

IEEE 802.11n Wireless Series

Wireless 1T1R USB Adapter



User Manual

Version: 2.0
Date: October 9, 2010

FCC Certifications



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. It also obtains FCC Certifications (FCC ID is NOI-W121C). 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.

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.

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.

IMPORTANT NOTE:

FCC Radiation Exposure Statement:

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

IEEE 802.11b/g or 802.11n operation of this product in the U.S.A. is firmware-limited to channels 1 through 11.

CE Mark Warning



This equipment complies with the requirements relating to electromagnetic compatibility, EN 55022 Class B for ITE, the essential protection requirement of Council Directive 2004/108/EC on the approximation of the laws of the Member States relating to electromagnetic compatibility and R&TTE Directive 1999/5/EC to meet the regulation of the radio equipment and telecommunications terminal equipment.

Company has an on-going policy of upgrading its products and it may be possible that information in this document is not up-to-date. Please check with your local distributors for the latest information. No part of this document can be copied or reproduced in any form without written consent from the company.

Trademarks:

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Package Contents

The following contents should be found in your box:

- One IEEE 802.11n USB Adapter
- One external antenna
- One resource CD, including:
 - ✧ REALTEK 11n USB Wireless LAN Driver and Utility
 - ✧ User Manual

Note:

Make sure that the package contains the above items. If any of the listed items are damaged or missing, please contact with your distributor.

Conventions:

The “Adapter” mentioned in this user guide stands for Wireless 11n USB Adapter without any explanations.

CONTENTS

Package Contents	4
Chapter 1 Introduction	7
1.1 Overview of the Product.....	7
1.2 Application Diagram	7
1.3 Features.....	8
1.4 LED Status	8
Chapter 2 Management Guide for Windows XP User	9
2.1 Hardware Installation	9
2.2 Software Installation.....	9
2.2.1 Overview	9
2.2.2 Installation Procedures.....	9
2.3 Management Guide	12
2.3.1 Select a Configuration Tool	12
2.3.2 To Connect with Microsoft Zero Configuration Tool	13
2.3.3 Introduction to the 802.11n Wireless LAN Utility	13
2.3.3.1 Interface	13
2.3.3.2 Available Network	15
2.3.3.3 Profile.....	16
2.3.3.4 General	20
2.3.3.5 Advanced	21
2.3.3.6 Status	21
2.3.3.7 Statistics.....	23
2.3.3.8 Wi-Fi Protect Setup	24
2.3.4 AP Mode Management Guide for Windows XP User	27
2.3.4.1 General	28
2.3.4.2 Advanced	31
2.3.4.3 Statistics.....	32
2.3.4.4 ICS.....	33
Chapter 3 Management Guide for Vista User.....	34
3.1 Hardware Installation	34
3.2 Soft Installation.....	34
3.2.1 Overview	34
3.2.2 Installation Procedures.....	34
3.3 Management Guide.....	36
3.3.1 Interface	36
3.3.2 Available Network	37
3.3.3 Profile.....	38
3.3.4 General	42
3.3.5 Advanced	43
3.3.6 Status	44
3.3.7 Statistics.....	45
3.3.8 Wi-Fi Protect Setup	46
3.4 AP Mode Management Guide for Vista User	50
3.4.1 General	50
3.4.2 Advanced	53
3.4.3 Statistics.....	54
3.4.4 ICS.....	55
Chapter 4 Introduction for Windows 7 User	56

4.1 Hardware Installation56

4.2 Software Installation.....56

 4.2.1 Overview56

 4.2.2 Installation procedures56

4.3 Management Guide.....58

 4.3.1 Interface58

 4.3.2 Available Network60

 4.3.3 Profile.....61

 4.3.4 General65

 4.3.5 Advanced66

 4.3.6 Status67

 4.3.7 Statistics.....68

 4.3.8 Wi-Fi Protect Setup70

 4.3.9 Virtual WiFi.....73

4.4 AP mode Management Guide for Windows 7 User78

 4.4.1 General78

 4.4.2 Advanced81

 4.4.3 Statistics.....82

 4.4.4 ICS.....83

Appendix A: Specifications85

Appendix B: Glossary86

Chapter 1 Introduction

Thank you for purchasing this product. Read this chapter to know about your IEEE 802.11n wireless USB Adapter.

1.1 Overview of the Product

Comply with 802.11n standard

This Wireless 11n USB Adapter provides you a better wireless signal, with its smart external antenna. It complies with standards IEEE 802.11n with data rate up to 150Mbps, and IEEE 802.11b/g with maximum data rate of 54Mbps. It can also interoperate with all the 11Mbps wireless(802.11b) products.

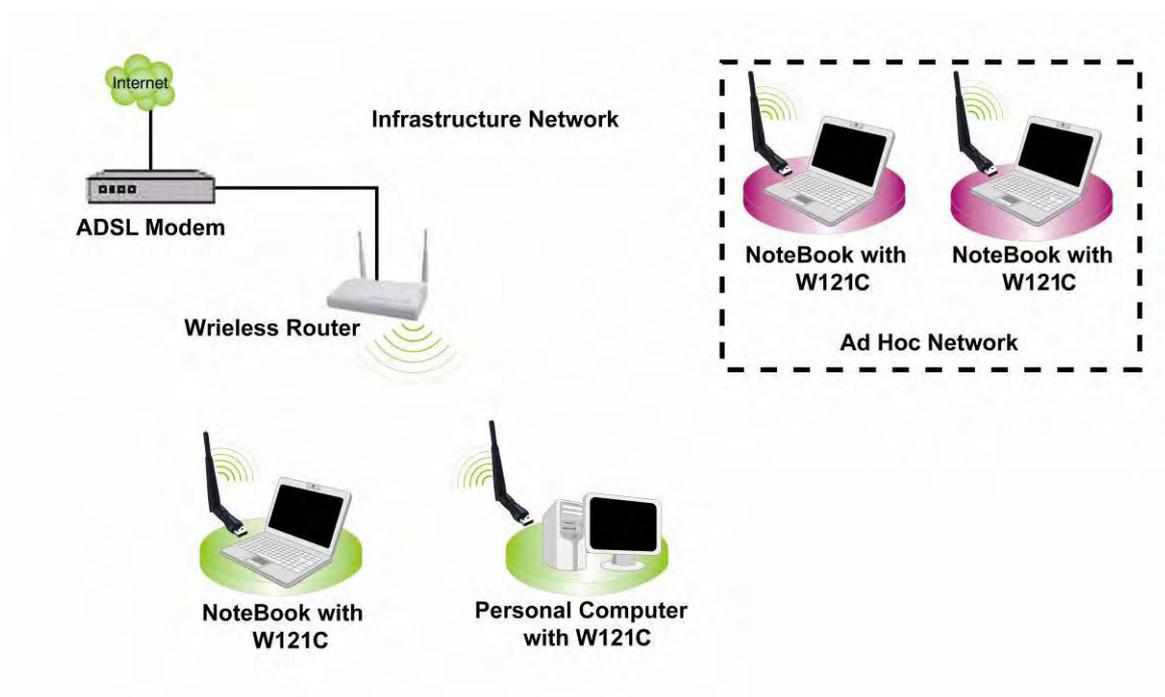
Reliable coverage

This Adapter includes a convenient utility for scanning available networks and saving preferred networks that users usually connected with. And your wireless communications are protected by up to 128-bit encryption, which can keep your data secure.

Easy installation and connection

Installation and use are further simplified by living up to USB's plug and play installation. You will neither need to open the case of your computer, nor will you be required to set IRQ's. It represents the simplest way to connect your computer to an ethernet based network. Also, this USB Adapter has a small shape and is light in weight. It is convenient to carry and place.

1.2 Application Diagram



1.3 Features

- High Speed transfer data rate up to 150 Mbps.
- Supports 2.4GHz Frequency band, 1T1R.
- Supports QoS Enhancement (WMM, WMM-PS Client mode).
- Supports Multiple BSSID.
- Supports frame aggregation, Power saving mechanism and co-existence.
- Transmit Opportunity (TXOP) Short Inter-Frame Space (SIFS) bursting for higher multimedia bandwidth.
- Supports driver for Windows 7, XP 86, XP 64, Vista 86, Vista 64 and Linux.
- Supports auto-installation and diagnostic utilities.

1.4 LED Status

This USB Adapter contains one LED. Please refer to the following description for LED definition.

LED Indications	Status	Working Status
Radio/ACT LED	Blink blue	The Adapter is Radio on
	Blink blue and flashing intermittently	The Adapter is already connected but is not transmitting or receiving data
	Blink blue and fast flashing	The Adapter is activity and transmitting of receiving data.
	Off	The Adapter is Radio off

Chapter 2 Management Guide for Windows XP User

2.1 Hardware Installation

The installation of the Adapter is very simple. You could plug the Adapter directly to the USB port on your computer. The LED will light up when the Adapter is installed successfully and the PC is on.

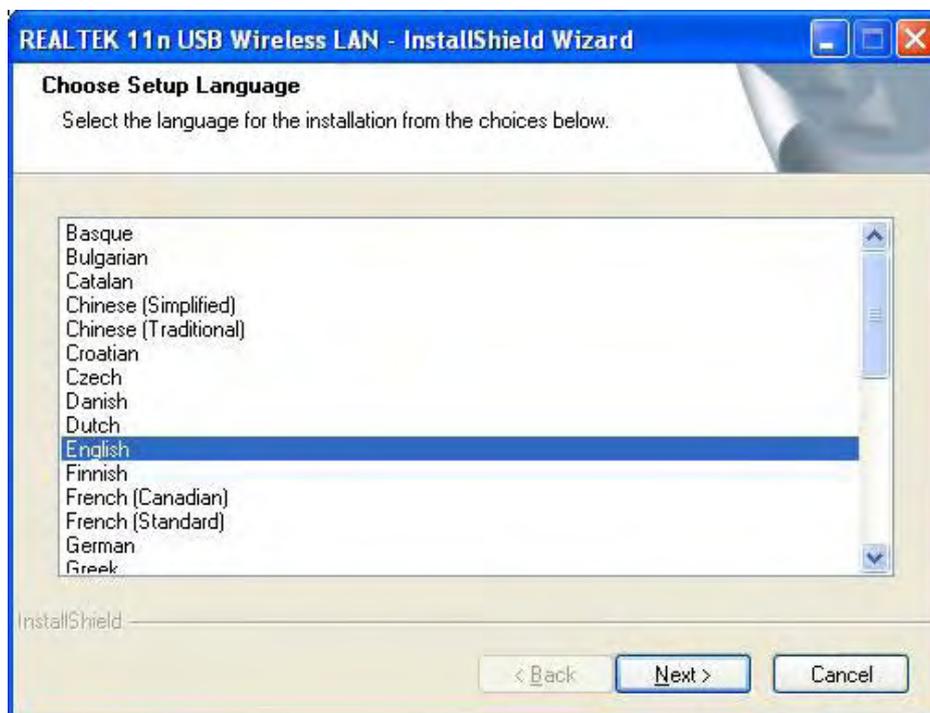
2.2 Software Installation

2.2.1 Overview

The following Setup Wizard will guide you through the Installation procedure for Windows XP. The Setup Wizard will install the REALTEK 11n USB Wireless LAN Driver and Utility. When you install the hardware before installing the software, the system will prompt “Found New Hardware Wizard” on your screen, click Cancel, and run the Setup Wizard program on the CD-ROM.

2.2.2 Installation Procedures

1. Insert the CD into your CD-Rom, and find the setup driver in the CD. Then click the setup icon to start the installation.
2. The language-selecting window pops up. Please select the language you use and click “Next”.



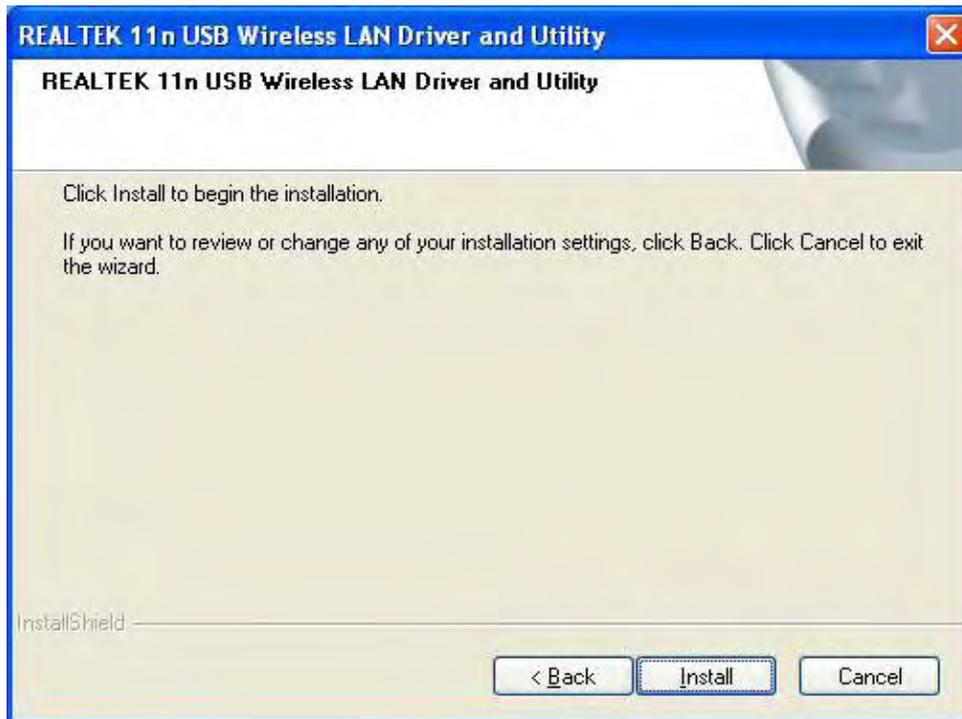
3. At this moment “Preparing Setup” window appears. Please wait.



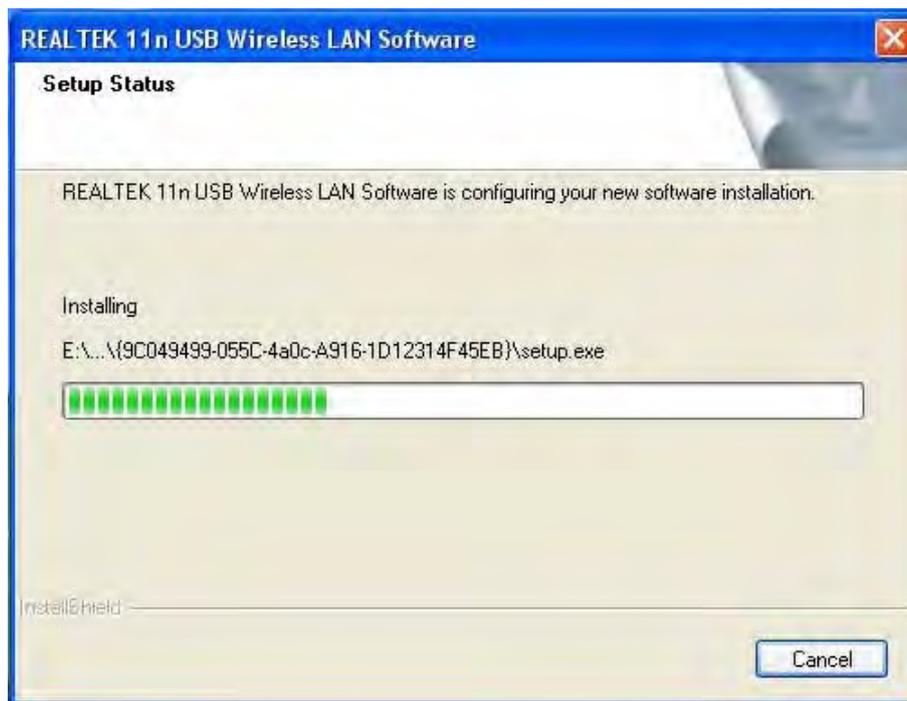
4. Now comes the welcome window. Click the “Next” button to proceed.



5. Click the "Install" button to start installing.



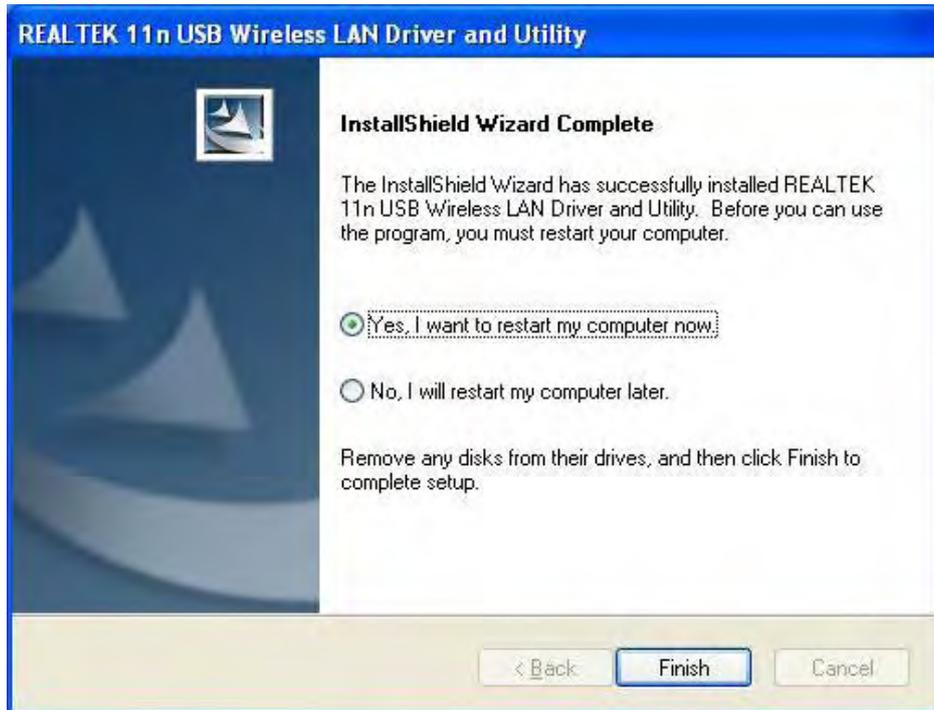
6. Please wait when you see the following interface.



7. Please wait again while installation



8. After all the steps above, you will see the screen below. Select “Yes, I want to restart my computer now.” and click “Finish” to reboot the system.



2.3 Management Guide

This guide describes how to configure your Adapter for wireless connectivity on your Wireless Local Area Network (WLAN) and use the data security encryption features.

After Installing the Adapter, the Adapter's tray icon will appear in your system tray. It appears at the bottom of the screen, and shows the signal strength using color and the received signal strength indication (RSSI).



If the icon is purple, there is no connection.



If the icon is white, the network is dropping off.



If the icon is almost green, there is good signal strength.



If the icon is full green, there is excellent signal strength.

2.3.1 Select a Configuration Tool

In the following instruction for making a network connection, we use the provided Utility to configure your wireless network settings.

Note:

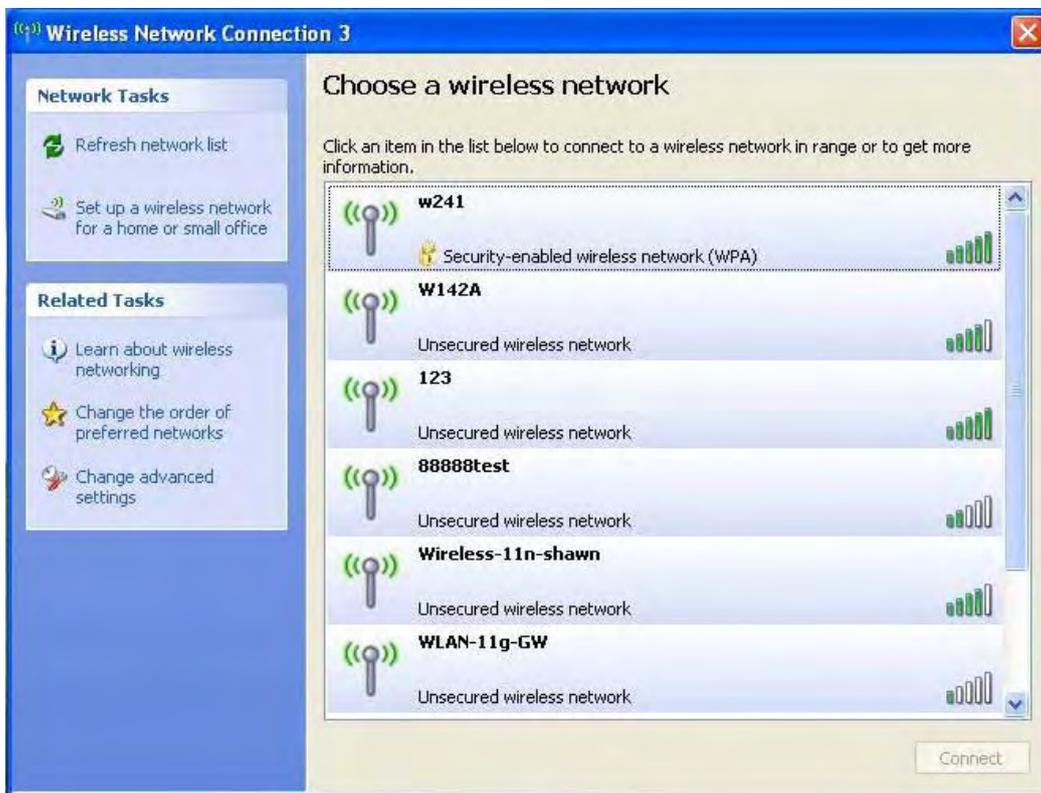
You could use either the software we provide or Microsoft Zero Configuration tool to configure this Adapter.

2.3.2 To Connect with Microsoft Zero Configuration Tool

After specifying the Microsoft Zero Configuration tool to configure your wireless network, right click on the  icon on system tray. Select “View Available Wireless Networks” to specify your wireless network.



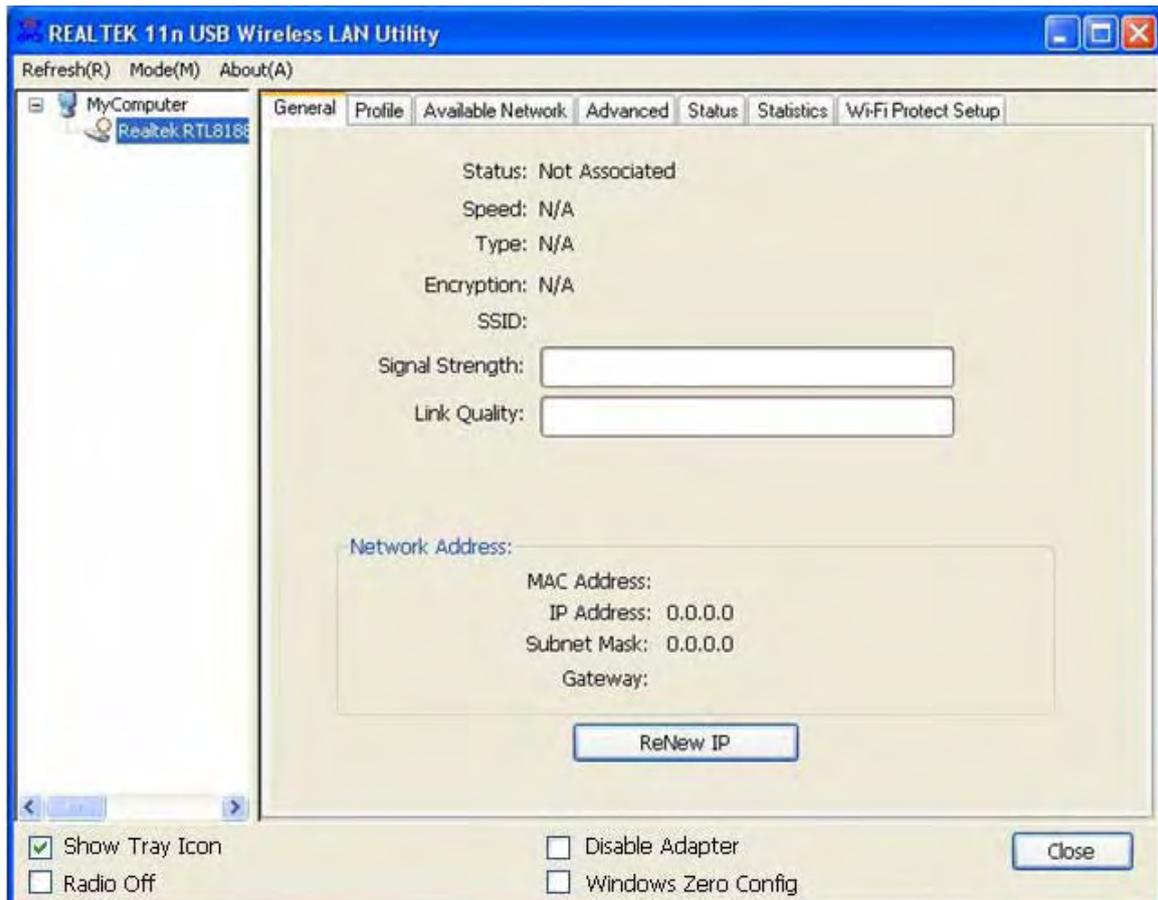
The tool shows the available wireless networks. Select your demanding network to connect with. To connect to a wireless network, please click “Change advanced settings” to be compatible with your wireless network settings.



2.3.3 Introduction to the 802.11n Wireless LAN Utility

2.3.3.1 Interface

After the driver installation, the  icon will appear on your desktop. Double click this icon and the following interface appears:

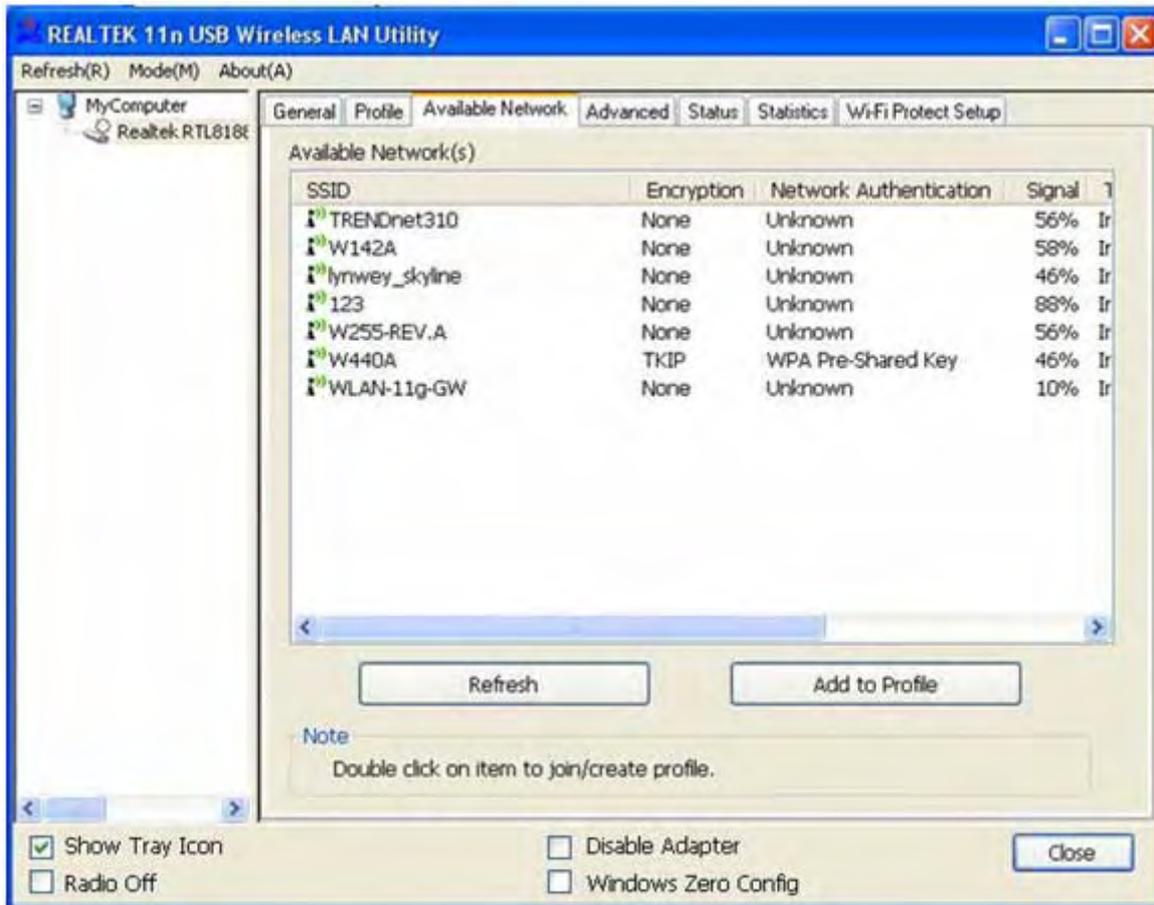


Note:

1. **Functional Buttons:** on the upper side of the utility window, you can click each button to access each configuration window for the detail information in the center area.
2. **Optional Table:** at the bottom: "Show Tray Icon", "Disable Adapter", "Radio off", "Windows Zero Config"
 - A. *Show Tray Icon*---Clicking "Show Tray Icon" and "Close" button, the management GUI will be minimized and stay on the tray icon located at the right bottom corner of Windows. If not, management GUI will shut down by only click "Close" button with unchecked condition.
 - B. *Disable Adapter*---Disable this wireless PCI card.
 - C. *Radio off*---It can save power while turning off the radio. While the radio is off, the links with other wireless network will be disconnected. User should be aware that while the wireless configuration is in AP mode. Radio Off will cause the sub network belonging to the AP to be disconnected with internet.
 - D. *Windows Zero Config*---External Configuration: select this item will enables you to disable the WLAN Station Configuration Utility and indicates that the station driver is to be configured with Windows XP's built-in Zero Configuration Utility. This item is only displayed on windows XP systems.

2.3.3.2 Available Network

This table lists the available wireless networks surrounding you. You can select the network you want in this list (The network with the strongest signal is recommended). You can refresh the connecting network list by clicking the “Refresh” button.



Available Network Information:

Items	Information
SSID	The name of the IEEE 802.11 wireless network. This field has a maximum limit of 32 characters.
Encryption	Shows the encryption mode in use. There are total 4 modes: None, WEP, TKIP and AES.
Network Authentication	Shows the authentication mode in use.
Signal	This percentage shows the strength of the signal.
Type	The type of network and the station currently connected are shown here. The options include :

	<ul style="list-style-type: none">• Infrastructure - All wireless clients will connect to an access point or wireless router.• Ad-Hoc - Directly connecting to another computer, for peer-to-peer communication, using wireless network adapters on each computer, such as two or more wireless adapters.
BSSID	The MAC address of locally-managed, generating from a 46 random code.
Support Rates	Show current rate

Note:

- 1) An Infrastructure network contains an Access Point or wireless router. All the wireless devices or clients will connect to the wireless router or access point.
- 2) An Ad-Hoc network contains only clients, such as laptops with wireless desktop adapters. All the adapters must be in Ad-Hoc mode to communicate.

2.3.3.3 Profile

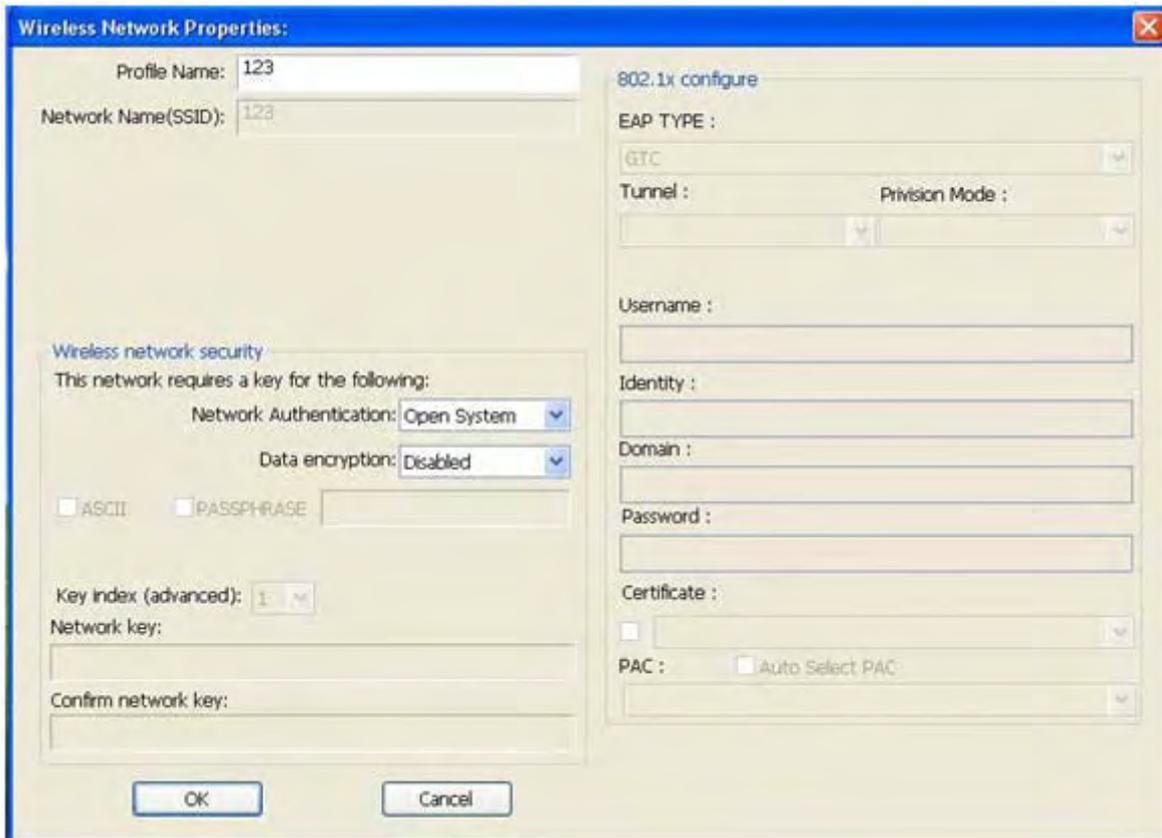
1. Add a new profile:

(1) Selecting an available network in the “Available Network” function then click the “Add to Profile” button., or double click the network name. You could also add a new profile (for example, the network with SSID 123) quickly by clicking the “Add” button in the “Profile” function.

Note: If the network you add to profile is not encrypted, “Unsecured network” window will pop up, then Click “OK”.



(2) It displays “Wireless Network Properties” dialog box. This profile page allows users to save different wireless settings, which helps users to get access to wireless networks at home, office or other wireless network environments quickly.



In this dialog box, there are some items:

Items	Information
Profile Name	Identifies the configuration profile .This name must be unique. Note that the profile names are not case-sensitive. (You can enter the Profile name by “Add”, but you could only use the default name by “Add to profile”).
Network Name(SSID)	The IEEE 802.11n wireless network name, using default name defined by system. This field has a maximum limit of 32 characters.

(3) Wireless Network Security

A. Network Authentication



There are 7 types supported: Open System, Shared Key, WPA-PSK, WPA2-PSK, and WPA 802.1X, WPA2 802.1X, WEP 802.1X. Please select a type from the drop down list. Select the Security tab in the screen above. To define the security mode, select the desired security mode as follows.

- **Open System:** enable an adapter to attempt authentication regardless of its WEP settings. It will only associate with the access point if the WEP keys on both the adapter and the access point match.
- **Shared-key:** only allows the adapter to associate with access points that have the same WEP key.
- **802.1x:** This item appears while the environment is set to an open authentication with WEP encryption. The section is also available in WPA and WPA2 authentication types.
- **Preshared Key (PSK):** This is the shared secret between AP and STA. For WPA-PSK, WPA2-PSK and WPA-NONE authentication mode, this field must be filled with characters longer than 8 and less than 32 lengths. The following dialog appears if you have input invalid values.
- **WEP Key:** Only available when using WEP encryption algorithm. The key must match AP's key. Only using the same cryptographic key to access the computer, the internet can storage, and decryption the information from other computer.

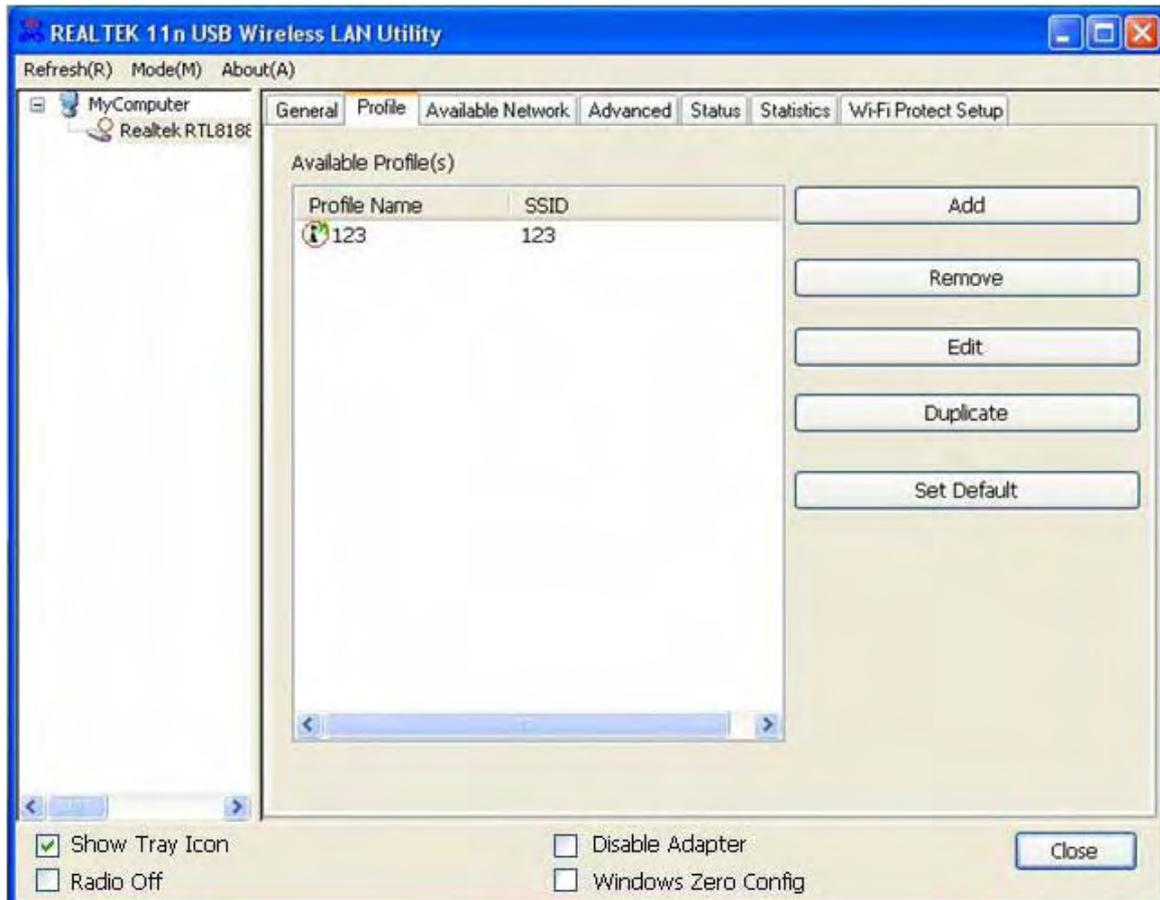
B. Data Encryption:

Data encryption	There are 4 types supported: Disabled, WEP, TKIP and AES. The available encryption selection will differ from the authentication type you have chosen, the result is shown below:	
	Authentication	Available Encryption Selection
	Open System	Disabled, WEP
	Shared Key , WEP 802.1X	WEP
	WPA-PSK, WPA2-PSK, and WPA 802.1X, WPA2 802.1X	TKIP, AES

Note: Select different Security Options, the configurations are different; you can select the appropriate security option and configure the exact key as your need.

- **TKIP:** "Temporary Key Integration communication Protocol", it provide each packet's key mixture, message integration and key reconstruction mechanism. TKIP can use with personal or the enterprise network validation.
- **AES:** "Advanced Encryption Standard", it is a new method that the wireless transmission of privacy protection. AES encryption method is more careful than TKIP.

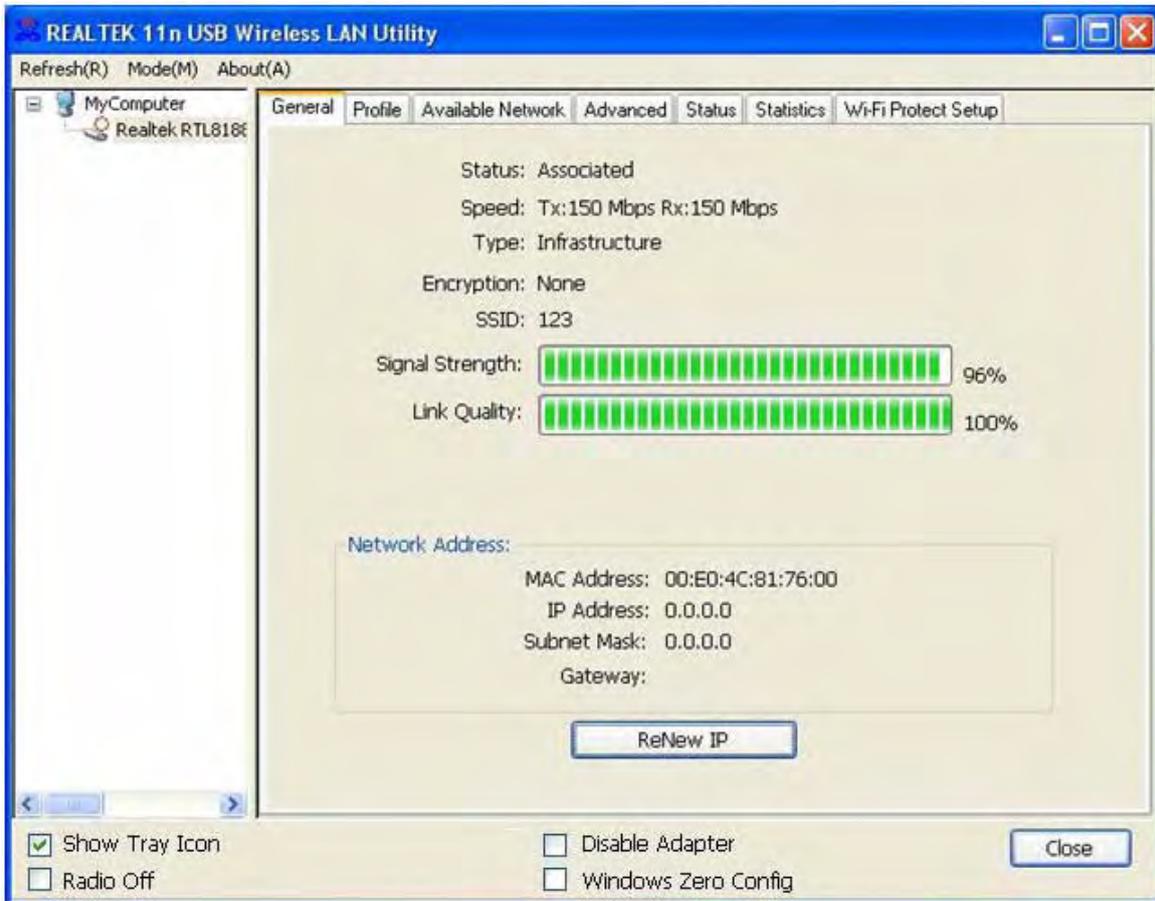
(4) Finish the configuration, then click "OK", that network has been added to the profile. You can go to the "General" interface for the connecting status.



Profile List: The list shows all the profiles you have added before.

Buttons: You can click on these buttons to **Add** a new profile, **Remove**, **Edit**, **Duplicate** or **Set Default** an old profile.

2.3.3.4 General

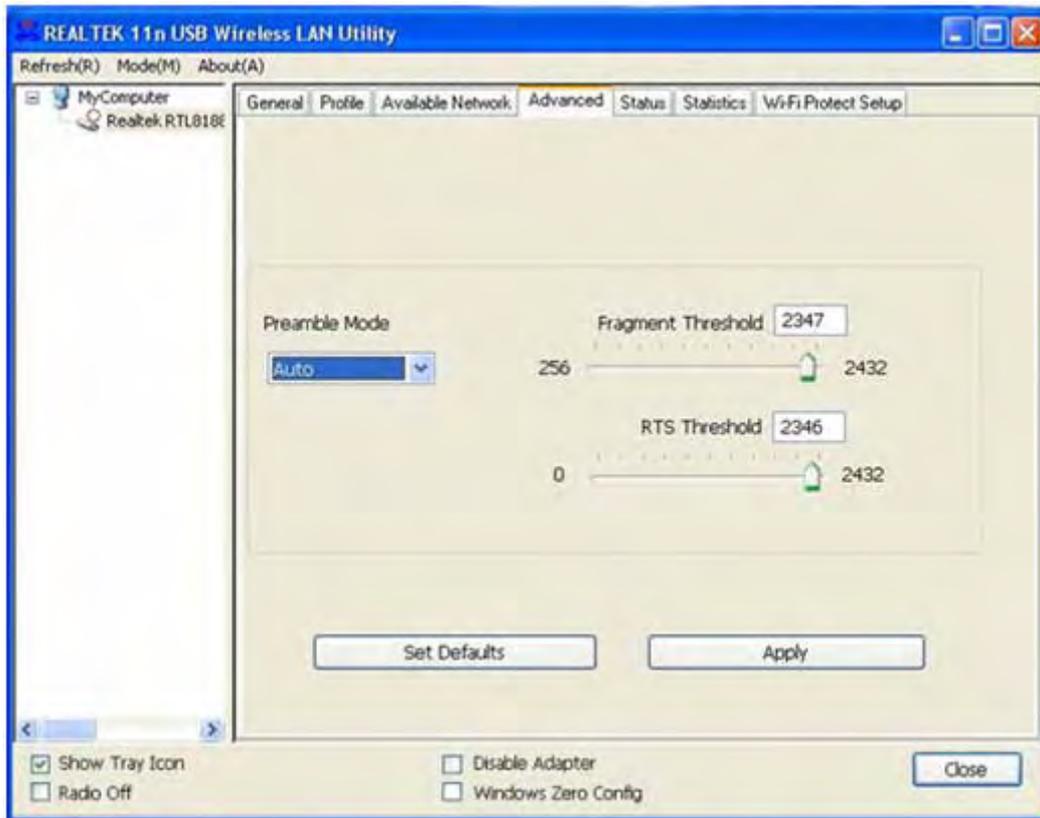


In this window, there are some items as following:

Items	Information
Status	Currently connection status.
Speed	Show current transmit rate and receive rate.
Type	Network type in use.
Encryption	Encryption type in use.
SSID	The name of the IEEE 802.11 wireless network. This field has a maximum limit of 32 characters.
Signal Strength	Receive signal strength.
Link Quality	Display connection quality based on signal strength.
Network Address	A. MAC Address: The MAC address of the wireless network adapter. B. IP Address: IP address of current connection. C. Subnet Mask: Subnet mask of current connection. D. Gateway: Gateway of current connection.

2.3.3.5 Advanced

This screen below enables you to make advanced configuration for the profile. Please refer to the following chart for definitions of each item.



1. Preamble Mode

The length of CRC blocks in the frames during the wireless communication. Select the options from the drop list: (1) Long (2)Short (3)Auto.

2. Threshold

(1) Fragment Threshold

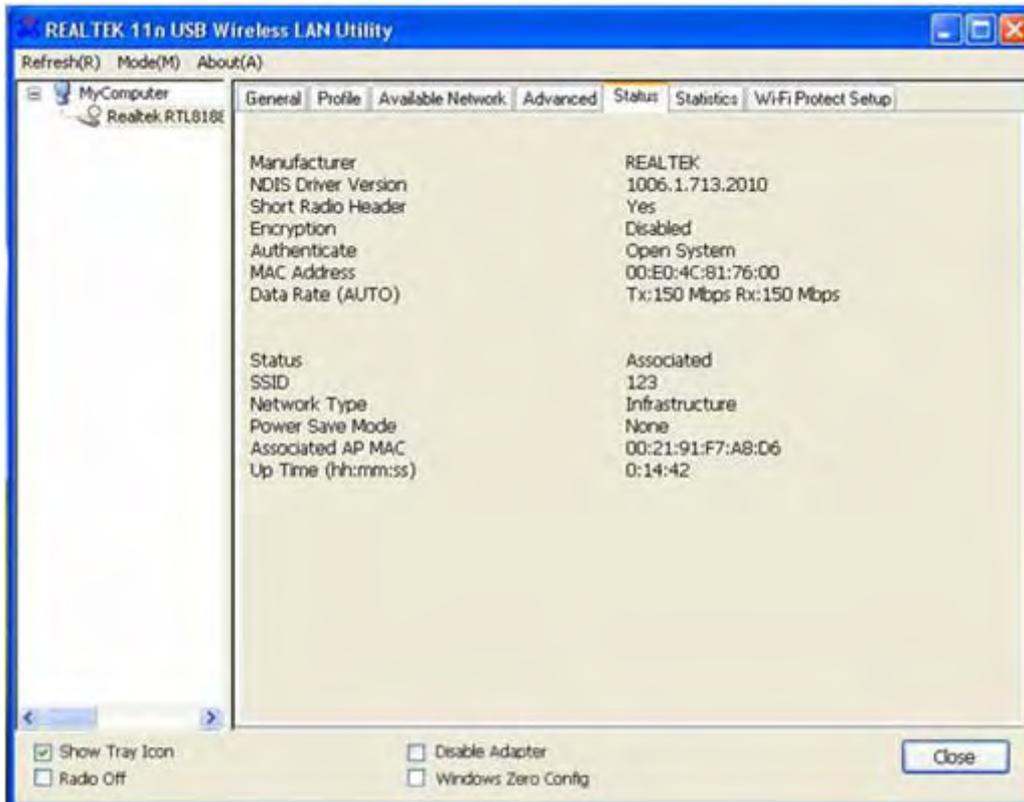
This value should remain at its default setting of 2347. If you experience a high packet error rate, you may slightly increase your fragmentation threshold within the value range of 256 to 2432. Setting the fragmentation threshold too low may result in poor performance.

(2) RTS Threshold

Request To Send Threshold. This value should remain at its default setting of 2346. If you encounter inconsistent data flow, only minor modifications to the value range between 0 and 2432 are recommended.

2.3.3.6 Status

The Status tab contains general information about the program and its operations.



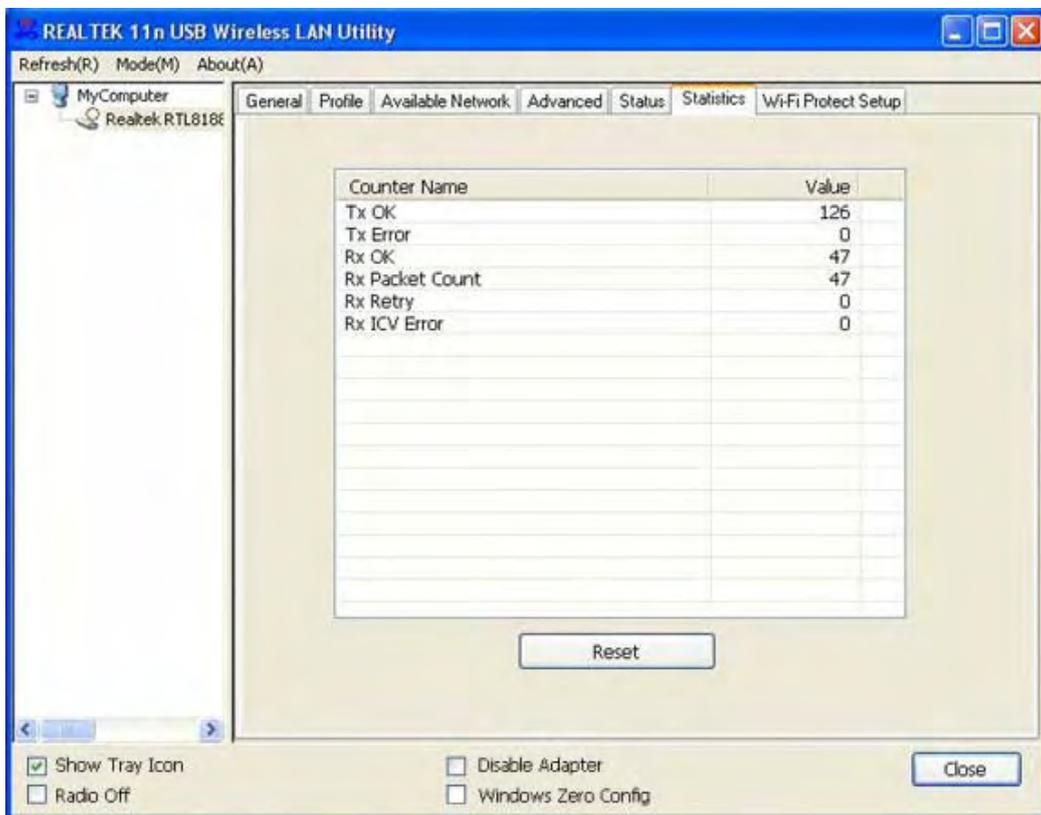
The following table describes the items in “Status”.

Items	Information
Manufacturer	The name of manufacturing this product.
NDIS Driver Version	The version of Network Driver Interface Specification.
Encryption	Here displays the encryption type the device is using.
Authenticate	This shows whether the server based authentication is used.
MAC Address	The MAC address of the wireless network adapter.
Data Rate(Auto)	Show current transmit rate and receive rate.
Status	Current connection status.
SSID	The SSID of the wireless system.
Network Type	The type of network and the station currently connected are shown here. The options include : Infrastructure, Ad Hoc
Power Save Mode	The power save mode have three modes, as follows : <ul style="list-style-type: none"> • Max - Selects maximum mode to let the access point buffer incoming messages for the Adapter. The Adapter will detect the access point if any messages are waiting periodically. • Min – Min mode uses minimum when retrieving a large number of packets, then switches back to power save mode after retrieving

	<p>the packets.</p> <ul style="list-style-type: none"> • None - Turns power saving off, thus powering up the Wireless USB Adapter continuously for a short message response time.
Associated AP MAC	The MAC Address of associated AP.
Up Time	Record life time.

2.3.3.7 Statistics

Statistics page displays the detail counter information based on 802.11 MIB counters. This page translates the MIB counters into a format easier for user to understand. It show receiving and transmitting statistical information about the following receiving and transmitting diagnostics for frames received by or transmitted to the wireless network Adapter.

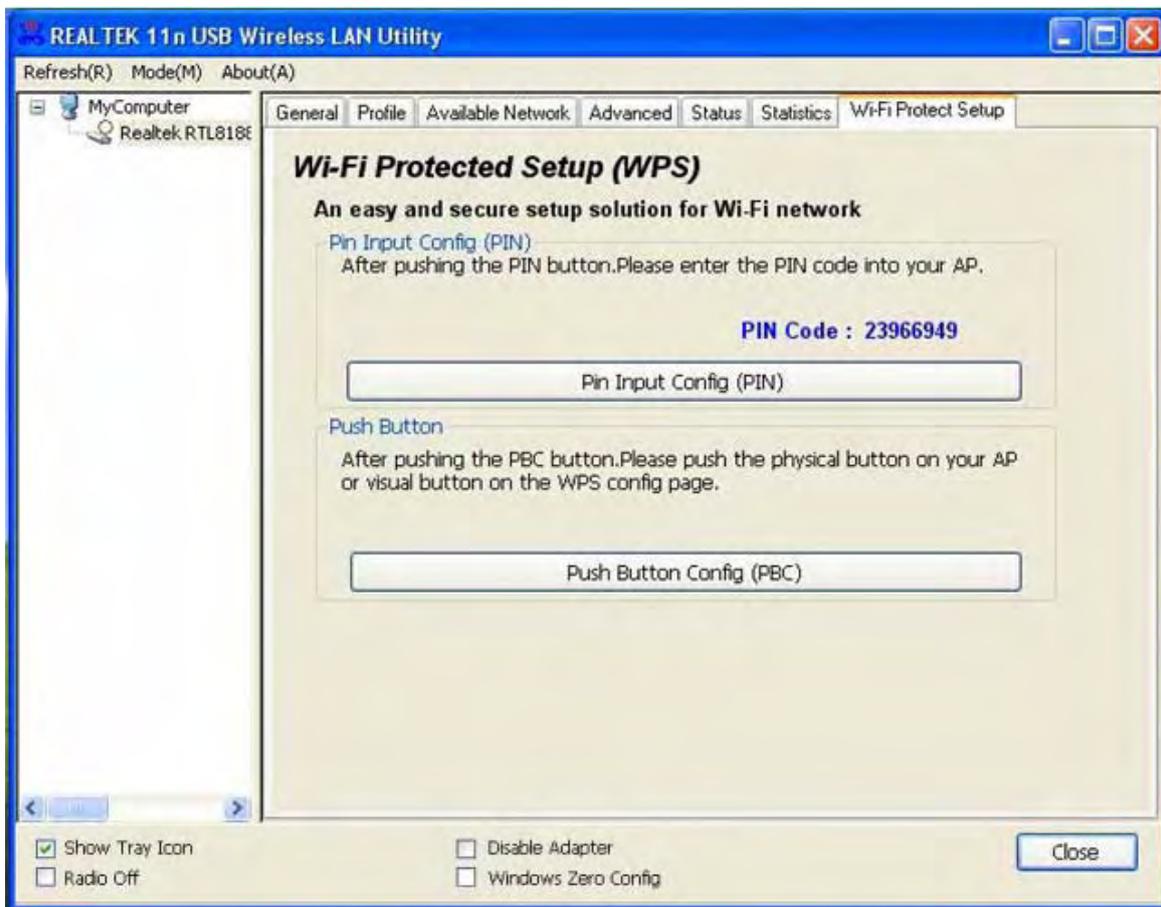


Items	Information
TX OK	Successfully transmitted frames numbers.
TX Error	Frames numbers transmitting with error.
RX OK	Successfully received frames numbers.
Rx Packet Count	The packets of receiving frames.
RX Retry	Frames numbers re-receiving.

RX ICV Error	Integrity Check Value receiving with error.
Reset Counter	Reset counters to zero.

2.3.3.8 Wi-Fi Protect Setup

The primary goal of Wi-Fi Protected Setup (Wi-Fi Simple Configuration) is to simplify the security setup and management of Wi-Fi networks. This Adapter supports the configuration setup using PIN configuration method or PBC configuration method. If the connected wireless Router/AP support Wi-Fi Protected Setup (WPS), you can use this USB Adapter to establish a wireless connection using either Push Button Configuration (PBC) method or PIN method.



Here we will introduce two ways to configure the QSS

(QSS is known as rapid security settings, by pressing the wireless router and this Adapter on the QSS button to automatically set up WPA2 secure connection level without the router or network adapter management software to conduct the cumbersome interface settings, greatly simplifying the operation of the wireless security settings.)

Pin Code: 8-digit numbers. It is randomly generated from system.

1. PIN method

Click the button "Pin Input Config (PIN)", and then come to the following figure.



Click the button "Yes", and then select one of the AP. Also, you can click these buttons by "Refresh / Select / Cancel" for any change.

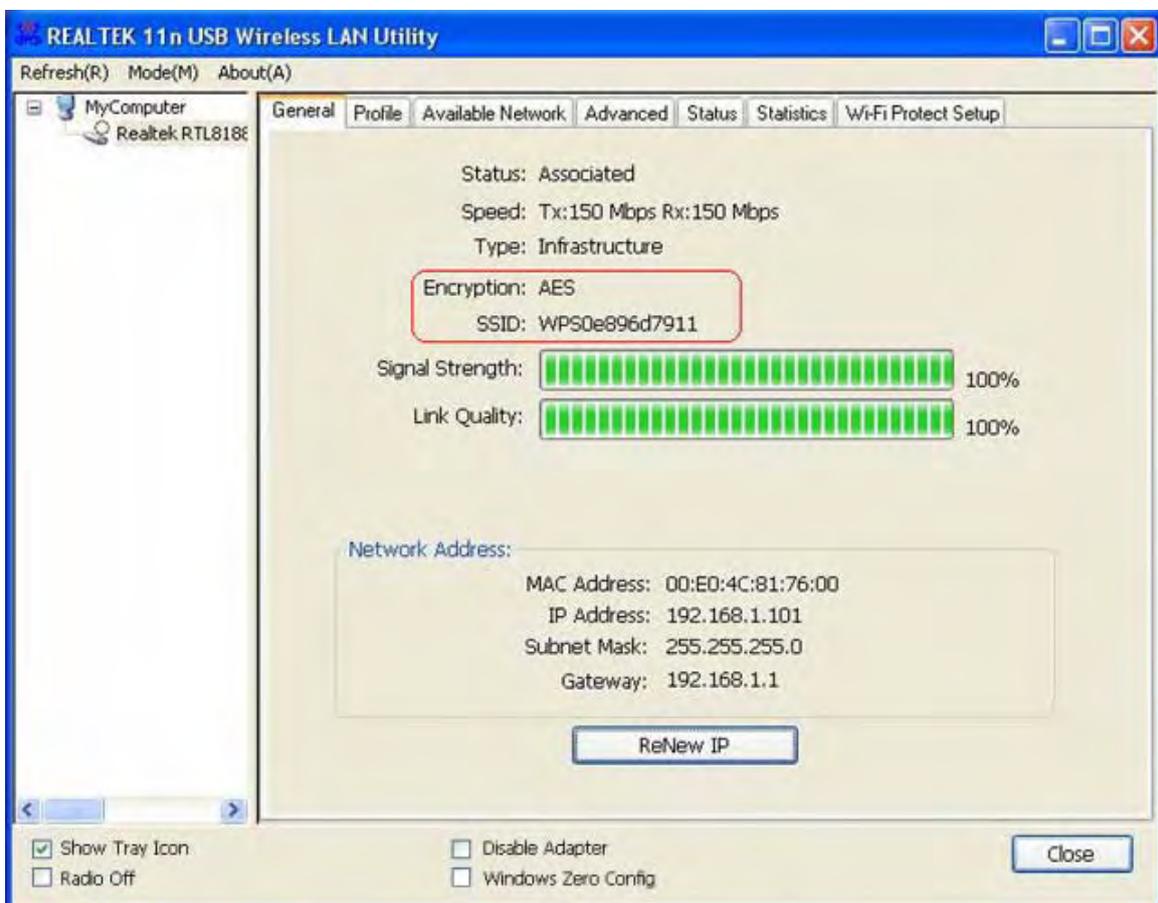


When the following interface pops up, double click the Internet WEB browser icon on your desktop screen. Type the IP address of you selected Router/AP into the URL and press "Enter", and then you can enter the configuration.

Please enter the WPS (Wi-Fi) configuration page, type the PIN code of adapter and click confirm button to build WPS connection.

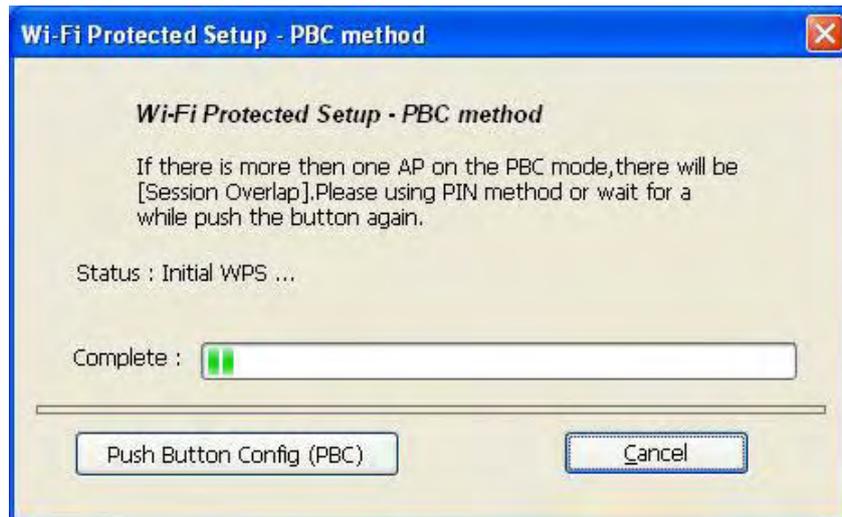


When the "General" window appears, WPS is configured successfully.

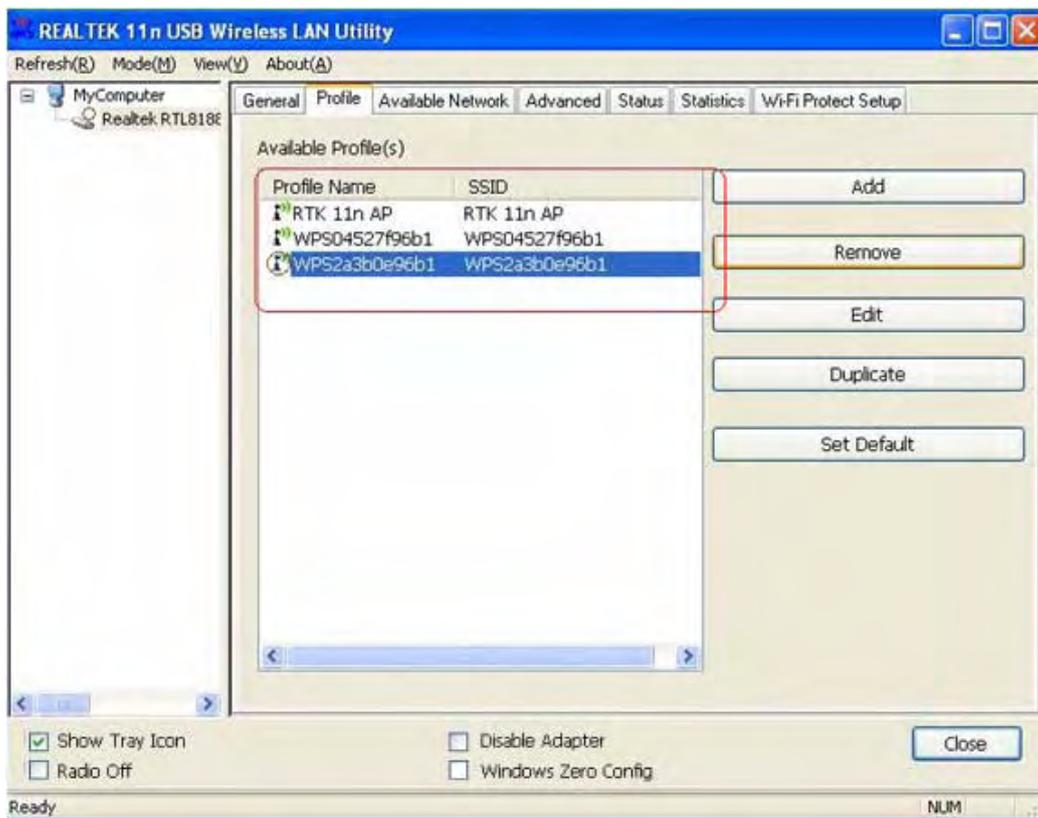


2. PBC (Push Button Configuration) method

After pushing the PBC button, please push the physical button on your Router/AP or visual button on the WPS config page, then come to the following figure.



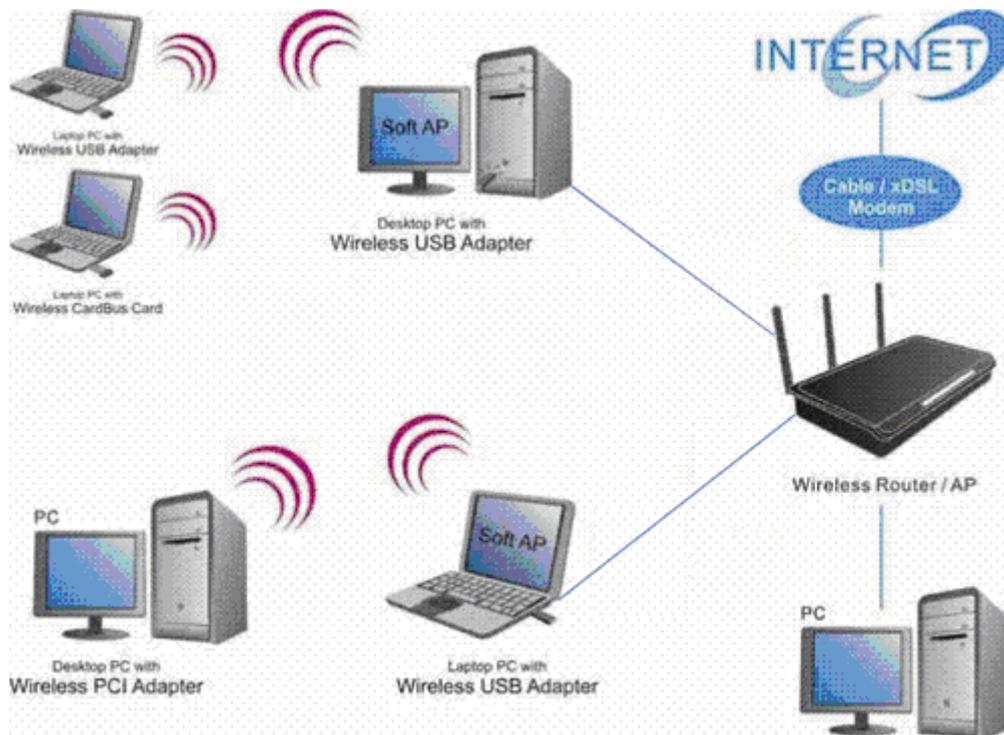
When WPS is configured successfully, the “Available Profile” is changed.



2.3.4 AP Mode Management Guide for Windows XP User

If you wish to share the Internet access with the wireless stations in your environment, you can configure this wireless adapter as a software access point (Soft AP). In this mode, this wireless adapter becomes the wireless access point that provides local area network and Internet access for your wireless stations.

Software Access Point (Soft AP) Application:

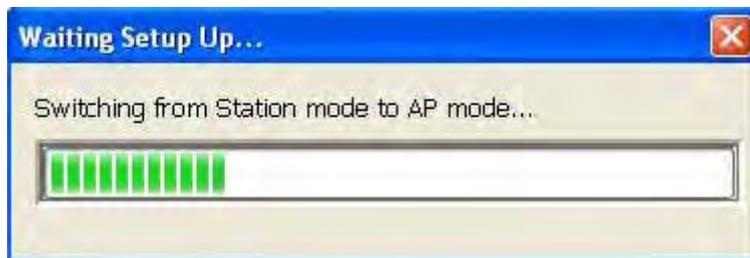


2.3.4.1 General

To use this Adapter as an access point, please click the “Mode” on the menu bar and select “Access Point”.



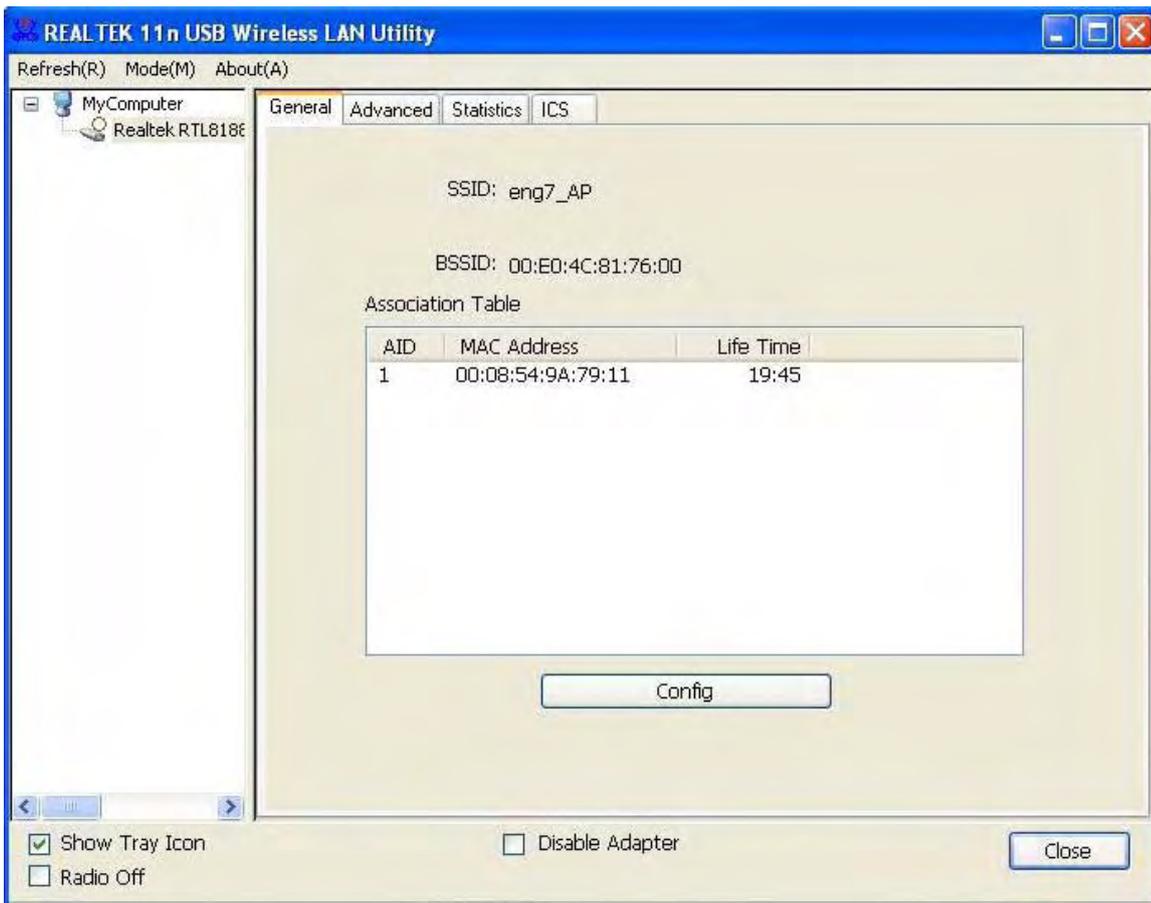
Then switch from station mode to AP:



At the same time, you will find that the icon on the system tray is changed.



The following interface is under AP mode:



Please refer to the following information about this AP mode utility.

Items	Information
SSID	AP name of user type.
BSSID	The MAC address of locally-managed, generating from a 46 random code.
AID	Raise value by current connection.
MAC Address	The station MAC address of current connection.
Life Time (mm:ss)	Record life time.

Click the “Config” button, then you can configure the wireless network properties. This page provides overall configuration to this Adapter.



SSID: AP name of user type.

Security Setting: Authentication mode and encryption algorithm used within the AP. System default is no authentication and encryption.

Cancel: Cancel the above changes.

OK: Apply the above changes.

Network Authentication: Select the Security tab in the screen above. To define the security mode, select the desired security mode as follows. There are 4 types supported: Open System, Shared Key, WPA-PSK, WPA2-PSK. Please select a type from the drop down list.

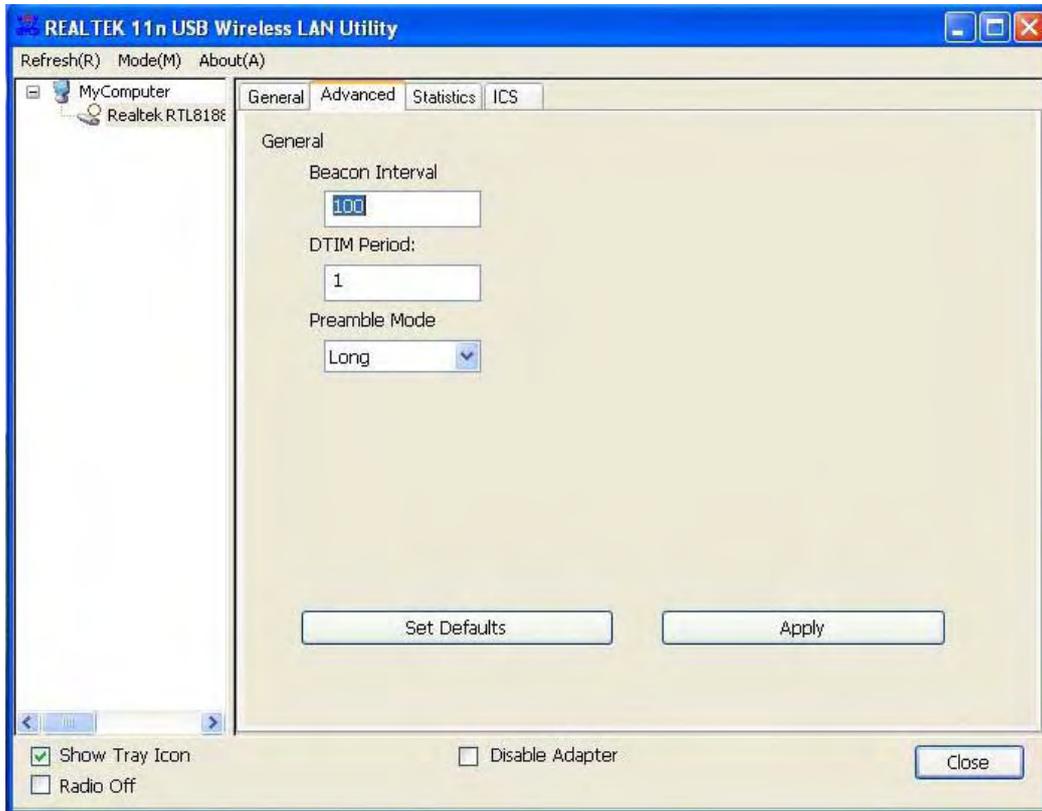
Data Encryption:

Data encryption	There are 4 types supported: Disabled, WEP, TKIP and AES. The available encryption selection will differ from the authentication type you have chosen, the result is shown below:	
	Authentication	Available Encryption Selection
	Open System	Disabled, WEP
	Shared Key	WEP
	WPA-PSK, WPA2-PSK	TKIP, AES

Note: Select different security options, the configurations are different; you can select the

appropriate security option and configure the exact key as your need.

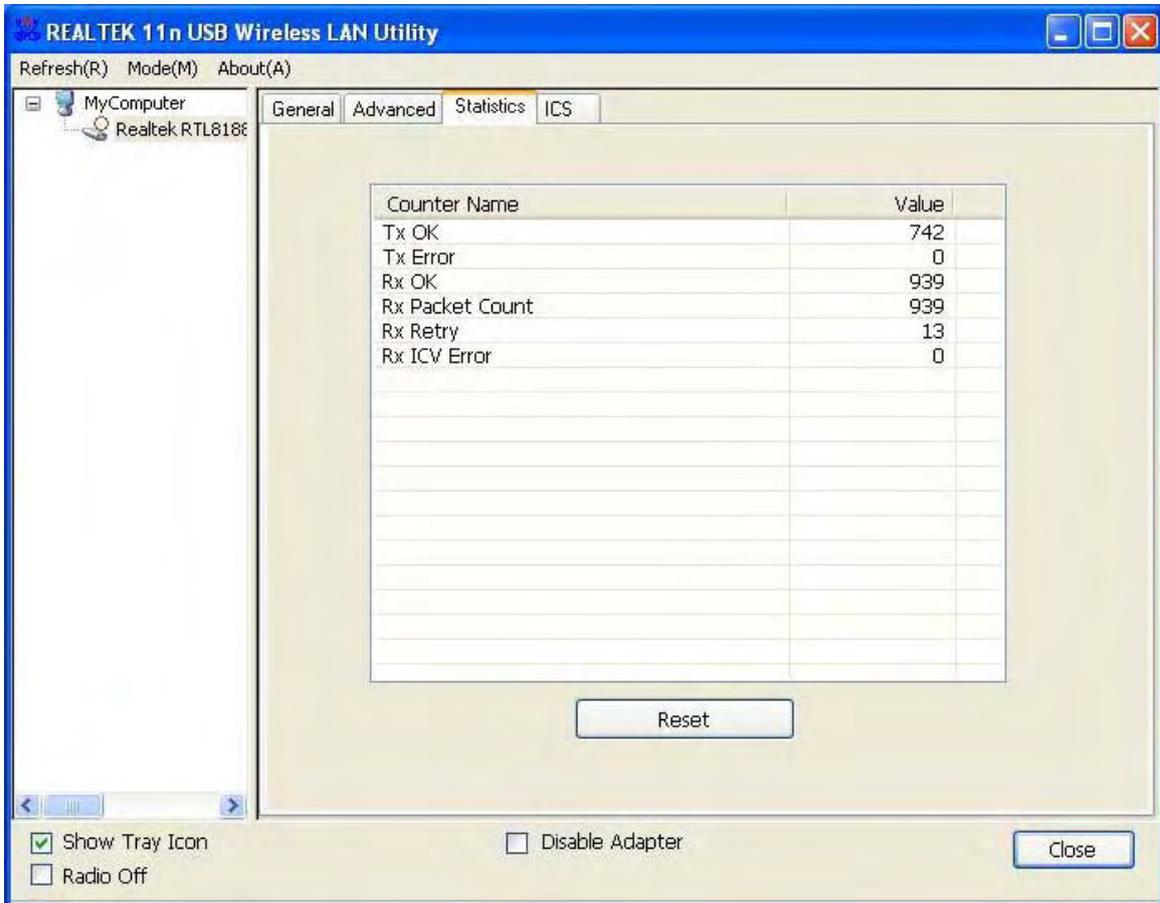
2.3.4.2 Advanced



Items	Information
Beacon Interval	Beacon frequency spacing.
DTIM Period	Delay transmission indicator map (DTIM) is enabled for power management of the client. If any client power management is enabled, the DTIM should be retained for 1 (the default). Support this parameter range from 1 to 255.
Preamble Mode	Select the options from the drop list, (Long / Short).
Set Defaults	Setting the default value of General.
Apply	Apply the above changes.

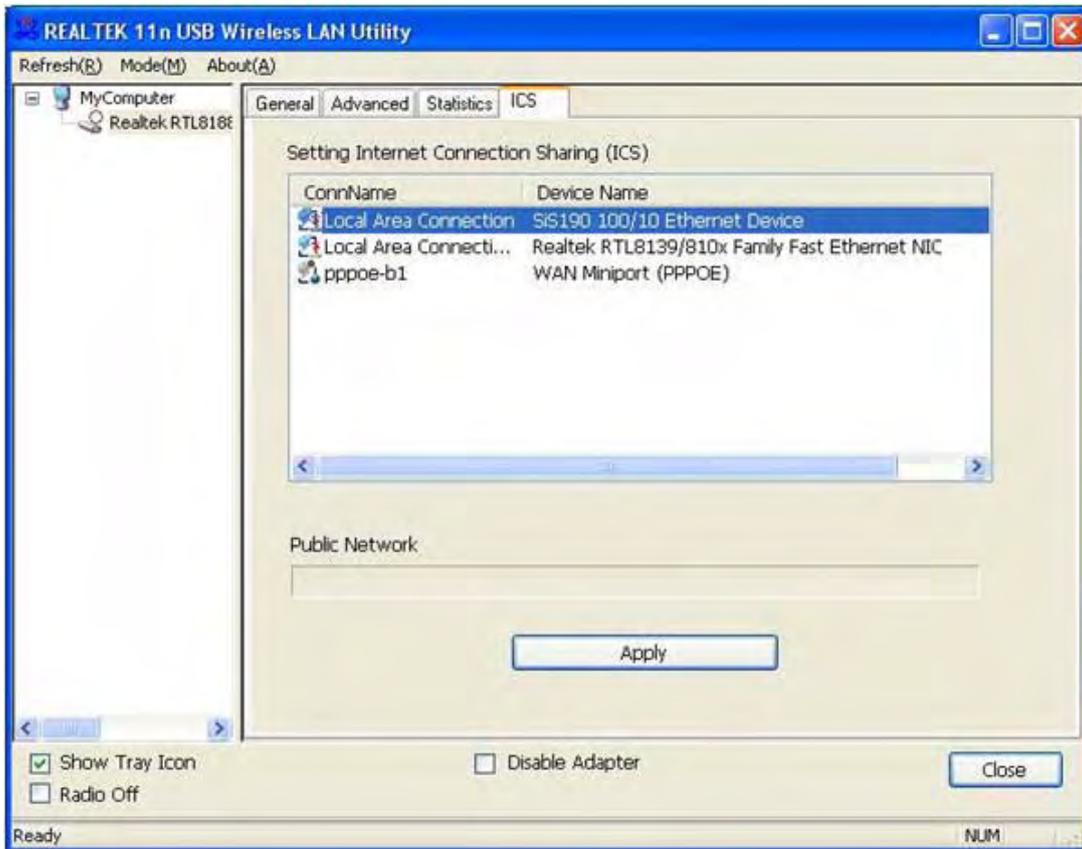
2.3.4.3 Statistics

Statistics page displays the detail counter information based on 802.11 MIB counters.



Items	Information
TX OK	Successfully transmitted frames numbers.
TX Error	Frames numbers transmitting with error.
RX OK	Successfully received frames numbers.
Rx Packet Count	The packets of receiving frames.
RX Retry	Frames numbers re-receiving.
RX ICV Error	Integrity Check Value receiving with error.
Reset Counter	Reset counters to zero.

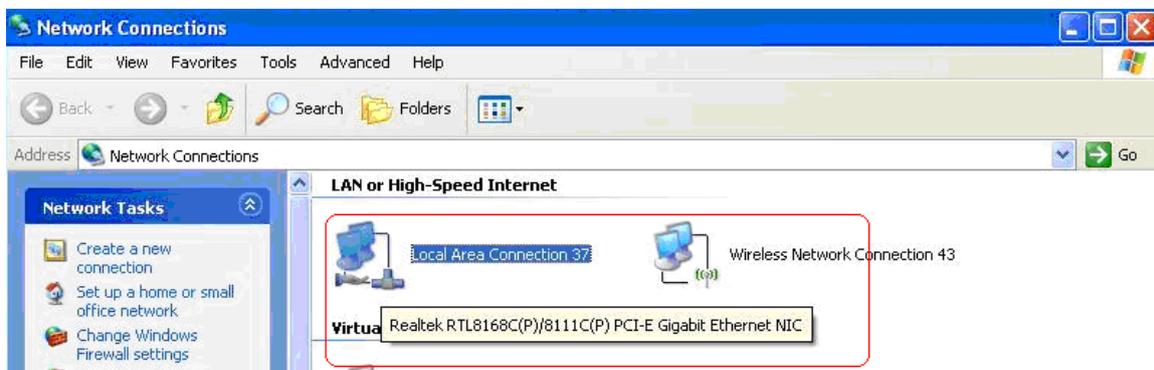
2.3.4.4 ICS



In this function, you can set the device sharing with Internet. Click the button “Apply”, and then Prompt box pops up.



Select “OK”. When the connection is successful, you will find that the tray “Local Area Connection” has been changed.



Chapter 3 Management Guide for Vista User

3.1 Hardware Installation

The installation of the Adapter is very simple. You could plug the Adapter directly to the USB port on your computer. The LED will light up when the Adapter is installed successfully and the PC is on.

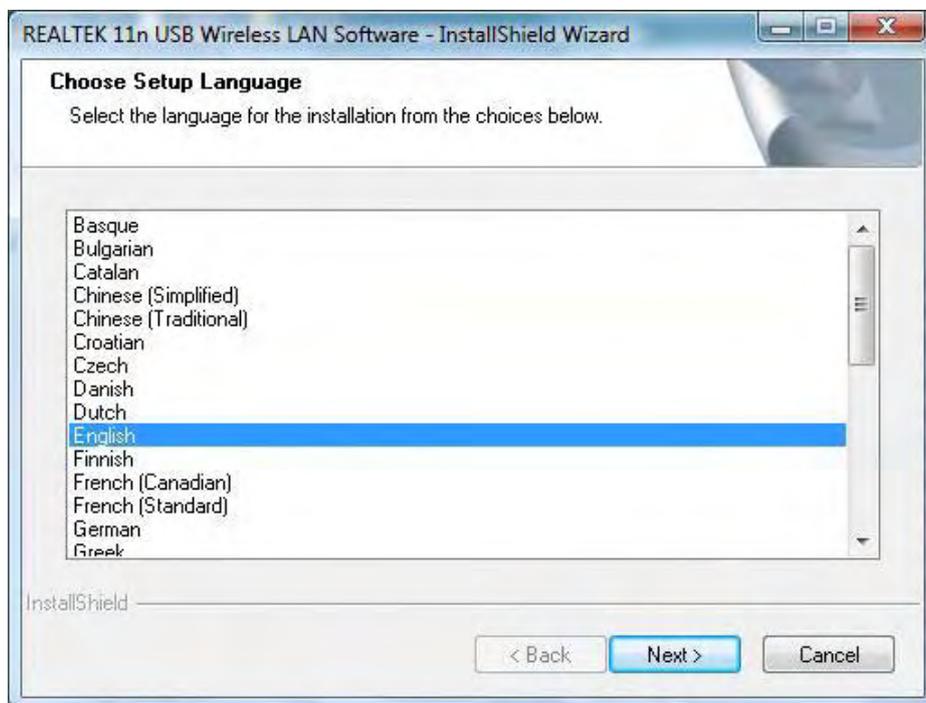
3.2 Soft Installation

3.2.1 Overview

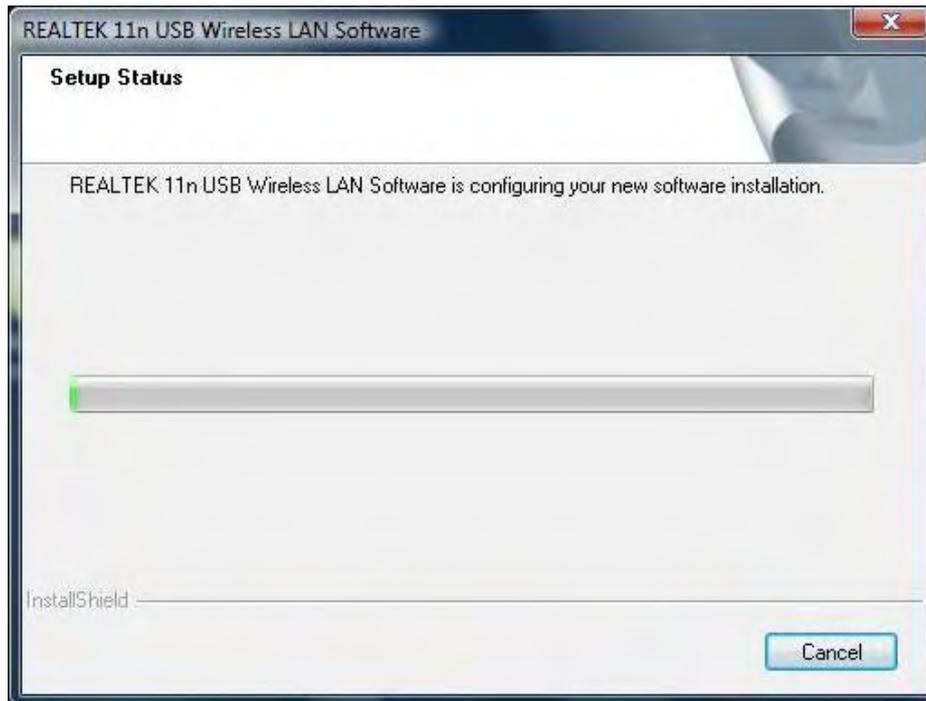
The following Setup Wizard will guide you through the Installation procedure for Vista. The Setup Wizard will install the REALTEK 11n USB Wireless LAN Driver and Utility. When you install the hardware before installing the software, the system will prompt “Found New Hardware Wizard”, click “Cancel”, and run the Setup Wizard program on the CD-ROM.

3.2.2 Installation Procedures

1. Insert the CD into your CD-Rom, and find the setup driver in the CD. Then click the setup icon to start the installation.
2. The language-selecting window pops up. Please select the language you use and click “Next”.



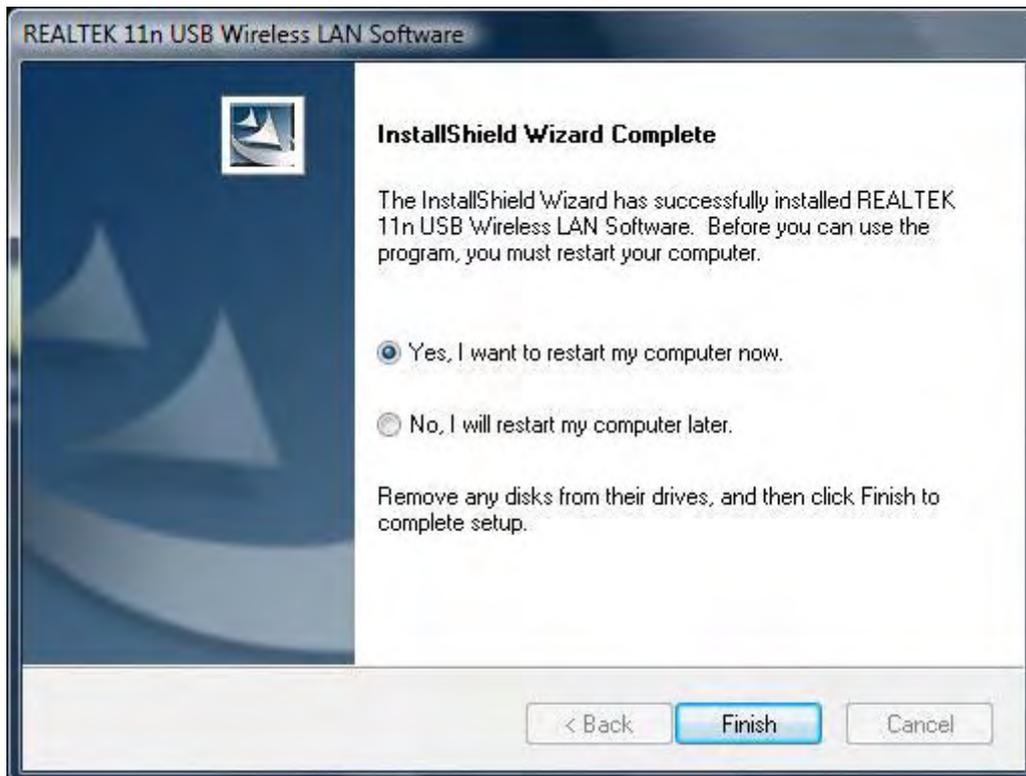
3. The welcome window pops up. Click the “Next” button to proceed.



4. Please wait again while installation



5. After all the steps above, you will see the screen below, Select "Yes" to reboot the system, then click "Finish".



3.3 Management Guide

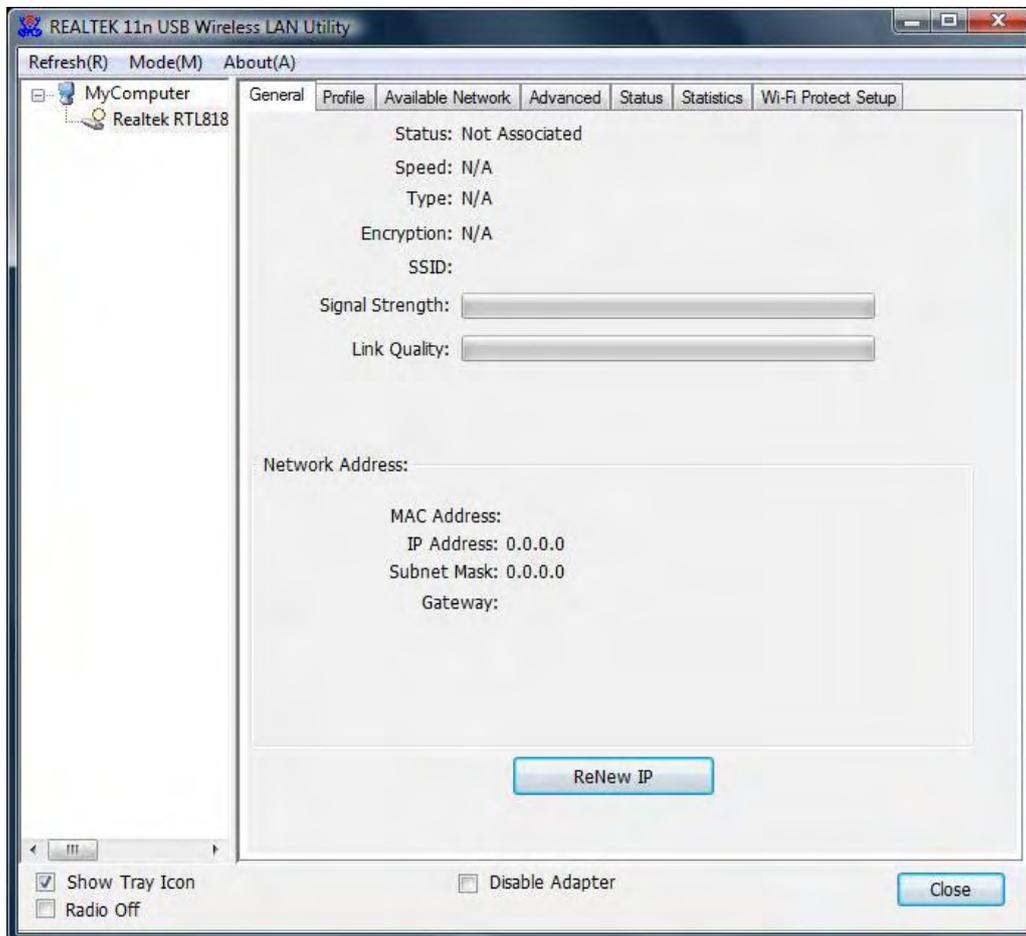
This guide describes how to configure your Adapter for wireless connectivity on your Wireless Local Area Network (WLAN) and use the data security encryption features.

After Installing the Adapter, the Adapter's tray icon will appear in your system tray. It appears at the bottom of the screen, and shows the signal strength using color and the received signal strength indication (RSSI).

3.3.1 Interface



After the driver installation, the  icon will appear on your desktop. Double click this icon and the following interface appears:



Note:

1. **Functional Buttons:** on the upper side of the utility window, you can click each button to access each configuration window for the detail information in the center area.

2. **Optional Table:** at the bottom: "Show Tray Icon", "Disable Adapter", "Radio off".

A. *Show Tray Icon*---Clicking "Show Tray Icon" and "Close" button, the management GUI will be

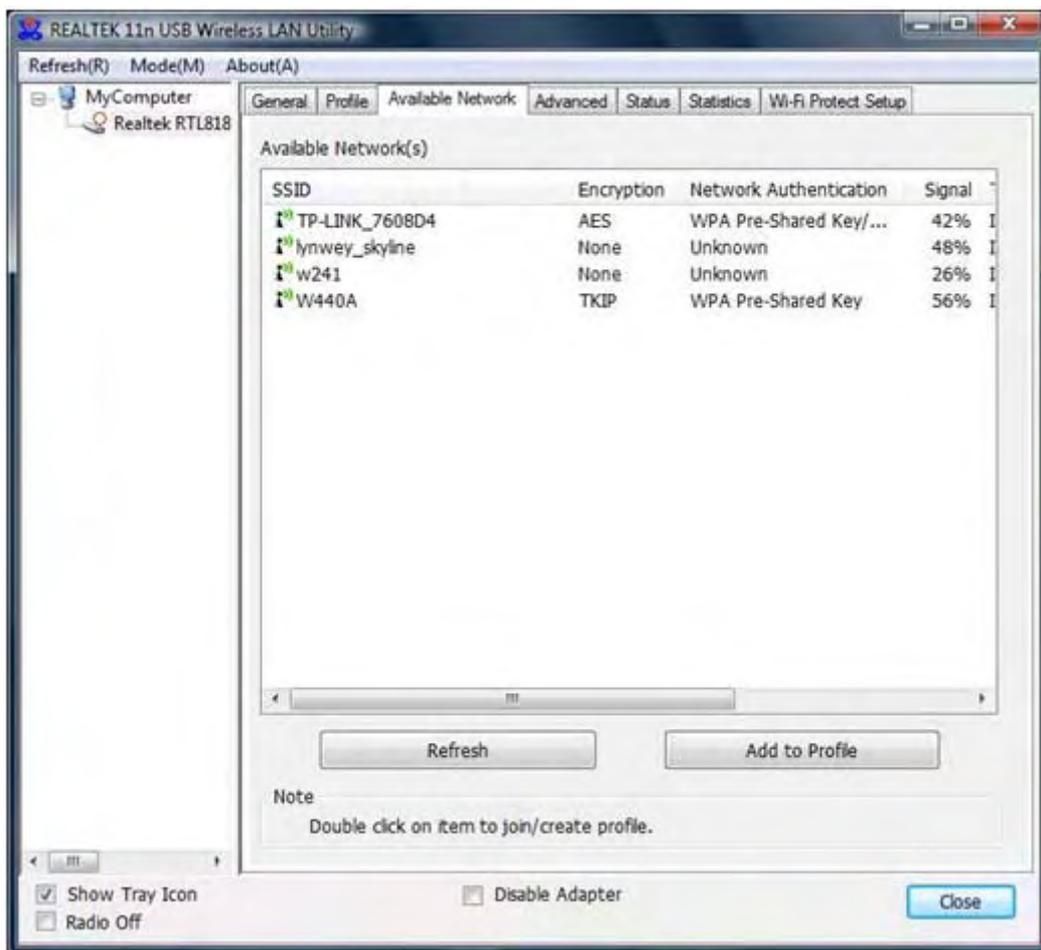
minimized and stay on the tray icon located at the right bottom corner of Windows. If not, management GUI will shut down by only click "Close" button with unchecked condition.

B. Disable Adapter---Disable this wireless PCI card.

C. Radio off---It can save power while turning off the radio. While the radio is off, the links with other wireless network will be disconnected. User should be aware that while the wireless configuration is in AP mode. The radio off will cause the sub network belonging to the AP to be disconnected with internet.

3.3.2 Available Network

This network lists the available wireless networks. The Utility connects to a wireless network with best signal strength automatically. You can refresh the connecting network by clicking on the network name and click the "Refresh" button.



Available Network Information:

Items	Information
SSID	The name of the IEEE 802.11 wireless network. This field has a maximum limit of 32 characters.
Encryption	Shows the encryption mode in use. There are total 4 modes: None, WEP, TKIP and AES.
Network Authentication	Shows the authentication mode in use.
Signal	This percentage shows the strength of the signal.
Type	The type of network and the station currently connected are shown here. The options include : Infrastructure & Ad-Hoc
BSSID	The MAC address of locally-managed, generating from a 46 random code.
Support Rates	Show current rate.

Note:

- 1) An Infrastructure network contains an Access Point or wireless router. All the wireless devices or clients will connect to the wireless router or access point.
- 2) An Ad-Hoc network contains only clients, such as laptops with wireless desktop adapters. All the adapters must be in Ad-Hoc mode to communicate.

3.3.3 Profile

1. Add a new profile:

(1) Selecting an available network in the “Available Network” function then click the “Add to Profile” button, or double click the network name. You could also add a new profile (for example, the network with SSID lynwey_skyline) quickly by clicking the “Add” button in the “Profile” function.

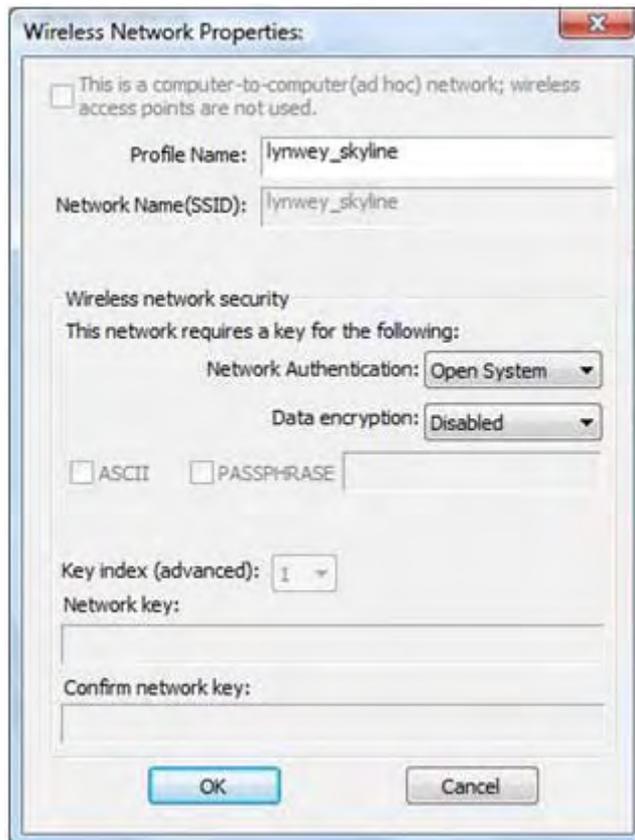
Note: If the network you add to profile is not encrypted, “Unsecured network” window will pop up, then Click “OK”.



(2) It displays “Wireless Network Properties” dialog box. This profile page allows users to save different wireless settings, which helps users to get access to wireless networks at home, office or other wireless network environments quickly.

In the following dialog box, there are some items:

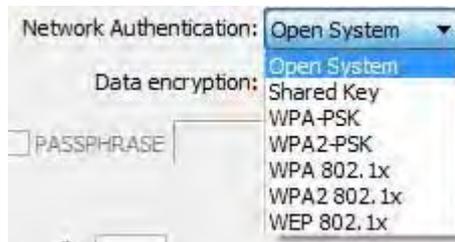
Items	Information
Profile Name	Identifies the configuration profile .This name must be unique. Note that the profile names are not case-sensitive.
Network Name(SSID)	The IEEE 802.11n wireless network name, using default name defined by system. This field has a maximum limit of 32 characters.



(3) Wireless Network Security

A. Network Authentication

Select the Security tab in the screen above. To define the security mode, select the desired security mode as follows. There are 7 types supported: Open System, Shared Key, WPA-PSK, WPA2-PSK, and WPA 802.1X, WPA2 802.1X, WEP 802.1X, Please select a type from the drop down list



- **Open System:** enable an adapter to attempt authentication regardless of its WEP settings. It will only associate with the access point if the WEP keys on both the adapter and the access point match.
- **Shared-key:** only allows the adapter to associate with access points that have the same WEP key.
- **802.1x:** This item appears while the environment is set to an Open authentication with WEP encryption. Mark the checkbox to make the section available. The section is also available in WPA and WPA2 authentication types.
- **Preshared Key(PSK):** This is the shared secret between AP and STA. For WPA-PSK, WPA2-PSK and WPA-NONE authentication mode, this field must be filled with characters longer than 8 and less than 32 lengths. The following dialog appears if you have input invalid values.
- **WEP Key:** Only available when using WEP encryption algorithm. The key must match AP's key. Only using the same cryptographic key to access the computer, the internet can storage, and decryption the information from other computer.

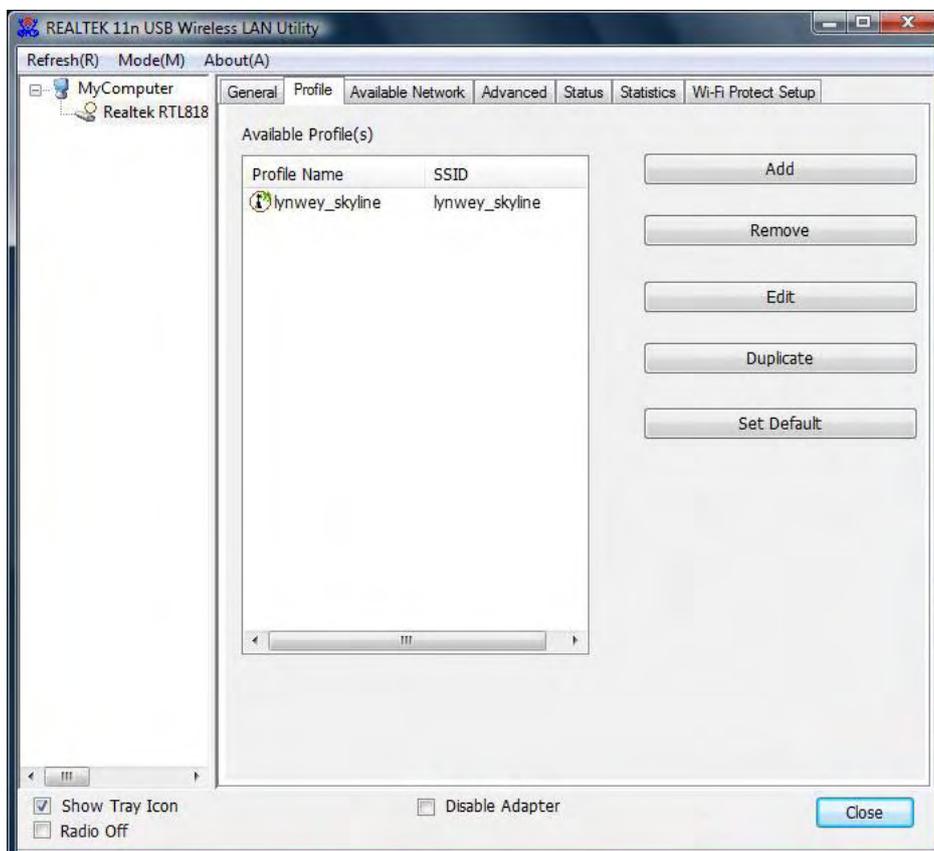
B. Data Encryption:

Data encryption	There are 4 types supported: Disabled, WEP, TKIP and AES. The available encryption selection will differ from the authentication type you have chosen, the result is shown below:	
	Authentication	Available Encryption Selection
	Open System	Disabled, WEP
	Shared Key	WEP
	WPA-PSK, WPA2-PSK, and WPA 802.1X, WPA2 802.1X	TKIP, AES
WEP 802.1X	WEP	

Note: Select different Security Options, the configurations are different; you can select the appropriate security option and configure the exact key as your need.

- **TKIP:** "Temporary Key Integration communication Protocol", it provide each packet's key mixture, message integration and key reconstruction mechanism. TKIP can use with personal or the enterprise network validation.
- **AES:** "Advanced Encryption Standard", It is a new method that the wireless transmission of privacy protection. AES encryption methods provides more careful than TKIP.

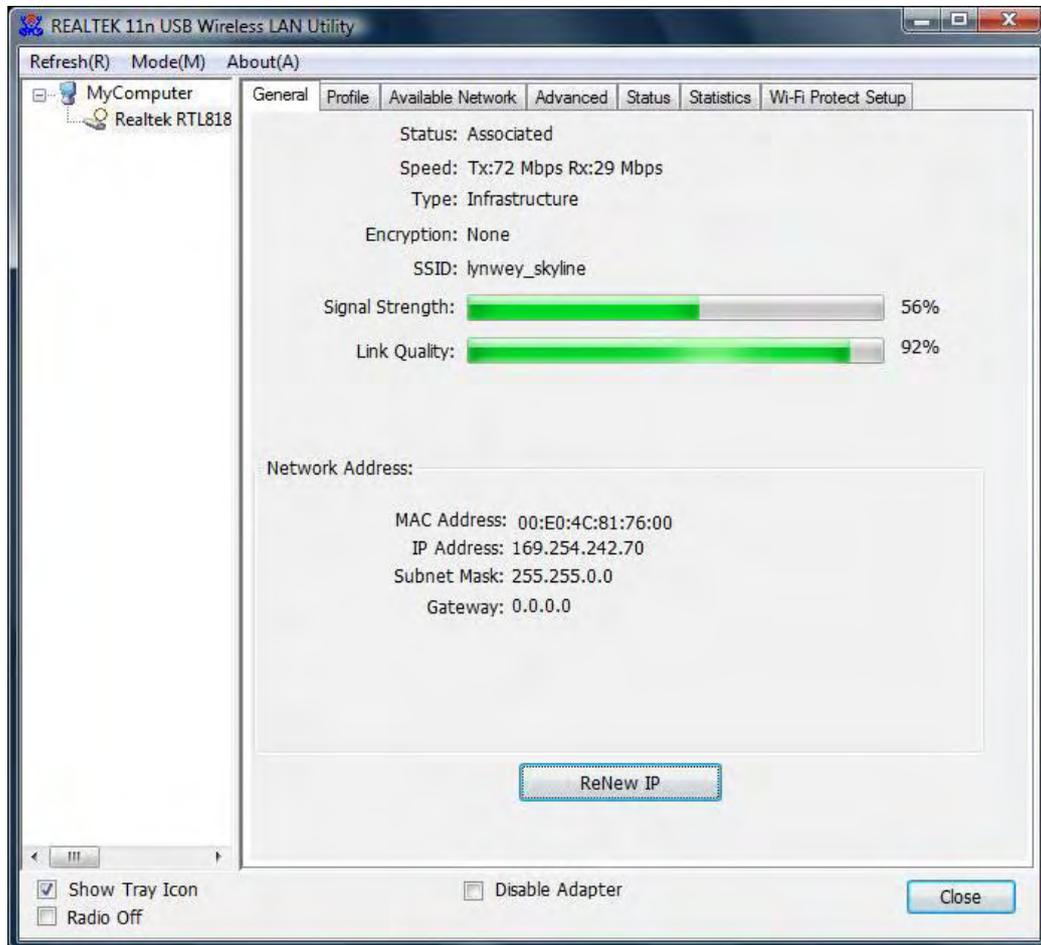
(4) Finish the configuration, and then click "OK", that network has been added to the profile.



Profile List: The list shows all the profiles you have added before.

Buttons: You can click on these buttons to **Add** a new profile, **Remove**, **Edit**, **Duplicate** or **Set Default** an old profile.

3.3.4 General



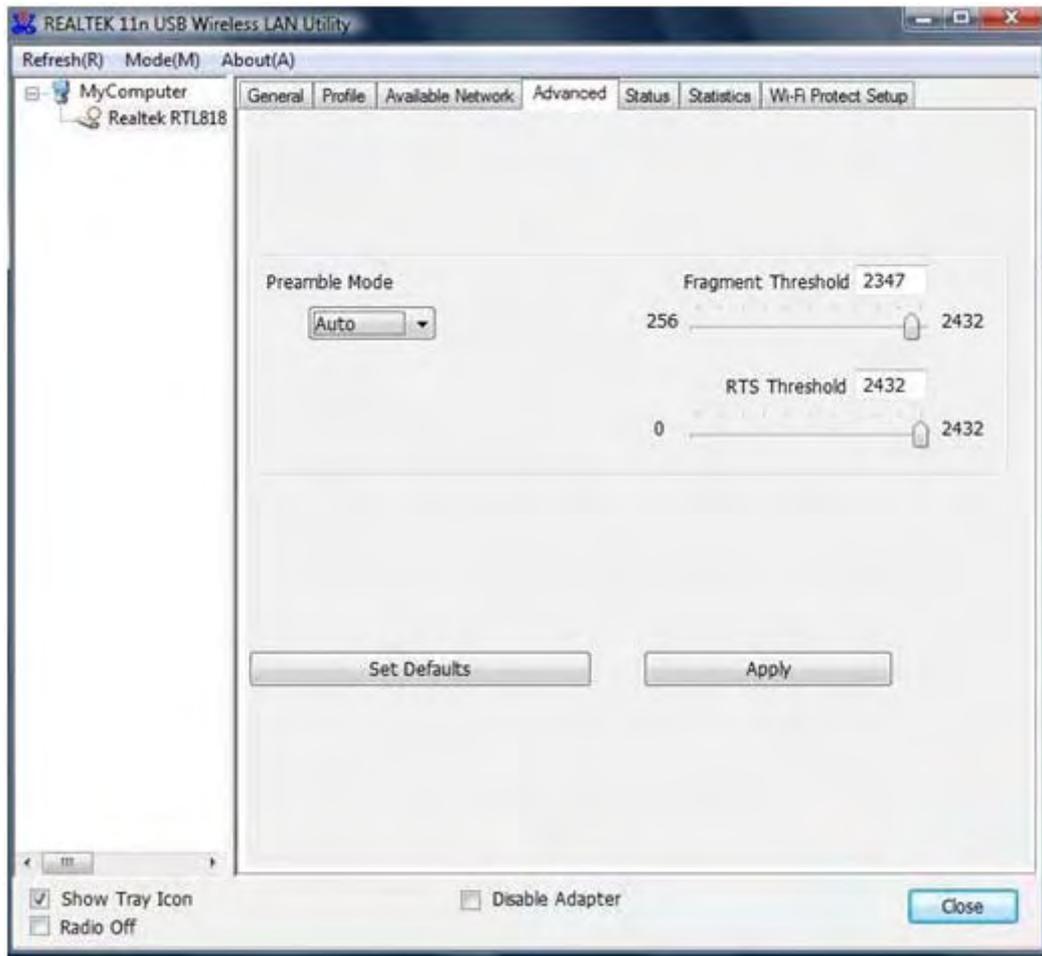
In this window, there are some items as following:

Items	Information
Status	Currently connection status.
Speed	Show current transmit rate and receive rate.
Type	Network type in use.
Encryption	Encryption type in use.
SSID	The name of the IEEE 802.11 wireless network. This field has a maximum limit of 32 characters.
Signal Strength	Receive signal strength.
Link Quality	Display connection quality based on signal strength.

Network Address	A. MAC Address: The MAC address of the wireless network adapter. B. IP Address: IP address of current connection. C. Subnet Mask: Subnet mask of current connection. D. Gateway: Gateway of current connection.
------------------------	--

3.3.5 Advanced

This screen below allows you to make advanced configuration for the profile. Please refer to the following chart for definitions of each item.



1. Preamble Mode

The length of CRC blocks in the frames during the wireless communication. Select the options from the drop list: (1) Long, (2)Short

2. Threshold

(1) Fragment Threshold

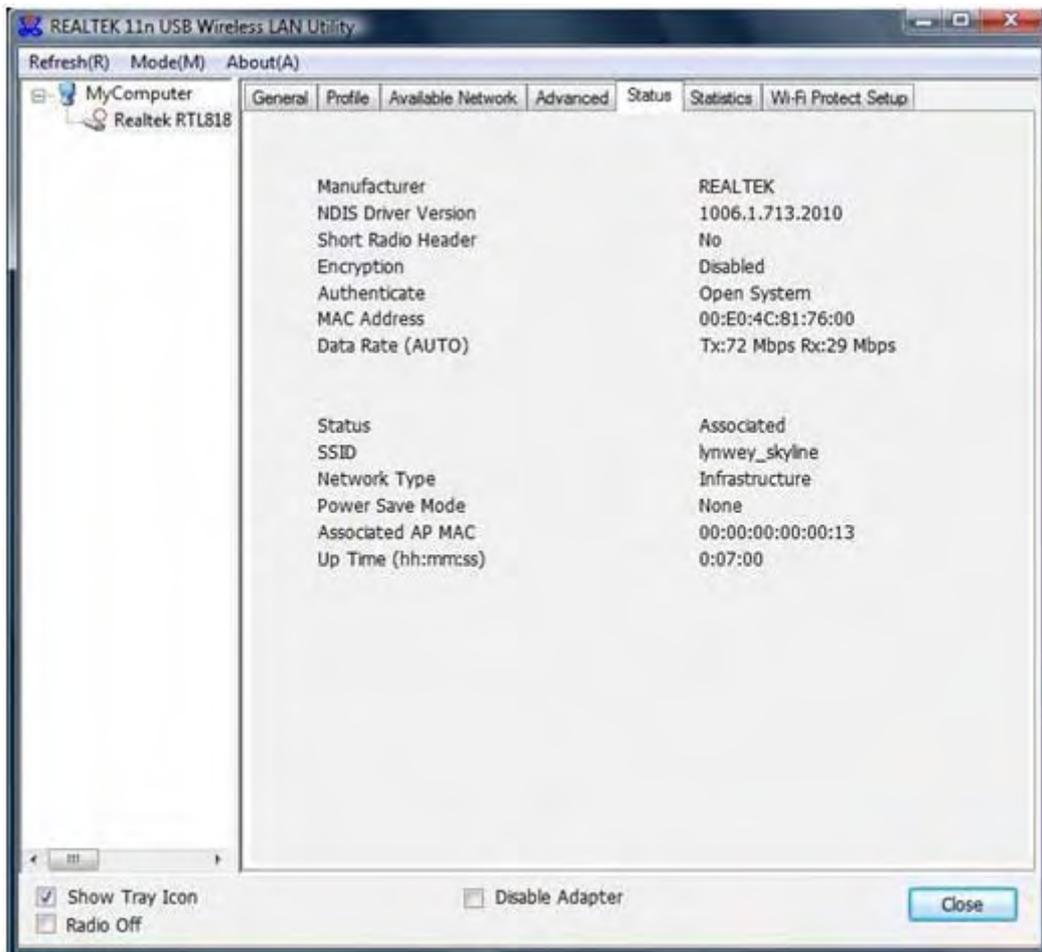
This value should remain at its default setting of 2347. If you experience a high packet error rate, you may slightly increase your fragmentation threshold within the value range of 256 to 2432. Setting the fragmentation threshold too low may result in poor performance.

(2) RTS Threshold

Request To Send Threshold. This value should remain at its default setting of 2346. If you encounter inconsistent data flow, only minor modifications to the value range between 0 and 2432 are recommended.

3.3.6 Status

The Status tab contains general information about the program and its operations. The current Status tab needn't any configurations.



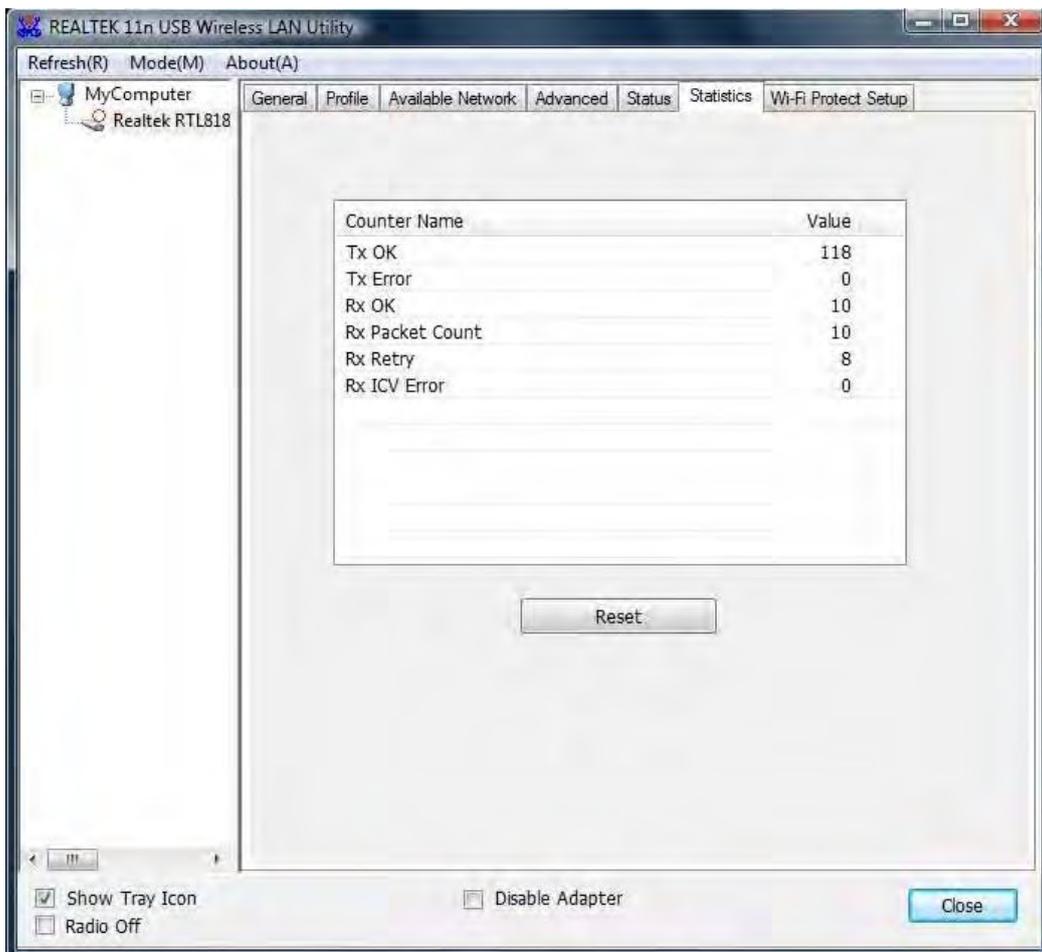
The following table describes the items found on the Status screen.

Items	Information
Manufacturer	The name of manufacturing this product.
NDIS Driver Version	The version of Network Driver Interface Specification.
Encryption	Here displays the encryption type the device is using.
Authenticate	This shows whether the server based authentication is used.
MAC Address	The MAC address of the wireless network adapter.
Data Rate(Auto)	Show current transmit rate and receive rate.

Status	Current connection status.
SSID	The SSID of the wireless system.
Network Type	The type of network and the station currently connected are shown here. The options include : Infrastructure, Ad Hoc
Power Save Mode	The power save mode have three mode: Max, Min, None
Associated AP MAC	The MAC Address of associated AP.
Up Time	Record life time.

3.3.7 Statistics

Statistics page displays the detail counter information based on 802.11 MIB counters. This page translates the MIB counters into a format easier for user to understand. It show receiving and transmitting statistical information about the following receiving and transmitting diagnostics for frames received by or transmitted to the wireless network adapter.



Items	Information
--------------	--------------------

TX OK	Successfully transmitted frames numbers.
TX Error	Frames numbers transmitting with error.
RX OK	Successfully received frames numbers.
Rx Packet Count	The packets of receiving frames.
RX Retry	Frames numbers re-receiving.
RX ICV Error	Integrity Check Value receiving with error.
Reset Counter	Reset counters to zero.

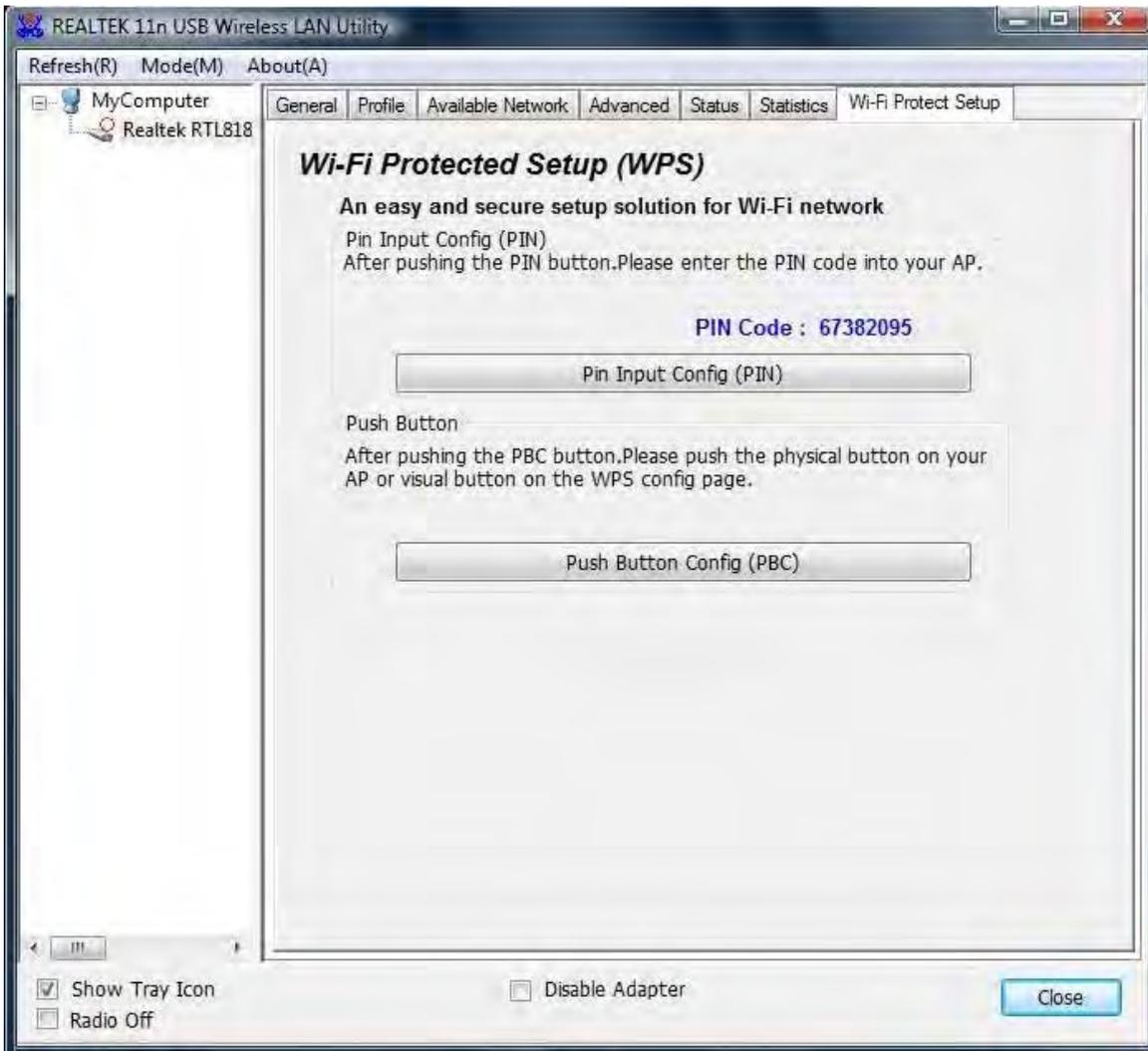
3.3.8 Wi-Fi Protect Setup

The primary goal of Wi-Fi Protected Setup (Wi-Fi Simple Configuration) is to simplify the security setup and management of Wi-Fi networks. This adapter supports the configuration setup using PIN configuration method or PBC configuration method. If the connected wireless Router/AP supports Wi-Fi Protected Setup (WPS), you can use this adapter to establish a wireless connection by either Push Button Configuration (PBC) method or PIN method.

Here we will introduce two ways to configure the QSS

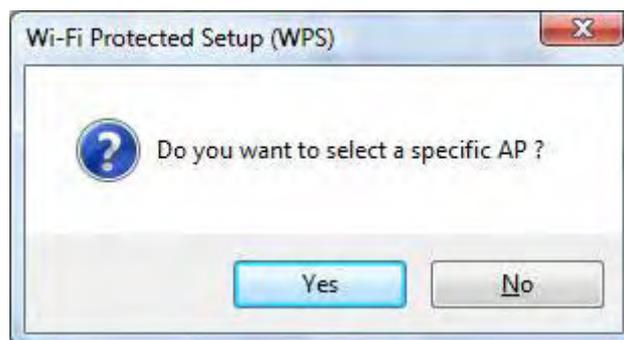
(QSS is known as rapid security settings, by pressing the wireless Router and this adapter on the QSS button to automatically set up WPA2 secure connection level without the Router or network adapter management software to conduct the cumbersome interface settings, greatly simplifying the operation of the wireless security settings.)

Pin Code: 8-digit numbers. It is randomly generated from system

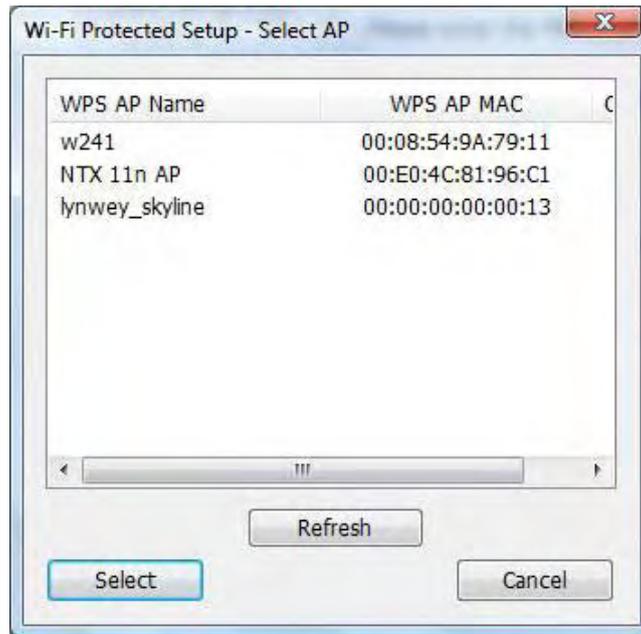


1. PIN method

Click the button “Pin Input Config (PIN)”, and then come to the following figure.

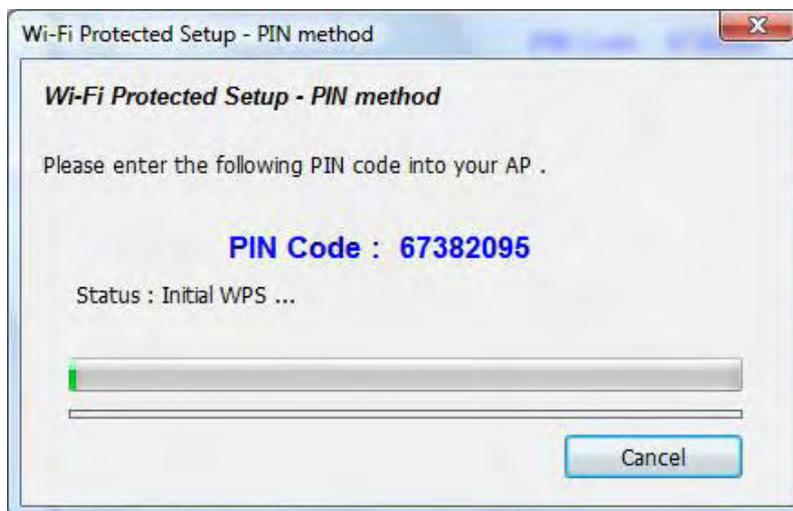


Click the button “Yes”, and then select one of the AP. Also, you can click these buttons by “Refresh / Select / Cancel” for any change.

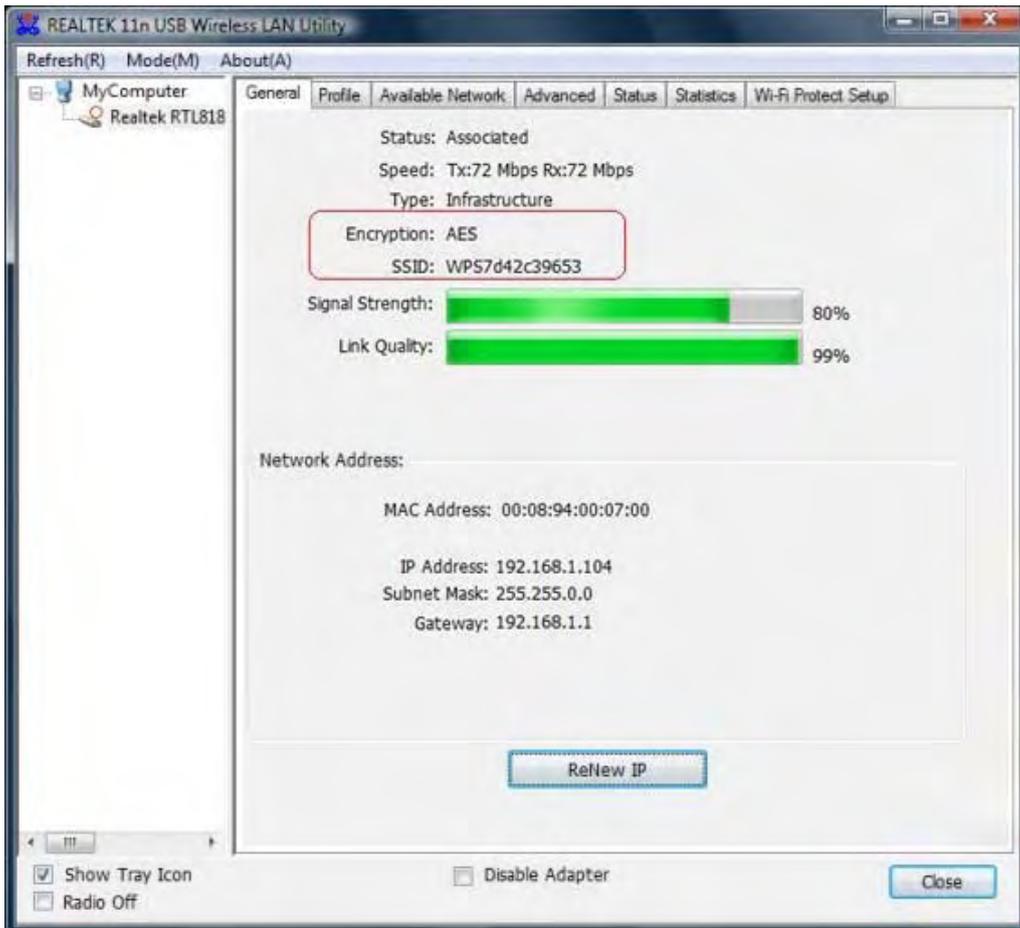


When the following interface pops up, double click the Internet WEB browser icon on your desktop screen. Type the IP address of you selected Router/AP into the URL and press "Enter", and then you can enter the configuration.

Please enter the WPS (Wi-Fi) configuration page, type the PIN code of adapter and click confirm button to build WPS connection.

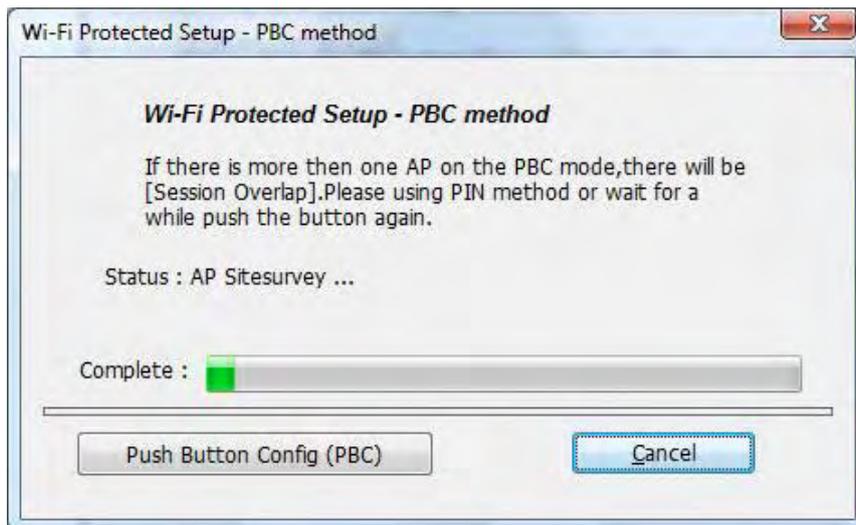


When the “General” window appears, WPS is configured successfully.

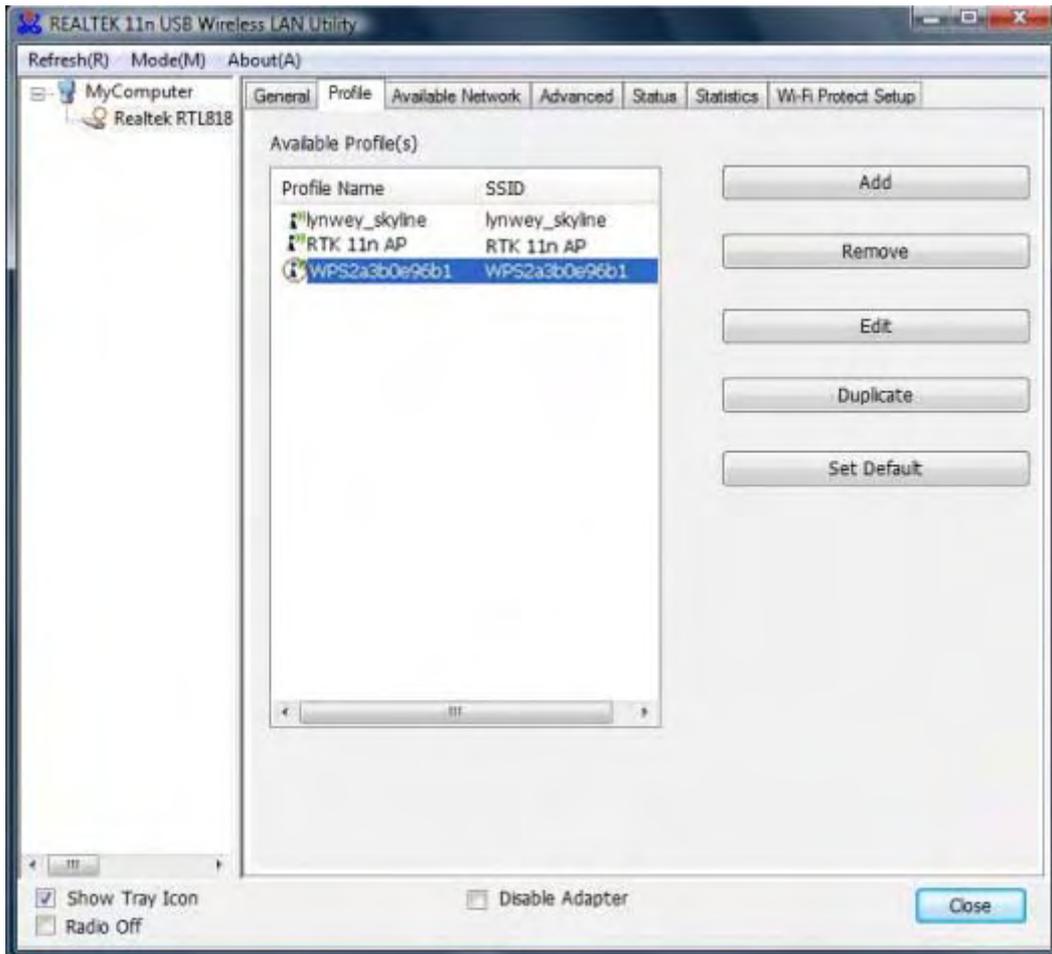


2. PBC (Push Button Configuration) method

After pushing the PBC button, Please push the physical button on your Router/AP or visual button on the WPS config page, then come to the following figure.



When WPS is configured successfully, the “Available Profile” is changed.

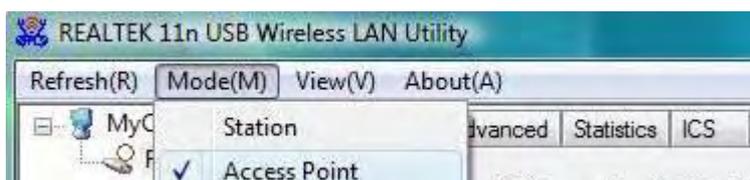


3.4 AP Mode Management Guide for Vista User

If you wish to share the Internet access with the wireless stations in your environment, you can configure this wireless adapter as a software access point (Soft AP). In this mode, this wireless adapter becomes the wireless access point that provides local area network and Internet access for your wireless stations.

3.4.1 General

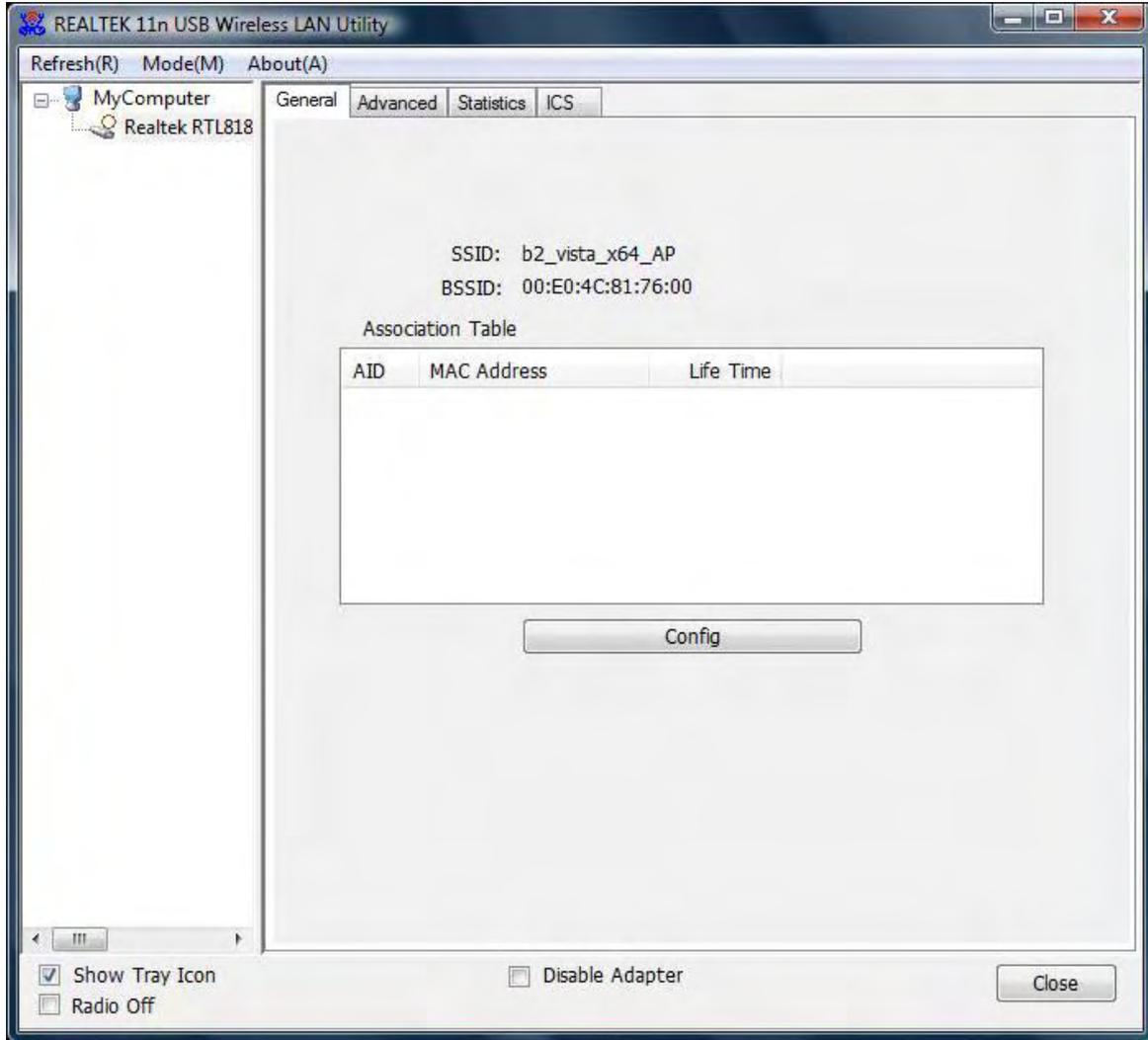
To use this adapter as an access point, please click the “Mode” on the menu bar and select “Access Point”.



Then switching from station mode to AP: At the same time, you will find that the icon on the system tray is changed.

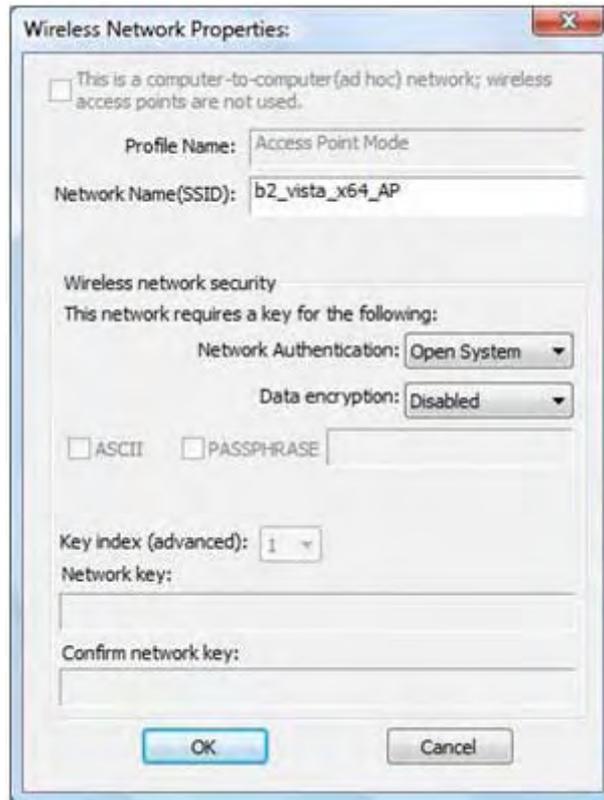


Please refer to the following information about this AP mode utility.



Items	Information
SSID	AP name of user type.
BSSID	The IEEE MAC address of locally-managed, generating from a 46 random code.
AID	Raise value by current connection.
MAC Address	The station MAC address of current connection.
Life Time (mm:ss)	Record life time.

Click the “Config” button, then you can configure the wireless network properties. This page provides overall configuration to this adapter.



SSID: AP name of user type.

Security Setting: Authentication mode and encryption algorithm used within the AP. System default is no authentication and encryption.

Cancel: Cancel the above changes.

OK: Apply the above changes.

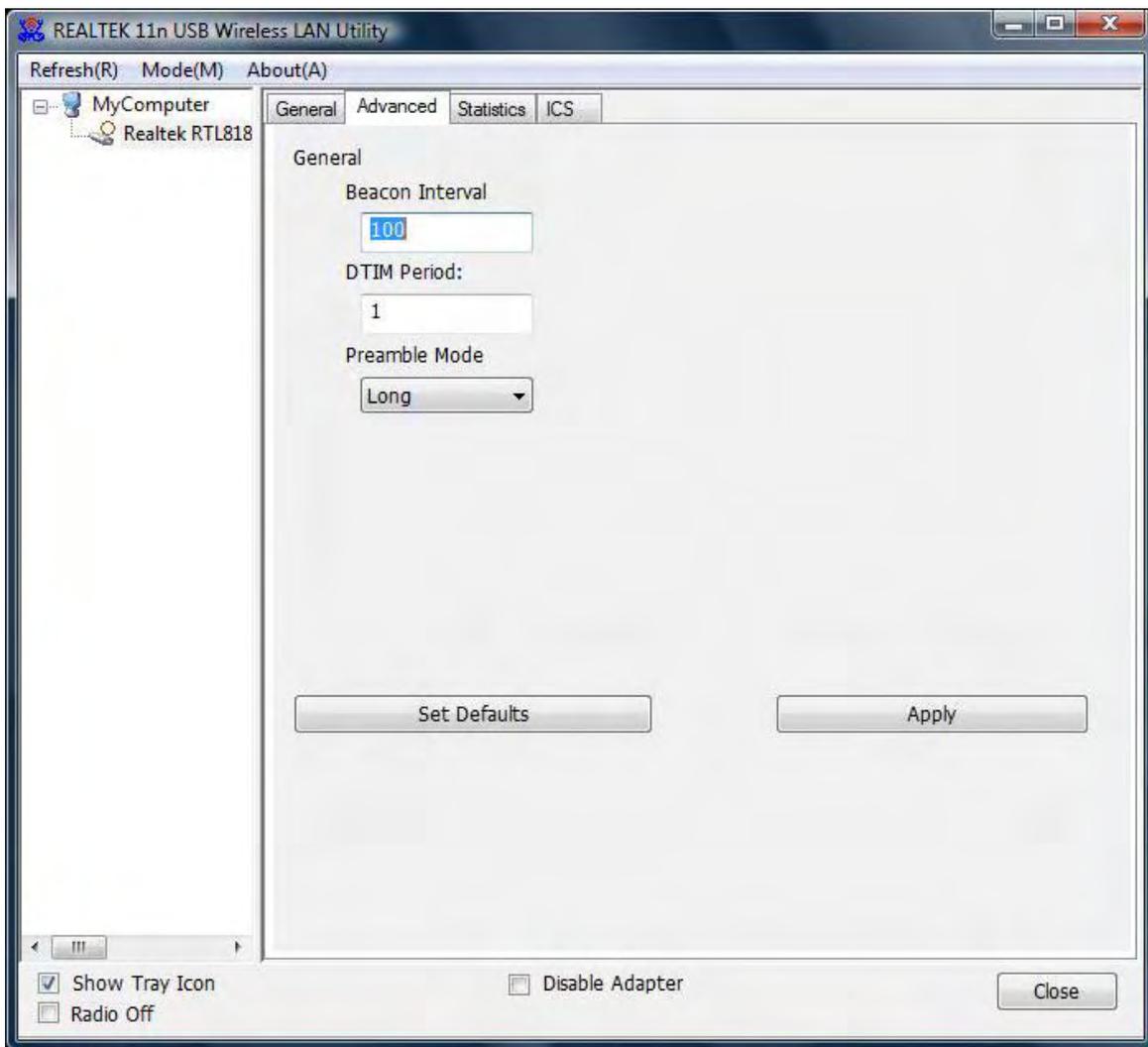
Network Authentication: Select the Security tab in the screen above. To define the security mode, select the desired security mode as follows. There are 4 types supported: Open System, Shared Key, WPA-PSK, WPA2-PSK. Please select a type from the drop down list.

Data Encryption:

Data encryption	There are 4 types supported: Disabled, WEP, TKIP and AES. The available encryption selection will differ from the authentication type you have chosen, the result is shown below:	
	Authentication	Available Encryption Selection
	Open System	Disabled, WEP
	Shared Key	WEP
	WPA-PSK, WPA2-PSK	TKIP, AES

Note: Select different Security Options, the configurations are different; you can select the appropriate security option and configure the exact key as your need.

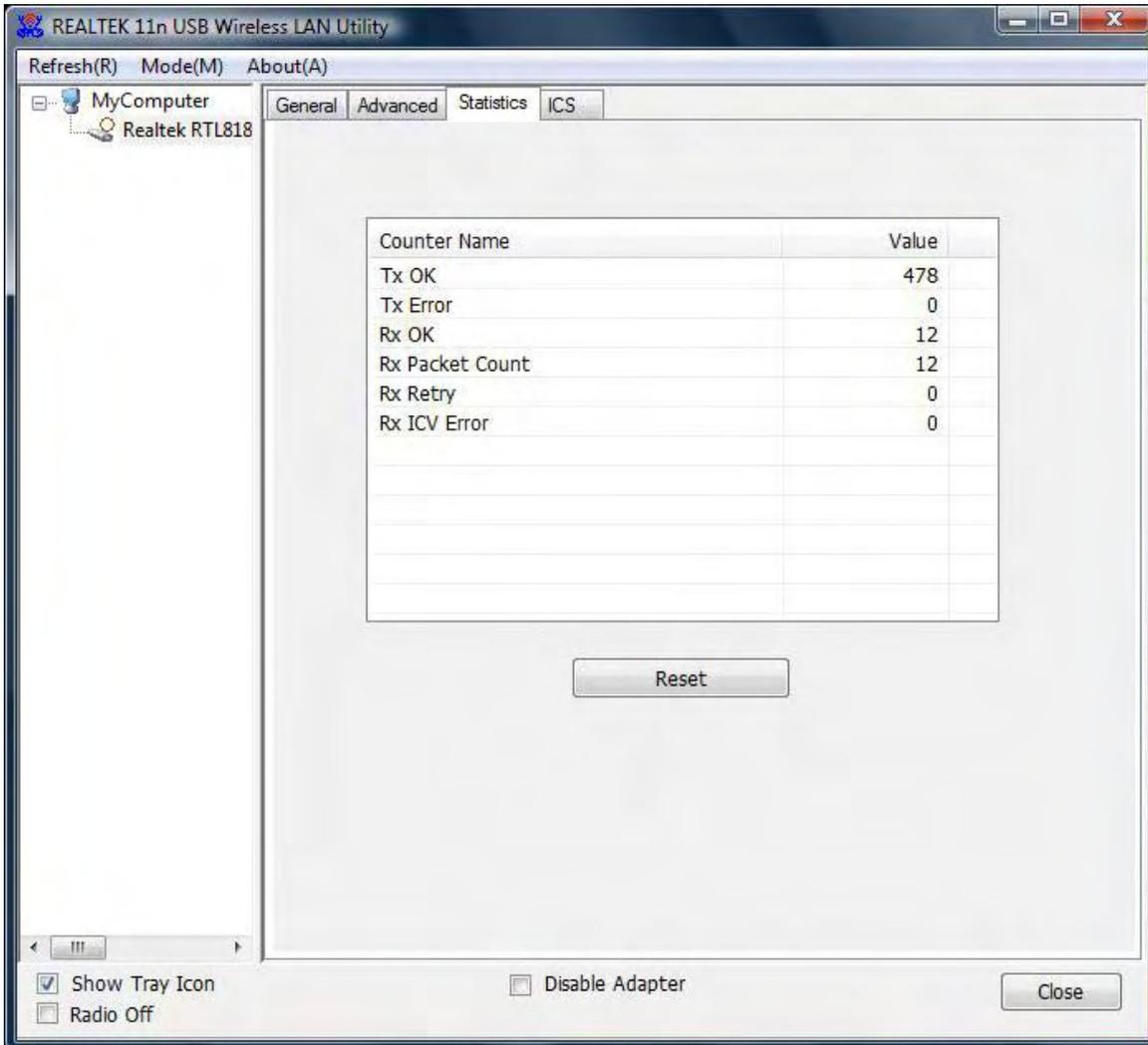
3.4.2 Advanced



Items	Information
Beacon Interval	Beacon frequency spacing.
DTIM Period	Delay transmission indicator map (DTIM) is enabled for power management of the client. If any client power management is enabled, the DTIM should be retained for 1 (the default). Support this parameter range from 1 to 255.
Preamble Mode	Select the options from the drop list, (Long / Short).
Set Defaults	Setting the default value of General.
Apply	Apply the above changes.

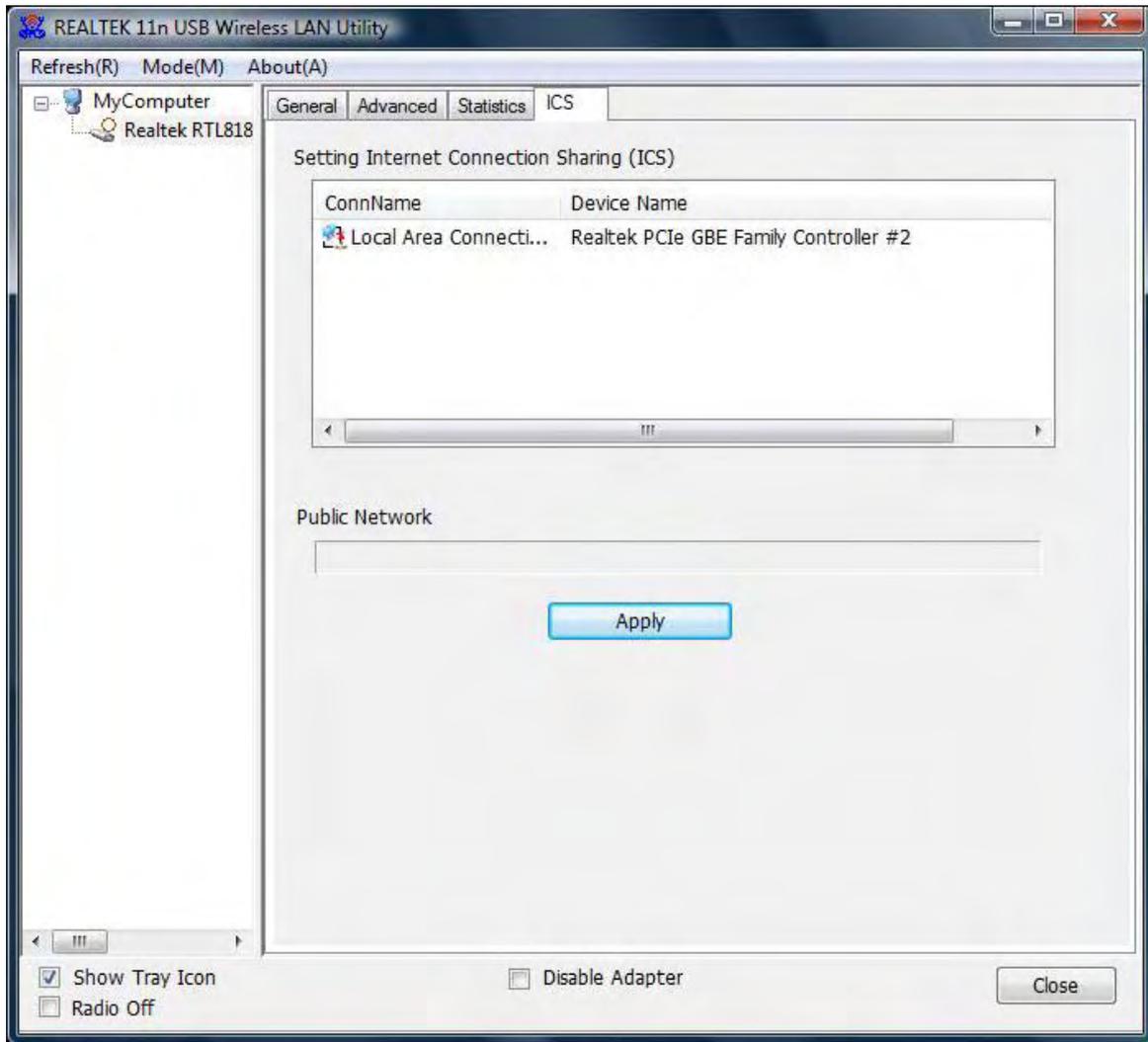
3.4.3 Statistics

Statistics page displays the detail counter information based on 802.11 MIB counters.



Items	Information
TX OK	Successfully transmitted frames numbers.
TX Error	Frames numbers transmitting with error.
RX OK	Successfully received frames numbers.
Rx Packet Count	The packets of receiving frames.
RX Retry	Frames numbers re-receiving.
RX ICV Error	Integrity Check Value receiving with error.
Reset Counter	Reset counters to zero.

3.4.4 ICS



In this function, you can set the device sharing with Internet. Click the button “Apply”, Prompt box pops up.



Select “OK”, then the Internet connection is sharing.

Chapter 4 Introduction for Windows 7 User

4.1 Hardware Installation

The installation of the Adapter is very simple. You could plug the Adapter directly to the USB port on your computer. The LED will light up when the Adapter is installed successfully and the PC is on.

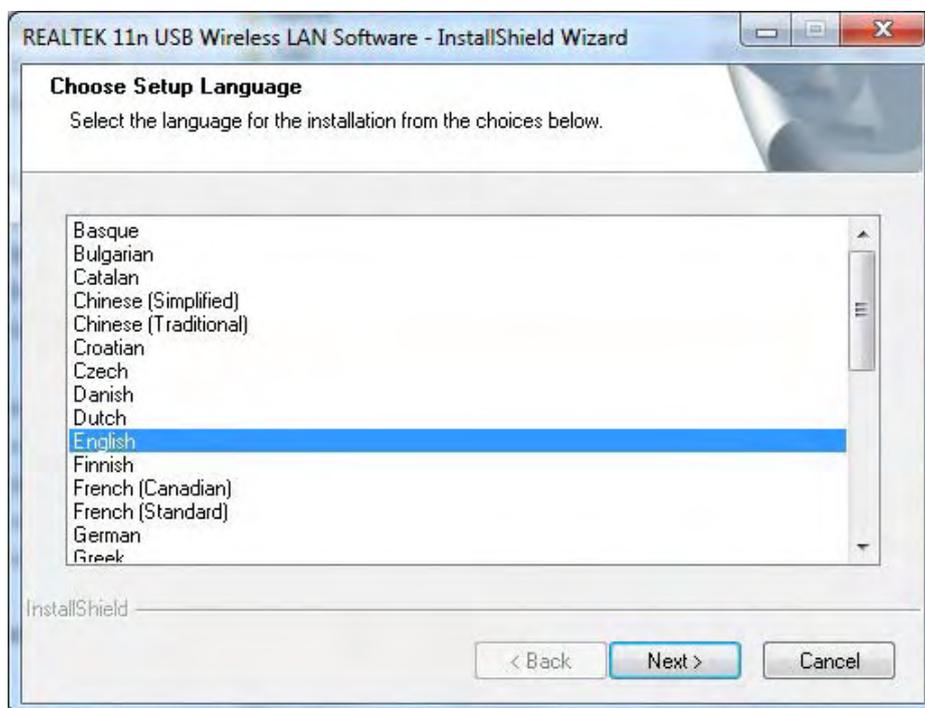
4.2 Software Installation

4.2.1 Overview

The following Setup Wizard will guide you through the Installation procedure for Windows 7. The Setup Wizard will install the REALTEK 11n USB Wireless LAN Driver and Utility. When you install the hardware before installing the software, the system will prompt “Found New Hardware Wizard” on your screen, click Cancel, and run the Setup Wizard program on the CD-ROM.

4.2.2 Installation procedures

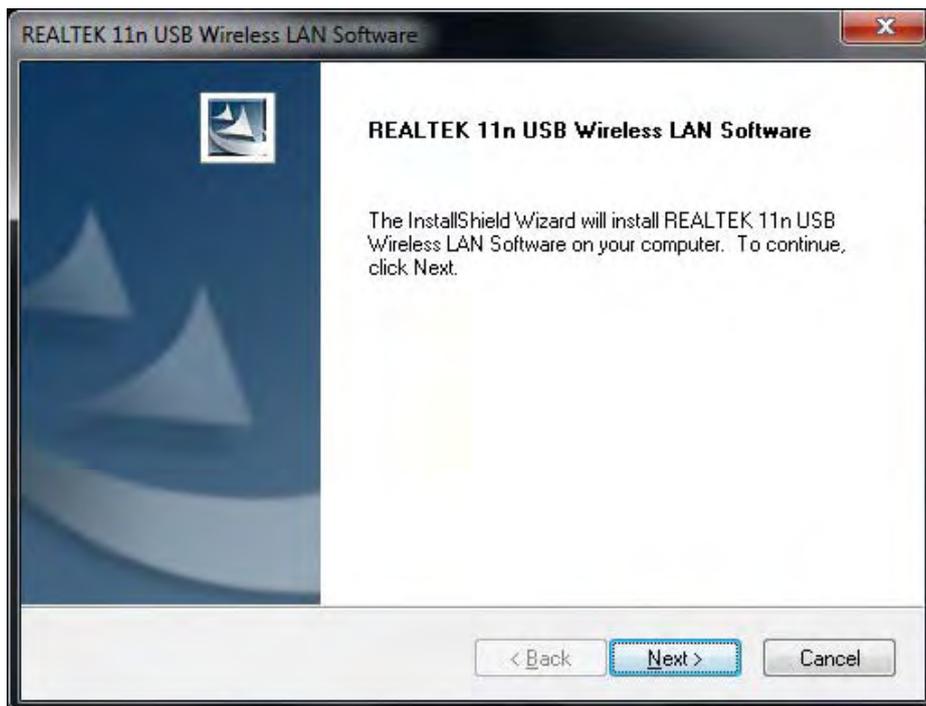
1. Insert the CD into your CD-Rom, and find the setup driver in the CD. Then click the setup icon to start the installation.
2. The language-selecting window pops up. Please select the language you use and click “Next”.



3. Please wait while “Preparing Setup” appears.



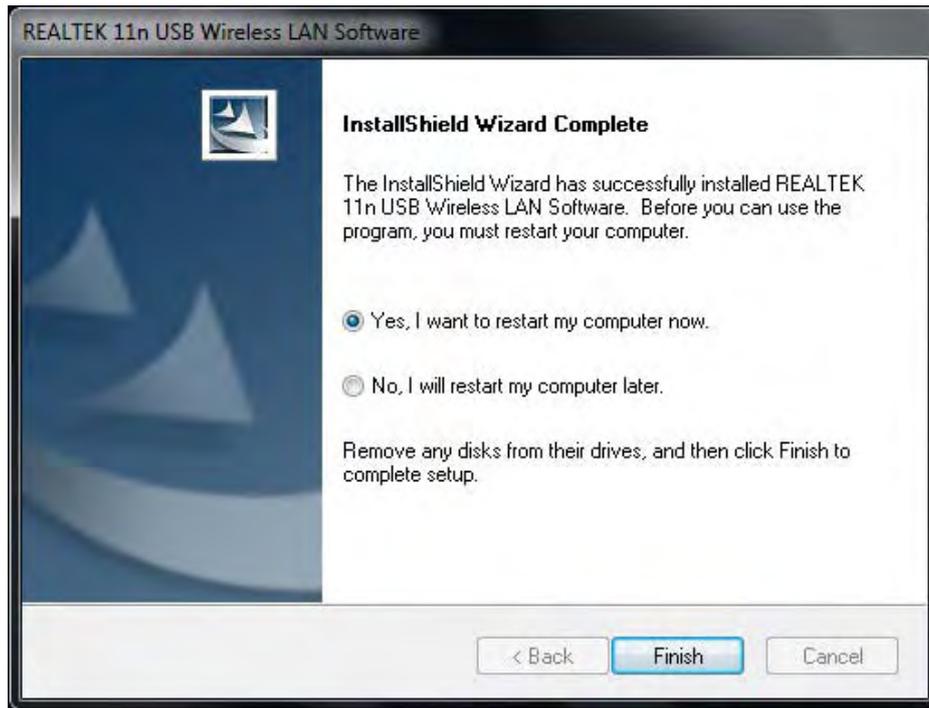
4. Here comes the welcome window. Click the “Next” button to proceed.



5. Please wait again while install.



6. After all the steps above, you will see the screen below, Select “Yes” option to reboot the system..



4.3 Management Guide

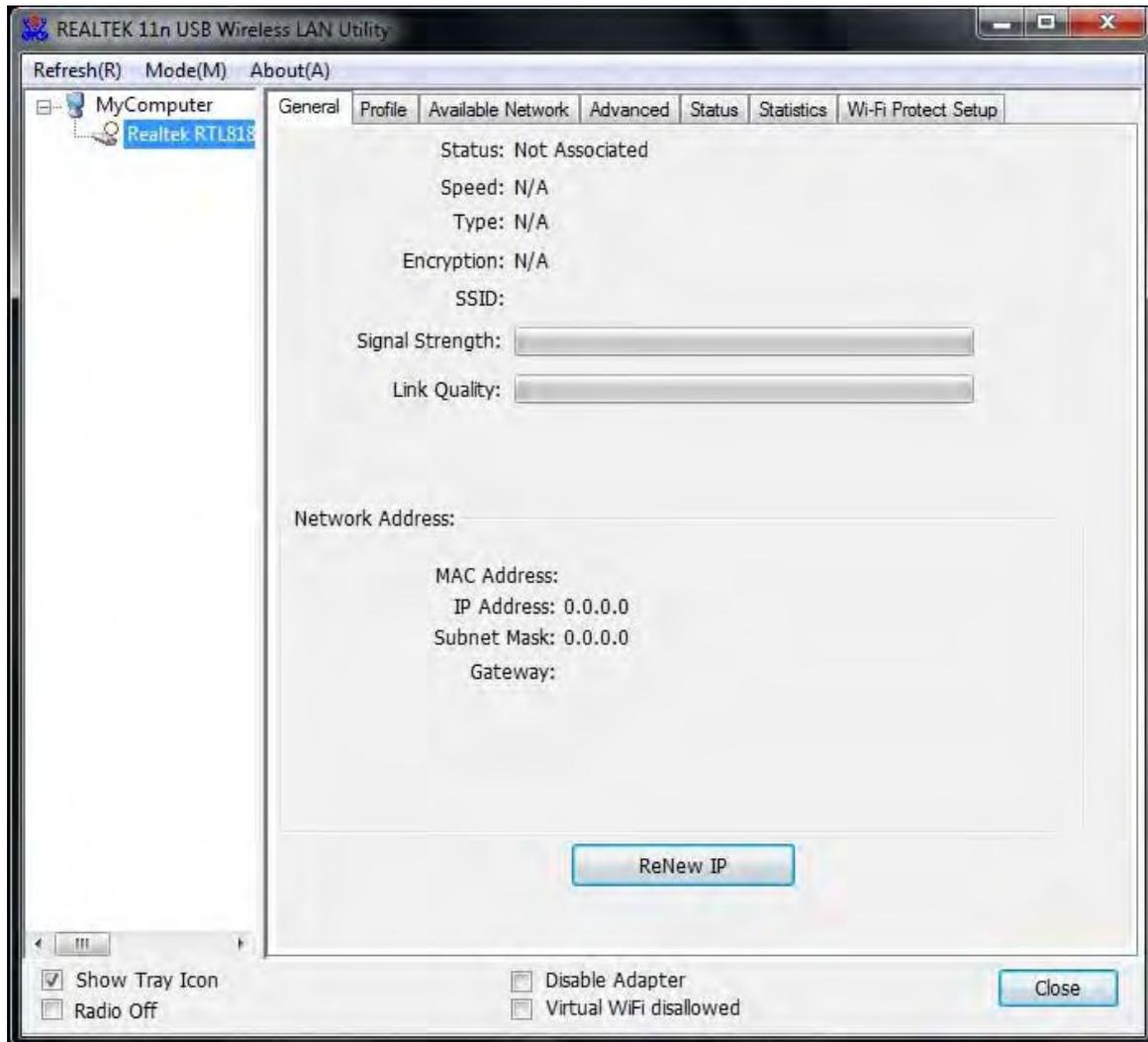
This guide describes how to configure your Adapter for wireless connectivity on your Wireless Local Area Network (WLAN) and use the data security encryption features.

After Installing the Adapter, the Adapter's tray icon will appear in your system tray. It appears at the bottom of the screen, and shows the signal strength (the icon will change its color) and the received signal strength indication (RSSI).

4.3.1 Interface



After the driver installation, the icon will appear on your desktop. Double click this icon and the following interface appears:

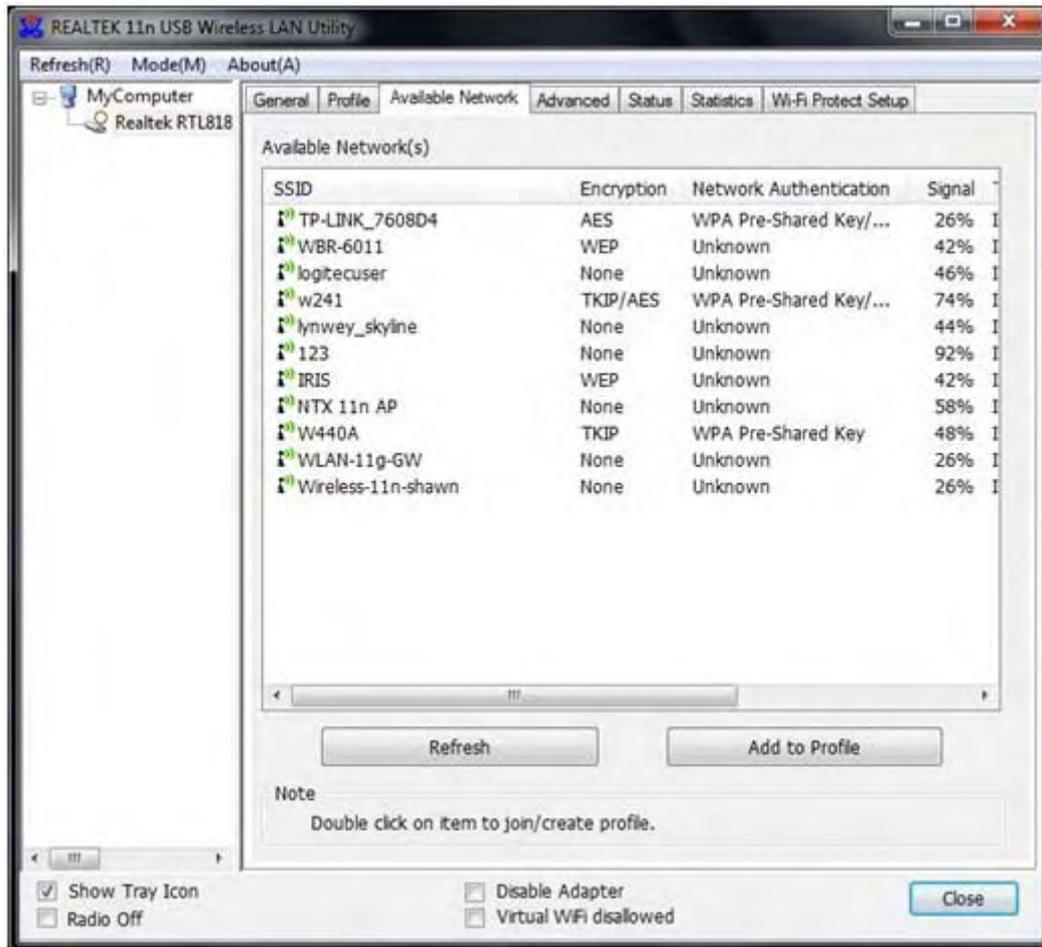


Note:

1. **Functional Buttons:** on the upper side of the utility window, you can click each button to access each configuration window for the detail information in the center area.
2. **Optional Table:** at the bottom: "Show Tray Icon", "Disable Adapter", "Radio off".
 - A. *Show Tray Icon*---Clicking "Show Tray Icon" and "Close" button, the management GUI will be minimized and stay on the tray icon located at the right bottom corner of Windows. If not, management GUI will shut down by only click "Close" button with unchecked condition.
 - B. *Disable Adapter*---Disable this wireless PCI card.
 - C. *Radio off*---It can save power while turning off the radio. While the radio is off, the links with other wireless network will be disconnected. User should be aware that while the wireless configuration is in AP mode. The radio off will cause the sub network belonging to the AP to be disconnected with internet.

4.3.2 Available Network

The above picture shows you the available wireless network lists. The Utility will connect to a wireless network with best signal strength automatically. You can refresh the connecting network by clicking on the network name and click the “Refresh” button. In the center of the Utility windows, you will see detail information of each network.



Available Network Information:

Items	Information
SSID	The name of the IEEE 802.11 wireless network. This field has a maximum limit of 32 characters.
Encryption	Shows the encryption mode in use. There are total 4 modes: None, WEP, TKIP and AES.
Network Authentication	Shows the authentication mode in use.
Signal	This percentage shows the strength of the signal.
Type	The type of network and the station currently connected are shown

	here. The options include : Infrastructure & Ad-Hoc
BSSID	The IEEE MAC address of locally-managed, generating from a 46 random code.
Support Rates	Show current rate.

Note:

- 1) An Infrastructure network contains an Access Point or wireless router. All the wireless devices or clients will connect to the wireless router or access point.
- 2) An Ad-Hoc network contains only clients, such as laptops with wireless desktop adapters. All the adapters must be in Ad-Hoc mode to communicate.

4.3.3 Profile

1. Add a new profile:

(1) Selecting an available network in the “Available Network” function then click the “Add to Profile” button, or double click the network name. You could also add a new profile (for example, SSID 123) quickly by clicking the “Add” button in the “Profile” function.

Note: If the network you add to profile is not encrypted, the following “Unsecured network” window will pop up, and then click “OK”.



(2) It displays “Wireless Network Properties” dialog box. This profile page allows users to save different wireless settings, which helps users to get access to wireless networks at home, office or other wireless network environments quickly.



In the following dialog box, there are some items:

Items	Information
Profile Name	Identifies the configuration profile .This name must be unique. Note that the profile names are not case-sensitive.
Network Name(SSID)	The IEEE 802.11n wireless network name, using default name defined by system. This field has a maximum limit of 32 characters.

(3) Wireless Network Security

A. Network Authentication

Select the Security tab in the screen above. To define the security mode, select the desired security mode as follows. There are 7 types supported: Open System, Shared Key, WPA-PSK, WPA2-PSK, and WPA 802.1X, WPA2 802.1X, WEP 802.1X, and you can select a type from the drop down list if you click the button beside "Network Authentication".

- **Open System:** enable an adapter to attempt authentication regardless of its WEP settings. It will only associate with the access point if the WEP keys on both the adapter and the access point match.
- **Shared-key:** only allows the adapter to associate with access points that have the same WEP key.
- **802.1x:** This item appears while the environment is set to an Open authentication with WEP encryption. Mark the checkbox to make the section available. The section is also available in

WPA and WPA2 authentication types.

- **Preshared Key(PSK):** This is the shared secret between AP and STA. For WPA-PSK, WPA2-PSK and WPA-NONE authentication mode, this field must be filled with characters longer than 8 and less than 32 lengths. The following dialog appears if you have input invalid values.
- **WEP Key:** Only available when using WEP encryption algorithm. The key must match AP's key. Only using the same cryptographic key to access the computer, the internet can storage, and decryption the information from other computer.

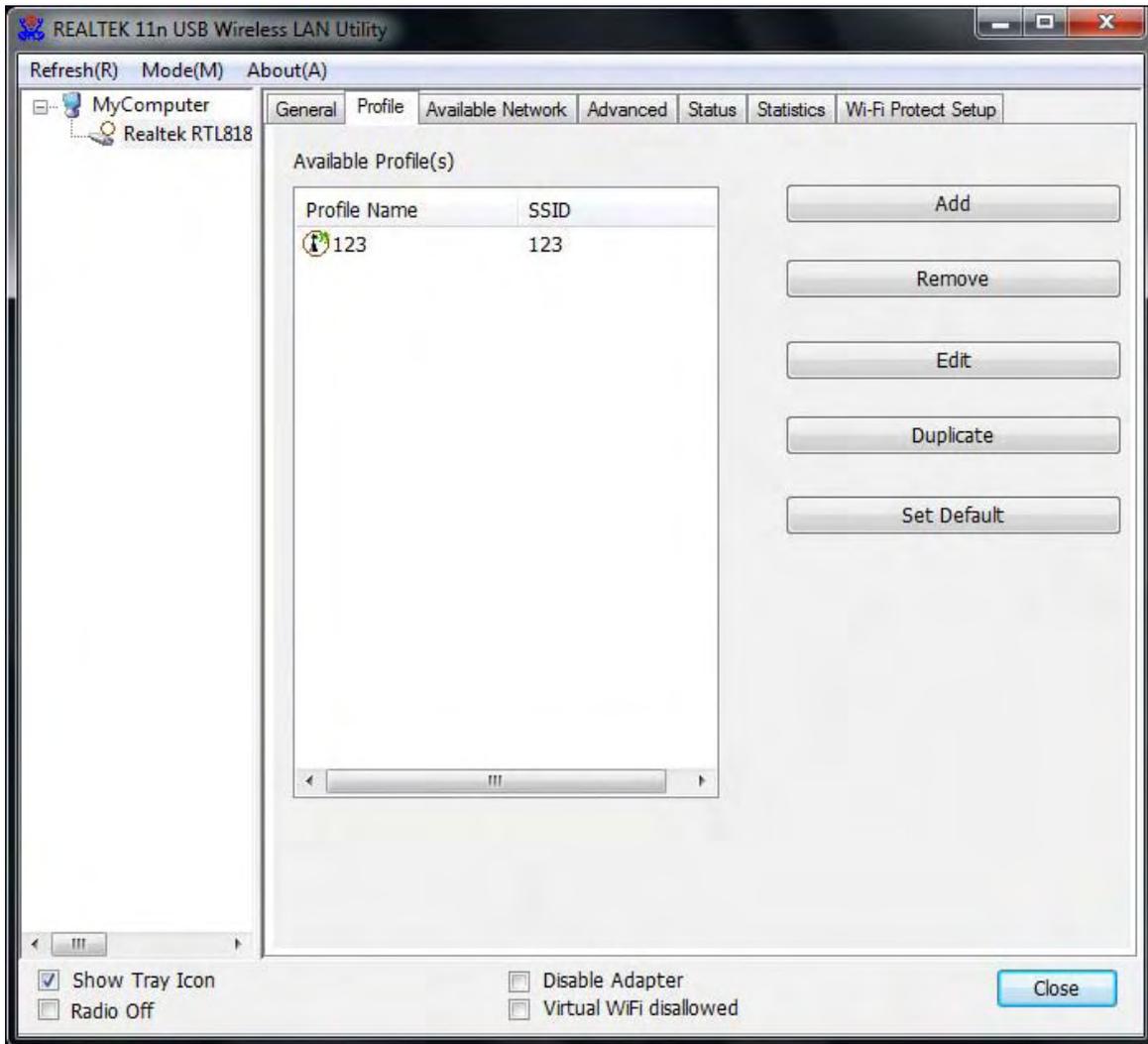
B. Data Encryption:

Data encryption	There are 4 types supported: Disabled, WEP, TKIP and AES. The available encryption selection will differ from the authentication type you have chosen, the result is shown below:	
	Authentication	Available Encryption Selection
	Open System	Disabled, WEP
	Shared Key	WEP
	WPA-PSK, WPA2-PSK, and WPA 802.1X, WPA2 802.1X	TKIP, AES
WEP 802.1X	WEP	

Note: Select different Security Options, the configurations are different; you can select the appropriate security option and configure the exact key as your need.

- **TKIP:** "Temporary Key Integration communication Protocol", it provide each packet's key mixture, message integration and key reconstruction mechanism. TKIP can use with personal or the enterprise network validation.
- **AES:** "Advanced Encryption Standard", It is a new method that the wireless transmission of privacy protection. AES encryption methods provides more careful than TKIP.

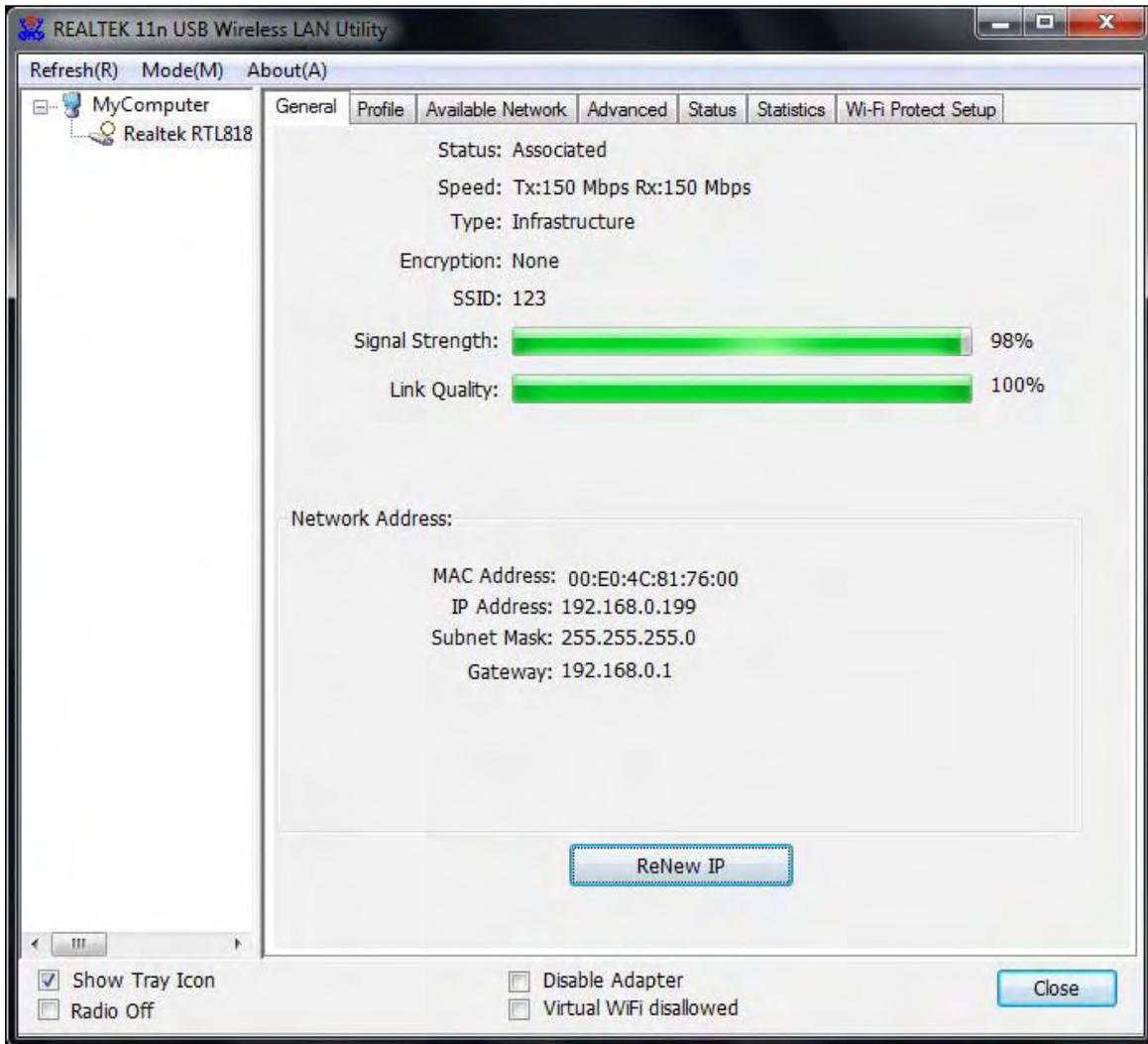
(4) Finish the configuration, and then click “OK”, that network has been added to the profile.



Profile List: The list shows all the profiles you have added before.

Buttons: You can click on these buttons to **Add** a new profile, **Remove**, **Edit**, **Duplicate** or **Set Default** an old profile.

4.3.4 General



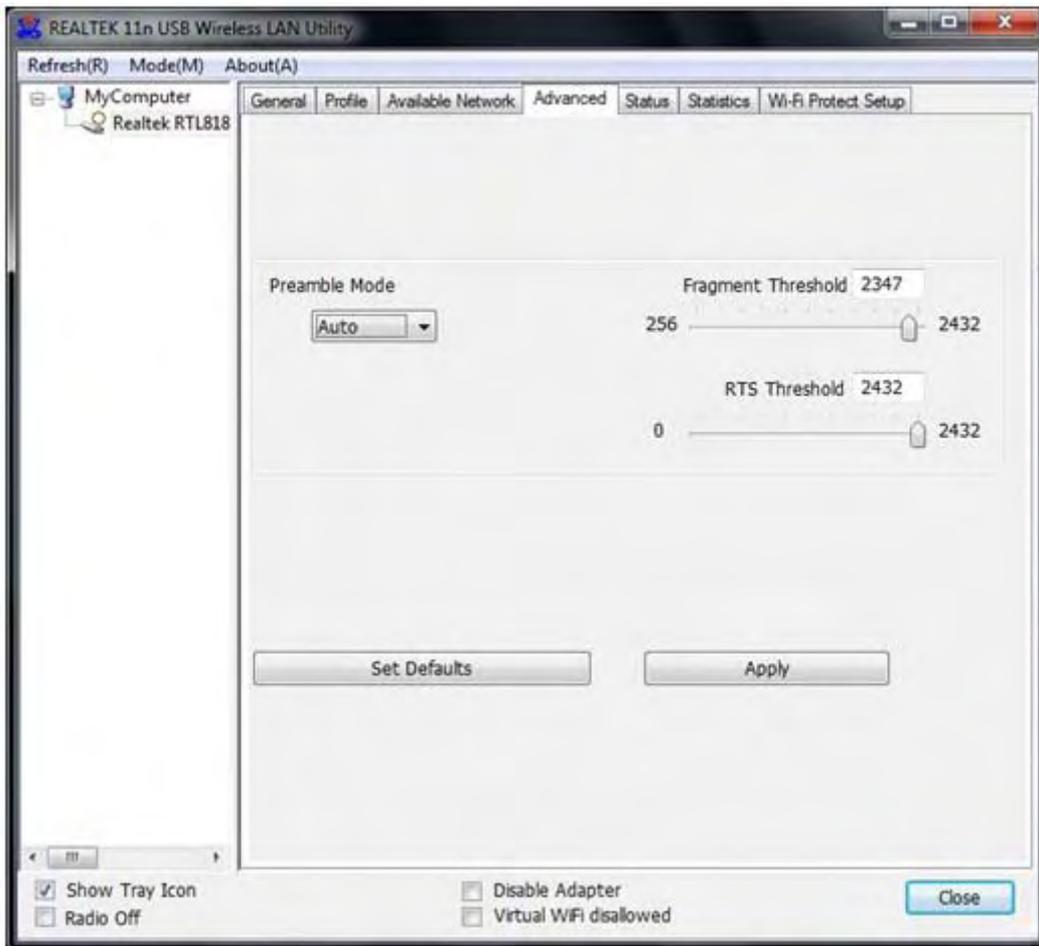
In this window, there are some items as following:

Items	Information
Status	Currently connection status.
Speed	Show current transmit rate and receive rate.
Type	Network type in use.
Encryption	Encryption type in use.
SSID	The name of the IEEE 802.11 wireless network. This field has a maximum limit of 32 characters.
Signal Strength	Receive signal strength.
Link Quality	Display connection quality based on signal strength.
Network	1. MAC Address : The MAC address of the wireless network adapter.

Address	2. IP Address : IP address of current connection. 3. Subnet Mask : Subnet mask of current connection. 4. Gateway : Gateway of current connection.
----------------	---

4.3.5 Advanced

This screen below allows you to make advanced configuration for the profile. Please refer to the following chart for definitions of each item.



1. Preamble Mode

The length of CRC blocks in the frames during the wireless communication. Select the options from the drop list: (1) Long (2)Short (3)Auto.

2. Threshold

(1) Fragment Threshold

This value should remain at its default setting of 2347. If you experience a high packet error rate, you may slightly increase your fragmentation threshold within the value range of 256 to 2432. Setting the fragmentation threshold too low may result in poor performance.

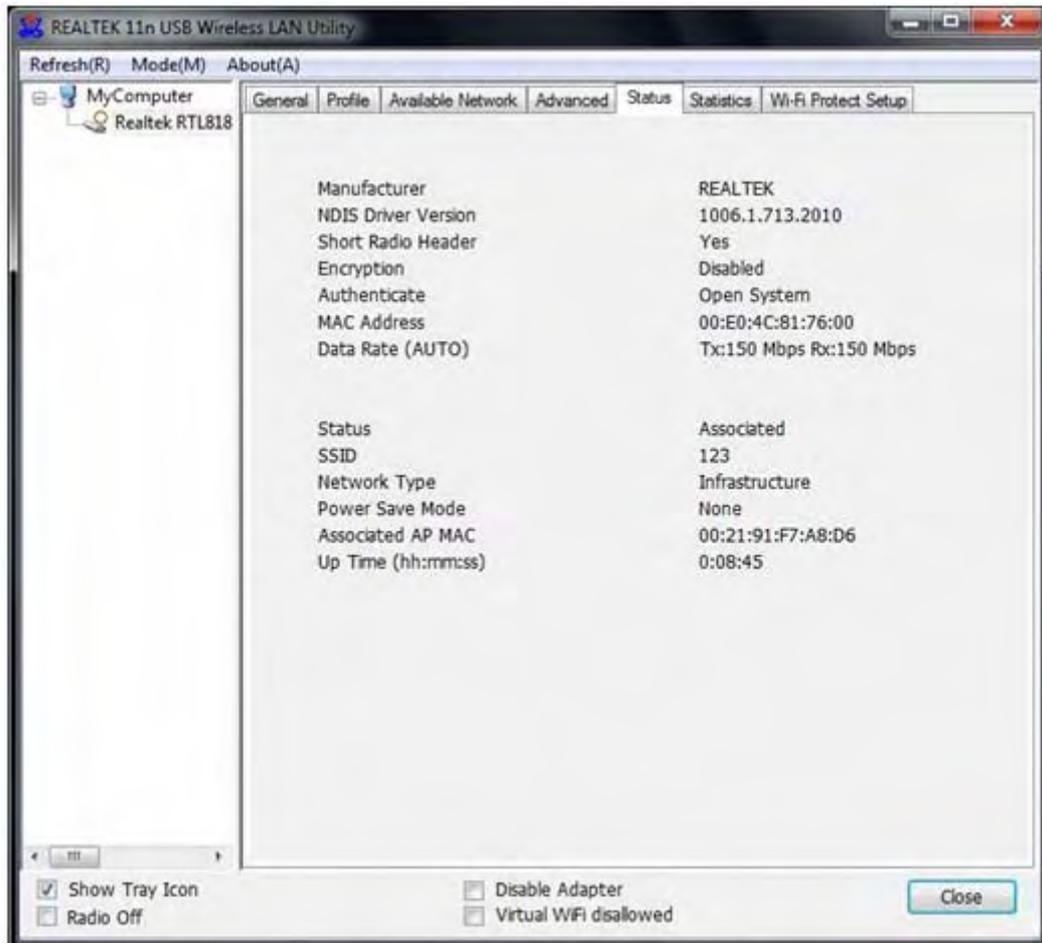
(2) RTS Threshold

Request To Send Threshold. This value should remain at its default setting of 2346. If you

encounter inconsistent data flow, only minor modifications to the value range between 0 and 2432 are recommended.

4.3.6 Status

The Status tab contains general information about the program and its operations.

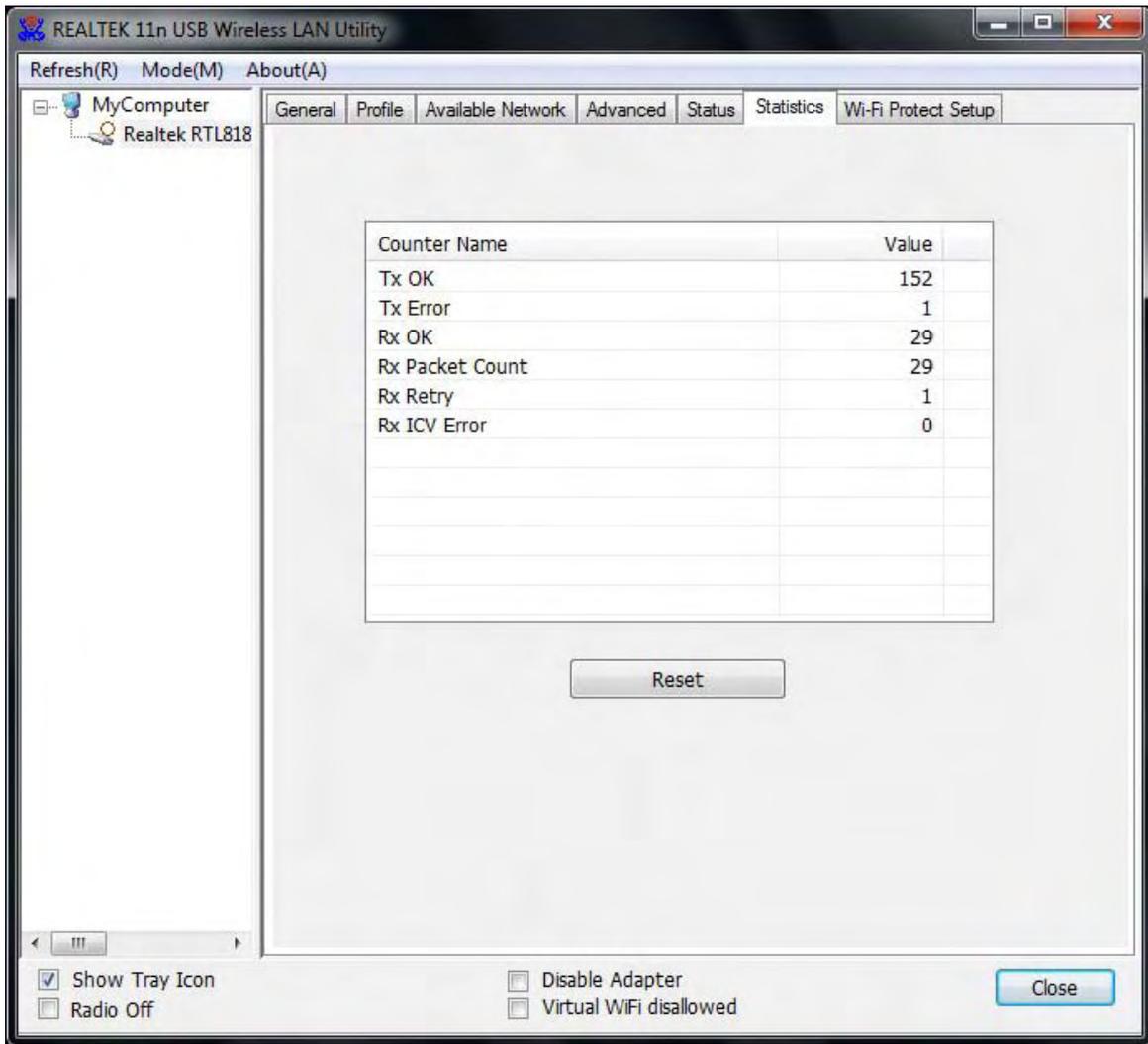


The following table describes the items found on the Status screen.

Items	Information
Manufacturer	The name of manufacturing this product.
NDIS Driver Version	The version of Network Driver Interface Specification.
Encryption	Here displays the encryption type the device is using.
Authenticate	This shows whether the server based authentication is used.
MAC Address	The MAC address of the wireless network adapter.
Data Rate(Auto)	Show current transmit rate and receive rate.
Status	Current connection status.
SSID	The SSID of the wireless system.
Network Type	The type of network and the station currently connected are shown here. The options include : Infrastructure, Ad Hoc
Power Save Mode	The power save mode have three mode: Max, Min, None
Associated AP MAC	The MAC Address of associated AP.
Up Time	Record life time.

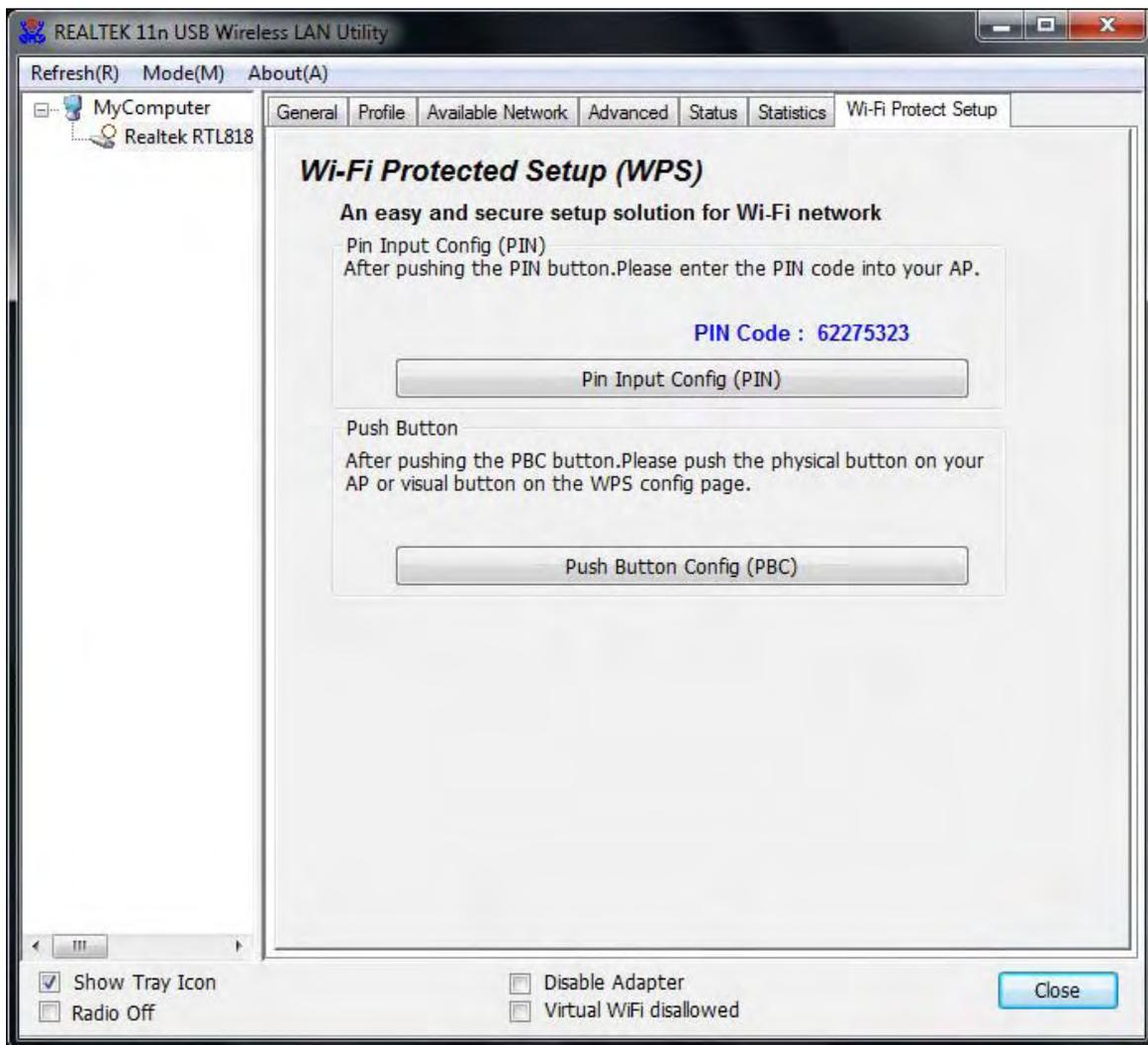
4.3.7 Statistics

Statistics page displays the detail counter information based on 802.11 MIB counters. This page translates the MIB counters into a format easier for user to understand. It show receiving and transmitting statistical information about the following receiving and transmitting diagnostics for frames received by or transmitted to the wireless network adapter.



Items	Information
TX OK	Successfully transmitted frames numbers.
TX Error	Frames numbers transmitting with error.
RX OK	Successfully received frames numbers.
Rx Packet Count	The packets of receiving frames.
RX Retry	Frames numbers re-receiving.
RX ICV Error	Integrity Check Value receiving with error.
Reset Counter	Reset counters to zero.

4.3.8 Wi-Fi Protect Setup



The primary goal of Wi-Fi Protected Setup (Wi-Fi Simple Configuration) is to simplify the security setup and management of Wi-Fi networks. This adapter supports the configuration setup using PIN configuration method or PBC configuration method. If the wireless card supports Wi-Fi Protected Setup (WPS), you can establish a wireless connection between wireless card and router using either Push Button Configuration (PBC) method or PIN method.

Here we will introduce two ways to configure the QSS

(QSS is known as rapid security settings, by pressing the wireless router and wireless card on the QSS button to automatically set up WPA2 secure connection level without the router or network adapter management software to conduct the cumbersome interface settings, greatly simplifying the operation of the wireless security settings.)

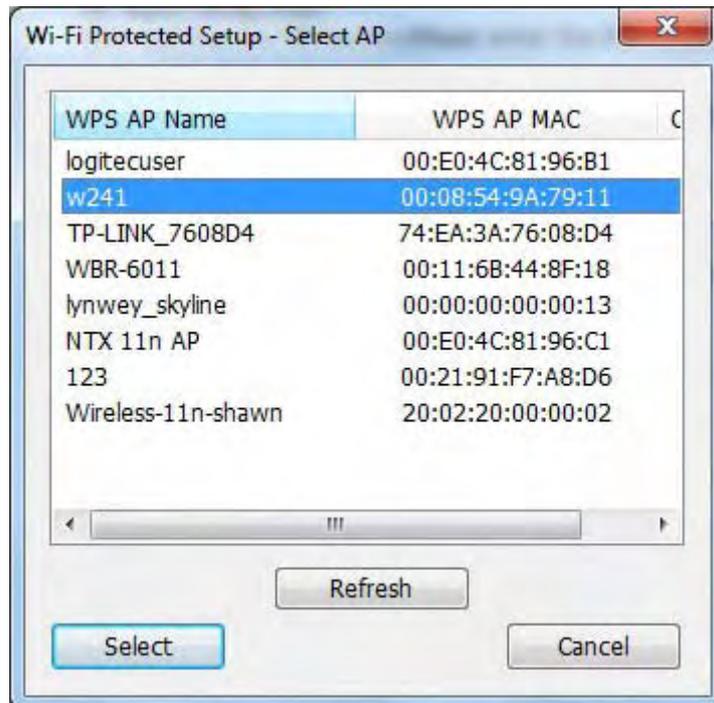
Pin Code: 8-digit numbers. It is randomly generated from system.

(1) PIN method

Click the button “Pin Input Config (PIN)”, and then come to the following figure.

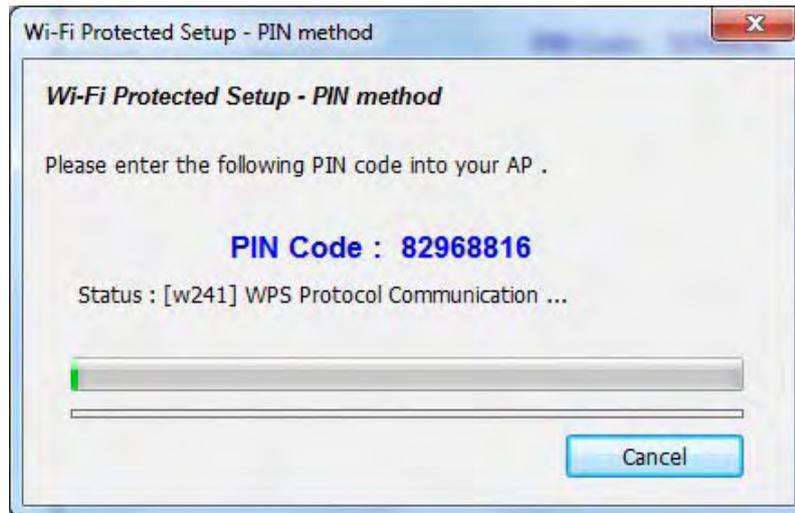


Click the button "Yes", and then select one of the AP. Also, you can click these buttons by "Refresh / Select / Cancel" for any change.

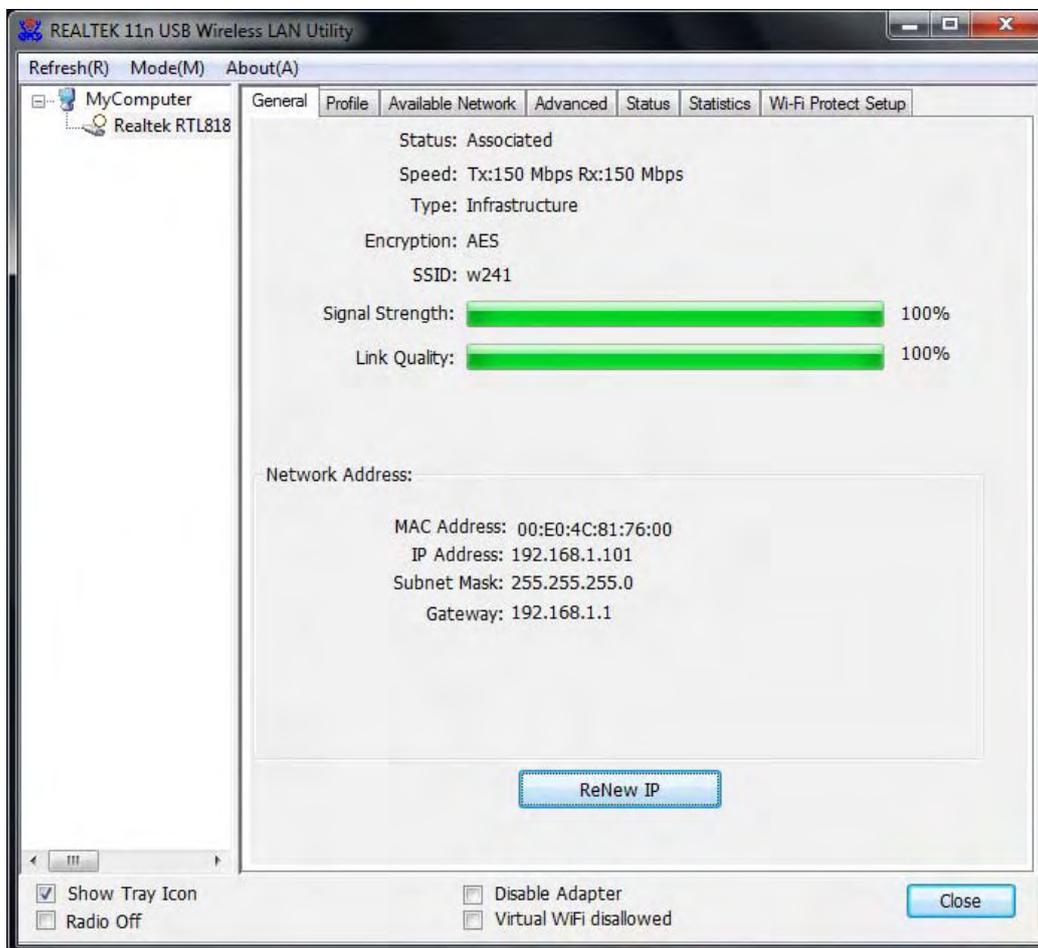


When the following interface pops up, double click the Internet WEB browser icon on your desktop screen. Type the IP address of you selected Router/AP into the URL and press "Enter", and then you can enter the configuration.

Please enter the WPS (Wi-Fi) configuration page, type the PIN code of adapter and click confirm button to build WPS connection.

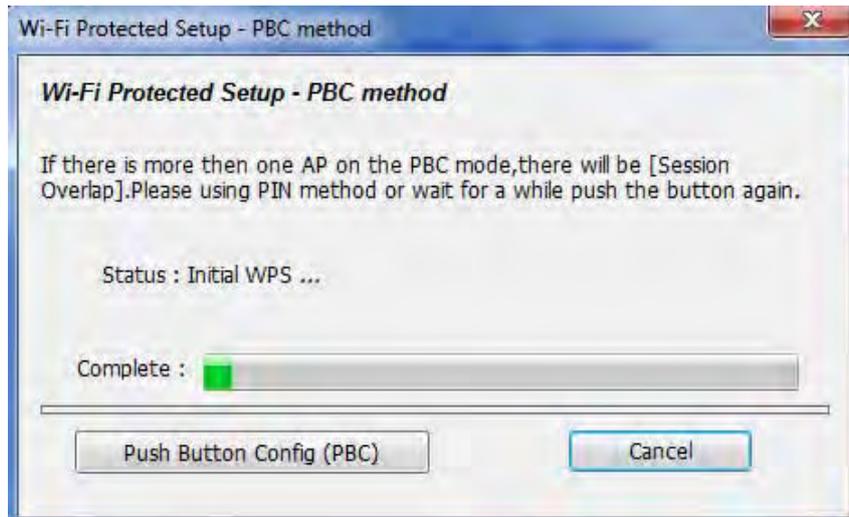


When the "General" window appears, WPS is configured successfully.

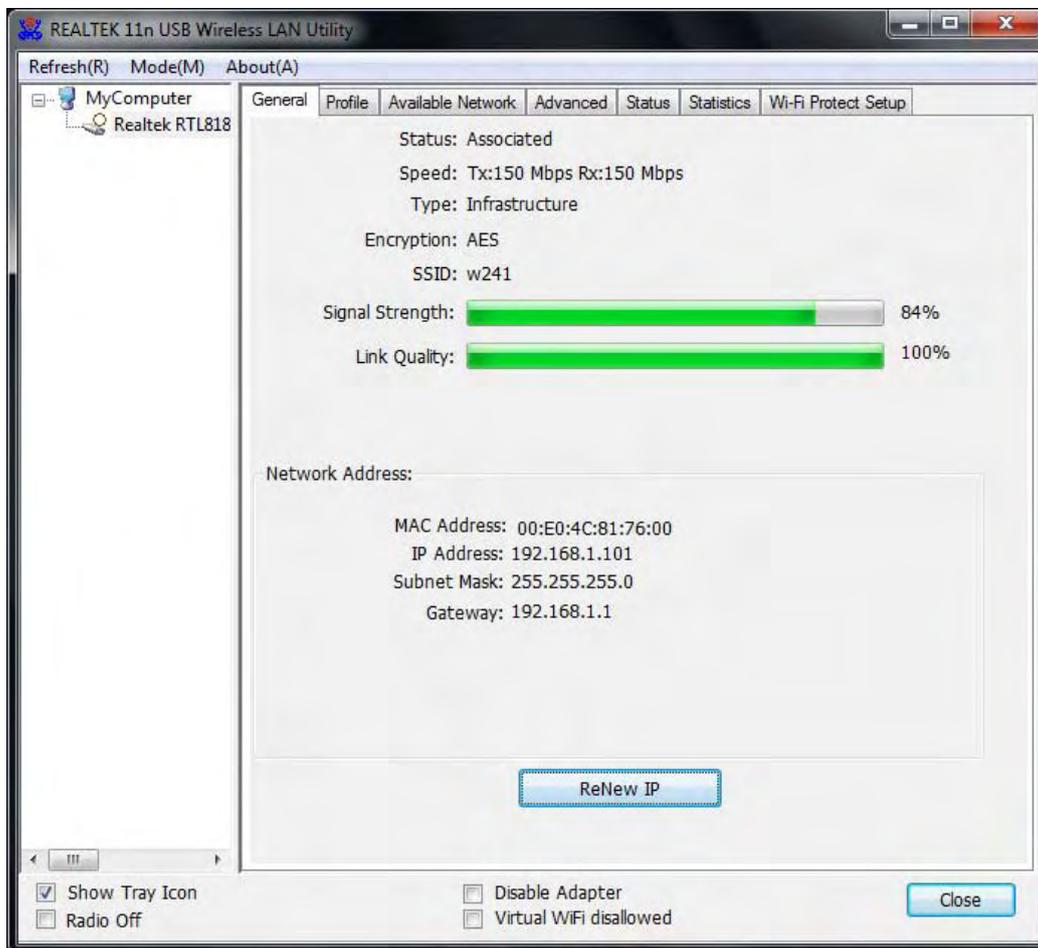


2. PBC (Push Button Configuration) method

After pushing the PBC button, Please push the physical button on your AP or visual button on the WPS config page, then come to the following figure.

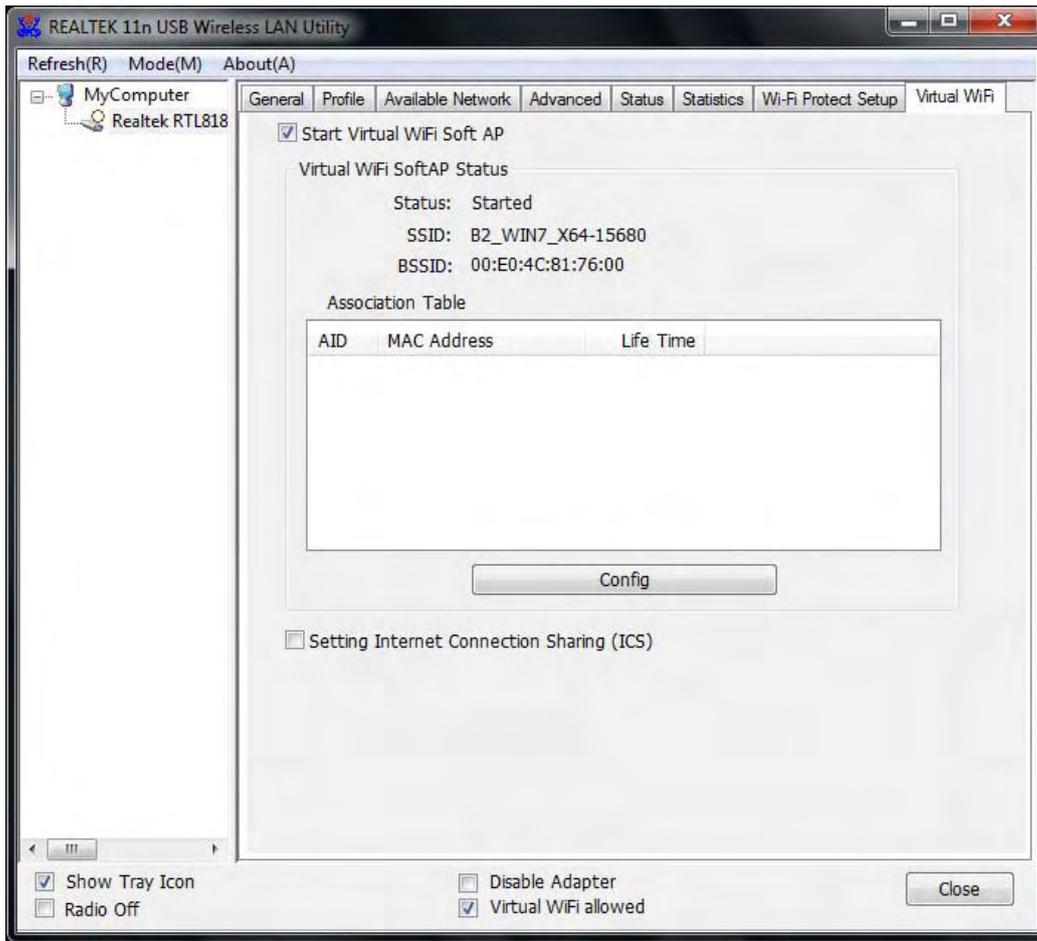


When the “General” window appears, WPS is configured successfully.



4.3.9 Virtual WiFi

Click the check box of “Virtual WiFi disallowed” at the bottom of the window to activate Virtual WiFi. Virtual WiFi, abbreviated to VWiFi, is a software layer that abstracts the wireless LAN card hardware into multiple virtual adapters. The software handles the connections of each adapter to ensure every adapter has an opportunity to connect to their respective networks limited by time. And you act as if you have multiple WLAN hardware adapters working independently.

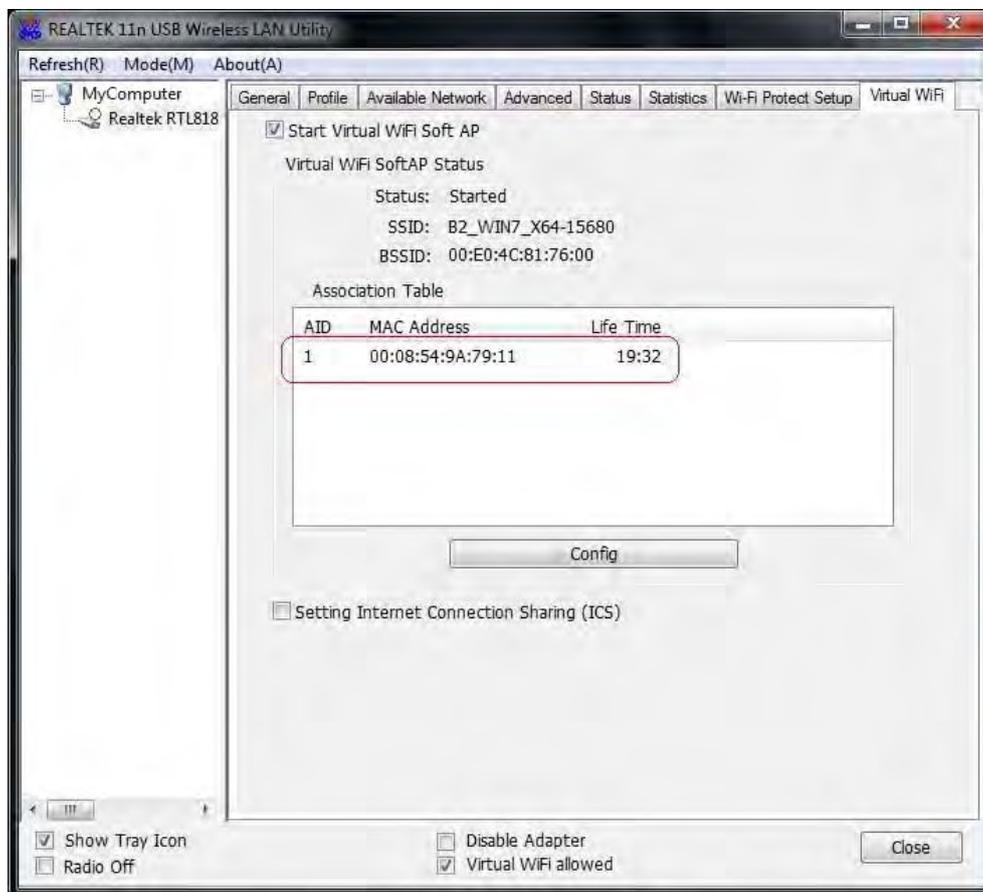


Items	Information
SSID	The name of connected IEEE 802.11 wireless network. This field has a maximum limit of 32 characters.
BSSID	a locally administered MAC address of the wireless network generated from a 64-bit random number
Association Table	It is the list of joined stations to this adapter
AID	Association ID
Mac Address	It is the six two-digit numbers that assemble the MAC address of respected joined station
Life time	It is the timer that counts down from 10 minutes whenever the adapter connects the station successfully. If an STA associated to SW adapter does not have any interaction with the adapter in 10 minutes, it will be disassociated from the Infra-structure BSS
config	A dialog of this adapter is shown for configuration modification

Click config button and the network properties interface pops up. You can key in the network key to set up the security accessing authority and click OK to finish the configuration.

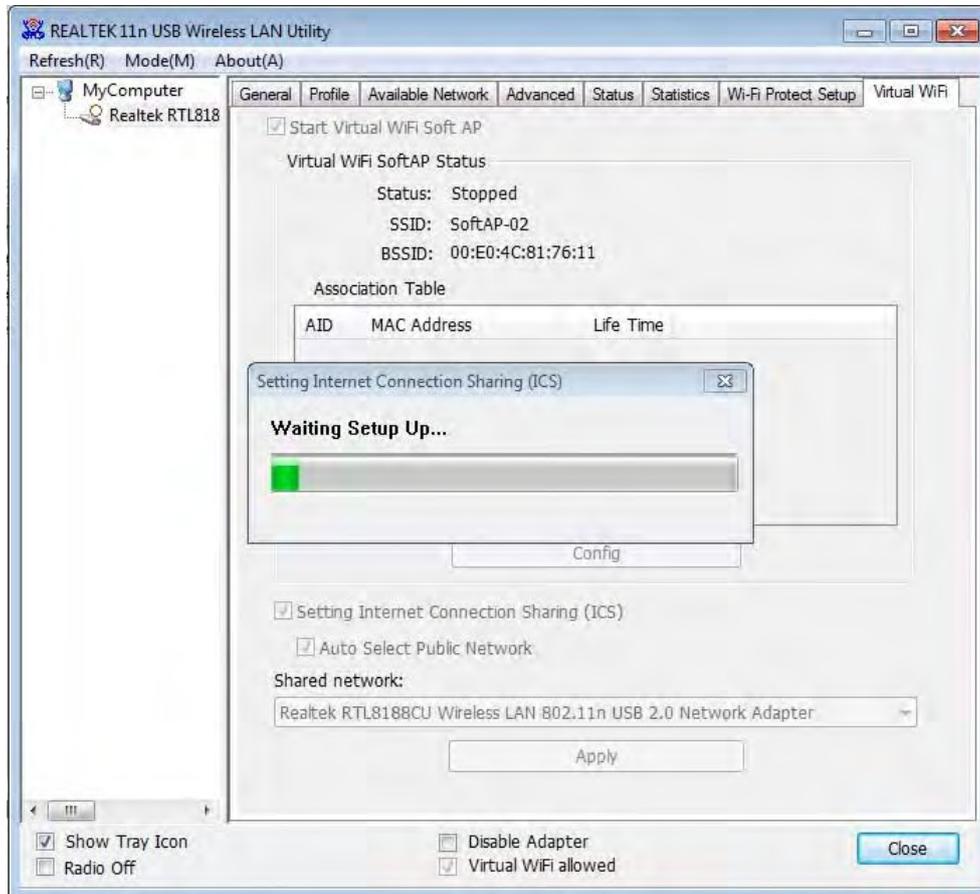


The other connector can share the same network by typing in the network key. In this way the connector is connected to the adapter.

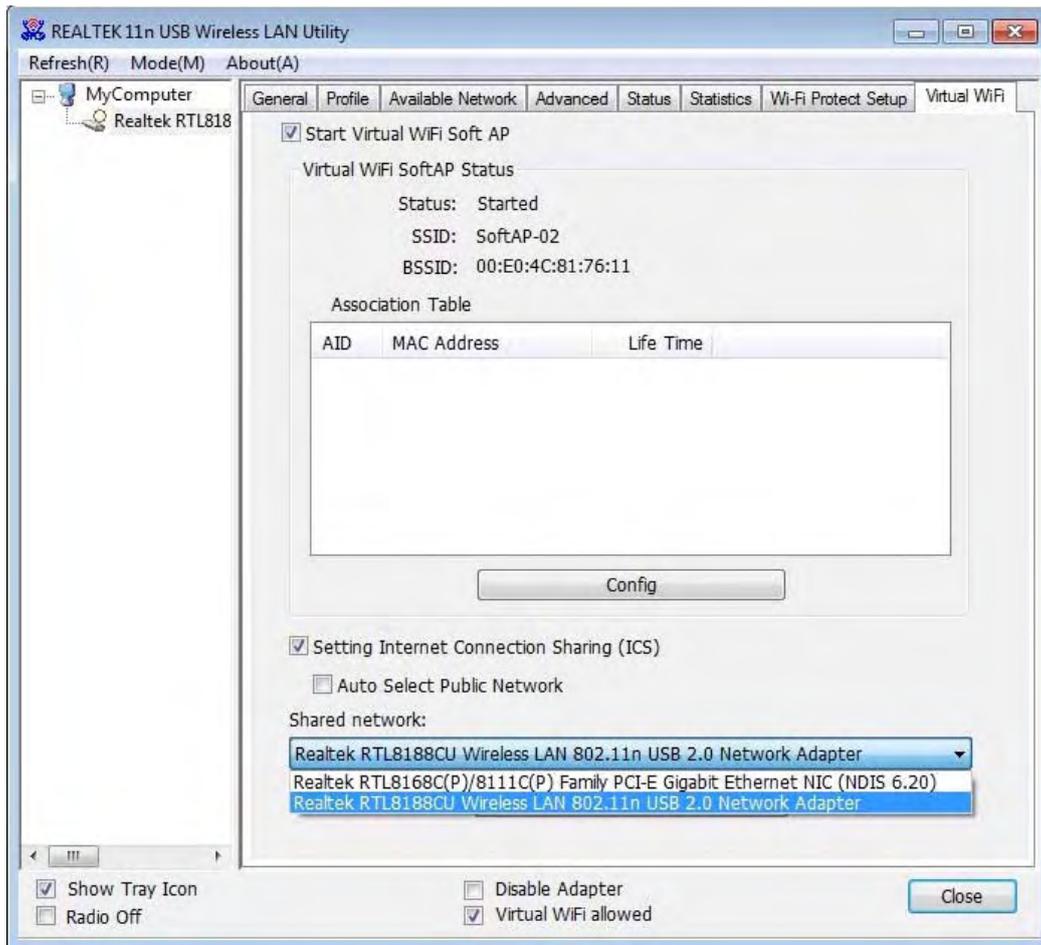


Setting Internet Connection Sharing(ICS)

1. Click the checkbox of ICS, a box asks for waiting will pop up, and “Auto Select Public Network” is enabled automatically.



2. If you want to select the “Shared network” manually, you can enable “Auto Select Public Network” and choose the “Shared network” you want by the drop-down list as follow:



3. After selecting the shared network, click the button “Apply”, and then Prompt box pops up.



4. Select “OK”. When the connection is successful, you will find that the tray “Local Area Connection” has been changed.

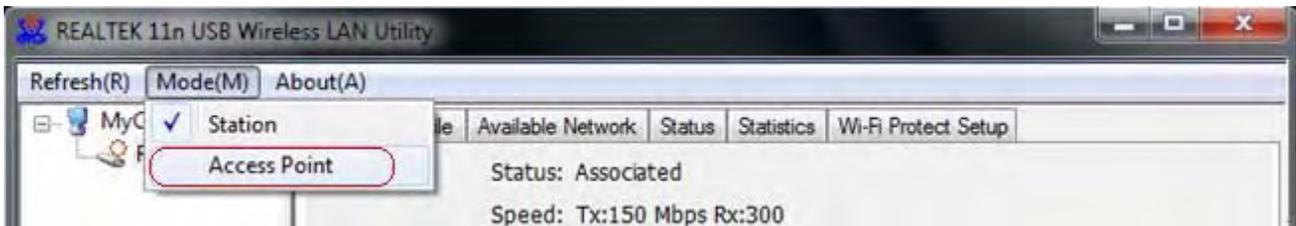


4.4 AP mode Management Guide for Window 7 User

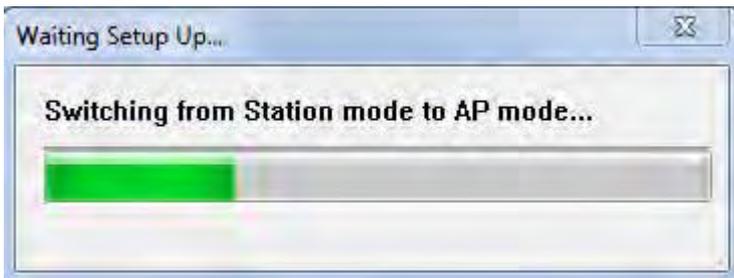
If you wish to share the Internet access with the wireless stations in your environment, you can configure this wireless adapter as a software access point (Soft AP). In this mode, this wireless adapter becomes the wireless access point that provides local area network and Internet access for your wireless stations.

4.4.1 General

To use this adapter as an access point, please click the “Mode” on the menu bar and select “Access Point”.



At this time a box pops up:



Then switching from station mode to AP: At the same time, you will find that the icon on the system

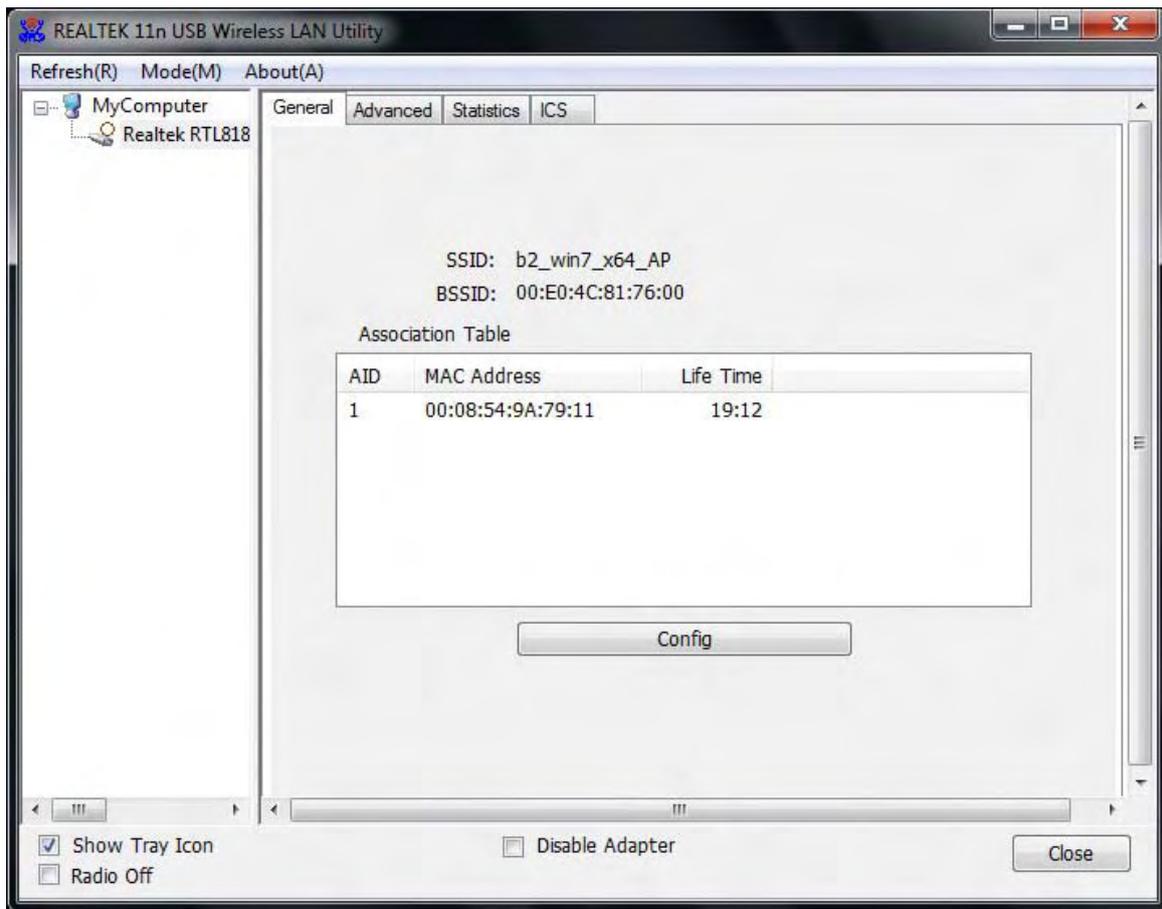
tray is changed form



to

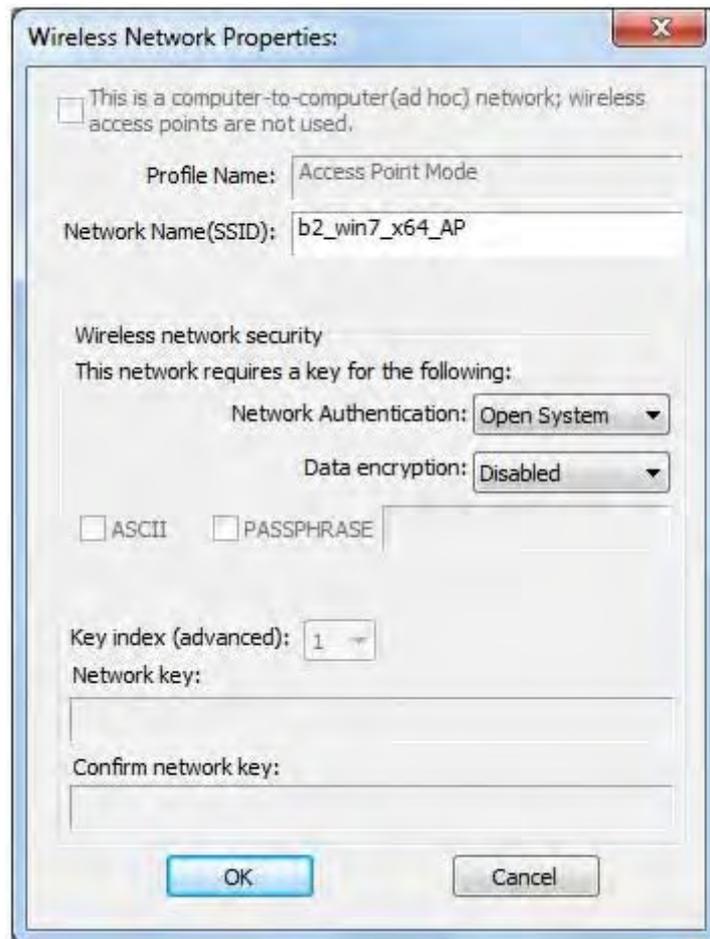


Please refer to the following information about this AP mode utility.



Items	Information
SSID	AP name of user type.
BSSID	The IEEE MAC address of locally-managed, generating from a 46 random code.
AID	Raise value by current connection.
MAC Address	The station MAC address of current connection.
Life Time (mm:ss)	Record life time.

Click the “Config” button, then you can configure the wireless network properties. This page provides overall configuration to this adapter.



SSID: AP name of user type.

Security Setting: Authentication mode and encryption algorithm used within the AP. System default is no authentication and encryption.

Cancel: Cancel the above changes.

OK: Apply the above changes.

A. Network Authentication

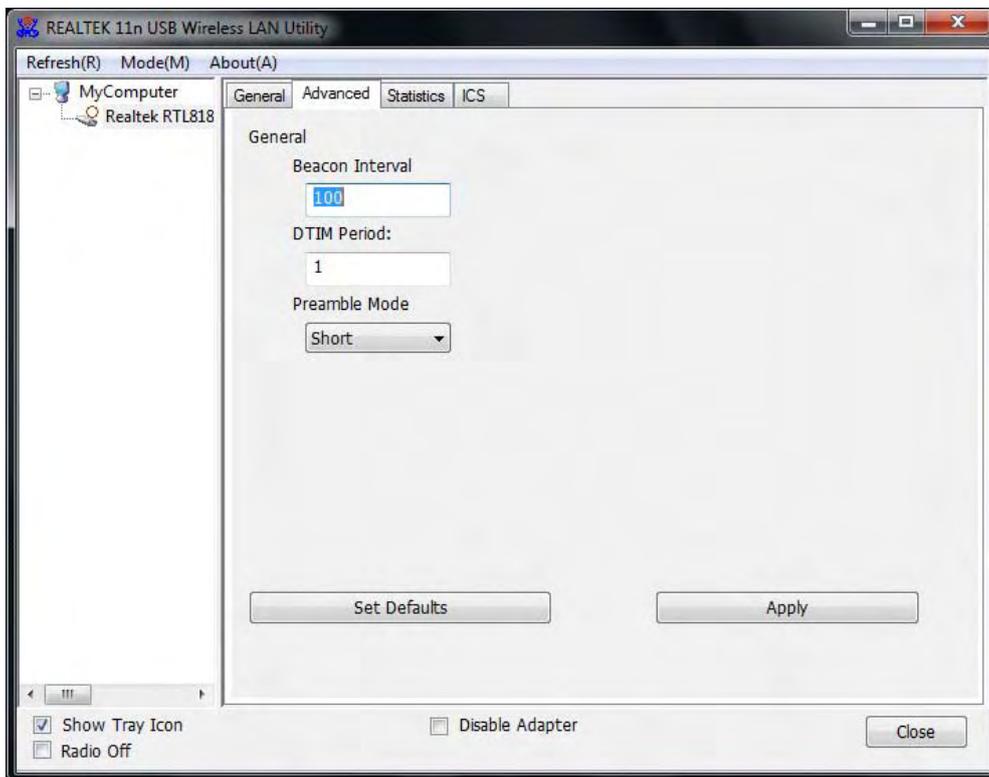
Select the Security tab in the screen above. To define the security mode, select the desired security mode as follows. There are 4 types supported: Open System, Shared Key, WPA-PSK, WPA2-PSK. Please select a type from the drop down list.

B. Data Encryption:

Data encryption	There are 4 types supported: Disabled, WEP, TKIP and AES. The available encryption selection will differ from the authentication type you have chosen, the result is shown below:	
	Authentication	Available Encryption Selection
	Open System	Disabled, WEP
	Shared Key	WEP
	WPA-PSK, WPA2-PSK	TKIP, AES

Note: Select different Security Options, the configurations are different; you can select the appropriate security option and configure the exact key as your need.

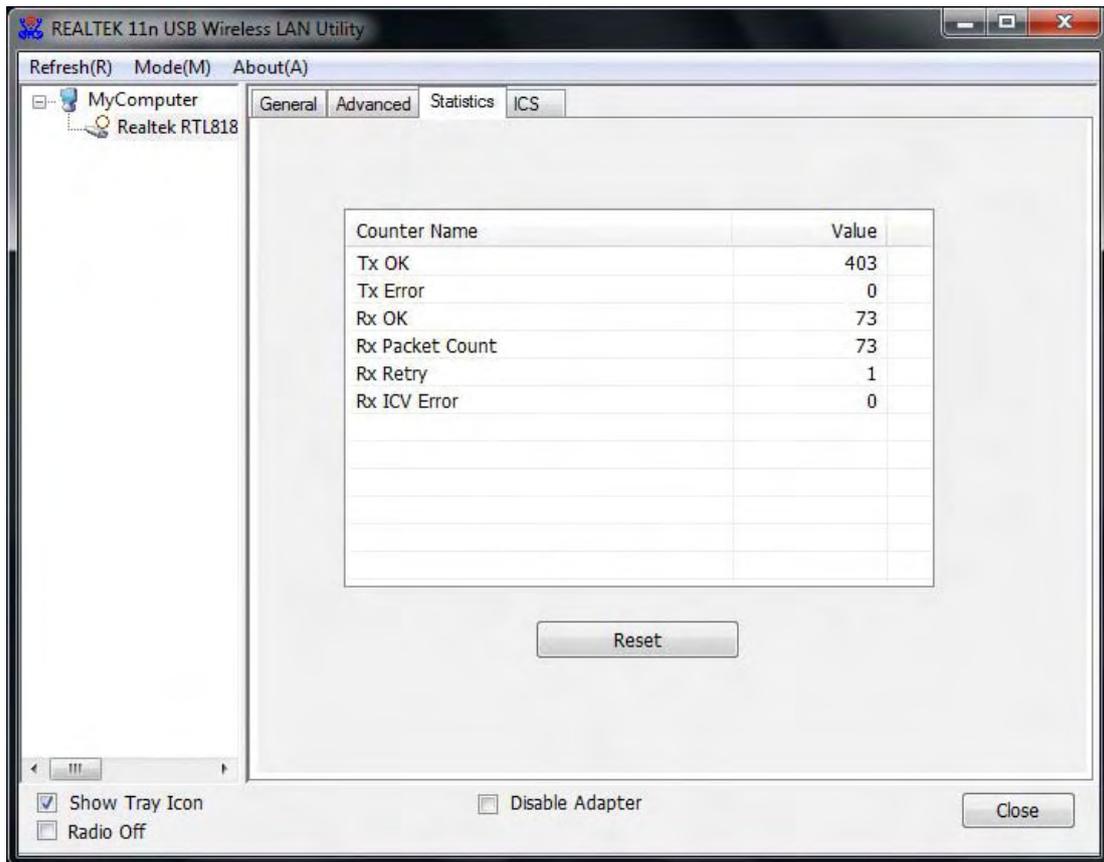
4.4.2 Advanced



Items	Information
Beacon Interval	Beacon frequency spacing.
DTIM Period	Delay transmission indicator map (DTIM) is enabled for power management of the client. If any client power management is enabled, the DTIM should be retained for 1 (the default). Support this parameter range from 1 to 255.
Preamble Mode	Select the options from the drop list. (Long / Short).
Set Defaults	Setting the default value of General.
Apply	Apply the above changes.

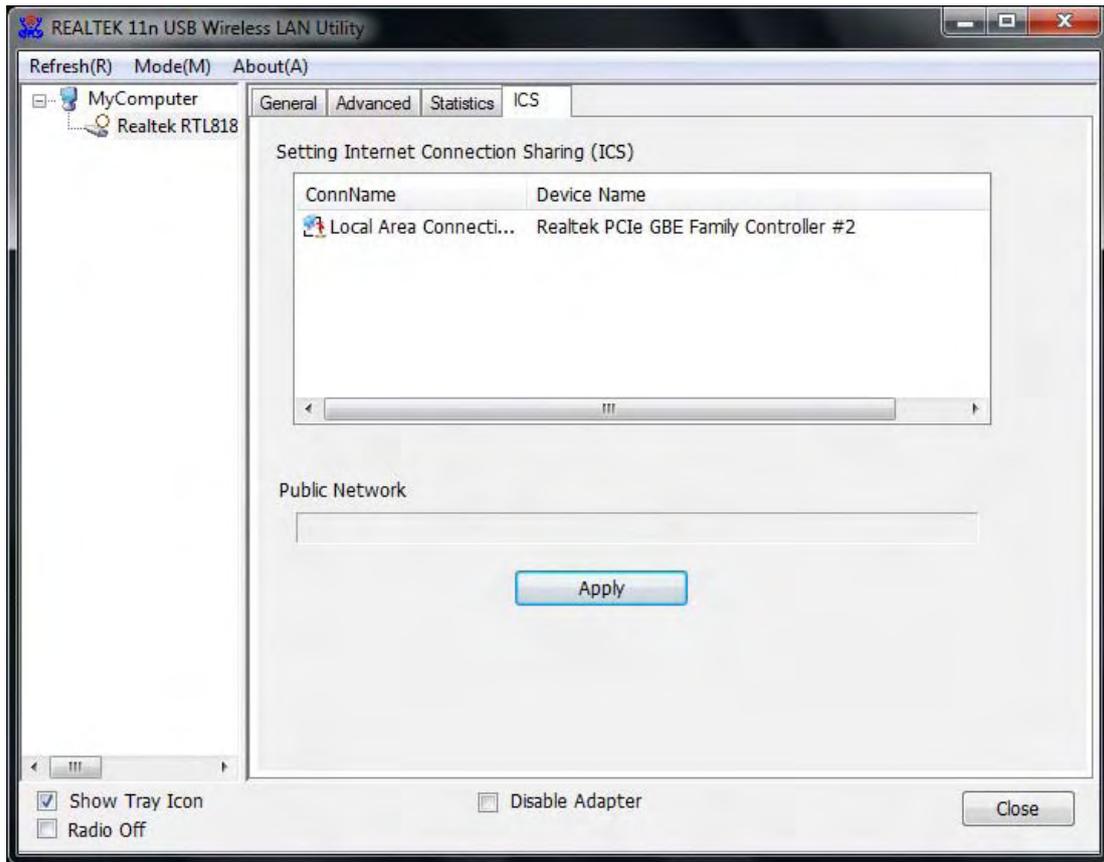
4.4.3 Statistics

Statistics page displays the detail counter information based on 802.11 MIB counters.



Items	Information
TX OK	Successfully transmitted frames numbers.
TX Error	Frames numbers transmitting with error.
RX OK	Successfully received frames numbers.
Rx Packet Count	The packets of receiving frames.
RX Retry	Frames numbers re-receiving.
RX ICV Error	Integrity Check Value receiving with error.
Reset Counter	Reset counters to zero.

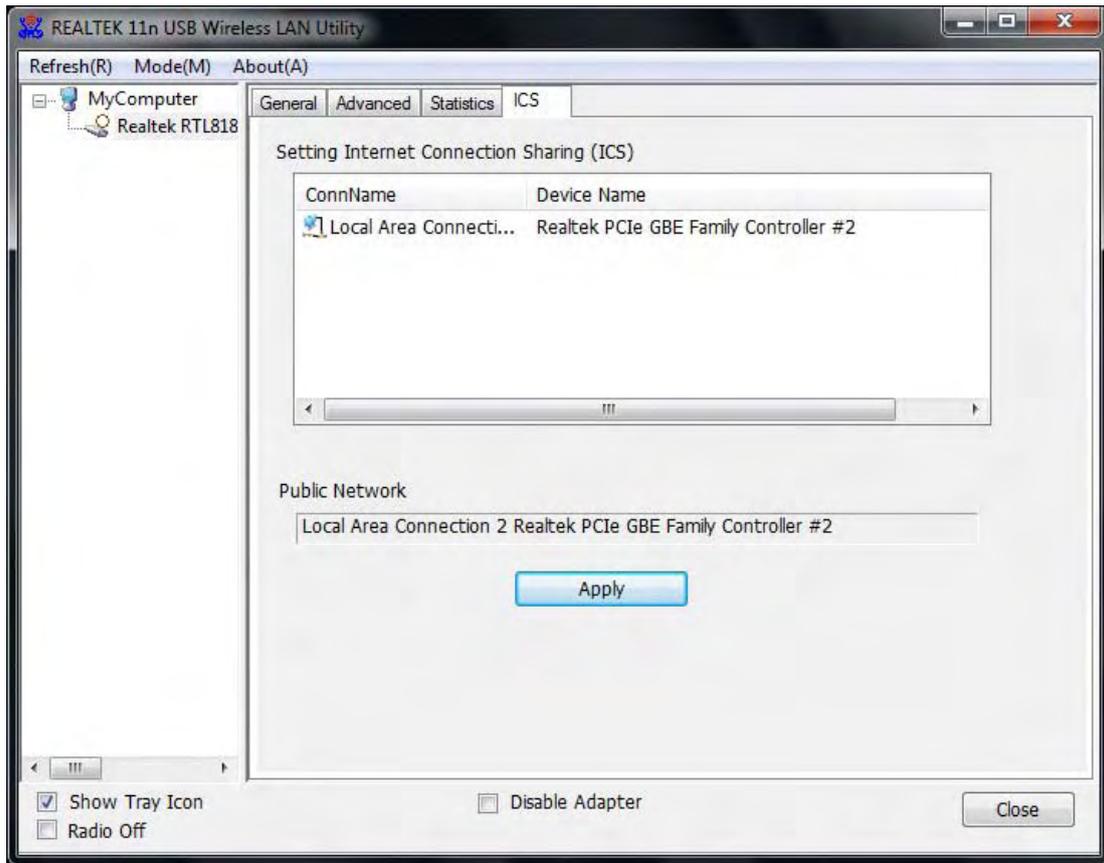
4.4.4 ICS



When a dialogue box appears and asks for checking the connection status appears.



Select "OK", then the Internet connection is sharing.



Appendix A: Specifications

Standard

IEEE 802.11n, IEEE 802.11g, IEEE 802.11b

Interface

Complies with USB 2.0

Antenna

Antenna type: Dipole

Antenna connector type: Reverse SMA

Antenna standard: 2/3/5dBi

Security

64/128-bit WPA , WPA2

Receiver Sensitivity

802.11n Typical -68 dBm

802.11g Typical -73 dBm

802.11b Typical -84 dBm

Transmit Power

13.6 dBm typically @ 802.11b

13.4 dBm typically @ 802.11g

13 dBm typically @ 802.11n

Network Data Rate

802.11b: 1,2,5.5 and 11 Mbps

802.11g: 6,9,12,18,24,36,48 and 54 Mbps

802.11n: up to 150 Mbps

Range Coverage

Indoor 35~100 meters

Outdoor 100~300 meters

Temperature

Operating: 0°C ~ 40°C (32°~104°F)

Storage: -20°C ~ 70°C (-4°~158°F)

Humidity

Operating: 10% ~ 90% RH, non-condensing

Storage: 5%~90% RH, non-condensing

Emission

FCC, CE, VCCI Class B

Appendix B: Glossary

- **802.11b** - The 802.11b standard specifies a wireless product networking at 11 Mbps using direct-sequence spread-spectrum (DSSS) technology and operating in the unlicensed radio spectrum at 2.4GHz, and WEP encryption for security. 802.11b networks are also referred to as Wi-Fi networks.
- **802.11g** - specification for wireless networking at 54 Mbps using direct-sequence spread-spectrum (DSSS) technology, using OFDM modulation and operating in the unlicensed radio spectrum at 2.4GHz, and backward compatibility with IEEE 802.11b devices, and WEP encryption for security.
- **802.11n** - 802.11n builds upon previous 802.11 standards by adding MIMO (multiple-input multiple-output). MIMO uses multiple transmitter and receiver antennas to allow for increased data throughput via spatial multiplexing and increased range by exploiting the spatial diversity, perhaps through coding schemes like Alamouti coding. The Enhanced Wireless Consortium (EWC) was formed to help accelerate the IEEE 802.11n development process and promote a technology specification for interoperability of next-generation wireless local area networking (WLAN) products.
- **Ad-hoc Network** - An ad-hoc network is a group of computers, each with a Wireless Adapter, connected as an independent 802.11 wireless LAN. Ad-hoc wireless computers operate on a peer-to-peer basis, communicating directly with each other without the use of an access point. Ad-hoc mode is also referred to as an Independent Basic Service Set (IBSS) or as peer-to-peer mode, and is useful at a departmental scale or SOHO operation.
- **DSSS** - (Direct-Sequence Spread Spectrum) - DSSS generates a redundant bit pattern for all data transmitted. This bit pattern is called a chip (or chipping code). Even if one or more bits in the chip are damaged during transmission, statistical techniques embedded in the receiver can recover the original data without the need of retransmission. To an unintended receiver, DSSS appears as low power wideband noise and is rejected (ignored) by most narrowband receivers. However, to an intended receiver (i.e. another wireless LAN endpoint), the DSSS signal is recognized as the only valid signal, and interference is inherently rejected (ignored).
- **Infrastructure Network** - An infrastructure network is a group of computers or other devices, each with a Wireless Adapter, connected as an 802.11 wireless LAN. In infrastructure mode, the wireless devices communicate with each other and to a wired network by first going through an access point. An infrastructure wireless network connected to a wired network is referred to as a Basic Service Set (BSS). A set of two or more BSS in a single network is referred to as an Extended Service Set (ESS). Infrastructure mode is useful at a corporation scale, or when it is necessary to connect the wired and wireless networks.
- **SSID** - A Service Set Identification is a thirty-two character (maximum) alphanumeric key

identifying a wireless local area network. For the wireless devices in a network to communicate with each other, all devices must be configured with the same SSID. This is typically the configuration parameter for a wireless PC card. It corresponds to the ESSID in the wireless Access Point and to the wireless network name. See *also* Wireless Network Name and ESSID.

- **WEP** - (Wired Equivalent Privacy) - A data privacy mechanism based on a 64-bit or 128-bit or 152-bit shared key algorithm, as described in the IEEE 802.11 standard. To gain access to a WEP network, you must know the key. The key is a string of characters that you create. When using WEP, you must determine the level of encryption. The type of encryption determines the key length. 128-bit encryption requires a longer key than 64-bit encryption. Keys are defined by entering in a string in HEX (hexadecimal - using characters 0-9, A-F) or ASCII (American Standard Code for Information Interchange – alphanumeric characters) format. ASCII format is provided so you can enter a string that is easier to remember. The ASCII string is converted to HEX for use over the network. Four keys can be defined so that you can change keys easily.
- **Wi-Fi** - A trade name for the 802.11b wireless networking standard, given by the Wireless Ethernet Compatibility Alliance (WECA, see <http://www.wi-fi.net>), an industry standards group promoting interoperability among 802.11b devices.
- **WLAN** - (Wireless Local Area Network) - A group of computers and associated devices communicate with each other wirelessly, which network serving users are limited in a local area.
- **WPA** - (Wi-Fi Protected Access) - A wireless security protocol use TKIP (Temporal Key Integrity Protocol) encryption, which can be used in conjunction with a RADIUS server