

IEEE 802.11n draft 2.0 Mini PCI Adapter

User's Manual

December 2007

FCC Warning

This equipment has been tested and found to comply with the limits for a Class C 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 communication. 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
- Consult the dealer or an experienced radio/TV technician for help. the receiver is connected.

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

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

IMPORTANT NOTE:

FCC Radiation Exposure Statement:

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with a minimum distance of about eight inches (20cm) between the radiator and your body.

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

Modular Approval Statement:

This device is intended to be used only for OEM integrator under the following conditions:

- 1) The antenna must be installed such that 20 cm is maintained between the antenna and users, and
- 2) The transmitter module may not be co-located with any other transmitter or antenna.

IMPORTANT NOTE:

In the event that these conditions cannot be met (for example certain laptop configurations or co-location with another transmitter), then the FCC authorization is no longer considered valid and the FCC ID cannot be used on the final product. In these circumstances, the OEM integrator will be responsible for re-evaluating the end product (including the transmitter) and obtaining a separate FCC authorization.

Revision History

Revision	History
V1.0	First release

All brand and product names mentioned in this manual are trademarks and/or registered trademarks of their respective holders.

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1. Introduction

This is a wireless 11n Mini PCI Adapter that provides unsurpassed wireless performance for your Desktop PC or Notebook. It complies with IEEE 802.11n draft 2.0 wireless standard and is backward compatible with IEEE 802.11b/g. This Mini PCI adapter provides better wireless reception and up to 300Mbps data transfer rates in 11n mode. With this adapter, you can easily upgrade your Desktop PC or Notebook wireless connectivity. Once connected, to access the network with high-speed Internet connection while sharing photos, files, music, video, printers, and storage. Get a better Internet experience with a faster wireless connection so you can enjoy smooth digital phone calls, gaming, downloading, and video streaming.

The Wireless Mini PCI adapter provides peer-to-peer communication among any compatible wireless client users and no Access Point required. Otherwise, it provides maximum transfer rate up to 150Mbps and supports WEP, WPA, WPA2, WPS, 802.1x high-level WLAN security features that guarantee the best security for users..

This product is made in ISO9001 approved factory and complies with FCC part 15 regulations and CE approval.

1.1 Features

- Complies with draft IEEE 802.11n standard
- Up to 300Mbps data transfer rates in IEEE 802.11n mode
- Backward compatible with IEEE 802.11b/g
- Legacy and High Throughput Modes
- Supports 64/128-bit WEP Data Encryption
- Supports WPA, WPA2 (802.11i), WPS, 802.1x advanced security
- Supports Quality of Service (QoS) - WMM, WMM-PS
- Supports both Infrastructure and Ad-Hoc Networking Modes
- Supports Multiple BSSID
- Simple user setup and diagnostics utilities

1.2 Package Contents

- One Wireless Mini PCI adapter
- One CD-ROM (Drivers, Utility, User's Manual)

1.3 Before you start

You must have the requirements as follow,

- At least a 300MHz processor and 32MB memory
- Windows 2000/XP/Vista
- A CD-ROM drive
- Wireless Mini PCI Adapter properly installed

2. Installation Procedure

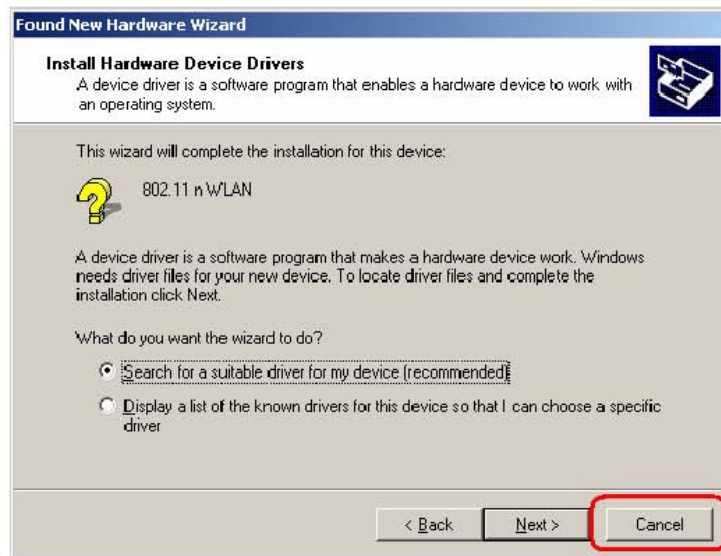
Note: If you have installed the Wireless Adapter driver & utility before, please **uninstall the old version first.**

2.1 For Windows XP and 2000

STEP1: Found New Hardware Wizard is displayed after the adapter is installed and the computer is restarted. Please click **Cancel** to continue.



(For Windows XP)

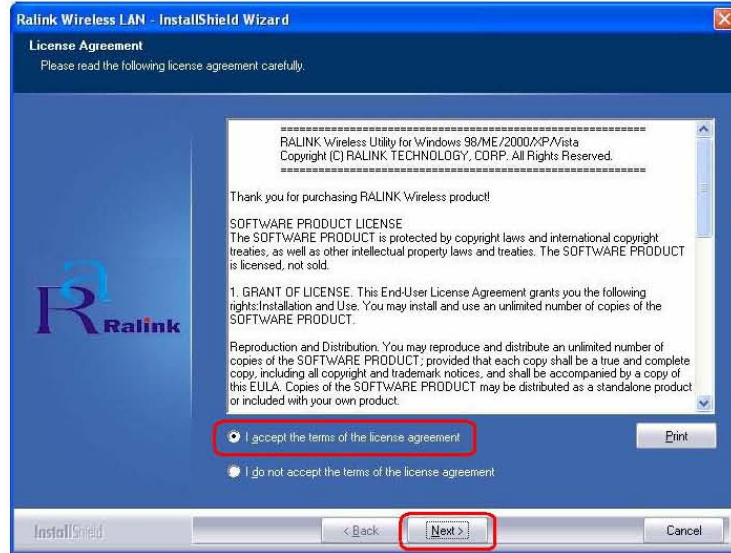


(For Windows 2000)

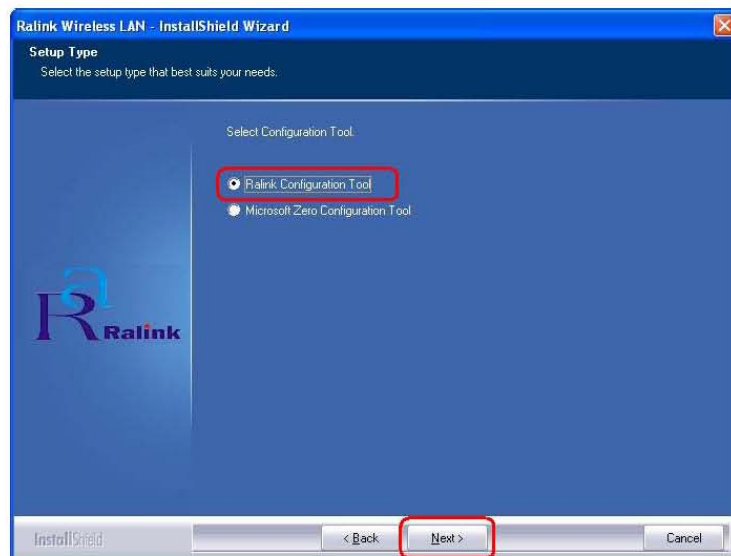
STEP2: Insert Installation CD into CD-ROM drive then windows below will appear. Click **Install Driver** to begin device driver installation.



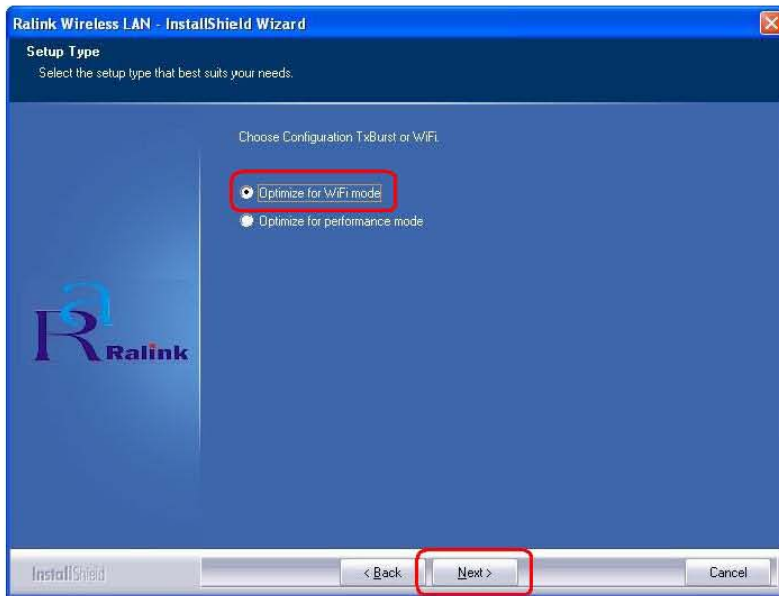
STEP3: Please read the following license agreement. Use the scroll bar to view the rest of this agreement. Select **I accept the terms of the license agreement** and click **Next** to continue.



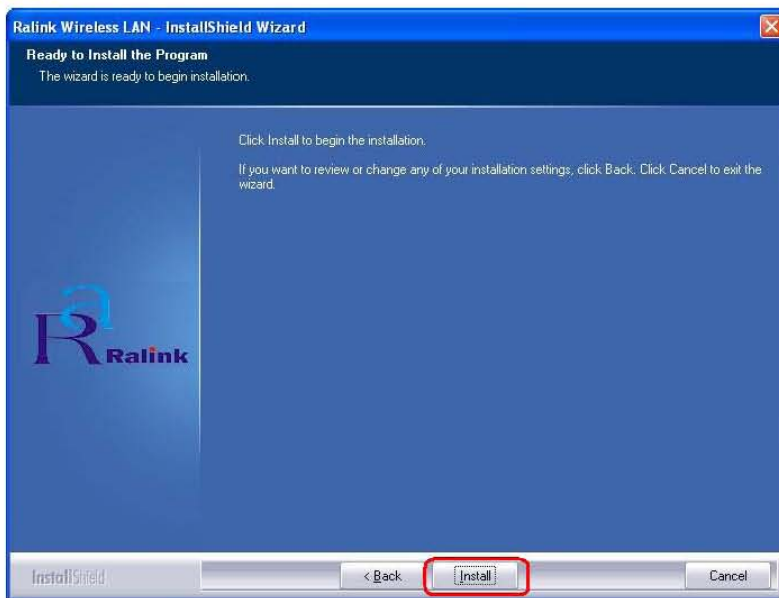
STEP4: In Windows XP, there is a **Windows Zero Configuration Tool** for you to setup wireless adapter. You can choose to configure the adapter through the **Microsoft Zero Configuration Tool** or the **Ralink Configuration Tool**. It is recommended to choose the **Ralink Configuration Tool** for the adapter. Click **Next** to continue.



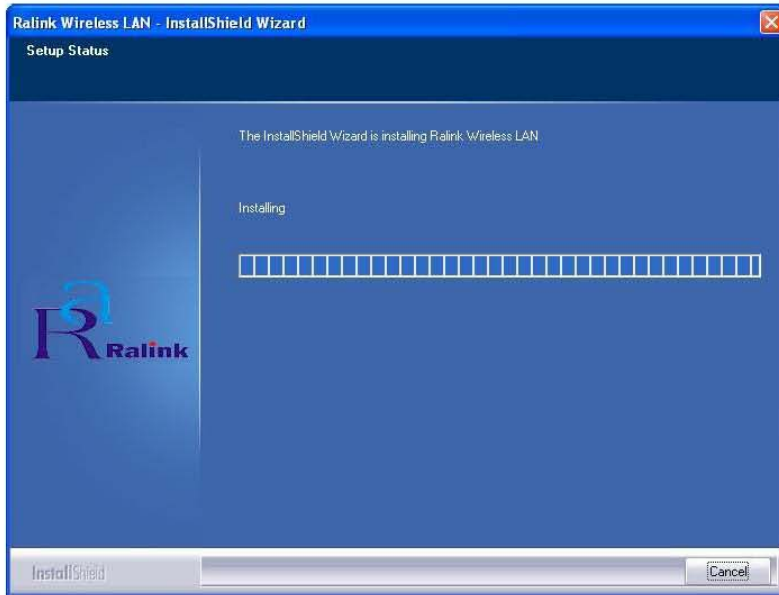
STEP5: If you need the adapter to operate with better performance, please choose **Optimize for performance mode** to enable the **Tx Burst mode**. Or you can choose **Optimize for WiFi mode** to run in standard wireless network.



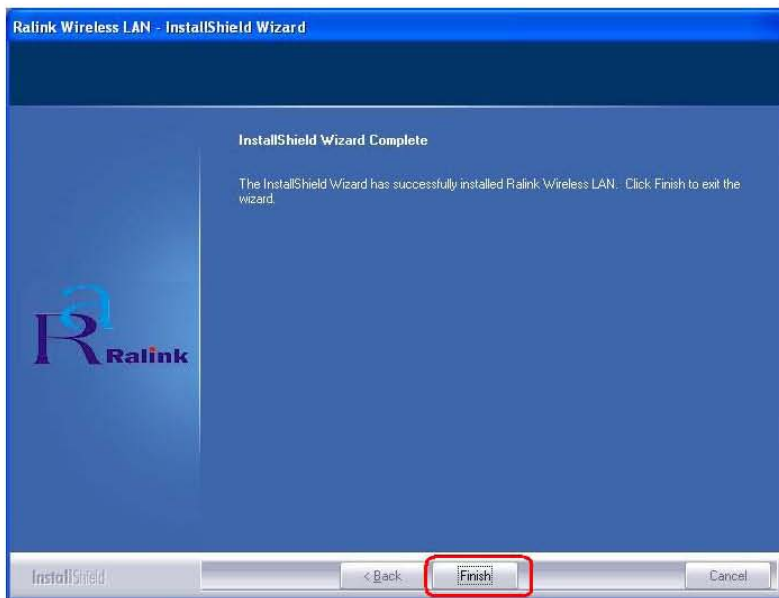
STEP6: Click **Install** to begin the installation.



STEP7: Please wait for a while during the adapter is configuring your new software installation.



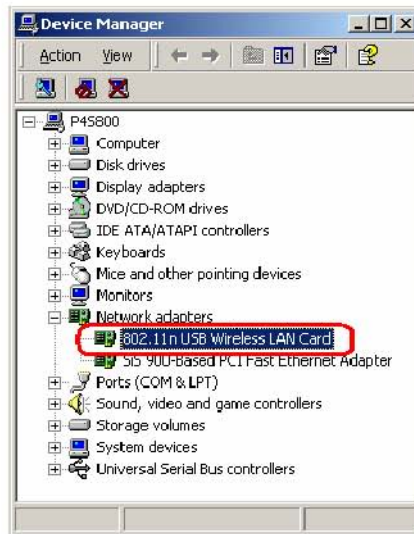
STEP8: After the setup wizard has successfully installed wireless LAN, click **Finish** to exit the wizard.




To check if the adapter is properly installed, you can right-click **My Computer** → choose **Properties** → click **Device Manager**.



(For Windows XP)

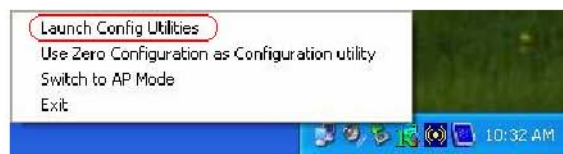


(For Windows 2000)

The Configuration Utility appears as an icon on the system tray of Windows while the adapter is running. You can open the utility by double-click on the icon. 

Right-click the icon, there are some items for you to operate the configuration utility,

- **Launch Config Utilities** → Select this option to open the Configuration Utility tool.
- **Use Zero Configuration as Configuration utility** → Select this option to use Windows XP built-in wireless configuration utility (Windows Zero Configuration) to configure to card.
- **Switch to AP Mode** → Select this option to change to AP mode.
- **Exit** → Select **Exit** to close the Configuration Utility tool.



2.2 For Vista

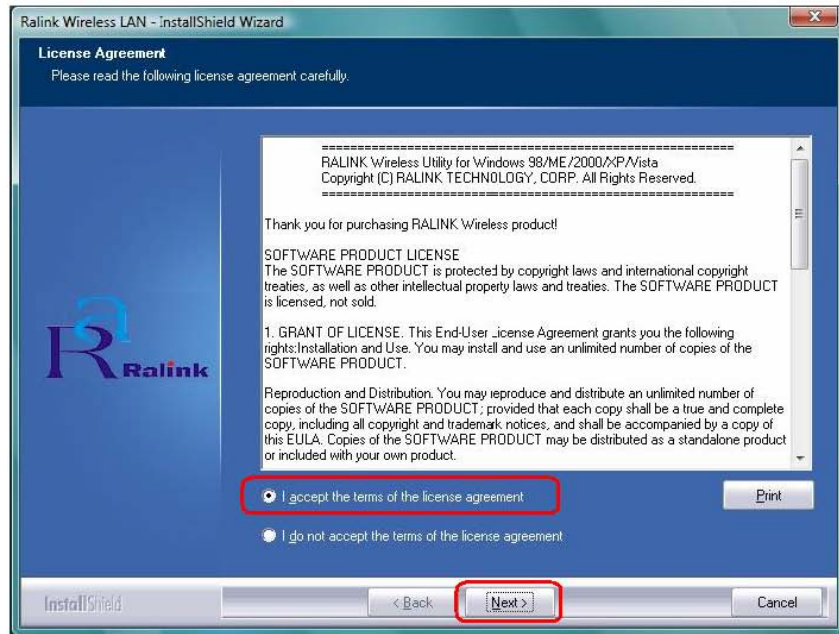
STEP1: Found New Hardware Wizard is displayed after the adapter is installed and the computer is restarted. Please click **Cancel** to continue.



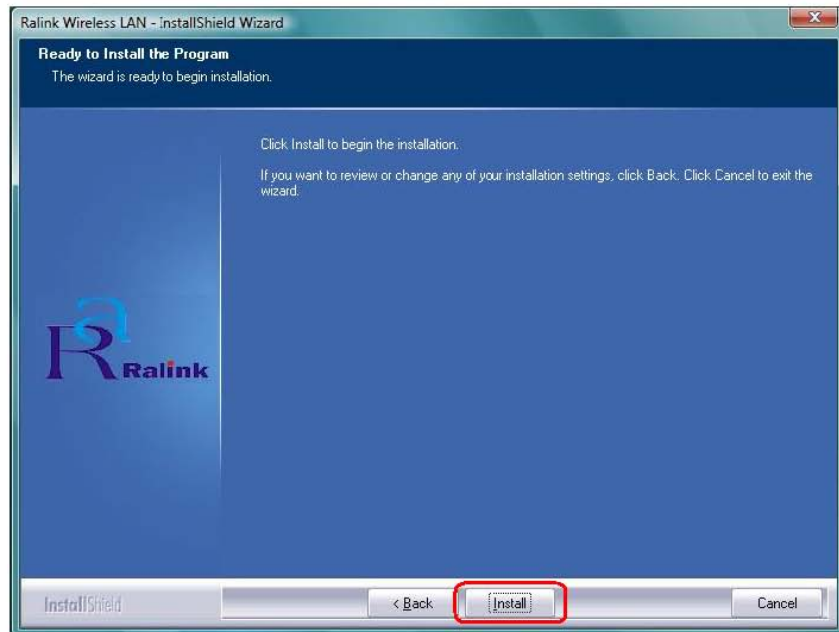
STEP2: Insert Installation CD into CD-ROM drive then windows below will appear. Click **Install Driver** to begin device driver installation.



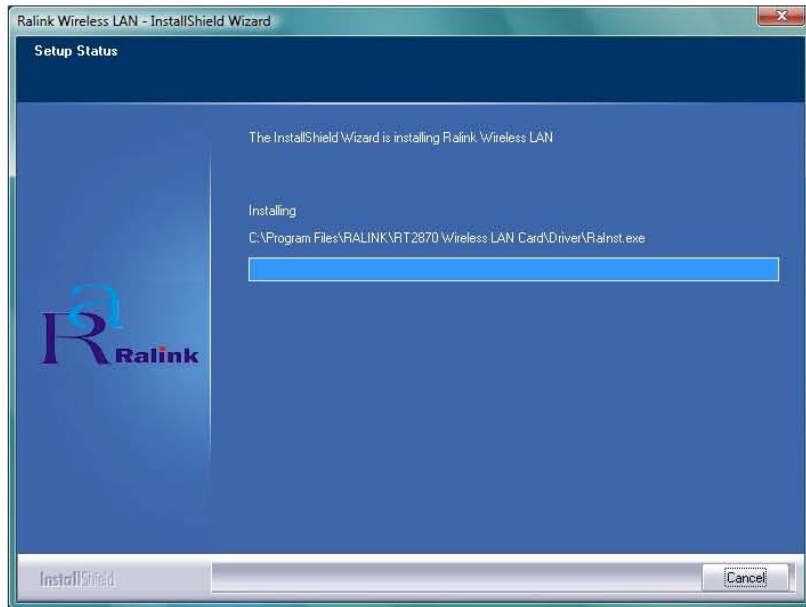
STEP3: Please read the following license agreement. Use the scroll bar to view the rest of this agreement. Select **I accept the terms of the license agreement** and click **Next** to continue.



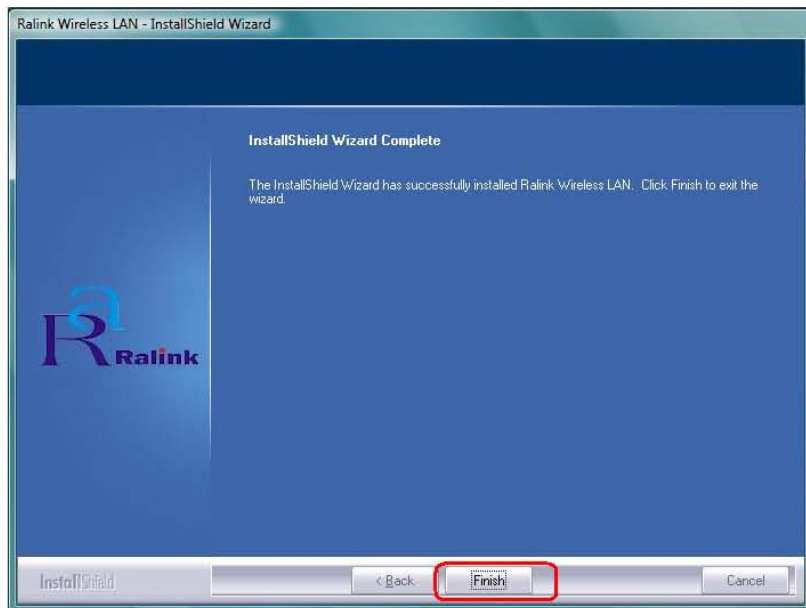
STEP4: Click **Install** to begin the installation.



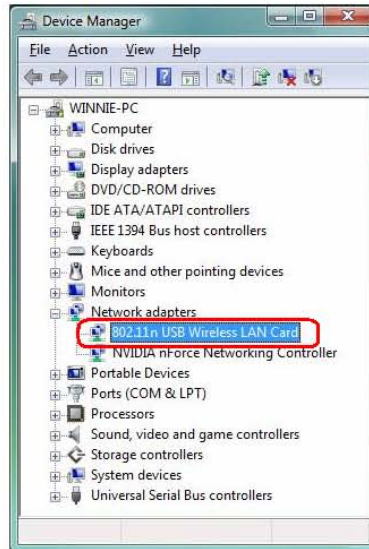
STEP5: Please wait for a while during the adapter is configuring your new software installation.




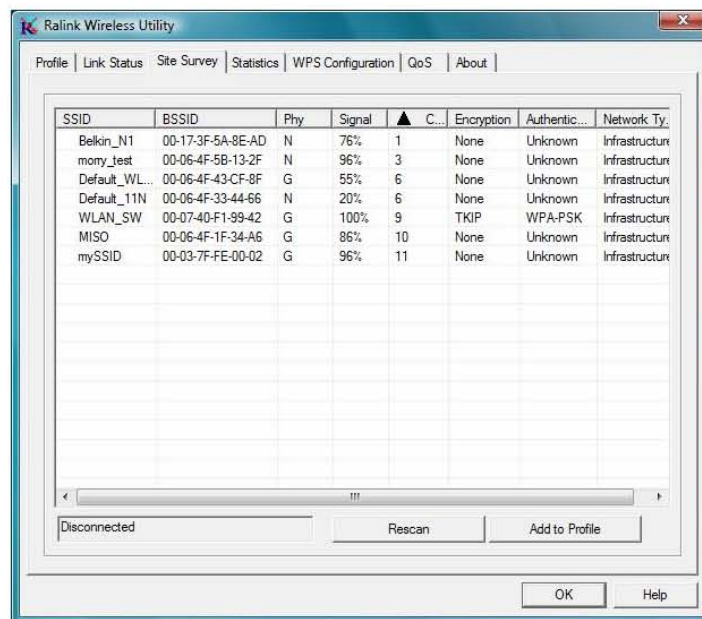
STEP8: After the setup wizard has successfully installed wireless LAN, click **Finish** to exit the wizard.



To check if the adapter is properly installed, you can right-click **My Computer** → choose **Properties** → click **Device Manager**.



The Configuration Utility appears as an icon on the system tray of Windows while the adapter is running. You can open the utility by double-click on the icon. 



Ralink wireless utility needs to cooperate with Microsoft AutoConfig service in order to perform scanning and connecting actions, so the AutoConfig service should be enable beforehand.



Control Menu → Once Ralink wireless utility is minimized, the user can click the Ralink icon on the taskbar to bring up the control menu.

- **Launch Config Utilities** → Restore Ralink wireless utility window.
- **Switch to AP Mode** → Select this option to change to AP mode.
- **Exit** → Select **Exit** to close the Configuration Utility tool.

3. Wireless Network Configuration Utility

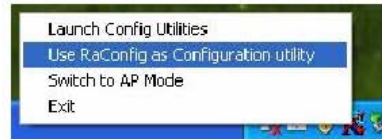
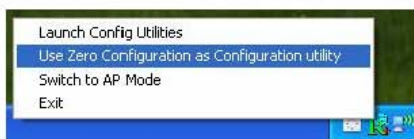
3.1 For Windows XP & 2000

The Configuration Utility is a powerful application that helps you to configure the Wireless LAN adapter and monitor the link status and statistics during the communication process.

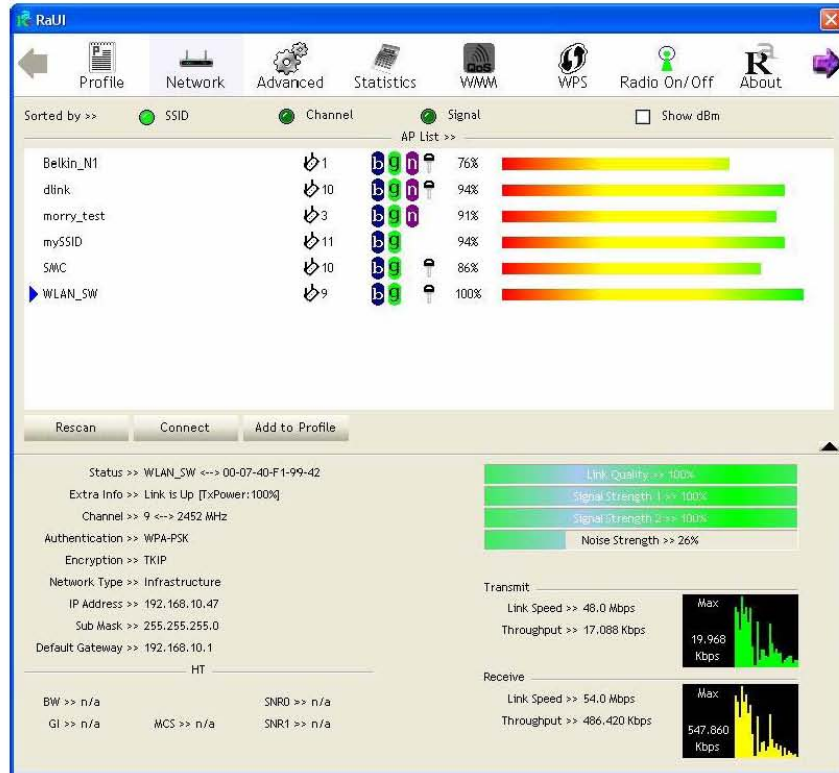
When the adapter is installed, the configuration utility will be displayed automatically. This adapter will auto connect to wireless device which has better signal strength and no wireless security setting.

In Windows XP, it provides wireless configuration utility named "Windows Zero configuration" which provides basic configuration function for Ralink Wireless NIC, Ralink's Utility (RaUI) provides WPA supplicant functionality. To make it easier for user to select the correct utility, RaUI will let user make the selection when it first runs after windows XP boots.

RaUI can co-exist with **WZC (Windows Zero Configuration)**. When coexisting with WZC, RaUI only provides monitoring function, such as link status, network status, statistic counters, advance feature status, WMM status and WPS status. It won't interfere with WZC's configuration or profile functions. Please see below picture: To select WZC or RaUI



If "Use Zero Configurations as Configuration utility" is selected, please continue on the section. Below picture shows that the RaUI status when WZC is active as main control utility.



When activating WZC, there are couple different on RaUI status compare to the without WZC running:

- (1) **Profile** button will be gray, profile function is removed since the NIC is controlled by WZC.
- (2) The **connect** and **add profile** function will be gray. The reason is same as the first difference.

[Use WZC to configure wireless adapter]

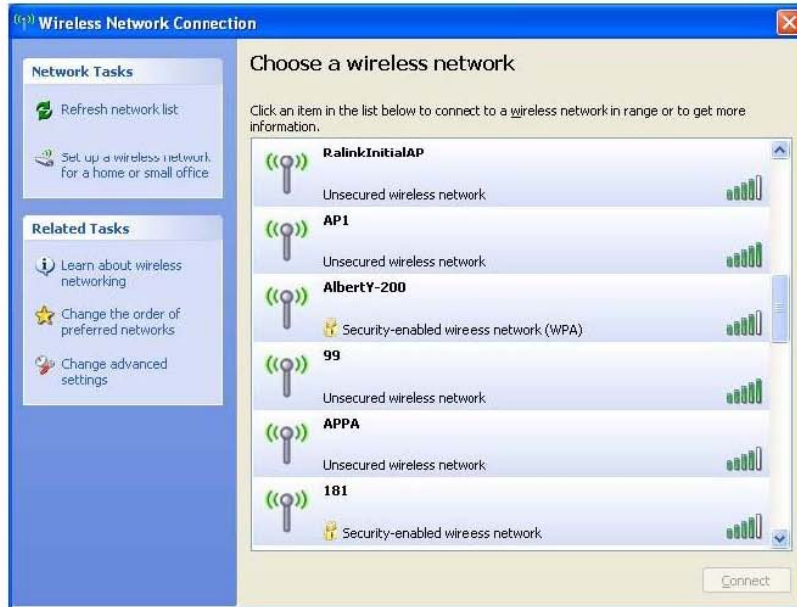
STEP1: If connection is lost or not connected, the status prompt as below will pop up.



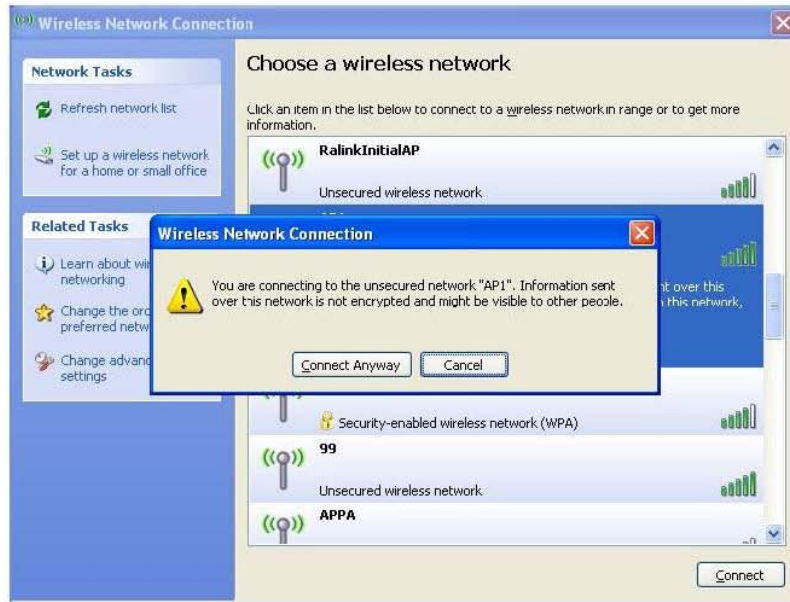
STEP2: Right-click the network connection icon in the task bar.



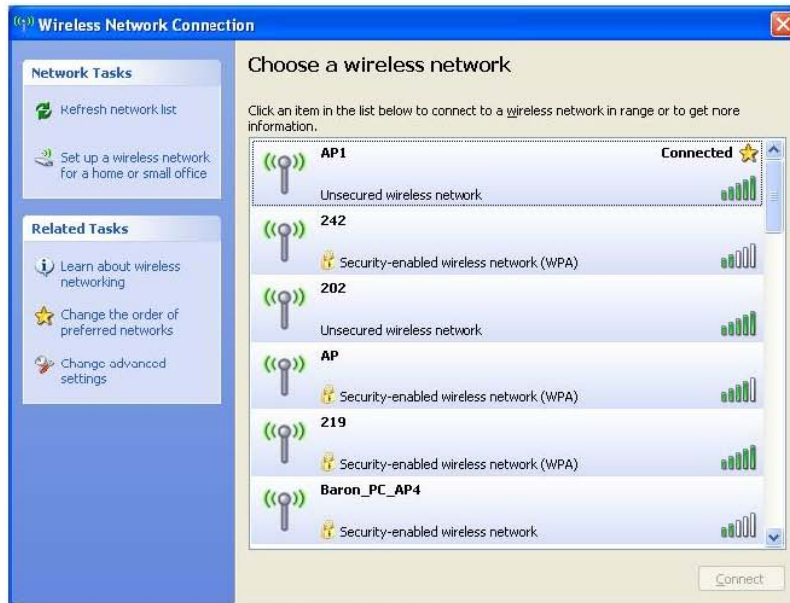
STEP3: Select "View Available Wireless Networks" will pop up the dialog shown as below.



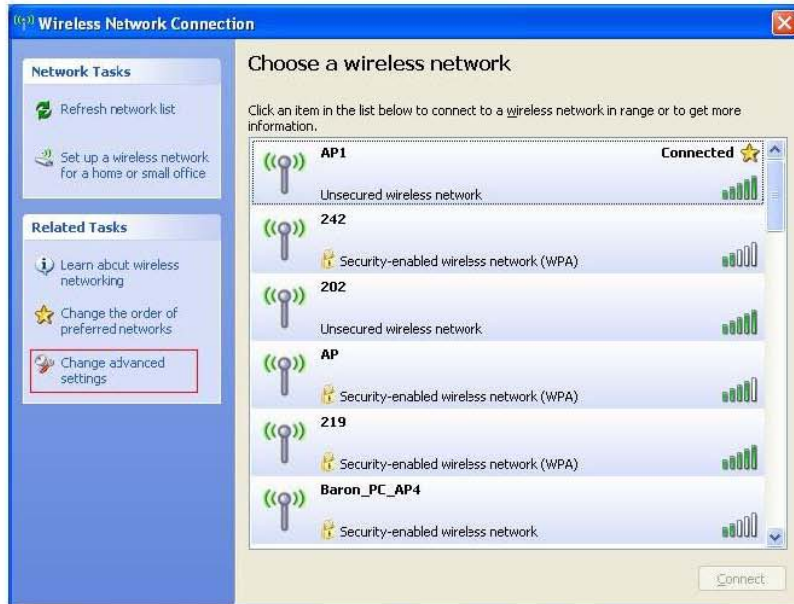
STEP4: Select intended AP and click "**Connect**" shown as below, then click "**Connect Anyway**".



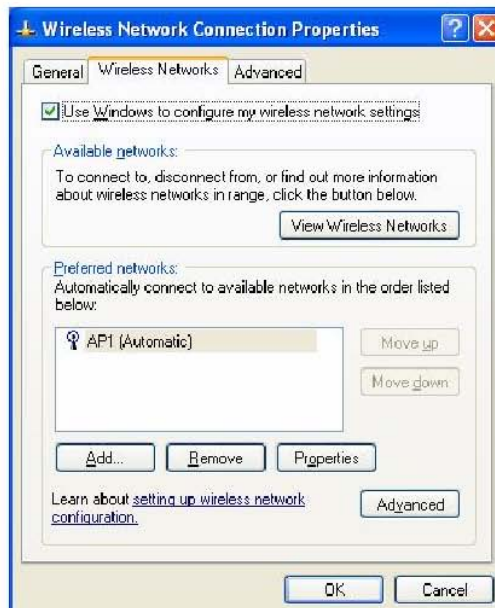
STEP5: AP1 is successful connected.



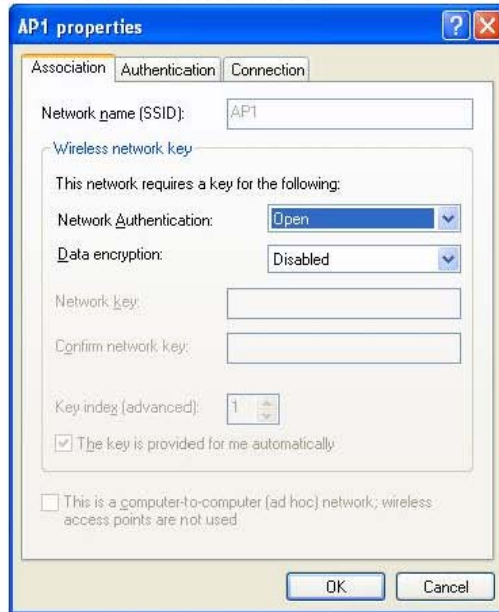
STEP6: If you want to modify information about AP, click "Change advanced settings"



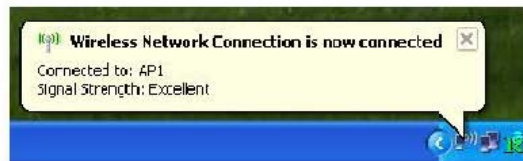
STEP7: Choose "Wireless Networks" tab.



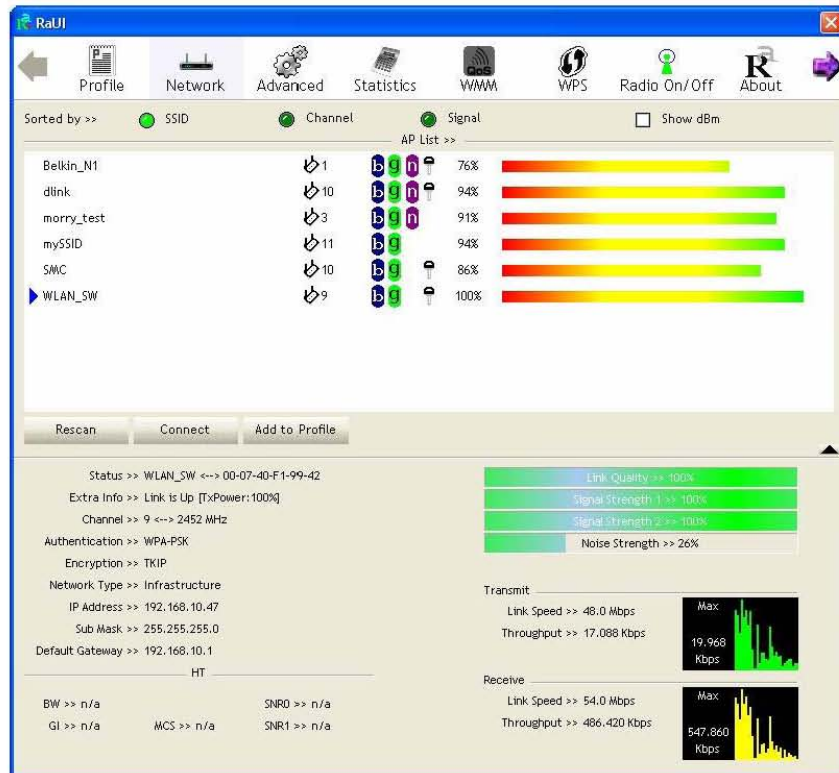
STEP8: Click "**Properties**" and then click "**OK**" button.



STEP9: After filling appropriate value, click "**OK**" button. And the status will prompt up as below.

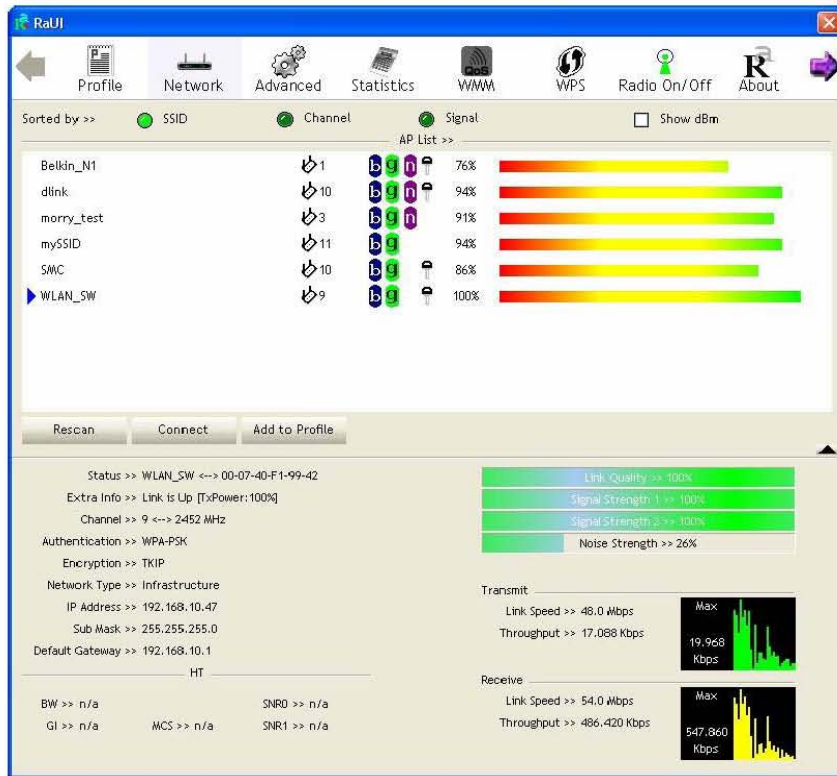


STEP10: Click the Ralink's icon will bring up RaUI main window. User can find the surrounding APs in the list. The current connected AP will also shown with the green icon indicated as below screen. User may use the available tab to configure more advanced features provided by Ralink's wireless NIC.



3.1.1 Start

When starting RaUI, system will connect to the AP with best signal strength without setting profile or matching profile setting. It will issue a scan command to wireless NIC. After two seconds, the AP list will updated with the result of BSS list scan. The AP list include most used fields, such as SSID, network type, channel used, wireless mode, security status and signal percentage. The arrow icon indicates the connected BSS or IBSS network.



There are three sections in RaUI. These sections are briefly described as below.

- **Button Section:** include Profile page, Network page, Advanced page, Statistics page, WMM page, WPS page, About button, Radio On/Off button and Help button.

➔ **Button Section**



➔ **Move to the Left**



➔ **Move to the Right**



■ **Function Section: Corresponding button**

→ **Profile Page**

Profile List

Profile Name >>

SSID >>

Network Type >>

Authentication >>

Encryption >>

Use 802.1x >>

Channel >>

Power Save Mode >>

Tx Power >>

RTS Threshold >>

Fragment Threshold >>

Add Edit Delete Activate

→ **Network Page**

Sorted by >> SSID Channel Signal Show dBm

AP List >>

SSID	Channel	Signal	Strength (%)
_Shiang_2860AP	11	b/g/n	81%
aaa	3	b/g	55%
AlbertY-200	6	b/g	76%
AP	1	b/g	55%
AP1	6	b/g/n	100%
APPA	6	b/g/n	70%
asus	11	b/g	81%
Broadcom	11	b/g	81%
Buffalo 54	11	b/g	76%
Cobra	6	b/g	34%

Rescan Connect Add to Profile

→ **Advanced Page**

Wireless mode >> 802.11 B/G/N mix

Enable TX Burst

Enable TCP Window Size

Fast Roaming at -70 dBm

Show Authentication Status Dialog

Select Your Country Region Code

11 B/G >> 0: CH1-11

Enable CCX (Cisco Compatible eXtensions)

Turn on CCKM

Enable Radio Measurements

Non-Serving Channel Measurements Limit 250 ms (0-2000)

Apply

