

IEEE 802.11g Wireless PC Card

# User's Guide

# 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. 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. End users must follow the specific operating instructions for satisfying RF exposure compliance.

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

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

This equipment has been SAR-evaluated for use in notebooks with side slot configuration.

## **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 89/336/EEC on the approximation of the laws of the Member States relating to electromagnetic compatibility.

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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# Overview

**Thank you for purchasing this product. Read this chapter to know about your IEEE 802.11g Wireless PC Card.**

## Unpacking information

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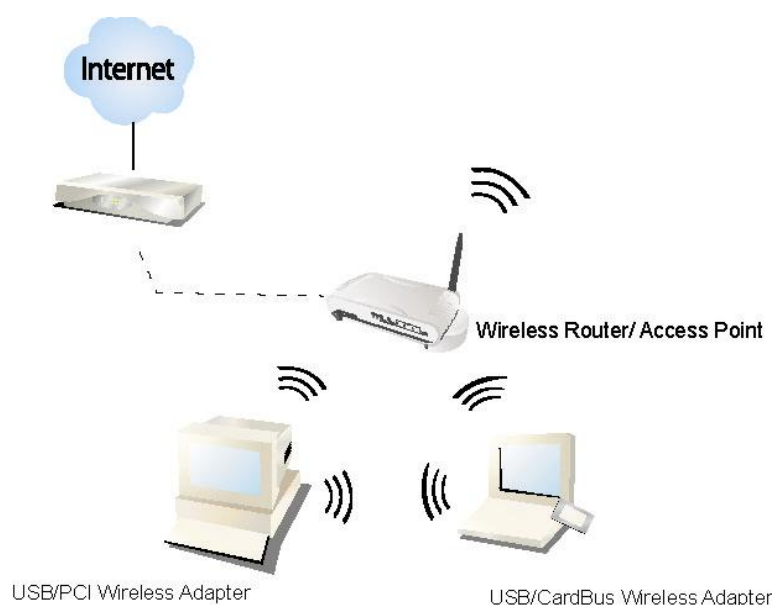
Before getting started, please verify that your package includes the following items:

1. IEEE 802.11g Wireless PC Card
2. One quick installation guide
3. One Utility/ Manual CD

## Introduction to the IEEE 802.11g Wireless PC Card

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The IEEE 802.11g Wireless PC card provides users to launch IEEE 802.11g wireless network at 54 Mbps in the 2.4GHz frequency, which is also compatible with IEEE 802.11b wireless devices at 11Mbps. You can configure this adapter with ad-hoc mode to connect to other 2.4GHz wireless computers or with Infrastructure mode to connect to a wireless AP or router for accessing to Internet. This adapter includes a convenient Utility for scanning available networks and saving preferred networks profiles that users usually connected with. Security encryption can also be configured by this utility.



## Key Features

- 
- |  |  |
|--|--|
| • Complies with IEEE 802.11b/g wireless standard | • Support wireless data encryption with 64/128-bit WEP, WPA (TKIP with IEEE 802.1x) and AES functions. |
| • Complies with 32-bit CardBus type II           | • Support driver for Windows 98se, ME, 2000 and XP.  |
| • High Speed transfer data rate up to 54 Mbps    | • Supports auto-installation and diagnostic utilities.   |
| • Support turbo mode for 72 Mbps data rate       |  |
-

# Installation Guide

## Software Installation

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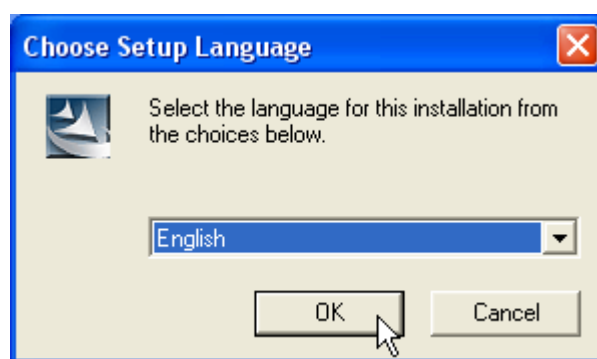
**Note:**

- a. Users of Windows Vista please refer to **"Windows Vista Driver Installation"** in Appendix for installing instructions.
- b. The following driver installation guide uses Windows XP as the presumed operation system. The procedures and screens in Windows 98se, 2000 are familiar with Windows XP.

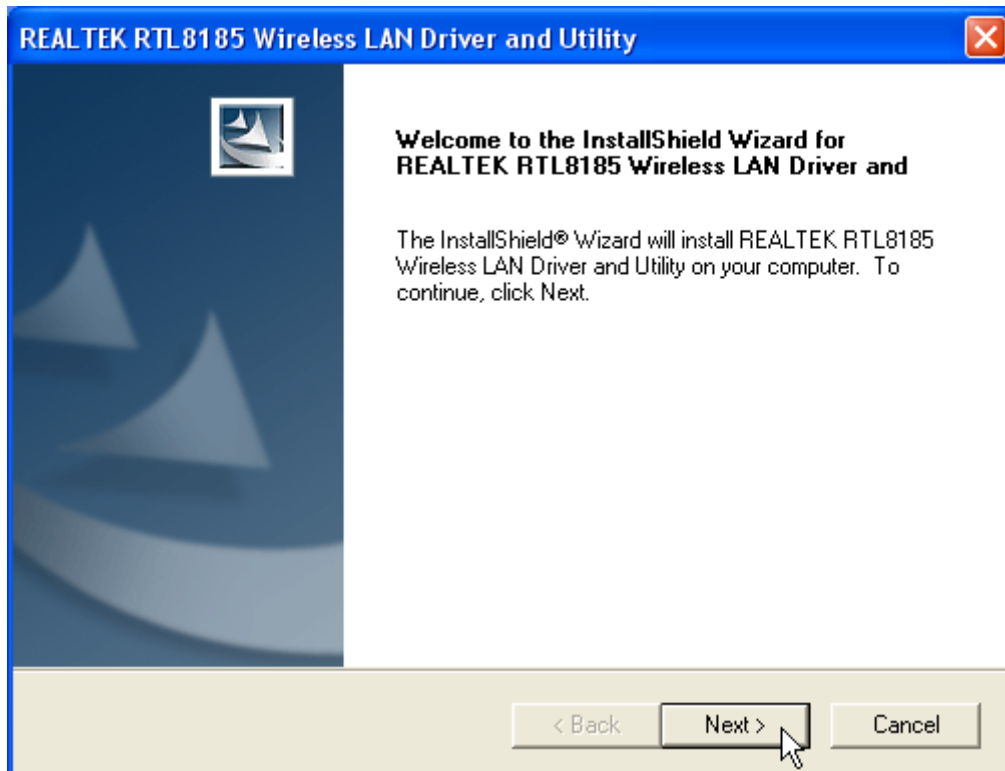
1. Insert the CD-Rom that came with this product to your CD-Rom drive. The menu window pops up automatically. Please click the **"Driver"** button of this product.

**Note:** If the CD-Rom fails to auto-run, please click on **"My Computer"**→ **your CD-Rom Drive** then double-click the **"Setup"** icon to start the this menu.

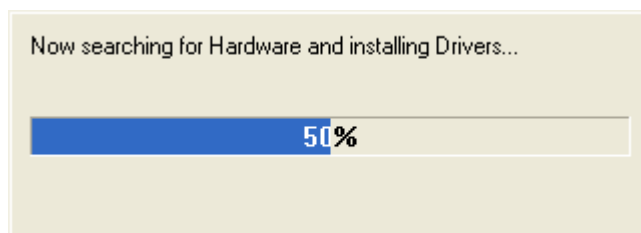
2. The language-selecting window pops up. Please select the language you use and click **OK**.



3. The welcome window pops up. Click the **"Next"** button to proceed.



4. Please wait while installation.

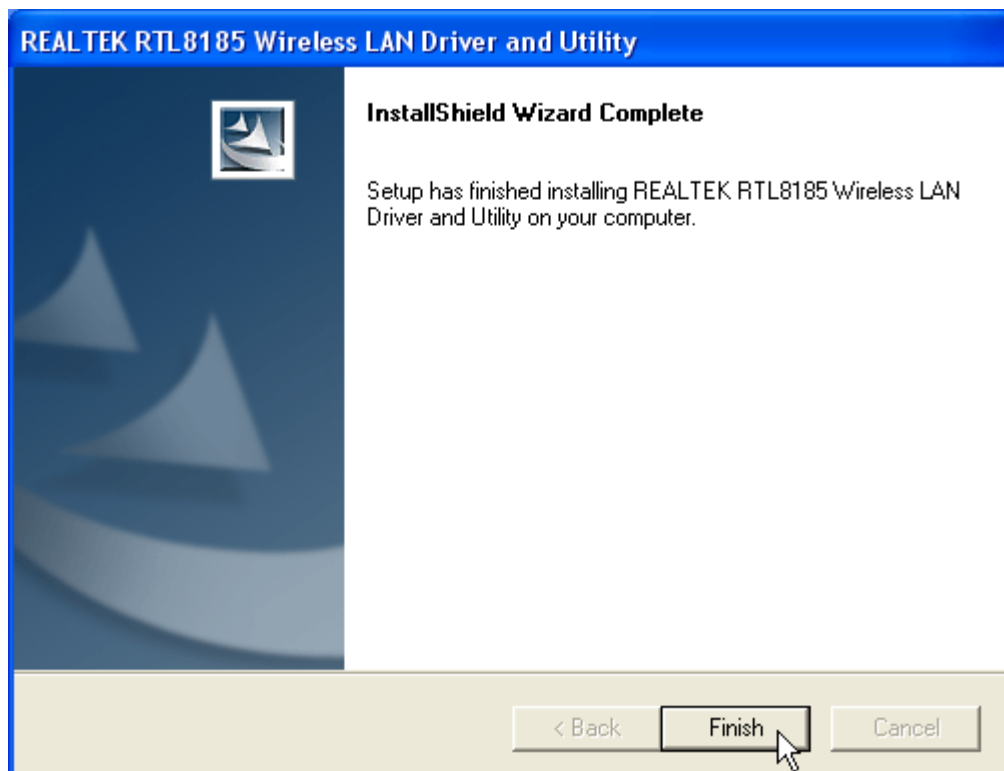


5. This Windows Logo testing warning window may pop up upon installation. Please click the "**Continue Anyway**" to continue.





6. If you are using Windows 98se or ME, the system may ask for the driver CD. Please click the Browse button. Select your CD-ROM Drive then select CardBus→ Driver→ WIN98 (or WINME) to browse the driver. If not, please skip this step.
7. Click the **"Finish"** button to complete driver and utility installation.



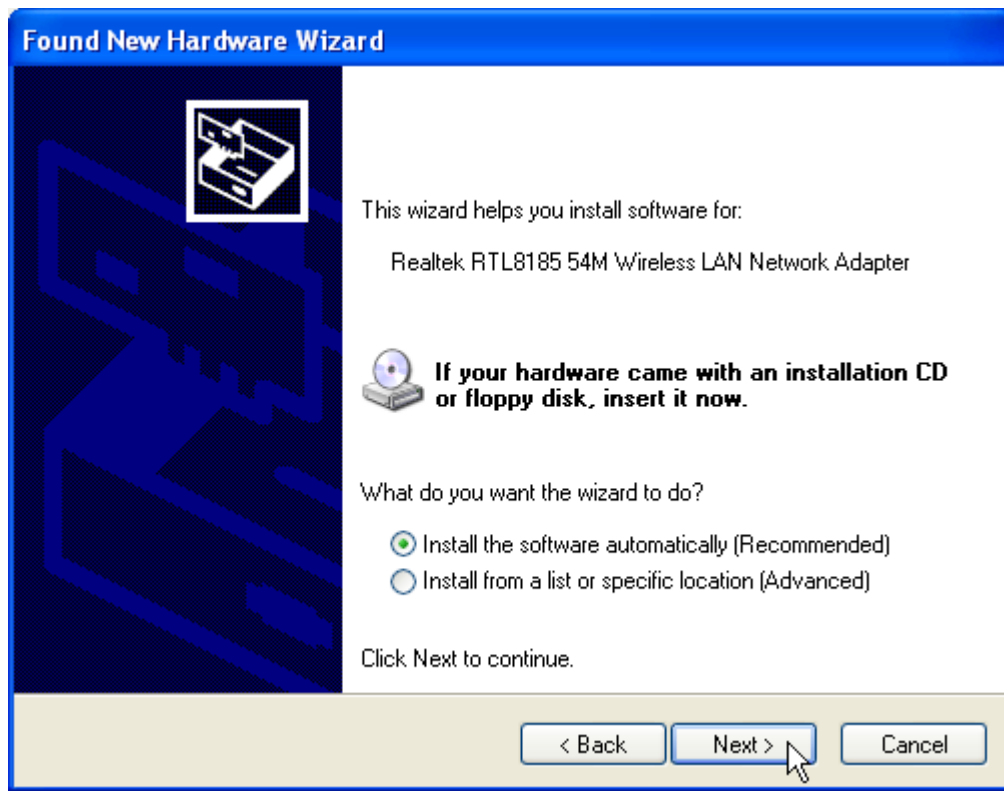
8. For Windows XP and 2000 users, please insert this wireless adapter to your

computer. If you are using Windows 98se or ME, please restart the system first before connect this wireless adapter to your computer.

9. The **"Found New Hardware Wizard"** pops up. (**Note:** This wizard won't pop up in Windows 98 and ME. The system finds the new hardware and installs the hardware automatically. Please skip the following steps)
10. Select **"No, not this time"** and click the **"Next"** button.



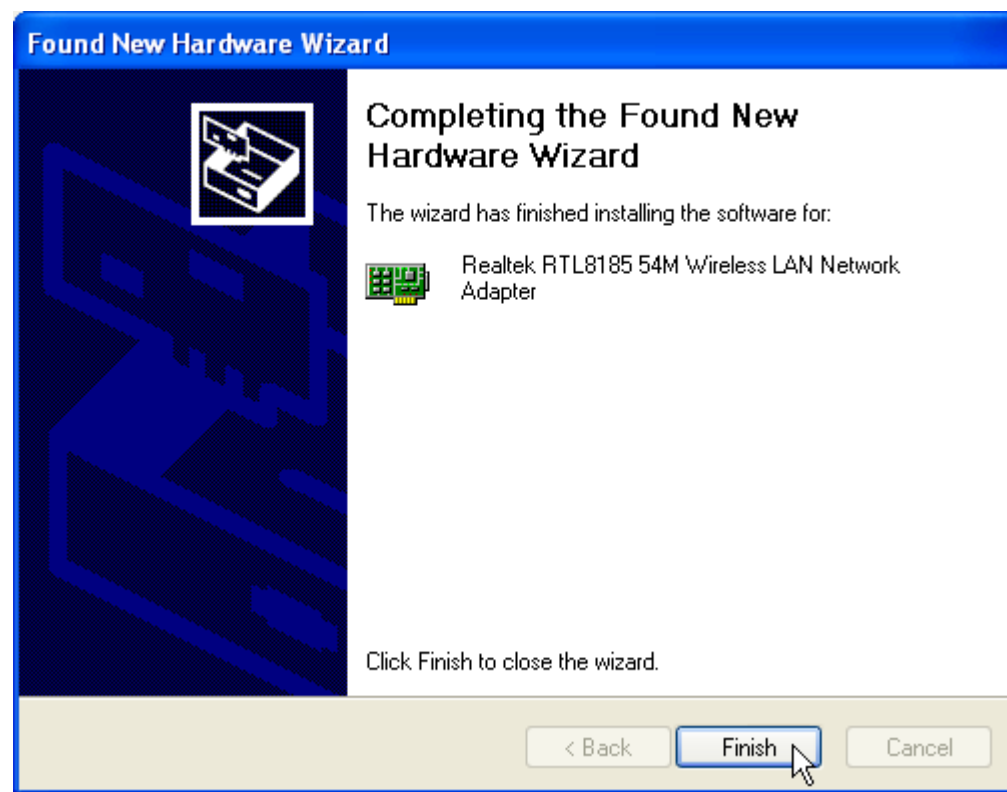
11. Select **"Install the software automatically"** and click the **"Next"** button.



12. Please wait while installing the driver. The Windows logo testing warning window may pops up again. Please click the **"Continue Anyway"** button to continue.



13. Click the **"Finish"** button after driver installation.



# Management Guide

**Read this chapter to understand the management interface of the device and how to manage the device.**

## Making a Basic Network Connection


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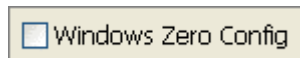
### Before You Start

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

#### Note:

- a. This utility does **not** support Windows Vista. Vista users please use the wireless network configuration software embedded in Windows Vista.
- b. For Windows XP users that want to configure your wireless network using this Utility, please perform the following procedures to disable your native Windows XP wireless support (Wireless Zero Configuration Service)

1. Double click the  icon on your desktop to start the utility.
2. Make sure that the **"Windows Zero Config"** checkbox is unchecked.



### Ad-Hoc Mode

An Ad-Hoc mode wireless network connects two computers directly without the use of a router or AP. It is also known as a peer-to-peer network. For example, we can install this wireless adapter to two computers respectively. The communication between the two computers is an Ad-Hoc mode network.

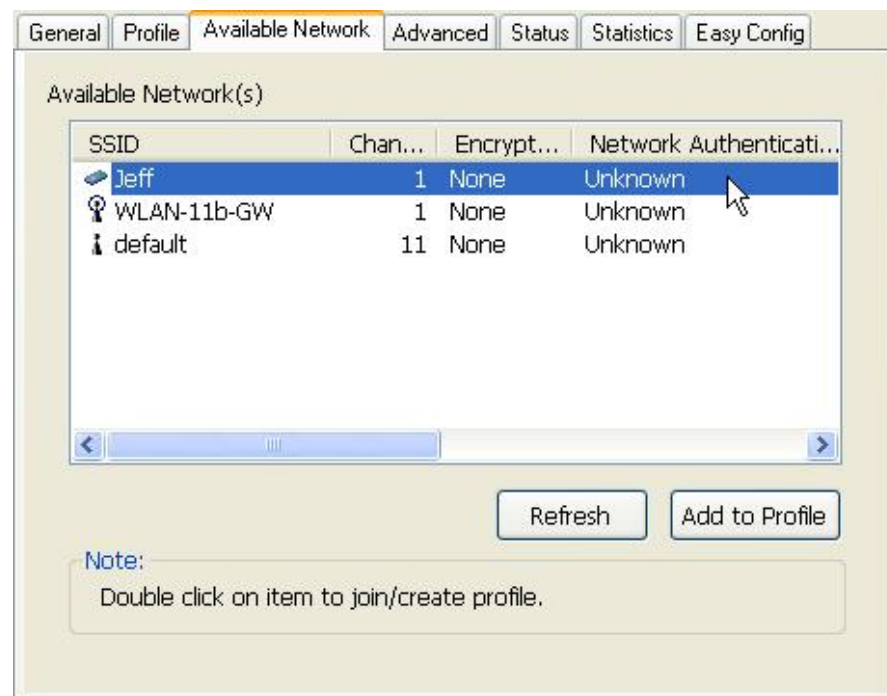


**Ad-Hoc Mode**

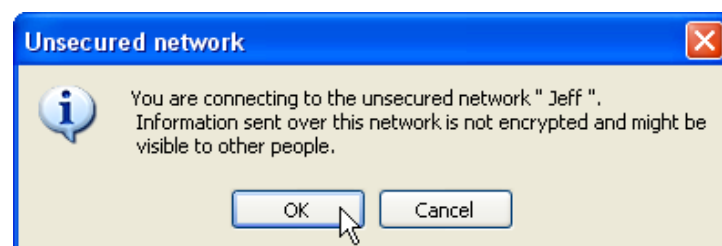
### To use this adapter in Ad-Hoc Mode



1. Double click the icon on your desktop.
2. Click the **"Available Network"** button to scan available wireless network adapters. Double click on the network adapter that you are going to connect to.



3. Click the OK button to confirm that you are connecting to an open wireless network.



4. Click OK to add this network into the profile list.

**Note:** This example is an open wireless network. If you are going to connect to a Wireless adapter with security protection, you will have to configure the encryption settings in this profile to be corresponding to the other wireless adapter. Please click on the **"Network Authentication"** drop list to select an authentication method, and then select a **"Data encryption"** type. Fill in each required blanks and click **"OK"**.

**Wireless network properties**

Profile Name:

Network Name(SSID):

☒ This is a computer-to-computer(ad hoc) network; wireless access points are not used. Channel:

**Wireless network security**

This network requires a key for the following:

Network Authentication:

Data encryption:

☐ ASCII ☐ Passphrase

Key Length:

Network key:

Confirm network key:

Key index (advanced):

**802.1x configure**

EAP TYPE:

Tunnel:

Username:

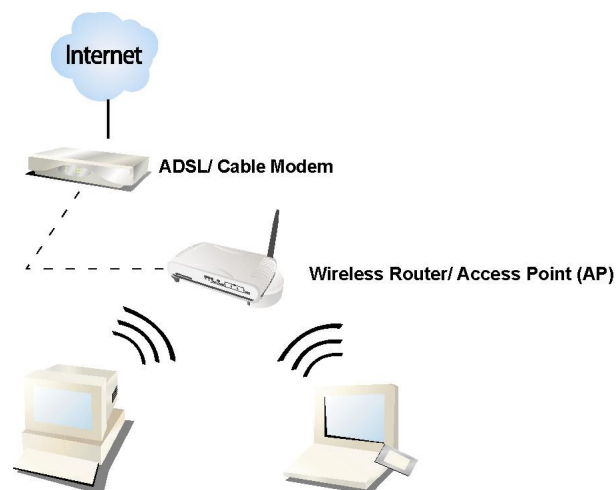
Identity:

Password:

Certificate: ☐

## Infrastructure mode


An Infrastructure Mode network contains at least one wireless client and one wireless AP or router. This client connects to Internet or intranet by communicating with this wireless AP.

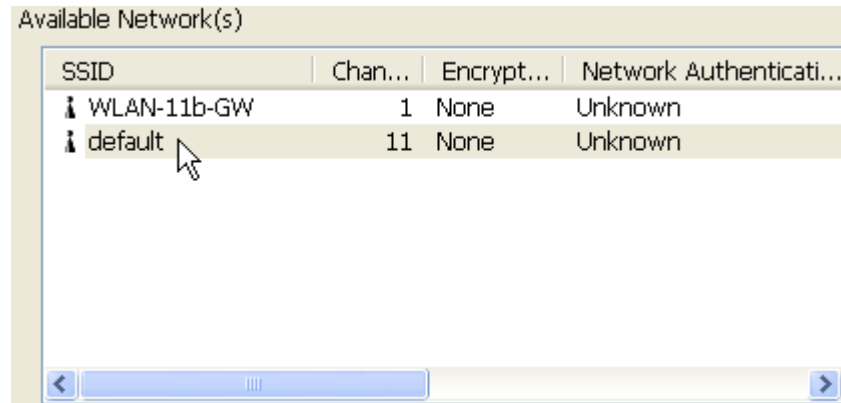


**Infrastructure Mode**

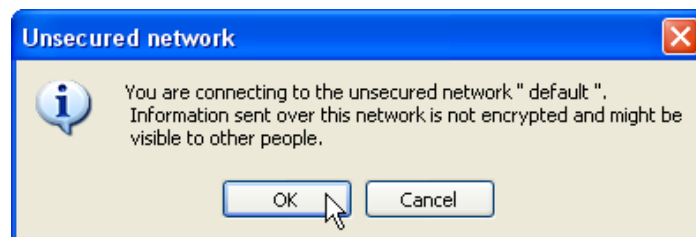
**To use this adapter in Infrastructure Mode:**



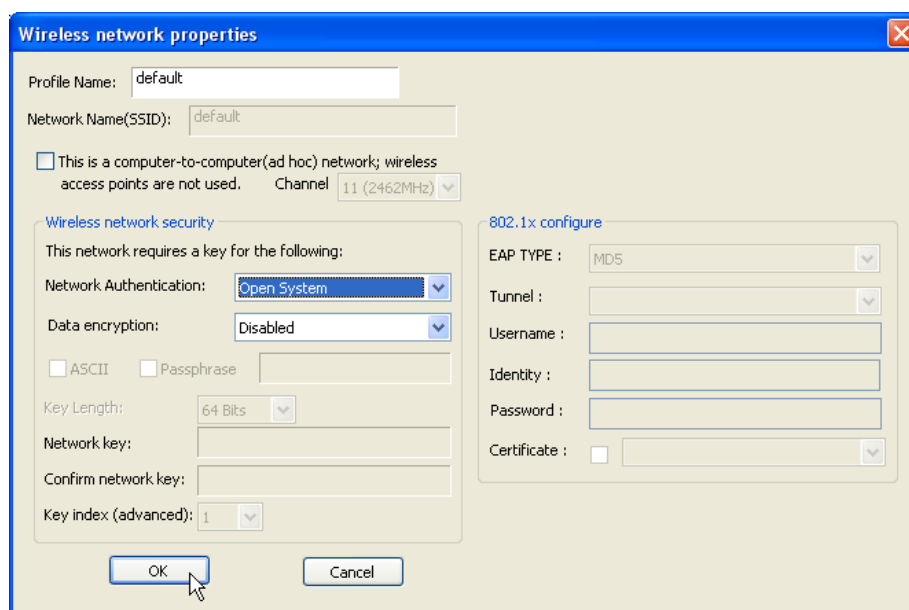
1. Double click the  icon on your desktop.
2. Click the **"Available Network"** button to scan available access points. Double click on the AP that you are going to connect to.



3. Click the **OK** button to confirm that you are connecting to an open wireless network.



4. Click **OK** to add this network into the profile list.





**Note:**

This example is an open wireless network. If you are going to connect to an AP with security protection, you will have to configure the encryption settings in this profile to be corresponding to your AP. Please click on the **"Network Authentication"** drop list to select an authentication method, and then select a **"Data encryption"** type. Fill in each required blanks and click **"OK"**.

**Tip:** Windows XP and Windows 2000 users is also allowed to connect to your wireless network with the "RT-Set" setup wizard. Please refer to **"Appendix"** for more information.


## Introduction to the Wireless LAN Utility

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**Note:** This management instruction uses Windows XP as the presumed operation system. Some functions are not supported in Windows 98se or Windows ME.

### Starting the Wireless LAN Utility

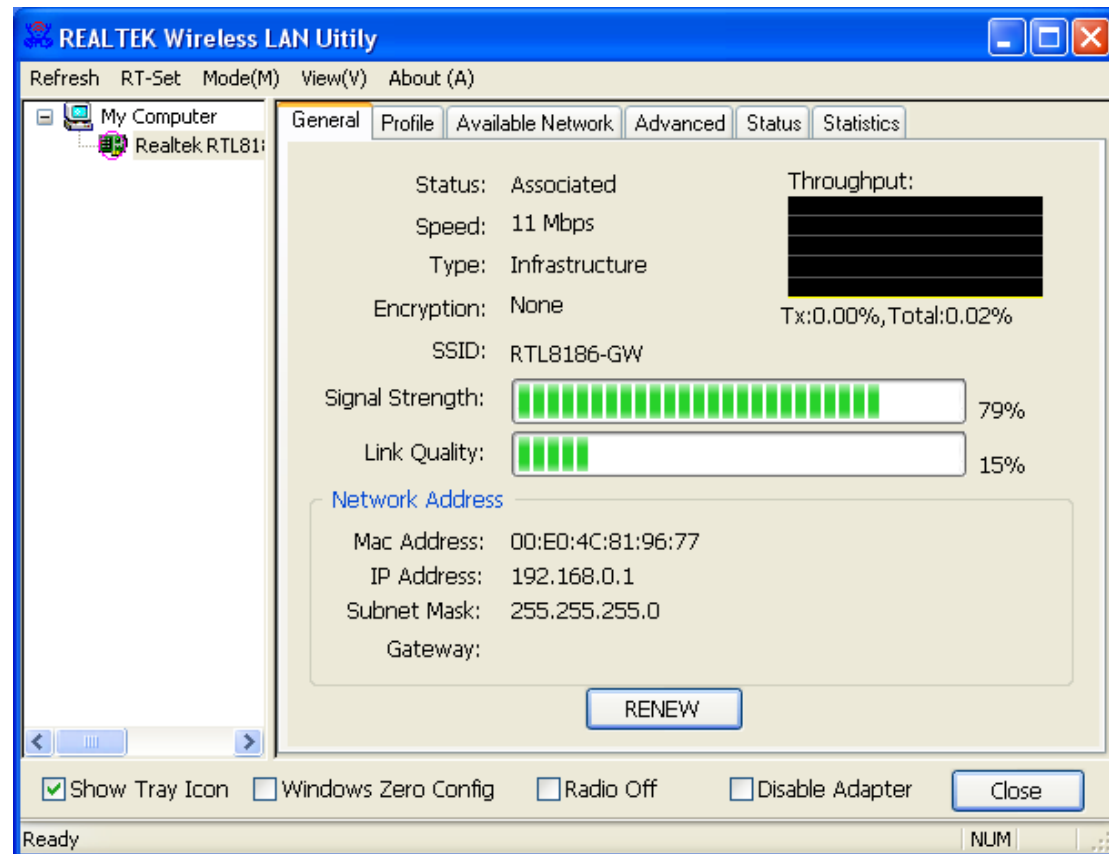


Double click the  shortcut on your desktop. The Wireless LAN Utility pops up. You may click on the tabs above to configure this adapter. The checkboxes below provide the following functions:

<b>Show Tray Icon</b>	Check this checkbox to show the utility icon on your system tray, which is in the notification area at the lower-right corner of the windows desktop. You may also uncheck it to remove the utility icon from system tray.
<b>Windows Zero Config</b>	Uncheck this checkbox to use native Windows XP wireless support (Wireless Zero Configuration Service) instead of using this utility to configure your wireless network.
<b>Radio Off</b>	Check this checkbox to prevent this adapter form transmitting or receiving signals. Uncheck it to communicate.
<b>Disable Adapter</b>	Check this checkbox to disable this wireless adapter. Uncheck it to enable this adapter again.

## General

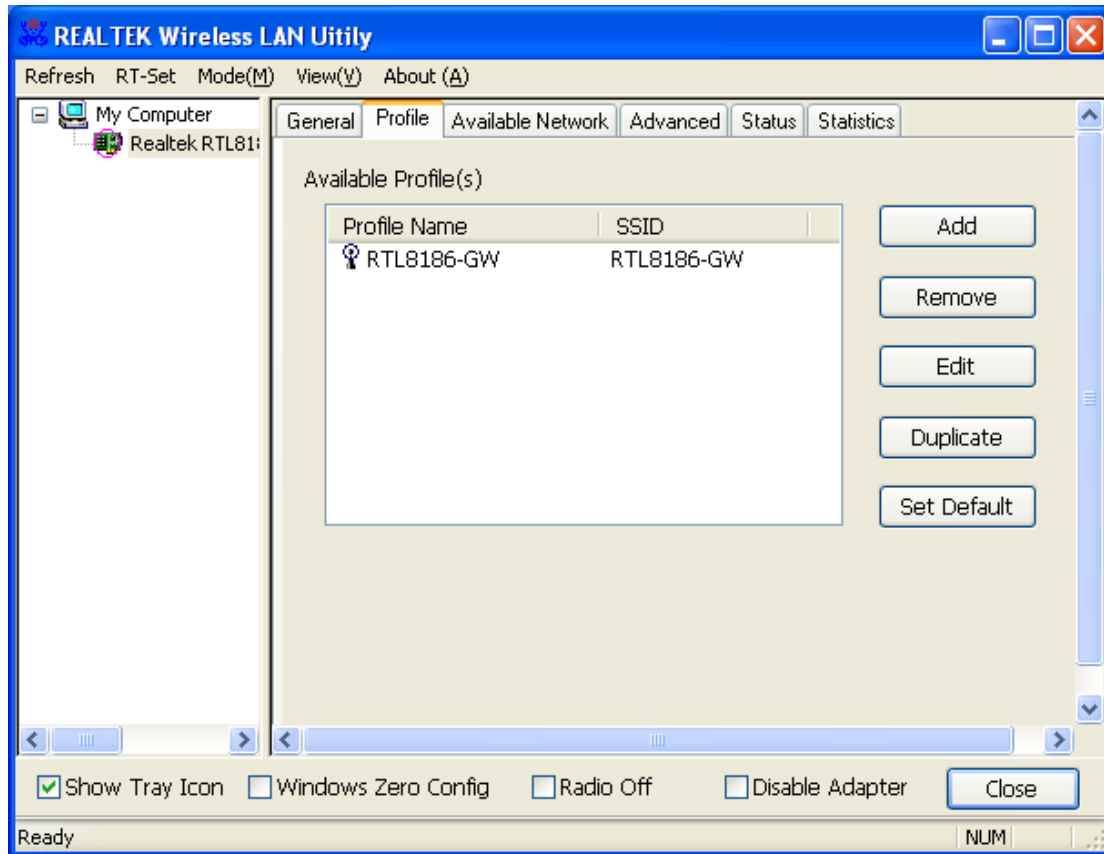
After starting the utility, the general page pops up. This **General** tab provides the information of your current wireless network connection. You may click the **Renew** button to refresh those listed information.



<b>Status:</b>	Check if the device associated to target network.
<b>Speed:</b>	The current connection speed
<b>Type:</b>	Infrastructure mode or Ad-Hoc mode.
<b>Encryption:</b>	The performing encryption mode for connecting to current network profile.
<b>SSID:</b>	The SSID (network name) of the connected wireless network.
<b>Signal Strength:</b>	Indicates the signal strength detected by this adapter.
<b>Link Quality</b>	Indicates the link quality of this wireless connection.
<b>Network Address:</b>	Shows the current IP addresses settings for this adapter.

## Profile

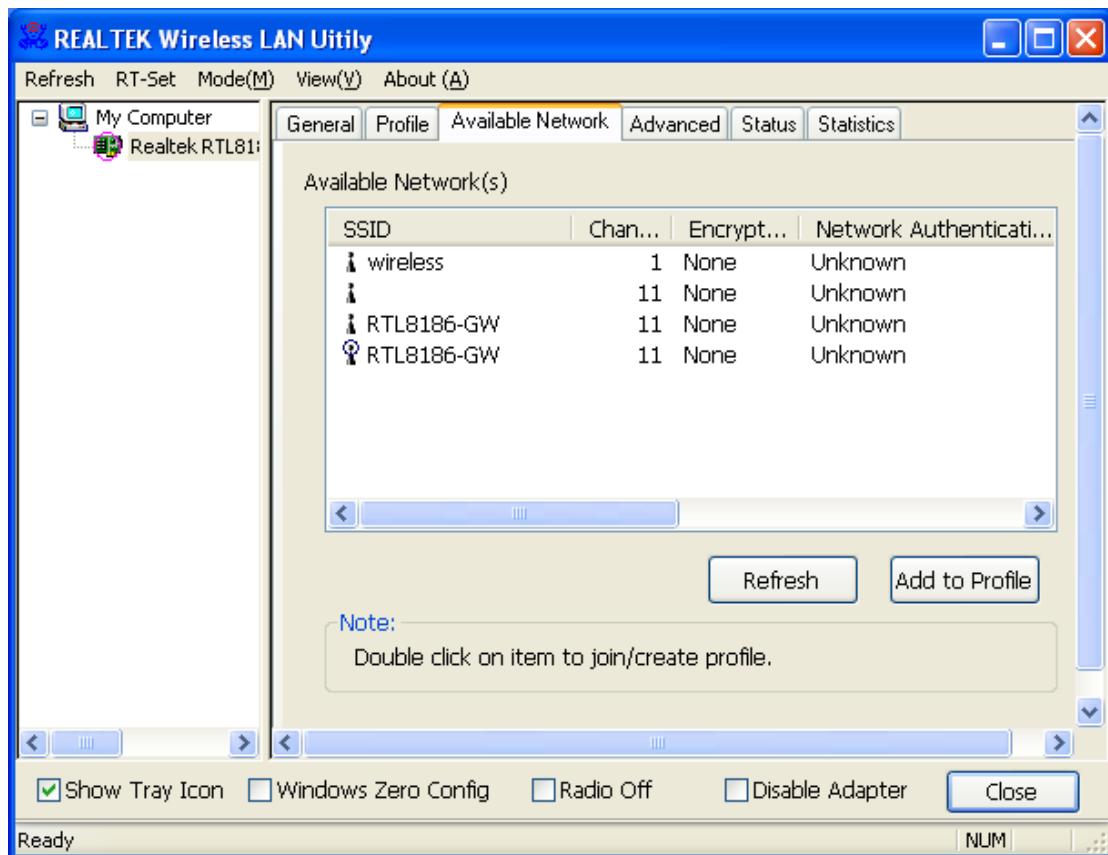
The **Profile** tab lists the preferred connections. You can click the buttons beside to do configure each connection.



- Add** Click this button to add a connection profile for this adapter.
- Remove** To remove a connection profile, click this profile on the profile list and click this button to delete it.
- Edit** To modify the configurations for a profile, click this profile on the profile list and click this button to edit.
- Duplicate** To make a copy of a profile, click the profile that going to be copied, and click this button to copy it.
- Set Default** To select a profile as your default wireless connection, click this profile on the list and click this button. You may also double click on each profile to select it as your default wireless connection.

## Available Network

This available tab lists the reachable wireless network of this adapter.



### Refresh

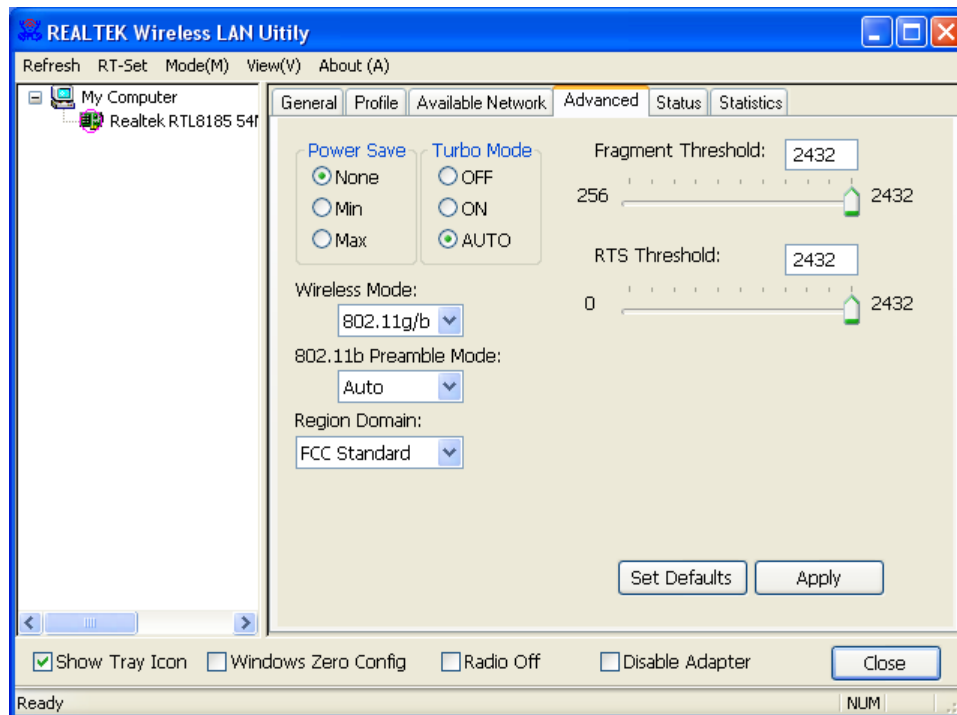
Click this button to rescan available networks around the adapter.

### Add to Profile

To add an available Network to your profile list, select an available network and click this button to add.

## Advanced

This Advanced tab provides advanced configurations to this adapter. Every modification in this tab will be performed after clicking the **Apply** button. To restore the default settings of the advanced tab, click the **Set defaults** button to perform restoring.

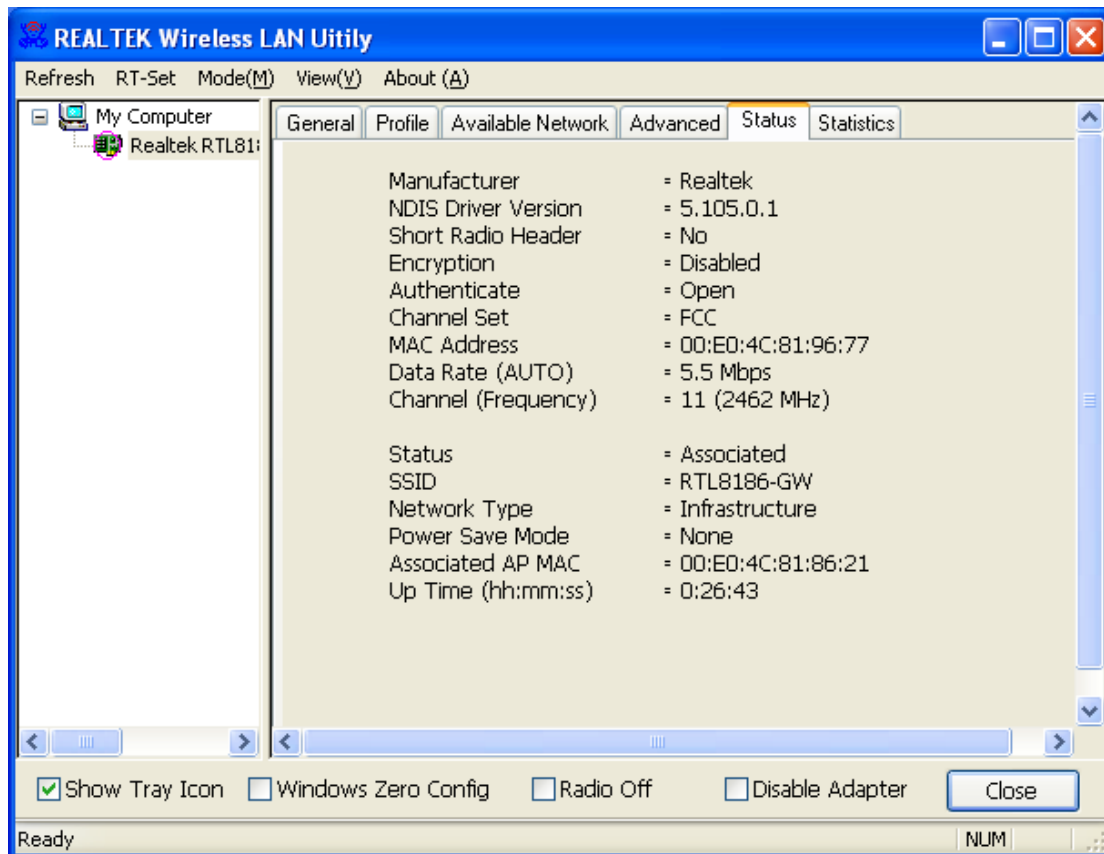


Power Save	
<b>None</b>	Disable Power saving function.
<b>Min</b>	Minimum power consumption
<b>Max</b>	Maximum power consumption
Turbo Mode	
<b>OFF</b>	Disable turbo mode
<b>ON</b>	Enable turbo mode
<b>AUTO</b>	Enable or disable turbo automatically according to the detected environment
Fragment Threshold	
The maximum size of a packet that is going to be segmented and transmitted. Select the size from 256 to 2432(default) bytes.	
RTS Threshold	
Select the RTS Threshold form 0 to 2432(default)	
Wireless Mode	
<b>802.11g/b</b>	Connect to a 802.11b/g network (2.4GHz/54Mbps)
<b>802.11b</b>	Connect to a 802.11b network (2.4GHz/11Mbps)
802.11b Preamble Mode	
Select the preamble mode to be long, short or auto detection mode.	
Region Domain	

Select your region from the drop list. Please note that it is necessary for you to select a correct region. Selecting an incorrect region may again the applicable law.

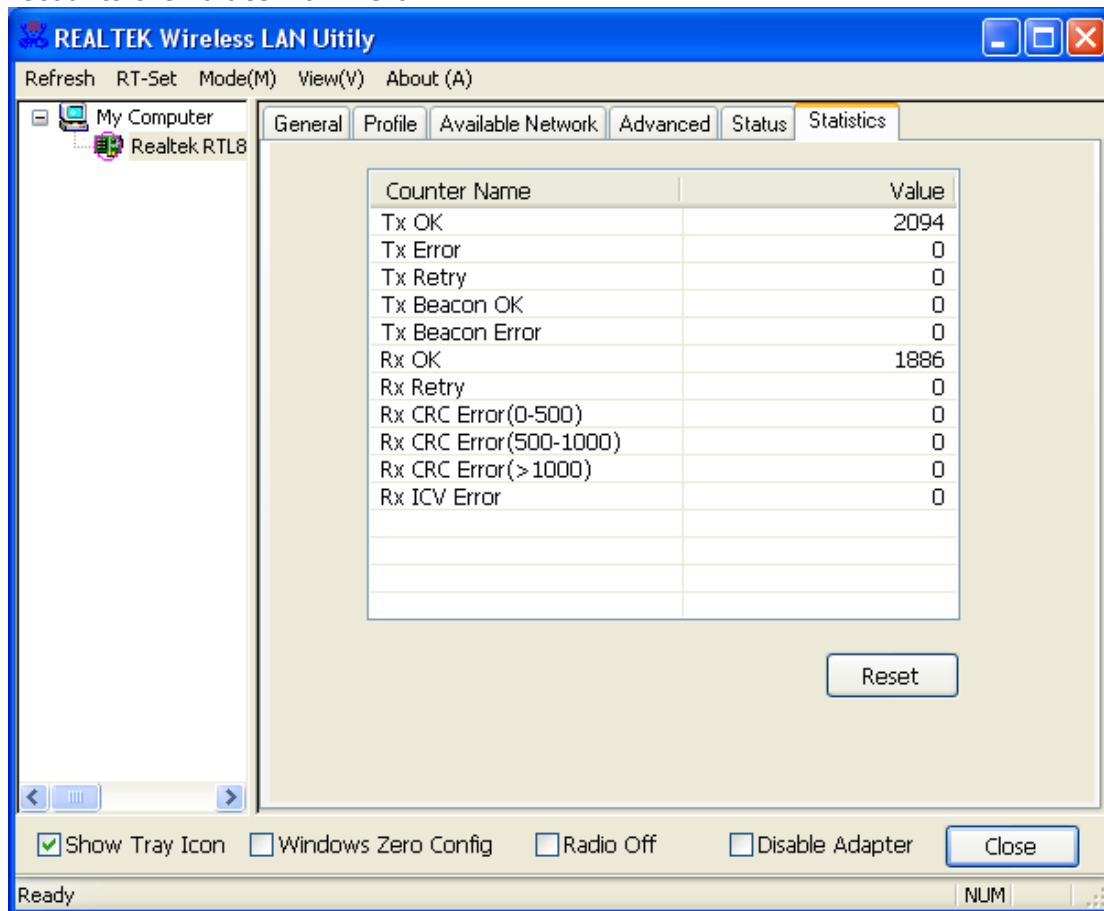
## Status

This tab shows the current connection status of this adapter.



## Statistics

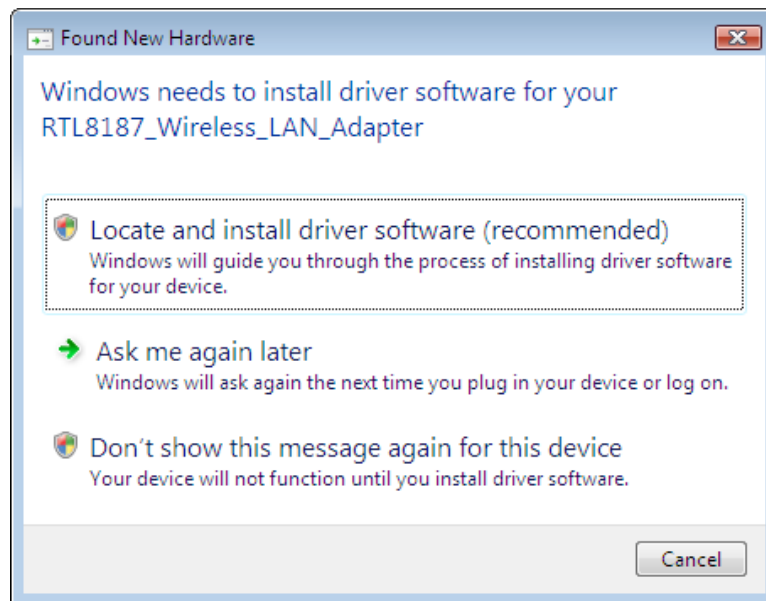
See this tab to show the transmission activity record. Clicking the **"Reset"** button recounts the values from zero.



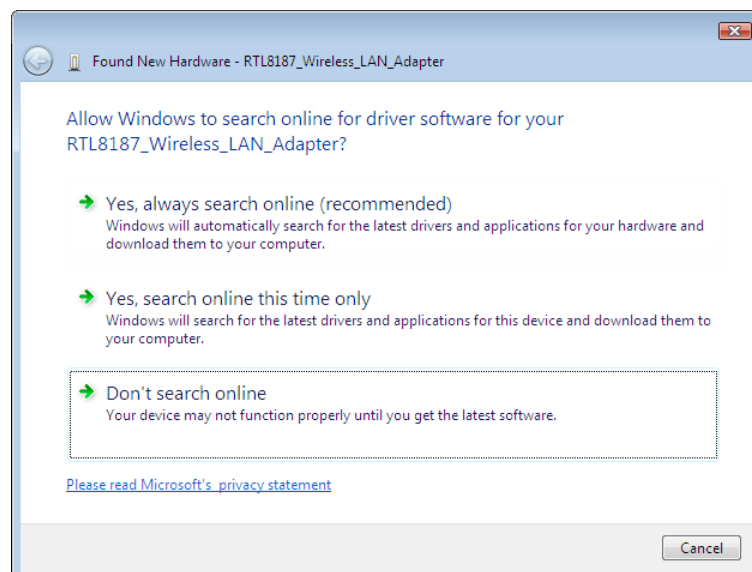
# Appendix

## Windows Vista Driver Installation

1. Insert the device to your computer. The system finds the new device automatically. Click the "Locate and install driver software" to proceed.

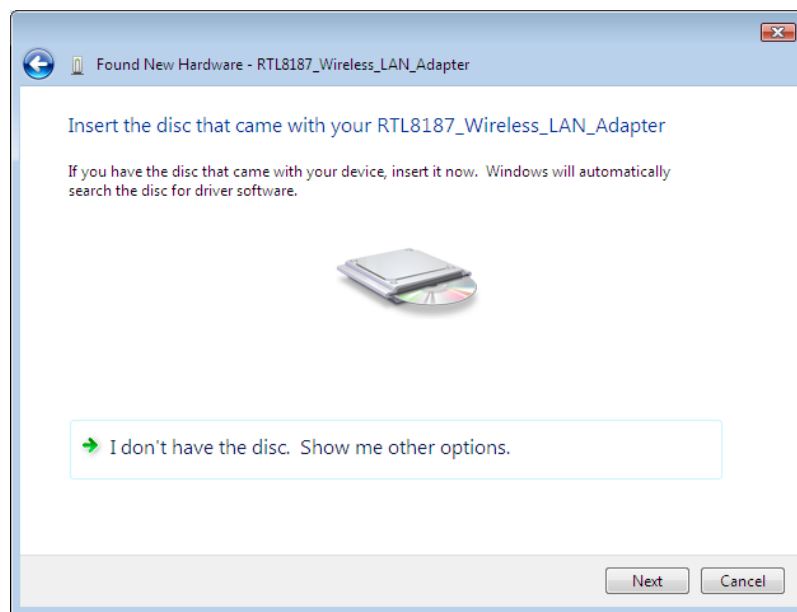


2. Select "Don't Search online"

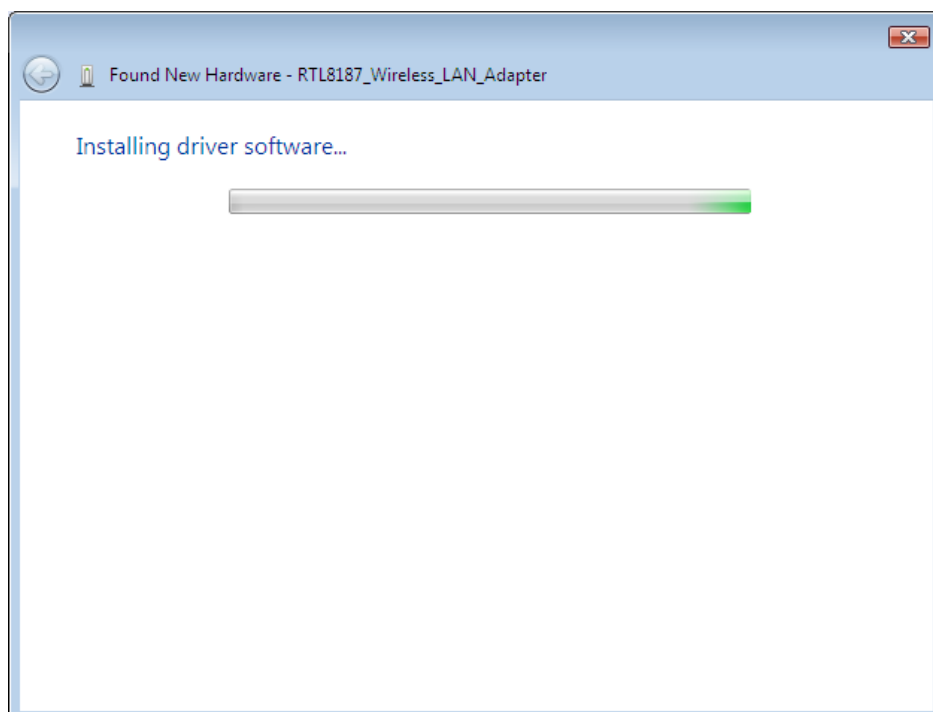




3. Insert the Driver CD that came with this device then click the Next Button.



4. The system search for appropriate drive for this device in the CD automatically and start installing. If the system fail to find the driver automatically, please browse the driver in your CD drive→ Cardbus→ Driver→ Vista→ VistaX86 (or VistaX64).



5. Click the close button to finish installation.

## RT-Set Setup Wizard

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For Windows 2000 and XP users to connect to a wireless network easily, we also provide the RT-Set setup wizard to help users set their preferred wireless network step by step. You can configure your wireless network via this RT-Set setup wizard in the following three modes:

**Station mode (infrastructure):** Select this mode to connect to the AP (access point) in your LAN.

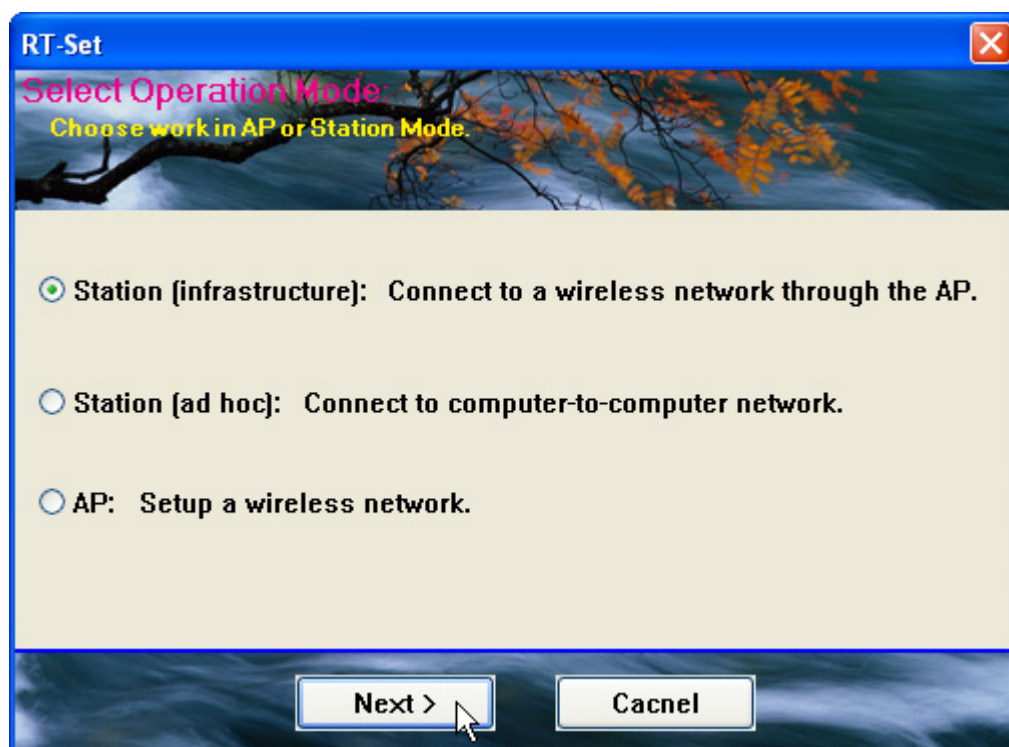
**Station mode (ad hoc):** Select this mode to connect to another wireless network adapter in your LAN.

**AP mode:** Select this mode to perform this adapter as an AP (access point).

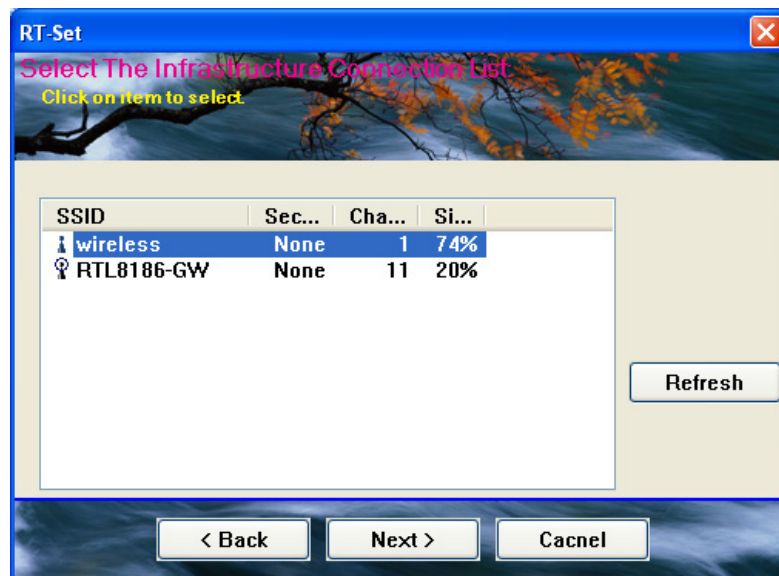
To start the RT-Set Wizard, please click the **"RT-Set"** tab on the up-left corner of the window

### Connect to a wireless network in infrastructure mode

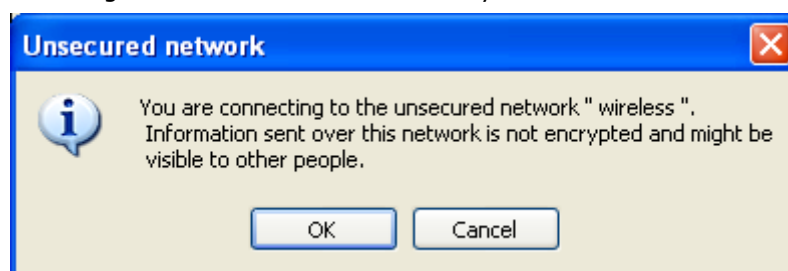
1. To connect this adapter to an AP, select the "Station (infrastructure)" mode and click the "Next" button to proceed.



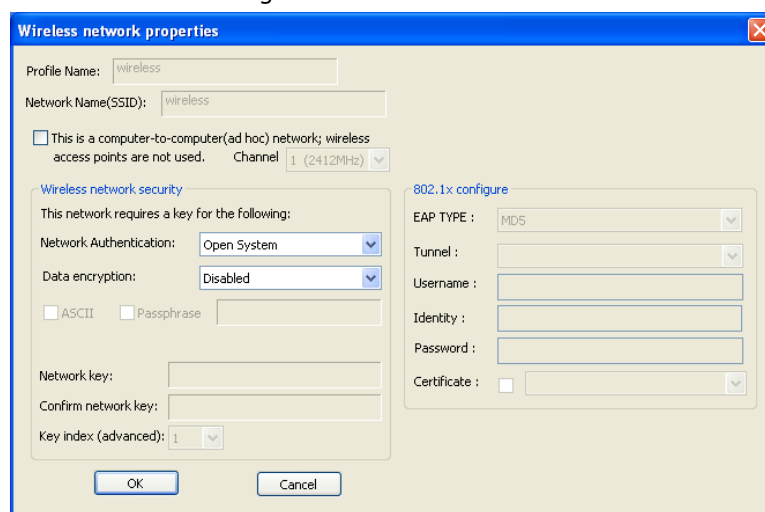
- The RT-Set scans the available AP within your LAN. Those AP are listed with their SSID. Click the wireless AP that you are going to connect with and then click the **"Next"** button. You may also click the "Refresh" button to scan wireless AP again.



- The "unsecured network" window may pop up if the AP you select doesn't use security encryption settings. Click the "OK" button after your confirmation.



- Click "OK" after configuring the profile content to be corresponding to the AP that you are going to connect with. If you are connecting to an AP without security encryption, please click "OK" button without configuration.



5. Configure the IP address for connecting to the network. You may choose "Use the following IP address" to fill in IP addresses manually or choose "Obtain an IP address automatically (recommend)".

RT-Set

Setup TCP/IP  
Chooses automatic or manual obtains IP

**TCP/IP**

☒ Obtain an IP address automatically

☐ Use the following IP address:

IP: . . .

MASK: 255 . 255 . 255 . 0

GATEWAY: . . .

**DNS**

☒ Obtain DNS server address automatically

☐ Use the following DNS server addresses:

Primary: . . .

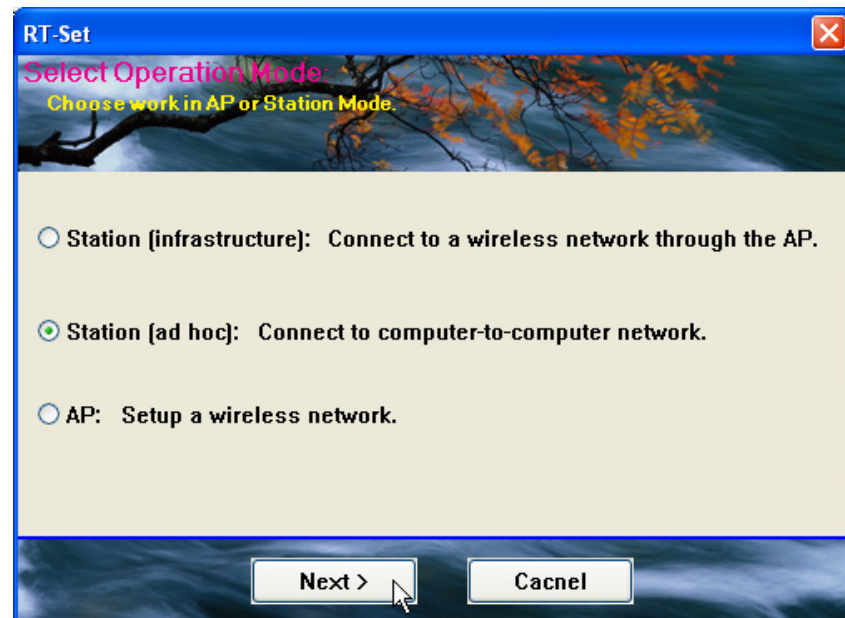
Sec: . . .

< Back      Finish

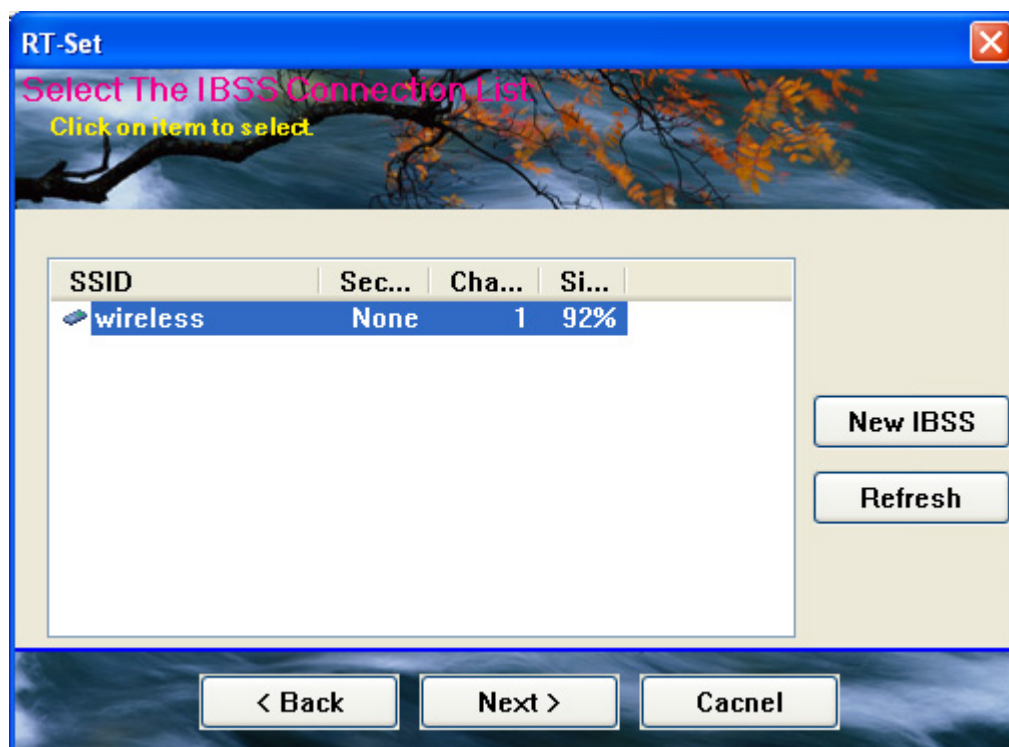
6. After configuring IP addresses, click the "Finish" button to complete.

## Connect to a wireless network in ad hoc mode

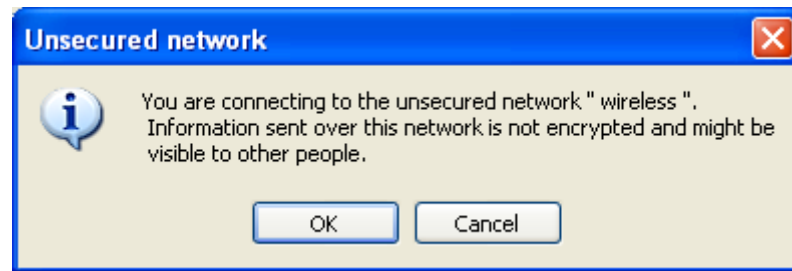
1. To connect this adapter to another computer, select the "Station (ad hoc)" mode and click the "Next" button to proceed.



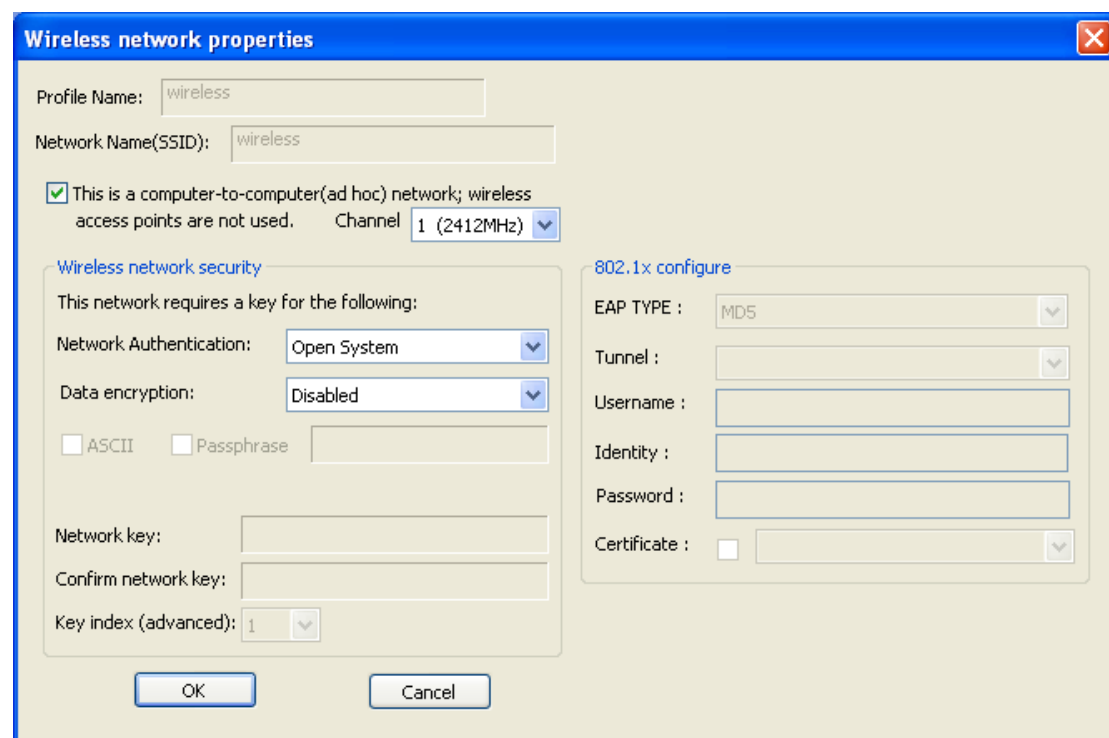
2. The RT-Set scans the available wireless adapters within your LAN. Those adapters are listed with their SSID. Click the one that you are going to connect with and then click the "Next" button. You may also click the "Refresh" button to scan wireless adapters again.



3. The "unsecured network" window may pop up if the adapter you select doesn't use security encryption settings. Click the "OK" button after your confirmation.



4. Click "OK" after configuring the profile content to be corresponding to the wireless adapter that you are going to connect with. If you are connecting to a wireless adapter without security encryption, please click "OK" button without configuration.



5. Configure the IP address for connecting to the wireless adapter. You may choose "Use the following IP address" to fill in IP addresses manually or choose "Obtain an IP address automatically".

**RT-Set**

**Setup TCP/IP:**  
Chooses automatic or manual obtains IP.

**TCP/IP**

☒ Obtain an IP address automatically

☐ Use the following IP address:

IP: . . .

MASK: 255 . 255 . 255 . 0

GATEWAY: . . .

**DNS**

☒ Obtain DNS server address automatically

☐ Use the following DNS server addresses:

Primary: . . .

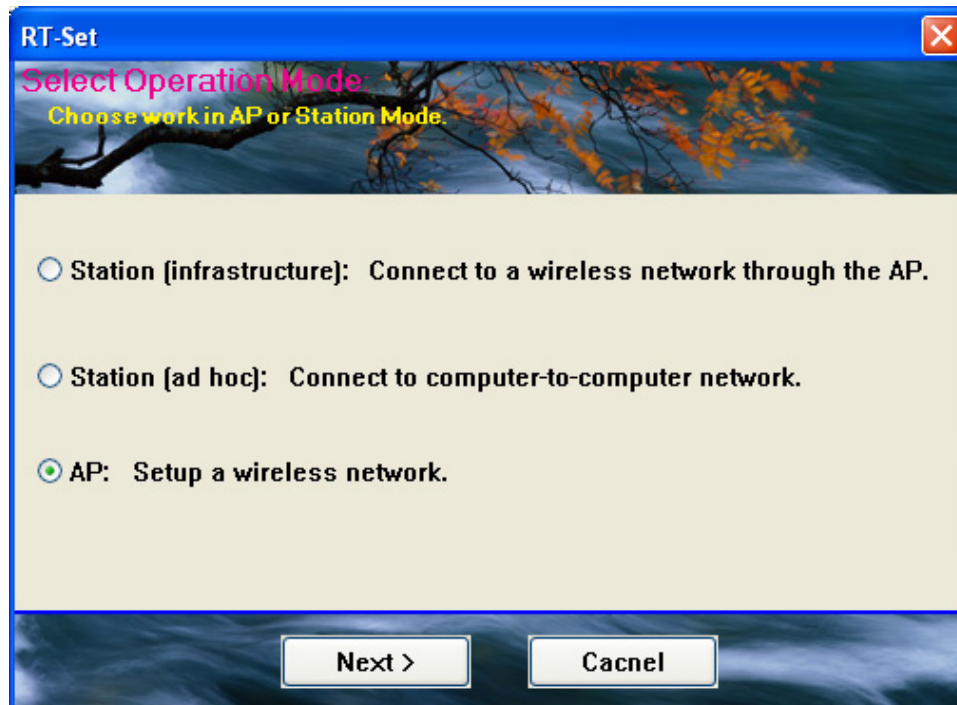
Sec: . . .

< Back      Finish

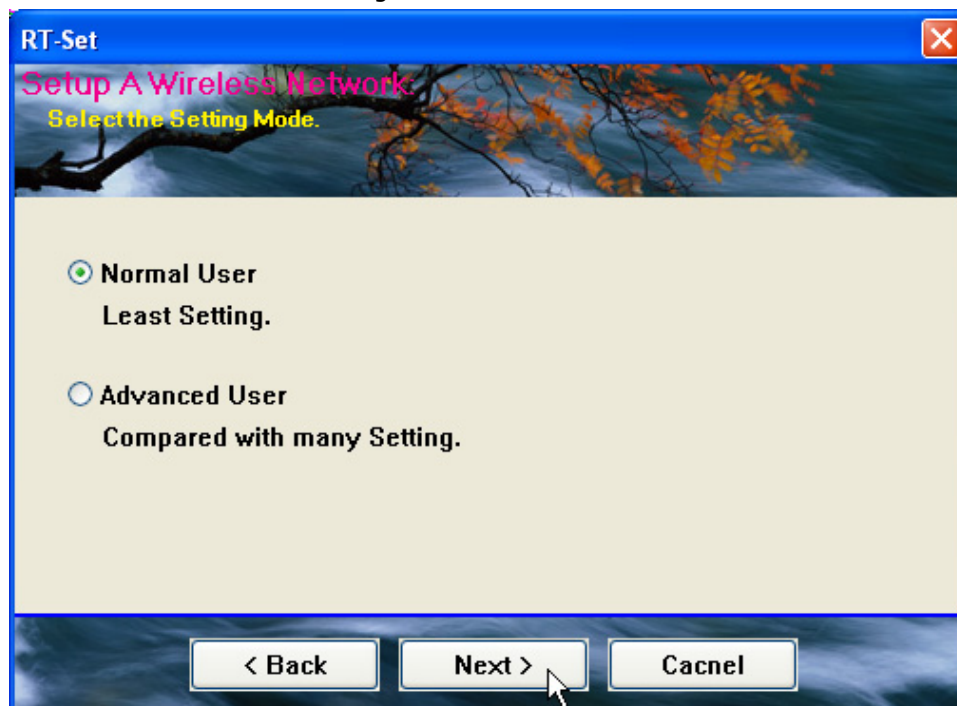


## Use this adapter as an AP

1. To use this adapter as an AP (access point), select the "AP" mode and click the "Next" button to proceed.



2. Select "Normal User" (recommend) to make an step-by-step configuration. You may also select "Advanced Users" to configure this AP with more detail.





3. Assign an SSID for this AP, which is the name that is going to be identified while other wireless devices scan for available network. Choose to use WEP encryption or not from the drop list and click "Next" to proceed.



The image shows a dialog box titled "RT-Set" with a blue header bar and a close button in the top right corner. The main area has a light beige background with a decorative header image of autumn leaves. The text "Wireless Network Properties" is in pink, and "Setting AP mode parameter." is in yellow. Below this, there is a text field for "Network Name(SSID):" containing the text "user-29fea547f0\_AP". A paragraph explains that the SSID can be discovered by network sniffing and is part of the packet header. Below that is a "WEP Encryption:" section with a dropdown menu set to "Disable". A paragraph explains that WEP makes 802.11b wireless LANs more secure. At the bottom, there are three buttons: "< Back", "Next >", and "Cacnel". A mouse cursor is pointing at the "Next >" button.

**RT-Set**

**Wireless Network Properties**  
Setting AP mode parameter.

Network Name(SSID):

The SSID can be discovered by network sniffing.  
By default, the SSID is part of the packet header  
for every packet sent over the WLAN.

WEP Encryption:

Wired Equivalent Privacy - makes 802.11b wireless LANs  
more secure. WEP is a protocol that adds security to  
wireless local area networks (WLANs) based on the  
802.11b standard.

< Back    Next >    Cacnel

4. Click the "Next" button after confirming those settings above.



The image shows a dialog box titled "RT-Set" with a blue header bar and a close button in the top right corner. The main area has a light beige background with a decorative header image of autumn leaves. The text "Show Setting Information" is in pink, and "Confirms the parameter." is in yellow. Below this, there is a text box containing the text "Network Name(SSID) : user-29fea547f0\_AP" and "Network Key :". At the bottom, there are three buttons: "< Back", "Next >", and "Cacnel". A mouse cursor is pointing at the "Next >" button.

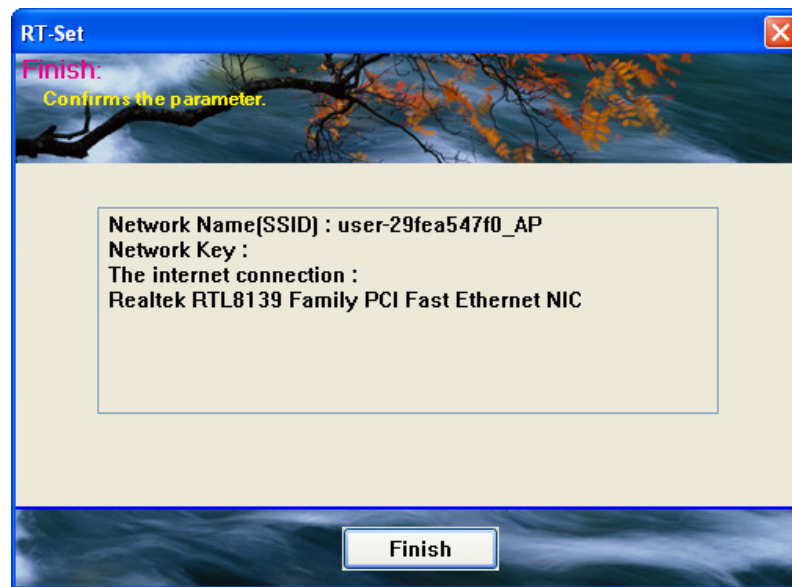
**RT-Set**

**Show Setting Information**  
Confirms the parameter.

Network Name(SSID) : user-29fea547f0\_AP  
Network Key :

< Back    Next >    Cacnel

5. Click "Finish" to complete setup.



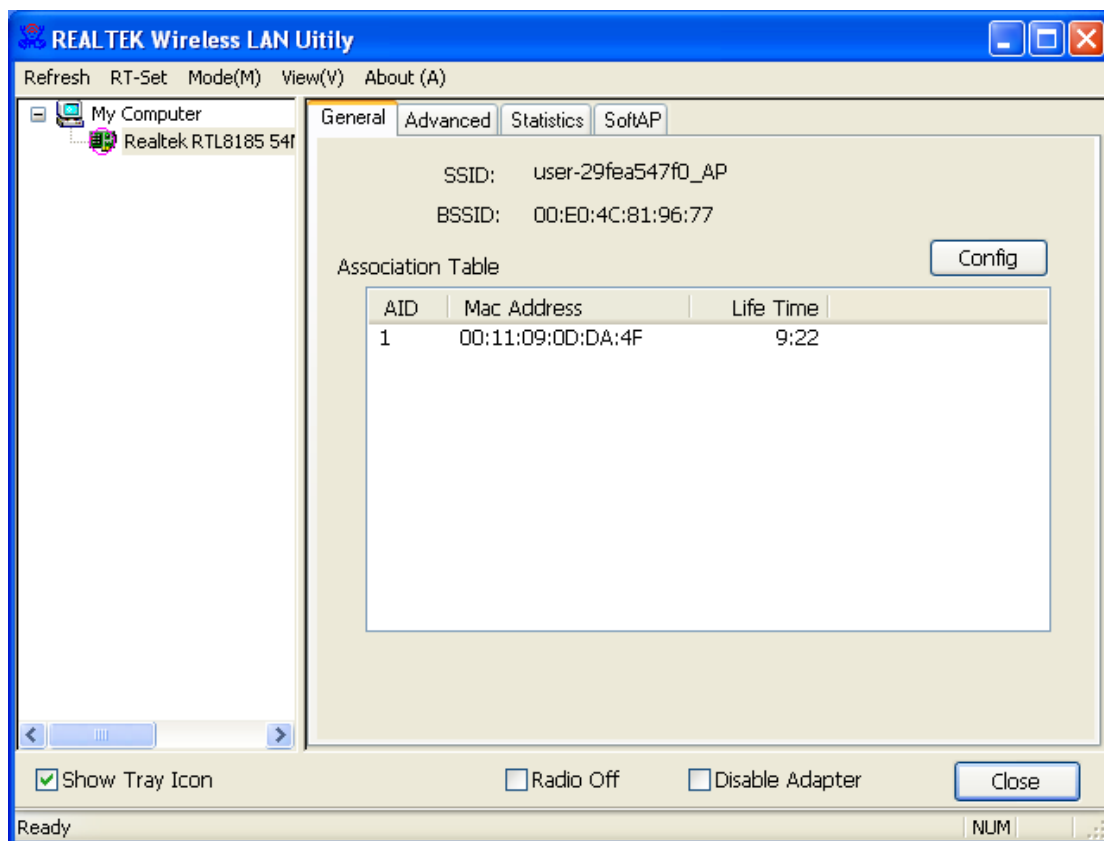
# AP mode management guide

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## General

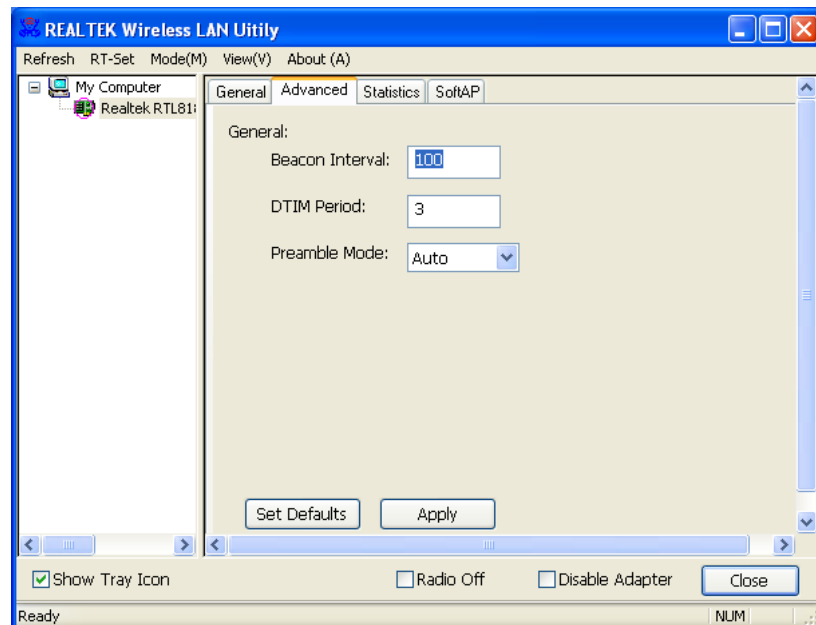
After configuring the adapter in AP mode, this “**General**” page shows up, which shows the general information of this AP.

- SSID:** The SSID (network name) of the wireless network constructed by this AP.
- BSSID:** The MAC address of this AP
- Config:** Click this button to change configurations to this AP
- Association Table:** Shows the information of those devices that associated with this AP including their MAC addresses and the time that they connected with this device.



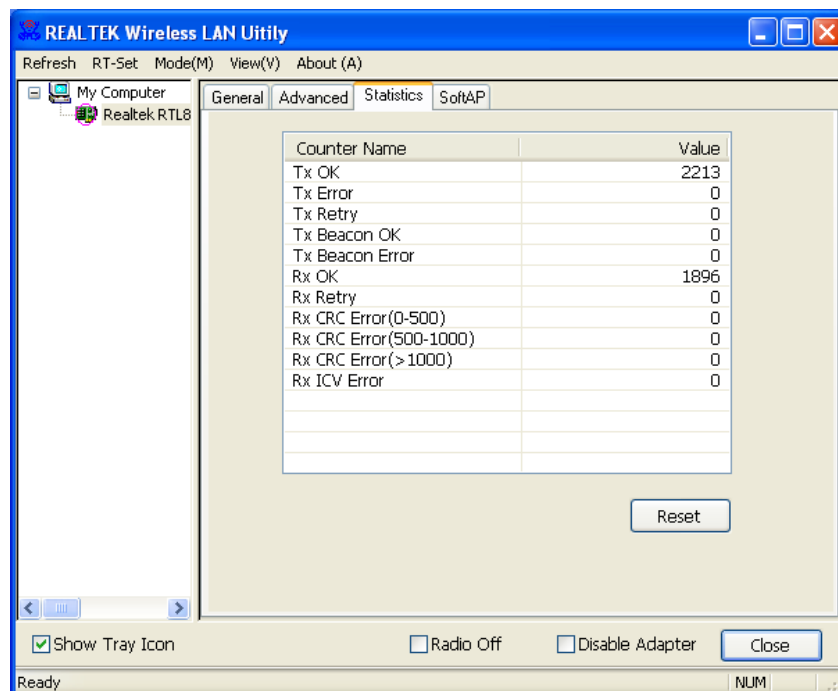
## Advanced

- Beacon Interval:** Define the interval between beacons from 20~1000  
**DTIM Period:** Set the DTIM period between 1~255  
**Preamble Mode:** Click the drop list to select the preamble to be long, short or auto  
**Set Defaults:** Click this button to restore the settings above to default  
**Apply:** Click this button to execute changes.



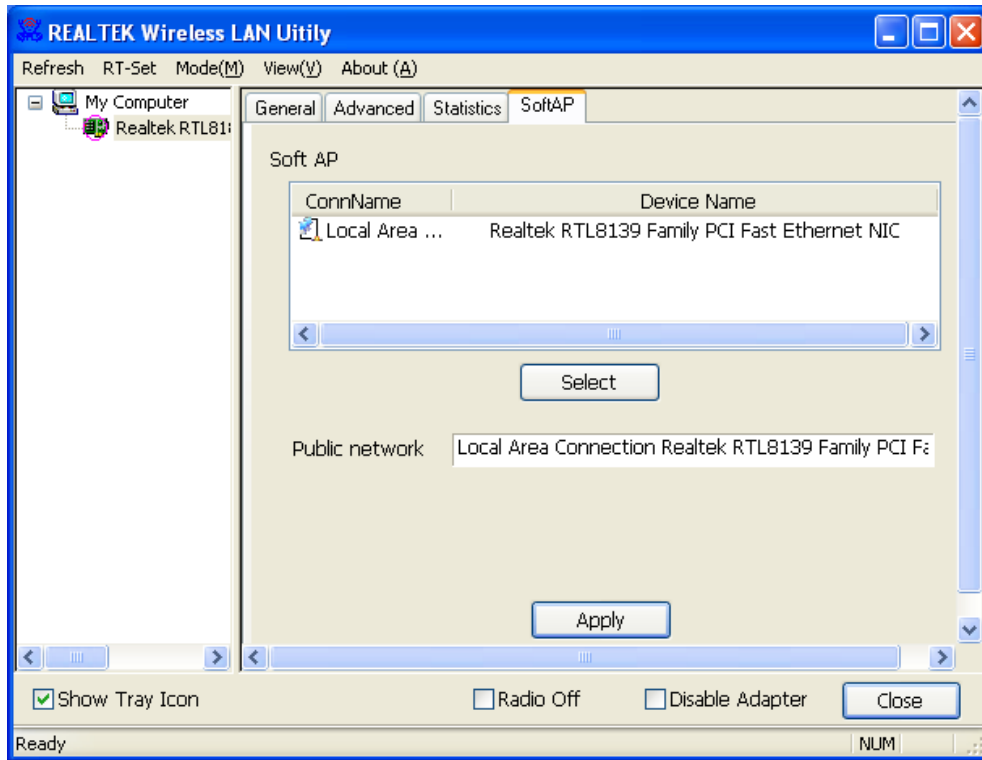
## Statistics

See this tab to show the transmission activity record. Clicking the **"Reset"** button recounts the values from zero.



## SoftAP

This page allows users to select the adapter for connect to public network.  
Please click on the device that are used for connecting to public network and click the **"Select"** button, and then click the **"Apply"** button to execute.



# Product Specification

## Standard

IEEE 802.11b, IEEE 802.11g

## Interface

32-Bit CardBus Type II

## Security

64/128-bit WEP, WPA (TKIP with IEEE 802.1x), AES

## Receiver Sensitivity

54Mbps OFDM, 10%PER, -68dBm

11Mbps CCK, 8%PER, -86dBm

1Mbps BPSK, 8%PER, -92dBm

## Channel

USA 11, Europe 13

## Data Rate

802.11b: 1, 2, 5.5 and 11Mbps

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

## Transmit Power

16dBm~18dBm

## Range Coverage

Indoor 35~100 meters

Outdoor 100~300meters

## LED indicator

Link(Green)

## Operating Temperature

0- 40 °C (32 – 104 °C)

## Operating Humidity

10% ~ 90% (non-condensing)

## Emission

FCC Class B, CE