TRENDnET®

User's Guide

TEW-642EC

H/W: v1.0

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Trademark recognition

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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:
Radiation Exposure Statement:
This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. End users must follow the specific operating instructions for satisfying RF exposure compliance. To maintain compliance with FCC RF exposure compliance requirements, please follow operation instruction as documented in this manual.
This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.
SAR compliance has been established in typical laptop computer(s) with Express Card slot, and product could be used in typical laptop computer with Express Card slot. Other application like handheld PC or similar device has not been verified and may not compliance with related RF exposure rule and such use shall be prohibited.

The availability of some specific channels and/or operational frequency bands are country dependent and are firmware programmed at the factory to match the intended destination. The firmware setting is not accessible by the end user.

CE Mark Warning

This is a Class B product. In a domestic environment, this product may cause radio interference, in which case the user may be required to take adequate measures.

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

Table of Contents

Chapter 1 - Getting Started

This chapter introduces the Card and prepares you to use the Wireless Utility.

2.1 About Your Card

With the Card, you can enjoy wireless mobility within almost any wireless networking environment.

The following lists the main features of your Card.

- ✓ Automatic rate selection.
- ✓ Data transmission rates up to 300 Mbps
- ✓ Offers 64-bit and 128-bit WEP (Wired Equivalent Privacy) data encryption for network security.
- ✓ Supports IEEE802.1x and WPA/WPA2 (Wi-Fi Protected Access).
- ✓ Multiple antennas design.
- ✓ Driver support for Windows XP/2000 and Vista.

2.2 Package Content

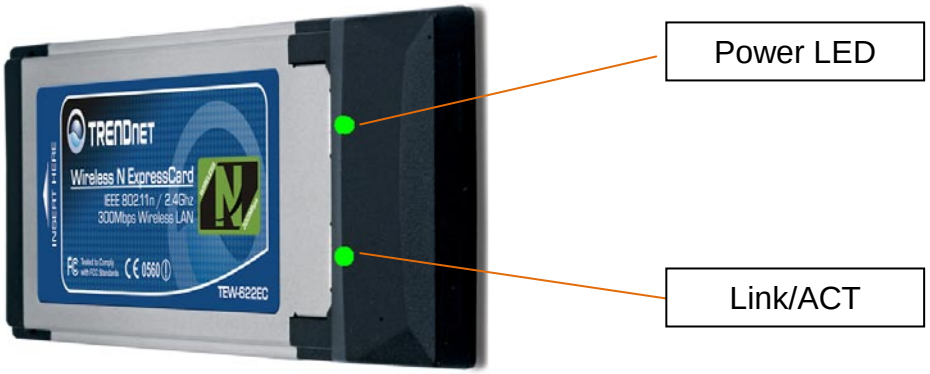
- ➢ The WLAN Card
- ➢ Installation and Manual CD
- ➢ Quick Start Guide
- ➢ Warranty/Registration Card

2.3 System Requirement

- ● Pentium class notebook computers with at least one available Type II Express Card slot
- ● Microsoft Windows 2000, XP, or Vista
- ● CD-ROM drive

2.4 LED Definition

The following table describes the LED on the Card



STATUS	POWER LED	LINK LED
POWER OFF	OFF	OFF
POWER ON	ON	OFF
Associated without traffic	ON	BLINK(SLOW)
Associated with traffic	ON	BLINK(QUICK)

2.5 Wireless Utility & Card Hardware Installation

NOTE

IF YOU HAVE CONNECTED THE CARD TO YOUR COMPUTER, PLEASE REMOVE IT FIRST.

Follow the instructions below to install the Card and Utility.

STEP 1

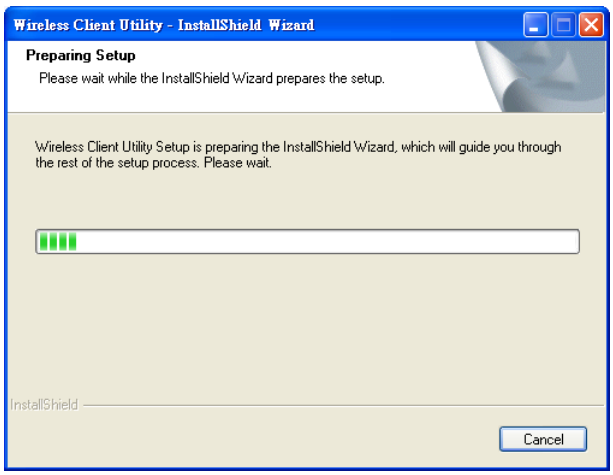
Insert the Driver and Utility CD into CD drive

STEP 2

If your CD Autorun is enabled, the installation procedures will be started. (Otherwise open your CD folder and double-click on the “setup.exe” file)

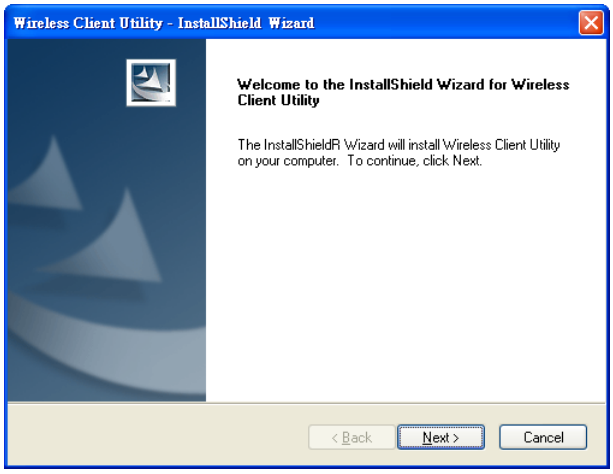
STEP 3

The InstallShield Wizard prepares for installation.



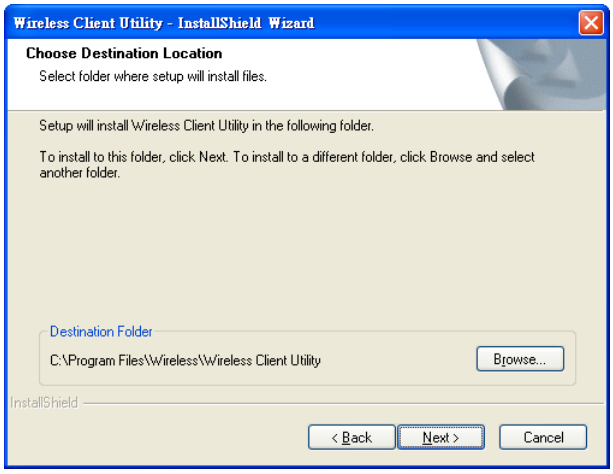
STEP 4

The InstallShield Wizard prompts you for confirmation. Click **Next** on the following menu.



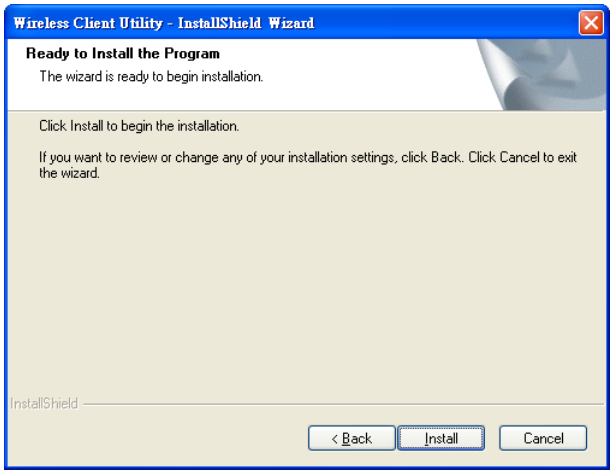
STEP 5

In the destination Folder screen you are asked to confirm the Destination Folder for the application software. If you would like, you may change the destination folder to another location. Click **Next**



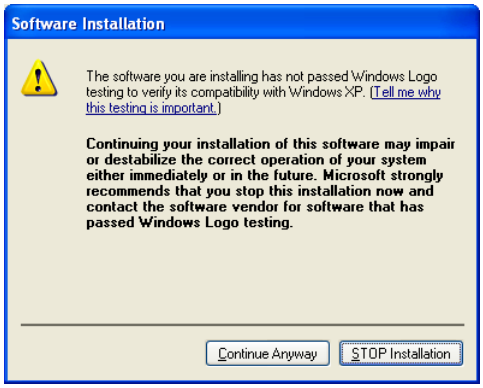
STEP 6

The wizard is ready to begin installation. Click **Install** on it.



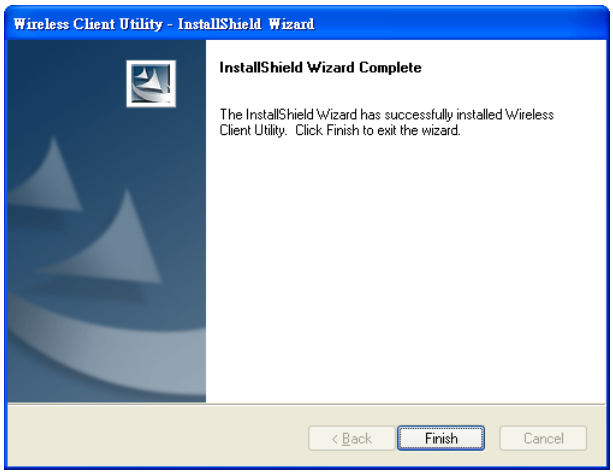
STEP 7

At the Software Installation menu click **Continue Anyway.**



STEP 8

Click **Finish** to complete the client utility installation.

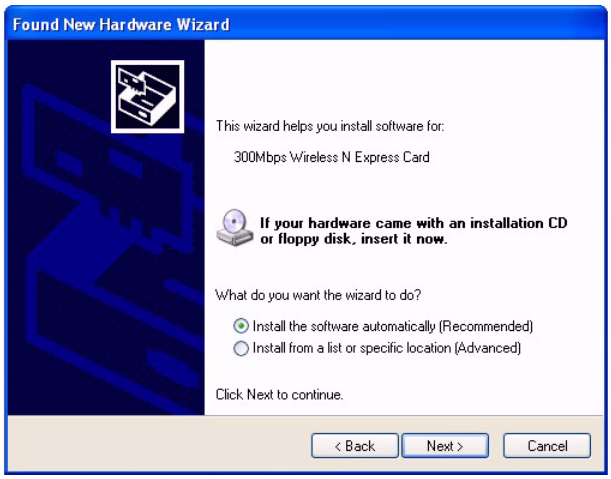


STEP 9

At this moment please insert your Card to your Laptop, after the following window pop up, click **Next** on the Fund New Hardware Wizard

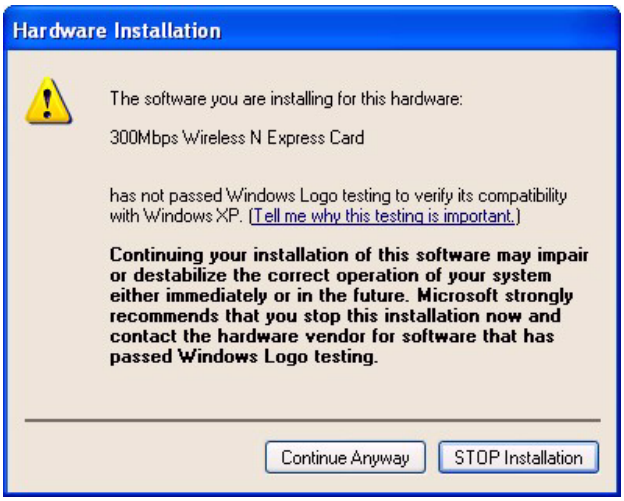
STEP 10

Choose "**Install the software automatically**" and click **Next.**



STEP 11

Click "**Continue Anyway**".



STEP 12

Click **Finish** to complete the installation.

2.6 Windows Vista installation

Important! DO NOT install the PC Adapter in the computer until instructed to.

Step 1

Insert the Utility & Driver CD-ROM into your computer's CD-ROM Drive and then click Install Driver & Utility.

Step 2

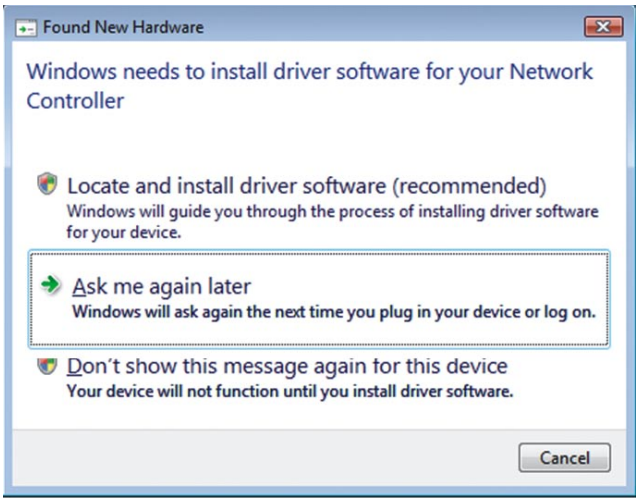
Shut down the computer.

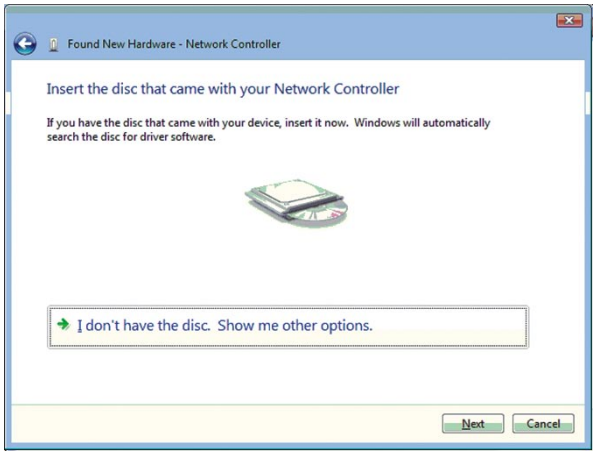
Step 3

Insert PC Card firmly into a notebook PC and then turn ON the computer and wait until the Windows desktop appears.

Step 4

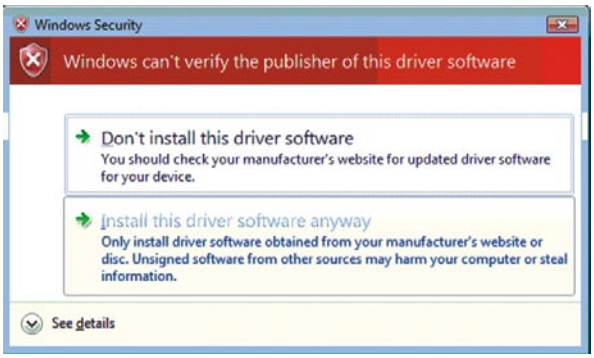
Click Locate and install driver software (recommended).





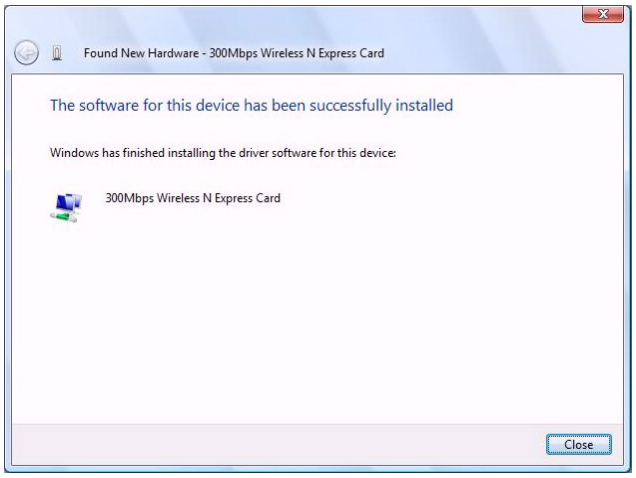
Step 5

Click on Next to continue.



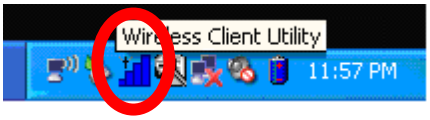
Step 6

Click on Close to exit.



2.6 Using the Utility to Configure Your Network

The following are explanations on how to configure and use the Utility program. After completing the installation procedure, a new icon as shown below will automatically appear in the lower right tray bar.



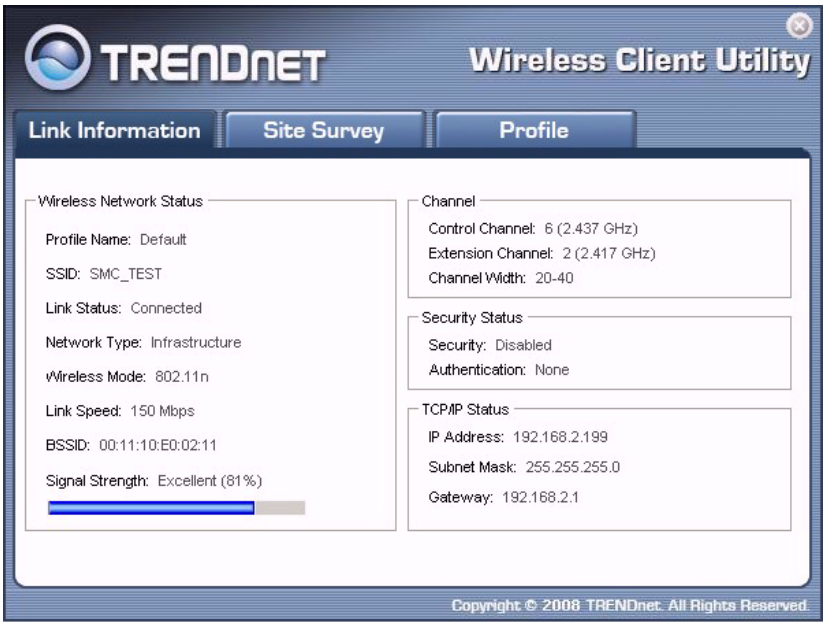
Hold your mouse pointer over the icon, and double click the left mouse button to open the Wireless Client Utility**.**

The Wireless Client Utility window as shown below will appear.

The user can now use any of the management functions available in the IEEE 802.11 Wireless Client Utility.

2.7.1 Link Information

Click the **Link Information** tab to see general information about the program and its operation.



The following table describes the items found on the Link Information screen.

Wireless Network Status	
Profile Name	The name of the current selected configuration profile. Set up the configuration name on the **Profile tab.**
SSID	Displays the wireless network name.
Link Status	Shows whether the station is associated to the wireless network.
Network Type	The type of network the station is connected to. The options include: ■ **Infrastructure (access point)** ■ **Ad Hoc**
Wireless Mode	Displays the wireless mode. 802.11g, 11b or 11n
Link Speed	Displays the current transmit rate in Mbps.
BSSID	Displays the MAC address of the access point the wireless card is associated to.
Signal Strength	Shows the strength of wireless signal.
Channel	

Control Channel	Channel number of the control 20MHz channel
Extension Channel	To locate the 40MHz channel on combination with the control channel
Channel Width	20MHz only or 40/20MHz channel support
Security Status	
Security	Shows the security type – Disable, WEP, WPA/WPA2, WPA-PSK/WPA2-PSK or 802.1X
Authentication	Displays the authentication mode.
TCP/IP Status	
IP Address	Displays the computer's IP address.
Subnet Mask	Displays subnet mask
Gateway	Displays gateway address

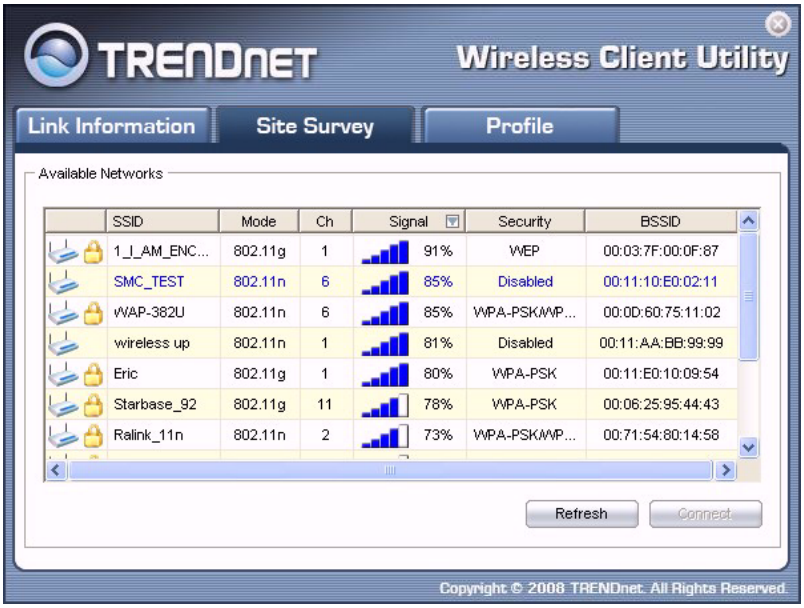
2.7.2 Site Survey

Click the **Site Survey** tab to see available infrastructure and ad hoc networks.

On this screen, click **Refresh** to refresh the list at any time.

Connecting to a different network

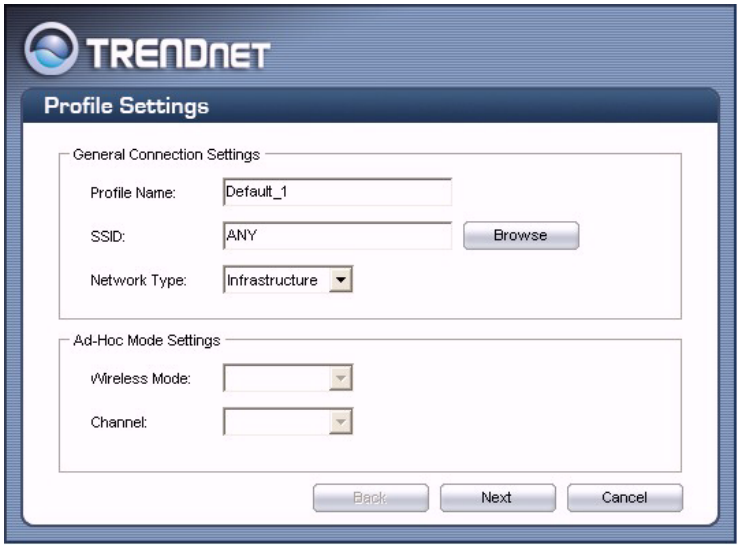
Hold your mouse pointer over the network icon, and click the right mouse button to select the network.



Click the **Connect** button to connect the available network. If no configuration profile exists for that network, the Profile Settings window opens to ask to create a profile for the network. Follow the procedures to create profile for that network.

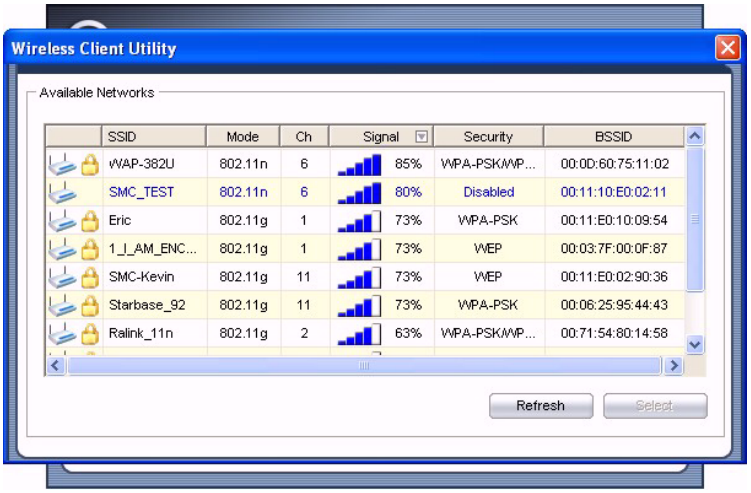
2.7.3 Profile

To add a new configuration profile, click **Add** on the Profile tab.
To modify a configuration profile, select the configuration from the Profile list and click the **Edit** button.

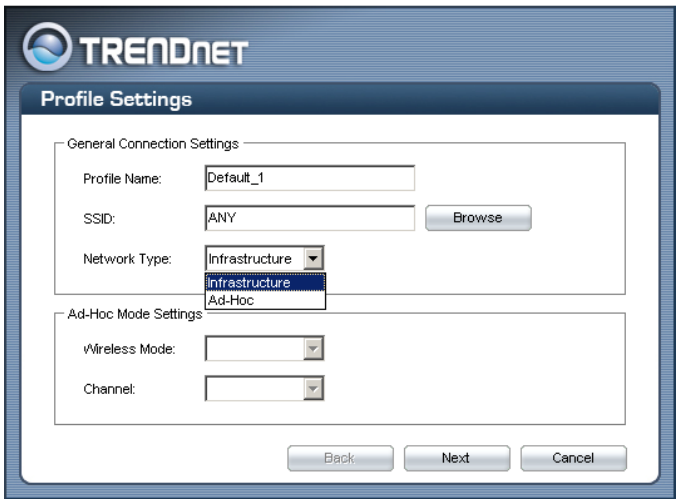


Scan Available Networks

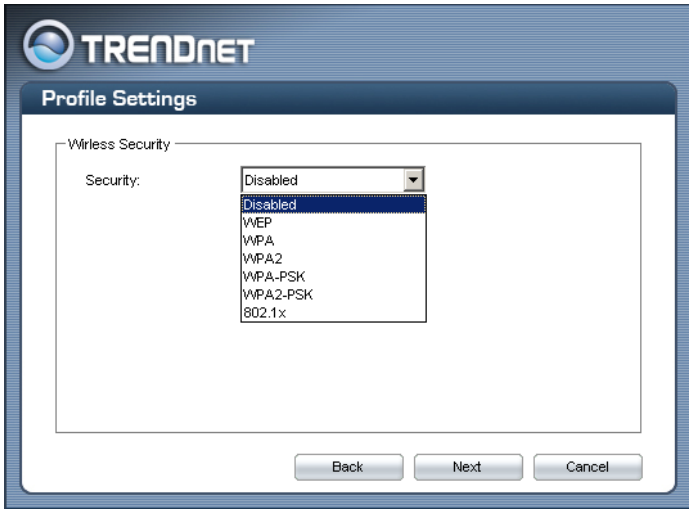
Click the **Browse** button on the Profile Settings screen to scan for available infrastructure and ad hoc networks. On this list, click **Refresh** to refresh the list at any time.



To configure a profile for Ad-Hoc or Infrastructure mode, select the Network Type field on the Profile Settings.



Click **Next** to continue the profile setting.

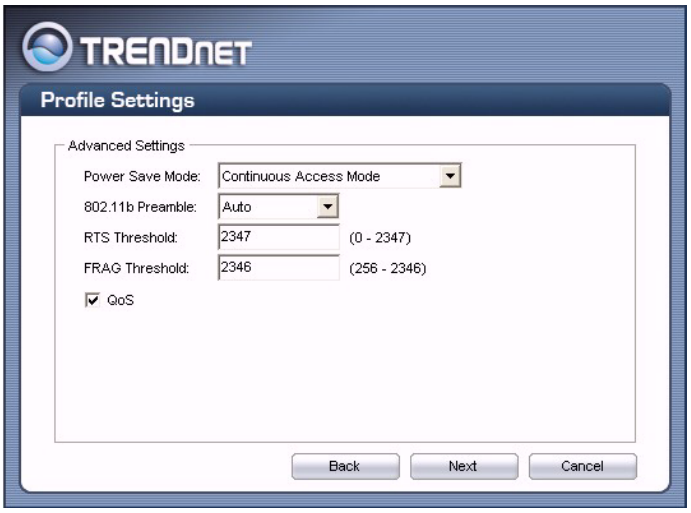


To define the security mode, select the security button of the desired security mode. And then click **Next** to continue. Please see following table for details of security modes.

WEP	This card support two modes of WEP, include: ■ **64 Bits** ■ **128 Bits** Both 64-Bit & 128-Bit modes support Passphrase.
WPA/WPA2	Enables the use of Wi-Fi Protected Access (WPA). Choosing WPA/WPA2 opens the WPA/WPA2 **Security Settings** screen. The options include: ■ **TLS (Transport Layer Security)** is a Point-to-Point Protocol (PPP) extension supporting additional authentication methods within PPP. Transport Layer Security (TLS) provides for mutual authentication, integrity-protected cipher suite negotiation, and key exchange between two endpoints. ■ **PEAP (EAP-GTC)** (**Protected Extensible Authentication Protocol)** authenticates wireless LAN clients using only server-side digital certificates by creating an encrypted SSL/TLS tunnel between the client and the authentication server. The tunnel

	then protects the subsequent user authentication exchange. ▪ **PEAP (EAP-MSCHAP V2)** (**Protected Extensible Authentication Protocol**) **To use PEAP (EAP-MSCHAP V2) security**, the server must have WPA-PEAP certificates, and the server properties must already be set. Check with the IT manager ▪ **TTLS (Tunneled Transport Layer Security)** An EAP variant that provides mutual authentication using a certificate for server authentication, and via a secure TLS tunnel for the client
WPA-PSK/WPA2-PSK	Enables WPA/WPA2 Passphrase security. Fill in the WPA/WPA2 Passphrase on **Security Settings** screen.
802.1x	Enables 802.1x security. This option requires IT administration. Choosing 802.1x opens the 802.1x **Security Settings** screen. The options include: ▪ **TLS** ▪ **PEAP** ▪ **TTLS**

Advanced Settings
After Security Settings finished, the **Advanced Settings** screen will be shown as following.

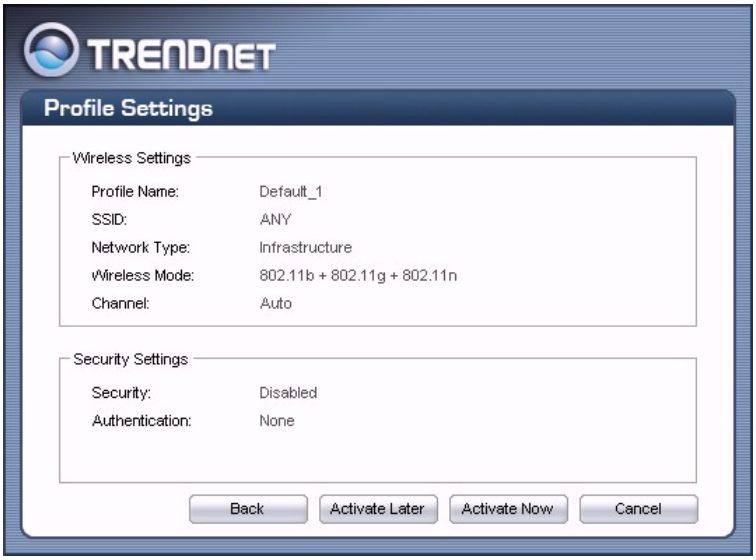


The following table describes the items found on the Advanced Settings screen.

Power Save Mode	Shows the power save mode. Power management is disabled in ad hoc mode. The options include: • **Continuous Access Mode** • **Maximum Power Saving**

	• **Fast Power Saving**
802.11b Preamble	Displays the 802.11b preamble format. The options include: ● **Long** ● **Short** ● **Auto**
RTS Threshold	Value from 0 ~ 2347
FRAG Threshold	Value from 256 ~ 2346
Qos	Enable/disable Qos

After advance settings are finished, the following screen showed as below.
You can activate the profile now or later.



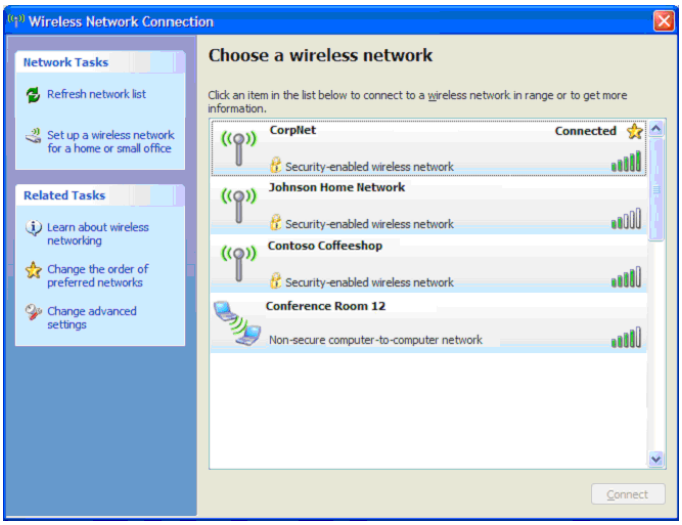
Using Windows Wireless Zero Configuration

Step 1

Click on the balloon option “One or more wireless networks are in range of this computer”.

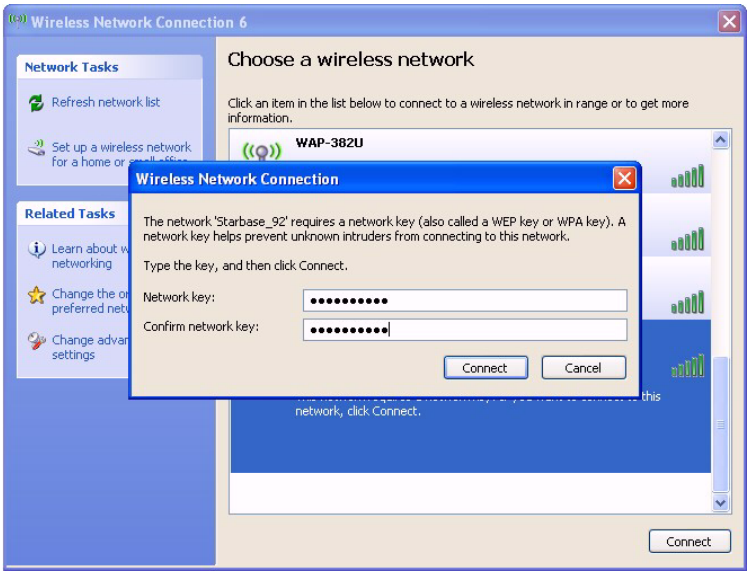
Step 2

Choose a network from the list.



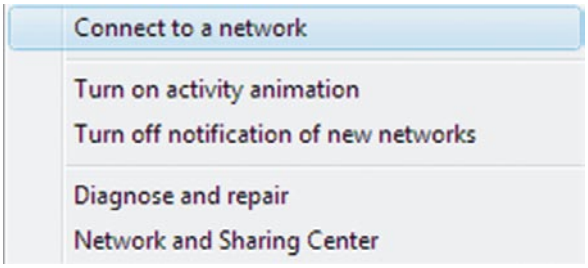
Step 3

If the wireless network has wireless security, please supply the wireless security key. Enter the wireless key in twice at the security prompt.

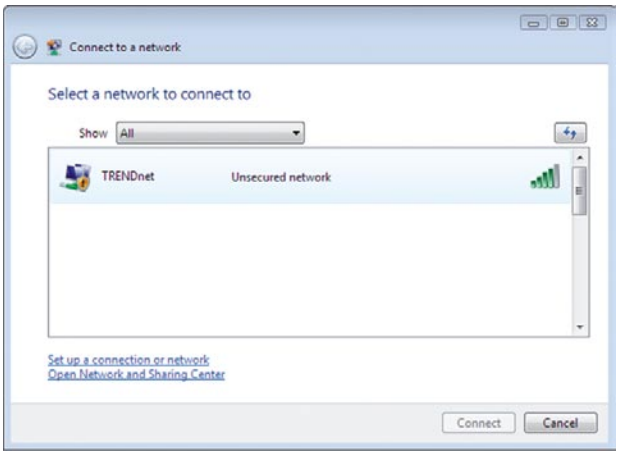


Using Windows Vista

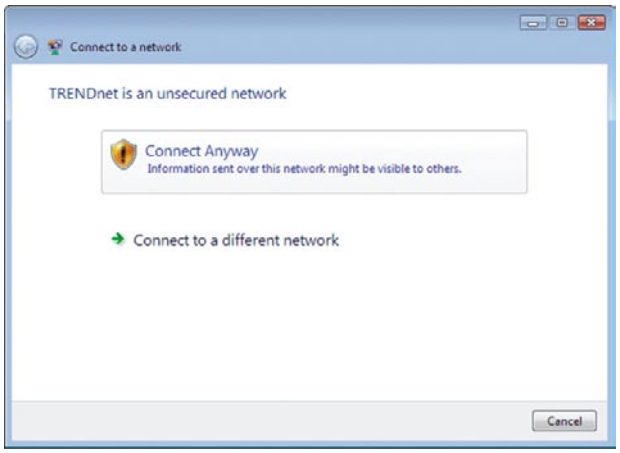
Step 1
On the bottom right-hand corner of the screen, right click the wireless network connection icon and select Connect to a network.



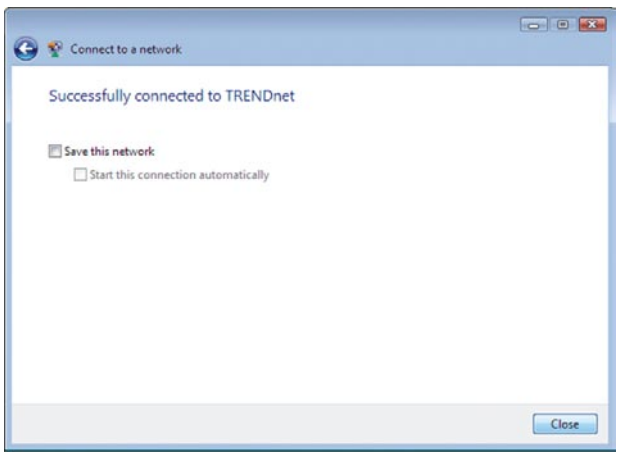
Step 2
Select the desired network and then click Connect.



Step 3
Click on Continue anyway



Step 4
Click on Close.



Chapter 3 – Maintenance

This chapter describes how to uninstall or upgrade the Wireless Utility.

3.1 Uninstall the Driver

Follow the steps below to remove (or uninstall) the Card driver from your computer.

Step 1. To remove the driver from the OS, go to **Start -> Control Panel**

Step 2. Double-click **System**

Step 3. Under **Hardware** tab, click **Device Manager.**

Step 4. Double-click **Network adapters**

Step 5. Right-click mouse button on "**300Mbps Wireless N Express Card** ", and choose **Uninstall**

Step 6. Click **OK** to confirm that you are going to uninstall the driver

3.2 Uninstall the Client Utility

Follow the steps below to remove the Client Utility from your computer.

Step 1. To remove the utility from the OS, go to **Start -> Control Panel**

Step 2. Double-click **Add-Remove Programs**

Step 3. Select **300Mbps Wireless N Express Card,** and click the **Uninstall** button

3.3 Upgrading the Wireless Utility

To perform the upgrade, follow the steps below.

Step 1. Download the latest version of the utility from the web site and save the file on your computer.

Step 2. Follow the steps in *Section 3.2* to remove the current Wireless Utility from your computer.

Step 3. Restart your computer if prompted.

Step 4. After restarting, refer to the procedure in the Chapter 2 to install the new utility.

Glossary

For unfamiliar terms used below, look for entries elsewhere in the glossary.

AD-HOC (IBSS)

Ad-hoc mode does not require an AP or a wired network. Network that transmits wireless from computer to computer without the use of a base station (access point).

Two or more wireless stations communicate directly to each other. An ad-hoc network may sometimes be referred to as an Independent Basic Service Set (IBSS).

CHANNEL

A radio frequency used by a wireless device is called a channel.

EAP AUTHENTICATION

EAP (Extensible Authentication Protocol) is an authentication protocol that runs on top of the IEEE802.1X transport mechanism in order to support multiple types of user authentication. By using EAP to interact with an EAP-compatible RADIUS server, an access point helps a wireless station and a RADIUS server perform authentication.

ENCRYPTION

The reversible transformation of data from the original to a difficult-to-interpret format. Encryption is a mechanism for protecting confidentiality, integrity, and authenticity of data. It uses an encryption algorithm and one or more encryption keys.

FRAGMENTATION THRESHOLD

This is the maximum data fragment size that can be sent before the packet is fragmented into smaller packets.

IEEE 802.1X

The IEEE 802.1X standard outlines enhanced security methods for both the authentication of wireless stations and encryption key management. Authentication can be done using an external RADIUS server.

INFRASTRUCTURE (BSS)

When a number of wireless stations are connected using a single AP, you have a Basic Service Set (BSS).

ROAMING

In an infrastructure network, wireless stations are able to switch from one BSS to another as they move between the coverage areas. During this period, the wireless stations maintain uninterrupted connection to the network. This is roaming. As the wireless station moves from place to place, it is responsible for choosing the most appropriate AP depending on the signal strength, network utilization among other factors.

SSID

The SSID (Service Set Identity) is a unique name shared among all wireless devices in a wireless network. Wireless devices must have the same SSID to communicate with each other.

TEMPORAL KEY INTEGRITY PROTOCOL (TKIP)

Temporal Key Integrity Protocol (TKIP) uses 128-bit keys that are dynamically generated and distributed by the authentication server.

USER AUTHENTICATION

WPA applies IEEE 802.1X and Extensible Authentication Protocol (EAP) to authenticate wireless clients using an external RADIUS database. If you do not have an external RADIUS server, use WPA-PSK/WPA2-PSK (WPA -Pre-Shared Key) that only requires a single (identical) password entered into each access point, wireless gateway and wireless client. As long as the passwords match, clients will be granted access to a WLAN.

WEP

WEP (Wired Equivalent Privacy) encryption scrambles all data packets transmitted between the TEW-642EC and the AP or other wireless stations to keep network communications private. Both the wireless stations and the access points must use the same WEP key for data encryption and decryption.

WPA/WPA2

Wi-Fi Protected Access (WPA) and WPA2 (future upgrade) is a subset of the IEEE 802.11 i security specification draft. Key differences between WPA and WEP are user authentication and improved data encryption. WPA2 is a wireless security standard that defines stronger encryption, authentication and key management than WPA.

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