

PROWARE®

User Guide

M-WN823N

Wireless N USB Adapter



COPYRIGHT & TRADEMARKS

Specifications are subject to change without notice. **PROWARE**[®] is a registered trademark of PROWARE TECHNOLOGIES CO., LTD. Other brands and product names are trademarks or registered trademarks of their respective holders.

No part of the specifications may be reproduced in any form or by any means or used to make any derivative such as translation, transformation, or adaptation without permission from PROWARE TECHNOLOGIES CO., LTD. Copyright © 2010 PROWARE TECHNOLOGIES CO., LTD. All rights reserved.

<http://www.proware.com.cn>

FCC 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 or more 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.
- (2) This device must accept any interference received, including interference that may cause undesired operation.

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

FCC RF Radiation Exposure Statement:

This device has been tested for compliance with FCC RF Exposure (SAR) limits in the typical laptop computer configuration and this device can be used in desktop or laptop computers with side mounted PCMCIA slots. This device cannot be used with handheld PDAs (personal digital assistants). This device and its antenna must not be co-located or operated in conjunction with any other antenna or transmitter.

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.

National restrictions

This device is intended for home and office use in all EU countries (and other countries following the EU directive 1999/5/EC) without any limitation except for the countries mentioned below:

Country	Restriction	Reason/remark
Bulgaria	None	General authorization required for outdoor use and public service
France	Outdoor use limited to 10 mW e.i.r.p. within the band 2454-2483.5 MHz	Military Radiolocation use. Refarming of the 2.4 GHz band has been ongoing in recent years to allow current relaxed regulation. Full implementation planned 2012
Italy	None	If used outside of own premises, general authorization is required
Luxembourg	None	General authorization required for network and service supply(not for spectrum)
Norway	Implemented	This subsection does not apply for the geographical area within a radius of 20 km from the centre of Ny-Ålesund
Russian Federation	None	Only for indoor applications

Note: Please don't use the product outdoors in France.

CONTENTS

Package Contents	1
Chapter 1 Introduction	2
1.1 Overview of the Product	2
1.2 Features	2
1.3 LED Status	3
Chapter 2 Installation Guide	4
2.1 Hardware Installation.....	4
2.2 Software Installation	4
2.2.1 Overview	4
2.2.2 Software Installation for Windows XP	4
2.2.3 Software Installation for Windows Vista	8
Chapter 3 Configuration	13
3.1 General Status	13
3.2 Profile Management	14
3.2.1 Add or Edit a Configuration Profile	15
3.2.2 Remove a configuration profile.....	20
3.2.3 Duplicate a configuration file	21
3.2.4 Set default configuration profile.....	21
3.3 Available Network.....	21
3.4 Status	22
3.5 Statistics	23
3.6 Wi-Fi Protect Setup	24
3.6.1 PIN	25
3.6.2 Question-Answer Method.....	26
3.7 Access Point Mode.....	27
Appendix A: Specifications	28
Appendix B: Glossary	29

Package Contents

The following items should be found in your package:

- One M-WN823N Wireless N USB Adapter
- Quick Installation Guide
- One Resource CD for M-WN823N, including:
 - Wireless Utility and Drivers
 - User Guide
 - Other Helpful Information

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 both stand for M-WN823N Wireless N USB Adapter without any explanations.

Chapter 1 Introduction

Thank you for choosing the **M-WN823N Wireless N USB Adapter!**

1.1 Overview of the Product

The adapter is a 802.11n client device; it is designed to provide a high-speed and unrivaled wireless performance for your notebook and PC. With a faster wireless connection, you can get a better Internet experience, such as downloading, gaming, video streaming and so on.

With the 802.11n technology, higher throughput improvements using MIMO (multiple input, multiple output antennas), the M-WN823N's auto-sensing capability allows high packet transfer rate of up to 300Mbps for receiver and 150Mbps for transmitter. It has good capability on anti-jamming, it can also interoperate with other wireless (802.11b/g) products. The adapter supports WEP, WPA and WPA2 encryption to prevent outside intrusion and protect your personal information from being exposed.

With unmatched wireless performance, reception, and security protection, the M-WN823N is the best choice for easily adding or upgrading wireless connectivity.

1.2 Features

- Complies with IEEE802.11n, IEEE802.11g, IEEE802.11b standards
- Supports IEEE802.1x authentication, WEP, WPA/WPA2/WPA-PSK/WPA2-PSK encryption
- Supports high rate of up to 300Mbps for receiver and 150Mbps for transmitter, supports automatically adjust to lower speeds due to distance or other operating limitations
- Provides USB interface
- Supports Ad-Hoc and Infrastructure modes
- Good capability on anti-jamming
- Supports roaming between access points when configured in Infrastructure mode
- Ease to configure and provides monitoring information
- Supports Windows XP, Windows vista, Windows 7.
- Built-in two internal antennas which are listed in a format of 1x2 for two receivers and one transmitter.

1.3 LED Status

LED Indications	Status	Working Status
Status Green	Intermittently	The adapter is in an electricity saving status or the adapter is already connected but is not transmitting or receiving data.
Status Green	On	The adapter is on wake up status.
Status Green	Flashing	The adapter is transmitting and receiving data.

Chapter 2 Installation Guide

2.1 Hardware Installation

There are two ways to install the Adapter:

1. Plug the Adapter directly to the USB port on your computer.
2. Connect the Adapter and your computer through the USB cable attached in package.

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 Adapter's Setup Wizard will guide you through the Installation procedure. The Setup Wizard will install the Wireless Utility and drivers.

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.

The Setup steps for Windows operation Systems are very similar. The User guide takes the Windows XP for example to explain the installation.

2.2.2 Software Installation for Windows XP

Step 1: Insert the Resource CD into your CD-ROM drive, and open the folder with the same name as your product. Then double-click Setup.exe in the proper folder to start the installation, and Figure 2-1 will appear. Select the language for the installation. Click **Next** in the screen below to continue, you can click **Cancel** to end the installation.

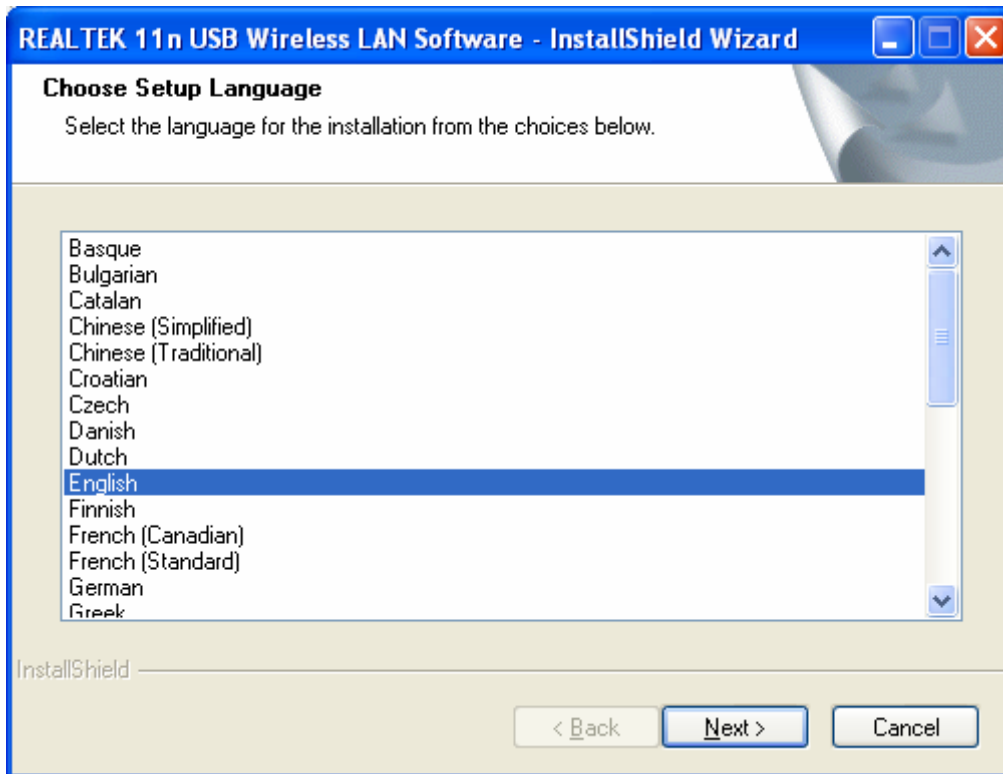
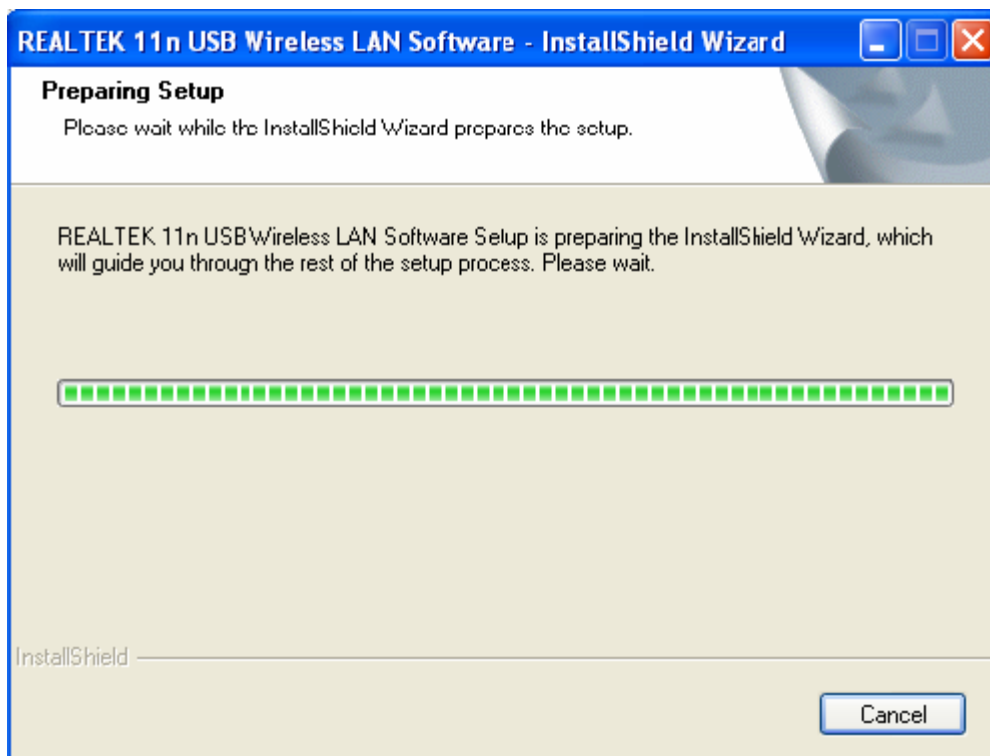


Figure 2-1

Step 2: You can click **Cancel** to end the installation in the screen. Otherwise, the installation will continue.



Step 3: Click **Next** in the screen below (shown in Figure 2-2) to continue, you can click **Cancel** to end the installation.



Figure 2-2

Step 4: After that, the next screen appears, select **Install** to continue.

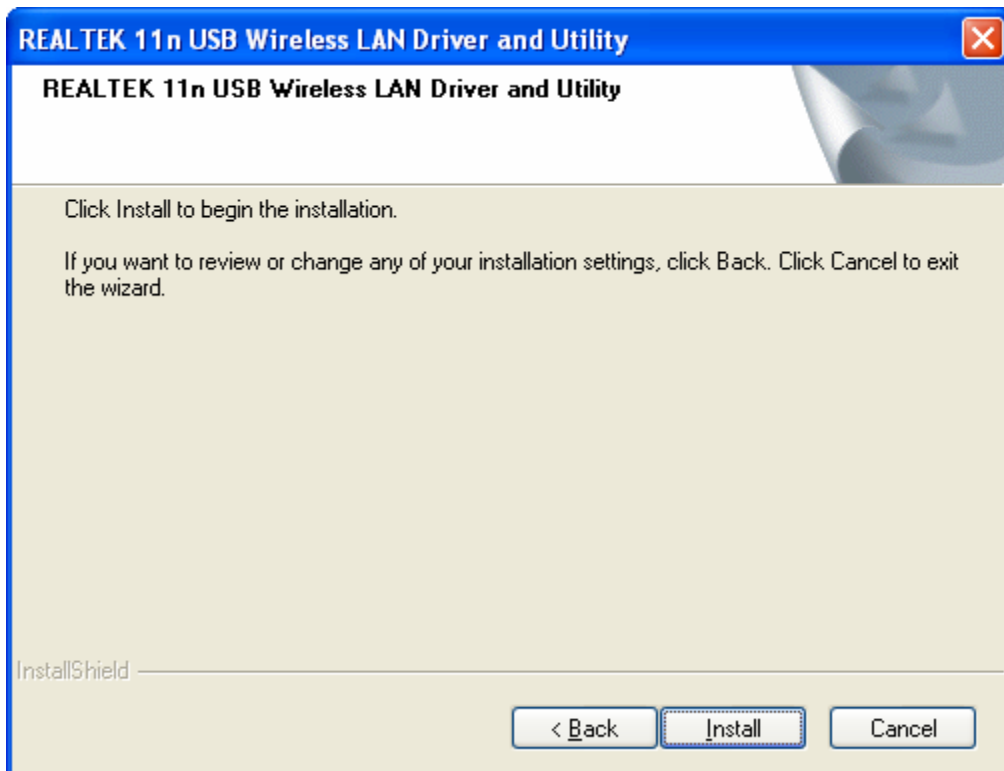


Figure 2-3

Step 5: In the next screen, the files will be copied as the next screen shown (shown in Figure 2-4). To end the Installation, click **Cancel**.

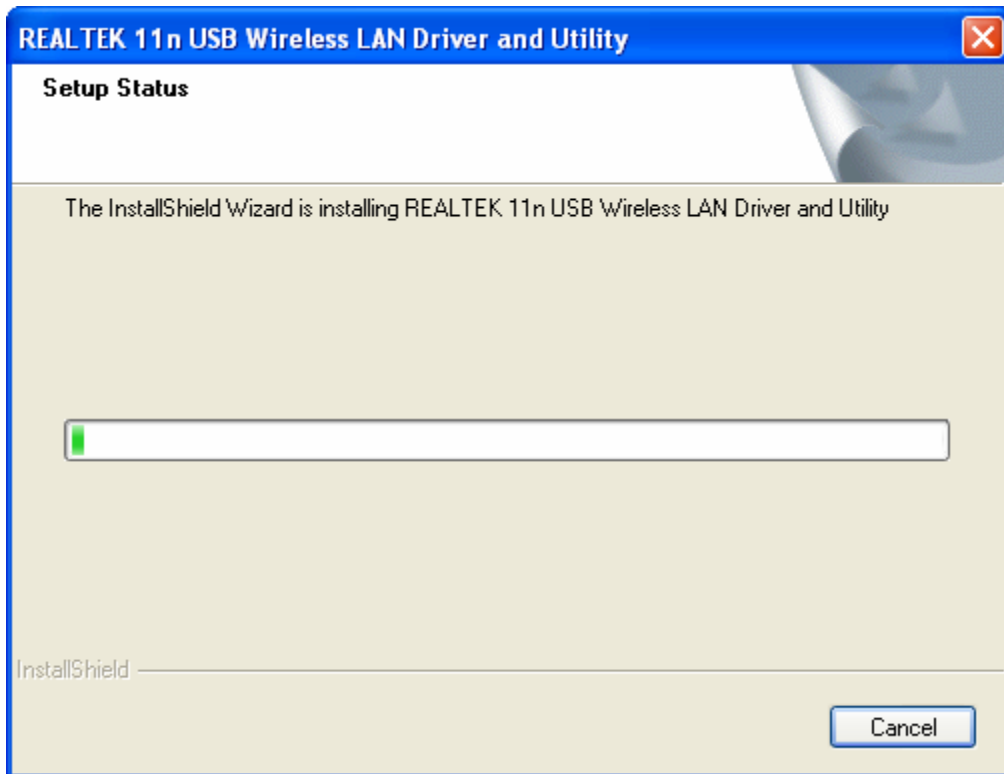


Figure 2-4

Note:

During the installation, the system will warn about Windows Logo testing, please click **Continue Anyway** to continue the installation.



Figure 2-5

Step 6: Click the **Finish** button to complete.

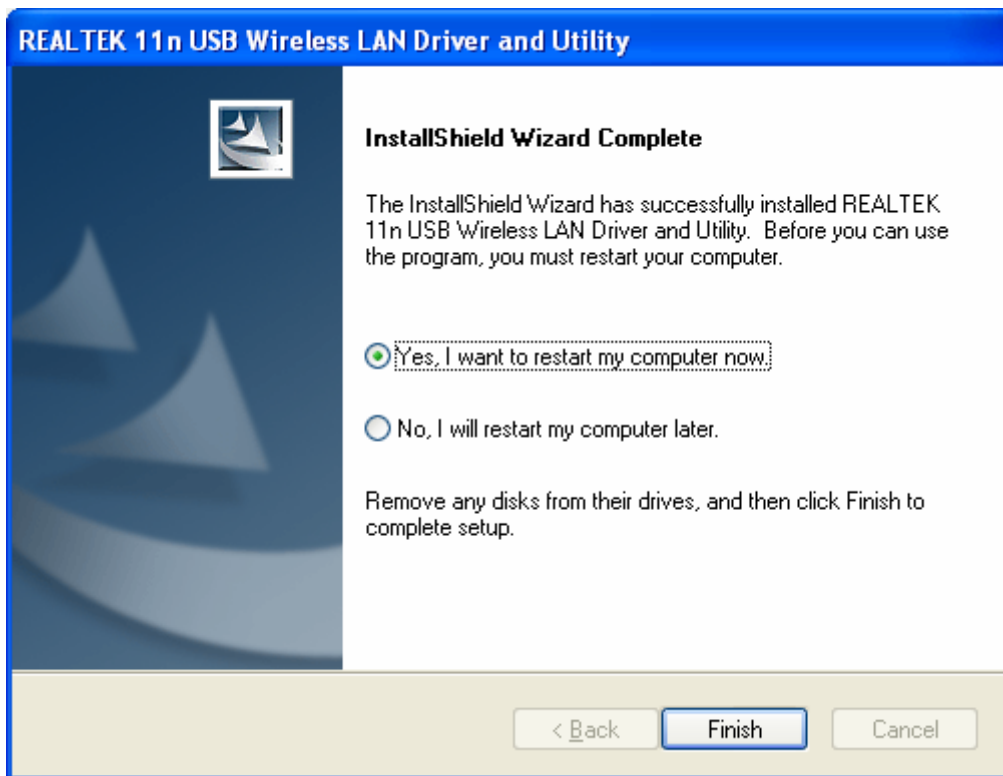


Figure 2-6

2.2.3 Software Installation for Windows Vista

The Setup steps for Windows Vista and Windows 7 are very similar. The User guide takes the Windows Vista for example to explain the installation.

1. Insert the Resource CD into your CD-ROM drive, and open the folder with the same name as your product. Then double-click Setup.exe in the proper folder according to your operating system to start the installation. And then Figure 2-7 will appear; Select the language for the installation. Click **Next** in the screen below to continue, you can click **Cancel** to end the installation.

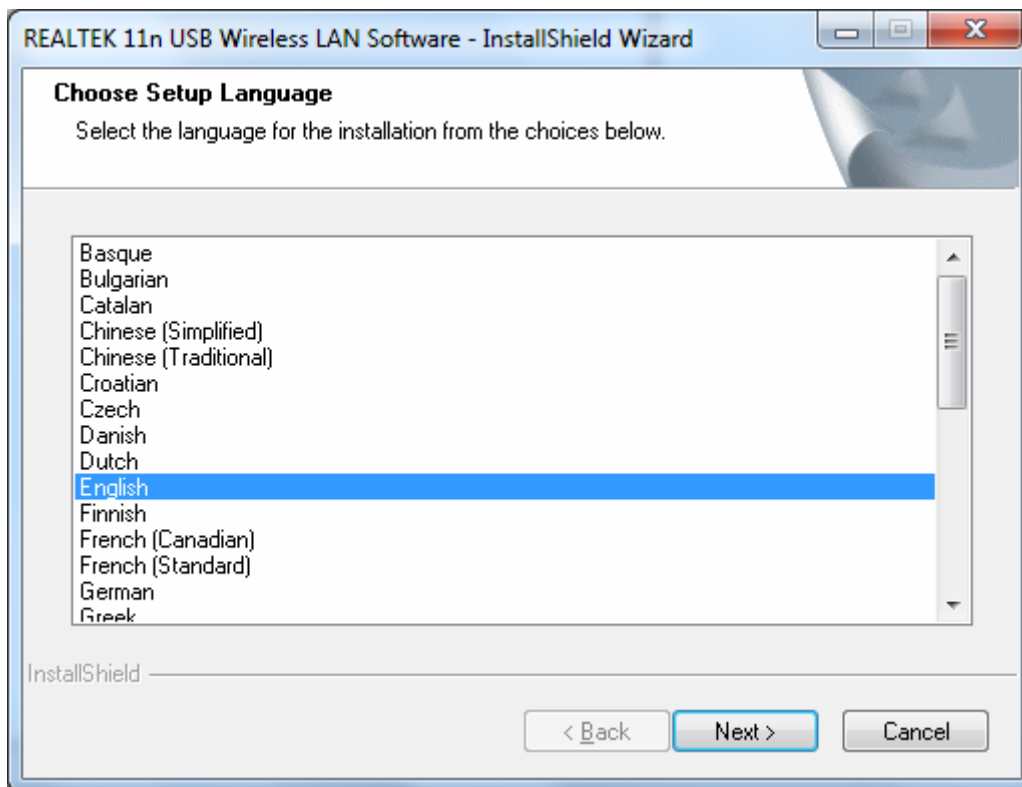


Figure 2-7

2. You can click **Cancel** to end the installation in the screen. Otherwise, the installation will continue.

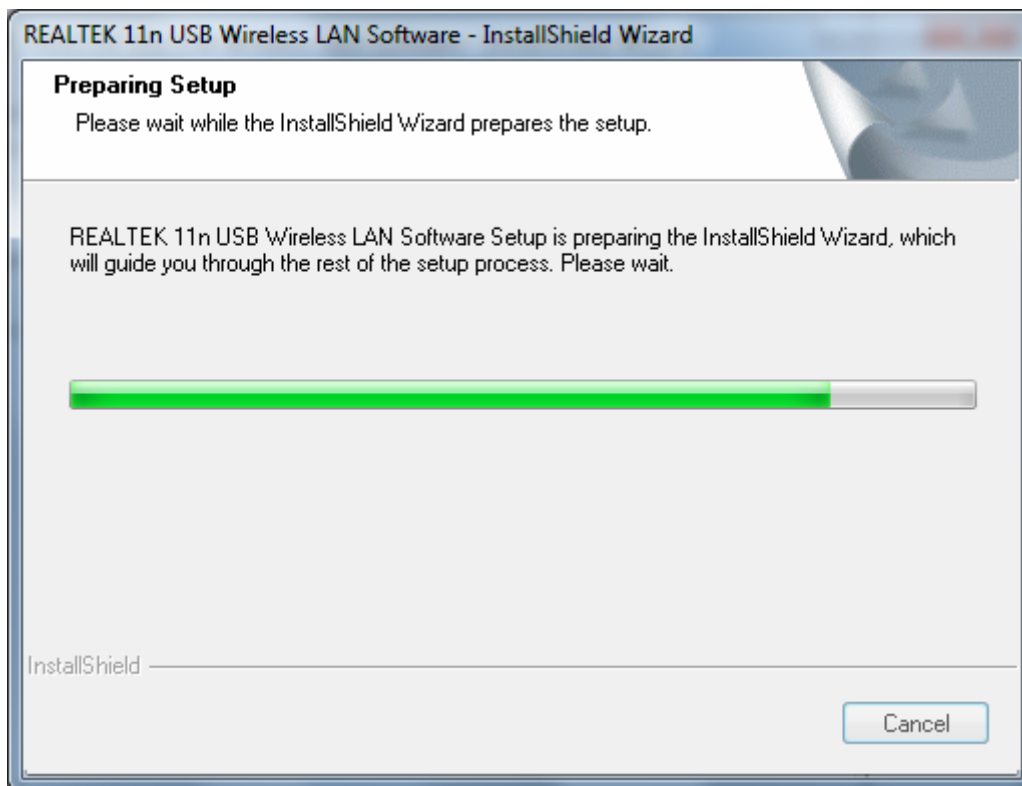


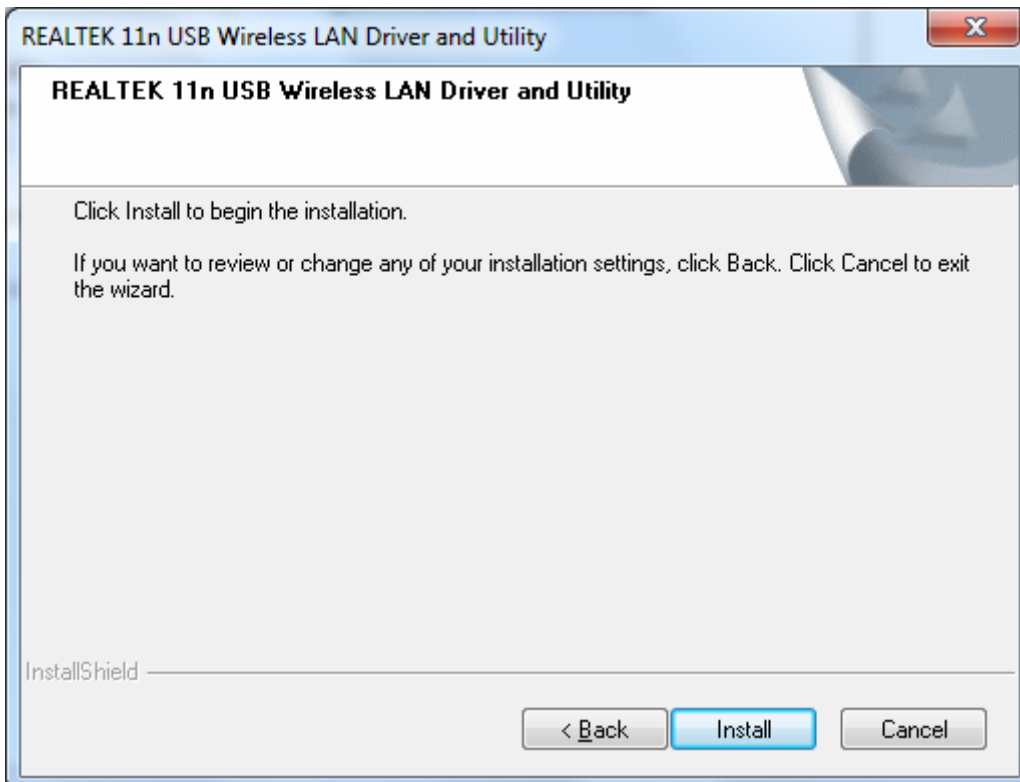
Figure 2-8

3. Click **Next** in the screen below to continue, you can click **Cancel** to end the installation.



Figure 2-9

4. After that, the next screen appears, select **Install** to continue.



5. After that, the files will be copied as the next screen shown (shown in Figure 2-10). To end the Installation, click Cancel.

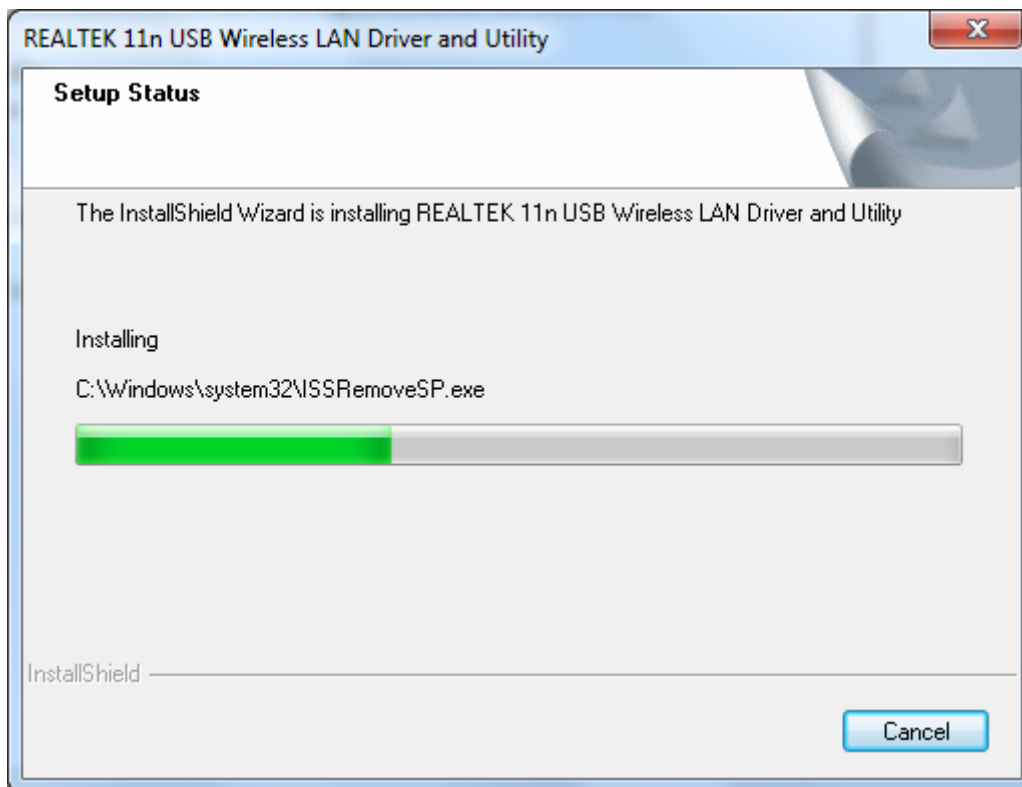


Figure 2-10

 **Note:**

During the installation, the system will warn about Windows Security testing, please click **“Install this driver software anyway”** to continue the installation.

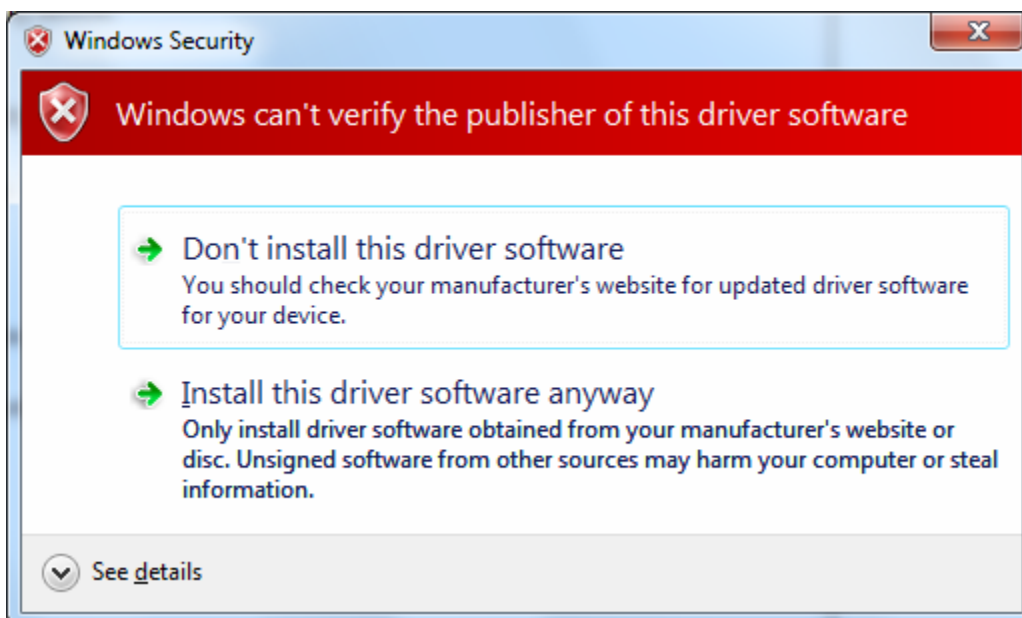


Figure 2-11

6. Click the Finish button to complete.

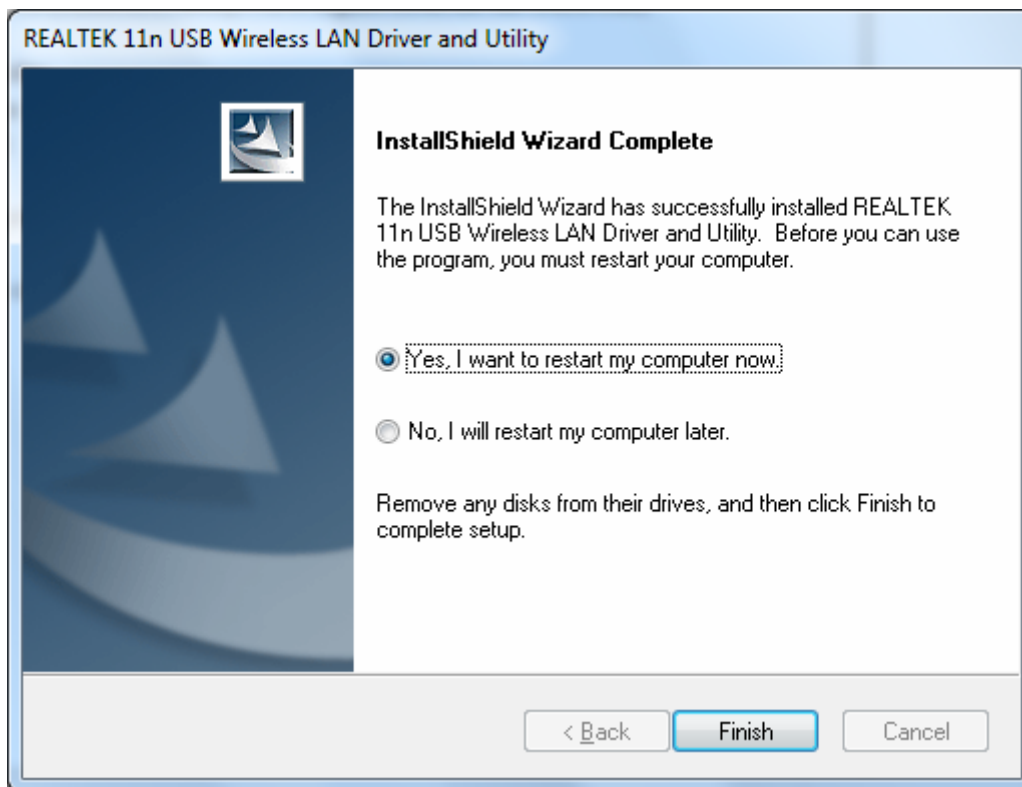





Figure 2-12

Chapter 3 Configuration

Wireless N USB Adapter M-WN823N can be configured by REALTEK 11 n USB Wireless LAN Utility. This chapter describes how to configure your Wireless N USB 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 gray, there is no connection.

 If the icon is red, there is poor signal strength.

 If the icon is yellow, there is poor signal strength.

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

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

Double-click the icon and the REALTEK 11 n USB Wireless LAN Utility will run. You can also run the utility by clicking the **Start>Programs>REALTEK 11 n USB Wireless LAN Utility>REALTEK 11 n USB Wireless LAN Utility**. The utility provides integrated and easy tool to:

- Display current status information
- Edit and add configuration profiles
- Display current statistics information

The sections below take Windows XP for example to introduce these above capabilities.

3.1 General Status

Choose the tab **General** as shown in Figure 3-1, the left field displays the type of the adapter, the right field displays the status about the connection, including Status, Speed, Type, SSID, Signal Strength, Link Quality and other IP information.

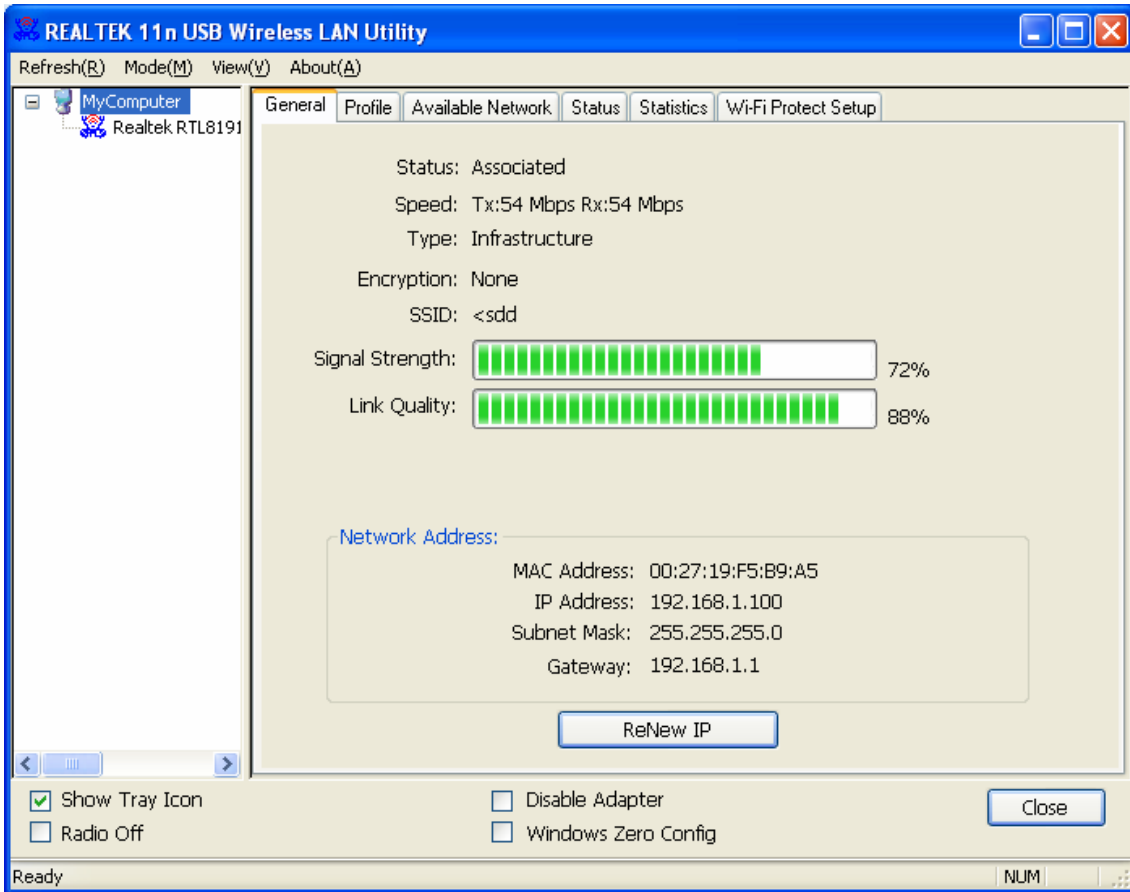



Figure 3-1

- **Signal Strength** - This shows the strength of the wireless signal.
- **Link Quality** - This shows the quality of the wireless connection.
- **ReNew IP** - Click the button to get the IP address from the AP.
- **Show Tray Icon** - Select the option to display the icon  on the bottom of the desktop.
- **Disable Adapter** - If you select the option, the adapter can't work.
- **Radio Off** - If you select the option, the wireless function will be ineffective.
- **Windows Zero Config** - Select the option, you can use the Windows Zero Config function.

Click **Close** to close the screen.

3.2 Profile Management

Click the tab **Profile** as shown in Figure 3-2 to add, remove, edit, duplicate or set default for a profile.

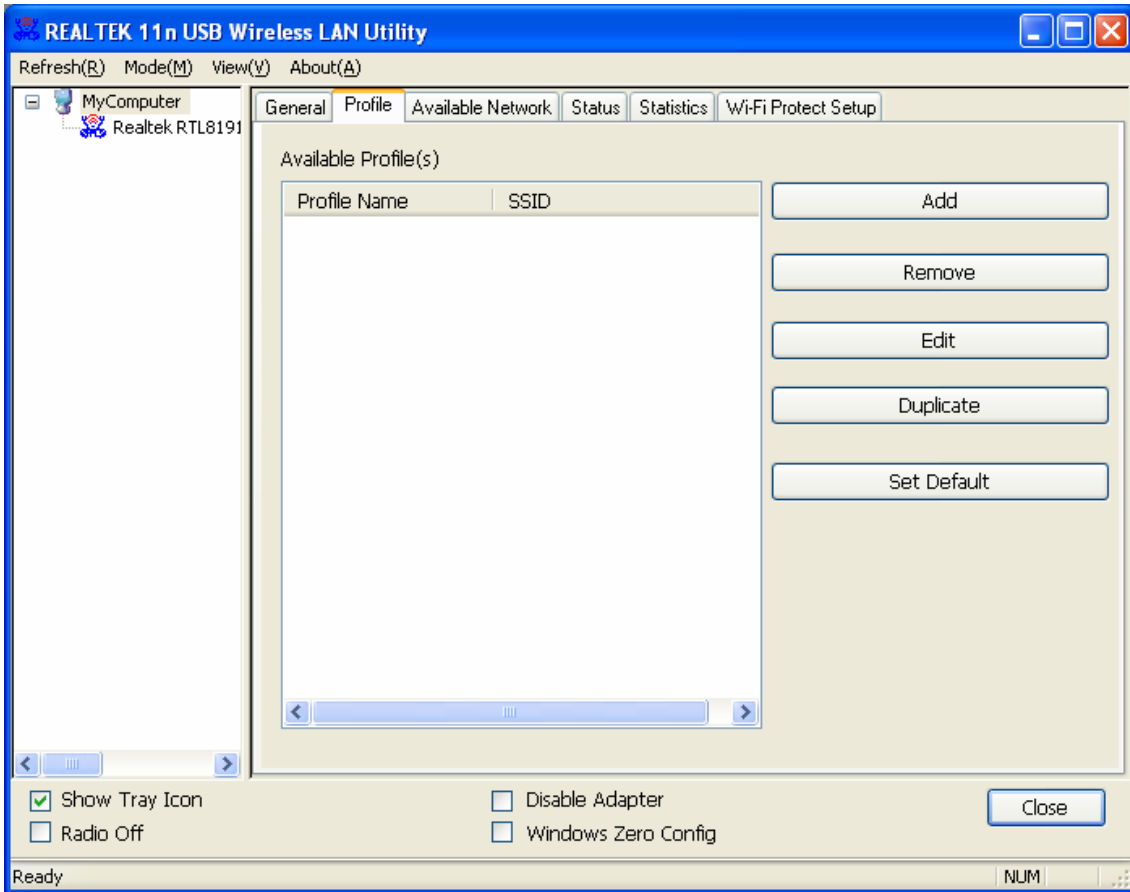


Figure 3-2

3.2.1 Add or Edit a Configuration Profile

Click the button **Add** or **Edit** (you should select an existed profile first to edit it) on the screen above, and you can configure the profile as shown in Figure 3-3.

We add a new profile and configure it for example here.

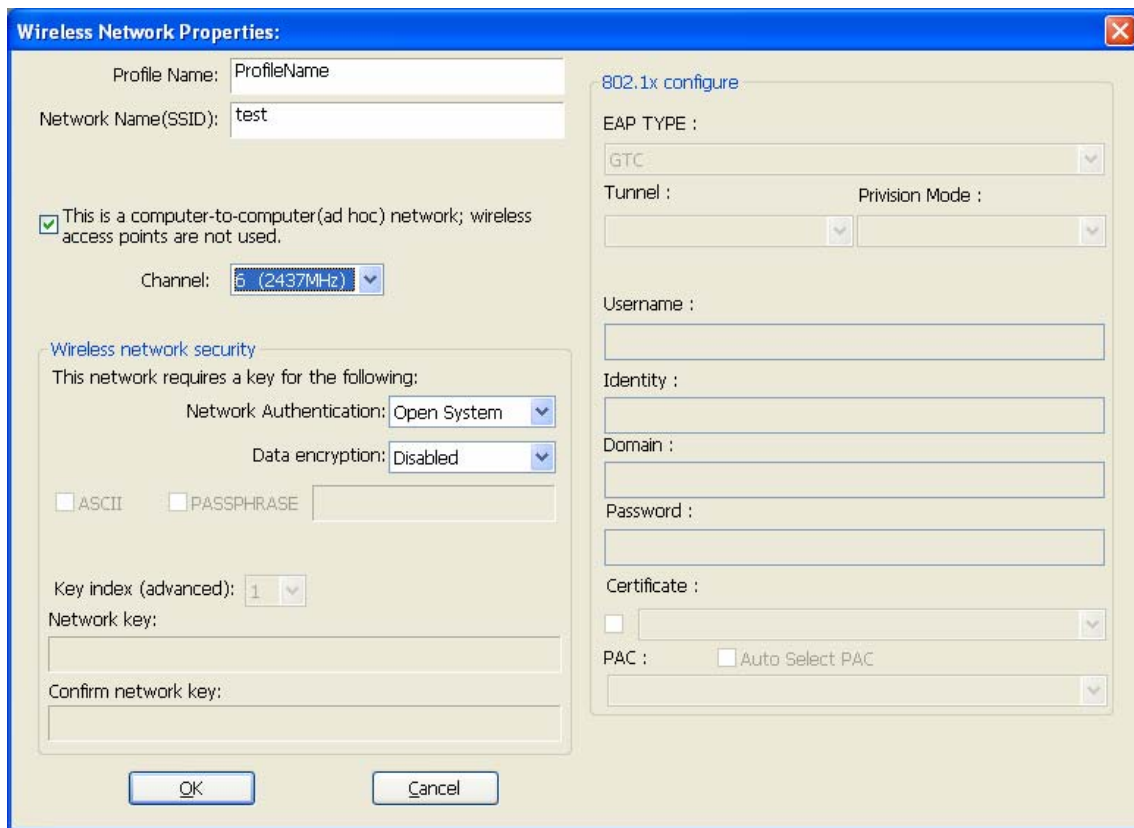


Figure 3-3

- **Profile Name** - Please enter the Profile name which identifies the configuration profile. This name must be unique. Note that the profile names are not case-sensitive.
- **Network Name (SSID)** - Please enter the IEEE 802.11 wireless network name. This field has a maximum limit of 32 characters.

 **Note:**

The **Profile Name** and **Network Name** are necessary for the profile, you must configure it.

- **Channel** - If you want to setup an ad-hoc, select the option “This is a computer-to-computer (ad-hoc) network; wireless access points are not used.” If you don't select the option, the system will search the available channel to connect.
- **Wireless network security** - This configure the security for the adapter.

 **Note:**

You should configure the security for the adapter according with the wireless network that you want to connect. If the wireless network takes some security measure, you should configure the same security for the adapter accordingly. If the wireless network doesn't take security measure, you don't need to configure the security for the adapter.

- **Network Authentication** - Select which mode the Wireless N USB Adapter uses to authenticate to an access point. These modes are: Open System, Shared key, WPA-PSK, WPA2-PSK, WPA 802.1X, WPA2 802.1X, and WEP 802.1X.
- **Data encryption** - Select the corresponding data encryption for the authentication. These encryptions are: Disabled, WEP, TKIP and AES.

 **Note:**

- 1) Select different **authentications** and **data encryptions**, the security configuration is different.
 - 2) When you select channel manually, the available network authentication are Open System, Shared key and WPA-None.
 - 3) The RTWCU does not support WPA 802.1x authentication in Windows Vista, while the Windows Zero Config Tools may satisfy your need.
 - **ASCII** - Select this option, you can enter any ASCII characters to compose the password.
 - **Key Index** - Select the index of the password.
 - **Network Key & Confirm network key** - The fields configure the network key. The two should be the same.
- **802.1x configure** - This configures the 802.1x security, it is available when you select the data encryption as WPA 802.1X, WPA2 802.1X or WEP 802.1X.
- **EAP TYPE** - Select the EAP type for the 802.1x configuration, the options are: GTC, TLS, LEAP, TTLS, PEAP.
 - **Tunnel** - Select the tunnel: MD5, GTC, TLS, and MSCHAP-V2. The option is necessary for the EAP type of TTLS and PEAP.
 - **Username** - Enter the username for authentication. The option is necessary for the EAP type of TTLS and PEAP.
 - **Identity** - Enter the identity for the authentication.
 - **Password** - Enter the password for the authentication. The option is necessary for the EAP type of LEAP, TTLS and PEAP.
 - **Certificate** - Select the certificate you apply.

1. Open System authentication

When you select the **Open System** as the authentication, the Disabled and WEP can be available for the data encryption. If you select **Disabled**, you don't need to configure any passwords. If you select **WEP**, you can configure the password as follows.

For example: If the wireless network takes Open System authentication, WEP data encryption, the password is 64bit with the value of 0123456789. The index is 1.

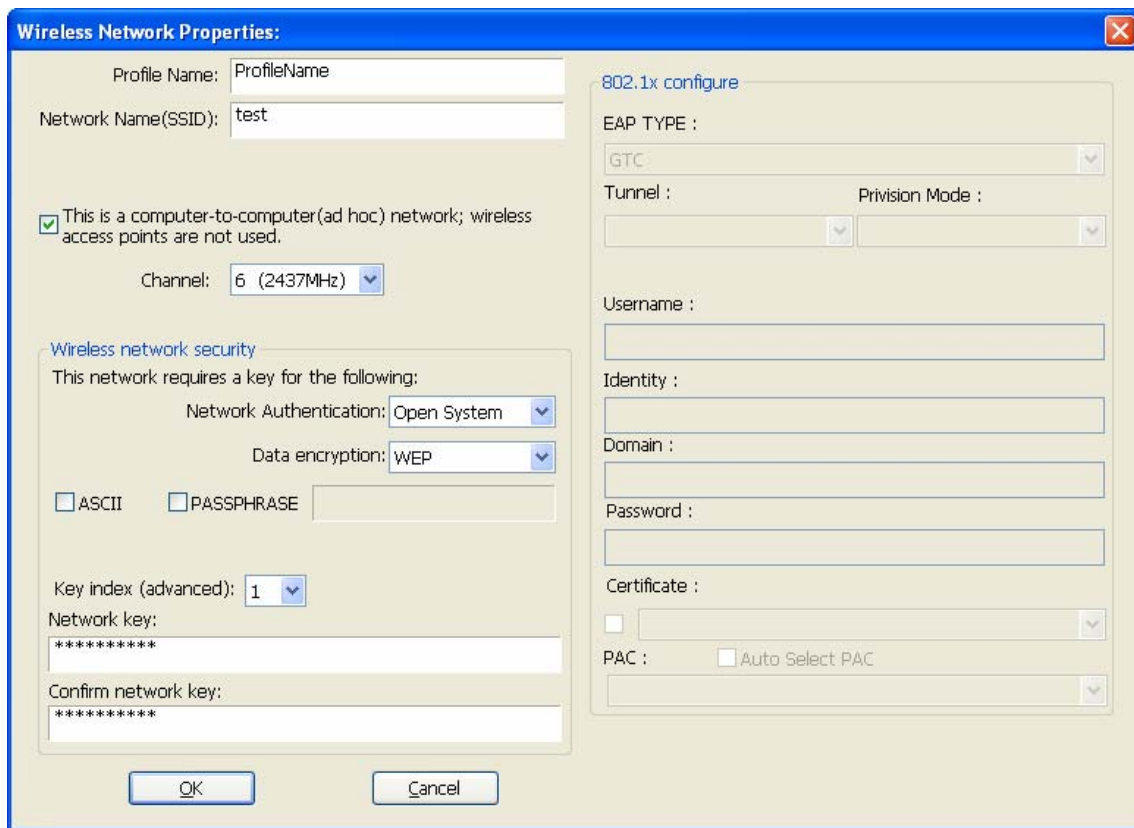


Figure 3-4

Step 1: Select the “Open System” as the Network Authentication.

Step 2: Select the “WEP” as Data encryption.

Step 3: Select the type for the password and you can select the ASCII or Network Key. For ASCII, you can enter any characters in the keyboard; For Network Key, you can enter the characters from 0 to 9.

Step 4: Select the Key index “1”.

Step 5: Enter “0123456789” as the Network key.

Step 6: Enter it again to confirm the Network Key and click the **OK** to save the configuration.

2. Shared Key authentication

When you select the **Shared Key** as the authentication, the only available data encryption is WEP.

Note:

The configuration for Shared Key authentication and Open System are similar, you can refer to the Open System authentication to configure it.

3. WPA-PSK authentication

When you select the **WPA-PSK** as the authentication, the available data encryptions are TKIP and AES. Please select the one according your need.

For example: If the wireless network takes WPA-PSK authentication, TKIP data encryption, the network key is 0123456789. You can configure it for adapter as follows.

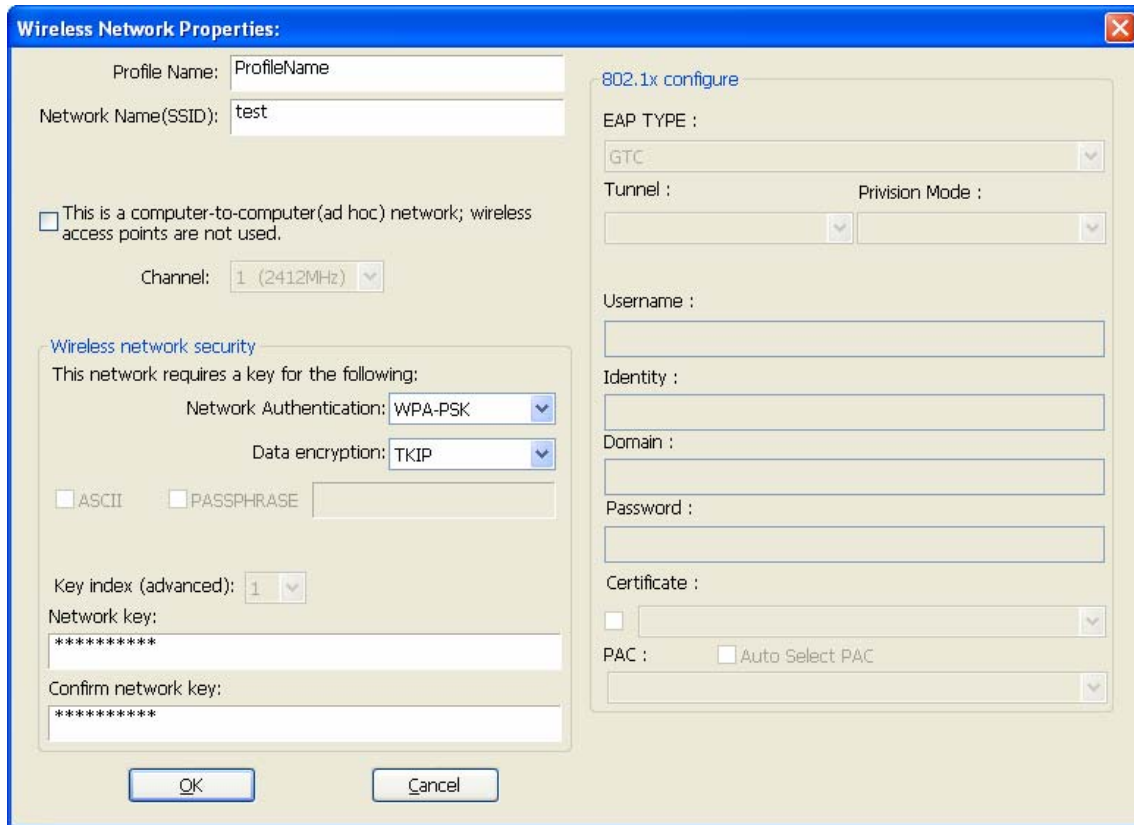


Figure 3-5

Step 1: Select the “WPA-PSK” as the Network Authentication.

Step 2: Select the “TKIP” as Data encryption.

Step 3: Enter the Network key and confirm it.

Step 4: Click the **OK** to save the configuration.

4. WAP2-PSK authentication

When you select the **WPA2-PSK** as the authentication, the available data encryptions are TKIP and AES. Please select the one according your need.

Note:

The configuration for WPA2-PSK and WPA-PSK are similar, you can refer to WAP-PSK authentication to configure it.

5. WPA 802.1x

When you select the **WPA 802.1x** as the authentication, the available data encryptions are TKIP and AES. For the authentication, you should configure the 802.1x security. Select the EAP Type and configure the corresponding options.

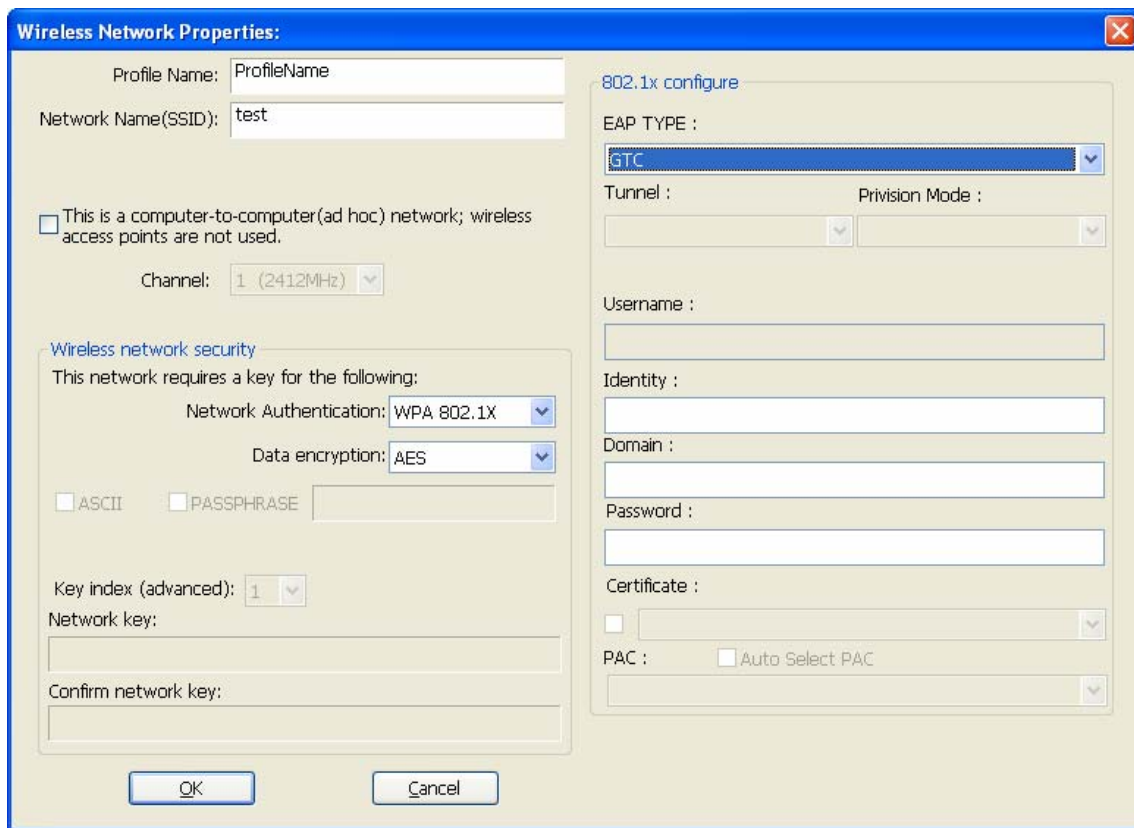


Figure 3-6

 **Note:**

Select different EAP types, the configuration are different.

6. WPA2 802.1x

When you select the **WPA2 802.1x** as the authentication, the available data encryptions are TKIP and AES. For the authentication, you should configure the 802.1x security.

 **Note:**

The configuration for WPA2 802.1x and WPA 802.1x are similar, you can refer to WPA 802.1x authentication to configure it.

7. WEP 802.1x

When you select the **WEP 802.1x** as the authentication, the only available data encryption is WEP.

 **Note:**

The configuration for WEP 802.1x authentication and WPA 802.1x are similar, you can refer to WPA 802.1x authentication to configure it.

3.2.2 Remove a configuration profile

Follow the steps below to delete a configuration profile.

Step 1: Go to the Profile tab (shown in Figure 3-7).

Step 2: Select the profile name in the Profiles List.

Step 3: Click **Remove**.

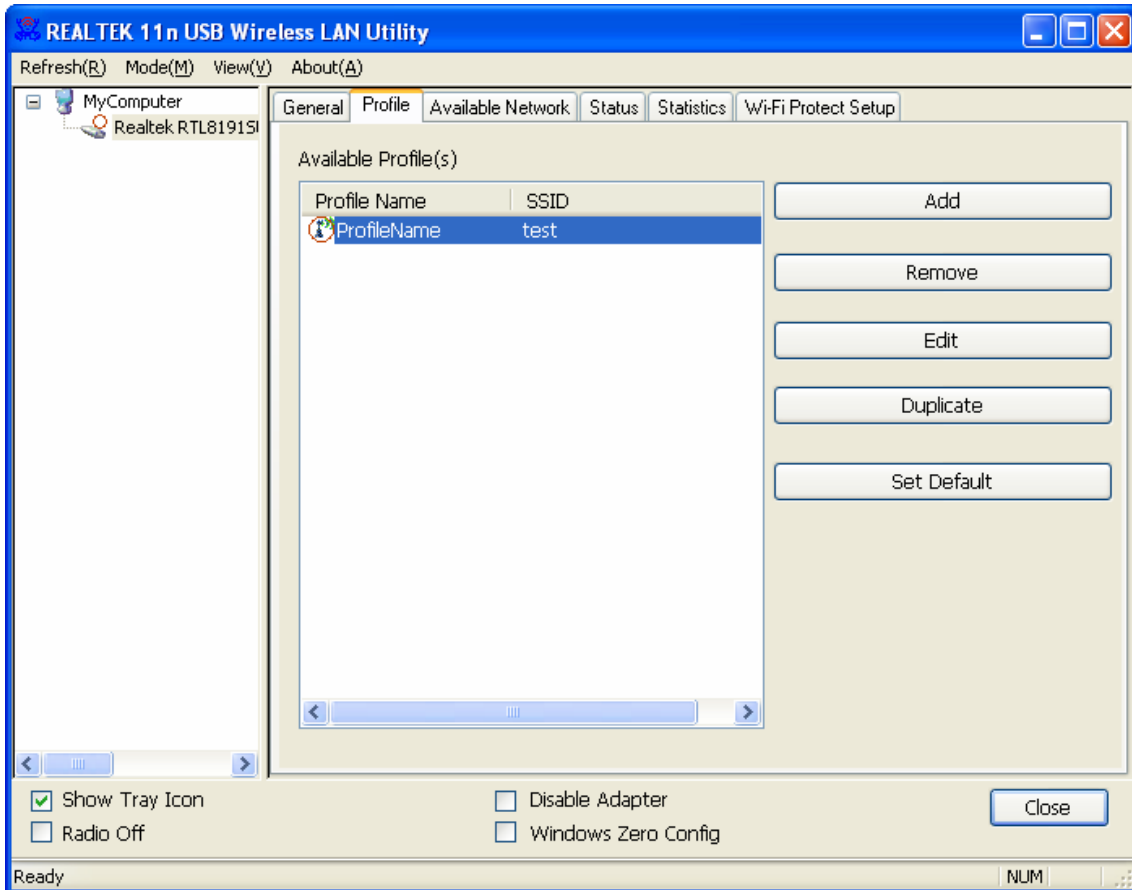


Figure 3-7

3.2.3 Duplicate a configuration file

Follow the steps below to change the name of a configuration profile.

Step 1: Go to the Profile tab (shown in Figure 3-7).

Step 2: Select the profile name in the Profiles List.

Step 3: Click **Duplicate**, and then enter the new name for the configuration profile.

3.2.4 Set default configuration profile

Follow the steps below to select a configuration profile as default. Once the adapter wants to connect a wireless network, it will select the default profile to connect firstly.

Step 1: Go to the Profile tab (shown in Figure 3-7).

Step 2: Select the profile name in the Profiles List.

Step 3: Click **Set Default**.

3.3 Available Network

Click the tab **Profile** as shown in Figure 3-8 to view the wireless networks. You can follow the steps below to accede to a specific network.

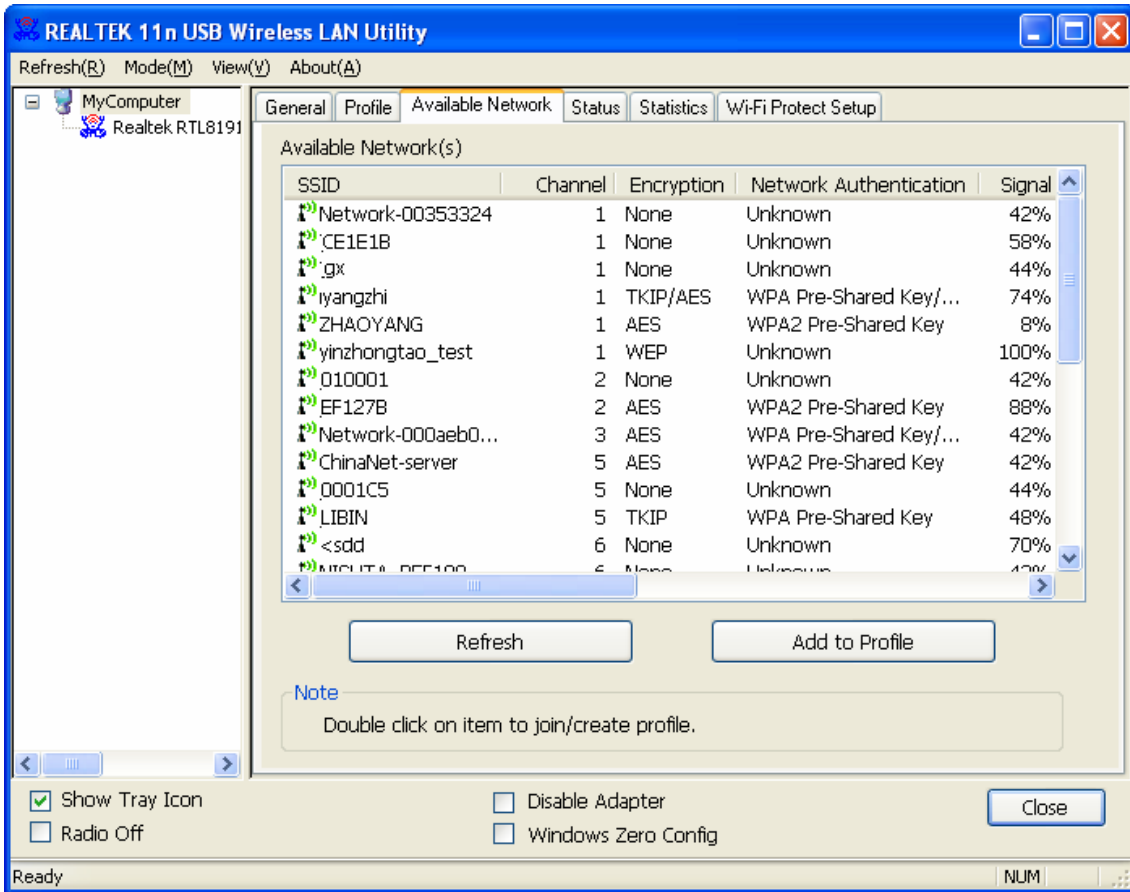


Figure 3-8

Step 1: Click **Refresh** to refresh the list at any time.

Step 2: Highlight a network name and click **Add to Profile** to connect to an available network. Fill in the Profile name and click **OK** to create the new configuration profile for that network.

3.4 Status

Click the tab **Status** as shown in Figure 3-9 to view the information about the connection.

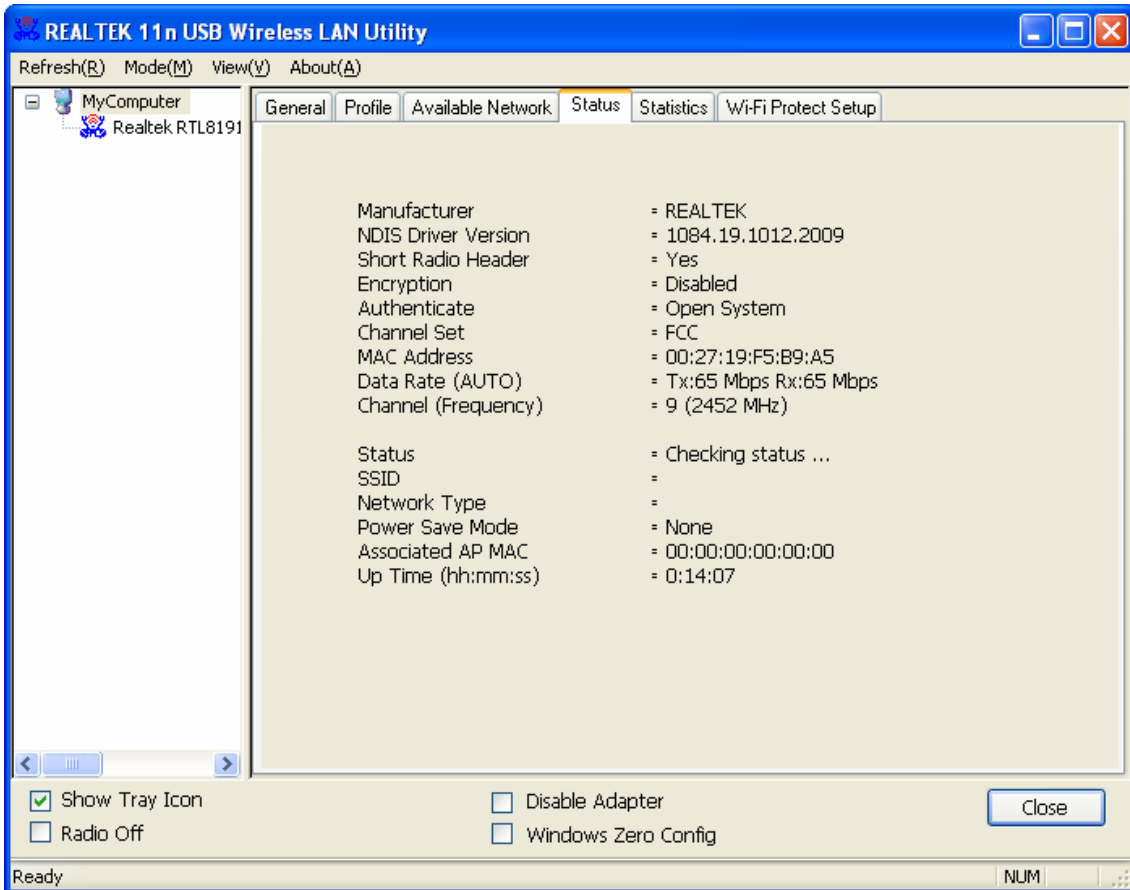


Figure 3-9

3.5 Statistics

Click the tab **Statistics** as shown in Figure 3-10 to view the traffic statistics about the connection. Click the **Reset** to refresh the information.

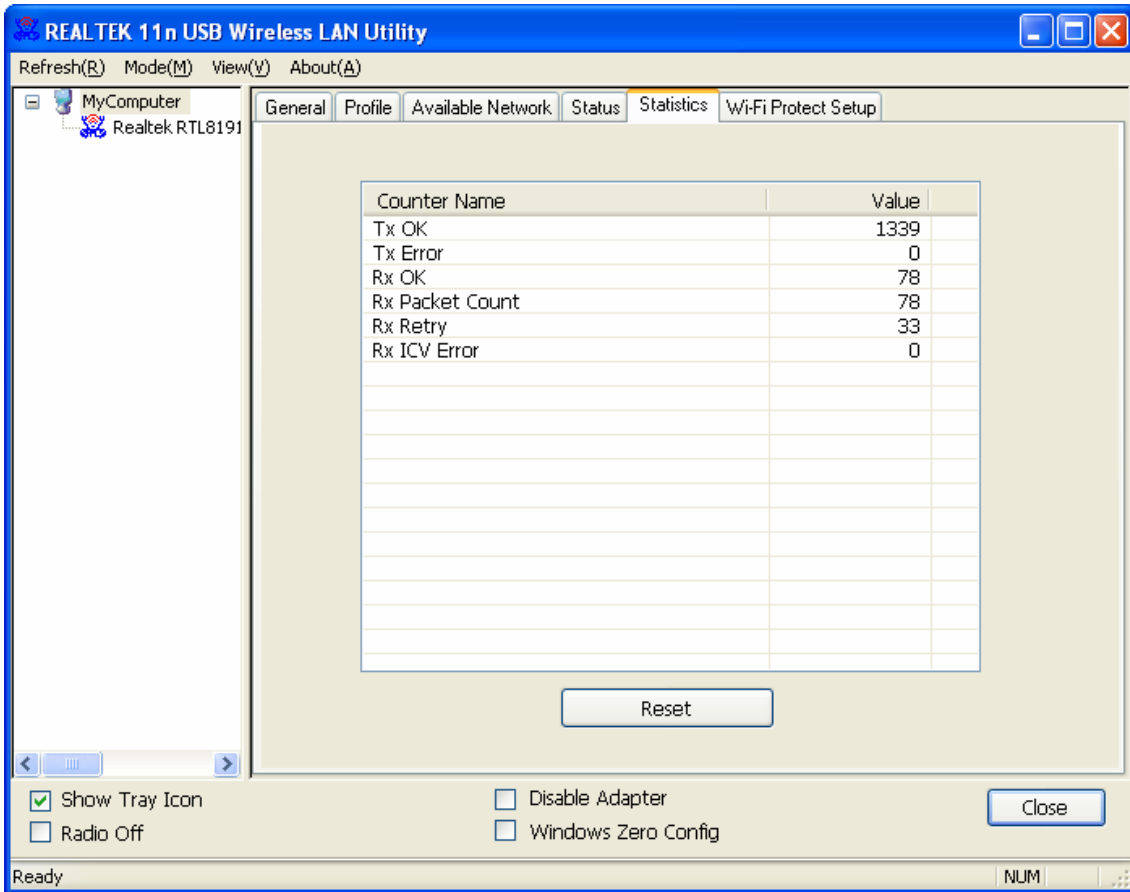


Figure 3-10

3.6 Wi-Fi Protect Setup

Click the tab **Wi-Fi Protect Setup** as shown in Figure 3-11, select different way to configure the adapter for Wi-Fi network.

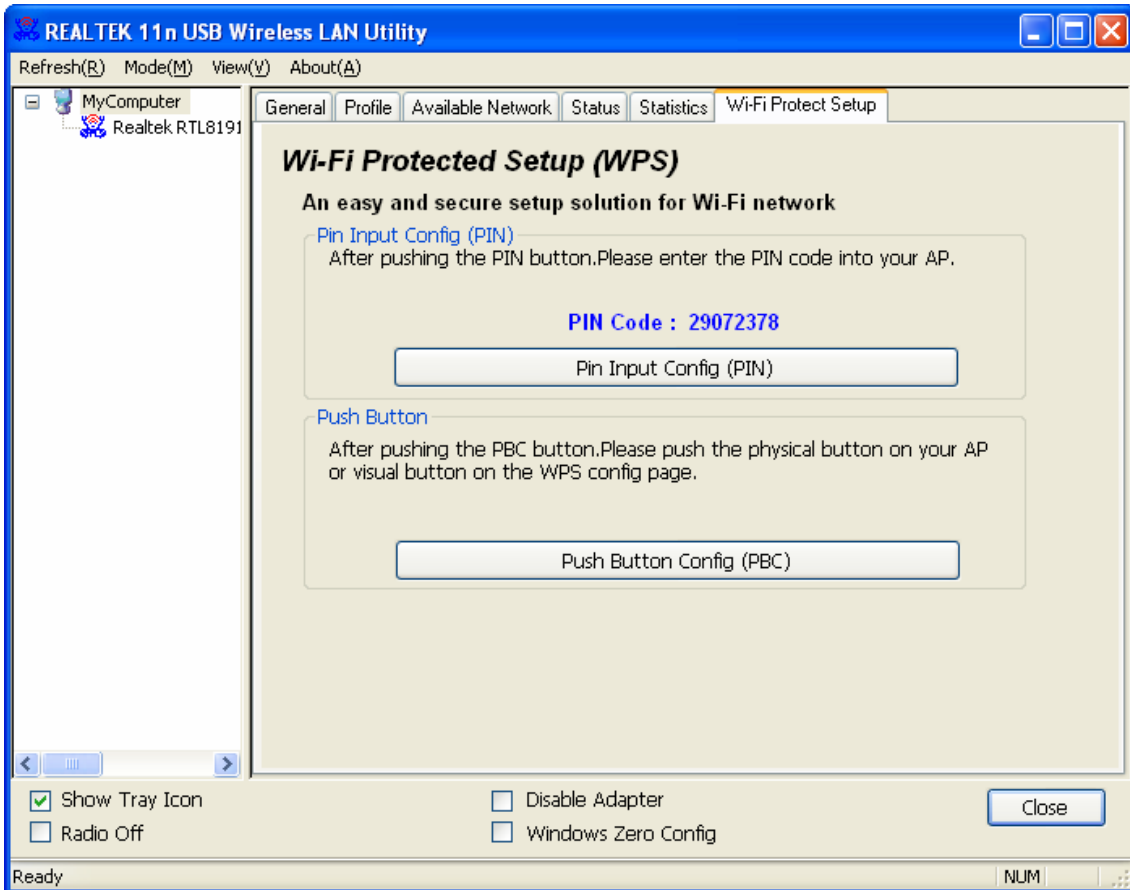


Figure 3-11

 **Note:**

The **Wi-Fi Protect Setup** function takes effect only when the adapter and the AP (the adapter wants to connect) must support the Wi-Fi function first. Or else, the adapter can't connect the AP.

3.6.1 PIN

Step 1: Select the **PIN** (shown in Figure 3-11).

Step 2: Click the **Refresh** button, and then the searched AP will display in the screen (shown in Figure 3-12). Select the AP name as you need, and click **Select** button.

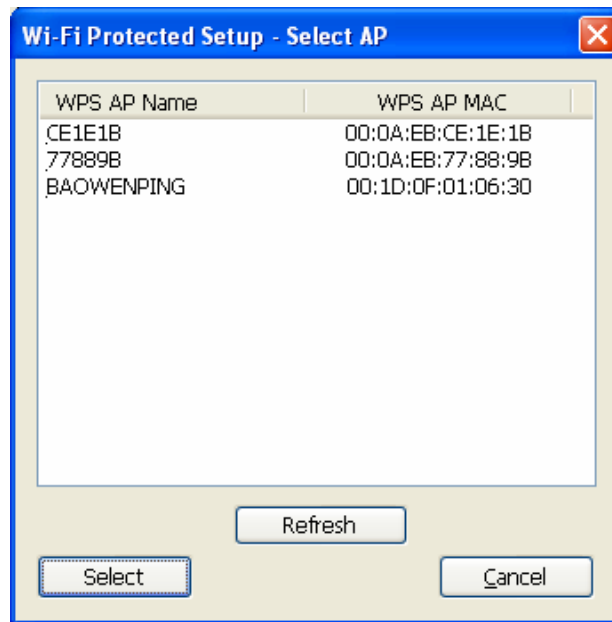


Figure 3-12

Step 3: After that, the PIN Code displays on the screen (shown in Figure 3-13). Now, you should enter the pin code into your AP.

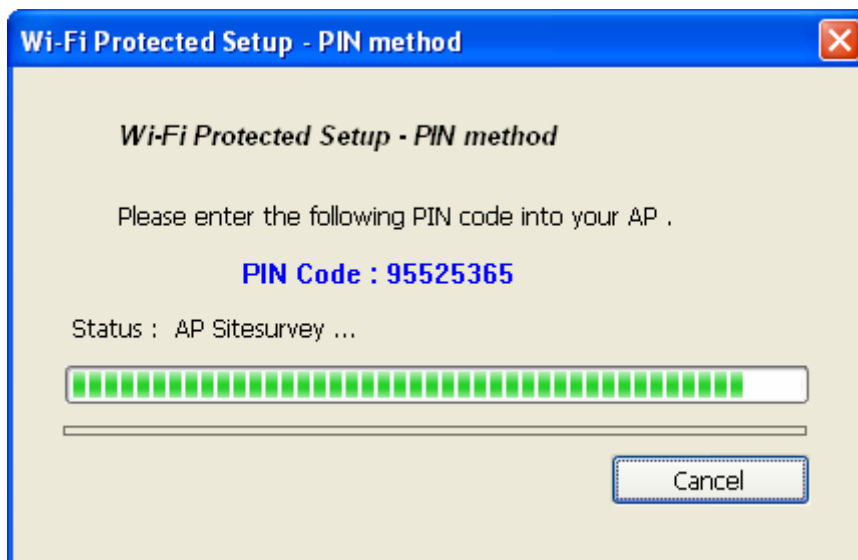


Figure 3-13

Step 4: Finally, the adapter will create the profile and connect to the AP automatically. This is a new connection for Wi-Fi network.

3.6.2 Question-Answer Method

Step 1: Click **PBC** as shown in Figure 3-11.

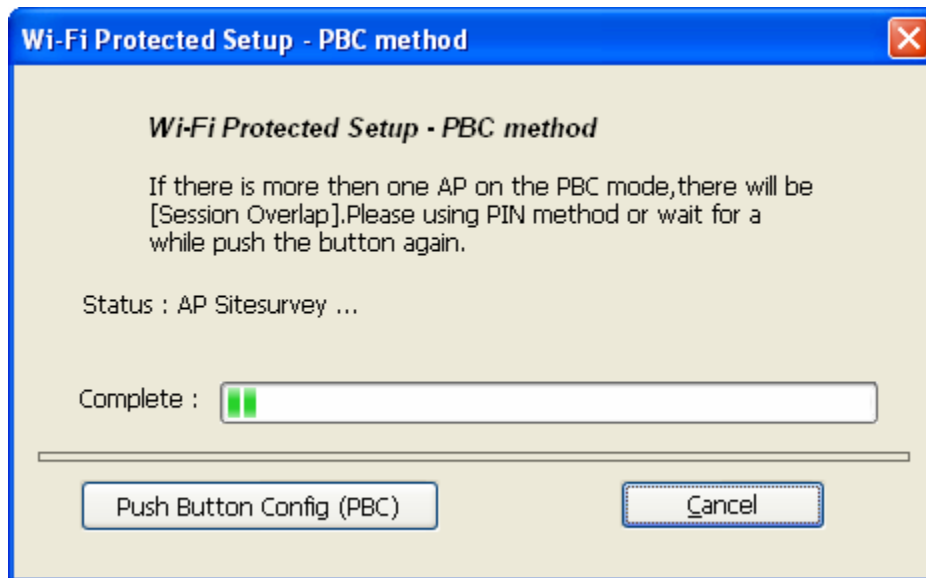


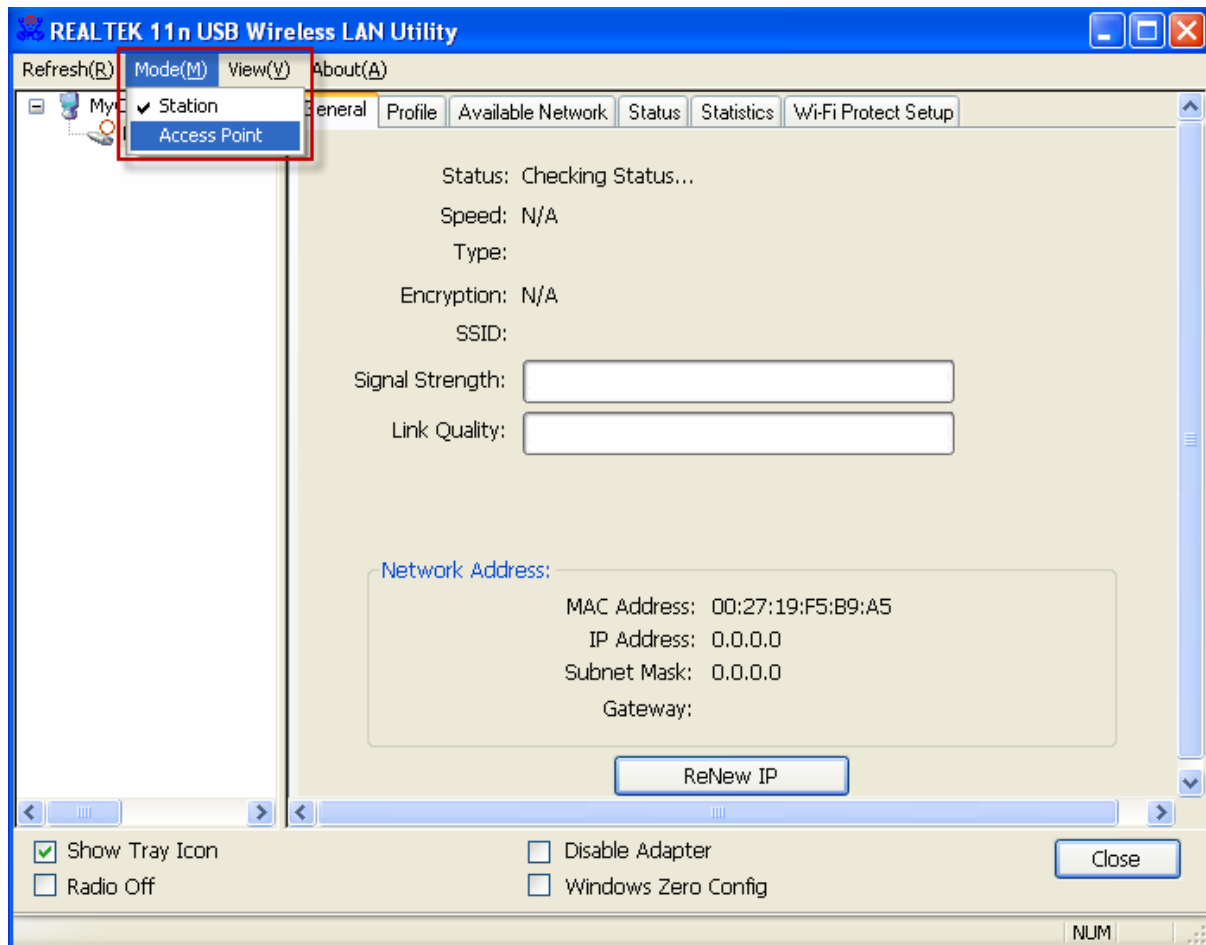
Figure 3-14

Step 2: Push the physical button on the AP.

Step 3: Finally, the adapter will create the profile and connect to the AP automatically.

3.7 Access Point Mode

Click **Access Point** as below to switch to Access Point Mode. In this mode you can use the M-WN823N as a soft AP. Here you can also do some basic configurations.



Appendix A: Specifications

Normal	
Interface	USB 2.0 Interfaces
Standards	IEEE802.11n; IEEE802.11g; IEEE802.11b;
Operating System	Windows XP, Windows Vista, Windows 7
Radio Data Rate	11b: 1/2/5.5/11Mbps 11g: 6/9/12/18/24/36/48/54Mbps 11n: Up to 300Mbps for receiver
Modulation	11b:CCK,QPSK,BPSK; 11g:OFDM; 11n: QPSK,BPSK,16-QAM,64-QAM
Media Access Protocol	CSMA/CA with ACK
Data Security	WPA/WPA2; 64/128-bit WEP; TKIP/AES
Frequency	2.4 ~ 2.4835GHz
Spread Spectrum	Direct Sequence Spread Spectrum (DSSS)
Safety & Emissions	FCC, CE
Environmental and Physical	
Operating Temp.	0°C~40°C (32°F~104°F)
Storage Temp.	-40°C~70°C (-40°F~158°F)
Humidity	10%~95% RH, Non-condensing

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.
- **Ad-hoc Network** - An ad-hoc network is a group of computers, each with a Wireless N USB 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).
- **FHSS (Frequency Hopping Spread Spectrum)** - FHSS continuously changes (hops) the carrier frequency of a conventional carrier several times per second according to a pseudo-random set of channels. Because a fixed frequency is not used, and only the transmitter and receiver know the hop patterns, interception of FHSS is extremely difficult.
- **Infrastructure Network** - An infrastructure network is a group of computers or other devices, each with a Wireless N USB 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.
- **Spread Spectrum** - Spread Spectrum technology is a wideband radio frequency technique developed by the military for use in reliable, secure, mission-critical communications systems. It is designed to trade off bandwidth efficiency for reliability, integrity, and security. In other words, more bandwidth is consumed than in the case of narrowband transmission, but the trade off produces a signal that is, in effect, louder and thus easier to detect, provided that the receiver knows the parameters of the spread-spectrum signal being broadcast. If a receiver is not tuned to the right frequency, a spread-spectrum signal looks like background noise. There are two main alternatives, Direct Sequence Spread Spectrum (DSSS) and Frequency

Hopping Spread Spectrum (FHSS).

- **SSID** - A **S**ervice **S**et **I**dentification 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.
- **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.