

TEW-509UB

54Mbps 802.11a/g Wireless USB 2.0
Adapter with HotSpot Detector

User's Guide



TRENDnet[®]
TRENDware, USA
What's Next in Networking

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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.

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 device complies with FCC RF Exposure limits set forth for an uncontrolled environment, under 47 CFR 2.1093 paragraph (d)(2).

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

This device was tested for typical by stander conditions that may occur during use. To comply with FCC RF exposure requirements a minimum separation distance of 1.5 cm must be maintained between the user's body and the device, including the antenna.

TRENDware declares that TEW-509UB, (FCC ID: S92ZTEW509UB) is limited in CH1~CH11 for 2.4 GHz by specified firmware controlled in U.S.A.

FCC Radiation Exposure Statement

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment.

This device complies with FCC RF Exposure limits set forth for an uncontrolled environment, under 47 CFR 2.1093 paragraph (d) (2).

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



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Getting Started with the TEW-509UB

Congratulations on purchasing the TEW-509UB! The quick start guide included with your TEW-509UB tells you how to install the Wireless Client Utility and how to operate the Hotspot Detector features of the TEW-509UB.

This manual provides information for setting up and configuring the TEW-509UB. This manual is intended for both home users and professionals. It is not required to read some of the more technical information in this manual to operate and enjoy the TEW-509UB. It is included for your reference only.

The following conventions are used in this manual:



THE NOTE SYMBOL INDICATES ADDITIONAL INFORMATION ON THE TOPIC AT HAND.



THE TIP SYMBOL INDICATES HELPFULL INFORMATION AND TIPS TO IMPROVE YOUR NETWORK EXPERIENCE.



THE CAUTION SYMBOL ALERTS YOU TO SITUATIONS THAT MAY DEGRADE YOUR NETWORKING EXPERIENCE OR COMPROMISE YOUR SECURITY.



LIKE NOTES AND TIPS, THE IMPORTANT SYMBOL INDICATES INFORMATION THAT CAN IMPROVE NETWORKING. THIS INFORMATION SHOULD NOT BE OVERLOOKED.

Overview of the Wireless Client Utility

The Wireless Client Utility is included on the CD that shipped with the TEW-509UB. Install the utility as described in the Quick Start Guide before attaching the TEW-509UB to your computer.



BE SURE TO INSTALL THE WIRELESS CLIENT UTILITY BEFORE YOU ATTACH THE TEW-509UB TO YOUR COMPUTER. ATTACHING THE TEW-509UB BEFORE THE UTILITY IS INSTALLED COULD CAUSE THE INSTALLATION TO FAIL.

When the TEW-509UB is installed, it is configured to automatically load when you start your computer. The utility icon displays in the system tray at the bottom-right corner of your screen.



Double-click the TEW-509UB icon in the system tray, the following **Network** screen opens:

IEEE802.11

Network

Profile

SiteSurvey

Options

Version

Wireless Setting

- Current Profile
Default

Reconnect

- Network Mode Infrastructure
- Security Not Using WEP
- Authentication Open

TCP/IP Setting (Using DHCP)

IP Address:
Subnet Mask:
Gateway:
DNS Server:

IP Release IP Renew

Link Information

- SSID wlan-g
- Status Connected

[802.11b]

Tx Rx

- Link Speed 11.0 Mbps 11.0 Mbps
- Signal Level Excellent(-41 dBm)

BSSID = 00:90:4B:C9:42:A0 Channel = 6 (2.437 GHz)

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Wireless USB 2.0 Adapter

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The **Link Information** pane provides information on your current connection. This same pane is shown at the bottom of all screens so you are always aware of your connection status.



WHEN THE TEW-509UB IS NOT CONNECTED TO YOUR COMPUTER, MOST SETTINGS IN THE WIRELESS CLIENT UTILITY ARE UNAVAILABLE. SETTINGS OR BUTTONS THAT ARE NOT AVAILABLE ARE GRAYED OUT.

Working with Profiles

A profile is a record of the configuration you use to connect to a particular access point. Without profiles, you would have to reconfigure the TEW-509UB each time you change access points. Using the **Profile** screen you can configure the TEW-509UB to access your home network and your office network. Each configuration is saved as a profile. Then when you go from the office to your home you just select the appropriate profile.



YOU CAN CHANGE PROFILES WITHOUT REBOOTING YOUR COMPUTER. (PERHAPS WHEN WALKING FROM ONE ACCESS POINT TO ANOTHER WITHIN YOUR OFFICE.) IF YOU USE WINDOWS CONTROL PANEL TO CONFIGURE YOUR CONNECTIONS, YOU MUST REBOOT THE COMPUTER WHEN CHANGING ACCESS POINTS.

CREATING A PROFILE

1. Click Profile

IEEE802.11

Network
Profile
SiteSurvey
Options
Version

Profile List (current profile tagged #) Change Priority

Name	SSID	IP Address	
(#)Default	ANY	Windows Setting	Up (U) Down (D)

Add (A) Remove (R) Properties (P) Apply (Y)

Link Information 10110110 [802.11b]

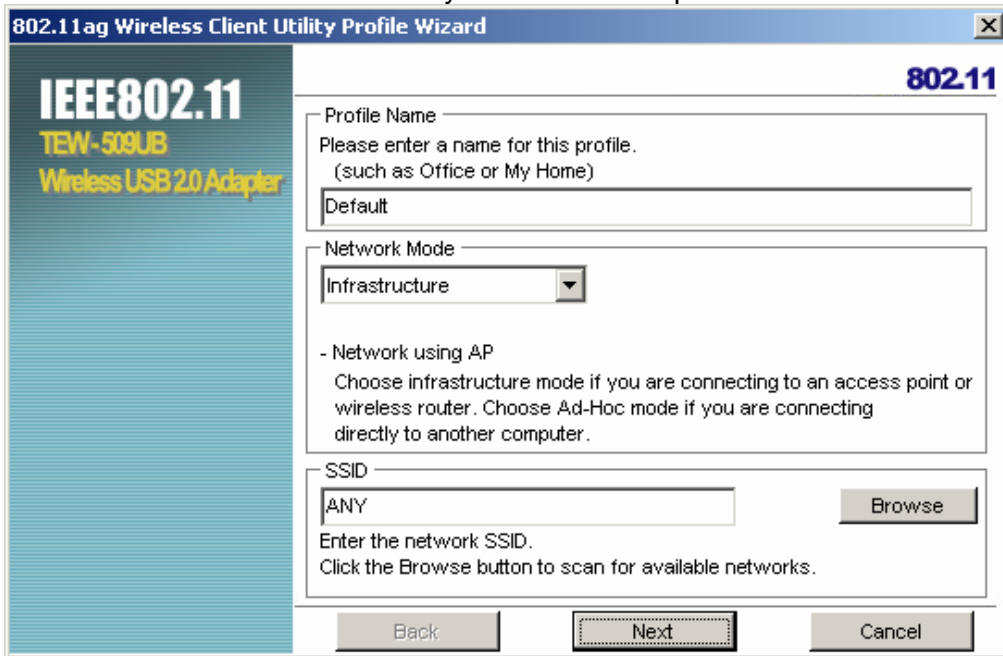
- SSID	wlan-g	- Link Speed	Tx 11.0 Mbps	Rx 11.0 Mbps
- Status	Connected	- Signal Level	Excellent(-41 dBm)	

BSSID = 00:90:4B:C9:42:A0 Channel = 6 (2.437 GHz)

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Wireless USB 2.0 Adapter

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2. Click **Add**. The Wireless Client Utility Profile Wizard opens.

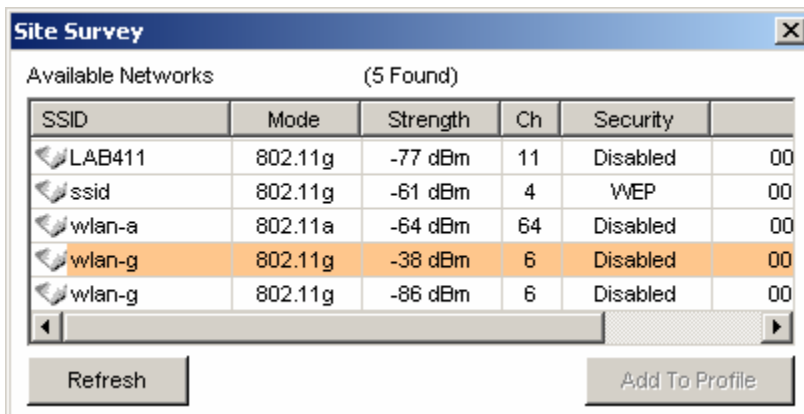


3. Type a descriptive name for the profile such as **Office** or **CoffeeShop**.

4. Click the drop-down arrow at Network Mode and select **Infrastructure** or **Ad-Hoc**. Choose **Infrastructure** when connecting to an access point or wireless router. You will need to know the SSID of the access point.

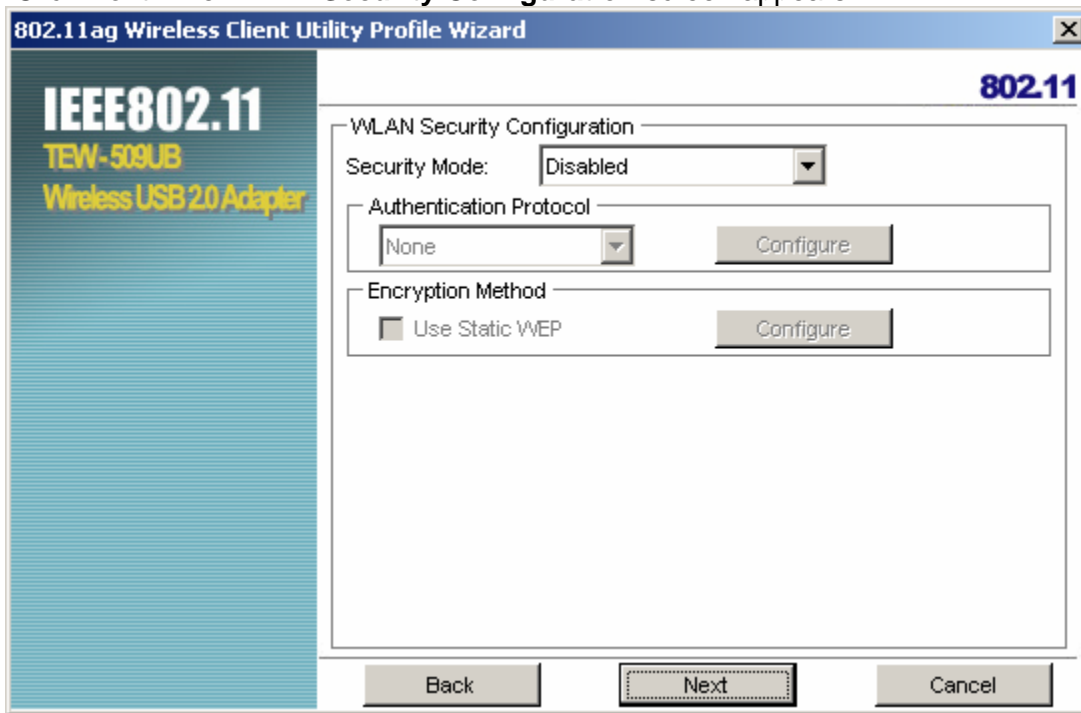
Choose **Ad-Hoc** when connecting directly to another computer without using an access point. You can type anything for the SSID as long as the same SSID is used on the computer you are connecting to.

5. In the **SSID** pane click **Browse**. The utility performs a site survey and displays the results.



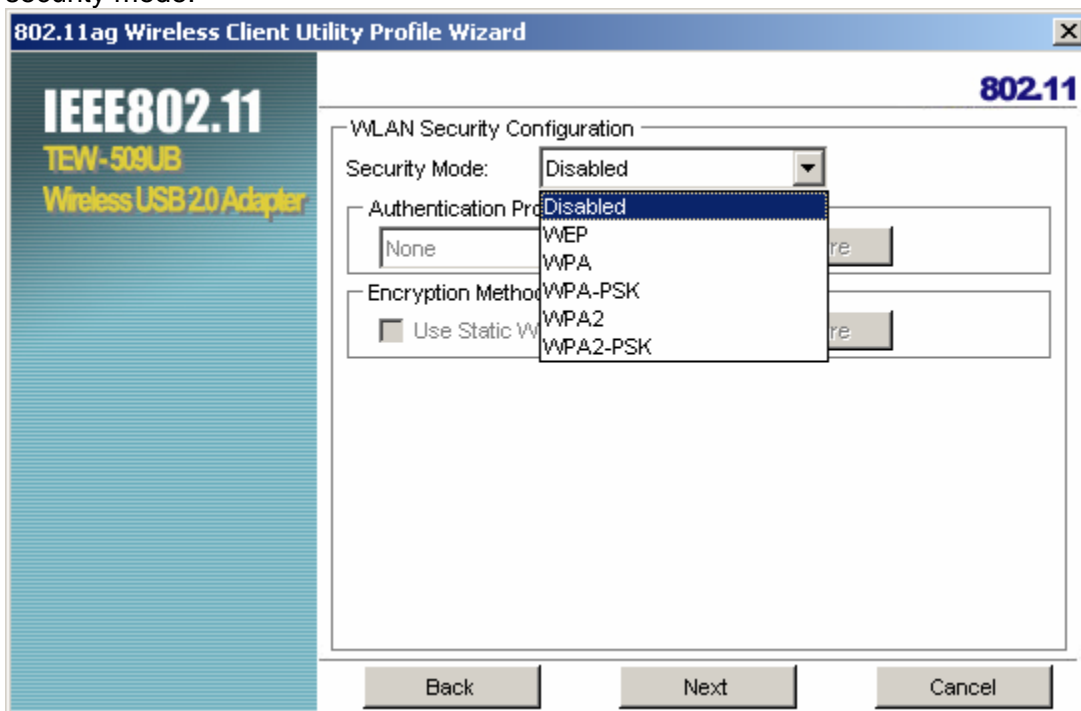
The SSID (Service Set Identifier) is the name assigned to a wireless Wi-Fi network. All devices must use this case-sensitive name, which is a text string up to 32 bytes long, in order to communicate.

6. Select the SSID you want to connect to and click Add to **Profile**.
7. Click **Next**. The **WLAN Security Configuration** screen appears.



This screen reflects the security settings detected in the access point you want to connect to. Security settings vary in complexity and you may have to consult your network administrator for this information. See "Configuring Wireless Security" for more information.

8. Select the Security Mode from the drop-down list and then select the appropriate settings for the security mode.



9. Click **Next**

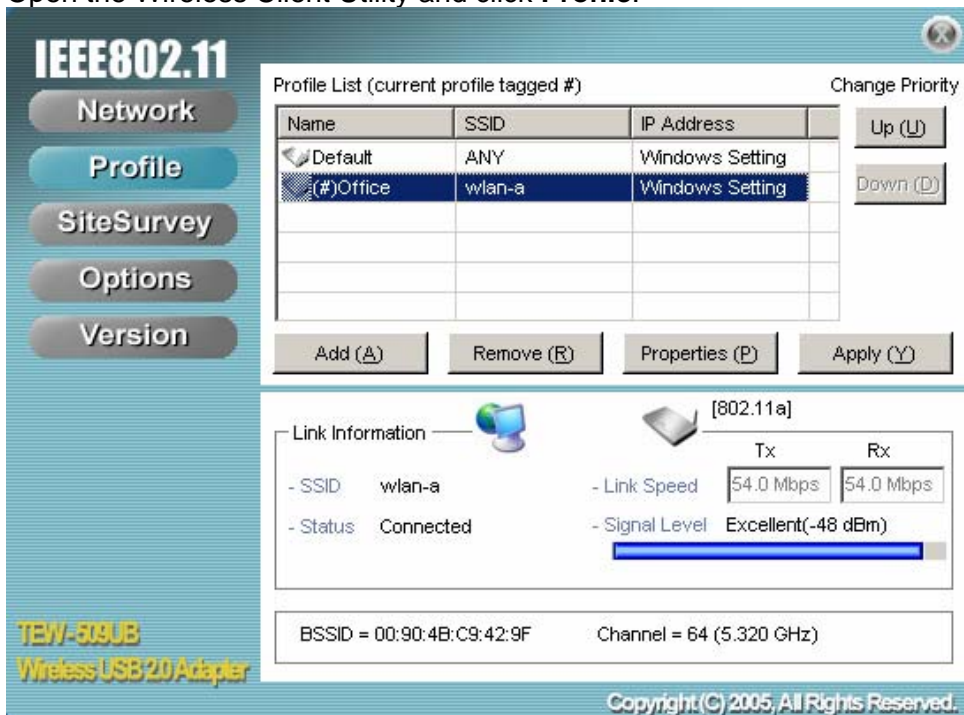


10. Click **Save** to complete the wizard and save the new profile. (If you do not want to activate the profile, uncheck the **Apply this profile now** checkbox.)

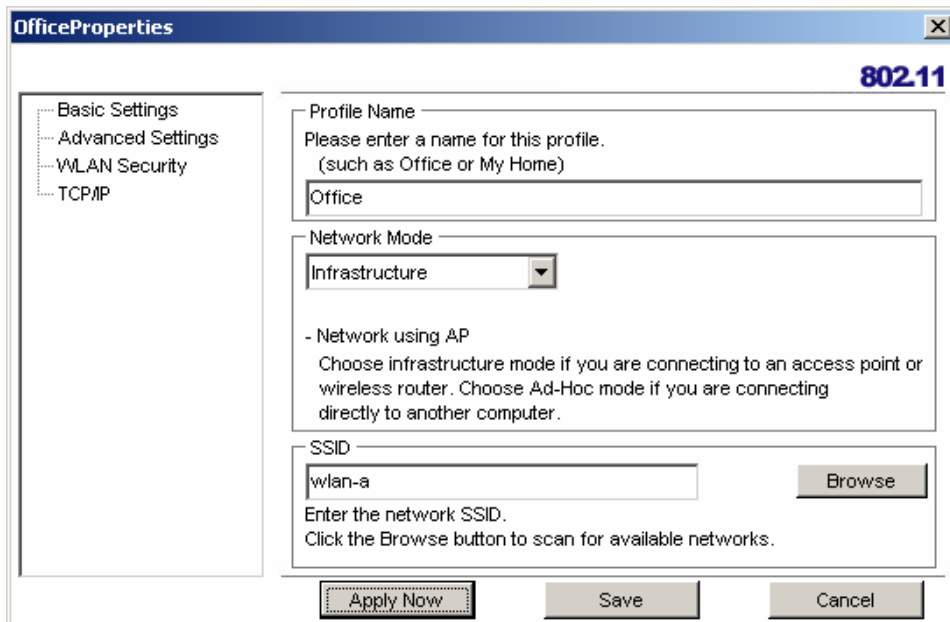
MODIFYING PROFILES

You may need to modify settings for a profile. For example, if you purchase a new router, or if your office administrator provides you with new security settings. Refer to the following to modify a profile.

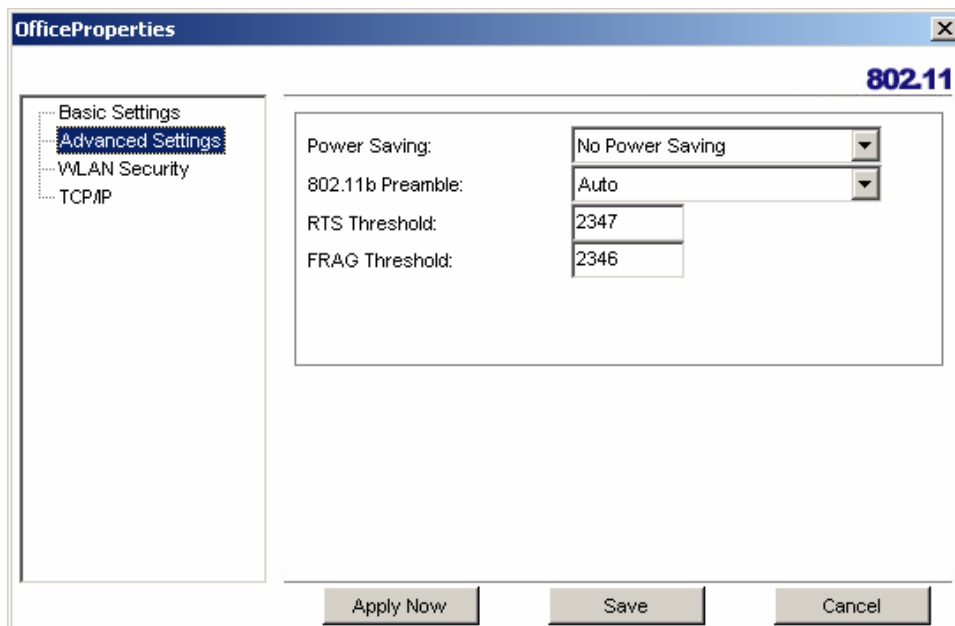
1. Open the Wireless Client Utility and click **Profile**.



2. Select the profile you want to modify and click **Properties**, the following window appears

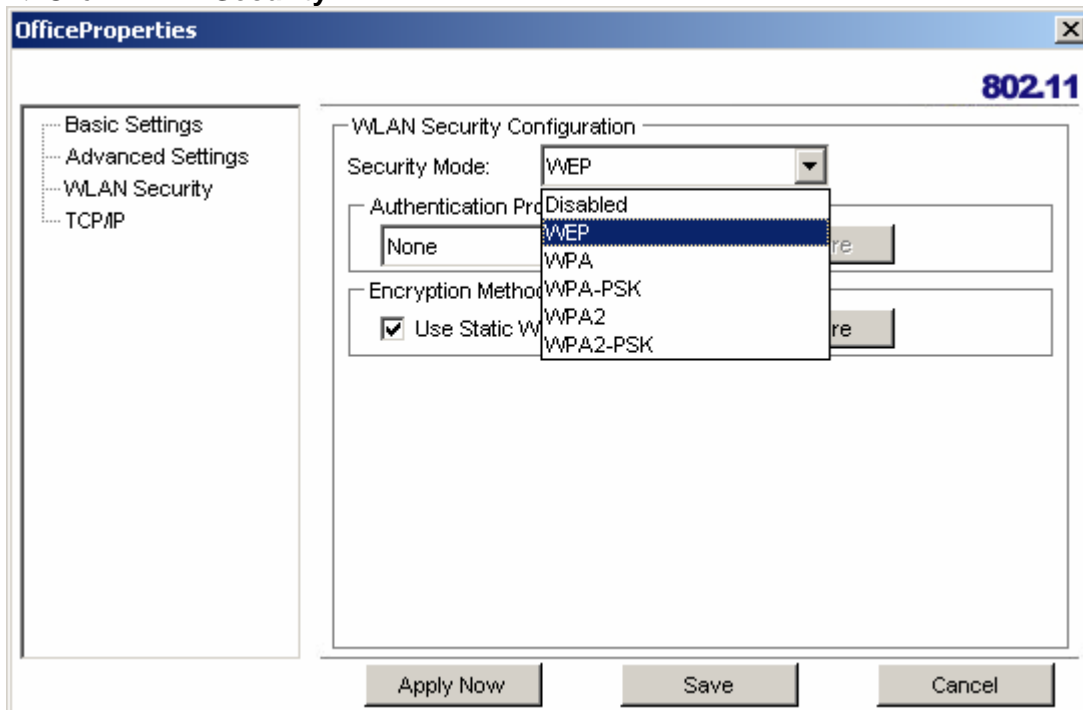


3. Make the changes you want to the **Basic Settings** and click **Advanced Settings**.



Unless you have a thorough understanding of wireless networking, it is recommended that you leave these settings at the defaults.

4. Click **WLAN Security**.



Click the drop-down arrow at Security Mode to choose from the following settings:

Disabled (No Encryption)

All data sent between the access point and the client is left unencrypted and may be viewed by other wireless devices.

WEP (Wired Equivalent Privacy)

Encrypts all traffic sent between the access point and the client using a shared key. When using WEP encryption, only access points and PCs using the same WEP Key can communicate with each other

WPA/WPA2

WPA encrypts all traffic between the access point and the client using either TKIP or AES encryption. Depending on the authentication protocol selected, each client must authenticate using their own unique username, password, and security certificate.

WPA-PSK/WPA2-PSK

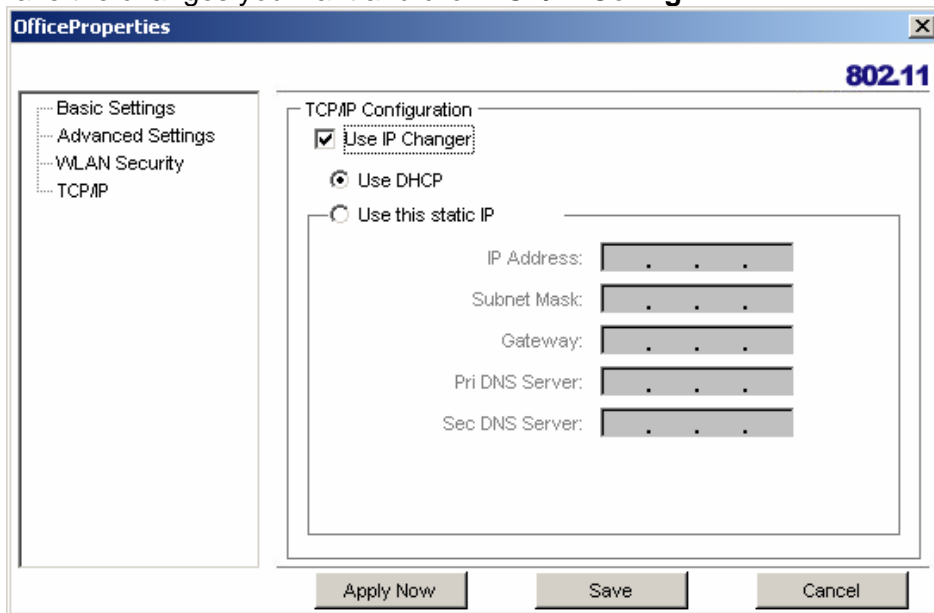
WPA-PSK or WPA2-PSK is a compromise between WPA/WPA2 and WEP. Like WEP, it uses a pre-shared key that every user of the network must have in order to send and receive data. Like WPA, it uses either TKIP or AES.



IMPORTANT

IT IS RECOMMENDED THAT YOU USE WPA/WPA2 OR WPA-PSK/WPA2-PSK WHENEVER POSSIBLE. WPA (WI-FI PROTECTED ACCESS) PROVIDES STRONGER ENCRYPTION THAN THE EARLIER WEP (WIRED EQUIVALENT PRIVACY) METHOD. WPA2 PROVIDES EVEN STRONGER ENCRYPTION, AUTHENTICATION AND KEY MANAGEMENT.

5. Make the changes you want and click **TCP/IP Config.**



Select the **Use IP Changer** checkbox. This allows you to bypass your existing wireless TCP/ IP settings and configure TCP/IP settings for each profile.

Use DHCP

DHCP (Dynamic Host Configuration Protocol) automatically assign IP addresses. Check this radio button if your router is set to DHCP.

Use static IP below

Check this radio button if you have to enter a static IP address.

Checking for Available Access Points

The number of access points or hot spots for public use is constantly increasing in major cities. Many Web sites report on the locations of hot spots. Check the following Web sites for updated information for your location.

- <http://intel.jiwire.com>
- www.hotspot-locations.com
- www.hotspotlist.com
- www.wififreespot.com
- www.wifinder.com
- www.wi-fizone.org

If you think you are in the vicinity of an access point, you can use the SiteSurvey screen to list the ones available.



Remember, you do not have to turn on your computer to find access points. You can use the hot spot finder functionality of the WHF-432/230 to locate access points while you are walking around. See the Quick Start Guide for details.

To scan for access points using the TEW-509UB, refer to the following.

1. Open the Wireless Client Utility and click **SiteSurvey**.

SSID	Mode	Strength	Ch	Security	
LAB411	802.11g	-81 dBm	11	Disabled	00
ssid	802.11g	-60 dBm	4	WEP	00
wlan-a	802.11a	-56 dBm	64	Disabled	00
wlan-g	802.11g	-85 dBm	6	Disabled	00
wlan-g	802.11g	-86 dBm	6	Disabled	00

Link Information

- SSID wlan-a

- Status Connected

- Link Speed 54.0 Mbps

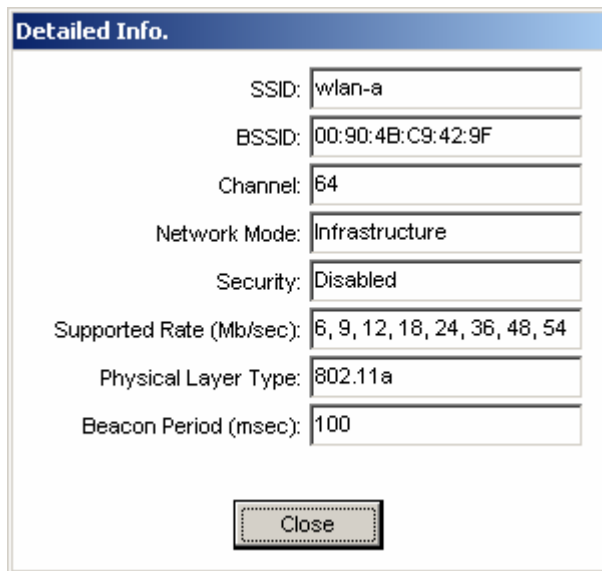
- Signal Level Excellent(-52 dBm)

BSSID = 00:90:4B:C9:42:9F Channel = 64 (5.320 GHz)

2. Available wireless networks are listed. Click **Refresh** anytime to update the list.

3. Select the network you want and click **Connect**. Or click **Add To Profile** if you want to connect later.

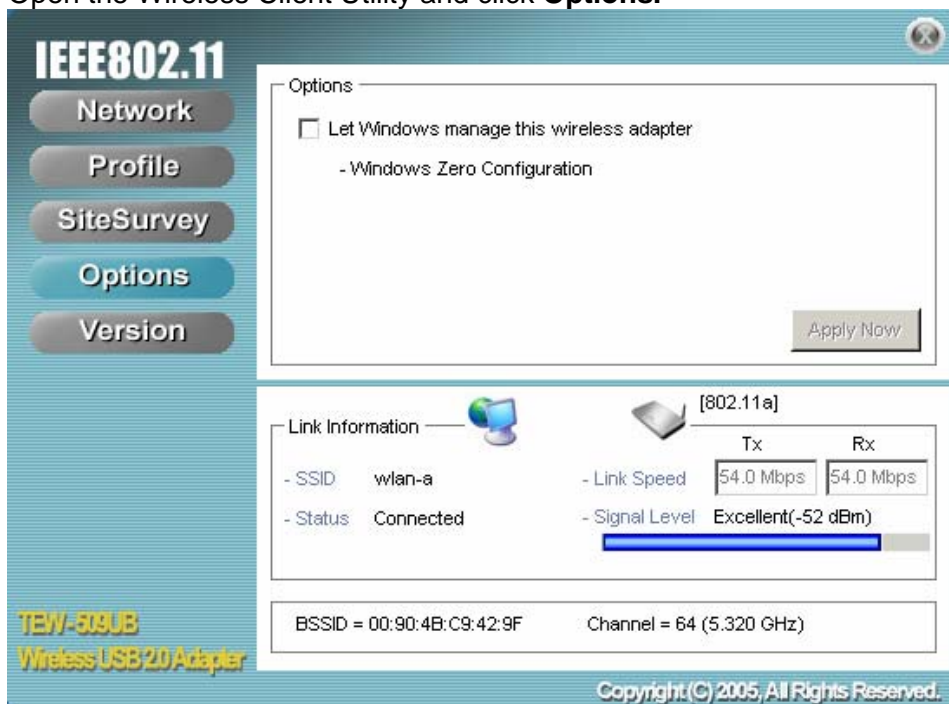
For details about any of the listed access points, select it from the list and click **Detailed Info** to see the following screen. (You can also double-click an access point to view the **Detailed Info** screen.)



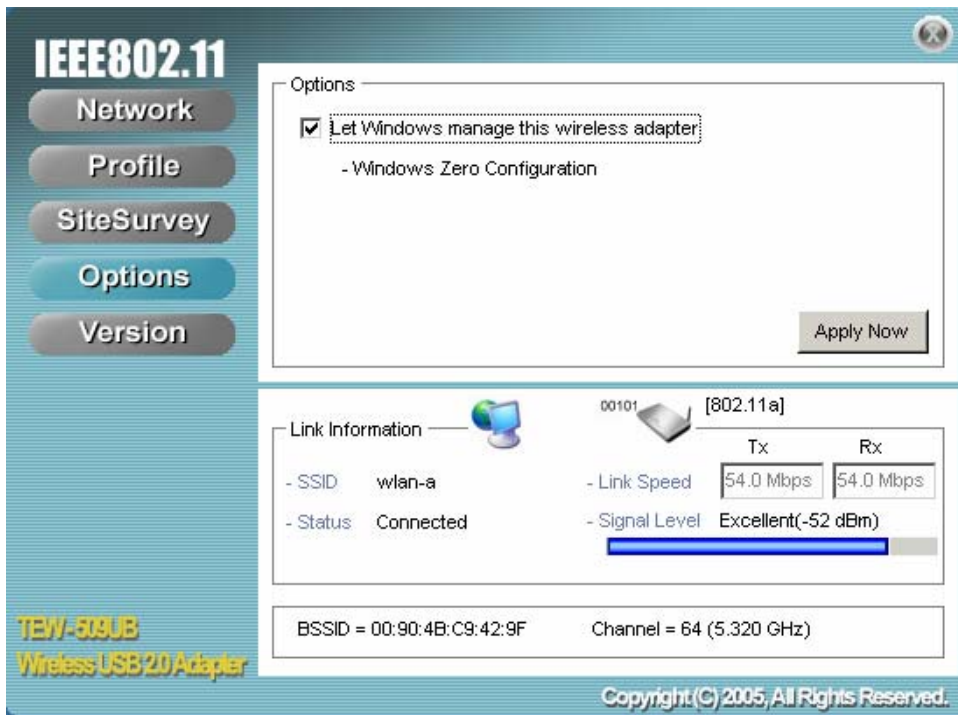
Disabling the Wireless Client Utility

You may need to have Windows manage your wireless network settings. In that case, you should disable the Wireless Client Utility. To disable the Wireless Client Utility refer to the following.

1. Open the Wireless Client Utility and click **Options**.



2. Select the **Let Windows manage this wireless adapter** check box and click **Apply Now**.





HotSpot Detector

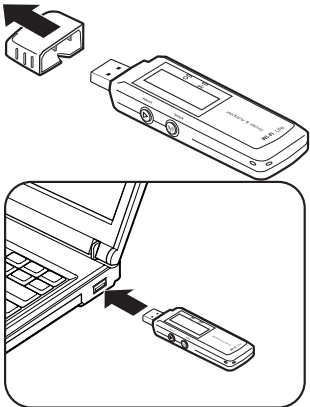
This section explains the hardware section of the TEW-509UB.

Charging the TEW-509UB

The TEW-509UB is powered by a rechargeable battery. The battery must be charged before first use as follows.

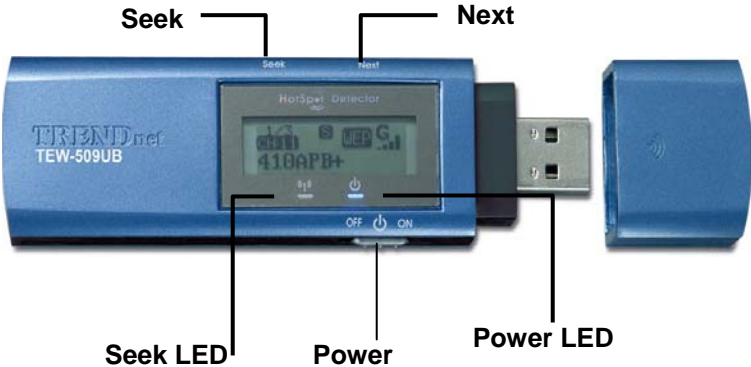
 **CAUTION** Most notebook computer USB connectors are horizontal. The TEW-509UB should be connected with the display facing up. If the USB connector on your computer is vertical, connect the TEW-509UB carefully to avoid damaging the connectors.

1. Remove the cap from the TEW-509UB.
2. With the display facing up, insert the TEW-509UB into a USB connector on your computer.
The  icon on the LCD screen indicating the battery is charging.



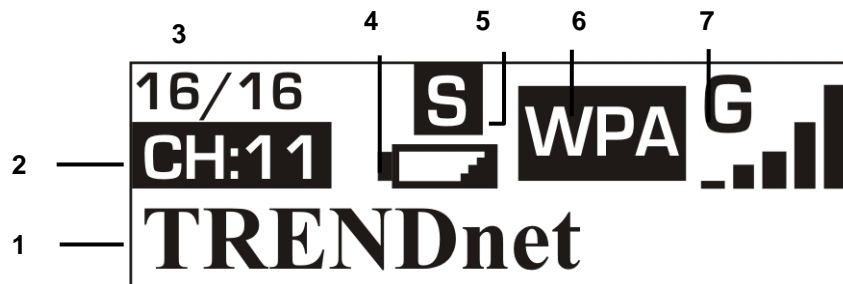
Identifying Components








The illustration below shows the buttons and LEDs on the TEW-509UB.



LCD Icons

The illustration below shows the icons in the LCD. All the icons will not necessarily appear together as shown here.



- | | |
|--------------------------|---|
| 1 SSID: | Displays the SSID of the current connection. Scrolls horizontally for longer names. |
| 2 Channel: | Displays the channel number of the current connection. |
| 3 Found: | Displays the number of connections found. Up to 16 connections can be monitored. |
| 4 Power: | Indicates the battery status:  low;  fully charged;  recharging. |
| 5 Scan mode: | Press and hold the Seek button to scroll through the three modes: [S]; [F]; and [D].
 Scan results are ranked in order of signal strength.
 Only lists open hot spots ranked in order of signal strength.
 Continually refreshes details of the selected hot spot. Allows you to lock on and monitor the signal strength as you move around. |
| 6 Security | Displays the security settings of the network: [WEP]/[WPA] security enabled;  security disabled. |
| 7 Signal Strength | Displays the signal strength (five levels) and radio band: [A]/[G]/[B] 802.11a/g/b. |

Fully charged and Recharging icons would appear during charging process only.

Finding a Hot Spot

Refer to the following to find a hot spot.

3. Switch **Power** to **ON**.
The TEW-509UB boots and searches for hot spots.
4. Press **Next** to scroll the available hot spots.

Accessing a Hot Spot

5. Connect the TEW-509UB to your computer and open the Wireless Client Utility.
6. Open the SiteSurvey screen and select the hot spot you want to access.
7. Click **Connect** to access the hot spot.

Exploring the Wireless Client Utility Screens

The Network Screen

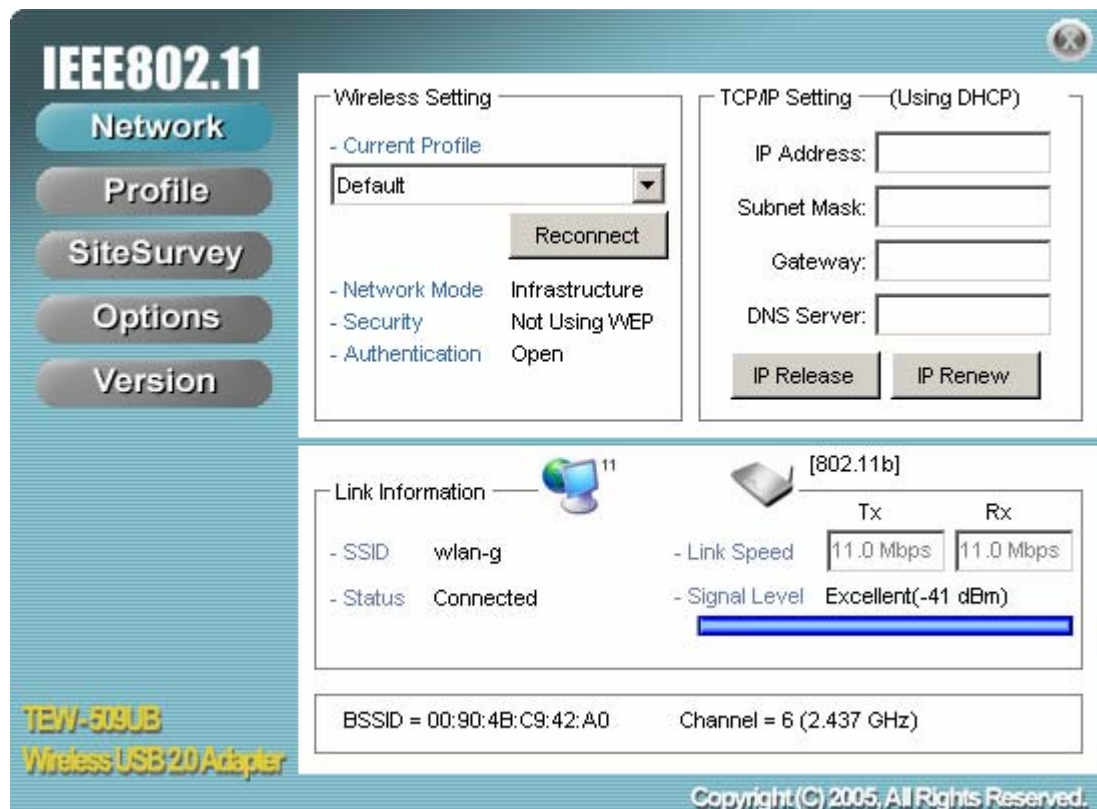
The Wireless Client Utility is included on the CD that shipped with the TEW-509UB. Install the utility as described in the Quick Start Guide before attaching the TEW-509UB to your computer.



BE SURE TO INSTALL THE WIRELESS CLIENT UTILITY BEFORE YOU ATTACH THE TEW-509UB TO YOUR COMPUTER. ATTACHING THE TEW-509UB BEFORE THE UTILITY IS INSTALLED COULD CAUSE THE INSTALLATION TO FAIL.

When the TEW-509UB is installed, it is configured to automatically load when you start your computer. The utility icon displays in the system tray at the bottom-right corner of your screen.

Double-click the TEW-509UB icon in the system tray, the following **Network** screen opens:



The screenshot shows the IEEE802.11 Network utility window. On the left is a sidebar with buttons for Network, Profile, SiteSurvey, Options, and Version. The main area is divided into several sections:

- Wireless Setting:** Includes a dropdown for Current Profile (Default), a Reconnect button, and status for Network Mode (Infrastructure), Security (Not Using WEP), and Authentication (Open).
- TCP/IP Setting (Using DHCP):** Includes input fields for IP Address, Subnet Mask, Gateway, and DNS Server, along with IP Release and IP Renew buttons.
- Link Information:** Shows SSID (wlan-g), Status (Connected), and a signal level bar.
- Link Speed and Signal Level:** Shows Tx and Rx Link Speed (11.0 Mbps) and Signal Level (Excellent (-41 dBm)).
- Bottom Section:** Shows BSSID = 00:90:4B:C9:42:A0 and Channel = 6 (2.437 GHz).

TEW-509UB Wireless USB 2.0 Adapter
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WIRELESS SETTING

The Wireless Setting pane settings are described below

Current Profile	Shows the current profile you have selected. If you have not added a profile, only Default shows. The settings shown in the Network screen are for the current profile. Click the drop down arrow to select another profile.
Reconnect (button)	Press to reconnect to the current access point.
Network Mode	Shows the current network mode. Infrastructure or ad-hoc mode. (See Note below for more information.)
Security	Shows the security status.
Authentication	Shows the authentication required. No authentication is required if this field is blank.

TCP/IP SETTING

The TCP/IP Setting pane settings are described below.

IP Address	Shows the current network IP address.
Subnet Mask	Shows the current subnet mask status.
Gateway	Shows the current gateway.
DNS Server	Shows the current network DNS address.
IP Release (button)	Click to release the current TCP/IP settings.
IP Renew (button)	Click to renew the TCP/IP settings.

LINK INFORMATION

The Link Information pane settings are described below. The Link Information pane shows the network status.

SSID	Shows the current SSID (Service Set Identifier). This is the name assigned to a wireless Wi-Fi network. All devices must use this case-sensitive name in order to communicate.
Status	Shows the current connection status.
Link Speed	Shows the speed of the current connection. Tx is the transmit speed; Rx the receive speed.
Signal Level	Shows the signal strength of the current connection. (See Tip below for more information.)
BSSID	Shows the ID of the current BSS. (See Note below for more information.)
Channel	Shows the network channel.



THE LINK INFORMATION PANEL IS SHOWN IN ALL SCREENS SO YOU CAN ALWAYS SEE THE STATUS OF YOUR CURRENT CONNECTION. Monitor this setting as you move around to attain a suitable signal.



WIRELESS SYSTEMS WORK IN INFRASTRUCTURE MODE OR PEER-TO-PEER MODE. IN INFRASTRUCTURE MODE, WIRELESS DEVICES COMMUNICATE TO A WIRED LAN VIA ACCESS POINTS. EACH ACCESS POINT AND ITS WIRELESS DEVICES ARE KNOWN AS A BASIC SERVICE SET (BSS). IN AD-HOC MODE (ALSO KNOWN AS PEER-TO-PEER MODE), WIRELESS DEVICES COMMUNICATE WITH EACH OTHER DIRECTLY AND DO NOT USE AN ACCESS POINT. THIS IS AN INDEPENDENT BSS (IBSS).

The Profile Screen

A profile is a record of the configuration you use to connect to a particular access point. Without profiles, you would have to reconfigure the TEW-509UB each time you change access points. Using the **Profile** screen you can configure the TEW-509UB to access your home network and your office network. Each configuration is saved as a profile.

The screenshot shows the IEEE802.11 utility interface. On the left is a navigation menu with buttons for Network, Profile (selected), SiteSurvey, Options, and Version. The main area is titled 'Profile List (current profile tagged #)' and contains a table with columns for Name, SSID, and IP Address. Below the table are buttons for Add (A), Remove (R), Properties (P), and Apply (Y). The 'Link Information' panel shows the current profile is 'wlan-a' with a 'Connected' status. It also displays link speed (54.0 Mbps Tx/Rx) and signal level (Excellent, -48 dBm) with a progress bar. At the bottom, it shows BSSID = 00:90:4B:C9:42:9F and Channel = 64 (5.320 GHz). The footer includes 'TEW-509UB Wireless USB 2.0 Adapter' and 'Copyright (C) 2005, All Rights Reserved.'

Name	SSID	IP Address	
Default	ANY	Windows Setting	Up (U)
(#)Office	wlan-a	Windows Setting	Down (D)

Link Information [802.11a]

- SSID	wlan-a	- Link Speed	Tx: 54.0 Mbps	Rx: 54.0 Mbps
- Status	Connected	- Signal Level	Excellent(-48 dBm)	

BSSID = 00:90:4B:C9:42:9F Channel = 64 (5.320 GHz)

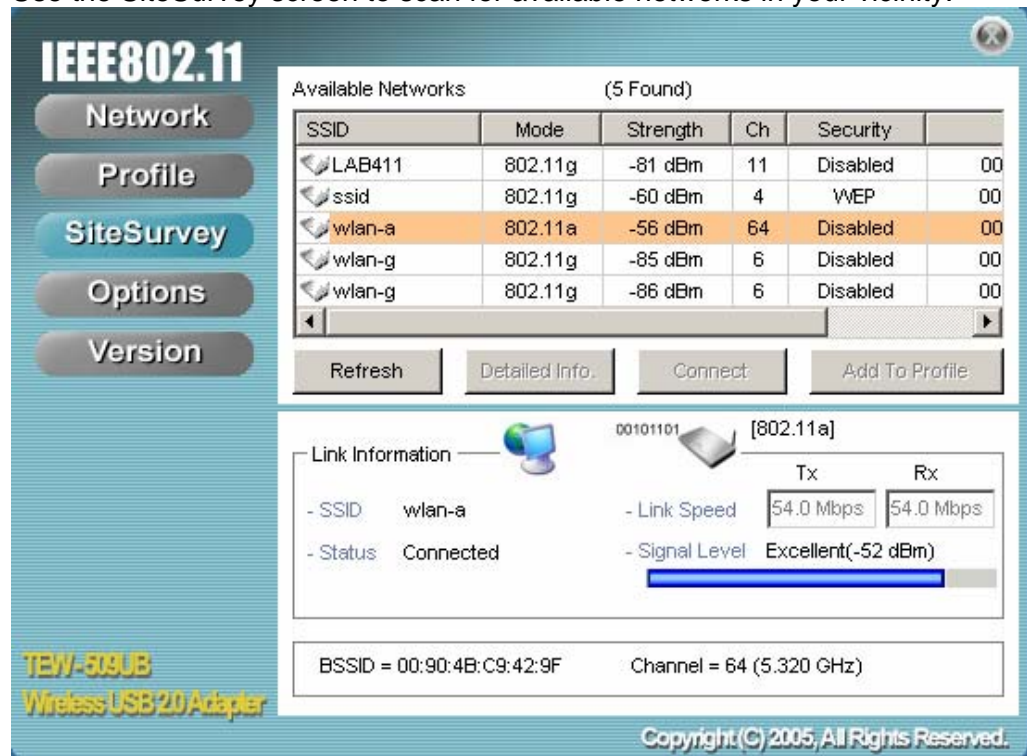
PROFILE LIST

The Profile List pane settings are described below.

Name	Shows the name of the profile that you assigned. If only default displays, no profiles have been added.
SSID	Shows the name (usually the equipment vendor's name) assigned to a wireless Wi-Fi network. (The keyword "ANY" means any available network.)
IP Address	Shows the IP address.
Add (button)	Click to add a profile.
Remove (button)	Click to remove the selected profile.
Properties (button)	Click to view properties for the selected profile.
Apply (button)	Click to apply changes after modifying settings.
Up (button)	Use the Up/Down buttons to move the selected network to the top of the list or to the bottom. When in the Network screen, the TEW-509UB attempts to connect to the network at the top of this list first.
Down (button)	

The SiteSurvey Screen

Use the SiteSurvey screen to scan for available networks in your vicinity.



AVAILABLE NETWORKS

The Available Networks pane settings are described below.

SSID	Shows the name (usually the equipment vendor's name) assigned to a wireless Wi-Fi network.
Mode	Shows the signal type (802.11a/b/g).
Strength	Shows the signal strength.
Ch	Shows the network channel.
Security	Shows the security status.
Refresh (button)	Click to refresh the list of currently available networks.
Detailed Info (button)	Click to view properties for the selected network. (See Detailed Info. Screen below.)
Connect (button)	Click to connect to the selected network. (The network is not added to the profile list.)
Add To Profile (button)	Click to add the network to the profile list.

DETAILED INFO. SCREEN

For details about any of the listed access points, select it from the list and click **Detailed Info** to see the following screen. (You can also double-click an access point to view the **Detailed Info** screen.)

Detailed Info.

SSID:	wlan-a
BSSID:	00:90:4B:C9:42:9F
Channel:	64
Network Mode:	Infrastructure
Security:	Disabled
Supported Rate (Mb/sec):	6, 9, 12, 18, 24, 36, 48, 54
Physical Layer Type:	802.11a
Beacon Period (msec):	100

Close

The Options Screen

By default, the Wireless Client Utility configures your wireless settings. Use this screen to disable the Wireless Client Utility.



IEEE802.11

- Network
- Profile
- SiteSurvey
- Options**
- Version

Options

Let Windows manage this wireless adapter
- Windows Zero Configuration

Apply Now

Link Information   [802.11a]

- SSID	wlan-a	- Link Speed	Tx 54.0 Mbps	Rx 54.0 Mbps
- Status	Connected	- Signal Level	Excellent(-52 dBm)	

BSSID = 00:90:4B:C9:42:9F Channel = 64 (5.320 GHz)

TEW-509UB
Wireless USB 2.0 Adapter

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OPTIONS

The Options pane settings are described below.

Let Windows manage this wireless adapter (tick box)	When you check the Let Windows manage this wireless adapter check-box, Windows Zero Configuration manages your wireless settings. The Wireless Client Utility still shows the link status of the adapter.
Apply Now (button)	Click to execute the changes.

The Version Screen

This screen displays the software and hardware information of the adapter. You cannot make changes to this screen.

The screenshot displays the IEEE802.11 utility interface. On the left, a sidebar contains navigation buttons: Network, Profile, SiteSurvey, Options, and Version (which is highlighted). The main content area is divided into several sections:

- SW Information:** Package Version: 1.0.0.0, Driver Version: 1.12.0.0, Utility Version: 1.0.0
- HW Information:** Supported Mode: 802.11b/802.11g/802.11a, MAC Address: 00-02-DD-01-00-45, Supported Ch: Ch 1~Ch 13, Ch 36~Ch 48
- Link Information:** Shows a computer icon labeled '11011' and a laptop icon labeled '[802.11a]'. It includes fields for SSID (wlan-a), Status (Connected), Link Speed (Tx: 54.0 Mbps, Rx: 54.0 Mbps), and Signal Level (Excellent(-54 dBm) with a blue progress bar).
- Adapter Info:** TEW-509UB Wireless USB 2.0 Adapter
- Network Details:** BSSID = 00:90:4B:C9:42:9F, Channel = 64 (5.320 GHz)
- Footer:** Copyright(C) 2005, All Rights Reserved.

Configuring Wireless Security

This chapter covers the configuration of security options in the 802.11 Wireless Client Utility.

Configuring Security

When you create a profile you need to configure the security settings with the information provided by the administrator. You modify security settings by selecting the profile and clicking **Properties**.

The screenshot displays the IEEE802.11 Wireless Client Utility interface. On the left, a sidebar contains navigation buttons for Network, Profile, SiteSurvey, Options, and Version. The main window is titled "IEEE802.11" and features a "Profile List (current profile tagged #)" table. The table has columns for Name, SSID, and IP Address. Two profiles are listed: "Default" with SSID "ANY" and IP Address "Windows Setting", and "(#)Office" with SSID "wlan-a" and IP Address "Windows Setting". The "(#)Office" profile is selected. To the right of the table are "Up (U)" and "Down (D)" buttons. Below the table are "Add (A)", "Remove (R)", "Properties (P)", and "Apply (Y)" buttons. Below the table, there is a "Link Information" section with a computer icon and a wireless adapter icon. The wireless adapter icon is labeled "[802.11a]". The Link Information section shows: - SSID: wlan-a, - Status: Connected, - Link Speed: 54.0 Mbps (Tx and Rx), and - Signal Level: Excellent(-48 dBm) with a corresponding signal strength bar. At the bottom, it shows BSSID = 00:90:4B:C9:42:9F and Channel = 64 (5.320 GHz). The bottom left corner identifies the device as "TEW-509UB Wireless USB 2.0 Adapter" and the bottom right corner contains the copyright notice "Copyright(C) 2005, All Rights Reserved."

Name	SSID	IP Address
Default	ANY	Windows Setting
(#)Office	wlan-a	Windows Setting

Link Information

[802.11a]

	Tx	Rx
- Link Speed	54.0 Mbps	54.0 Mbps
- Signal Level	Excellent(-48 dBm)	

BSSID = 00:90:4B:C9:42:9F Channel = 64 (5.320 GHz)

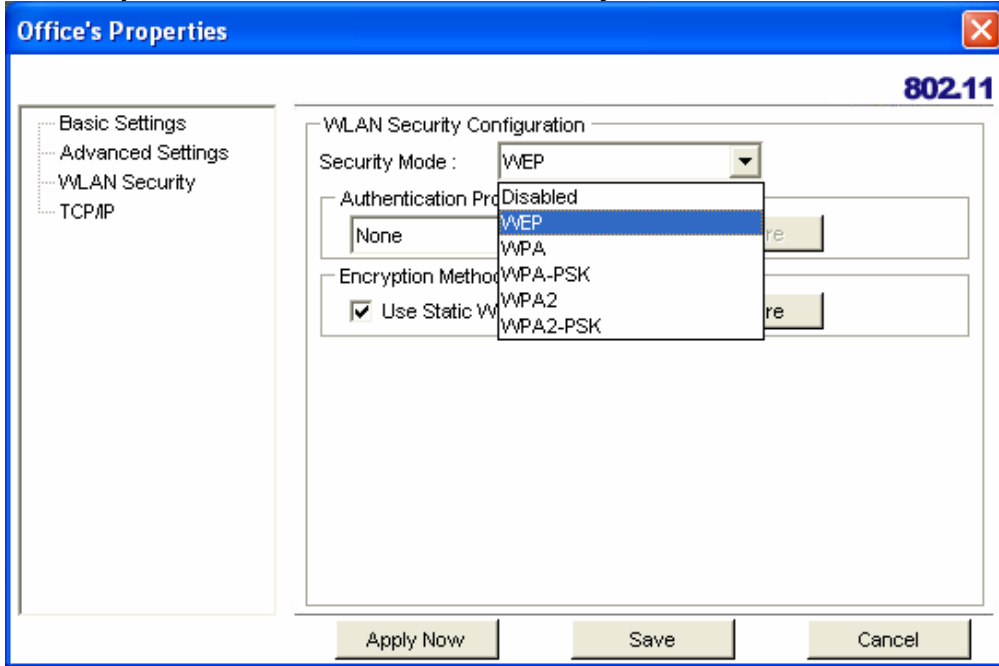
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Wireless USB 2.0 Adapter

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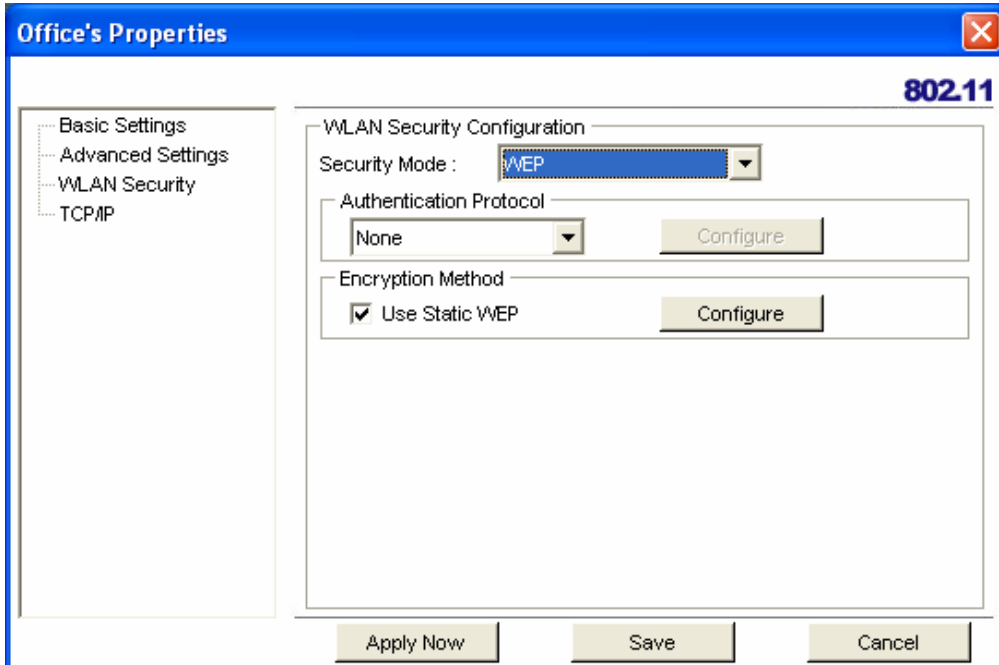
CONFIGURING WEP

Refer to the following to modify WEP settings.

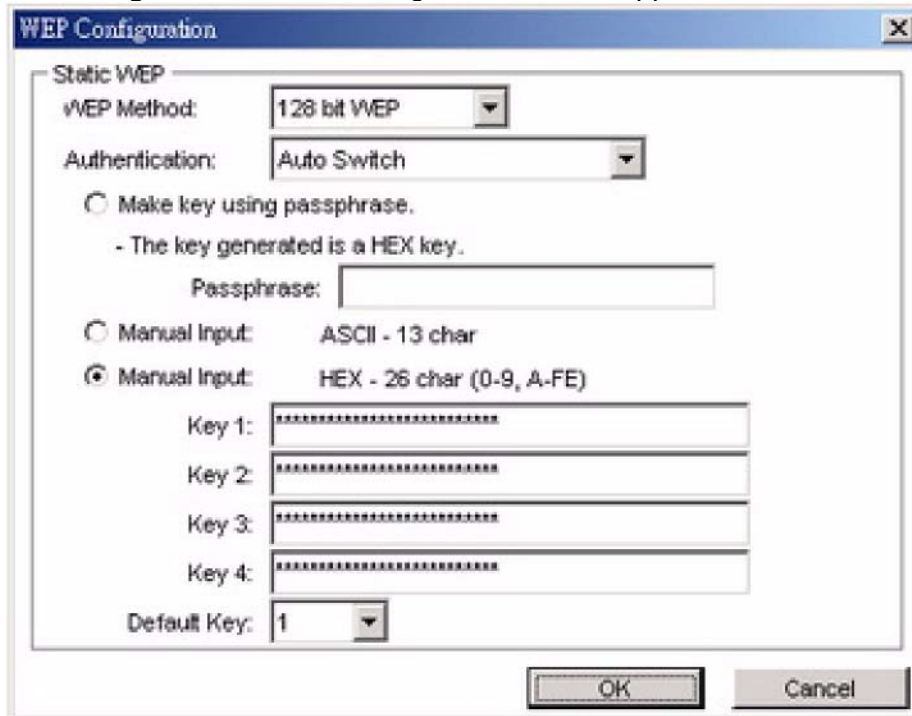
1. In the **Properties** window, click **WLAN Security**.



2. Click the drop-down arrow at **Security Mode** and choose **WEP**.
3. Click the **Use Static WEP** checkbox.



4. Click **Configure**. The WEP Configuration screen appears.



WEP Method	Select the encryption to match your access point: 64 or 128-bit. The encryption level must match the encryption level used by your access point.
Authentication	Options are Auto, Open System, and Shared. For most installations choose Auto.
Make Key using Pass-Phrase	A WEP Key is automatically generated as you type in any PassPhrase of your choice. Use this feature when you have used a PassPhrase to generate your WEP key on your access point.
Manual Input (ASCII)	Generate your own WEP Key (4 keys maximum) using ASCII characters (5 characters for 64-bit, 13 characters for 128-bit)
Manual Input (HEX)	Generate your own WEP Key using hexadecimal characters (10 characters for 64-bit, 26 characters for 128-bit).

Default Key Four keys are used for decryption; you have to choose a default key from them for encryption.

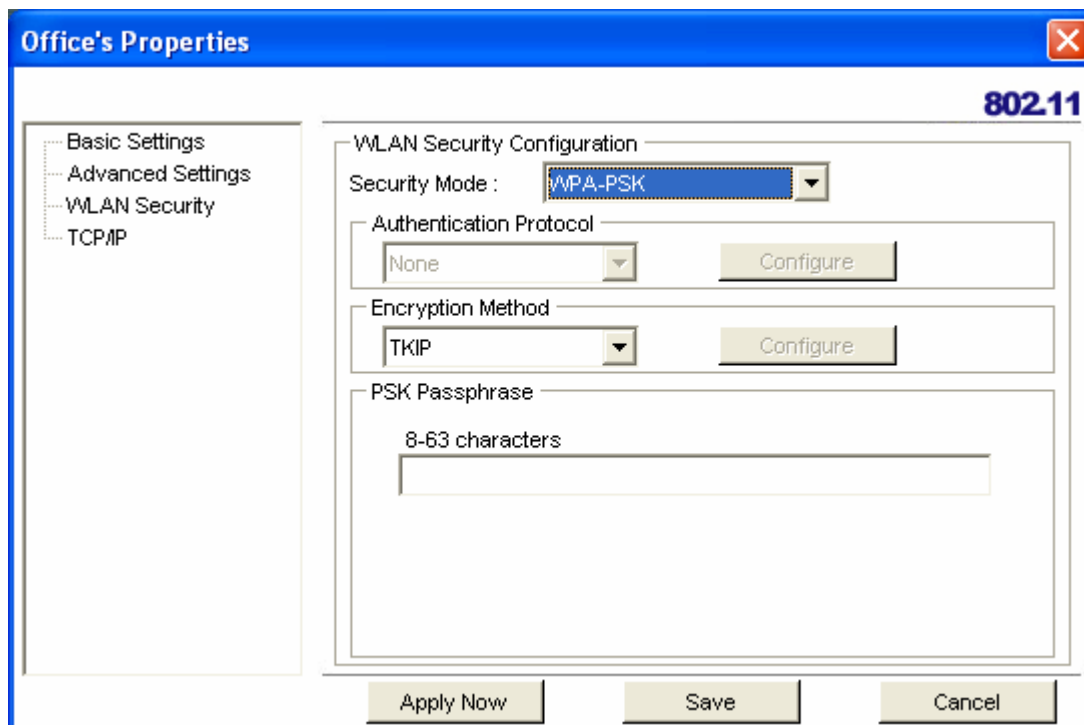
CONFIGURING WPA & WPA2

Refer to the following to configure WPA & WPA2.

The screenshot shows the 'Office's Properties' dialog box with the 'WLAN Security Configuration' section expanded. The 'Security Mode' dropdown is set to 'WPA'. Below it, the 'Authentication Protocol' is set to 'TLS' with a 'Configure' button. The 'Encryption Method' is set to 'TKIP' with a 'Configure' button. The 'User Information' section contains fields for 'User ID', 'Password', 'My Certificate' (displaying 'No user certificate'), 'Server Certificate' (displaying 'No server certificate'), and 'Server Name' with a 'Configure Certificate' button. At the bottom of the dialog are 'Apply Now', 'Save', and 'Cancel' buttons. The window title bar shows 'Office's Properties' and '802.11'.

1. Click the drop-down arrow at **Security Mode** and choose **WPA** or **WPA2**.
2. Click the drop-down arrow at **Encryption Method** and choose **TKIP** or **AES**. To configure 802.1x for WPA or WPA2, see "Configuring 802.1x" section.

CONFIGURING WPA-PSK & WPA2-PSK (TO BE SUPPORTED) Refer to the following to configure WPA-PSK & WPA2-PSK.



1. Click the drop-down arrow at **Security Mode** and choose **WPA-PSK** or **WPA2-PSK**.
2. Click the drop-down arrow at **Encryption Method** and choose **TKIP** or **AES**. (Most access points use TKIP for WPA-PSK & WPA2-PSK.)
3. At **PSK Pass Phrase** enter the same pass phrase used to configure the WPA-PSK or WPA2-PSK on your access point.

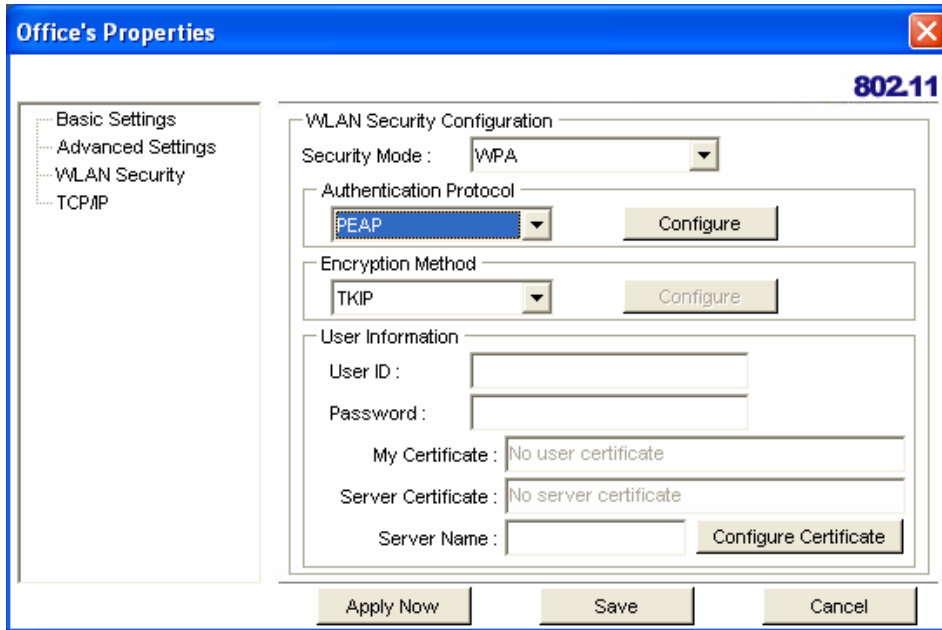
CONFIGURING 802.1 X

You need to know if your access point supports 802.1x and then apply the configuration here.

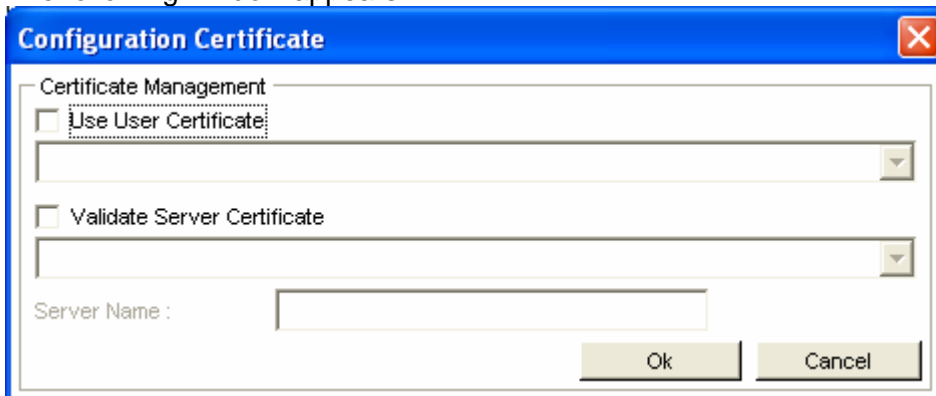
1. Choose the EAP method under **Authentication protocol**.
2. Options for **User Information** depend on the EAP method chosen.

CONFIGURING 802.1 X – PEAP

Refer to the following to configure PEAP.



1. At **WPA** or **WPA2** security mode, click **Configure** button next to **Authentication Protocol**.
2. Select **Inner PEAP** protocol.
3. Click **Save** to finish and return to the previous screen.
4. Type in a unique **User ID** and **Password** under **User Information**.
5. If your network uses a user server certificate click **Configure Certificate** (see **Note** below).
The following window appears:



Use user certificate	Check this box if your network requires user certification and then select the certificate from the drop-down menu.
Validate server certificate	Check this box if your network requires user certification and then select the certificate authority from the drop-down menu.
Server name:	Type in the name of the server that is used for 802.1 x authentication.

Server name should match exactly

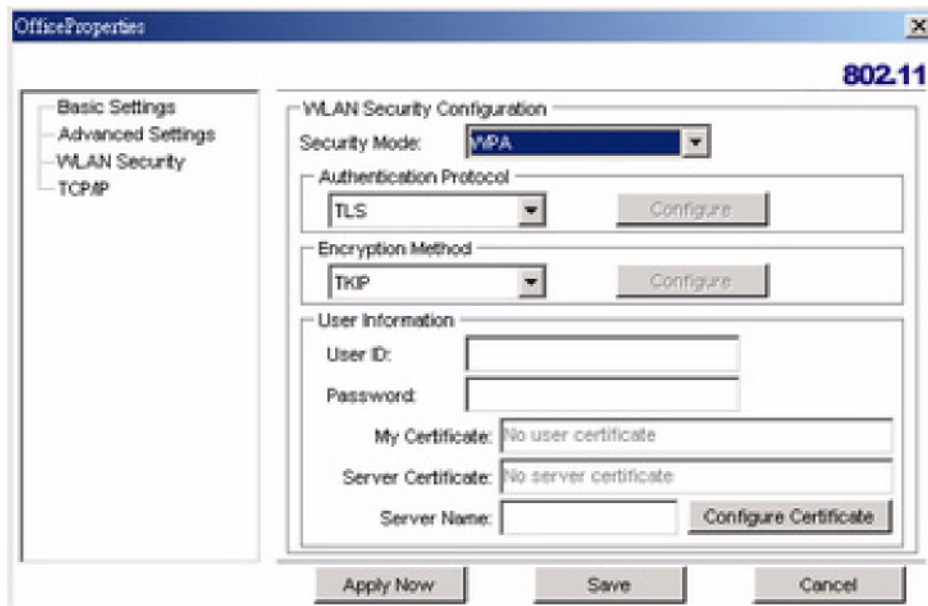
Check this box if the server name has to exactly match the name in the certificate.

6. Click **OK** to apply the settings.



Server Certificates require a wired connection to the network so you can obtain the certificate(s) from the certificate authority. Your network administrator can provide on certificate management.

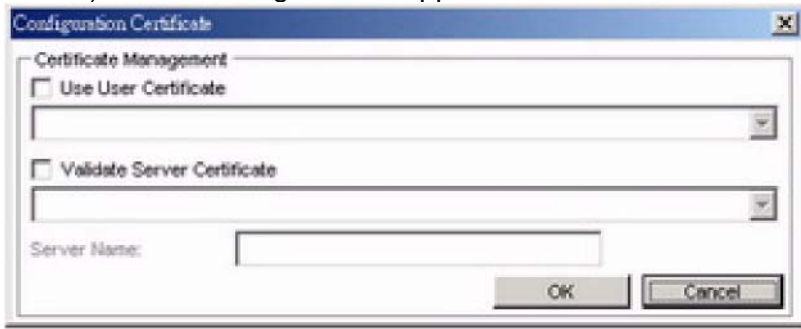
CONFIGURING 802.1X – PEAP-TLS



The screenshot shows the 'Office Properties' dialog box with the 'WLAN Security Configuration' tab selected. The 'Security Mode' is set to 'WPA'. The 'Authentication Protocol' is set to 'TLS' and the 'Encryption Method' is set to 'TKIP'. Under 'User Information', the 'User ID' and 'Password' fields are empty. The 'My Certificate' and 'Server Certificate' fields are both set to 'No user certificate' and 'No server certificate' respectively. The 'Server Name' field is empty. There are 'Apply Now', 'Save', and 'Cancel' buttons at the bottom.

1. At **Security Mode** select **WPA** or **WPA2** from the drop-down menu.
2. At **Authentication Protocol** select **TLS** from the drop-down menu.
3. Click the **Configure** button and select the **Inner TLS** protocol.
4. Type in a unique **User ID** and **Password** under **User Information**.

5. TLS requires both server and user certification. Click **Configure Certificate** (see **Note** below). The following window appears:



Use user certificate	Check this box if your network requires user certification and then select the certificate from the drop-down menu.
Validate server certificate	Check this box if your network requires user certification and then select the certificate authority from the drop-down menu.
Server name:	Type in the name of the server that is used for 802.1 x authentication.
Server name should match exactly	Check this box if the server name has to exactly match the name in the certificate.

6. Click **OK** to apply the settings.



Server Certificates require a wired connection to the network so you can obtain the certificate(s) from the certificate authority. Your network administrator can provide on certificate management.

Glossary

For unfamiliar terms used below, look for entries elsewhere in the glossary.

AD-HOC (IBSS)

Ad-hoc mode does not require an AP or a wired network. A network that transmits wireless from computer to computer without the use of a base station (access point).

Two or more wireless stations communicate directly to each other. An ad-hoc network may sometimes be referred to as an Independent Basic Service Set (IBSS).

CHANNEL

A radio frequency used by a wireless device is called a channel.

EAP AUTHENTICATION

EAP (Extensible Authentication Protocol) is an authentication protocol that runs on top of the IEEE802.1x transport mechanism in order to support multiple types of user authentication. By using EAP to interact with an EAP-compatible RADIUS server, an access point helps a wireless station and a RADIUS server perform authentication.

ENCRYPTION

The reversible transformation of data from the original to a difficult-to-interpret format. Encryption is a mechanism for protecting confidentiality, integrity, and authenticity of data. It uses an encryption algorithm and one or more encryption keys.

FRAGMENTATION THRESHOLD

This is the maximum data fragment size that can be sent before the packet is fragmented into smaller packets.

IEEE 802.1X

The IEEE 802.1x standard outlines enhanced security methods for both the authentication of wireless stations and encryption key management. Authentication can be done using an external RADIUS server.

INFRASTRUCTURE (BSS)

When a number of wireless stations are connected using a single AP, you have a Basic Service Set (BSS).

ROAMING

In an infrastructure network, wireless stations are able to switch from one BSS to another as they move between the coverage areas. During this period, the wireless stations maintain uninterrupted connection to the network. This is roaming. As the wireless station moves from place to place, it is responsible for choosing the most appropriate AP depending on the signal strength, network utilization among other factors.

SSID

The SSID (Service Set Identity) is a unique name shared among all wireless devices in a wireless network. Wireless devices must have the same SSID to communicate with each other.

TEMPORAL KEY INTEGRITY PROTOCOL (TKIP)

Temporal Key Integrity Protocol (TKIP) uses 128-bit keys that are dynamically generated and distributed by the authentication server.

USER AUTHENTICATION

WPA applies IEEE 802.1x and Extensible Authentication Protocol (EAP) to authenticate wireless clients using an external RADIUS database. If you do not have an external RADIUS server, use WPA-PSK/WPA2-PSK (WPA -Pre-Shared Key) that only requires a single (identical) password entered into each access point, wireless gateway and wireless client. As long as the passwords match, clients will be granted access to a WLAN.

WEP

WEP (Wired Equivalent Privacy) encryption scrambles all data packets transmitted between the TEW-509UB and the AP or other wireless stations to keep network communications private. Both the wireless stations and the access points must use the same WEP key for data encryption and decryption.

WPA/WPA2

Wi-Fi Protected Access (WPA) and WPA2 is a subset of the IEEE 802.11 i security specification draft. Key differences between WPA and WEP are user authentication and improved data encryption. WPA2 is a wireless security standard that defines stronger encryption, authentication and key management than WPA.

Maintenance

Installing a newer version of the Wireless Client Utility may improve the performance of the TEW-509UB. Before installing the new version, you must uninstall the old one.

CHECKING THE WIRELESS CLIENT UTILITY VERSION

To check the current Wireless Client Utility, open the utility on the Version screen. In the **S/W Information** pane, note the **Utility Version** number.

IEEE802.11

Network
Profile
SiteSurvey
Options
Version

S/W Information

Package Version: 1.0.0.0
Driver Version: 1.12.0.0
Utility Version: 1.0.0

HW Information

Supported Mode: 802.11b/802.11g/802.11a
MAC Address: 00-02-DD-01-00-45
Supported Ch: Ch 1~Ch 13, Ch 36~Ch 48

Link Information

11011 [802.11 a]

		Tx	Rx
- SSID	wlan-a	54.0 Mbps	54.0 Mbps
- Link Speed			
- Status	Connected	- Signal Level Excellent(-54 dBm)	

BSSID = 00:90:4B:C9:42:9F Channel = 64 (5.320 GHz)

TEW-509UB
Wireless USB 2.0 Adapter

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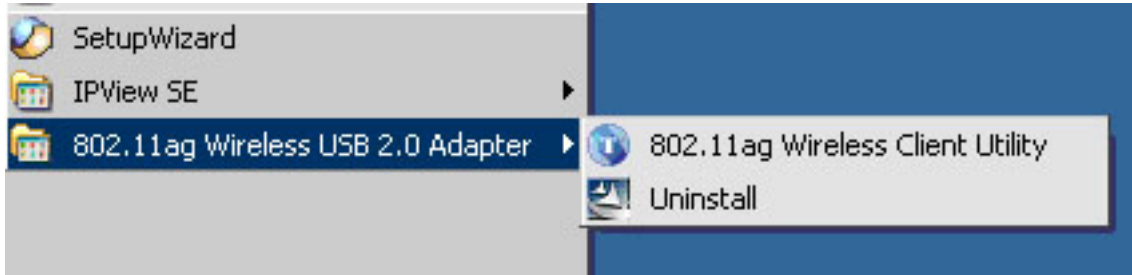


If you need to contact technical support, you will need to provide the S/W Information. Be sure to check the screen in the utility that is installed on your computer and not the screen shown in this manual.

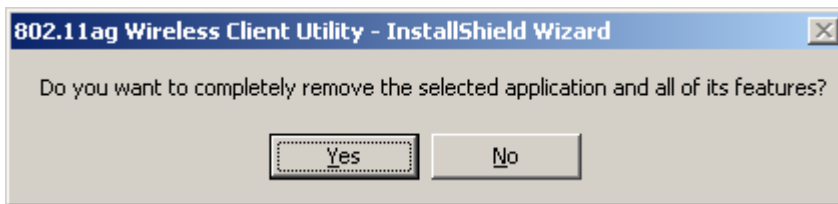
UNINSTALLING THE WIRELESS CLIENT UTILITY

Refer to the following to uninstall (remove) the Wireless Client Utility from your computer.

1. Click **Start -> All Programs (Windows 2000 Programs) -> 802.11 Wireless Network Adapter -> Uninstall**.



2. When prompted, click **Yes** to remove the driver and utility software.



3. Click **Finish** to complete the uninstallation.
4. Reboot your computer if prompted.

UPGRADING THE WIRELESS CLIENT UTILITY

Contact your dealer or technical support for details on downloading the current Wireless Client Utility. Refer to the following to upgrade the Wireless Client Utility.

1. Double-click the Setup.exe file that you downloaded. The installation wizard screen opens.
2. Click **Next** to continue.
3. Click **Next** in the **Choose Destination Location** screen.
4. Click **Install** to begin the installation.
5. Click **Finish** to exit the wizard and complete the installation.

Troubleshooting

PROBLEMS STARTING THE 802.11 a/g WIRELESS CLIENT UTILITY PROGRAM

PROBLEM	CORRECTIVE ACTION
Windows does not auto-detect the TEW-509UB.	Make sure the TEW-509UB power switch is turned off and properly inserted into the USB port and then restart your computer.
	Perform a hardware scan by clicking Start, Settings, Control Panel and then double-click Add/Remove Hardware . (Steps may vary depending on Windows version). Follow the on-screen instructions to search for the TEW-509UB (Wireless 802.11 USB Network Adapter) and install the driver.
	Check for possible hardware conflicts. In Windows, click Start, Settings, Control Panel, System, Hardware and then click Device Manager . Verify the status of the TEW-509UB (Wireless 802.11 USB Network Adapter) under Network Adapter . (Steps may vary depending on the Windows version).
	Install the TEW-509UB in another computer. If the error persists, there may be a hardware problem. In this case, please contact your local dealer for support.

PROBLEMS WITH THE LINK STATUS

PROBLEM	CORRECTIVE ACTION
The link quality and/or signal strength is poor all the time from the status bar.	Search and connect to another AP with a better link quality using the Site Survey screen. Change the channel used by your AP. Move your computer closer to the AP or the peer computer(s) within the transmission range. There may be too much radio interference (for example microwave or another AP using the same channel) around your wireless network. Relocate or reduce the radio interference.

PROBLEMS WITH SECURITY SETTINGS

"Disconnected" (meaning authentication failure) Shown in the Status Bar	Make sure your AP/Router has the same setting as your client adapter and follow AP/Router's security settings.
LED PWR and LINK are on but cannot receive or sending data and connect to network	Make sure your AP/Router has the same setting as your client adapter and follow AP/Router's security settings.

Problems Communicating With Other Computers

PROBLEM	CORRECTIVE ACTION
The TEW-509UB computer cannot communicate with the other computer.	Make sure you are connected to the network.

Infrastructure	<p>Make sure that the AP and the associated computers are turned on and working properly.</p> <p>Make sure the TEW-509UB computer and the associated AP use the same SSID.</p> <p>Change the AP and the associated wireless clients to use another radio channel if interference is high.</p> <p>Make sure that the computer and the AP share the same security option and key. Verify the settings in the Profile Security Settings screen.</p>
Ad-Hoc (IBSS)	<p>Verify that the peer computer(s) is turned on.</p> <p>Make sure the TEW-509UB computer and the peer computer(s) are using the same SSID and channel.</p> <p>Make sure that the computer and the peer computer(s) share the same security option and key.</p> <p>Change the wireless clients to use another radio channel if interference is high.</p>

Specifications

Wi-Fi Radio

	802.11 b	802.11 g	802.11 a
Frequency	2.412~2.484 GHz	2.412~2.484 GHz	4.920~5.825 GHz
Modulation	DBPSK, DQPSK, CCK (DSSS)	OFDM with BPSK, SPSK, 16/64 QAM sub-carrier	OFDM with BPSK, SPSK, 16/64 QAM sub-carrier
Data Rate	11, 5.5, 2, 1 Mbps	54, 48, 36, 24, 18, 12, 9, 6 Mbps	54, 48, 36, 24, 18, 12, 9, 6 Mbps
Output Power (Typical)	18 dBm @ 11 Mbps	15 dBm @ 54 Mbps	13 dBm @ 54 Mbps
Receiving Sensitivity (Typical)	-87 dBm @ 11 Mbps	-72 dBm @ 54 Mbps	-71 dBm @ 54 Mbps

Limited Warranty

TRENDware warrants its products against defects in material and workmanship, under normal use and service, for the following lengths of time from the date of purchase.

Wireless Products – 3 Years Warranty

If a product does not operate as warranted above during the applicable warranty period, TRENDware shall, at its option and expense, repair the defective product or part, deliver to customer an equivalent product or part to replace the defective item, or refund to customer the purchase price paid for the defective product. All products that are replaced will become the property of TRENDware. Replacement products may be new or reconditioned.

TRENDware shall not be responsible for any software, firmware, information, or memory data of customer contained in, stored on, or integrated with any products returned to TRENDware pursuant to any warranty.

There are no user serviceable parts inside the product. Do not remove or attempt to service the product by any unauthorized service center. This warranty is voided if (i) the product has been modified or repaired by any unauthorized service center, (ii) the product was subject to accident, abuse, or improper use (iii) the product was subject to conditions more severe than those specified in the manual.

Warranty service may be obtained by contacting TRENDware office within the applicable warranty period for a Return Material Authorization (RMA) number, accompanied by a copy of the dated proof of the purchase. Products returned to TRENDware must be pre-authorized by TRENDware with RMA number marked on the outside of the package, and sent prepaid, insured and packaged appropriately for safe shipment.

WARRANTIES EXCLUSIVE: IF THE TRENDWARE PRODUCT DOES NOT OPERATE AS WARRANTED ABOVE, THE CUSTOMER'S SOLE REMEDY SHALL BE, AT TRENDWARE'S OPTION, REPAIR OR REPLACEMENT. THE FOREGOING WARRANTIES AND REMEDIES ARE EXCLUSIVE AND ARE IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED, EITHER IN FACT OR BY OPERATION OF LAW, STATUTORY OR OTHERWISE, INCLUDING WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. TRENDWARE NEITHER ASSUMES NOR AUTHORIZES ANY OTHER PERSON TO ASSUME FOR IT ANY OTHER LIABILITY IN CONNECTION WITH THE SALE, INSTALLATION MAINTENANCE OR USE OF TRENDWARE'S PRODUCTS.

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Governing Law: This Limited Warranty shall be governed by the laws of the state of California.

AC/DC Power Adapter, Battery, Cooling Fan, and Power Supply carry 1 Year Warranty



Product Warranty Registration

Please take a moment to register your product online.
Go to TRENDware's website at <http://www.TRENDNET.com>

TRENDnet Technical Support

US/Canada Support Center	European Support Center
<p>Contact Telephone: 1(310) 626-6252 Fax: 1(310) 626-6267 Email: support@trendnet.com</p> <p>Tech Support Hours 7:30am - 6:00pm Pacific Standard Time Monday - Friday</p>	<p>Contact Telephone Deutsch : +49 (0) 6331 / 268-460 Français : +49 (0) 6331 / 268-461 0800-907-161 (numéro vert) Español : +49 (0) 6331 / 268-462 English : +49 (0) 6331 / 268-463 Italiano : +49 (0) 6331 / 268-464 Dutch : +49 (0) 6331 / 268-465 Fax: +49 (0) 6331 / 268-466</p> <p>Tech Support Hours 8:00am - 6:00pm Middle European Time Monday - Friday</p>

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