

WLAN 802.11a/b/g USB 2.0 Adapter

User's Guide

Version: 1.0 — Sep. 2004

Copyright Statement

No part of this publication may be reproduced, stored in a retrieval system, or transmitted in any form or by any means, whether electronic, mechanical, photocopying, recording or otherwise without the prior writing of the publisher.

Windows[™] 2000/XP are trademarks of Microsoft[®] Corp.

Atheros is a registered trademark of Atheros Communications, Inc.

All copyright reserved.

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. To maintain compliance with FCC RF exposure compliance requirements, please avoid direct contact to the transmitting antenna during transmitting. For operation within 5.15 ~ 5.25GHz frequency range, it is restricted to indoor environment. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

Wistron NeWeb Corp. declares that this product is limited in CH1~CH11 by specified firmware controlled in the USA.

Highest SAR test value: 1.55W/kg

Table of Contents

REGULATORY INFORMATION.....	錯誤! 尚未定義書籤。
1. WELCOME.....	5
1.1 KIT CONTENTS.....	5
1.2 MAIN FEATURES OF 802.11A/B/G USB 2.0 ADAPTER	5
1.3 WIRELESS NETWORKING SCENARIOS.....	6
2. QUICK START GUIDE	8
2.1 INSTALLATION.....	8
2.2 CONNECTING TO AN EXISTING NETWORK.....	9
3. STEP-BY-STEP INSTRUCTIONS.....	10
3.1 INSTALLATION.....	10
3.2 CONNECTING TO A NETWORK	15
3.3 CREATING AN AD HOC NETWORK	19
3.4 REMOVING YOUR 802.11 A/B/G USB 2.0 ADAPTER.....	21
3.5 UNINSTALLATION.....	22
4. USING THE UTILITY	24
4.1 CURRENT STATUS	24
4.2 DIAGNOSTICS	25
4.3 PROFILE MANAGEMENT	27
4.3.1 <i>Creating or Modifying a Configuration Profile</i>	28
4.3.2 <i>Removing a Profile</i>	30
4.3.3 <i>Profile Auto Selection</i>	31
4.3.4 <i>Switching Profiles</i>	32
4.4 SECURITY.....	33
4.4.1 <i>Using EAP-TLS Security</i>	33
4.4.2 <i>Enabling EAP-TLS Security</i>	34
4.4.3 <i>Using EAP-TTLS Security</i>	35
4.4.4 <i>Enabling EAP-TTLS Security</i>	36
4.4.5 <i>Using PEAP(EAP-GTC) Security</i>	37
4.4.6 <i>Enabling PEAP(EAP-GTC) Security</i>	38
4.4.7 <i>Using PEAP-MSCHAP V2 Security</i>	39
4.4.8 <i>Enabling PEAP- MSCHAP V2 Security</i>	40
4.4.9 <i>Using LEAP Security</i>	41
4.4.10 <i>Configuring LEAP</i>	41

4.4.11 Using WPA Passphrase Security	43
4.4.12 Using Pre-Shared Key (Static WEP) Security.....	44
4.5 DISPLAY SETTING	45
4.6 ACTIONS TOOLS	45
5. RIGHT CLICKING THE TRAY ICON	46
6. NETWORK APPLICATION.....	47
6.1 SURVEYING THE NETWORK NEIGHBORHOOD.....	47
6.2 FILE SHARING	48
6.3 USING THE SHARED FOLDER.....	49

1. Welcome

Thank you for purchasing our 802.11a/b/g USB 2.0 Adapter, and welcome to Wireless LAN—the easy way to wireless networking.

This user's guide introduces to you the 802.11a/b/g USB 2.0 Adapter and describes the most common configurations, which will help you connect to your network easily. Please read this manual to get familiar with the IEEE802.11a/b/g Wireless LAN. This manual contains detailed instructions in operation of this product. Please keep this manual for future reference.

As this product is designed to run under Microsoft Windows, it is recommended that to be installed by people who are familiar with the installation procedures for network operating systems under Microsoft Windows.

1.1 Kit Contents

The 802.11a/b/g USB 2.0 Adapter kit should include the following items: One 802.11a/b/g USB 2.0 Adapter with USB cable, one CD and one Quick Start Guide.

- One 802.11a/b/g USB 2.0 Adapter
- One Software CD including:
 - (1) Utility & Driver Installation Software
 - (2) User Manual PDF File
- Quick Start Guide

1.2 Main Features of 802.11a/b/g USB 2.0 Adapter

Status LED:

- **Off:** Power Off.
- **Blinking:** The USB adapter is powered on but no wireless connection is made yet.
- **Steady Green:** Wireless connection is linked.

802.11a/b/g USB 2.0 Adapter features:

- Plug & Play
- Worldwide Radio Support

- Super A/GTM and eXtended Range XRTM Technology
- Backward Compatible with 802.11b
- Roaming Support
- 802.1x Authentication
- AES-CCM & TKIP Encryption
- 64/128/152-bit WEP Encryption
- Driver Support OS Windows®2000/XP

802.11a/b/g USB 2.0 Adapter supports:

- Automatic load balancing for optimized bandwidth
- Advanced power management
- OS Windows®2000/XP

1.3 Wireless Networking Scenarios

As our 802.11a/b/g USB 2.0 Adapter is interoperable and compatible with other IEEE 802.11a/b/g compliant products from other manufacturers, it offers you the most freedom to establish your ideal wireless network. Therefore, after installing 802.11a/b/g USB 2.0 Adapter, you can connect your computer to:

- A Peer-to-Peer Workgroup of 802.11a/b/g compliant wireless devices.
- A LAN (Local Area Network) constructed by Access Point(s) or other 802.11a/b/g compliant systems.
- Share your Internet access by using just one connection, share printers and other peripheral devices, share data and image files between networked PCs, play multi-player games, and use other network enabled sharing resources.

Peer-to-Peer Networking:

An Ad Hoc Network could be easily set up with some PCs and this 802.11a/b/g USB 2.0 Adapter or our other WLAN devices. Therefore, it is very suitable to build a network for temporary use, such as for demonstration in exhibition, for new sales point/branch use and alike.

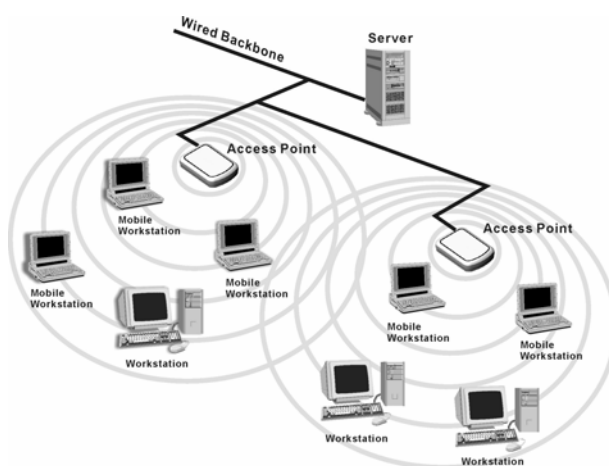


Cooperate LAN (Local Area Networking):

With some 802.11a/b/g USB 2.0 Adapters and Access Points, it is easy to construct a LAN with access to Internet for enterprise use.

The construction is quite easy that the 802.11a/b/g USB 2.0 Adapter and Access Point will automatically work at the most suitable frequency when Access Point is set within the proper range.

In addition, commonly manufacturers will bundle the Site-Survey tool for users to check the communication quality.



2. Quick Start Guide

2.1 Installation

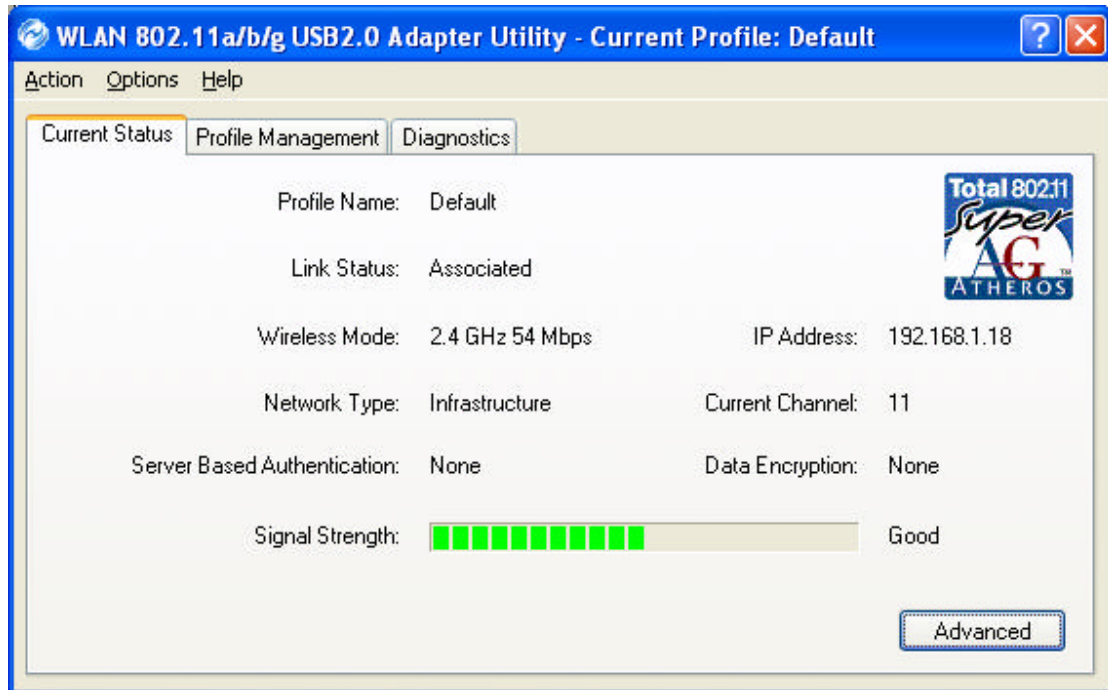
1. **Insert the installation CD.** It automatically starts the setup program for software installation.
2. **Follow the installation wizard** to complete the software installation process.
3. **Connect the WLAN 802.11a/b/g USB 2.0 Adapter** to your laptop PC/desktop PC during software installation.
4. Restart your PC.

NOTE! Select “Cancel” when Found New Hardware window appears.

NOTE! In Windows XP, it is recommended that you use the WLAN 802.11a/b/g USB2.0 Utility.

2.2 Connecting to an Existing Network

After restarting your PC, the adapter automatically connects to an unsecured network that has the best signal strength(if there's any). **Profile Name** shows Default.



You may also manually assign a network to connect with. Follow the steps below:

1. Open **WLAN 802.11a/b/g USB 2.0 Adapter Utility** (by double-clicking on the shortcut icon on the desktop), and click **Profile Management** tab.
2. Click **Scan**, and **Available Infrastructure and Ad Hoc Networks** list appears.
3. Click the desired network **SSID** and click **Activate**.
4. Contact the network administrator for Profile Settings: **General**, **Security** and **Advanced**.
5. Once connected, the configuration icon in the Windows System Tray appears . You can click **Current Status** tab to check the connection status.
6. For details of each tab in WLAN 802.11a/b/g USB2.0 Adapter Utility, please read Chapter 4.

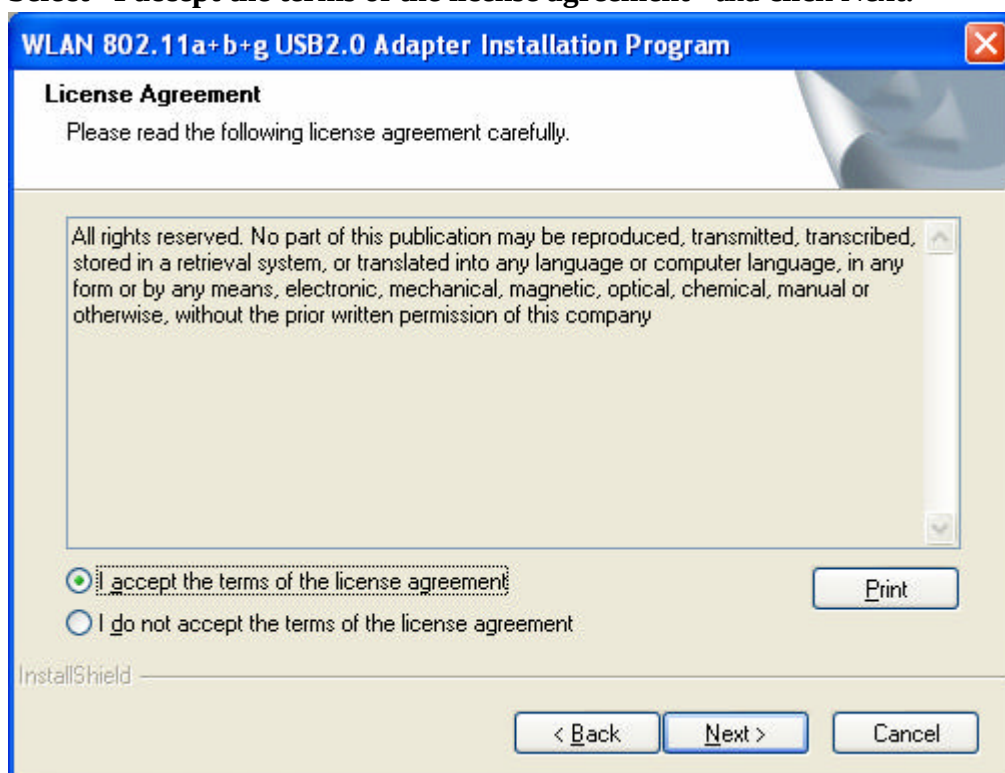
3. Step-by-Step Instructions

3.1 Installation

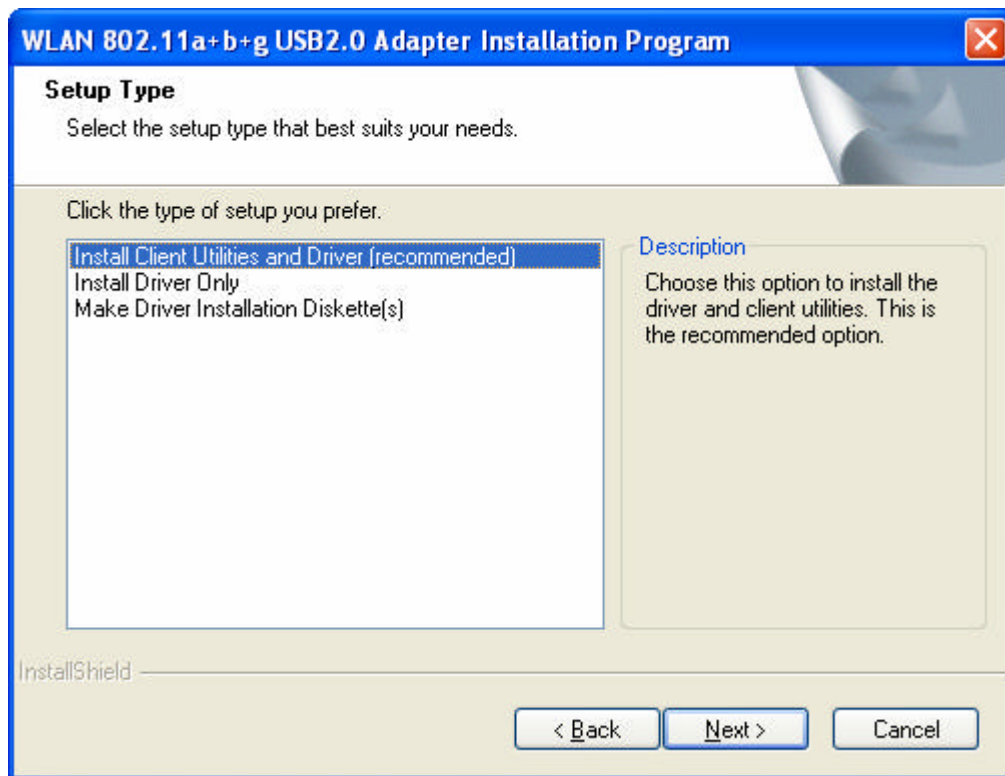
1. Insert the installation CD into your CD-ROM drive. Click **Next**.



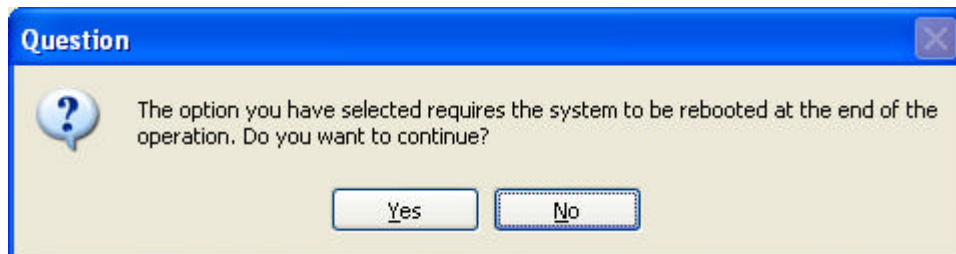
2. Select **"I accept the terms of the license agreement"** and click **Next**.



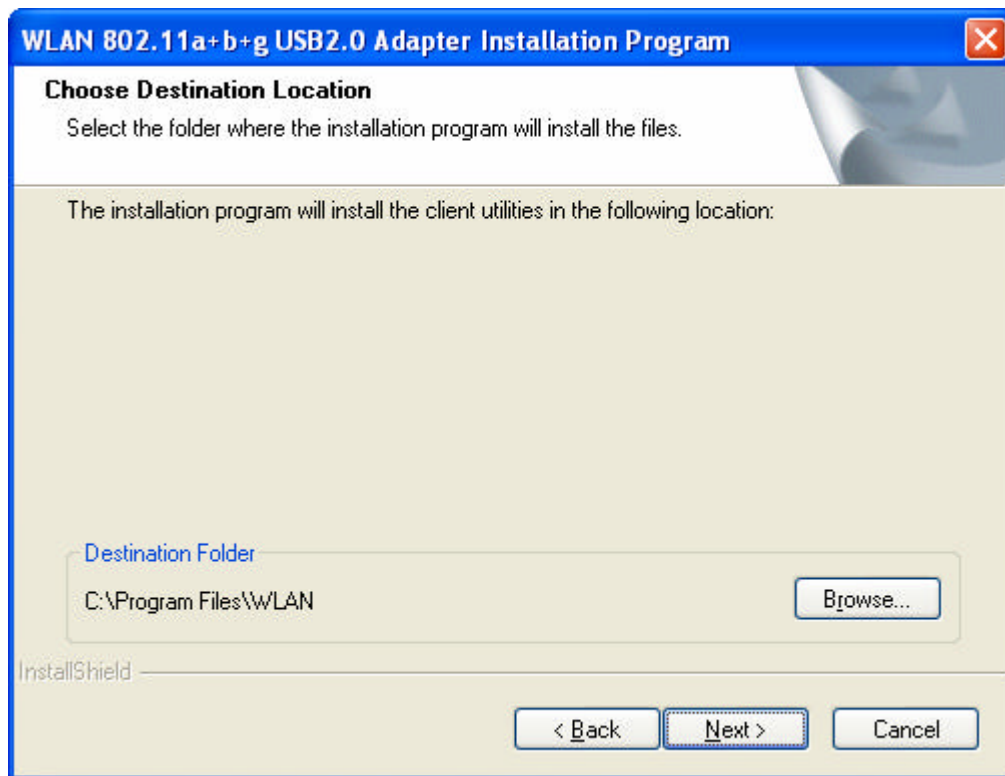
3. **Click Next.** You can highlight different items to choose different setup.



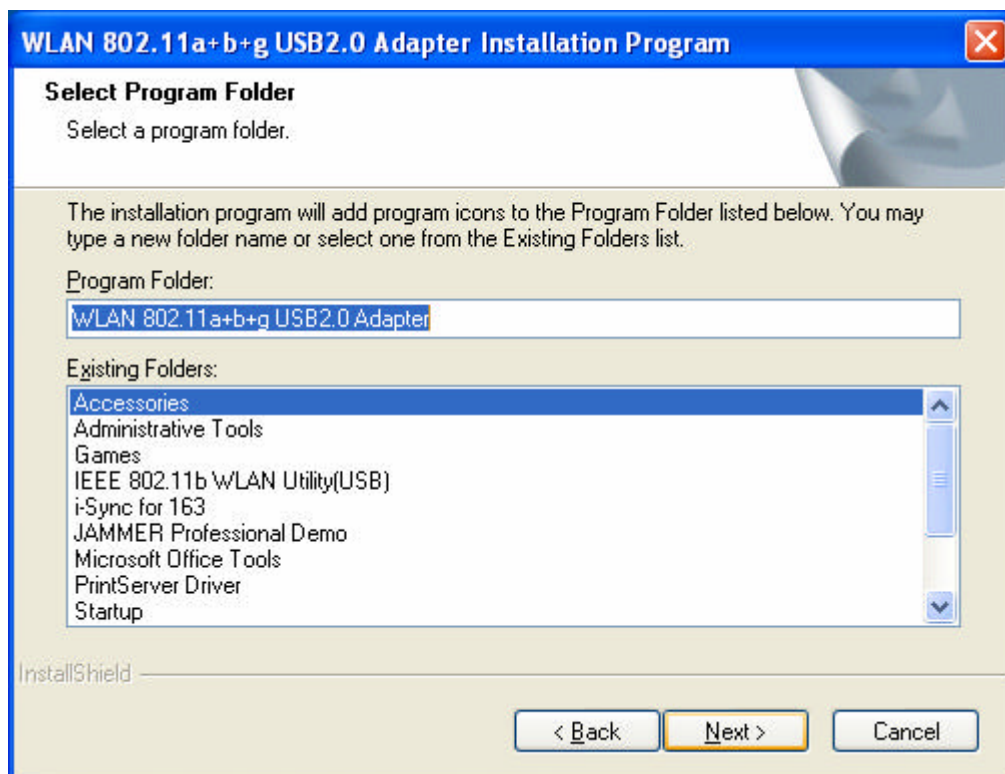
4. **Click Yes.** System reminds you the reboot step.



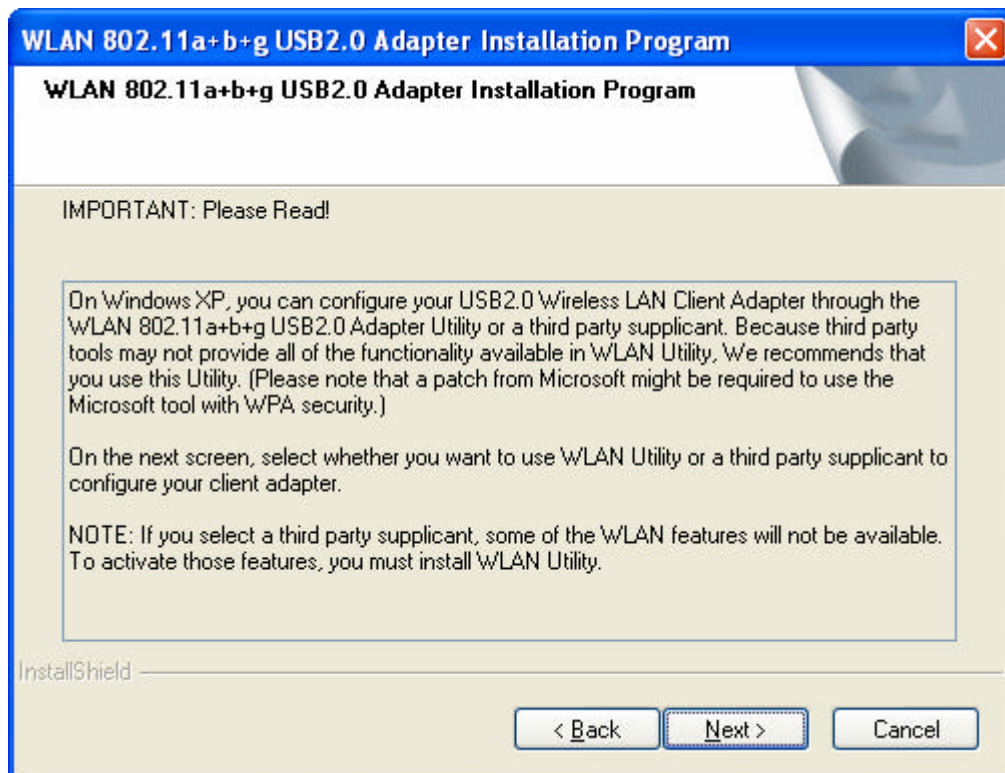
5. **Click Next.** Or click Browse to select the destination folder you prefer.



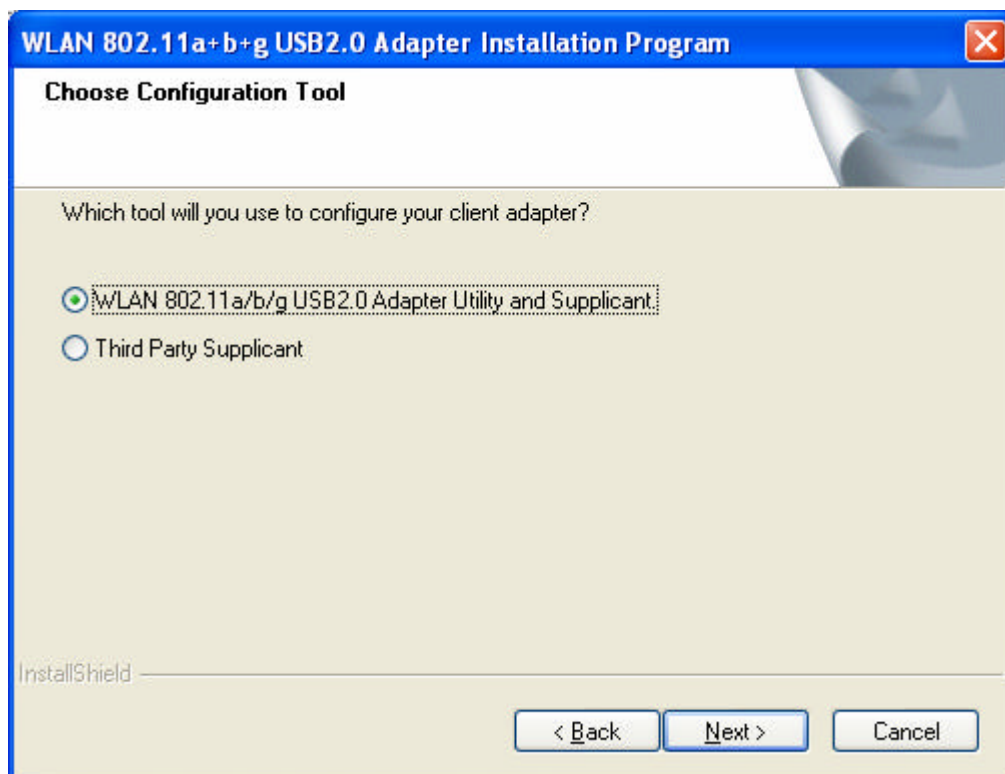
6. **Click Next.** Edit the Program Folder name if necessary.



7. Read the notice and **click Next**.



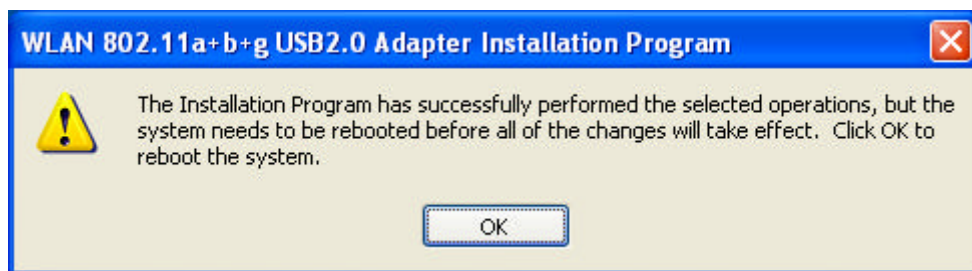
8. **Click Next.** WLAN 802.11a/b/g USB2.0 Adapter Utility is recommended.



9. **Insert the adapter and click OK.**



10. **Click OK** and your PC will restart.



11. A short-cut icon appears on the desktop of your PC.



NOTE! Select "Cancel" when Found New Hardware window appears.

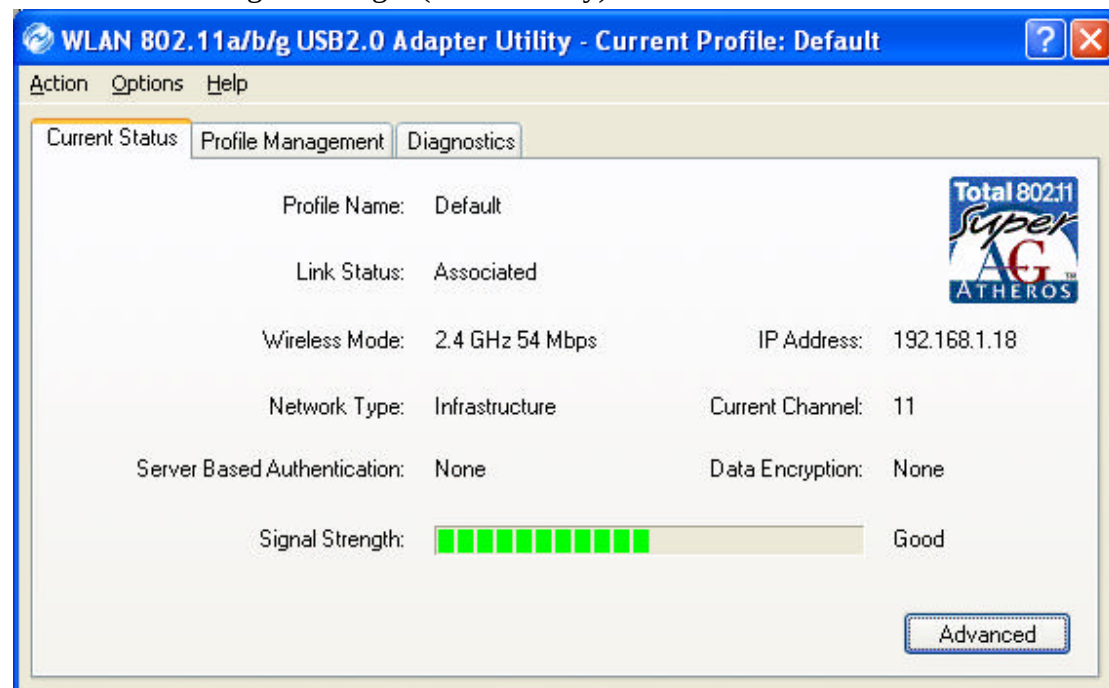
NOTE! In Windows XP, it is recommended that you use the WLAN 802.11a/b/g USB2.0 Utility.

3.2 Connecting to a network

NOTE! For details of Utility Configuration, please refer to Chapter 4.

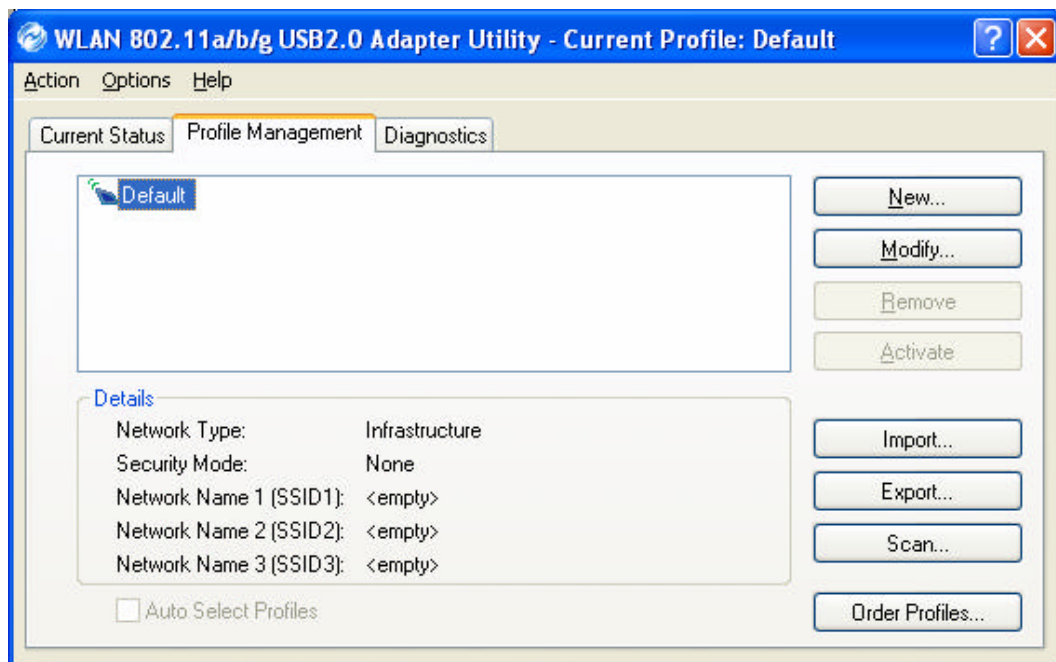
Status Icons	
	Low Signal Strength
	Medium Signal Strength
	High Signal Strength
	No Signal Strength
	Radio Off
	Ad Hoc Network
	Infrastructure Network
	Infrastructure Network Connected
	Profile Activated
	Secured

After restarting your PC, the adapter automatically connects to an unsecured network that has the best signal strength (if there's any). **Profile Name** shows Default.

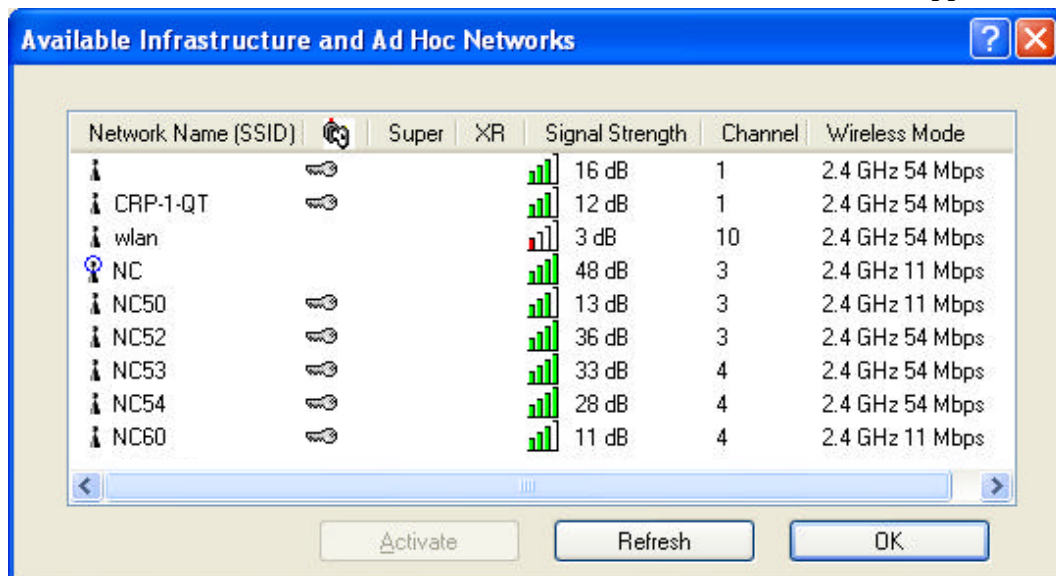


You may also manually assign a network to connect with. Follow the steps below:

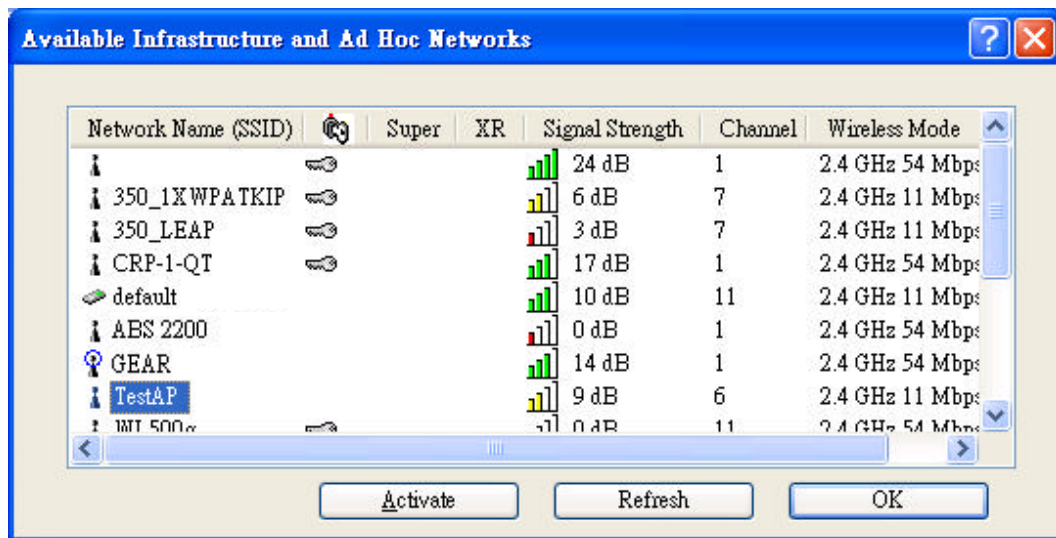
1. Open **WLAN 802.11a/b/g USB 2.0 Adapter Utility** (by double-clicking on the shortcut icon on the desktop), and click **Profile Management** tab.



2. Click **Scan**, and **Available Infrastructure and Ad Hoc Networks** list appears.

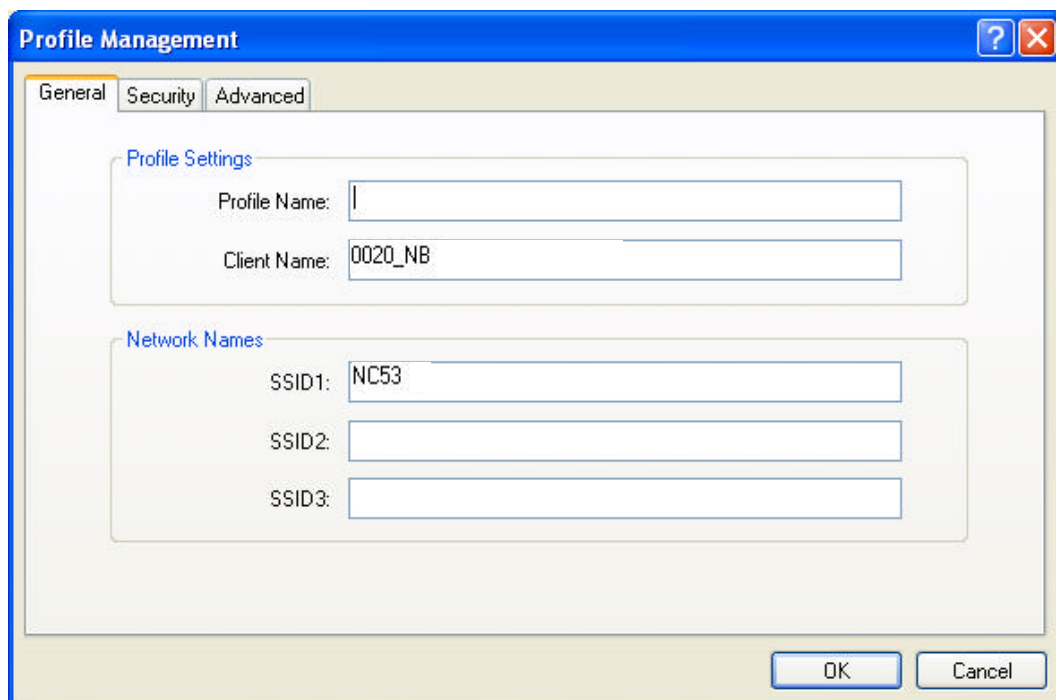


3. Click the desired network **SSID** and click **Activate**.

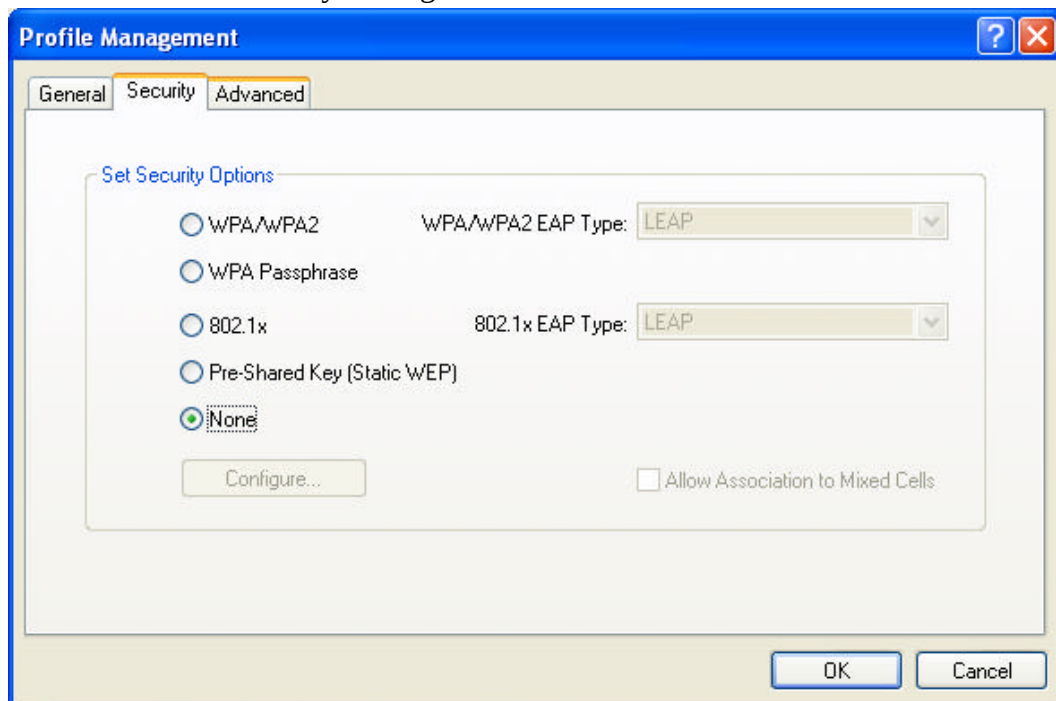


4. Contact the network administrator for Profile Settings: **General**, **Security** and **Advanced**.

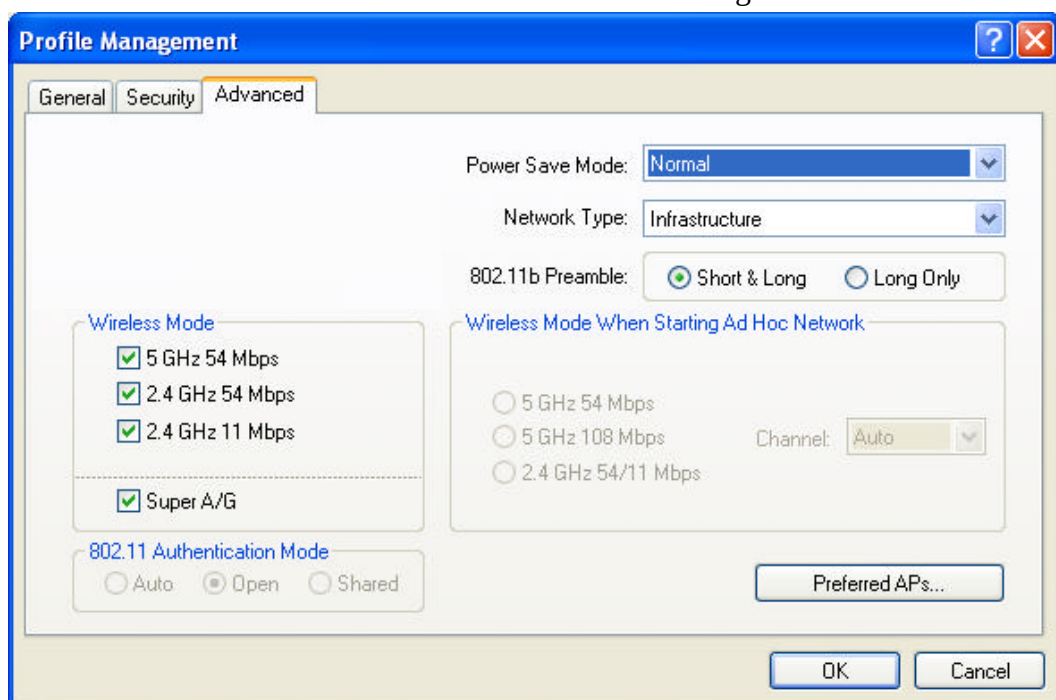
General Tab: Enter a Profile Name and SSID (if necessary).



Security Tab: If the connected network is secured, contact the network administrator for Security Settings.



Advanced Tab: Click Advanced for other network settings.

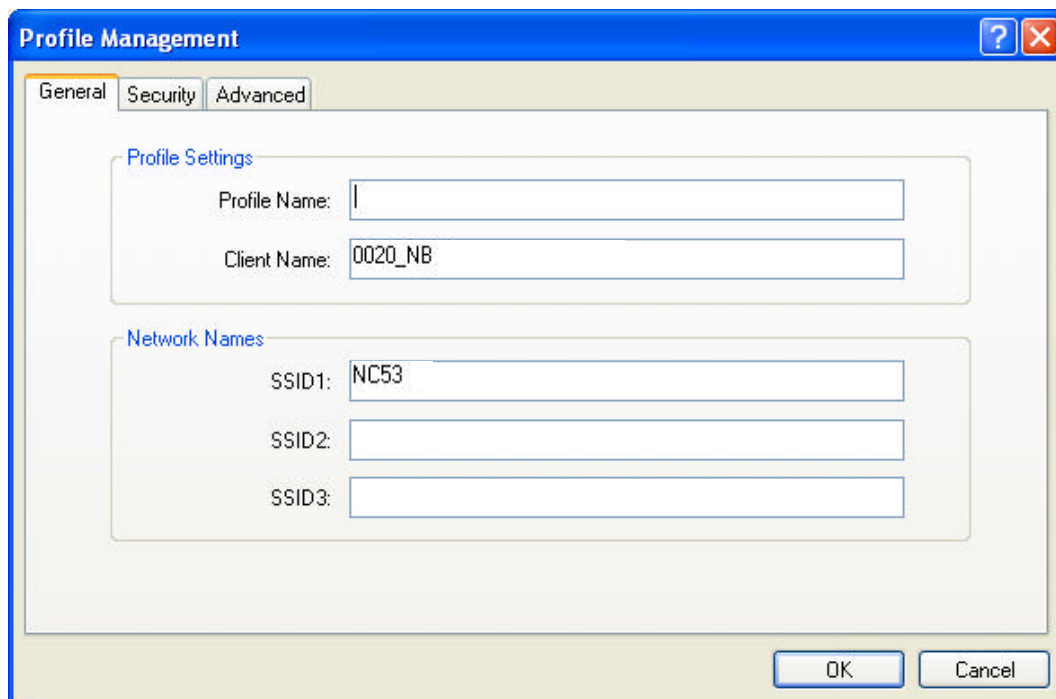
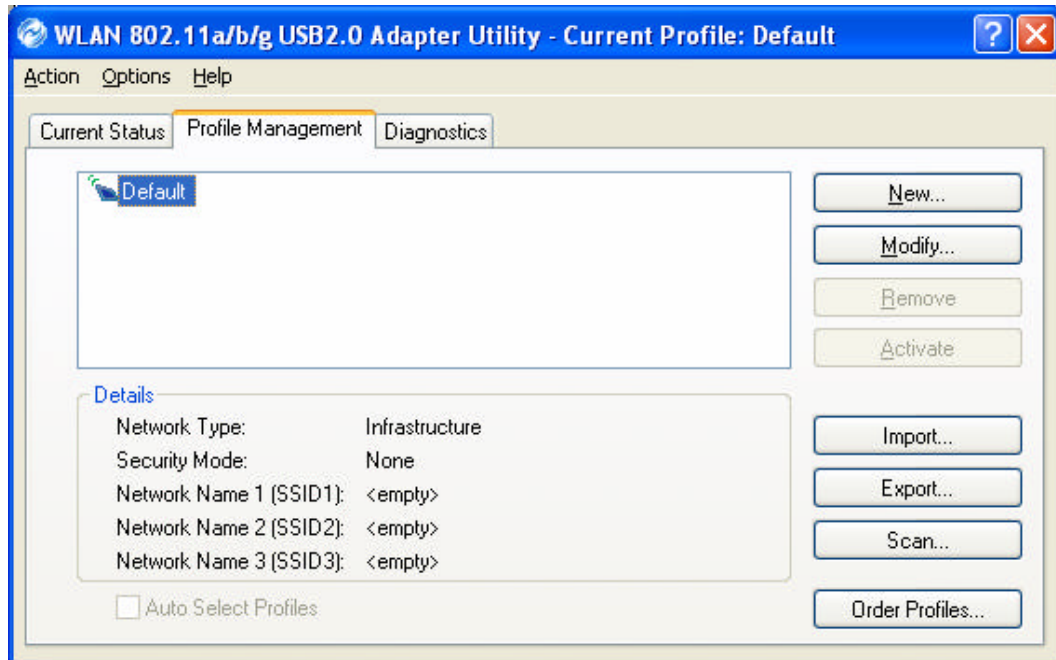


- Once connected, the status icon  in the Windows System Tray appears. You can click **Current Status** tab to check the connection status.

3.3 Creating an Ad Hoc Network

If you have more computers and only want to place them in a local area network, or you want to communicate directly without using an Access Point or any connection to a wired network, you can create a new Ad Hoc Network.

1. In **Profile Management** tab, click **New** button to create a profile.



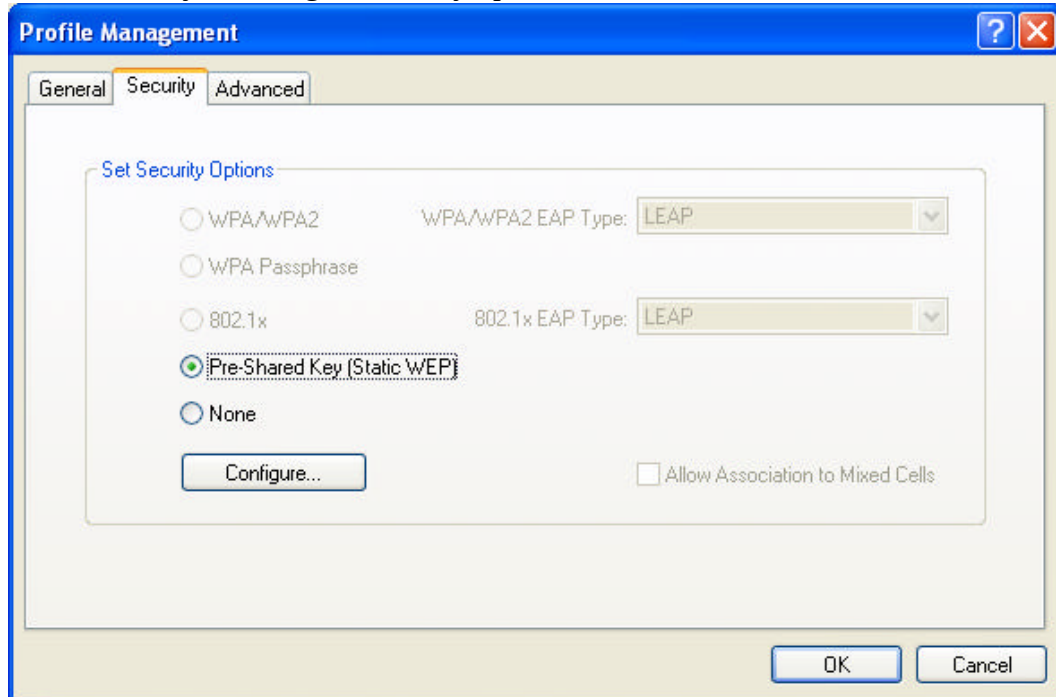
2. Click **Advanced** to switch **Network Type** to **Ad Hoc**.

The screenshot shows the 'Profile Management' dialog box with the 'Advanced' tab selected. The 'Network Type' is set to 'Ad Hoc'. The 'Wireless Mode' section has three checked options: '5 GHz 54 Mbps', '2.4 GHz 54 Mbps', and '2.4 GHz 11 Mbps'. The '802.11b Preamble' is set to 'Long Only'. The 'Wireless Mode When Starting Ad Hoc Network' section has three radio buttons: '5 GHz 54 Mbps' (selected), '5 GHz 108 Mbps', and '2.4 GHz 54/11 Mbps'. The 'Channel' is set to 'Auto'. The '802.11 Authentication Mode' has three radio buttons: 'Auto', 'Open' (selected), and 'Shared'. The 'Power Save Mode' is set to 'Off'. There is a 'Preferred APs...' button and 'OK' and 'Cancel' buttons at the bottom.

3. Click **General** to edit the Profile and SSID1 names.

The screenshot shows the 'Profile Management' dialog box with the 'General' tab selected. The 'Profile Settings' section has two text boxes: 'Profile Name' (empty) and 'Client Name' (containing '0020_NB'). The 'Network Names' section has three text boxes: 'SSID1' (containing 'NC53'), 'SSID2' (empty), and 'SSID3' (empty). There are 'OK' and 'Cancel' buttons at the bottom.

4. Click **Security** to configure security options.



5. Click **OK** button.

3.4 Removing your 802.11a/b/g USB 2.0 Adapter

You can remove the device after you finished the action with the device. However, in Windows XP and Windows 2000, please follow the safe removal procedure. You can find a safe removal icon in your computer's notification area.

1. Double click the **Safely Remove Hardware** icon.

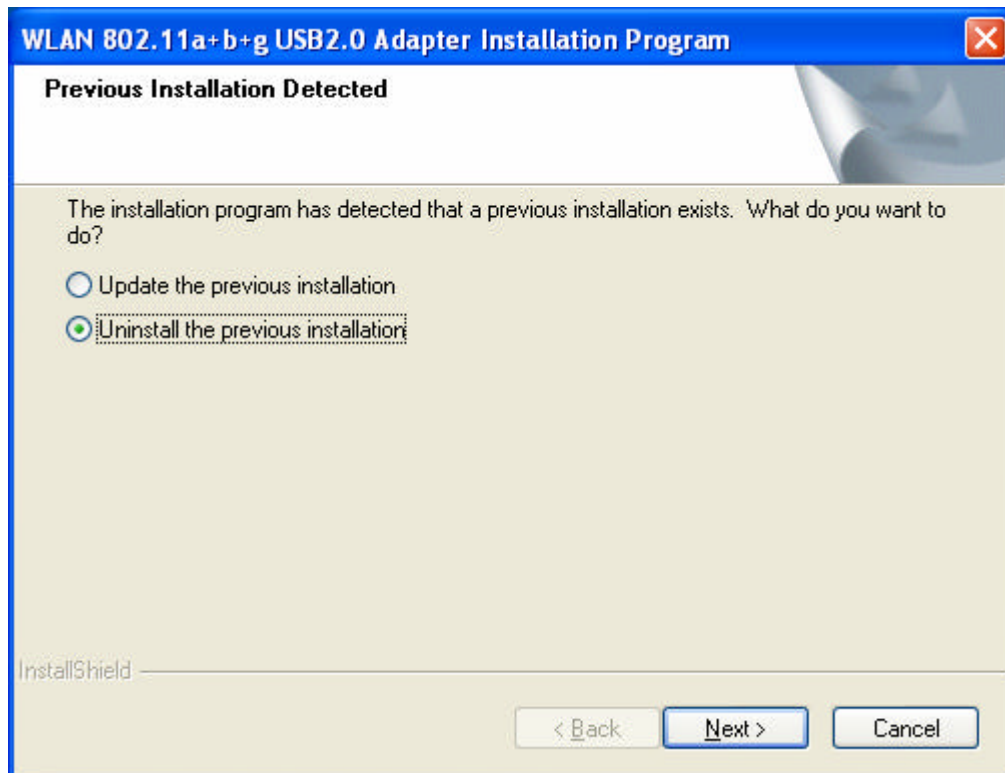


2. The “**Safely Remove Hardware**” window will pop up. You can select the device you want to remove. Then, click the “**Stop**” button.

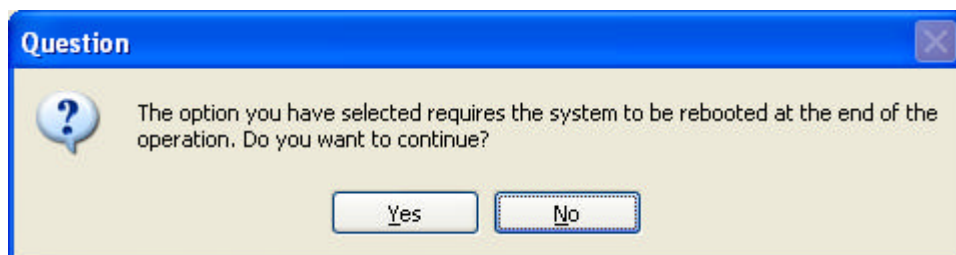
NOTE! When removing the WLAN 802.11a/b/g USB 2.0 Adapter, you will lose your connection to the network. Make sure you have closed all files and network applications (such as e-mail) before removing the WLAN 802.11a/b/g USB 2.0 Adapter.

3.5 Uninstallation

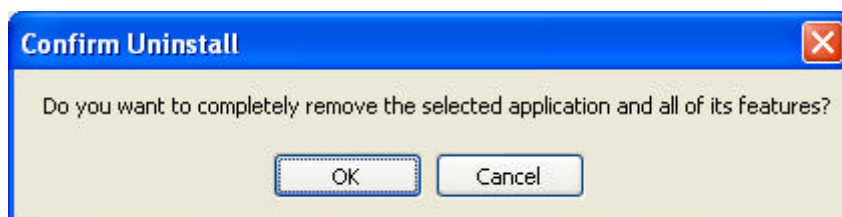
1. Make sure the Utility is closed.
2. Go to Star → Programs → WLAN 802.11a+b+g USB2.0 Adapter → Uninstall Utility.
3. Choose “Uninstall the previous installation” and click **Next**.



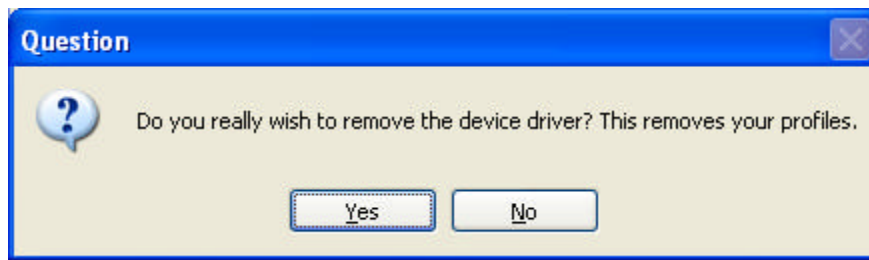
4. Click **Yes**.



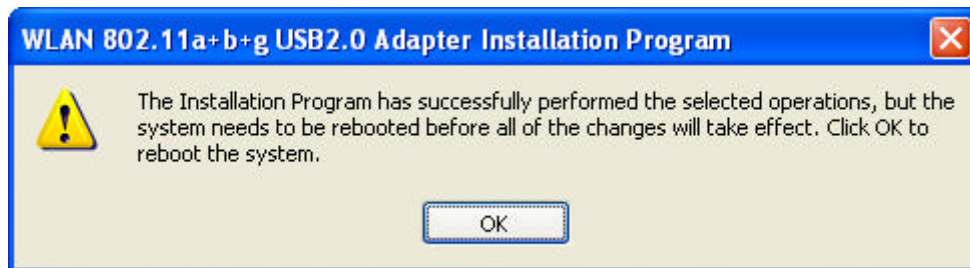
5. Click **OK**.



6. Click **Yes**.



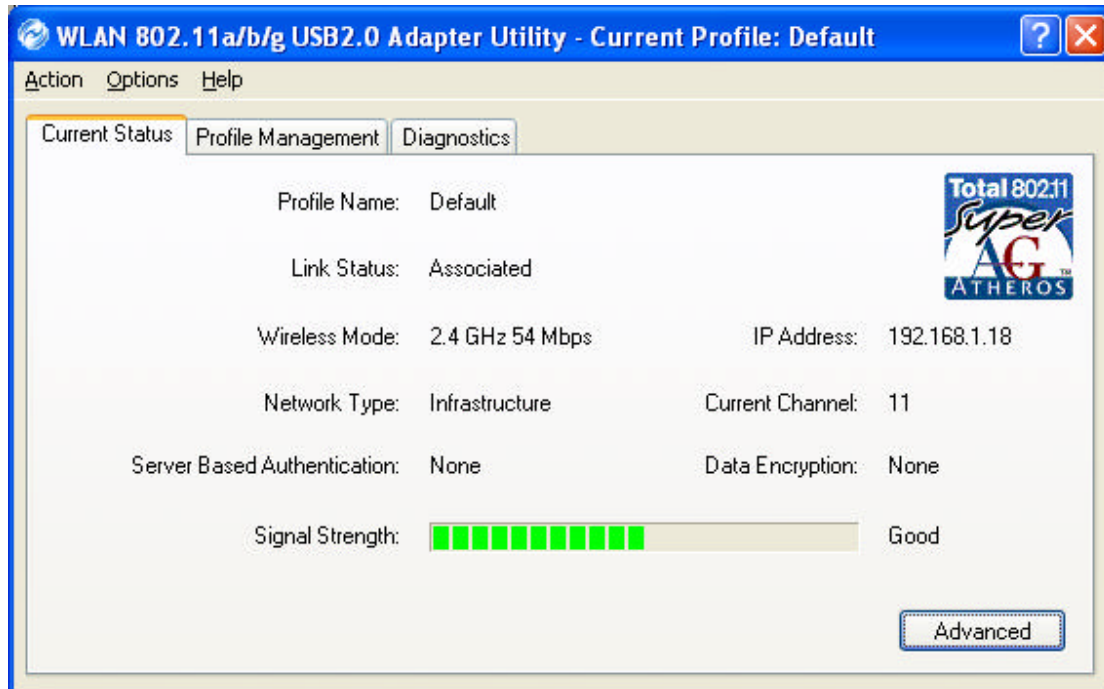
7. Click **OK**, and your PC will restart. Uninstallation is finished.



4. Using the Utility

4.1 Current Status

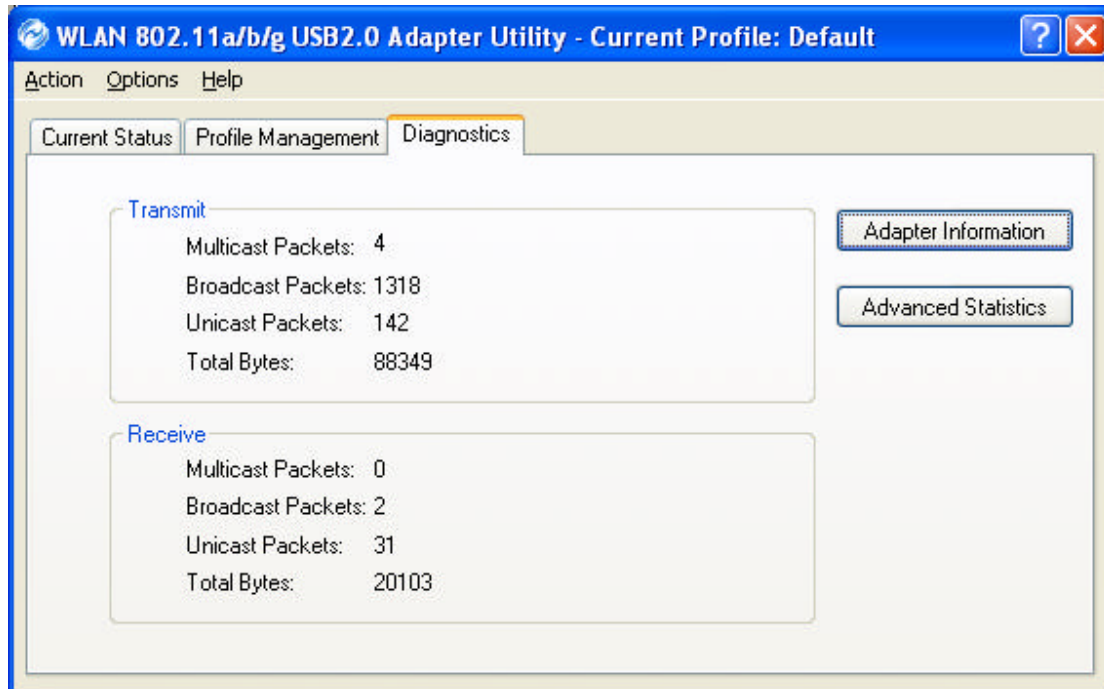
The Current Status tab contains general information about the program and its operations.



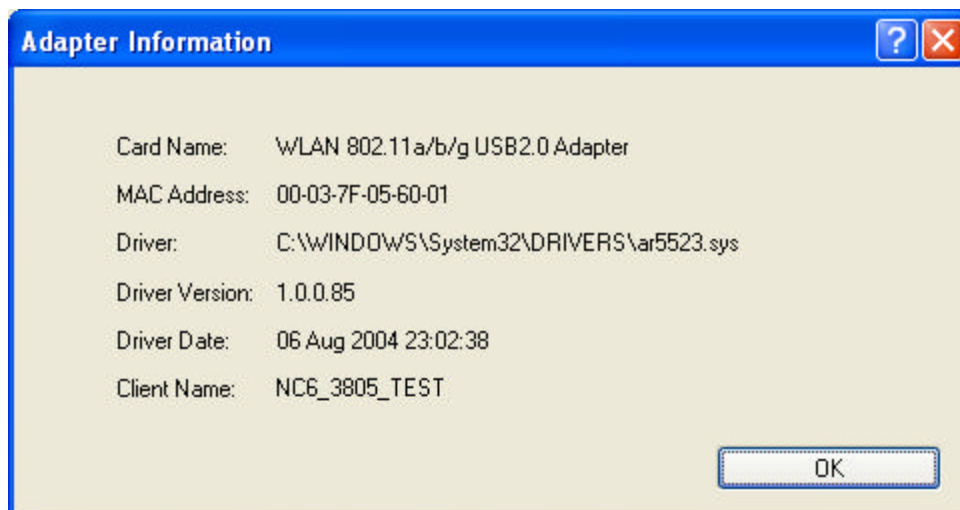
- **Profile Name:** The name of the current selected configuration profile. If you see Default in Profile Name, it is because you do not assign a specific SSID, and the adapter automatically searches and connects to the most suitable network. You can configure the profile name through Profile Management → Modify → General.
- **Link Status:** Shows whether or not the station is associated to the wireless network.
- **Wireless Mode:** Displays the wireless mode. You can configure the wireless mode through Profile Management → Modify → Advanced.
- **IP Address:** Displays the computer's IP address.
- **Network Type:** The type of network the station is connected to. The options include infrastructure and Ad Hoc. You can configure the network type through Profile Management → Modify → Advanced.
- **Current Channel:** Shows the currently connected channel.
- **Server Based Authentication:** Shows whether server based authentication is used.
- **Data Encryption:** Displays the encryption type the driver is using. You can configure Data Encryption through Profile Management → Modify → Security.
- **Signal Strength:** Shows the strength of the signal.

4.2 Diagnostics

In Diagnostics tab, you can check Transmit and Receive Data: Multicast Packets, Broadcast Packets, Unicast Packets and Total Bytes.

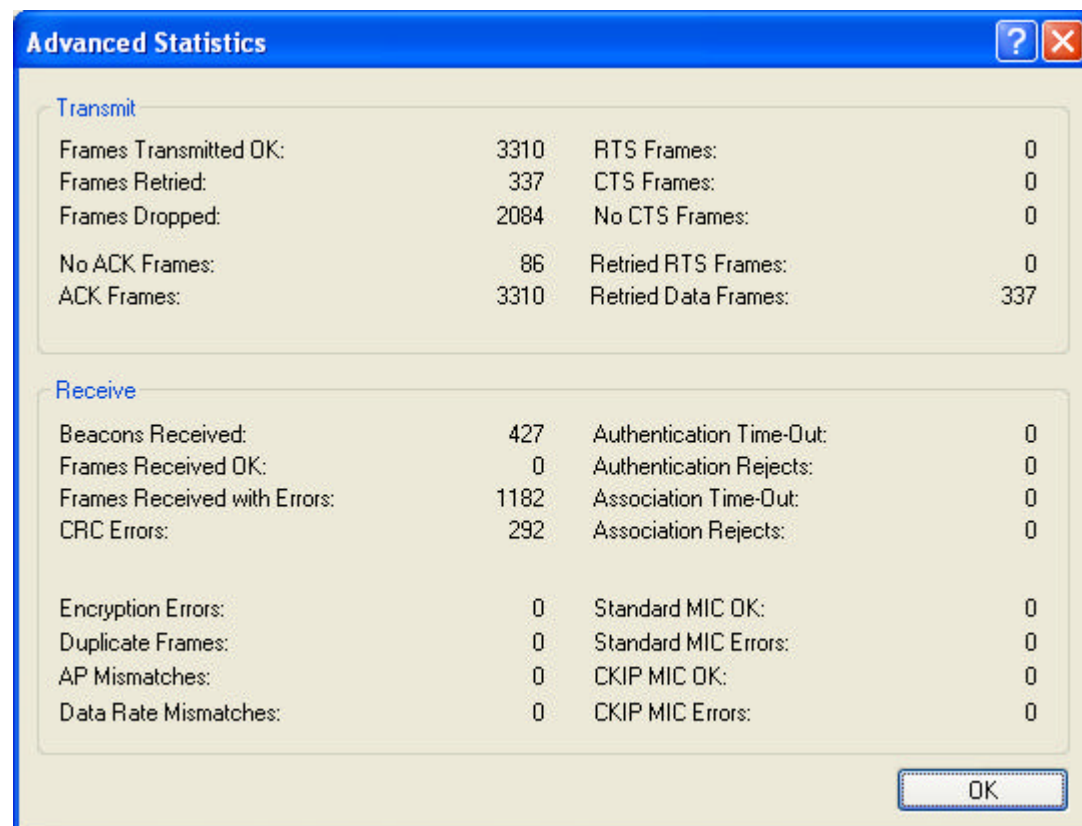


Adapter Information



- **Card Name:** The name of the wireless network adapter.
- **MAC Address:** The MAC address of the wireless network adapter.
- **Driver:** The driver name and path of the wireless network adapter driver.
- **Driver Version:** The version of the wireless network adapter driver.
- **Driver Date:** The creation date of the wireless network adapter driver.
- **Client Name:** The name of the client computer.

Advanced Statistics: Shows receive and transmit statistical information for the following receive and transmit diagnostics for frames received by or transmitted to the wireless network adapter:



Transmitted Frames:

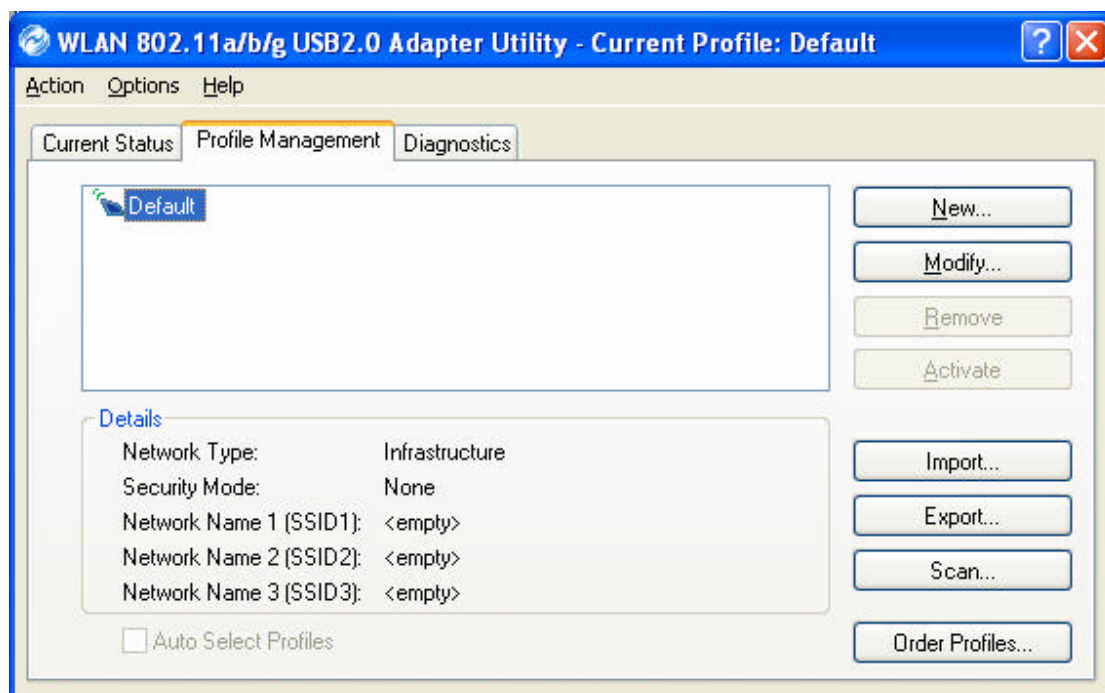
- Frames transmitted OK
- Frames retried
- Frames dropped
- No ACK frames
- ACK frames
- RTS Frames
- Clear-to-send (CTS) Frames
- No CTS frames
- Retried RTS frames
- Retried data frames

Received Frames:

- Frames received OK
- Beacons
- Frames with errors

- CRC errors
- Encryption errors
- Duplicate frames
- AP mismatches
- Data rate mismatches
- Authentication time-out
- Authentication rejects: the number of AP authentication failures received by the wireless network adapter
- Association time-out
- Association rejects: the number of access point authentication rejects received by the wireless network adapter
- Standard MIC OK
- Standard MIC errors
- CKIP MIC OK
- CKIP MIC errors

4.3 Profile Management



- **Network Type:** Indicates whether the current activated network type is Infrastructure or Ad Hoc mode.
- **Security Mode:** Indicates current connected network's security mode.
- **Network Name:** Indicates current connected network's name.
- **New:** To create new profile.

- **Modify:** To edit settings of chosen profile.
- **Remove:** To remove the chosen profile from the list.
- **Activate:** To activate the chosen profile.
- **Import:** To import a pre-set profile (pre-saved as a Config File *.prf)
- **Export:** To export the chosen profile, so you can save the profile as a Config File

(* .prf) for future use.



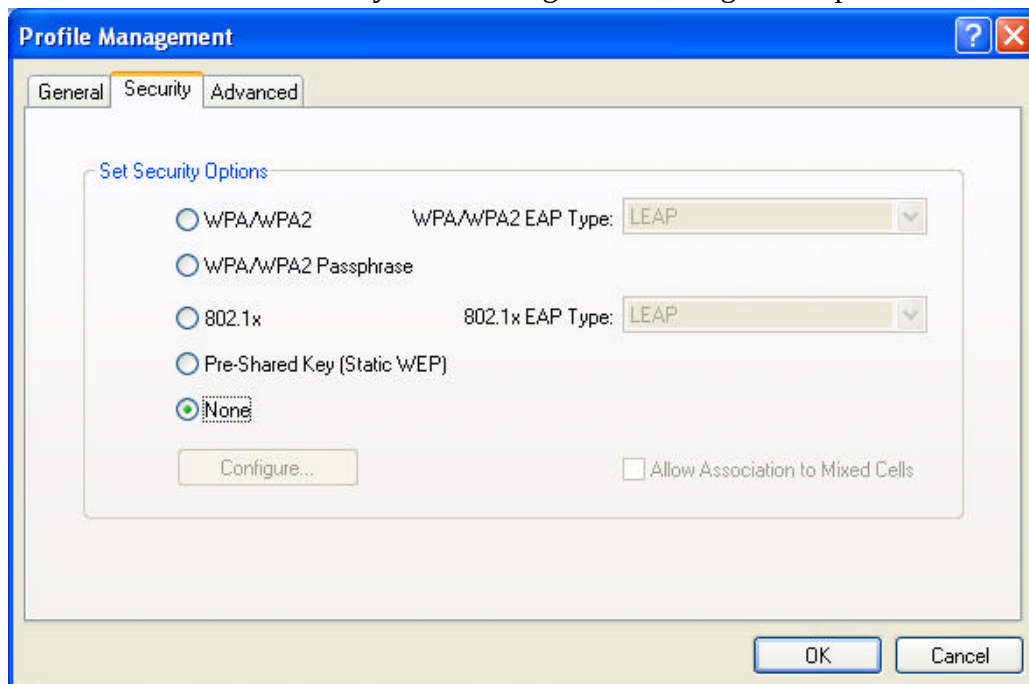
- **Scan:** To scan all available network in vicinity.
- **Order Profiles:** To place the order of preferred profiles.

4.3.1 Creating or Modifying a Configuration Profile

1. To add a New configuration profile, click **New** on the Profile Management tab. To modify a configuration profile, select the configuration from the Profile list and click the **Modify** button.
2. The Profile Management dialog box displays the **General**, **Security** and **Advanced** tabs.
3. Edit the fields in the **General** tab to configure the configuration profile.

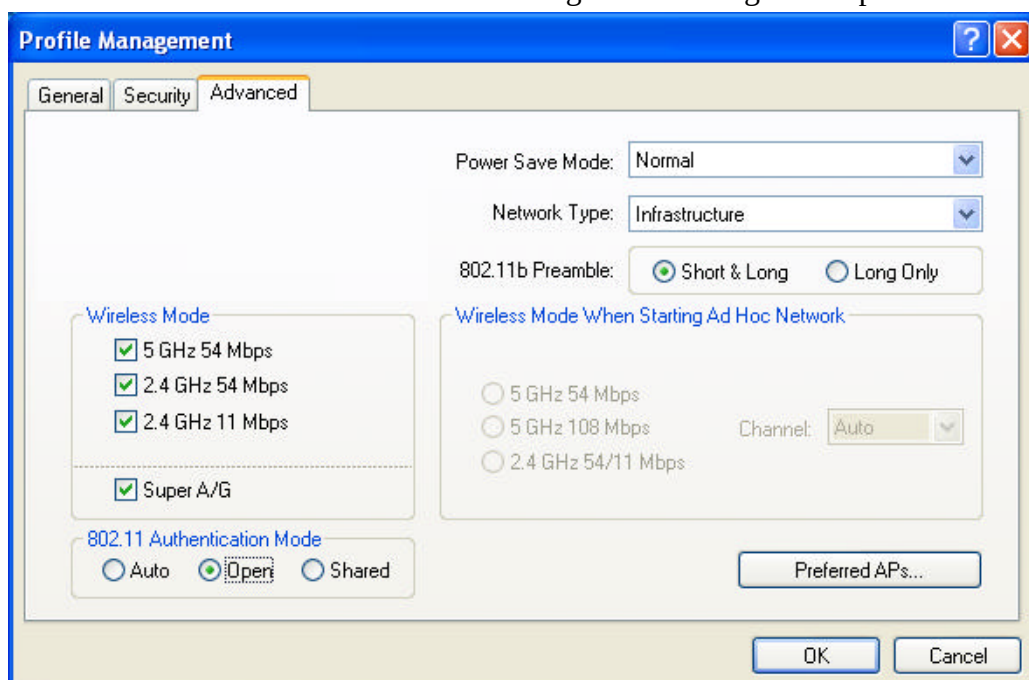
- **Profile Name:** Identifies the configuration profile. This name should be *unique*. Profile names are not case sensitive.
- **Client Name:** Identifies the client machine.
- **Network Names (SSIDs):** The IEEE 802.11 wireless network name. This field has a maximum limit of 32 characters. Configure up to *three* SSIDs (SSID1, SSID2, SSID3).

4. Edit the fields in the **Security** tab to configure the configuration profile.



- **WPA:** Enables the use of Wi-Fi Protected Access (WPA).
- **WPA Passphrase:** Enables WPA Passphrase security. Click on the **Configure** button and fill in the WPA Passphrase.
- **802.1x:** Enables 802.1x security. This option requires IT administration.
- **Pre-Shared Key (Static WEP):** Enables the use of pre-shared keys that are defined on both the access point and the station.
- **None:** No security (not recommended).

5. Edit the fields in the **Advanced** tab to configure the configuration profile.



- **Power Save Mode:** Specify:
 - ✓ **Maximum** mode: causes the access point to buffer incoming messages for the wireless adapter. The adapter up periodically polls the access point to see if any messages are waiting.
 - ✓ **Normal** mode: uses maxim when retrieving a large number of packets, then switches back to power save mode after retrieving the packets.
 - ✓ **Off:** turns power saving off, thus powering up the wireless adapter continuously for a short message response time.
- **Network Type:** Specifies the network as either Infrastructure or Ad Hoc.
- **802.11b Preamble:** Specifies the preamble setting in 802.11b. The default setting is **Short & Long** (access point mode), which allows both short and long headers in the 802.11b frames. The adapter can only use short radio headers if the access point supports and uses them. Set to **Long Only** to override allowing short frames.
- **Wireless Mode:** Specifies 5GHz 54Mbps, 2.4GHz 54Mbps, 2.4GHz 11Mbps, or Super A/G operation in an access point network. The wireless adapter must match the wireless mode of the access point it associates to.
- **Wireless Mode when Starting Ad Hoc Network:** Specifies 5GHz 54Mbps, 5GHz 108Mbps, or 2.4GHz 54/11Mbps, to start an Ad Hoc network if no matching network name is found after scanning all available modes. This mode also allows selection of the channel the wireless adapter uses. The channels available depend on the regulatory domain. If the adapter finds no other ad hoc adapters, this selection specifies which channel with the adapter starts the Ad Hoc network with. The wireless adapter must match the wireless mode of the access point it associates to.
- **802.11 Authentication Mode:** Select what mode the wireless adapter uses to authenticate to an access point:
 - ✓ **Auto:** causes the adapter to attempt authentication using shared, but switches it to open authentication if shared fails.
 - ✓ **Open:** enables 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:** only allows the adapter to associate with access points that have the same WEP key.

4.3.2 Removing a Profile

1. Go to the **Profile Management** tab.