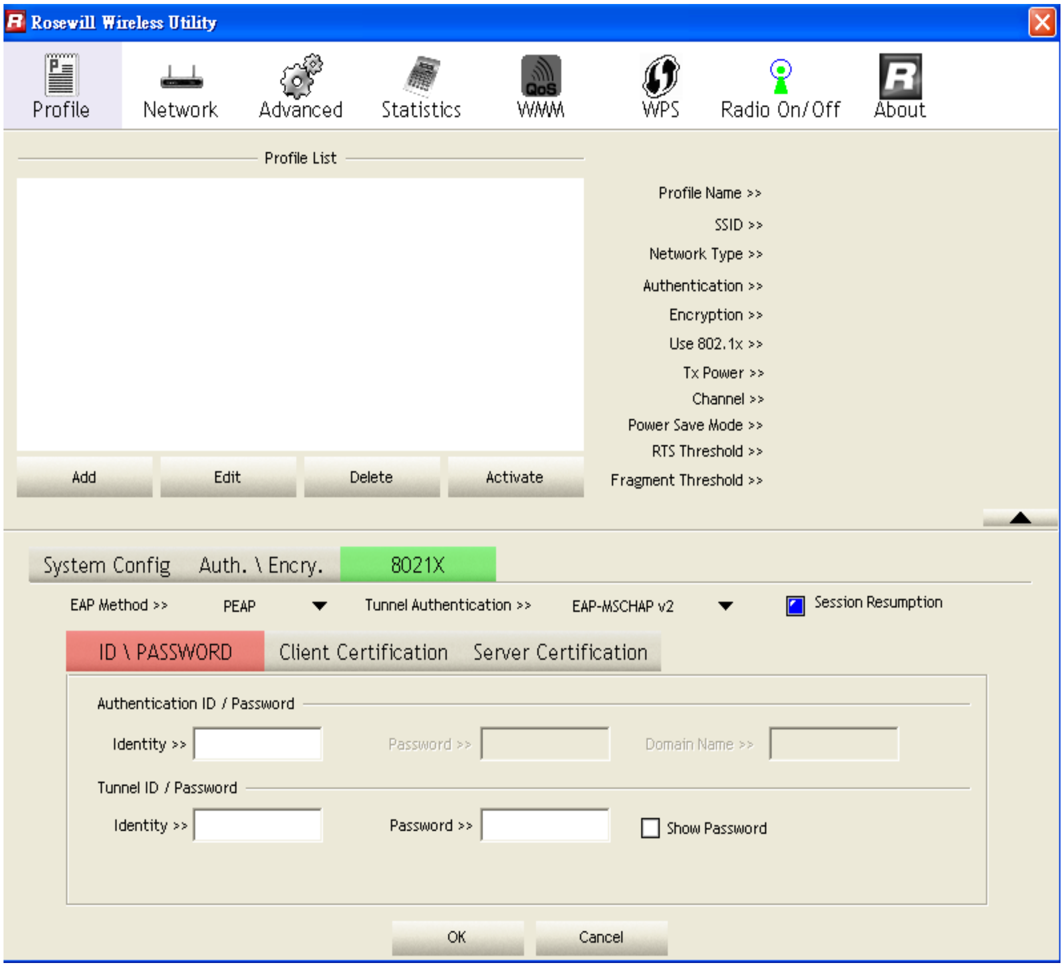
Password >>

□ Show Password

- **Authentication Type**: Select **PEAP** from the drop-down list.
- **Protocol**: If your network uses TLS or Smart Card to authenticate its users, select **TLS/Smartcard** 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.
- **Identity**: Enter the user name.
- Click on the **OK** button to save the changes.

3.4.6 802.1x with TTLS with EAP-MD5, MS-CHAP, MS-CHAPv2

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. 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.



EAP Method >> PEAP

Tunnel Authentication >> EAP-MSCHAP v2

☑ Session Resumption

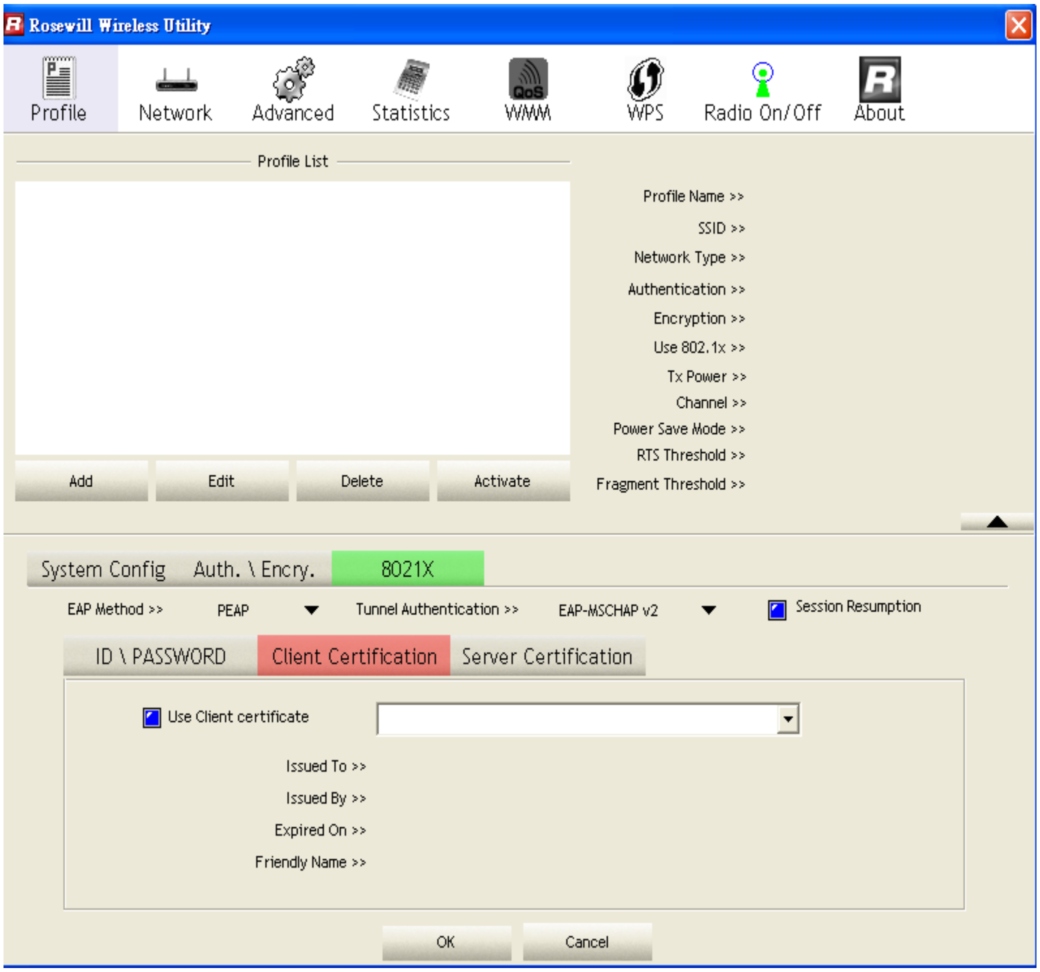
Authentication ID / Password: Identity >> Password >> Domain Name >>

Tunnel ID / Password: Identity >> Password >> □ Show Password

- **Authentication Type:** Select **TTLS** from the drop-down list.
- **Protocol**: Select **EAP-MSCHAP v2, MS-CHAP**, or **CHAP** from the drop-down list.
- **Identity**: Enter the user name.
- **Password**: Enter the password.
- Click on the **OK** button to save the changes.

3.4.7 802.1x CA Server

Depending on the EAP in use, only the server or both the server and client may be authenticated and require a certificate. Server certificates identify a server, usually an authentication or RADIUS server to clients. Most EAPs require a certificate issued by a root authority or a trusted commercial Certificate Authority.



Profile Name >>

SSID >>

Network Type >>

Authentication >>

Encryption >>

Use 802.1x >>

Tx Power >>

Channel >>

Power Save Mode >>

RTS Threshold >>

Fragment Threshold >>

EAP Method >> PEAP

Tunnel Authentication >> EAP-MSCHAP v2

☑ Session Resumption

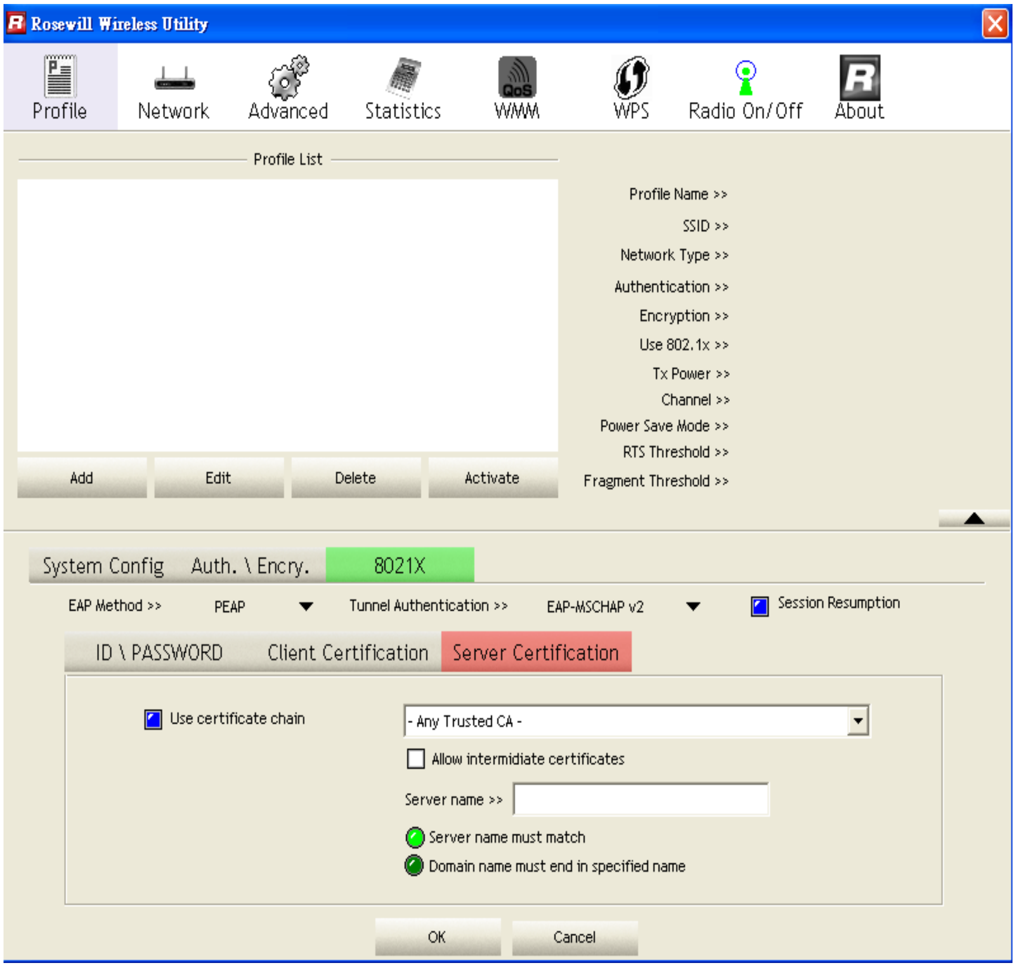
☑ Use Client certificate

Issued To >>

Issued By >>

Expired On >>

Friendly Name >>



EAP Method >> PEAP

Tunnel Authentication >> EAP-MSCHAP v2

☑ Session Resumption

☑ Use certificate chain

- Any Trusted CA -

□ Allow intermidiate certificates

Server name >>

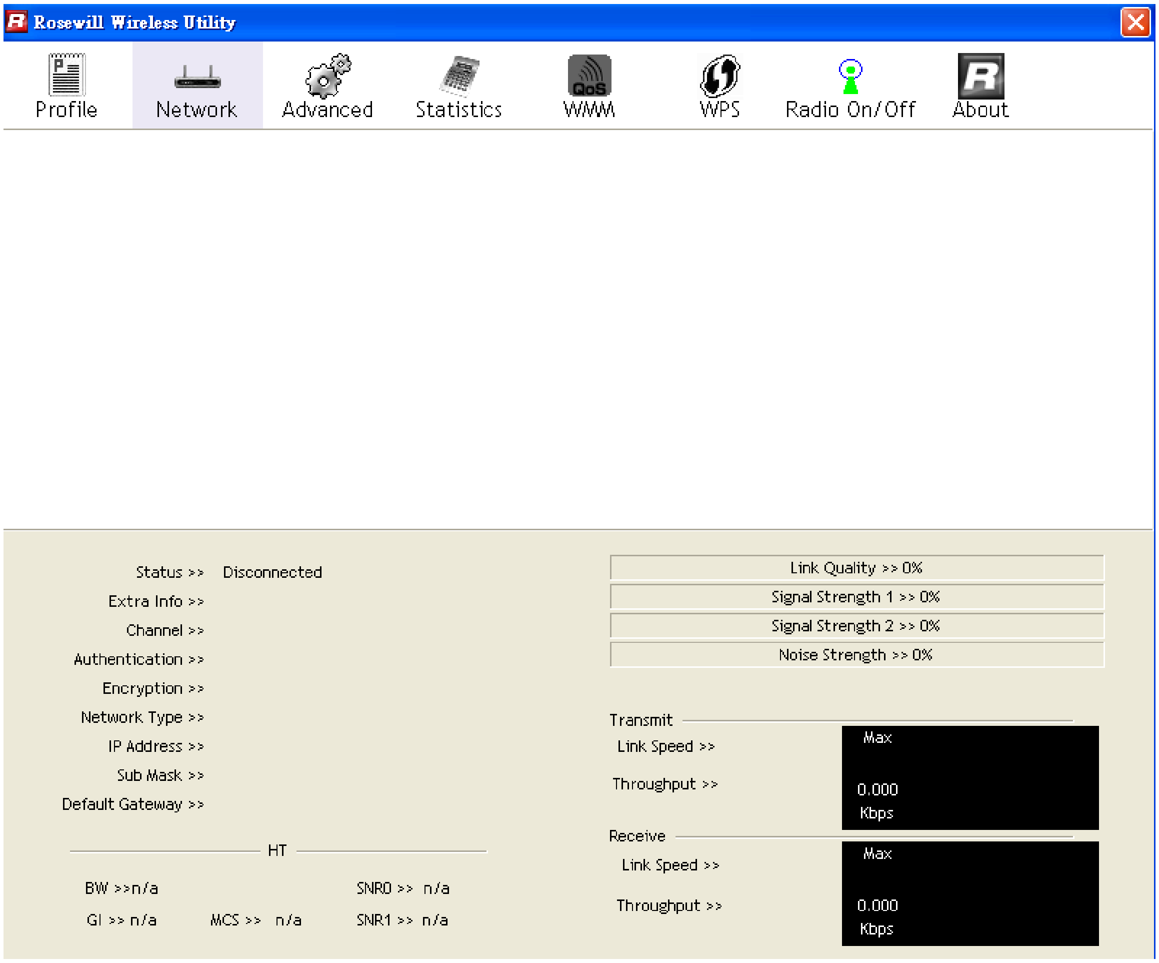
● Server name must match

● Domain name must end in specified name

- **Use certificate chai**n: Place a check in this to enable the certificate use.
- **Certificate issuer**: Select the Certification Authority from the drop-down list.
- **Allow intermediate certificates**: During tunnel creation the client must verify the server's certificate. When checking this certificate the signature is verified against a list of trusted certificate authorities. If this parameter is true then the client will also accept a signature from a trusted intermediate certificate authority, otherwise it will not.
- **Server name:** Enter the server name if not selected from the existing drop-down list above.
- Click on the **OK** button to save the changes.

3.5 NETWORK

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



Status >> Disconnected
Extra Info >>
Channel >>
Authentication >>
Encryption >>
Network Type >>
IP Address >>
Sub Mask >>
Default Gateway >>

HT

BW >>n/a
SNR0 >> n/a
GI >> n/a
MCS >> n/a
SNR1 >> n/a

Link Quality >> 0%
Signal Strength 1 >> 0%
Signal Strength 2 >> 0%
Noise Strength >> 0%

Transmit
Link Speed >>
Throughput >>
Max
0.000
Kbps

Receive
Link Speed >>
Throughput >>
Max
0.000
Kbps

- **Status**: This indicates the state of the client. There are three options:

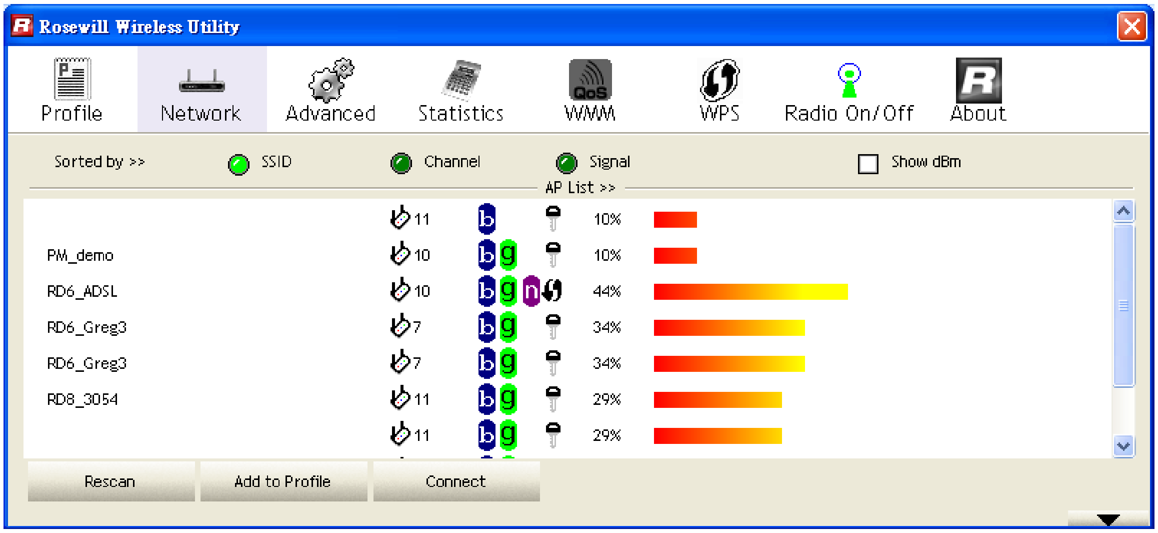
1. **Associated:** Indicates that the wireless client is connected to an Access Point (AP). The BSSID is shown in the form of 12 HEX digits, which is the MAC address of the AP.
2. **Scanning**: Indicates that the wireless client is searching for an AP in the area.
3. **Disconnected**: Indicates that there are no APs or clients in the area.

- **Extra Info**: Displayed here are information about the link stats and the percent of output power.
- **Channel**: The operating frequency channel that the client is using (infrastructure mode).
- **Authentication**: Displays the authentication type.
- **Encryption**: Displays the encryption type.
- **Network Type**: Displays the network type; infrastructure or ad-hoc.
- **IP Address**: Displays the IP address.
- **Sub Mask**: Displays the subnet mask IP address.
- **Default Gateway**: Displays the IP address of the default gateway.
- **Link Speed**: The current rate at which the client is transmitting and receiving.
- **Transmit/ReceiveThroughput**: Displays the Tx (transmit) and Rx (receive) kilo-bytes per second.
- **Link Quality**: In infrastructure mode, this bar displays the transmission quality between an AP and a client. In Ad-hoc mode, this bar displays the transmission quality between one client, and another.
- **Signal Strength**: This bar displays the strength of the signal received from an AP or client.

- **Noise Level**: Displays the background noise level; a lower level indicates less interference.
- Click on the **OK** button to close this window.

3.5.1 Site Survey

The **Network** tab also displays a list of Access Points and Stations in the area, and allows you to connect to a specific one. The following information is included in this tab, as the image depicts below.

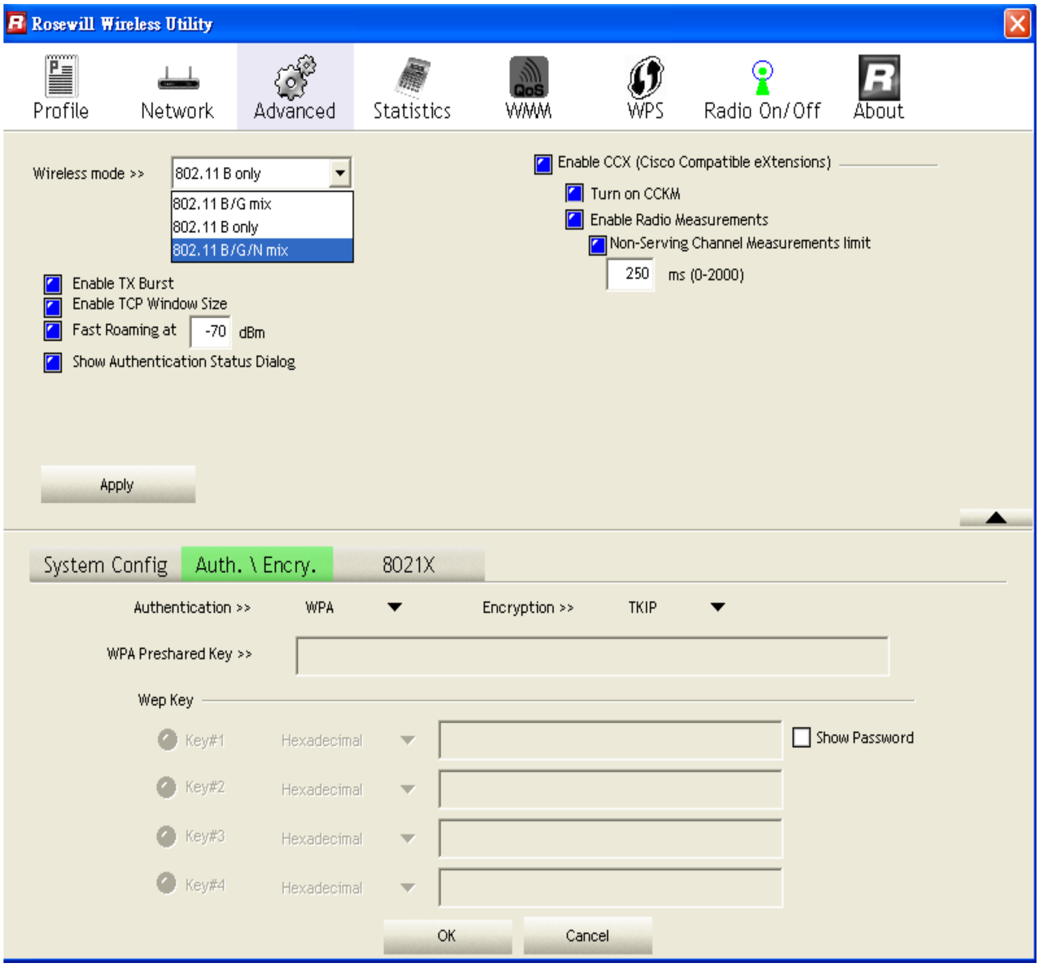


	11	b	10%
PM_demo	10	bg	10%
RD6_ADSL	10	bgn	44%
RD6_Greg3	7	bg	34%
RD6_Greg3	7	bg	34%
RD8_3054	11	bg	29%
	11	bg	29%

- **SSID:** Displays the SSID of the Access Point. 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.
- **Channel**: Displays the channel number of the Access Point.
- **Encryption:** Displays the encryption on the Access Point, this includes WEP, TKIP, AES or None.
- Signal: Displays the receiving signal strength from the Access Point.
- **Rescan**: Click on this button to view a list of Access Points in the area.
- **Connect**: to connect with a specific Access Point, select the SSID from the list, and then click on the Connect button.
- **Add to Profile:** Click on this button to add the SSID and its associated settings into a profile.
- Click on the **OK** button if you have made any changes.

3.6 ADVANCED CONFIGURATION

The **Advanced tab** is used to configure the wireless mode (802.11g, 802.11b/g-mixed, or 802.11b/g/n-mixed), Tx burst, and CCX.



Wireless mode >> 802.11 B only
802.11 B/G mix
802.11 B only
802.11 B/G/N mix

☑ Enable TX Burst
☑ Enable TCP Window Size
☑ Fast Roaming at -70 dBm
☑ Show Authentication Status Dialog

☑ Enable CCX (Cisco Compatible eXtensions)
☑ Turn on CCKM
☑ Enable Radio Measurements
☑ Non-Serving Channel Measurements limit
250 ms (0-2000)

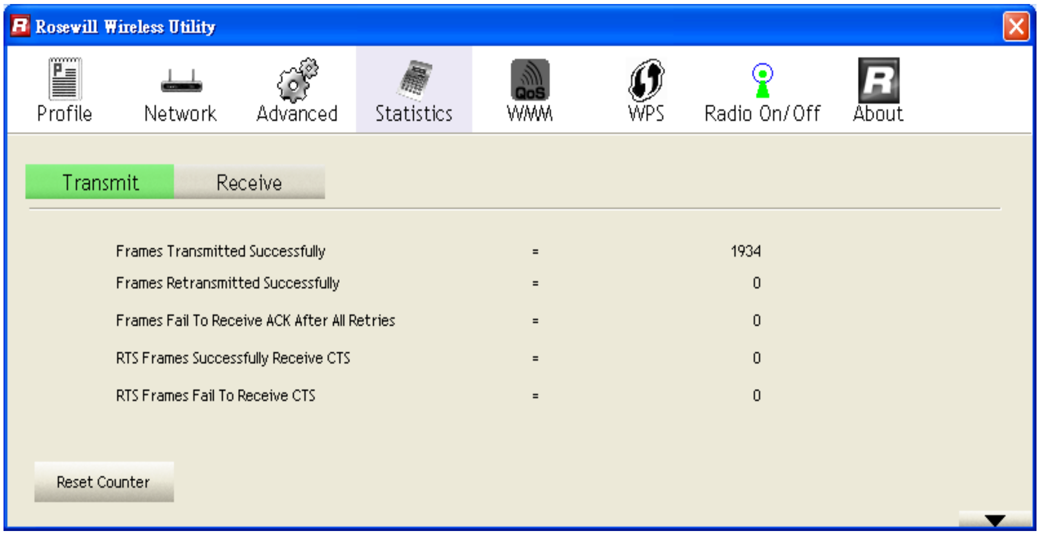
Authentication >> WPA
Encryption >> TKIP
WPA Preshared Key >>

Wep Key
○ Key#1 Hexadecimal
○ Key#2 Hexadecimal
○ Key#3 Hexadecimal
○ Key#4 Hexadecimal
□ Show Password

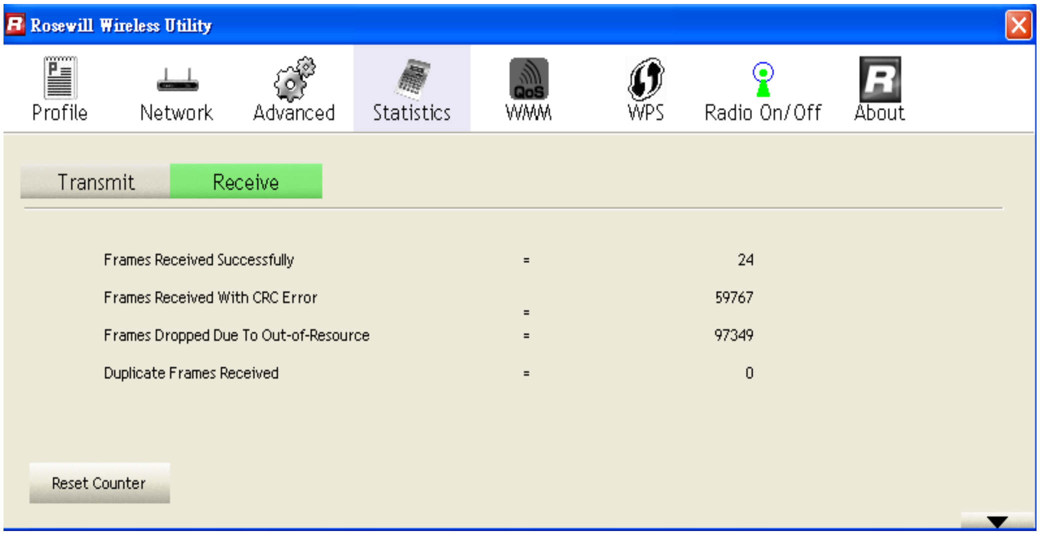
- **Wireless mode**: Select **802.11 b/g/n** mix if the wireless network uses both 11b, 11g, and 11n stations and APs. **B/G Protection**: This is the ERP protection mode of 802.11g. Selecting **auto** will dynamically send frames with and without protection. Select **On** to send a frame without protection, and **Off** to send it with protection.
- **Enable Tx BURST**: Click the check box will enhance the throughput
- **Enable TCP Window Size**: Enhance the throughput if enable this function.
- **CCX**: Enable this option if the network supports Cisco Compatible Extensions.
- Click on the **Apply** button to close this window.

3.7 STATISTICS

The **Statistics** tab displays transmit and receive packet statistics in real-time. Information included is frames transmitted/received successfully, transmitted successfully without and after retry, received with CRC error, duplicate frames received, etc.



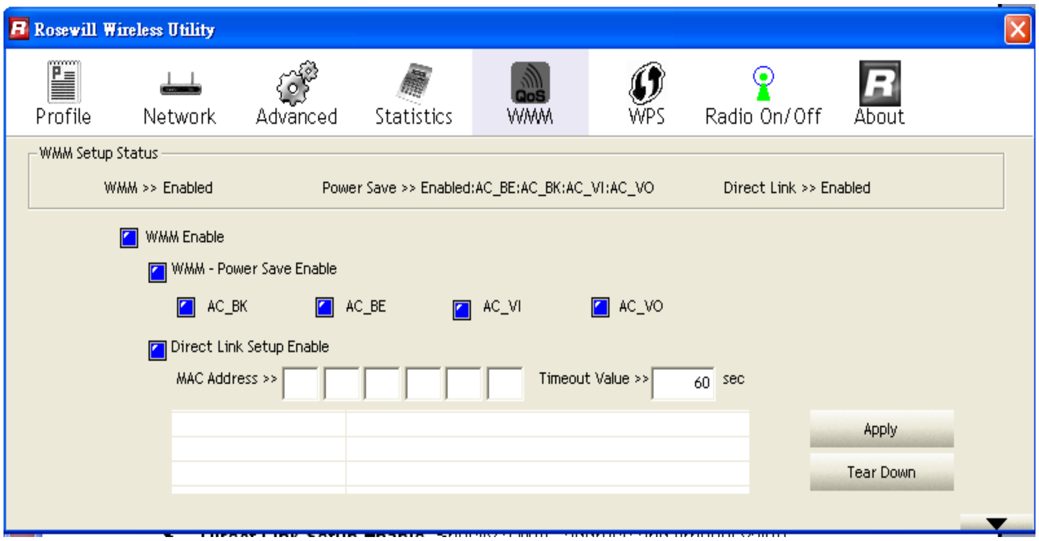
Frames Transmitted Successfully = 1934
Frames Retransmitted Successfully = 0
Frames Fail To Receive ACK After All Retries = 0
RTS Frames Successfully Receive CTS = 0
RTS Frames Fail To Receive CTS = 0



Frames Received Successfully = 24
Frames Received With CRC Error = 59767
Frames Dropped Due To Out-of-Resource = 97349
Duplicate Frames Received = 0

3.8 WMM (WIRELESS MULTIMEDIA)

Click on the **WMM** tab. Wireless Multimedia Extensions (WME), also known as Wi-Fi Multimedia (WMM) is a Wi-Fi Alliance interpretability certification, based on the IEEE 802.11e draft standard. It provides basic Quality of service (QoS) features to IEEE 802.11 networks. WMM prioritizes traffic according to 4 AC (Access Categories), however it does not provide guaranteed throughput. It is suitable for simple applications that require QoS, such as Wi-Fi Voice over IP (VoIP) phone.



WMM Setup Status

WMM >> Enabled   Power Save >> Enabled:AC_BE:AC_BK:AC_VI:AC_VO   Direct Link >> Enabled

☑ WMM Enable

☑ WMM - Power Save Enable

☑ AC_BK   ☑ AC_BE   ☑ AC_VI   ☑ AC_VO

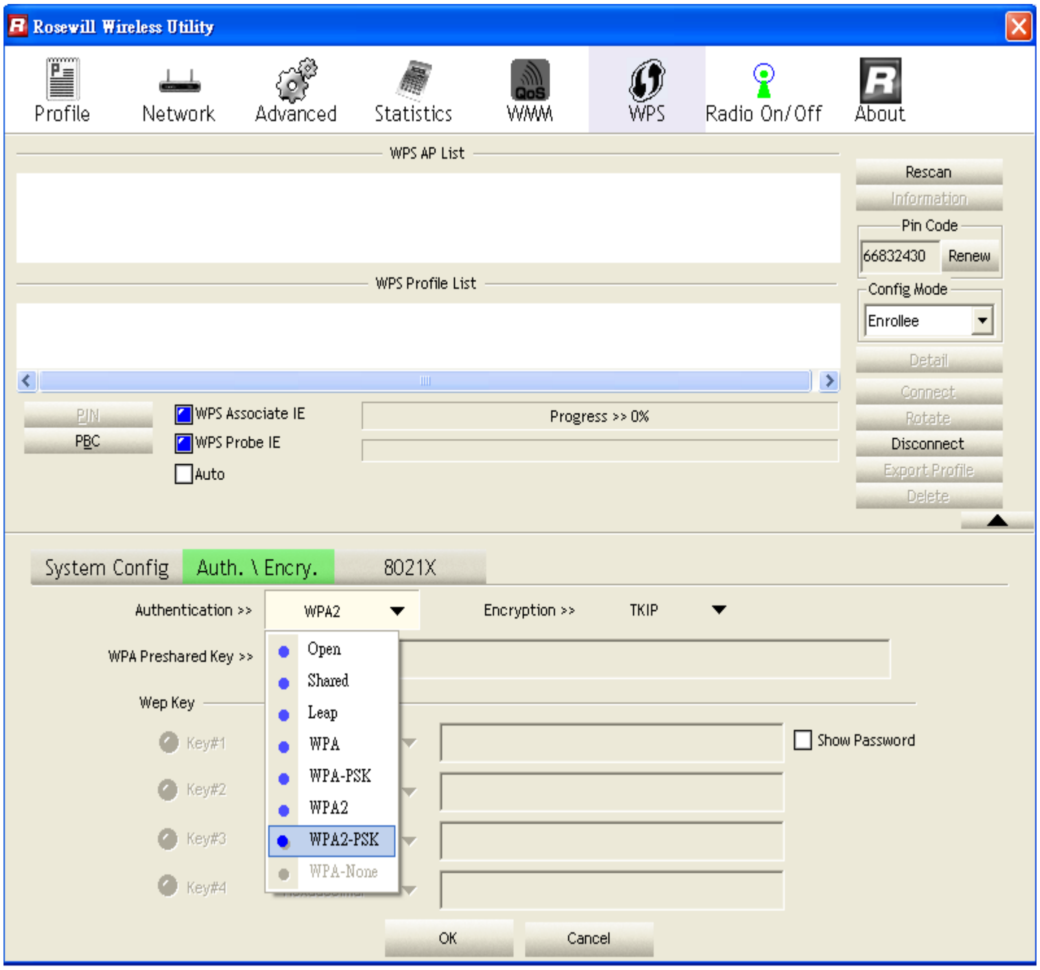
☑ Direct Link Setup Enable

MAC Address >>   Timeout Value >> 60 sec

- **WMM Enable**: Choose to enable or disable WMM.
- **WMM Power Save Enable**: Choose to enable or disable power save mode on WMM.
- **Direct Link Setup Enable**: Specify a MAC address and timeout value.
- Click on the **Apply** button to close this window.

3.9 WPS

WPS (Wireless Push Button) is used for WiFi Protected Setup. By pressing this button, the security settings of the device will automatically synchronize with other wireless devices on your network that support Wi-Fi Protected Setup.



Pin Code: 66832430 Renew

Config Mode: Enrollee

☑ WPS Associate IE

☑ WPS Probe IE

☐ Auto

Progress >> 0%

Authentication >> WPA2

Encryption >> TKIP

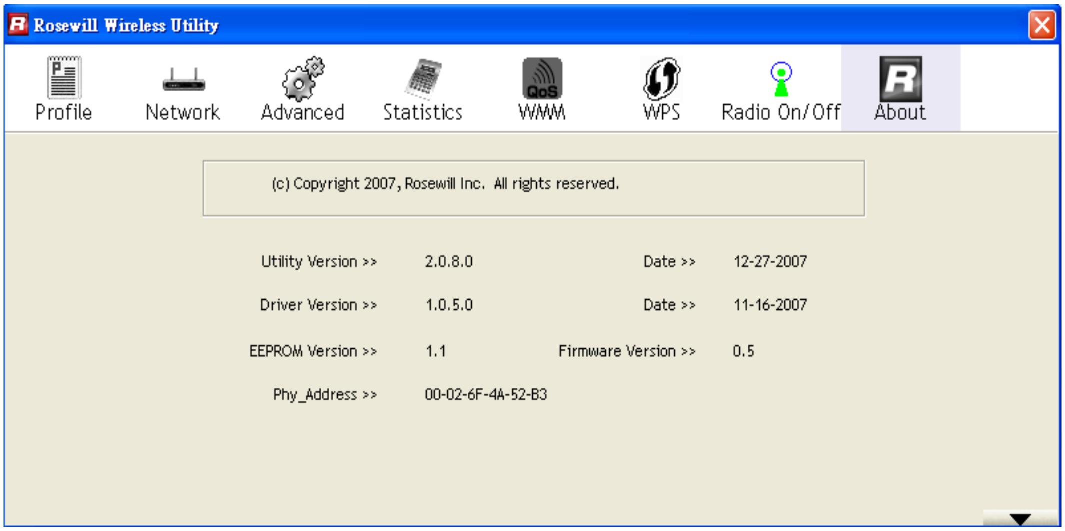
WPA Preshared Key >>

☐ Show Password

- **Rescan:** Click on this button to view a list of Access Points in the area.
- **WPS Information:** Display the information about WPS on the selected network. List information include Authentication Type, Encryption Type, Config Methods, Device Password ID, Selected Registrar, State, Version, AP Setup Locked, UUID-E and RF Bands
- **Pin Code:** 8-digit numbers. It is required to enter PIN Code into **Registrar** using PIN method. When RNX-N2X is **Enrollee**, you can use "Renew" button to re-generate new PIN Code.
- **Config Mode:** The RNX-N2X role-playing as an **Enrollee** or an external **Registrar**
- **Detail:** Information about Security and Key in the credential.
- **Connect:** Command to connect to the selected network inside credentials. The active selected credential is as like as the active selected Profile.
- **Rotate:** Command to rotate to connect to the next network inside credentials.
- **Disconnect:** Stop WPS action and disconnect this active link. And then select the last profile at the Profile Page of RaUI if exist. If there is an empty profile page, the driver will select any non-security AP.
- **Export Profile:** Export all credentials to Profile.
- **PBC:** Start to add to AP using PBC configuration method.
- **WPS Associate IE:** Send the association request with WPS IE during WPS setup. It is optional for RNX-2X
- **WPS Probe IE:** Send the probe request with WPS IE during WPS setup. It is optional for RNX-2X
- Click on the **OK** button if you have made any changes.

3.10 ABOUT

The **About** tab displays information about the device, such as: the network driver version and date, configuration utility version and date, and the NIC (Network Interface Card) firmware version and date.



(c) Copyright 2007, Rosewill Inc. All rights reserved.

Utility Version >> 2.0.8.0 Date >> 12-27-2007

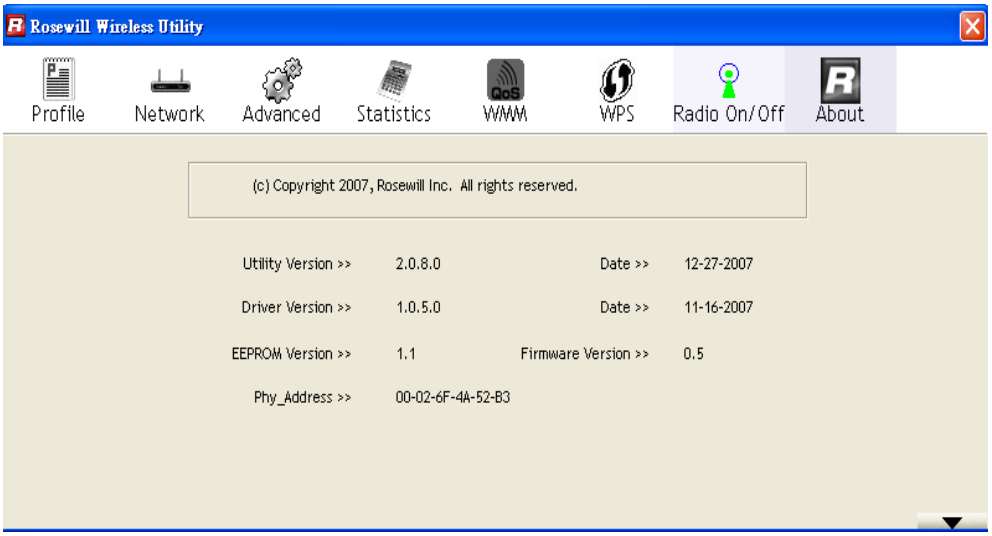
Driver Version >> 1.0.5.0 Date >> 11-16-2007

EEPROM Version >> 1.1 Firmware Version >> 0.5

Phy_Address >> 00-02-6F-4A-52-B3

3.11 RADIO

The **Radio** tab allows you to enable or disable the radio.



(c) Copyright 2007, Rosewill Inc. All rights reserved.

Utility Version >> 2.0.8.0 Date >> 12-27-2007

Driver Version >> 1.0.5.0 Date >> 11-16-2007

EEPROM Version >> 1.1 Firmware Version >> 0.5

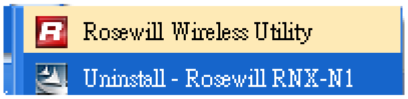
Phy_Address >> 00-02-6F-4A-52-B3

3.12 UNINSTALL THE DRIVERS & CLIENT UTILITY

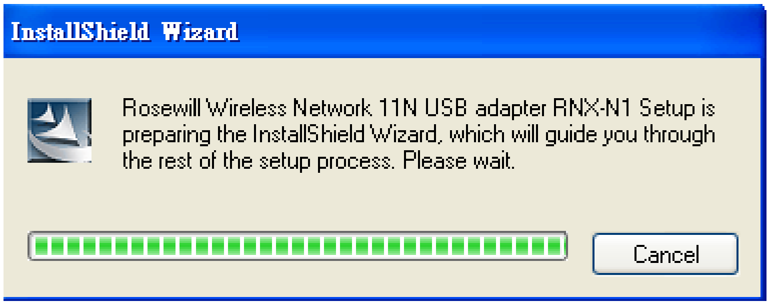
If the USB client adapter installation is unsuccessful for any reason, the best way to solve the problem may be to completely uninstall the USB adapter and its utility and repeat the installation procedure again.

Follow the steps below in order to uninstall the client utility:

- Click on **Start > Rosewill Wireless > Uninstall Rosewill Wireless USB Adapter**

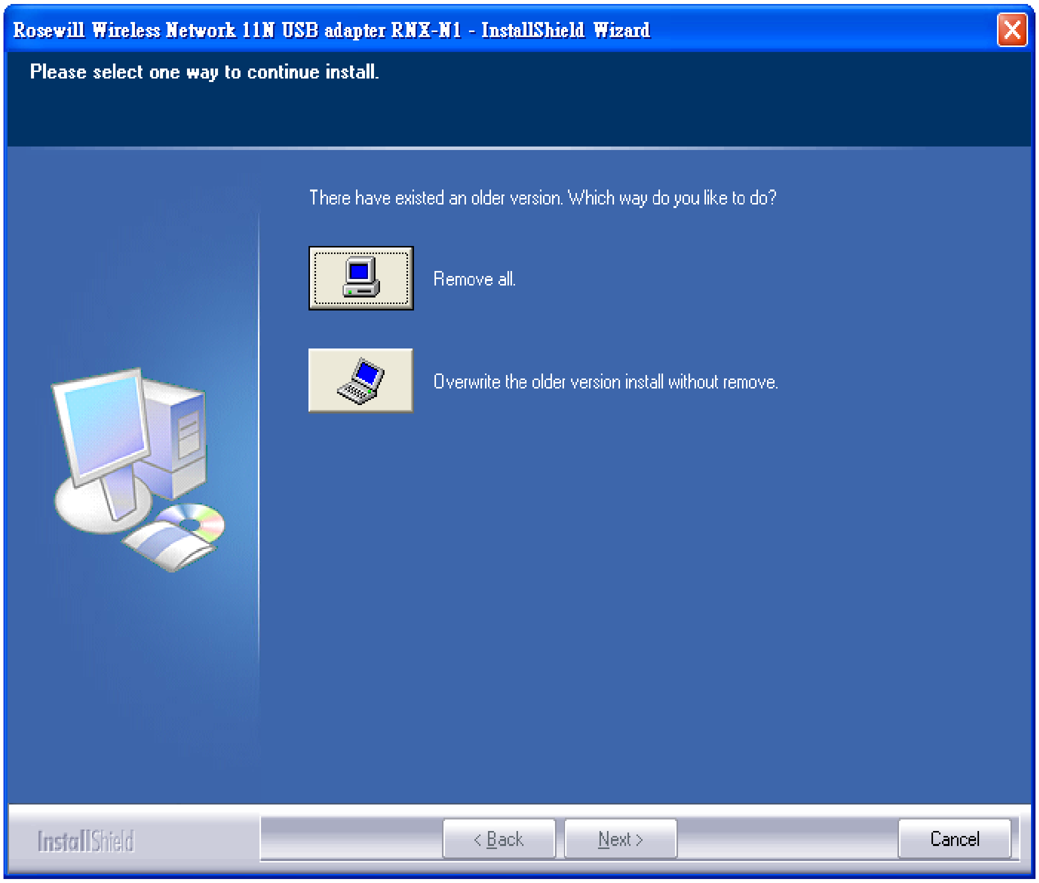


- The **un-installation** process will then begin.


InstallShield Wizard

Rosewill Wireless Network 11N USB adapter RNX-N1 Setup is preparing the InstallShield Wizard, which will guide you through the rest of the setup process. Please wait.

- Select the **Remove all** button and then click on the **Next** button.



Rosewill Wireless Network 11N USB adapter RNX-N1 - InstallShield Wizard

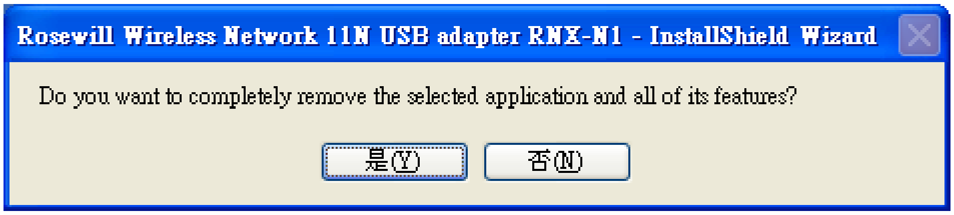
Please select one way to continue install.

There have existed an older version. Which way do you like to do?

Remove all.

Overwrite the older version install without remove.

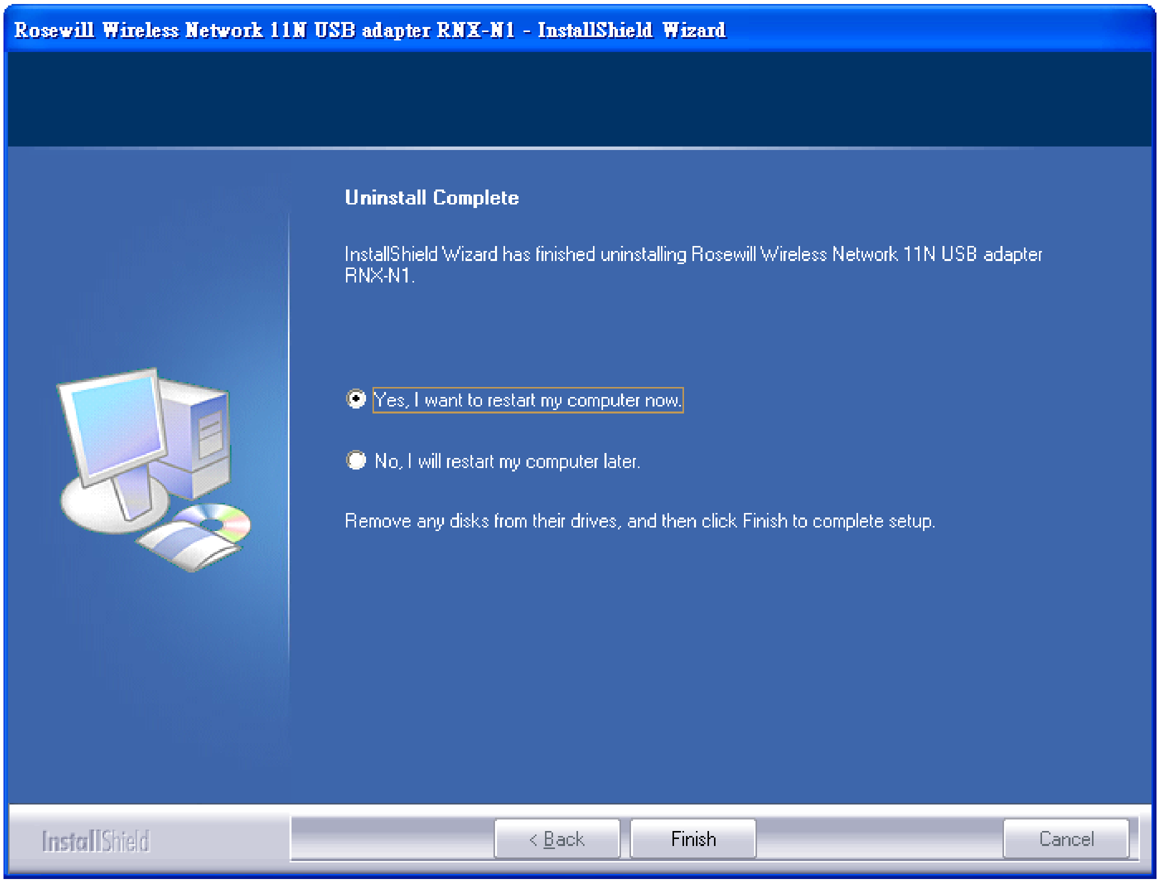
- Click on the **Yes** button to confirm the un-installation process.



Rosewill Wireless Network 11N USB adapter RNX-N1 - InstallShield Wizard

Do you want to completely remove the selected application and all of its features?

- The un-installation process is complete. Select **Yes, I want to restart my computer now** radio button and then click on the **Finish** button. Then remove the USB adapter.



Rosewill Wireless Network 11N USB adapter RNX-N1 - InstallShield Wizard

Uninstall Complete

InstallShield Wizard has finished uninstalling Rosewill Wireless Network 11N USB adapter RNX-N1.

● Yes, I want to restart my computer now.

○ No, I will restart my computer later.

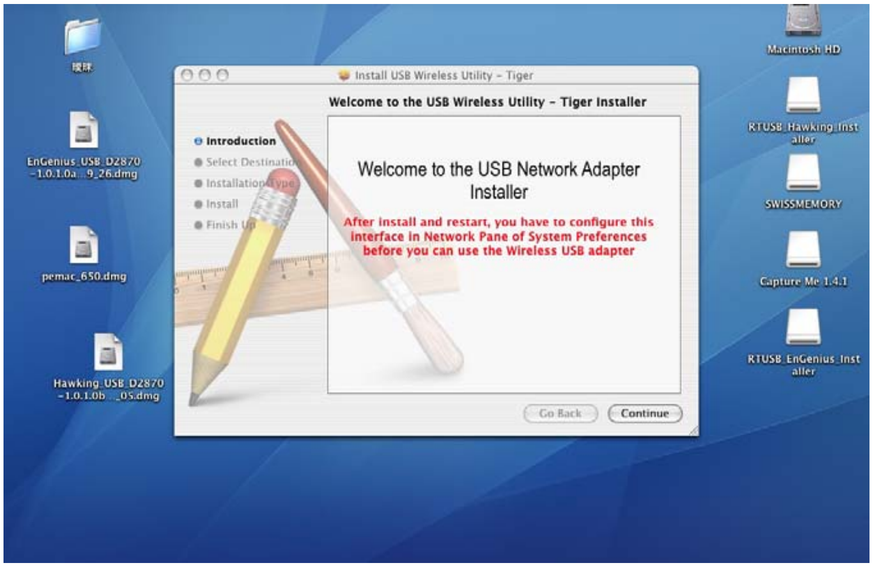
Remove any disks from their drives, and then click Finish to complete setup.

4. USB ADAPTER FOR MAC OS 10.3/10.4/10.5

4.1 INSTALLING THE DRIVERS

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

- 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 file from the CD-ROM drive.

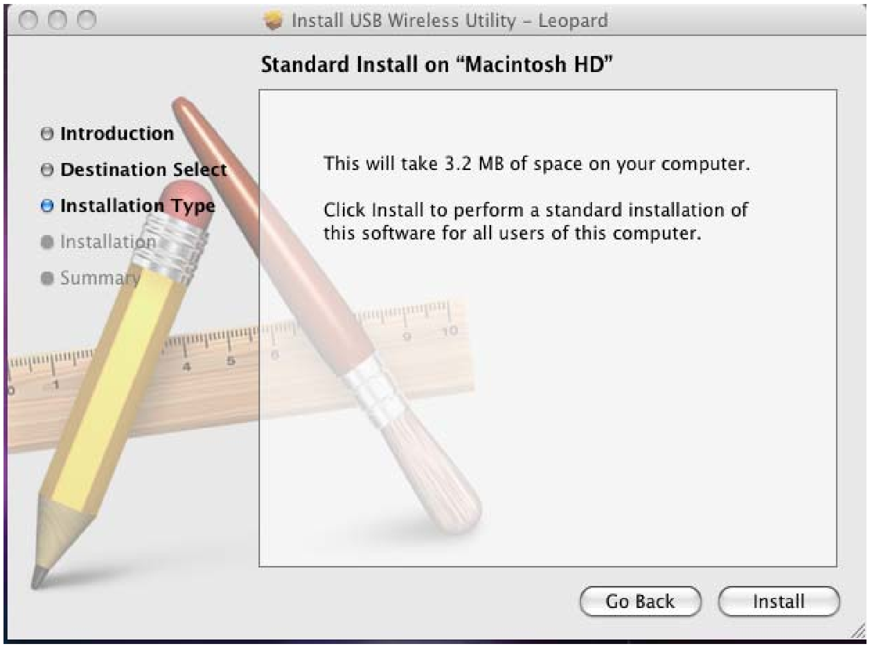


Welcome to the USB Wireless Utility – Tiger Installer

Welcome to the USB Network Adapter Installer

After install and restart, you have to configure this interface in Network Pane of System Preferences before you can use the Wireless USB adapter

- Click on the **Continue** button to configure the next step.

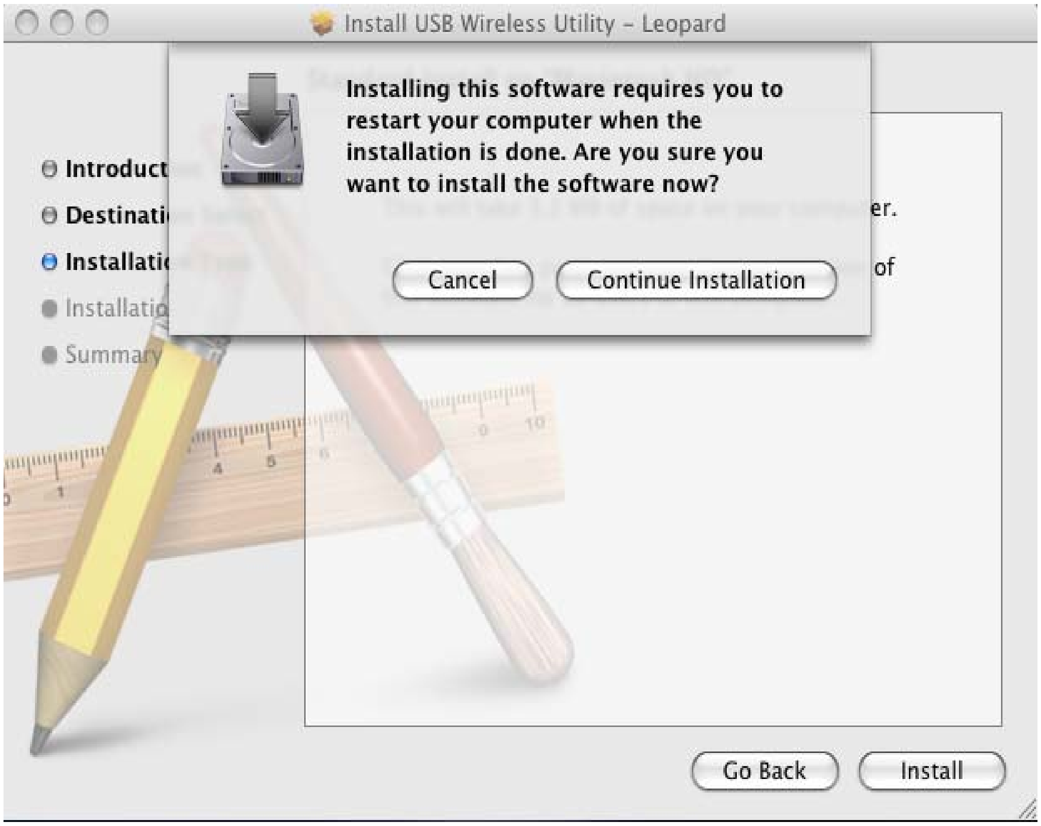


Standard Install on "Macintosh HD"

This will take 3.2 MB of space on your computer.

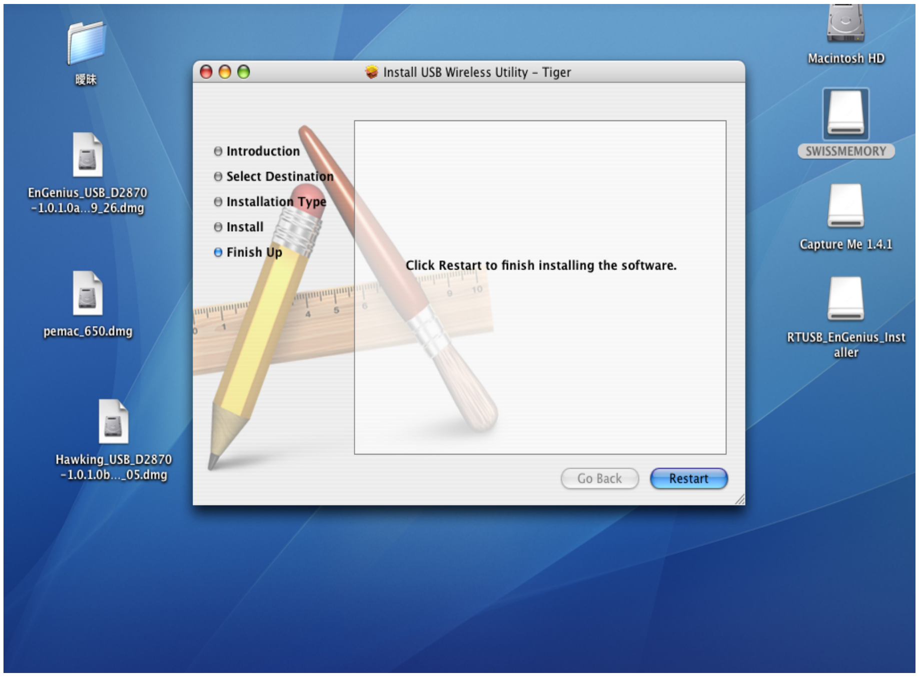
Click Install to perform a standard installation of this software for all users of this computer.

- Select the **Macintosh HD** and then click on the **Continue** button.



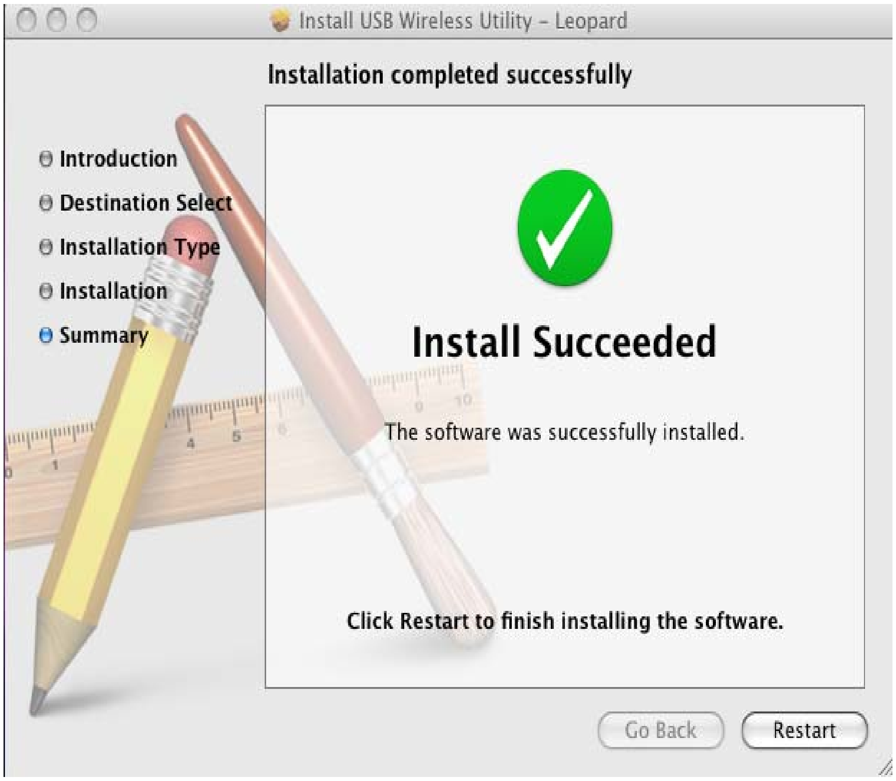
Installing this software requires you to restart your computer when the installation is done. Are you sure you want to install the software now?

- Click on the **Continue** button to configure the next step.



Click Restart to finish installing the software.

- The installation is complete. Click on the **Restart** button.



Installation completed successfully

Install Succeeded

The software was successfully installed.

Click Restart to finish installing the software.

- **Carefully insert the USB adapter into the USB port. MAC OS X will then detect and install the new hardware.**

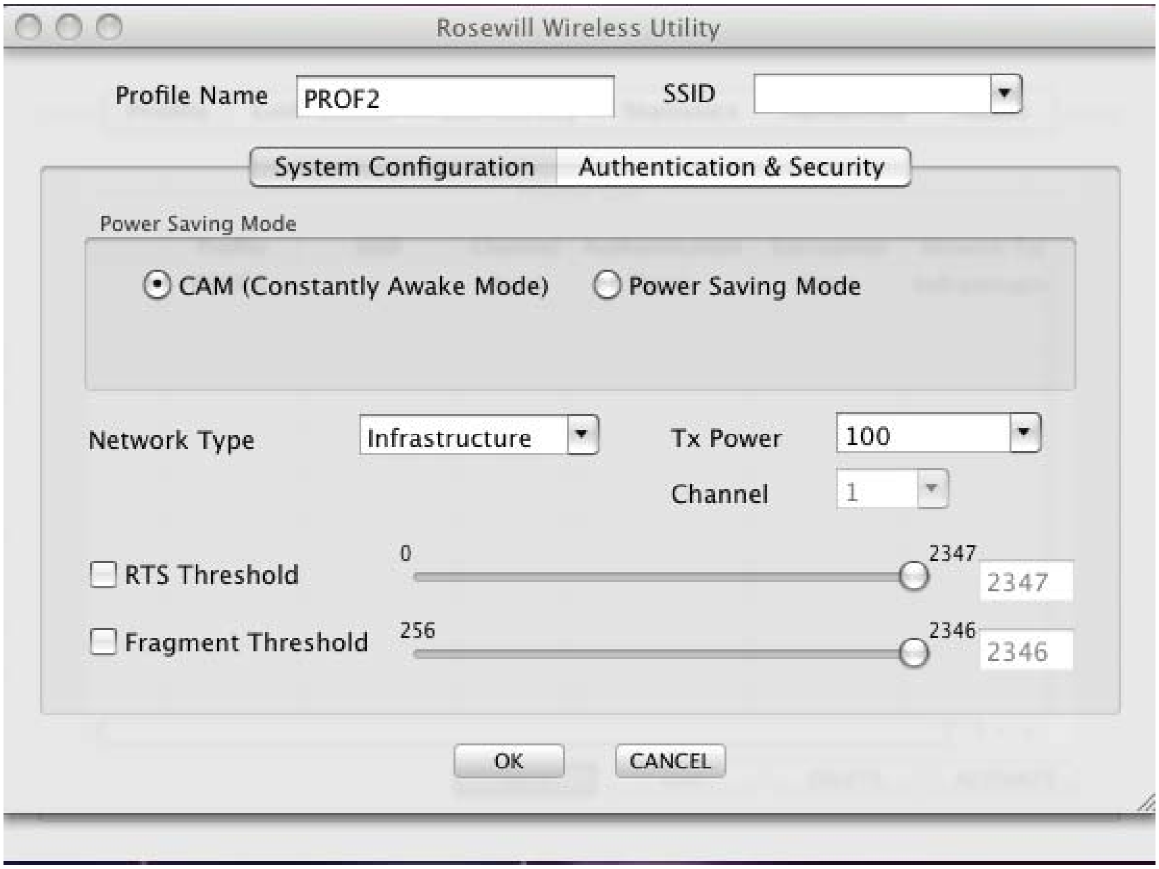
- The Client Utility is installed in the **Applications** folder.

4.2 PROFILES

The **Profile** tab is used to store the settings of multiple Access Points such as home, office, café, etc. When adding a profile you are required to enter a profile name and SSID as well as configure the power-saving mode, network type, RTS/fragmentation threshold and encryption/authentication settings. A profile can be configured as **Infrastructure** or **Ad-hoc** mode. The configuration settings for each mode are described below.

4.2.1 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.



Rosewill Wireless Utility

Profile Name: PROF2

SSID:

System Configuration | Authentication & Security

Power Saving Mode

● CAM (Constantly Awake Mode) ○ Power Saving Mode

Network Type: Infrastructure

Tx Power: 100

Channel: 1

□ RTS Threshold 0 2347 2347

□ Fragment Threshold 256 2346 2346

- **Profile**: Enter a name for the profile; this does not need to be the same as the SSID.
- **SSID**: Enter the SSID of the network or select one from the drop-down list. 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.
- **PSM**: Select a power saving mode (PSM) option.

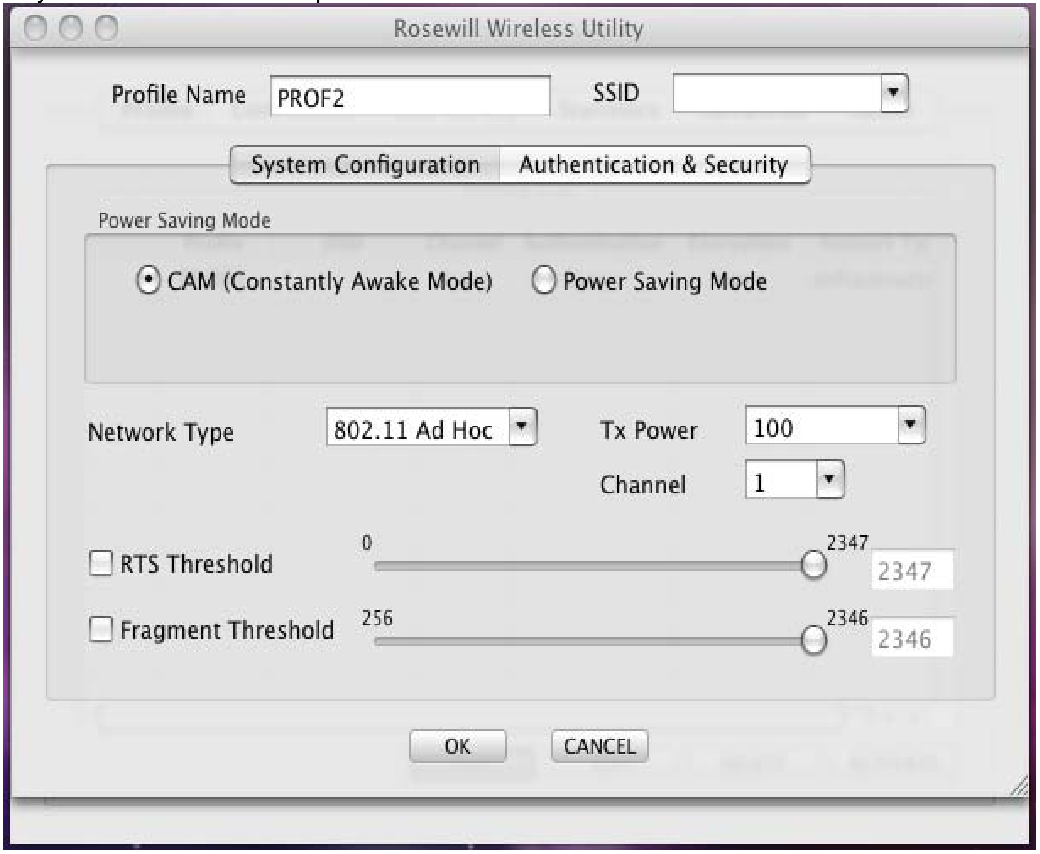
1. **CAM (Continuously Awake Mode)**: Select this option if your notebook is always connected to the power supply.
2. **PSM (Power Saving Mode)**: Select this option if your notebook uses its battery

power. This option minimizes the battery usage while the network is idle.

- **Network Type**: Select **Infrastructure** from the drop-down list.
- **TX Power**: Select a transmit power from the drop-down list. If your notebook is connected to external power then select **100%** or **auto**, if not, select one of the lower values for power saving.
- **RTS Threshold**: Place a check in this box if you would like to enable RTS Threshold. Any packet in the RTS/CTS handshake larger than the specified value (bytes) will be discarded.
- **Fragment Threshold**: Place a check in this box if you would like to enable Fragment Threshold. Any packet larger than the specified value (bytes) will be discarded.
- Click on the **Apply** button to save the changes.

4.2.2 Ad-hoc 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.



Rosewill Wireless Utility

Profile Name: PROF2

SSID:

Power Saving Mode

● CAM (Constantly Awake Mode) ○ Power Saving Mode

Network Type: 802.11 Ad Hoc

Tx Power: 100

Channel: 1

□ RTS Threshold 0 – 2347: 2347

□ Fragment Threshold 256 – 2346: 2346

- **Profile**: Enter a name for the profile; this does not need to be the same as the SSID.
- **SSID**: Enter the SSID of the network or select one from the drop-down list. 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.
- **Network Type**: Select **Ad-hoc** from the drop-down list.
- **TX Power**: Select a transmit power from the drop-down list. If your notebook is connected to external power then select **100%** or **auto**, if not, select one of the lower

values for power saving.

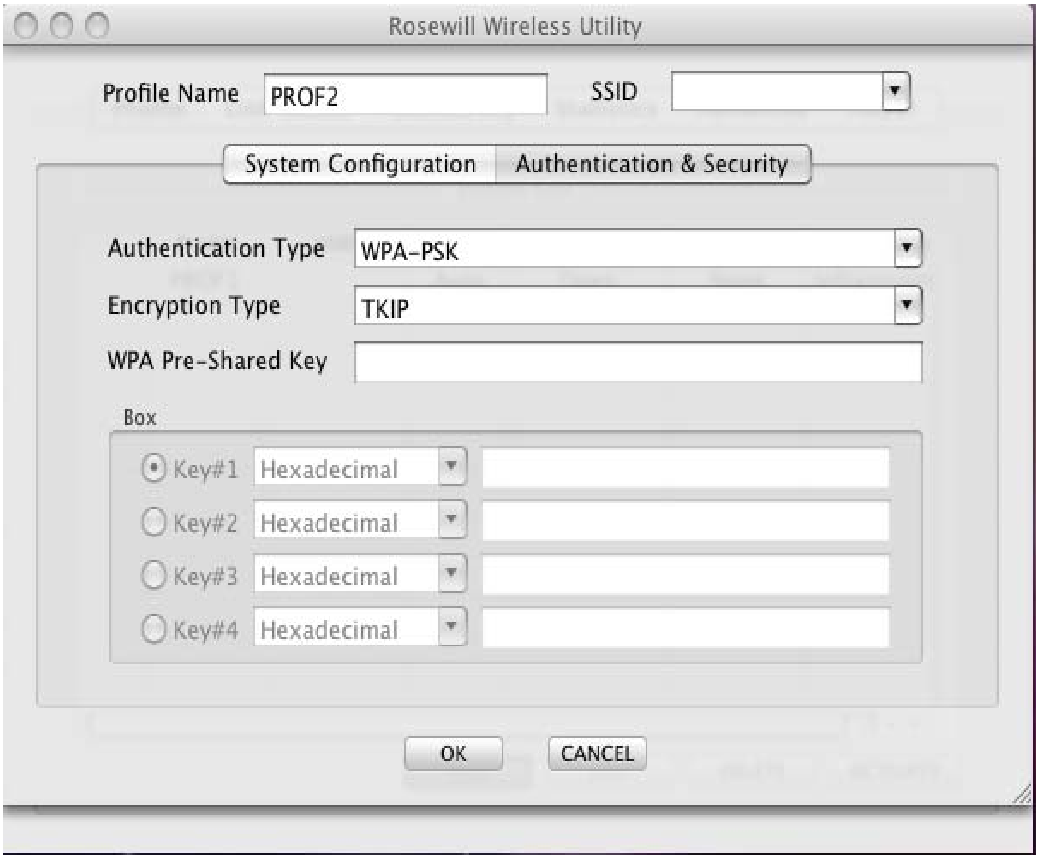
- **Preamble**: Select Auto from the drop-down list, unless you are aware of the preamble type (long or short) used in each station.
- **Ad-hoc wireless mode**: Select a wireless mode from the drop-down list depending on the type of stations used in the ad-hoc network. Select B/G Mix if the network consists of 11b and 11g stations. Select B-only or G-only if the network consists of only one type of wireless mode.
- **RTS Threshold**: Place a check in this box if you would like to enable RTS Threshold. Any packet in the RTS/CTS handshake larger than the specified value (bytes) will be discarded.
- **Fragment Threshold**: Place a check in this box if you would like to enable Fragment Threshold. Any packet larger than the specified value (bytes) will be discarded.
- Click on the **Apply** button to save the changes.

4.3 AUTHENTICATION AND SECURITY

The **Security** tab allows you to configure the authentication and encryption settings such as: WEP, WPA, WPA-PSK, WPA2, and 802.1x. Each security option is described in detail below.

4.3.1 WEP Encryption

The **WEP** tab displays the WEP settings. Encryption is designed to make the data transmission more secure. You may select 64 or 128-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. The following information is included in this tab, as the image depicts below.

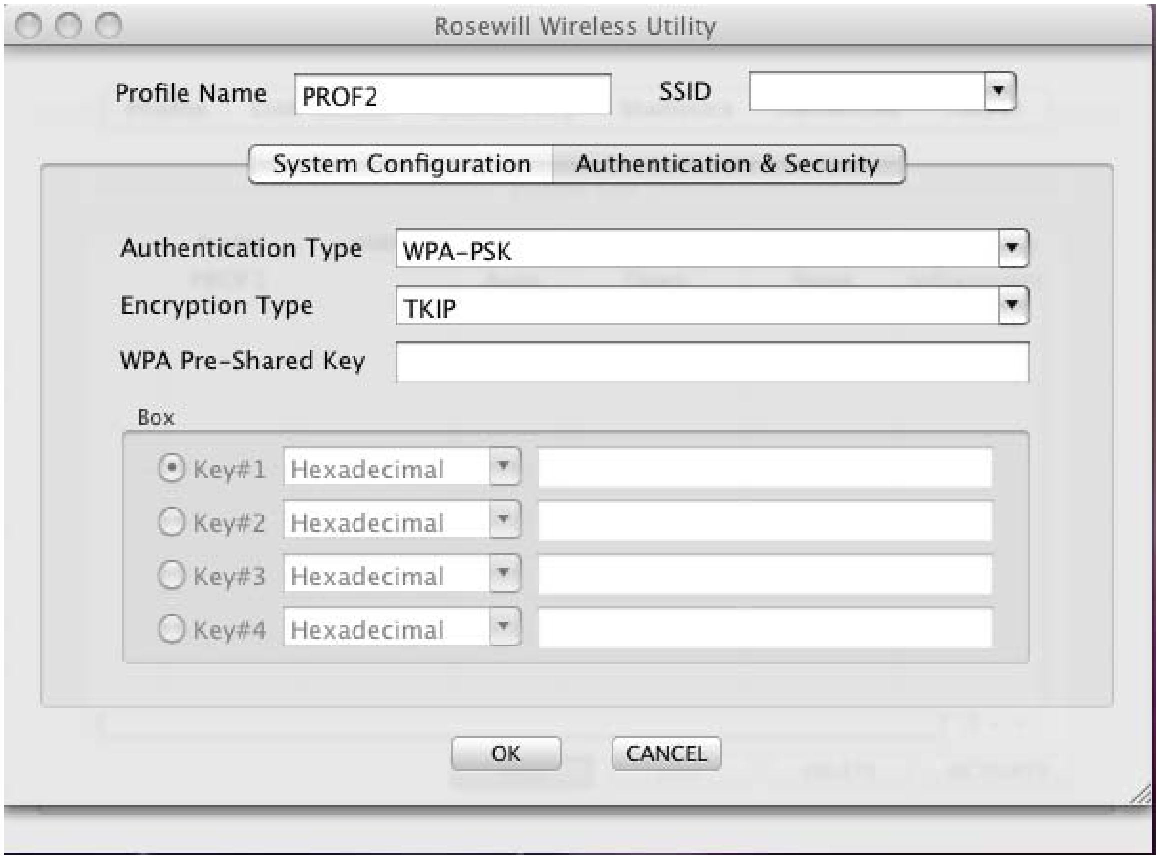


Profile Name: PROF2
SSID:
Authentication Type: WPA-PSK
Encryption Type: TKIP
WPA Pre-Shared Key:
Box
● Key#1 Hexadecimal
○ Key#2 Hexadecimal
○ Key#3 Hexadecimal
○ Key#4 Hexadecimal

- **Authentication Type**: Select **Open** or **Shared** from the drop-down list.
- **Encryption**: Select **WEP** from the drop-down list.
- **WEP Key:** Type a character string into the field.
  For 64-bit enter 5 alphanumeric or 10 hexadecimal characters.
  For 128-bit enter 13 alphanumeric or 26 hexadecimal characters.
- Click on the **Apply** button to save the changes.
- **Show Password** check box. If you want to make sure the accuracy of password you type, click the **Show Password** box to check it.

4.3.2 WPA-PSK Authentication & TKIP, AES Encryption

WPA – PSK (Pre-shared Key) is used in a Pre Shared Key mode that does not require an authentication server. Access to the Internet and the rest of the wireless network services is allowed only if the pre-shared key of the computer matches that of the Access Point. This approach offers the simplicity of the WEP key, but uses stronger TKIP encryption. 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.



Rosewill Wireless Utility

Profile Name: PROF2

SSID:

Authentication Type: WPA-PSK

Encryption Type: TKIP

WPA Pre-Shared Key:

Box

● Key#1 Hexadecimal

○ Key#2 Hexadecimal

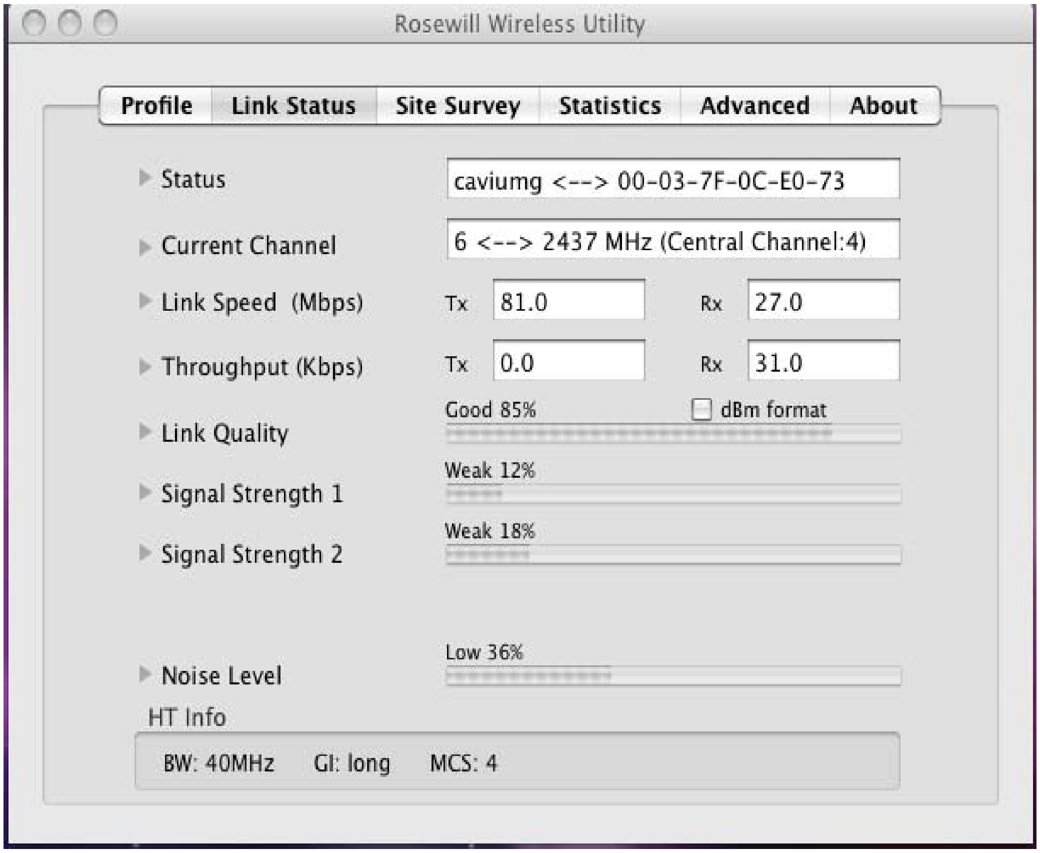
○ Key#3 Hexadecimal

○ Key#4 Hexadecimal

- **Authentication** Type: Select **WPA** or **WPA2** from the drop-down list.
- **Encryption**: Select **TKIP** or **AES** from the drop-down list.
- **WPA Preshared key**: Enter a pass phrase which is between 8 and 32 characters long.
- Click on the **Apply** button to save the changes.
- **Show Password** check box. If you want to make sure the accuracy of password you type, click the **Show Password** box to check it.

4.4 LINK STATUS

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



Status: caviumg <--> 00-03-7F-0C-E0-73

Current Channel: 6 <--> 2437 MHz (Central Channel:4)

Link Speed (Mbps): Tx 81.0 Rx 27.0

Throughput (Kbps): Tx 0.0 Rx 31.0

Link Quality: Good 85% □ dBm format

Signal Strength 1: Weak 12%

Signal Strength 2: Weak 18%

Noise Level: Low 36%

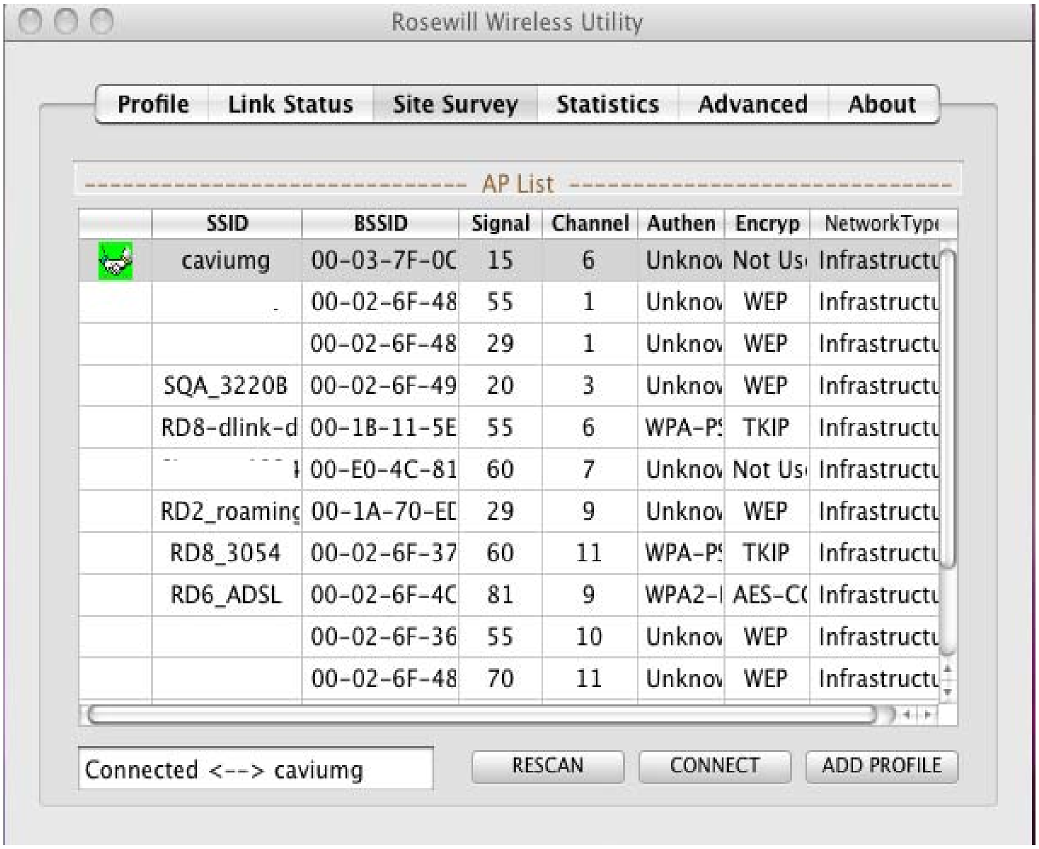
HT Info

BW: 40MHz GI: long MCS: 4

- **Status:** This indicates the state of the client. There are three options:
  1. **Associated:** Indicates that the wireless client is connected to an Access Point (AP). The BSSID is shown in the form of 12 HEX digits, which is the MAC address of the AP.
  2. **Scanning**: Indicates that the wireless client is searching for an AP in the area.
  3. **Disconnected**: Indicates that there are no APs or clients in the area.
- **Extra Info**: Displayed here are information about the link stats and the percent of output power.
- **Current Channel**: The operating frequency channel that the client is using (infrastructure mode).
- **Link Speed**: The current rate at which the client is transmitting and receiving.
- **Throughput (bytes/sec)**: Displays the Tx (transmit) and Rx (receive) kilo-bytes per second.
- **Link Quality**: In infrastructure mode, this bar displays the transmission quality between an AP and a client. In Ad-hoc mode, this bar displays the transmission quality between one client, and another.
- **Signal Strength**: This bar displays the strength of the signal received from an AP or client.
- **Noise Level:** Displays the background noise level; a lower level indicates less interference.
- Click on the **OK** button to close this window.
- **dBm Check Box**. When you click on the check box as the drawing below. The signal strength and noise level will be shown as the **dBm** measurements.

4.5 SITE SURVEY

The **Site Survey** tab displays a list of Access Points and Stations in the area, and allows you to connect to a specific one. The following information is included in this tab, as the image depicts below.



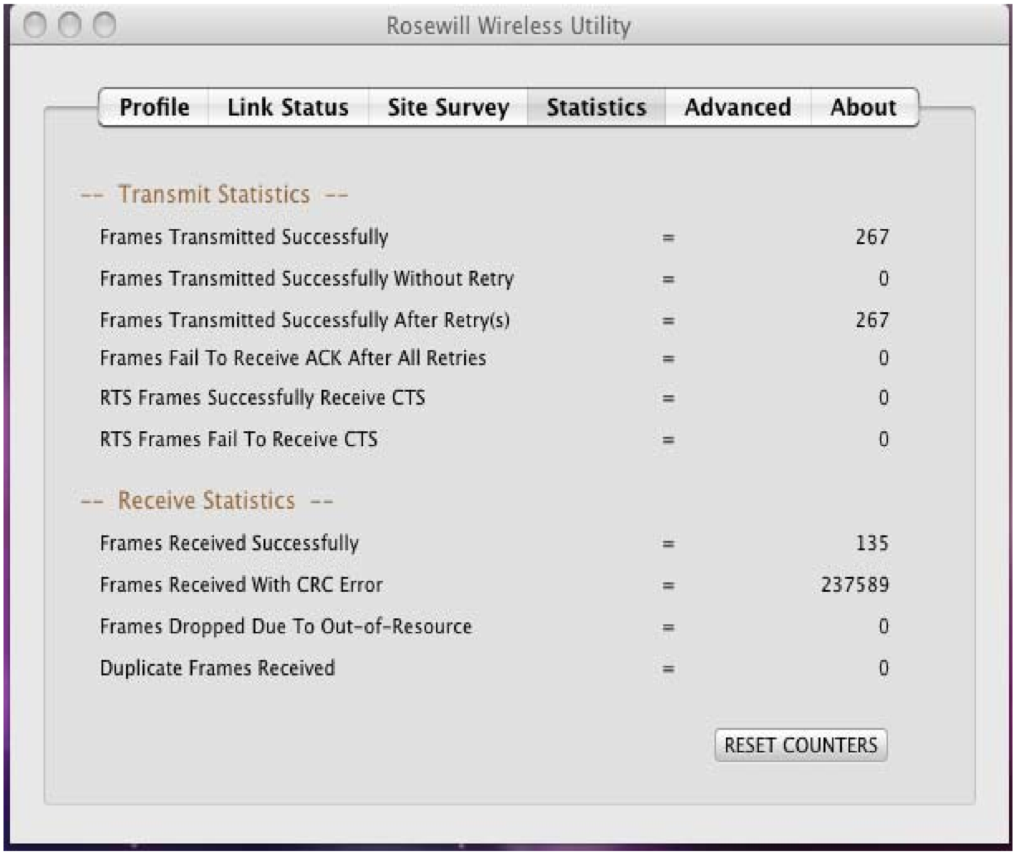
	SSID	BSSID	Signal	Channel	Authen	Encryp	NetworkTyp
✓	caviumg	00-03-7F-0C	15	6	Unknov	Not Us	Infrastructu
		00-02-6F-48	55	1	Unknov	WEP	Infrastructu
		00-02-6F-48	29	1	Unknov	WEP	Infrastructu
	SQA_3220B	00-02-6F-49	20	3	Unknov	WEP	Infrastructu
	RD8-dlink-d	00-1B-11-5E	55	6	WPA-P	TKIP	Infrastructu
	[illegible]	00-E0-4C-81	60	7	Unknov	Not Us	Infrastructu
	RD2_roaminc	00-1A-70-EC	29	9	Unknov	WEP	Infrastructu
	RD8_3054	00-02-6F-37	60	11	WPA-P	TKIP	Infrastructu
	RD6_ADSL	00-02-6F-4C	81	9	WPA2-I	AES-C(	Infrastructu
		00-02-6F-36	55	10	Unknov	WEP	Infrastructu
		00-02-6F-48	70	11	Unknov	WEP	Infrastructu

Connected <--> caviumg

- **SSID**: Displays the SSID of the Access Point. 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.
- **BSSID**: Displays the MAC address of the Access Point.
- **Signal**: Displays the receiving signal strength from the Access Point.
- **Channel:** Displays the channel number of the Access Point.
- **Encryption**: Displays the encryption on the Access Point, this includes WEP, TKIP, AES or None.
- **Authentication**: displays the authentication on the Access Point, this includes WPA, WPA-PSK, WPA2, or Unknown.
- **Network Type**: Indicates whether the SSID is a Station (Ad-hoc) or Access Point (Infrastructure).
- **Rescan**: Click on this button to view a list of Access Points in the area.
- **Connect**: to connect with a specific Access Point, select the SSID from the list, and then click on the Connect button.
- **Add Profile**: Click on this button to add the SSID and its associated settings into a profile.
- Click on the **OK** button if you have made any changes.

4.6 STATISTICS

The **Statistics** tab displays transmit and receive packet statistics in real-time. Information included is frames transmitted/received successfully, transmitted successfully without and after retry, received with CRC error, duplicate frames received, etc.



-- Transmit Statistics --

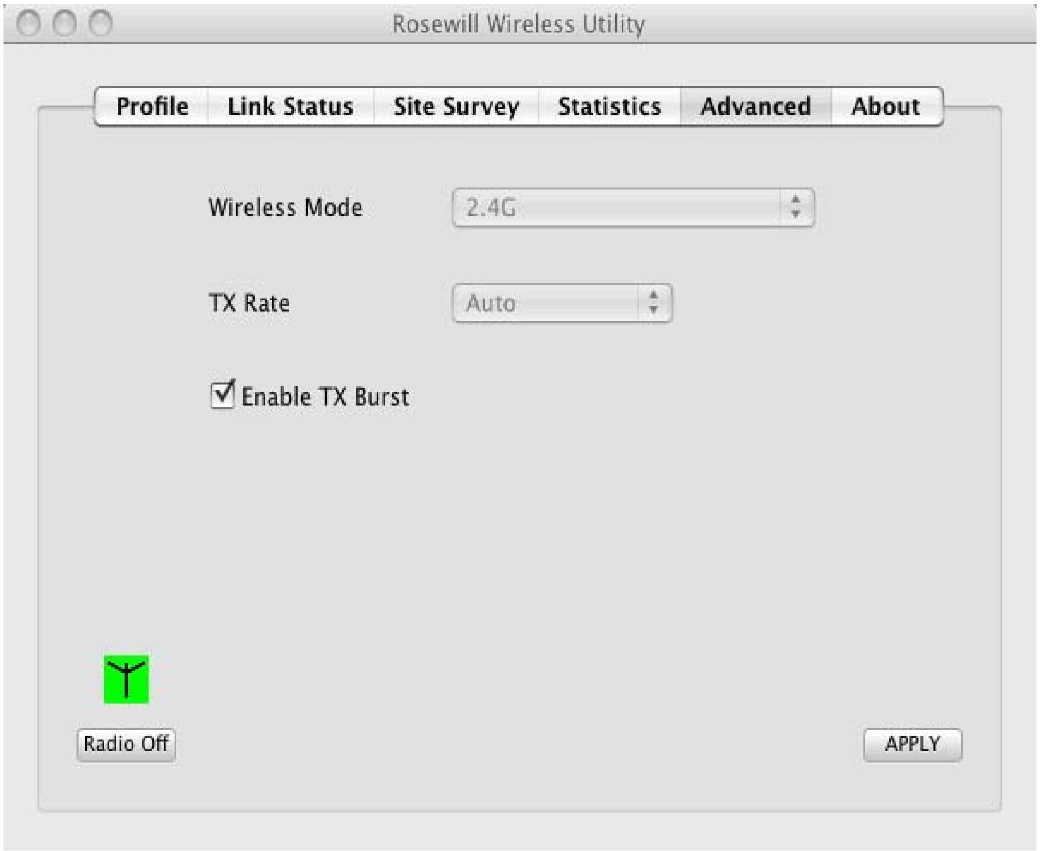
Frames Transmitted Successfully	=	267
Frames Transmitted Successfully Without Retry	=	0
Frames Transmitted Successfully After Retry(s)	=	267
Frames Fail To Receive ACK After All Retries	=	0
RTS Frames Successfully Receive CTS	=	0
RTS Frames Fail To Receive CTS	=	0

-- Receive Statistics --

Frames Received Successfully	=	135
Frames Received With CRC Error	=	237589
Frames Dropped Due To Out-of-Resource	=	0
Duplicate Frames Received	=	0

4.7 ADVANCED CONFIGURATION

The **Advanced** tab is used to configure the wireless mode (802.11b-only, 802.11g-only, or 802.11b/g-mixed), B/G protection and country/channel setting.



Wireless Mode 2.4G

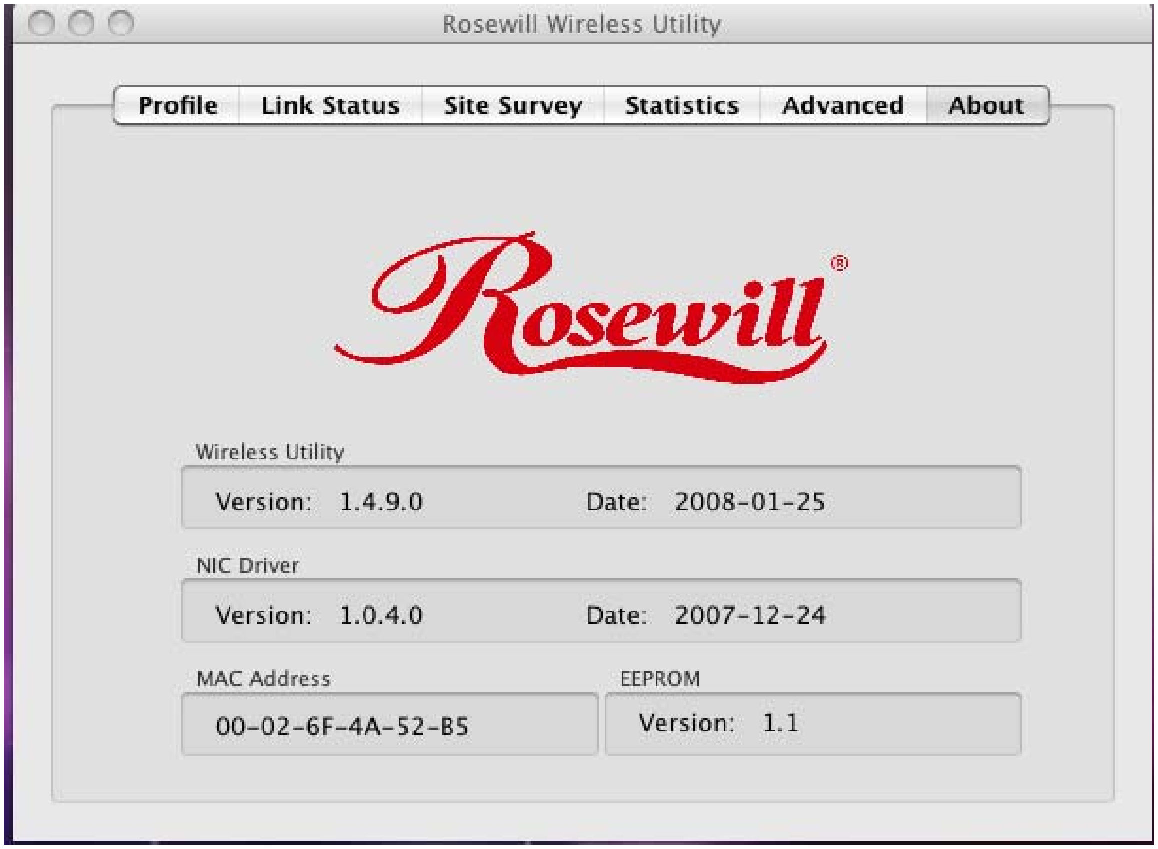
TX Rate Auto

☑ Enable TX Burst

- **Wireless mode**: Select 802.**11 B/G/N mixed** if the wireless network uses both 11b, 11g and 11n stations and APs.
- **Tx Rate**: The transmit rate should be set to auto, however you may manually select a transmit rate from the drop-down list.
- **Tx BURST**: Click the check box will enhance the throughput
- Click on the **Apply** button to save the changes.

4.8 ABOUT

The **About** tab displays information about the device, such as: the network driver version and date, configuration utility version and date, and the NIC (Network Interface Card) firmware version and date.



Wireless Utility

Version: 1.4.9.0 Date: 2008-01-25

NIC Driver

Version: 1.0.4.0 Date: 2007-12-24

MAC Address

00-02-6F-4A-52-B5

EEPROM

Version: 1.1

5. APPENDIX A – GLOSSARY

8

802.11
A family of specifications for wireless local area networks (WLANs) developed by a working group of the Institute of Electrical and Electronics Engineers (IEEE).

A

Access Control List
ACL. This is a database of network devices that are allowed to access resources on the network.

Access Point
AP. Device that allows wireless clients to connect to it and access the network

ActiveX
A Microsoft specification for the interaction of software components.

Address Resolution Protocol
ARP. Used to map MAC addresses to IP addresses so that conversions can be made in both directions.

Ad-hoc network
Peer-to-Peer network between wireless clients

ADSL
Asymmetric Digital Subscriber Line

Advanced Encryption Standard
AES. Government encryption standard

Alphanumeric
Characters A-Z and 0-9

Antenna
Used to transmit and receive RF signals.

AppleTalk
A set of Local Area Network protocols developed by Apple for their computer systems
AppleTalk Address Resolution Protocol
AARP. Used to map the MAC addresses of Apple computers to their AppleTalk network addresses, so that conversions can be made in both directions.

Application layer
7th Layer of the OSI model. Provides services to applications to ensure that they can communicate properly with other applications on a network.

ASCII
American Standard Code for Information Interchange. This system of characters is most commonly used for text files

Attenuation
The loss in strength of digital and analog signals. The loss is greater when the signal is being transmitted over long distances.

Authentication
To provide credentials, like a Password, in order to verify that the person or device is really who they are claiming to be

Automatic Private IP Addressing
APIPA. An IP address that that a Windows computer will assign itself when it is configured to obtain an IP address automatically but no DHCP server is available on the network

B

Backward Compatible

The ability for new devices to communicate and interact with older legacy devices to guarantee interoperability

Bandwidth

The maximum amount of bytes or bits per second that can be transmitted to and from a network device

Basic Input/Output System

BIOS. A program that the processor of a computer uses to startup the system once it is turned on

Baud

Data transmission speed

Beacon

A data frame by which one of the stations in a Wi-Fi network periodically broadcasts network control data to other wireless stations.

Bit rate

The amount of bits that pass in given amount of time

Bit/sec

Bits per second

BOOTP

Bootstrap Protocol. Allows for computers to be booted up and given an IP address with no user intervention

Bottleneck

A time during processes when something causes the process to slowdown or stop all together

Broadband

A wide band of frequencies available for transmitting data

Broadcast

Transmitting data in all directions at once

Browser

A program that allows you to access resources on the web and provides them to you graphically

C

Cable modem

A device that allows you to connect a computer up to a coaxial cable and receive Internet access from your Cable provider

CardBus

A newer version of the PC Card or PCMCIA interface. It supports a 32-bit data path, DMA, and consumes less voltage

CAT 5

Category 5. Used for 10/100 Mbps or 1Gbps Ethernet connections

Client

A program or user that requests data from a server

Collision

When do two devices on the same Ethernet network try and transmit data at the exact same time.

Cookie

Information that is stored on the hard drive of your computer that holds your preferences to the site that gave your computer the cookie

D

Data

Information that has been translated into binary so that it can be processed or moved to another device

Data Encryption Standard

Uses a randomly selected 56-bit key that must be known by both the sender and the receiver when information is exchanged

Database

Organizes information so that it can be managed updated, as well as easily accessed by users or applications.

Data-Link layer

The second layer of the OSI model. Controls the movement of data on the physical link of a network

DB-25

A 25 ping male connector for attaching External modems or RS-232 serial devices

DB-9

A 9 pin connector for RS-232 connections

dBd

Decibels related to dipole antenna

dBi

Decibels relative to isotropic radiator

dBm

Decibels relative to one milliwatt

Decrypt

To unscramble an encrypted message back into plain text

Default

A predetermined value or setting that is used by a program when no user input has been entered for this value or setting

Demilitarized zone

DMZ: A single computer or group of computers that can be accessed by both users on the Internet as well as users on the Local Network, but that is not protected by the same security as the Local Network.

DHCP

Dynamic Host Configuration Protocol: Used to automatically assign IP addresses from a predefined pool of addresses to computers or devices that request them

Digital certificate:

An electronic method of providing credentials to a server in order to have access to it or a network

Direct Sequence Spread Spectrum

DSSS: Modulation technique used by 802.11b wireless devices

DMZ

"Demilitarized Zone". A computer that logically sits in a "no-mans land" between the LAN and the WAN. The DMZ computer trades some of the protection of the router's security mechanisms for the convenience of being directly addressable from the Internet.

DNS

Domain Name System: Translates Domain Names to IP addresses

Domain name

A name that is associated with an IP address

Download

To send a request from one computer to another and have the file transmitted back to the requesting computer

DSL

Digital Subscriber Line. High bandwidth Internet connection over telephone lines

Duplex

Sending and Receiving data transmissions at the sane time

Dynamic DNS service

Dynamic DNS is provided by companies to allow users with Dynamic IP addresses to obtain a Domain Name that will always by linked to their changing IP address. The IP address is updated by either client software running on a computer or by a router that supports Dynamic DNS, whenever the IP address changes

Dynamic IP address

IP address that is assigned by a DHCP server and that may change. Cable Internet providers usually use this method to assign IP addresses to their customers.

E

EAP

Extensible Authentication Protocol

Email

Electronic Mail is a computer-stored message that is transmitted over the Internet

Encryption

Converting data into cyphertext so that it cannot be easily read

Ethernet

The most widely used technology for Local Area Networks.

F

Fiber optic

A way of sending data through light impulses over glass or plastic wire or fiber

File server

A computer on a network that stores data so that the other computers on the network can all access it

File sharing

Allowing data from computers on a network to be accessed by other computers on the network with different levels of access rights

Firewall

A device that protects resources of the Local Area Network from unauthorized users outside of the local network

Firmware

Programming that is inserted into a hardware device that tells it how to function
Fragmentation
Breaking up data into smaller pieces to make it easier to store

FTP

File Transfer Protocol. Easiest way to transfer files between computers on the Internet

Full-duplex

Sending and Receiving data at the same time

G

Gain

The amount an amplifier boosts the wireless signal

Gateway

A device that connects your network to another, like the internet

Gbps

Gigabits per second

Gigabit Ethernet

Transmission technology that provides a data rate of 1 billion bits per second

GUI

Graphical user interface

H

H.323

A standard that provides consistency of voice and video transmissions and compatibility for videoconferencing devices

Half-duplex

Data cannot be transmitted and received at the same time

Hashing

Transforming a string of characters into a shorter string with a predefined length

Hexadecimal

Characters 0-9 and A-F

Hop

The action of data packets being transmitted from one router to another

Host

Computer on a network

HTTP

Hypertext Transfer Protocol is used to transfer files from HTTP servers (web servers) to HTTP clients (web browsers)

HTTPS

HTTP over SSL is used to encrypt and decrypt HTTP transmissions

Hub

A networking device that connects multiple devices together

I

ICMP

Internet Control Message Protocol

IEEE

Institute of Electrical and Electronics Engineers

IGMP

Internet Group Management Protocol is used to make sure that computers can report their multicast group membership to adjacent routers

IIS

Internet Information Server is a WEB server and FTP server provided by Microsoft

IKE

Internet Key Exchange is used to ensure security for VPN connections

Infrastructure

In terms of a wireless network, this is when wireless clients use an Access Point to gain access to the network

Internet

A system of worldwide networks which use TCP/IP to allow for resources to be accessed from computers around the world

Internet Explorer

A World Wide Web browser created and provided by Microsoft

Internet Protocol

The method of transferring data from one computer to another on the Internet

Internet Protocol Security

IPsec provides security at the packet processing layer of network communication

Internet Service Provider

An ISP provides access to the Internet to individuals or companies

Intranet

A private network

Intrusion Detection

A type of security that scans a network to detect attacks coming from inside and outside of the network

IP

Internet Protocol

IP address

A 32-bit number, when talking about Internet Protocol Version 4, that identifies each computer that transmits data on the Internet or on an Intranet

IPsec

Internet Protocol Security

IPX

Internetwork Packet Exchange is a networking protocol developed by Novel to enable their Netware clients and servers to communicate

ISP

Internet Service Provider

J

Java

A programming language used to create programs and applets for web pages

K

Kbps

Kilobits per second

Kbyte

Kilobyte

L

L2TP

Layer 2 Tunneling Protocol

LAN

Local Area Network

Latency

The amount of time that it takes a packet to get from the one point to another on a network. Also referred to as delay

LED

Light Emitting Diode

Legacy

Older devices or technology

Local Area Network

A group of computers in a building that usually access files from a server

LPR/LPD

"Line Printer Requestor"/"Line Printer Daemon". A TCP/IP protocol for transmitting streams of printer data.

M

MAC Address

A unique hardware ID assigned to every Ethernet adapter by the manufacturer.

Mbps

Megabits per second

MDI

Medium Dependent Interface is an Ethernet port for a connection to a straight-through cable

MDIX

Medium Dependent Interface Crossover, is an Ethernet port for a connection to a crossover cable

MIB

Management Information Base is a set of objects that can be managed by using SNMP

Modem

A device that Modulates digital signals from a computer to an analog signal in order to transmit the signal over phone lines. It also Demodulates the analog signals coming from the phone lines to digital signals for your computer

MPPE

Microsoft Point-to-Point Encryption is used to secure data transmissions over PPTP connections

MTU

Maximum Transmission Unit is the largest packet that can be transmitted on a packet-based network like the Internet

Multicast

Sending data from one device to many devices on a network

N

NAT

Network Address Translation allows many private IP addresses to connect to the Internet, or another network, through one IP address

NetBEUI

NetBIOS Extended User Interface is a Local Area Network communication protocol. This is an updated version of NetBIOS

NetBIOS

Network Basic Input/Output System

Netmask

Determines what portion of an IP address designates the Network and which part designates the Host

Network Interface Card

A card installed in a computer or built onto the motherboard that allows the computer to connect to a network

Network Layer

The third layer of the OSI model which handles the routing of traffic on a network

Network Time Protocol

Used to synchronize the time of all the computers in a network

NIC

Network Interface Card

NTP

Network Time Protocol

O

OFDM

Orthogonal Frequency-Division Multiplexing is the modulation technique for both 802.11a and 802.11g

OSI

Open Systems Interconnection is the reference model for how data should travel between two devices on a network

OSPF

Open Shortest Path First is a routing protocol that is used more than RIP in larger scale networks because only changes to the routing table are sent to all the other routers in the network as opposed to sending the entire routing table at a regular interval, which is how RIP functions

P

Password

A sequence of characters that is used to authenticate requests to resources on a network

Personal Area Network

The interconnection of networking devices within a range of 10 meters

Physical layer
The first layer of the OSI model. Provides the hardware means of transmitting electrical signals on a data carrier

Ping
A utility program that verifies that a given Internet address exists and can receive messages. The utility sends a control packet to the given address and waits for a response.

PoE
Power over Ethernet is the means of transmitting electricity over the unused pairs in a category 5 Ethernet cable

POP3
Post Office Protocol 3 is used for receiving email

Port
A logical channel endpoint in a network. A computer might have only one physical channel (its Ethernet channel) but can have multiple ports (logical channels) each identified by a number.

PPP
Point-to-Point Protocol is used for two computers to communicate with each over a serial interface, like a phone line

PPPoE
Point-to-Point Protocol over Ethernet is used to connect multiple computers to a remote server over Ethernet

PPTP
Point-to-Point Tunneling Protocol is used for creating VPN tunnels over the Internet between two networks

Preamble
Used to synchronize communication timing between devices on a network

Q

QoS
Quality of Service

R

RADIUS
Remote Authentication Dial-In User Service allows for remote users to dial into a central server and be authenticated in order to access resources on a network

Reboot
To restart a computer and reload it's operating software or firmware from nonvolatile storage.

Rendezvous
Apple's version of UPnP, which allows for devices on a network to discover each other and be connected without the need to configure any settings

Repeater
Retransmits the signal of an Access Point in order to extend it's coverage

RIP
Routing Information Protocol is used to synchronize the routing table of all the routers on a network

RJ-11
The most commonly used connection method for telephones

RJ-45
The most commonly used connection method for Ethernet

RS-232C
The interface for serial communication between computers and other related devices

RSA

Algorithm used for encryption and authentication

S

Server
A computer on a network that provides services and resources to other computers on the network

Session key
An encryption and decryption key that is generated for every communication session between two computers

Session layer
The fifth layer of the OSI model which coordinates the connection and communication between applications on both ends

Simple Mail Transfer Protocol
Used for sending and receiving email

Simple Network Management Protocol
Governs the management and monitoring of network devices

SIP
Session Initiation Protocol. A standard protocol for initiating a user session that involves multimedia content, such as voice or chat.

SMTP
Simple Mail Transfer Protocol

SNMP
Simple Network Management Protocol

SOHO
Small Office/Home Office

SPI
Stateful Packet Inspection

SSH
Secure Shell is a command line interface that allows for secure connections to remote computers

SSID
Service Set Identifier is a name for a wireless network

Stateful inspection
A feature of a firewall that monitors outgoing and incoming traffic to make sure that only valid responses to outgoing requests are allowed to pass though the firewall

Subnet mask
Determines what portion of an IP address designates the Network and which part designates the Host

Syslog
System Logger -- a distributed logging interface for collecting in one place the logs from different sources. Originally written for UNIX, it is now available for other operating systems, including Windows.

T

TCP
Transmission Control Protocol

TCP Raw
A TCP/IP protocol for transmitting streams of printer data.

TCP/IP
Transmission Control Protocol/Internet Protocol

TFTP
Trivial File Transfer Protocol is a utility used for transferring files that is simpler to use than FTP but with less features

Throughput
The amount of data that can be transferred in a given time period

Traceroute
A utility displays the routes between you computer and specific destination

U

UDP
User Datagram Protocol

Unicast
Communication between a single sender and receiver

Universal Plug and Play
A standard that allows network devices to discover each other and configure themselves to be a part of the network

Upgrade
To install a more recent version of a software or firmware product

Upload
To send a request from one computer to another and have a file transmitted from the requesting computer to the other

UPnP
Universal Plug and Play

URL
Uniform Resource Locator is a unique address for files accessible on the Internet

USB
Universal Serial Bus

UTP
Unshielded Twisted Pair

V

Virtual Private Network
VPN: A secure tunnel over the Internet to connect remote offices or users to their company's network

VLAN
Virtual LAN

Voice over IP
Sending voice information over the Internet as opposed to the PSTN

VoIP
Voice over IP

W

Wake on LAN
Allows you to power up a computer though it's Network Interface Card

WAN
Wide Area Network

WCN
Windows Connect Now. A Microsoft method for configuring and bootstrapping wireless networking hardware (access points) and wireless clients, including PCs and other devices.

WDS
Wireless Distribution System. A system that enables the interconnection of access points wirelessly.

Web browser
A utility that allows you to view content and interact with all of the information on the World Wide Web

WEP

Wired Equivalent Privacy is security for wireless networks that is supposed to be comparable to that of a wired network

Wide Area Network

The larger network that your LAN is connected to, which may be the Internet itself, or a regional or corporate network

Wi-Fi

Wireless Fidelity

Wi-Fi Protected Access

An updated version of security for wireless networks that provides authentication as well as encryption

Wireless ISP

A company that provides a broadband Internet connection over a wireless connection

Wireless LAN

Connecting to a Local Area Network over one of the 802.11 wireless standards

WISP

Wireless Internet Service Provider

WLAN

Wireless Local Area Network

WPA

Wi-Fi Protected Access. A Wi-Fi security enhancement that provides improved data encryption, relative to WEP.

X

xDSL

A generic term for the family of digital subscriber line (DSL) technologies, such as ADSL, HDSL, RADSL, and SDSL.

Y

Yagi antenna

A directional antenna used to concentrate wireless signals on a specific location

6. APPENDIX B – SPECIFICATIONS

Data Rates

1, 2, 5.5, 6, 9, 11, 12, 18, 24, 36, 48, 54, 72, 84, 150 and 300Mbps (300 Rx PHY rate; 150Mbps Tx PHY support)

Standards / Compliance

IEEE802.3, IEEE802.3u, IEEE802.11b, IEEE802.11g, 802.11n (2.0)

Regulation Certifications

FCC Part 15, ETSI 300/328/CE

Operating Voltage

5 V ± 0.25V

Status LEDs

POWER / LINK

Drivers

Windows 2000/XP/Vista
MAC OS 10.3/10.4/10.5

RF Information

Frequency Band

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

802.11g: 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

Receive Sensitivity (Typical)

- 2.412~2.472G(IEEE802.11b) (1Rx)
  -91dBm @ 1Mbps
  -87dBm @ 11Mbps
- 2.412~2.472G(IEEE802.11g) (2Rx)
  -90dBm @ 6Mbps
  -75dBm @ 54Mbps
- 2.412~2.472G(IEEE802.11N) (2Rx)
  -88 dBm MCS 8
  -65 dBm MCS 15

Available transmit power

- 2.412~2.472G(IEEE802.11b)
  18dBm @1~11Mbps
- 2.412~2.472G(IEEE802.11g)
  15 dBm @6Mbps
  14 dBm @54Mbps
- 2.412~2.472G(IEEE802.11N)
  15dBm

Antenna Configuration

2T2R Mode

Networking

Topology

Ad-Hoc, Infrastructure

Security

WPA/WPA2 (AES, 64,128-WEP with shared-key authentication)
Cisco CCS V1.0, V2.0 and V3.0 compliant

Physical

Form Factor

USB 2.0/1.1

Dimensions (HxWxD)

77(L) mm x 23.5(W) mm x 11(H) mm

Weight

40 g/ 1.5oz

Environmental

Temperature Range

Operating: 0°C to 50°C
Storage: -10°Cto 75°C

Humidity (non-condensing)

5%~95% Typical

Package Contents

- One Wireless-N USB Dongle—RNX-N1/N1MAC
- One CD-ROM with User's Manual and Drivers
- One FLEX USB cable (15cm)
- One Flexible Stainless Steel USB 2.0 Extended Connector

7. APPENDIX C – 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.

Thank you for purchasing a quality Rosewill Product.

Please register your product at : www.rosewill.com for complete warranty information and future support for your product.