

802.11g Wireless MIMO PCI Card

WPC-360A

User Manual

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. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.

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

U-MEDIA declares that WPC-360A (FCC ID: SI5WPC360A) is limited in CH1~CH11 for 2.4 GHz by specified firmware controlled in U.S.A.

CE Mark Warning

This is a Class B product. In a domestic environment, this product may cause radio interference, in which case the user may be required to take adequate measures.

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

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Getting Started with the WPC-360A

Congratulations on purchasing the WPC-360A! This manual provides information for setting up and configuring the WPC-360A. 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 (such as in “Wireless LAN Networking” and “Configuring Wireless Security”) to operate and enjoy the WPC-360A. It is included for your reference only.

The following conventions are used in this manual:



NOTE

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



TIP

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



CAUTION

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



IMPORTANT

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

Wireless LAN Networking

This section provides background information on wireless LAN networking technology. Consult the [“Glossary”](#) for definitions of the terminology used in this section.



THE INFORMATION IN THIS SECTION IS FOR YOUR REFERENCE. CHANGING NETWORK SETTINGS AND PARTICULARLY SECURITY SETTINGS SHOULD ONLY BE DONE BY AN AUTHORIZED ADMINISTRATOR.

Transmission Rate (Transfer Rate)

The WPC-360A provides various transmission (data) rate options for you to select. Options include Fully Auto, 1 Mbps, 2 Mbps, 5.5 Mbps, 11 Mbps, 6 Mbps, 9 Mbps, 12 Mbps, 18 Mbps, 22 Mbps, 24 Mbps, 36 Mbps, 48 Mbps and 54 Mbps. In most networking scenarios, the factory default Fully Auto setting proves the most efficient. This setting allows your WPC-360A to operate at the maximum transmission (data) rate. When the communication quality drops below a certain level, the WPC-360A automatically switches to a lower transmission (data) rate. Transmission at lower data speeds is usually more reliable. However, when the communication quality improves again, the WPC-360A gradually increases the transmission (data) rate again until it reaches the highest available transmission rate.

Types of Wireless Networks

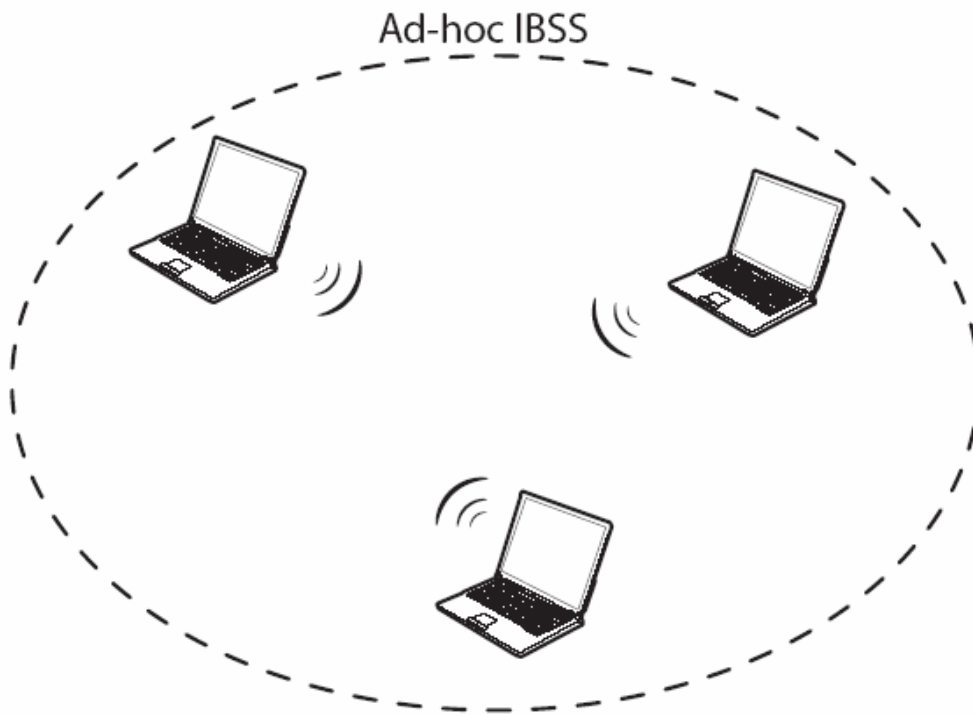
Wireless LAN networking works in either of the two modes: ad-hoc and infrastructure. In infrastructure mode, wireless devices communicate to a wired LAN via access points. Each access point and its wireless devices are known as a Basic Service Set (BSS). An Extended Service Set (ESS) is two or more BSSs in the same subnet. 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).

To connect to a wired network within a coverage area using access points, set the WPC-360A operation mode to Infrastructure (BSS). To set up an independent wireless workgroup without an access point, use Ad-hoc (IBSS) mode.

AD-HOC (IBSS) NETWORK

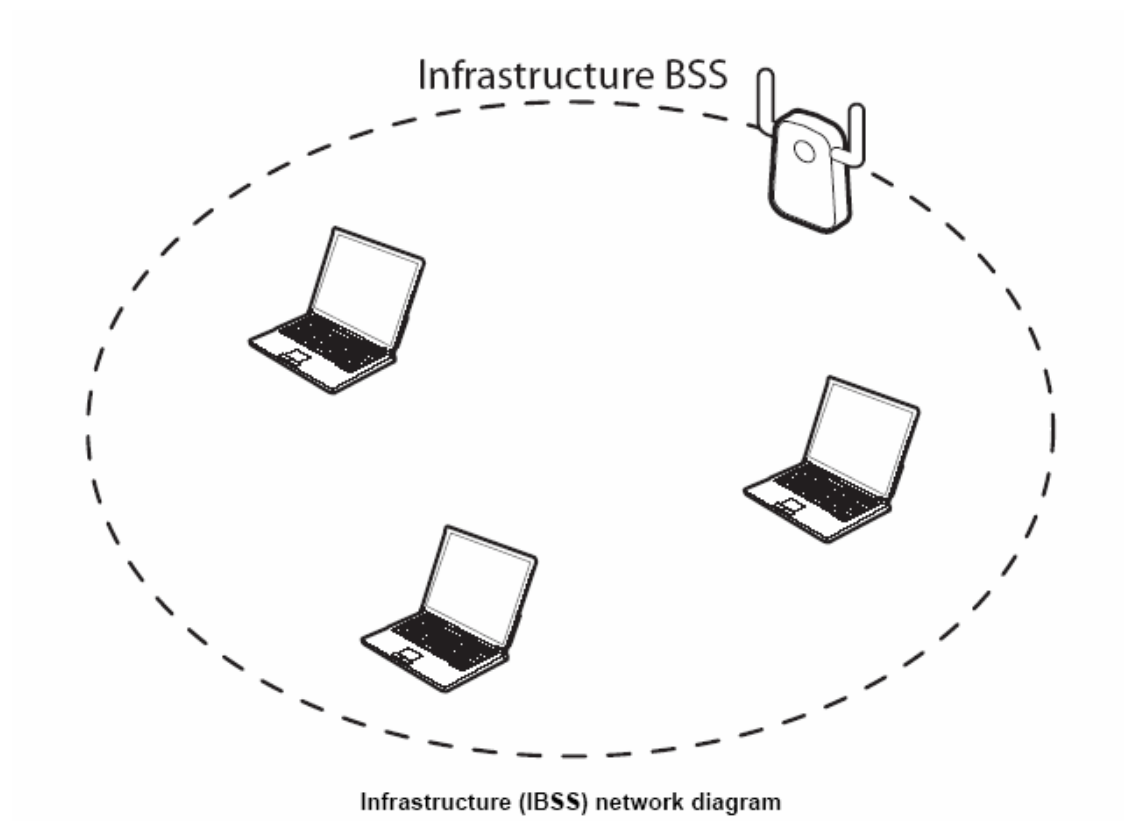
Ad-hoc mode does not require an access point or a wired network. Two or more wireless stations communicate directly to each other. An ad-hoc network may sometimes be referred to as an Independent Basic Service Set (IBSS).

To set up an ad-hoc network, configure all the stations in ad-hoc mode. Use the same SSID and channel for each station.

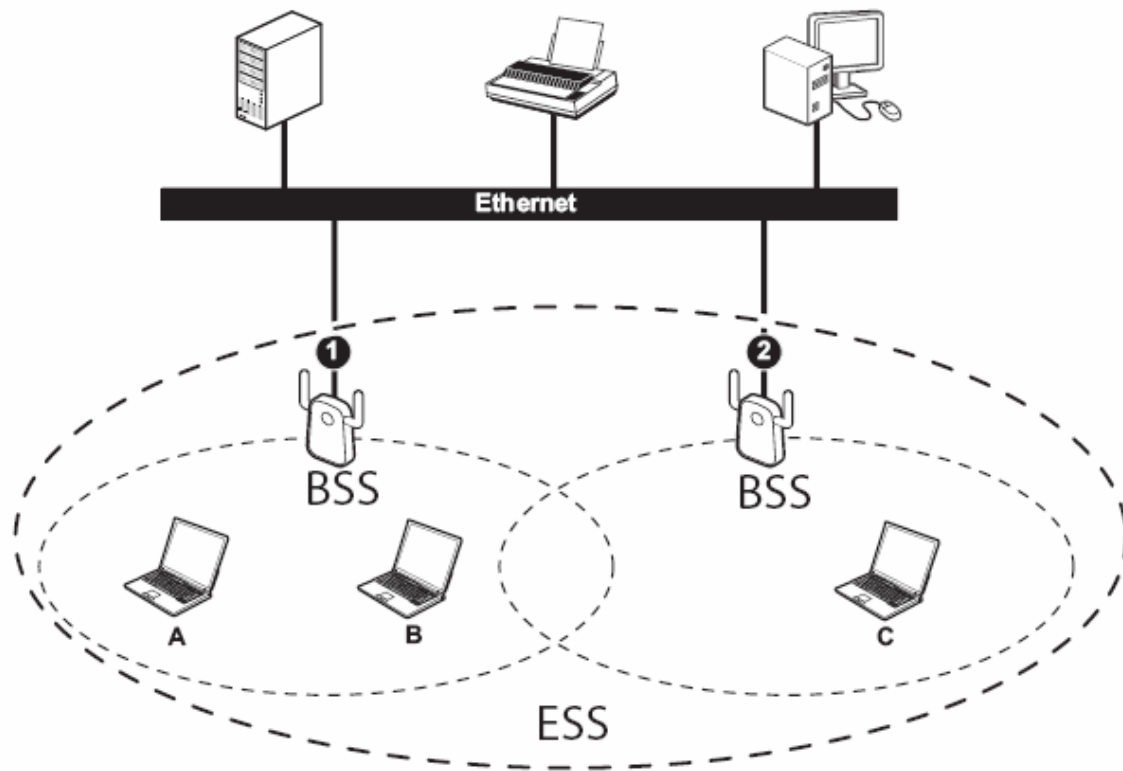


Ad-hoc (also known as peer-to-peer) network diagram

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

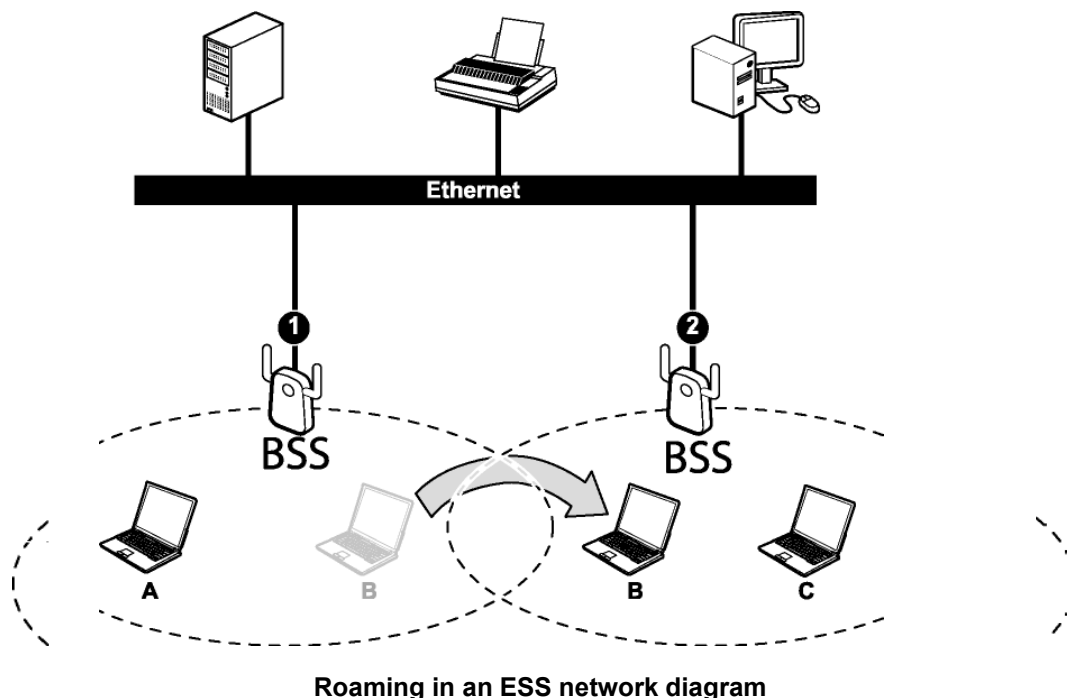


In the ESS diagram below, communication is done through the access points, which relay data packets to other wireless stations or devices connected to the wired network. Wireless stations can then access resources, such as a printer, on the wired network.



Infrastructure (ESS) network diagram

In an ESS environment, users are able to move from one access point to another without losing the connection. In the diagram below, when the user moves from BSS (1) to BSS (2) the WPC-360A automatically switches to the channel used in BSS (2).



Wireless LAN Security

Because wireless networks are not as secure as wired networks, its vital that security settings are clearly understood and applied.



DO NOT ATTEMPT TO CONFIGURE OR CHANGE SECURITY SETTINGS FOR A NETWORK WITHOUT AUTHORIZATION AND WITHOUT CLEARLY UNDERSTANDING THE SETTINGS YOU ARE APPLYING. WITH POOR SECURITY SETTINGS, SENSITIVE DATA YOU SEND CAN BE SEEN BY OTHERS.

The list below shows the possible wireless security levels on your WPC-360A starting with the most secure. EAP (Extensible Authentication Protocol) is used for authentication and utilizes dynamic WEP key exchange. EAP requires interaction with a RADIUS (Remote Authentication Dial-In User Service) server either on the WAN or the LAN to provide authentication service for wireless stations.

1. Wi-Fi Protected Access (WPA)
2. **IEEE802.1X EAP with RADIUS Server authentication**
3. WEP Encryption
4. Unique ESSID

To check wireless LAN security settings for a connection, open the Wireless Client Utility and select the **Profile** screen. Select the connection you want and click Properties. See “**Modifying Profiles**”.

DATA ENCRYPTION WITH WEP

The WEP (Wired Equivalent Privacy) security protocol is an encryption method designed to try to make wireless networks as secure as wired networks. WEP encryption scrambles all data packets transmitted between the WPC-360A and the access point 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.

There are two ways to create WEP keys in your WPC-360A.

- Automatic WEP key generation based on a password phrase called a passphrase. The passphrase is case sensitive. You must use the same passphrase for all WLAN adapters with this feature in the same WLAN.
- For WLAN adapters without the passphrase feature, you can still take advantage of this feature by writing down the four automatically generated WEP keys from the **Security Settings** screen of the wireless utility and entering them manually as the WEP keys in the other WLAN adapter(s).

The WPC-360A allows you to configure up to four WEP keys and only one key is used as the default transmit key at any one time.



THE WPC-360A SUPPORTS UP TO FOUR 64-BIT, 128-BIT, AND 152-BIT WEP KEYS. THE 152-BIT WEP MUST COMPLY WITH THE WEP SETTING OF YOUR ACCESS POINT OR ROUTER.

Hardware and Wireless Utility

This chapter introduces the Adapter and prepares you to use the Wireless Utility.

About Your 802.11g Wireless MIMO PCI Card

The Adapter is an IEEE 802.11b, and 802.11g compliant wireless LAN adapter. With the Adapter, you can enjoy wireless mobility within almost any wireless networking environment.

The following lists the main features of your Card.

- ✓ Your Adapter can communicate with other IEEE 802.11b/g compliant wireless devices.
- ✓ Automatic rate selection.
- ✓ Standard data transmission rates up to 54 Mbps.
- ✓ Proprietary Atheros transmission rates of 108 Mbps
- ✓ Offers 64-bit, 128-bit and 152-bit WEP (Wired Equivalent Privacy) data encryption for network security.
- ✓ Supports IEEE802.1x and WPA (Wi-Fi Protected Access).
- ✓ Two built-in external antennas.
- ✓ Driver support for Windows XP/2000.

Package Content

- 802.11g Wireless MIMO PCI Card
- Two external antennas
- Installation and Manual CD
- Quick Start Guide

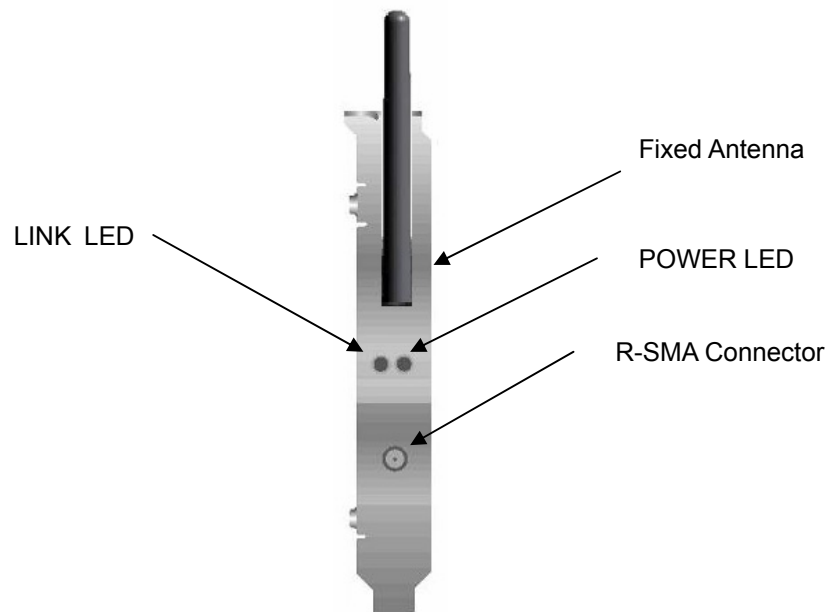
System Requirement

- Pentium class desktop computers with at least one available PCI slot
- Microsoft Windows XP or 2K
- CD-ROM drive

LED Definition

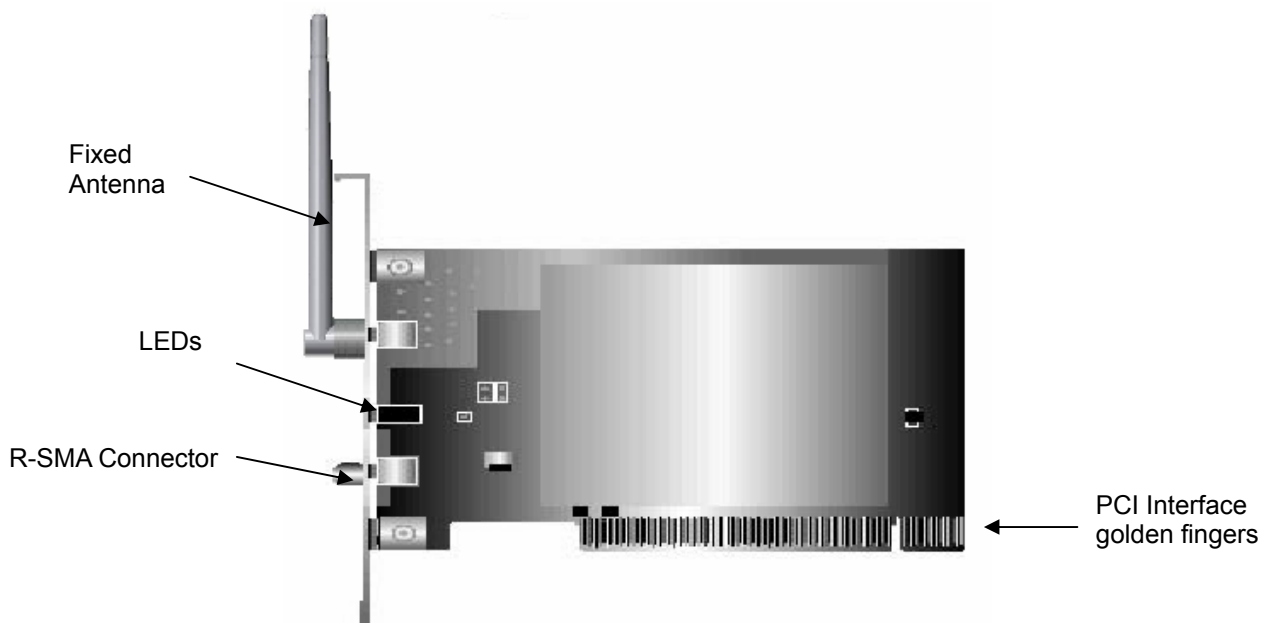
The following table describes the LEDs on the 802.11g Wireless MIMO PCI Card

STATUS	POWER LED	LINK LED
<i>POWER OFF</i>	OFF	OFF
<i>POWER ON</i>	Slow Blinking	OFF
<i>Radio on without association</i>	Two LEDs slow blinking mutually	
<i>Associated without traffic</i>	Two LEDs slow blinking together	
<i>Associated with traffic</i>	Two LEDs blinking together per traffic amount	



Side view of the PCI Adapter from bracket.

Product Outline



The 802.11g Wireless MIMO PCI Card

Overview of the Wireless Client Utility

The Wireless Client Utility is included on the CD that shipped with the WPC-360A. Install the utility as described in the Quick Start Guide before attaching the WPC-360A to your computer.

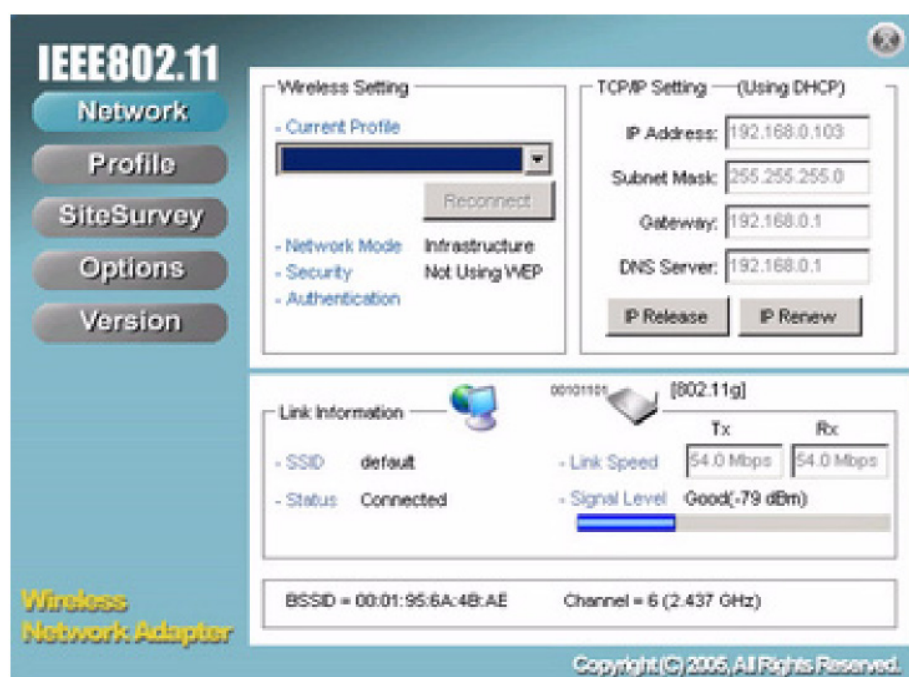


BE SURE TO INSTALL THE WIRELESS CLIENT UTILITY BEFORE YOU ATTACH THE WPC-360A TO YOUR COMPUTER. ATTACHING THE WPC-360A BEFORE THE UTILITY IS INSTALLED COULD CAUSE THE INSTALLATION TO FAIL.

When the WPC-360A 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 WPC-360A icon in the system tray, the following **Network** screen opens:



There are five screens in the utility.

- The Network Screen
- The Profile Screen
- The SiteSurvey Screen
- The Options Screen
- The Version Screen

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. I



NOTE

WHEN THE WPC-360A 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 WPC-360A each time you change access points. Using the **Profile** screen you can configure the WPC-360A 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.



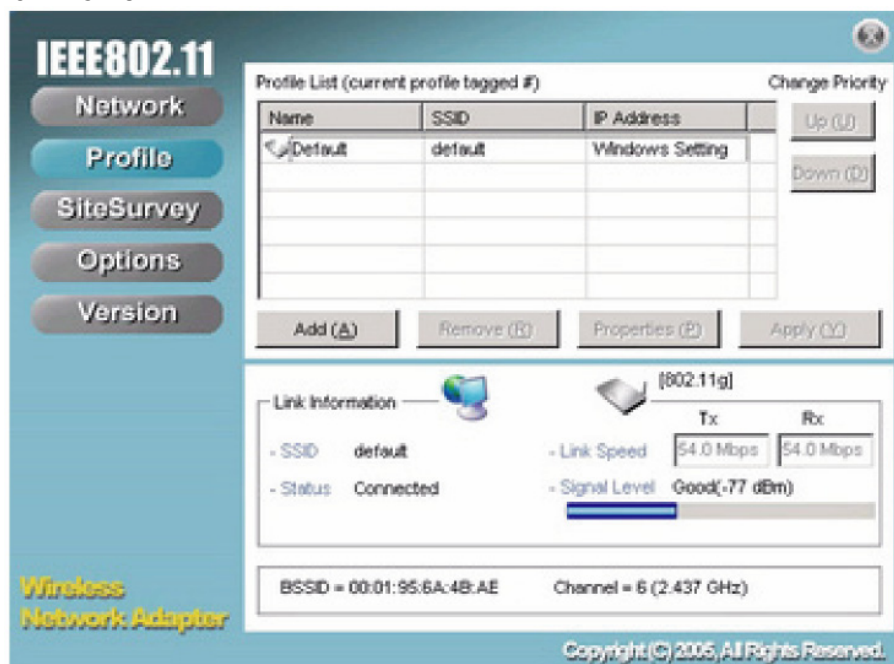
NOTE

YOU CAN CHANGE PROFILES WITHOUT REBOOTING YOUR COMPUTER. IF YOU USE WINDOWS CONTROL PANEL TO CONFIGURE YOUR CONNECTIONS, YOU MUST REBOOT THE COMPUTER WHEN CHANGING ACCESS POINTS.

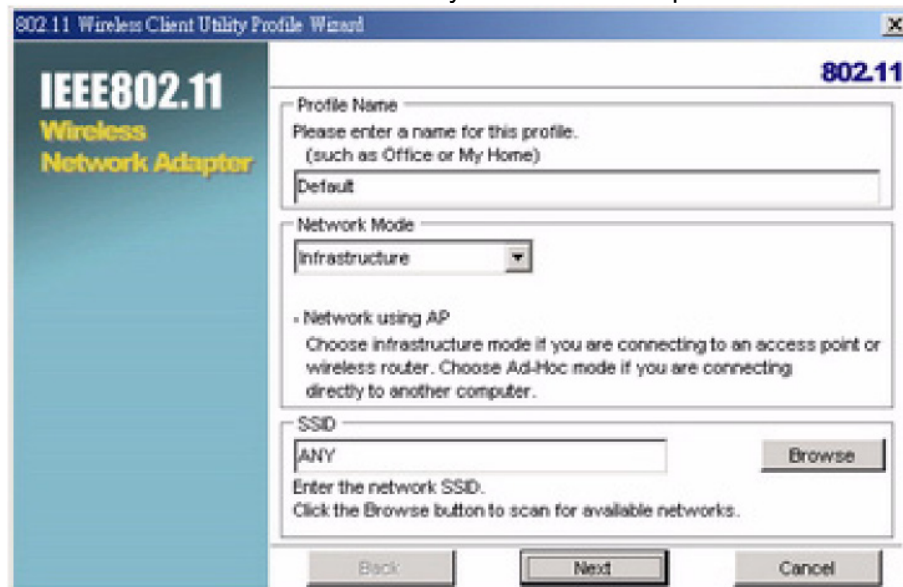
CREATING A PROFILE

Refer to the following to add a profile.

1. Click **Profile**.



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

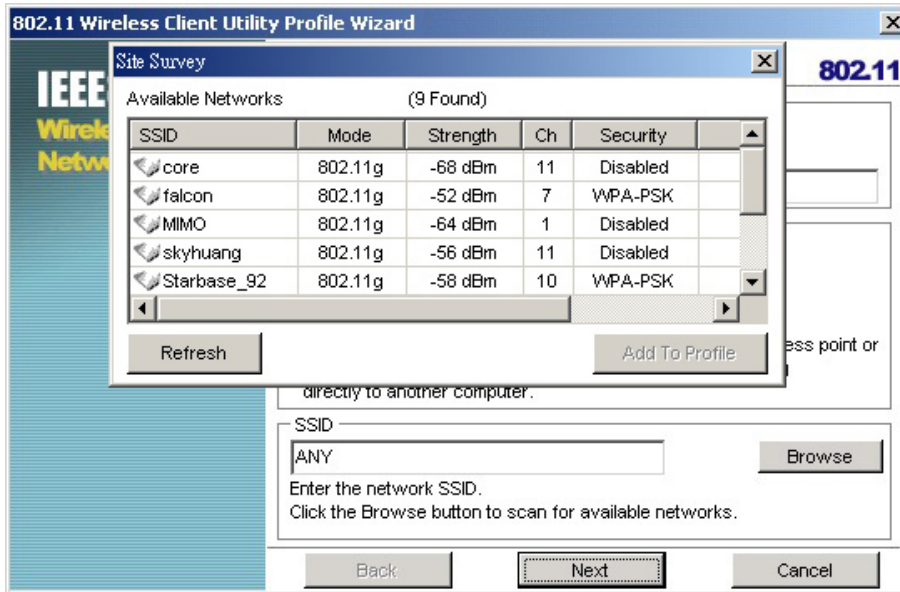


The screenshot shows a Windows-style dialog box titled "802.11 Wireless Client Utility Profile Wizard". On the left is a blue sidebar with the text "IEEE802.11 Wireless Network Adapter". The main area contains three sections: "Profile Name" with a text box containing "Default"; "Network Mode" with a dropdown menu set to "Infrastructure"; and "SSID" with a text box containing "ANY" and a "Browse" button. Below these sections are "Back", "Next", and "Cancel" buttons. A small "802.11" logo is in the top right corner of the main area.

3. Type a descriptive name for the profile such as **Home** or **CoffeShop**.
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.

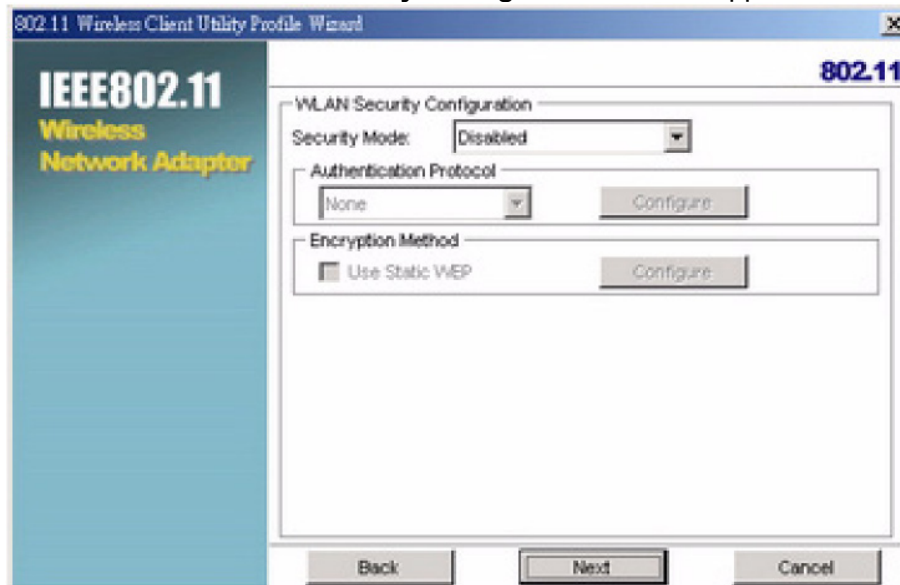
Choose **Ad-Hoc** when connecting directly to another computer without using an access point. You can type anything for the SSID as long as the same SSID is used on the computer you are connecting to.

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



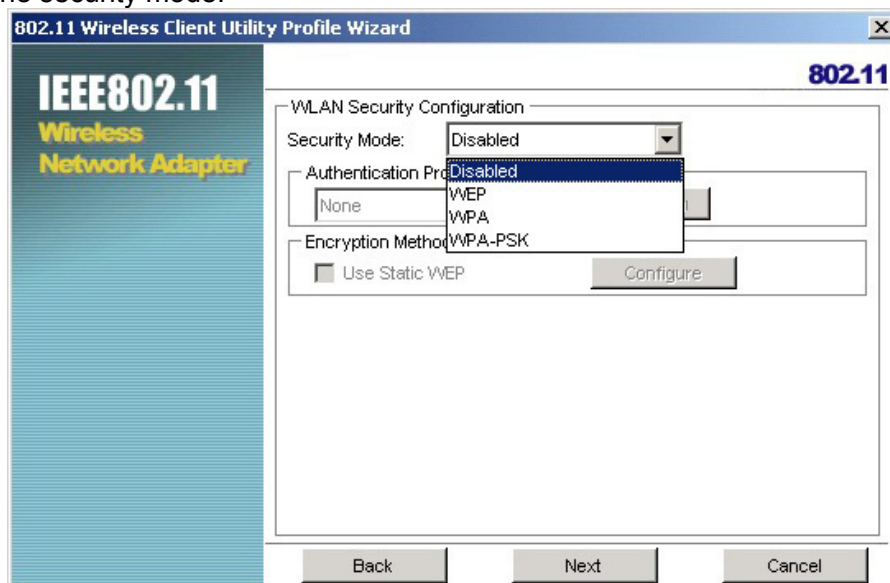
The SSID (Service Set Identifier) is the name assigned to a wireless Wi-Fi network. All devices must use this case-sensitive name, which is a text string up to 32 bytes long, in order to communicate.

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

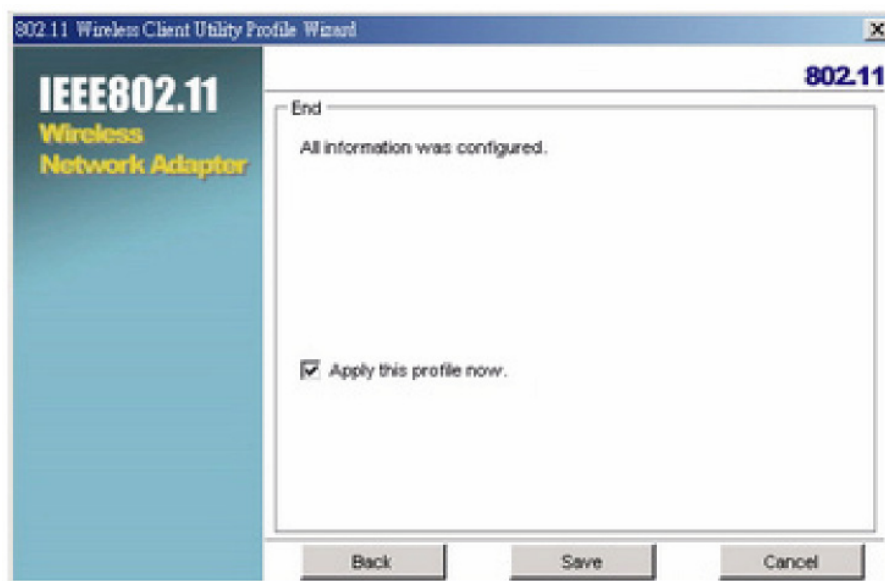


This screen reflects the security settings detected in the access point you want to connect to. Security settings vary in complexity and you may have to consult your network administrator for this information. See [“Configuring Wireless Security”](#) for more information.

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



9. Click **Next**.

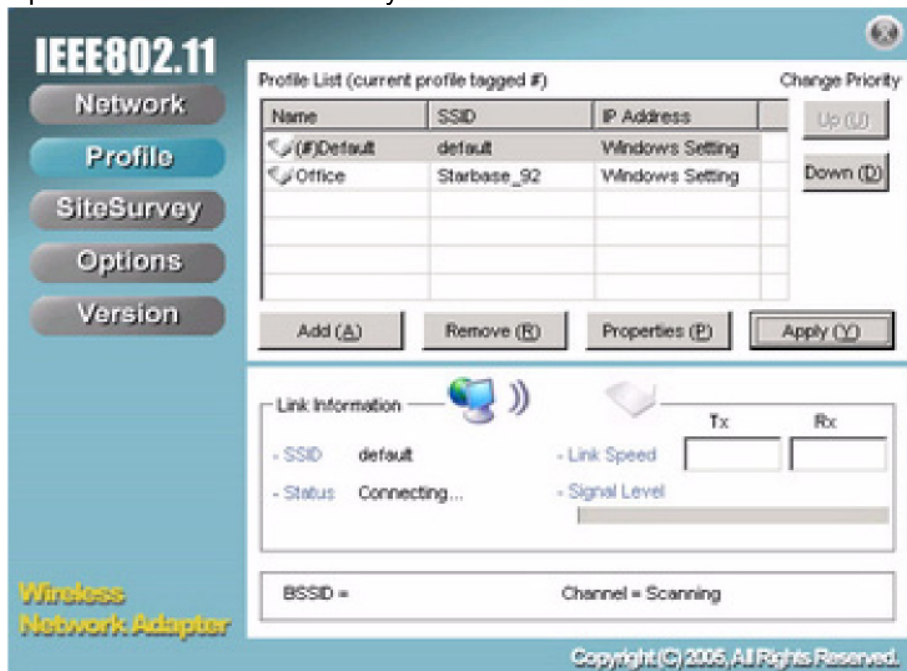


10. Click **Save** to complete the wizard and save the new profile. (If you do not want to activate the profile, uncheck the **Apply this profile now** checkbox.)

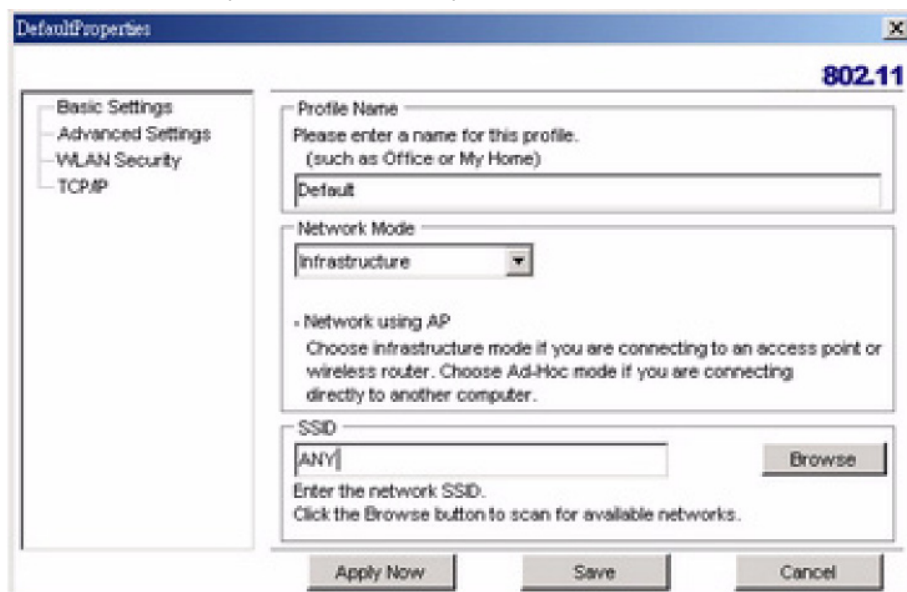
MODIFYING PROFILES

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**.



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

The screenshot shows the 'Default Properties' dialog box with the '802.11' tab selected. On the left, a tree view shows 'Basic Settings', 'Advanced Settings' (selected), 'WLAN Security', and 'TCP/IP'. The main area displays the 'Advanced Settings' for 802.11. It includes a 'Power Saving' dropdown set to 'No Power Saving', an '802.11b Preamble' dropdown set to 'Auto', an 'RTS Threshold' text box with '2347', and a 'FRAG Threshold' text box with '2346'. At the bottom are 'Apply Now', 'Save', and 'Cancel' buttons.

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

4. Click **WLAN Security**. (Refer to "[Configuring Wireless Security](#)" for more details on security settings.)

The screenshot shows the 'Default Properties' dialog box with the '802.11' tab selected. The 'WLAN Security' section is now active in the left tree view. The main area displays the 'WLAN Security Configuration'. It includes a 'Security Mode' dropdown set to 'WPA', an 'Authentication Protocol' dropdown set to 'PEAP' with a 'Configure' button, an 'Encryption Method' dropdown set to 'AES' with a 'Configure' button, and a 'User Information' section. The 'User Information' section has 'User ID' set to 'test', 'Password' masked with '*****', 'My Certificate' set to 'No user certificate', 'Server CA' set to 'No server certificate', and an empty 'Server Name' field with a 'Configure Certificate' button. At the bottom are 'Apply Now', 'Save', and 'Cancel' buttons.

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

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.

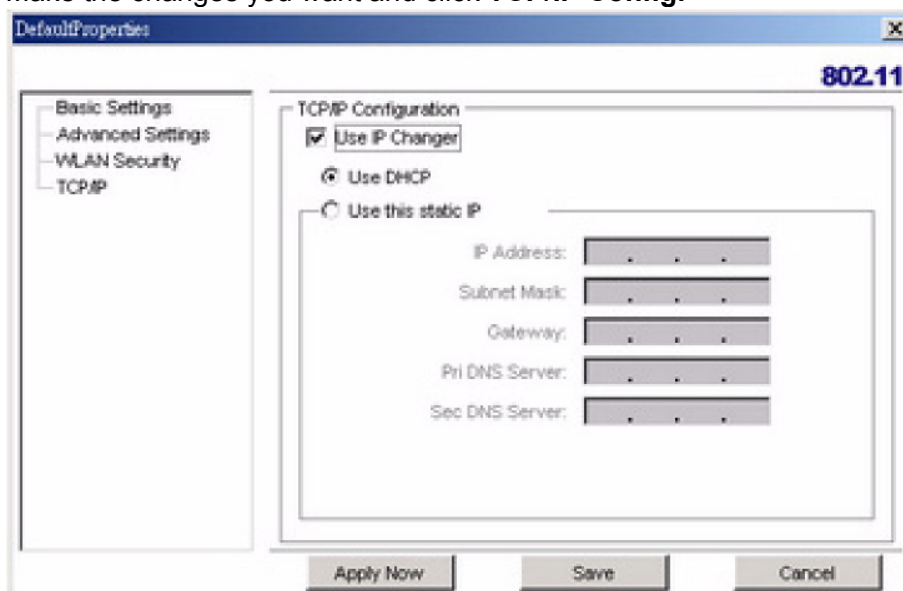
WPA-PSK

WPA-PSK is a compromise between WPA 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.



IT IS RECOMMENDED THAT YOU USE WPA OR WPA-PSK WHENEVER POSSIBLE. WPA (WI-FI PROTECTED ACCESS) PROVIDES STRONGER ENCRYPTION THAN THE EARLIER WEP (WIRED EQUIVALENT PRIVACY) METHOD.

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.

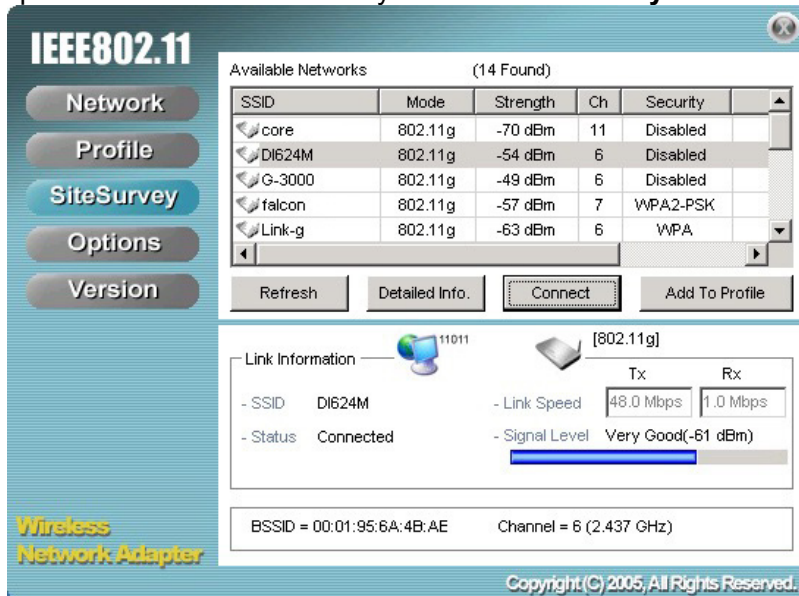
Use static IP below

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

Checking for Available Access Points

To scan for access points using the WPC-360A, refer to the following.

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



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.)

The 'Detailed Info.' window displays the following network parameters:

SSID:	HardWareLAB
BSSID:	00:13:49:00:00:01
Channel:	11
Network Mode:	Infrastructure
Security:	WEP
Supported Rate (Mb/sec):	1, 2, 5.5, 11
Physical Layer Type:	802.11b
Beacon Period (msec):	100

Close

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**.

The IEEE802.11 Wireless Network Adapter utility is shown with the **Options** tab selected. The interface includes a sidebar with buttons for Network, Profile, SiteSurvey, Options, and Version. The main area contains the following information:

Options:

☐ Let Windows manage this wireless adapter
- Windows Zero Configuration

Apply Now

Link Information:

	Tx	Rx
Link Speed	54.0 Mbps	54.0 Mbps
Signal Level	Very Good(-59 dBm)	

BSSID = 00:06:25:67:55:55 Channel = 10 (2.457 GHz)

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

Exploring the Wireless Client Utility Screens

This section covers the following topics:

- [The Network Screen](#)
- [The Profile Screen](#)
- [The SiteSurvey Screen](#)
- [The Options Screen](#)
- [The Version Screen](#)

The Network Screen

The Wireless Client Utility is included on the CD that shipped with the WPC-360A. Install the utility as described in the Quick Start Guide before attaching the WPC-360A to your computer.

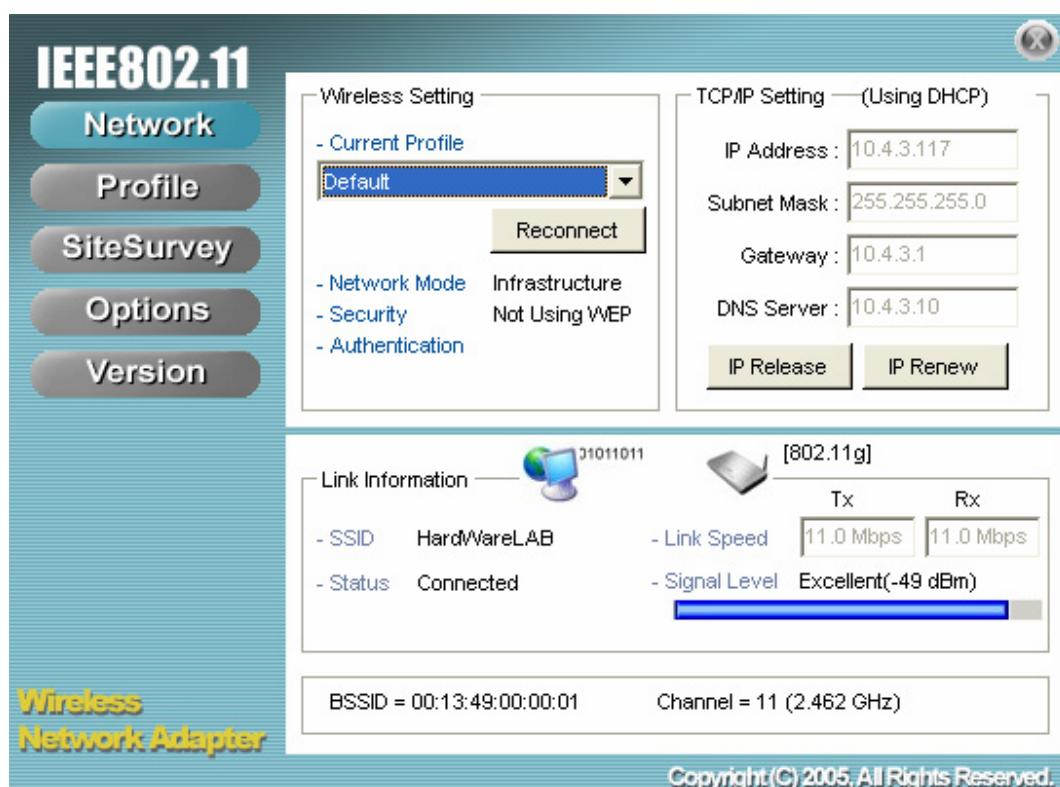


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When the WPC-360A is installed, it is configured to automatically load when you start your computer. The utility icon displays in the system tray at the bottom-right corner of your screen.



Double-click the WPC-360A icon in the system tray, the following **Network** screen opens:



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 dropdown 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.(See " Configuring Wireless Security ")



WIRELESS SYSTEMS WORK IN INFRASTRUCTURE MODE OR PEER-TO-PEER MODE. IN INFRASTRUCTURE MODE, WIRELESS DEVICES COMMUNICATE TO A WIRED LAN VIA ACCESS POINTS. 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.

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.



TIP

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.



NOTE

WIRELESS SYSTEMS WORK IN INFRASTRUCTURE MODE OR AD-HOC (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 WPC-360A each time you change access points. Using the **Profile** screen you can configure the WPC-360A to access your home network and your office network. Each configuration is saved as a profile.

The screenshot displays the IEEE802.11 configuration interface. On the left is a sidebar 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). To the right of the table are 'Up (U)' and 'Down (D)' buttons for changing priority. Below the profile list is a 'Link Information' panel showing details for the current connection (SSID: Starbase_92, Status: Connected, Link Speed: 48.0 Mbps, Signal Level: Very Good(-58 dBm)). At the bottom, it shows the BSSID (00:06:25:67:55:55) and Channel (10 (2.457 GHz)). The footer includes 'Wireless Network Adapter' and 'Copyright (C) 2005, All Rights Reserved.'

Name	SSID	IP Address
Default	default	Windows Setting
(#)Office	Starbase_92	Windows Setting

Link Information

- SSID: Starbase_92
- Status: Connected
- Link Speed: 48.0 Mbps (Tx) / 48.0 Mbps (Rx)
- Signal Level: Very Good(-58 dBm)

BSSID = 00:06:25:67:55:55 Channel = 10 (2.457 GHz)

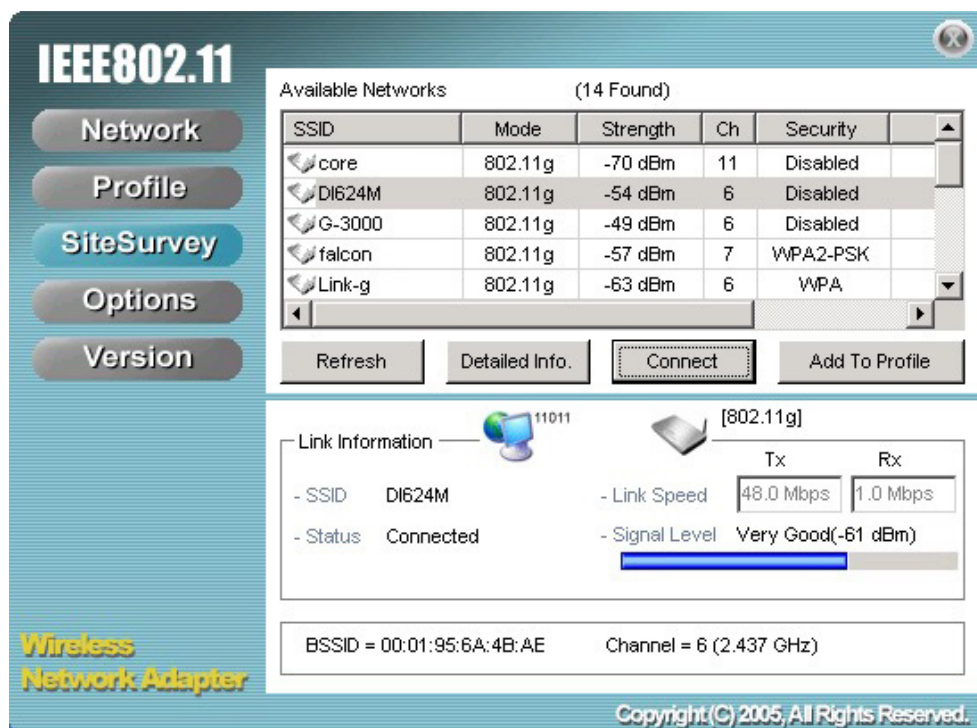
PROFILE LIST

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 profile to the top of the list or to the bottom. When in the Network screen, the WPC-360A attempts to connect to the network at the top of this
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 (802.11b/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.)



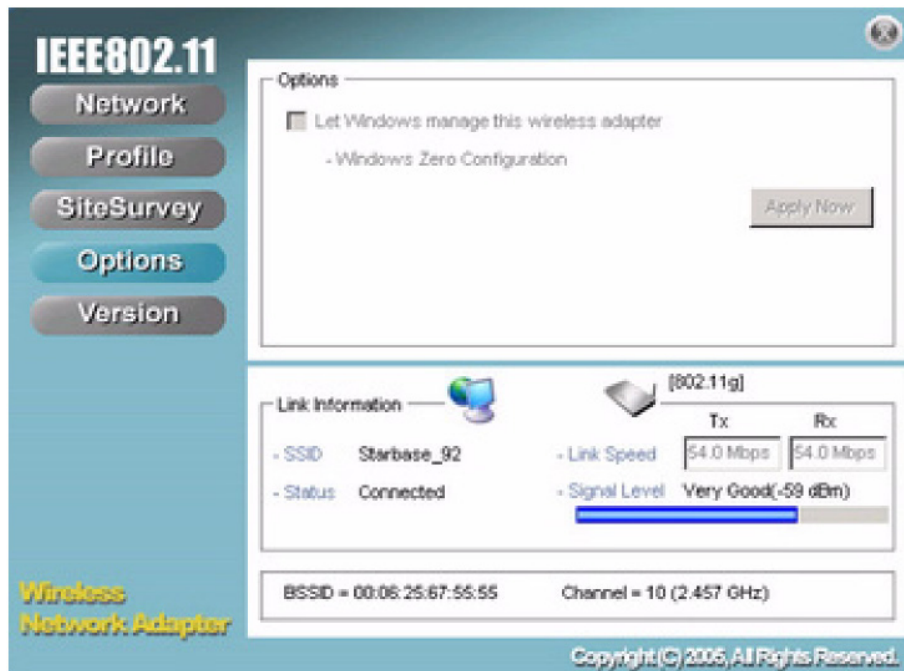
The screenshot shows a dialog box titled "Detailed Info." with a blue header bar. Inside the dialog, there are several labeled text boxes containing the following information:

SSID:	HardWareLAB
BSSID:	00:13:49:00:00:01
Channel:	11
Network Mode:	Infrastructure
Security:	WEP
Supported Rate (Mb/sec):	1, 2, 5.5, 11
Physical Layer Type:	802.11b
Beacon Period (msec):	100

At the bottom center of the dialog is a button labeled "Close".

The Options Screen

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



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 checkbox, 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.

IEEE802.11

- Network
- Profile
- SiteSurvey
- Options
- Version

Wireless Network Adapter

SW Information

Package Version: 1.0.0.0
Driver Version: 1.12.2.13
Utility Version: 1.0.0

HW Information

Supported Mode: 802.11b/802.11g
MAC Address: 00-03-7F-BE-F2-36
Supported Ch: Ch 1~Ch 11

Link Information



- SSID: D1624M
- Status: Connected



Tx
Rx

- Link Speed: 36.0 Mbps 54.0 Mbps
- Signal Level: Very Good(-60 dBm)

BSSID = 00:01:95:6A:4B:AE
Channel = 6 (2.437 GHz)

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NOTE

Reference the **Version** screen if you need to contact technical support.
See "[Maintenance](#)".

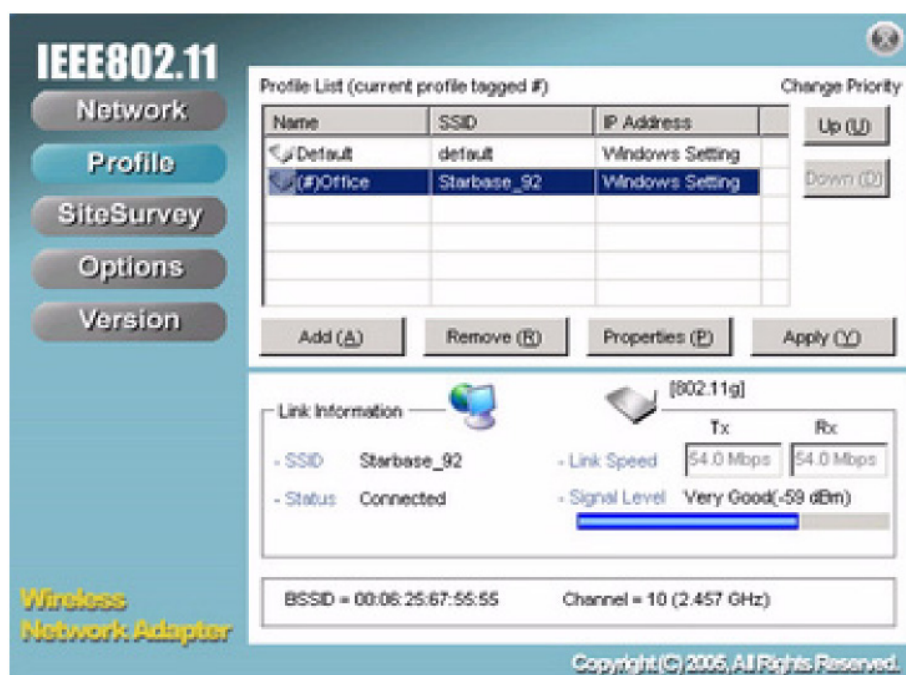
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Configuring Wireless Security

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

Configuring Security

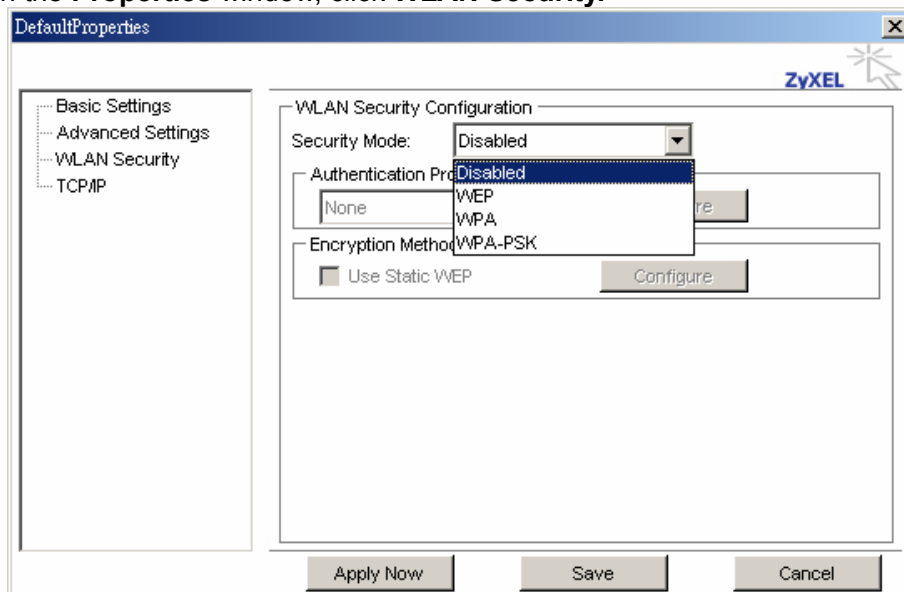
When you create a profile you need to configure the security settings with the information provided by the administrator. You modify security settings by selecting the profile and clicking **Properties**.



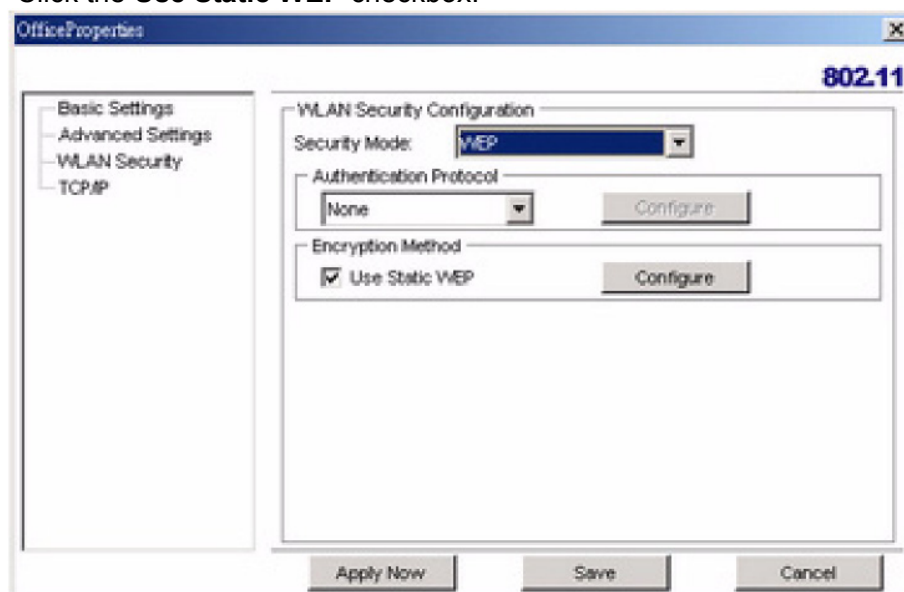
CONFIGURING WEP

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, 128, or 152-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.
Manual Input (HEX)	Generate your own WEP Key using hexadecimal characters.
Default Key	Four keys are used for decryption; you have to choose a default key from them for encryption. Make sure access point uses same WEP key.

CONFIGURING WPA

Refer to the following to configure WPA.

DefaultProperties

ZyXEL

Basic Settings
Advanced Settings
WLAN Security
TCP/IP

WLAN Security Configuration

Security Mode: WPA

Authentication Protocol: TLS Configure

Encryption Method: TKIP Configure

User Information

User ID:

Password:

My Certificate: No user certificate

Server CA: No server certificate

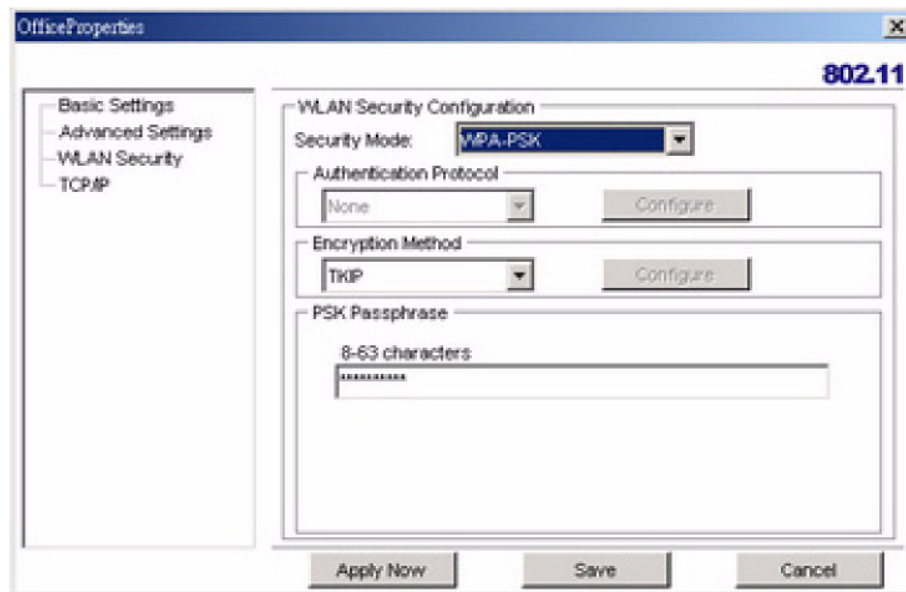
Server Name: Configure Certificate

Apply Now Save Cancel

1. Click the drop-down arrow at **Security Mode** and choose **WPA** .
 2. Click the drop-down arrow at **Encryption Method** and choose **TKIP** or **AES**.
- To configure 802.1X (authentication protocol) for WPA, see [“Configuring 802.1X ”](#).

CONFIGURING WPA-PSK

Refer to the following to configure WPA-PSK.



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

CONFIGURING 802.1X

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 802.1X – PEAP

Refer to the following to configure PEAP.

1. At **WPA** 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).

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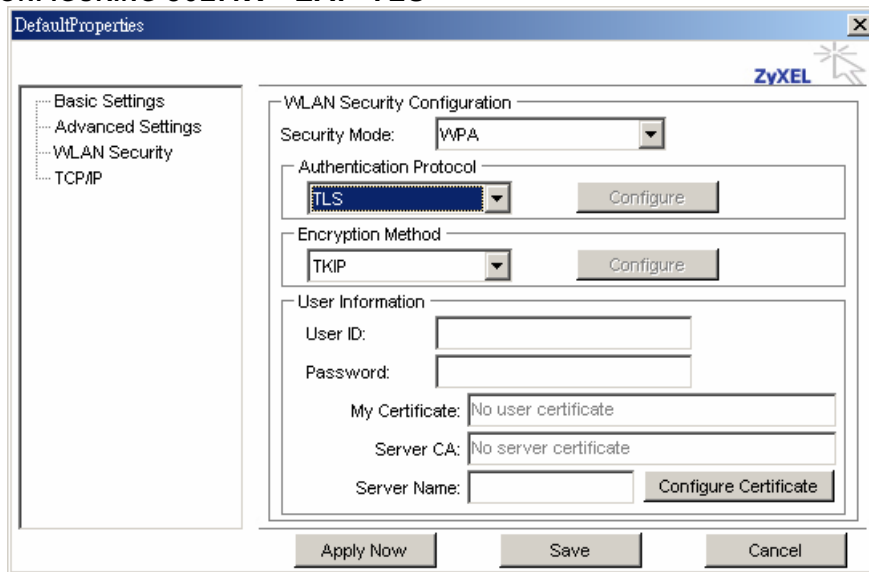
Validate server certificate	Check this box if your network requires server certification and then select the certificate authority from the drop-down menu.
Server name:	Type in the name of the server that is used for 802.1X authentication.
Server name should match exactly	Check this box if the server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

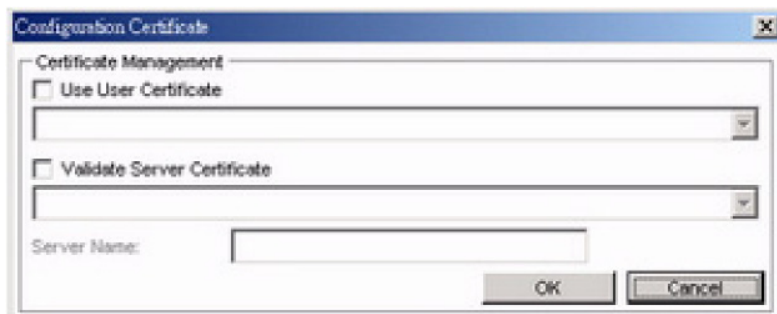


The image shows the 'Default Properties' window for WLAN Security Configuration. On the left is a tree view with 'Basic Settings', 'Advanced Settings', 'WLAN Security', and 'TCP/IP'. The 'WLAN Security' section is expanded. The main area is titled 'WLAN Security Configuration' and contains the following fields:

- Security Mode:** A drop-down menu set to 'WPA'.
- Authentication Protocol:** A drop-down menu set to 'TLS' with a 'Configure' button next to it.
- Encryption Method:** A drop-down menu set to 'TKIP' with a 'Configure' button next to it.
- User Information:**
 - User ID:** An empty text field.
 - Password:** An empty text field.
 - My Certificate:** A text field containing 'No user certificate'.
 - Server CA:** A text field containing 'No server certificate'.
 - Server Name:** An empty text field with a 'Configure Certificate' button next to it.

At the bottom are three buttons: 'Apply Now', 'Save', and 'Cancel'.

1. At **Security Mode** select **WPA** from the drop-down menu.
2. At **Authentication Protocol** select **TLS** from the drop-down menu.
3. TLS requires both server and user certification. Click **Configure Certificate** (see **Note** below). The following window appears:



The image shows the 'Configuration Certificate' window. It has a 'Certificate Management' section with the following options:

- ☐ **Use User Certificate**: Below this is an empty text field.
- ☐ **Validate Server Certificate**: Below this is an empty text field.
- Server Name:** An empty text field.

At the bottom are 'OK' and 'Cancel' buttons.

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 server 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 802.1X authentication.
Server name should match exactly	Check this box if the server name should exactly match the name in the certificate.

4. 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 (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 WPC-360A 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

Wi-Fi Protected Access (WPA) 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.

Appendix

This section provides maintenance and troubleshooting procedures. The following topics are discussed:

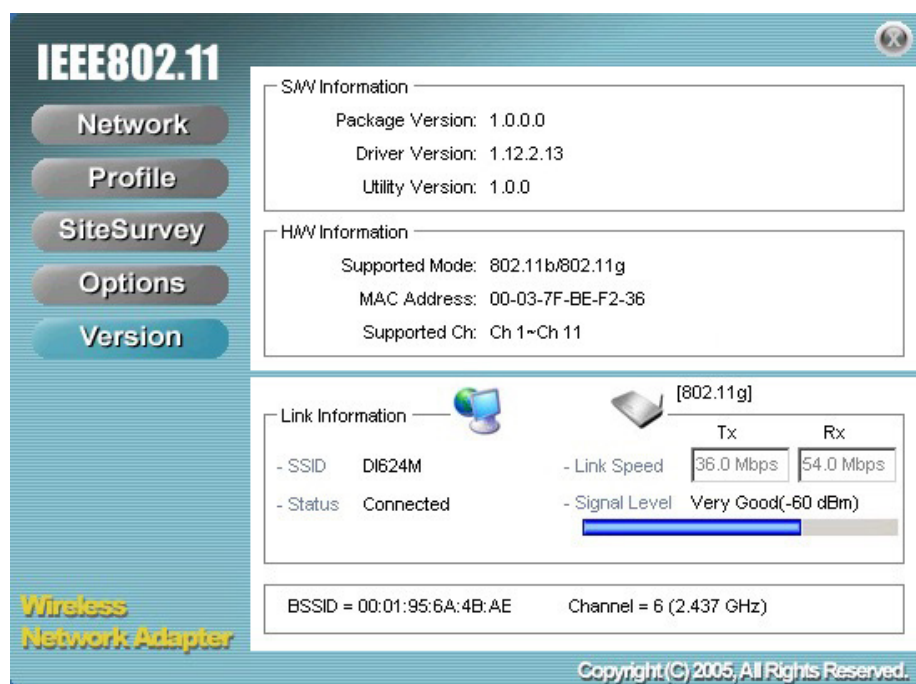
- See “[Maintenance](#)”
- See “[Troubleshooting](#)”

Maintenance

Installing a newer version of the Wireless Client Utility may improve the performance of the WPC-360A. 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.

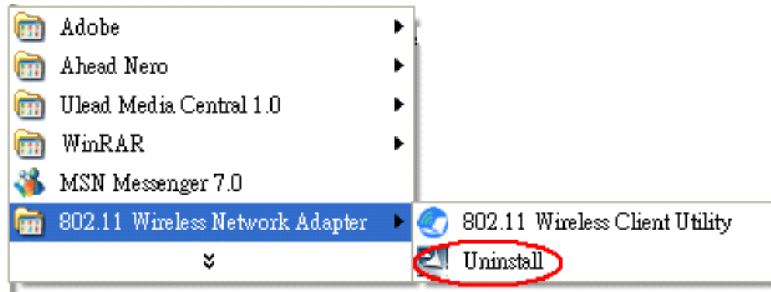


If you need to contact technical support, you will need to provide the S/W Information. Be sure to check the screen in the utility that is installed on your computer and not the screen shown in this manual.

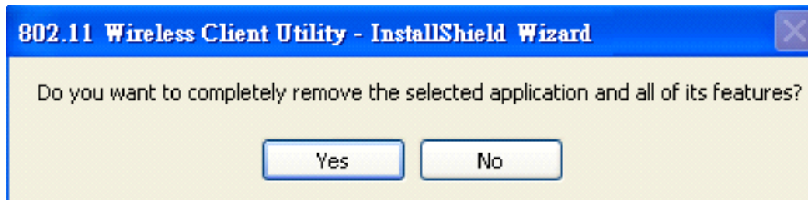
UNINSTALLING THE WIRELESS CLIENT UTILITY

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 WIRELESS CLIENT UTILITY PROGRAM

PROBLEM	CORRECTIVE ACTION
Windows does not auto-detect the WPC-360A.	Make sure the WPC-360A is properly inserted into the PCI slot 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 WPC-360A (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 WPC-360A (Wireless 802.11 USB Network Adapter) under Network Adapter . (Steps may vary depending on the Windows version).
	Install the WPC-360A 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 WPC-360A computer cannot communicate with the other computer.	Make sure you are connected to the network.

Infrastructure	Make sure that the AP and the associated computers are turned on and working properly. Make sure the WPC-360A computer and the associated AP use the same SSID. Change the AP and the associated wireless clients to use another radio channel if interference is high. Make sure that the computer and the AP share the same security option and key. Verify the settings in the Profile Security Settings screen.
Ad-Hoc (IBSS)	Verify that the peer computer(s) is turned on. Make sure the WPC-360A computer and the peer computer(s) are using the same SSID and channel. Make sure that the computer and the peer computer(s) share the same security option and key. Change the wireless clients to use another radio channel if interference is high.