Super G™ Multi-Functional Wireless Access Point

Model # AP431W

User's Manual

Ver. 2A

Table of Contents

1. Introduction

Congratulations on your purchase of this Super G™ Wireless Access Point. The Access Point features five operating modes. The Access Point mode connects your wireless clients with the wired part of your network. The AP client mode acts as a wireless network adapter for your PC or game console. The AP Repeater mode extends the range of your access point/wireless router by repeating the signal to wireless clients that are beyond the broadcasting range of the access point/wireless router. This provides the wireless clients with greater flexibility and mobility. The WDS bridges the network clients from various physically separate LANs into one virtual LAN. Finally, the WDS with AP bridges separate LANs into a virtual LAN while allowing wireless clients to connect with the device.

The Access Point is compatible with existing 802.11b and 802.11g network devices so it will work with most existing wireless devices. If you have other Super G™ compatible wireless network device, you can also enable Super G™ on the Access Point for faster transfer rate.*

Instructions for installing and configuring this product can be found in this manual. Before you install and use this product, please read this manual carefully for proper operation of this product.

Package Contents

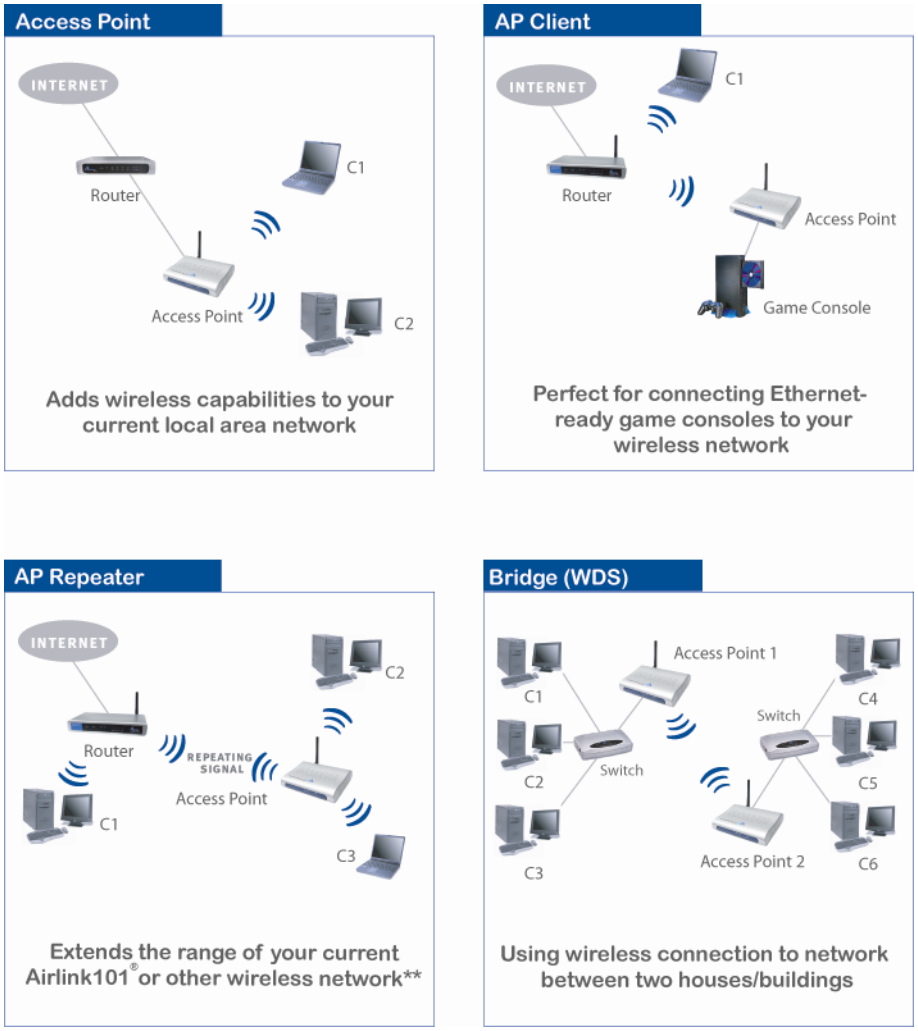
Before you begin the installation, please check the items of your package:

- Super G™ Wireless Access Point
- Power Adapter
- RJ-45 Network Cable
- Antenna
- Quick Installation Guide
- Manual CD

If any item contained is damaged or missing, please contact your local dealer immediately. Also, keep the box and packaging materials in case you need to ship the unit in the future.

2. Getting Started

Please refer to the following diagrams to determine which operating mode you should use for your network.



If you want to use the AP431W as an Access Point with minimal configuration, just connect it to your existing router or switch with a Cat. 5 network cable and then power it on. The Access Point is ready to use with its default settings:

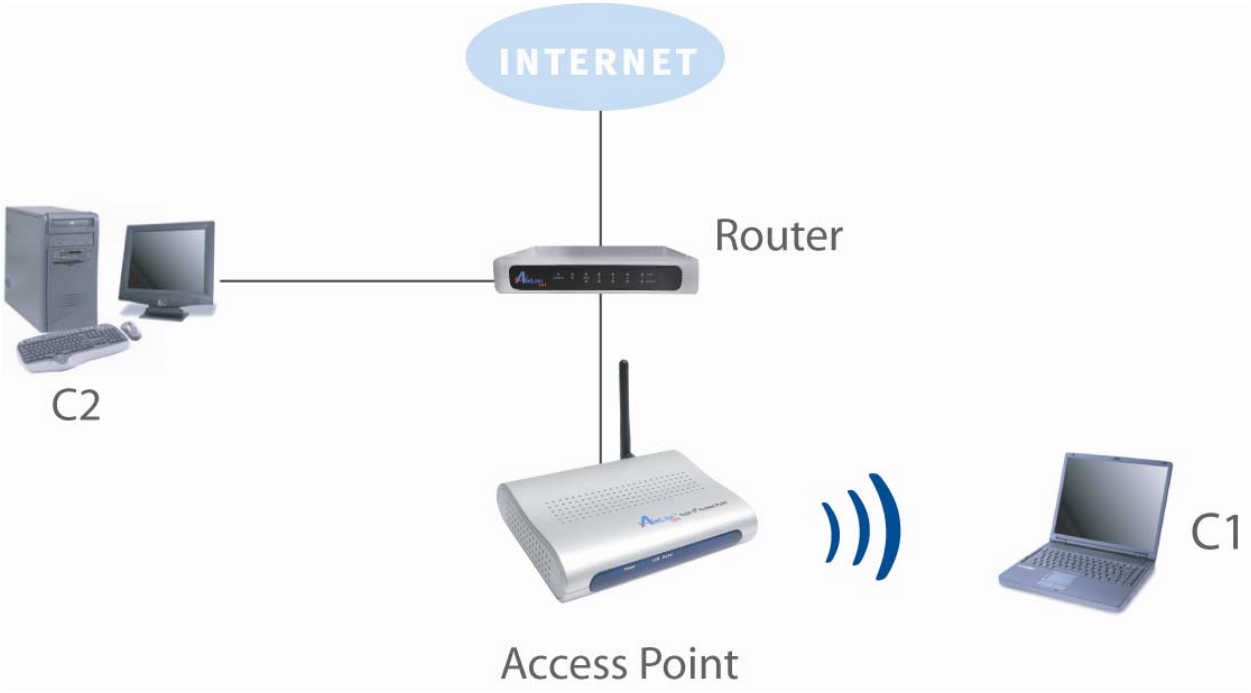
SSID: **default**
Channel: **6**
Encryption: **disabled**

If you want to configure the Access Point's settings or set it to other operating modes, please follow the rest of this guide.

Step 1 Connect one end of a network cable to the **Network** port of the Access Point and connect the other end to one of the **LAN** ports of the router *(See the diagram below)*.

Step 2 Power on the Access Point by connecting one end of the supplied power adapter to the power jack of the Access Point and connecting the other end to an electrical outlet.

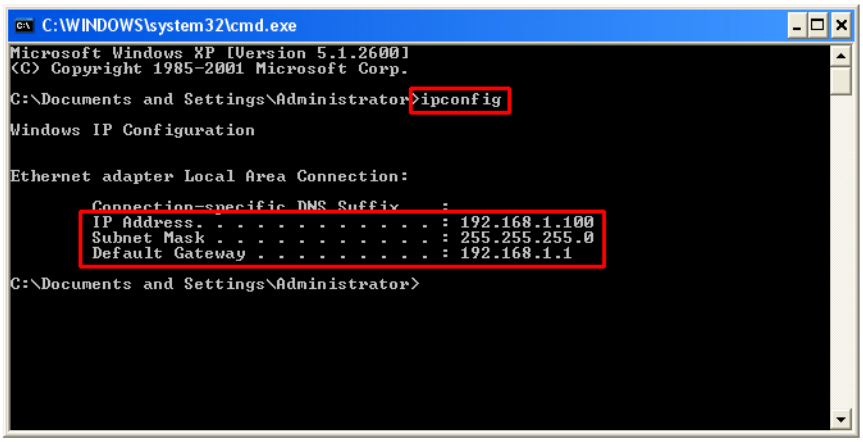
Step 3 Verify that all three lights on the Access Point are lit. If not, verify that all the connections are secure and try again.



3. Gathering Information

Step 1 From a computer connected to the router with a cable, go to **Start**, **Run**, type **command** (for Windows 95/98/ME) or **cmd** (for Windows 2000/XP) and click **OK**.

Step 2 Type **ipconfig** and press **Enter**. Your network settings will be displayed.



Step 3 Write down the values for the **IP Address**, **Subnet Mask**, and **Default Gateway** on a piece of paper.

Step 4 If you want to set the AP431W to a mode other than an Access Point, write down the following values for your existing wireless router or AP:

1. **SSID (Network Name)**
2. **Channel Number**
3. **Wireless Security Settings**

The AP431W needs to use the same wireless settings in order for it to work properly. You may gather this information from the web configuration utility of your wireless router.

Step 5 Refer to the **IP Address** you've written down from **Step 3**.

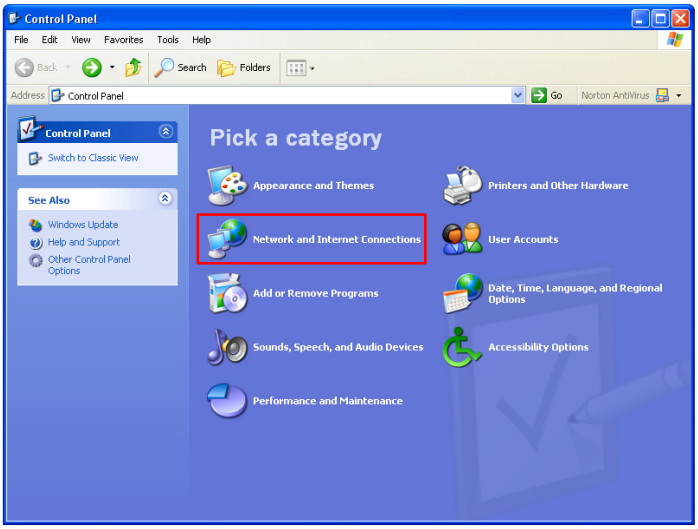
If the first three numbers of your **IP Address** are **192.168.1**, then you do not need to configure your computer's IP Address. Please continue to **Section 5, Using Web Configuration Utility**.

If the first three numbers of your **IP Address** are not **192.168.1**, (Ex. **192.168.2**), then please refer to the next section for instructions on how to change the IP Address of the Access Point.

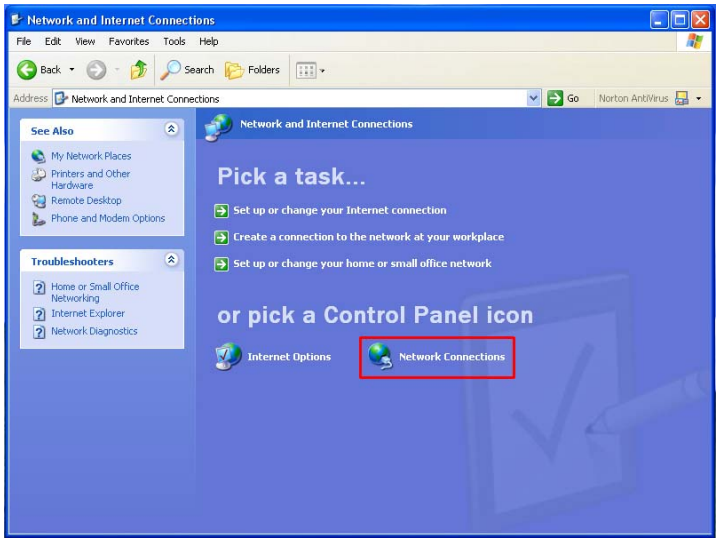
4. Configuring Network Address

This section describes how to change your computer's IP Address to access the Access Point's Web Configuration Utility and then to change the Access Point's IP Address to match your existing Network Address.

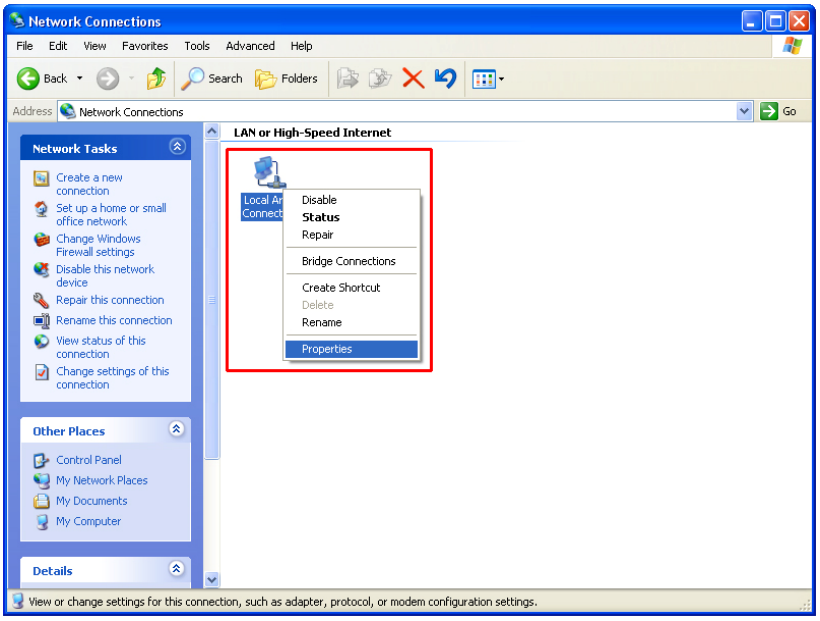
Step 1 Go to **Start > Settings > Control Panel > Network and Internet Connections**.



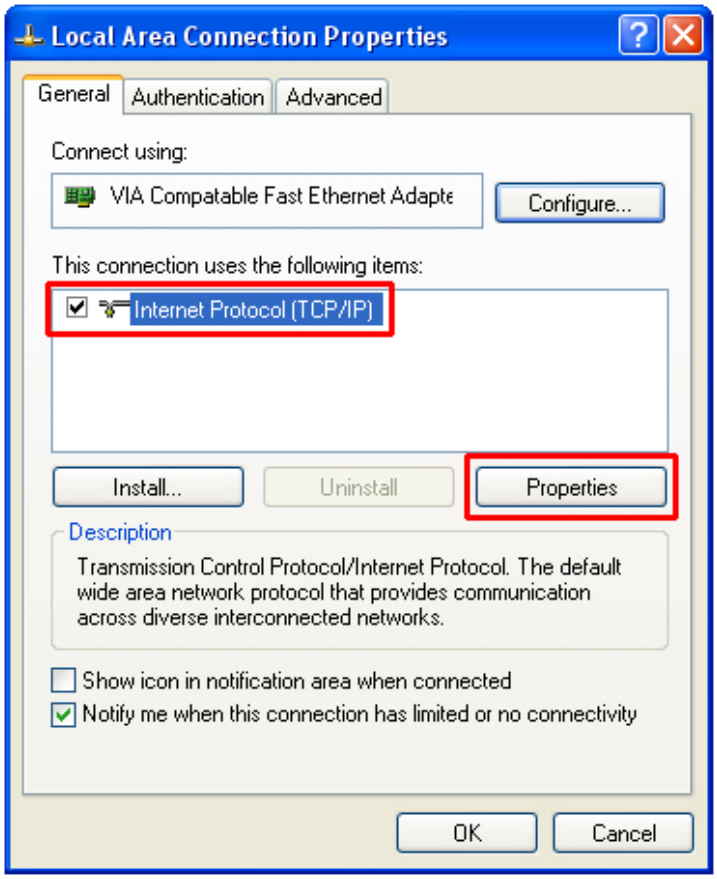
Step 2 Select **Network Connections**.



Step 3 Right-click on **Local Area Connection** and select **Properties**.

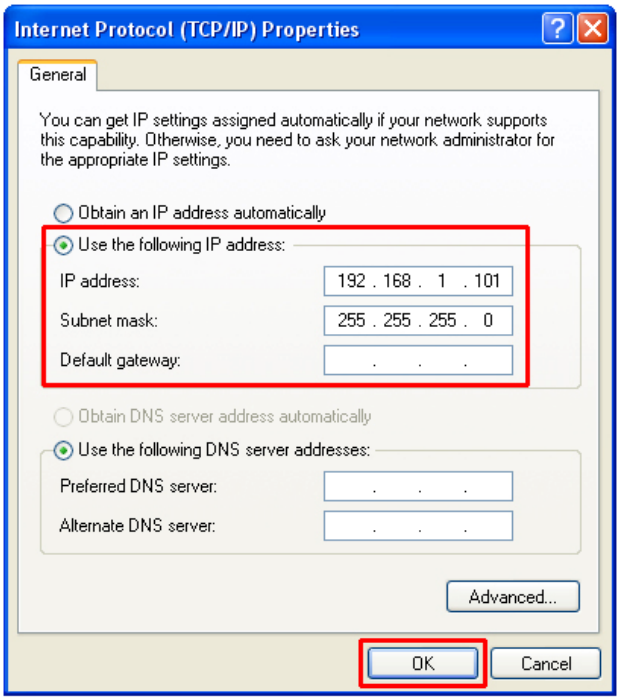


Step 4 Select **Internet Protocol (TCP/IP)** and click on **Properties**.



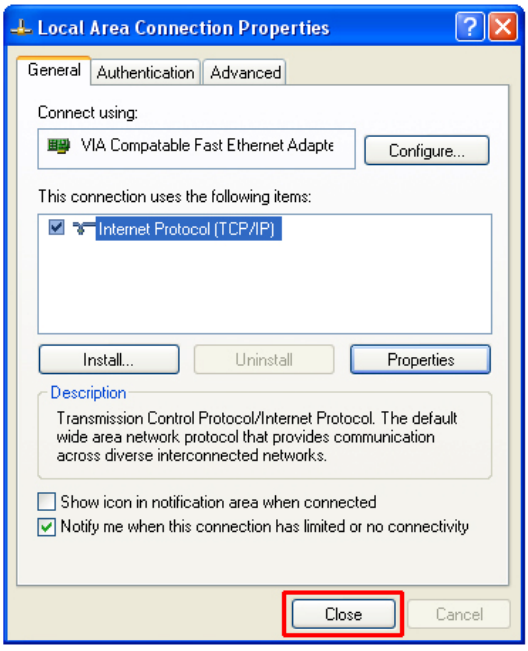
Step 5 Select **Use the following IP address** and enter the following:

IP Address: **192.168.1.101**
Subnet Mask **255.255.255.0**

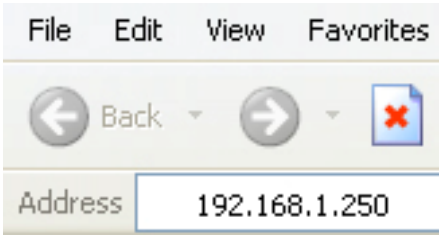


Click **OK** when done.

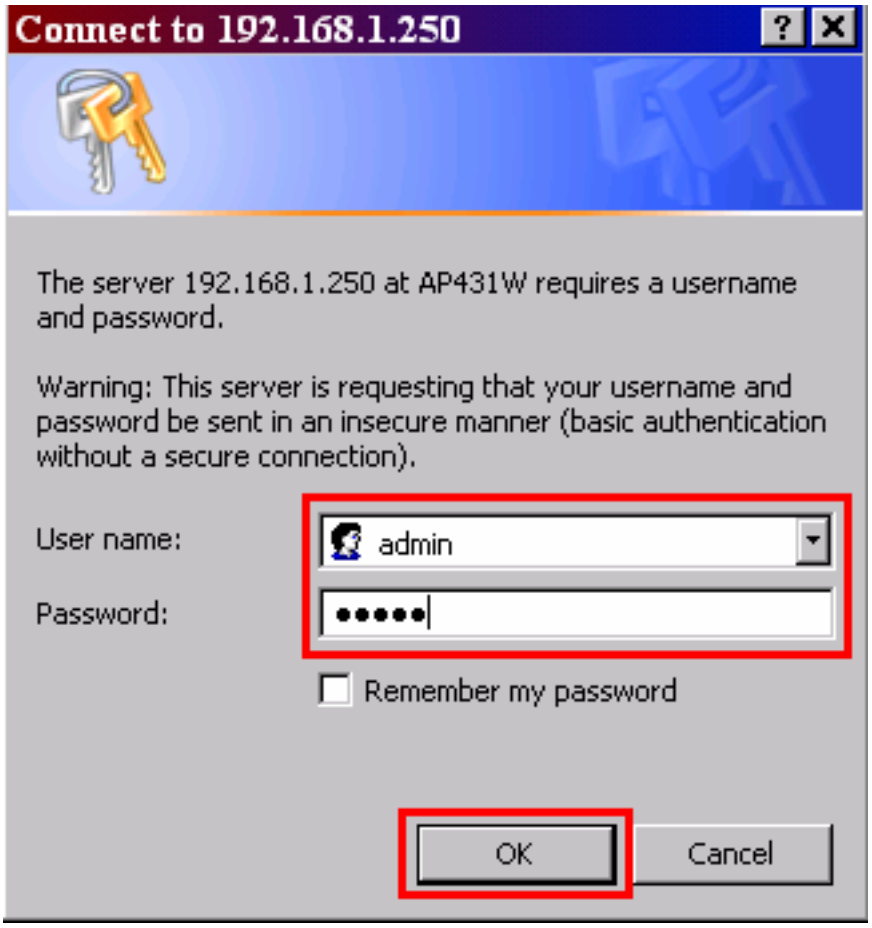
Step 6 Click **Close**.



Step 7 Open your web browser (Internet Explorer or Netscape) and enter **192.168.1.250** in the Address Bar and press **Enter**.

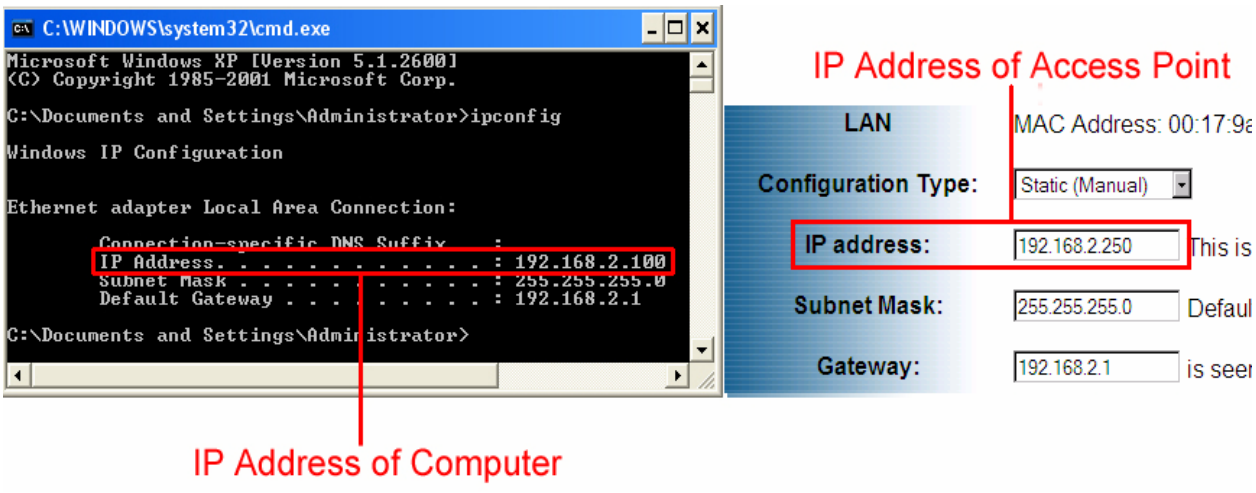


Step 8 Enter **admin** for both the **User name** and **Password** and click **OK**.

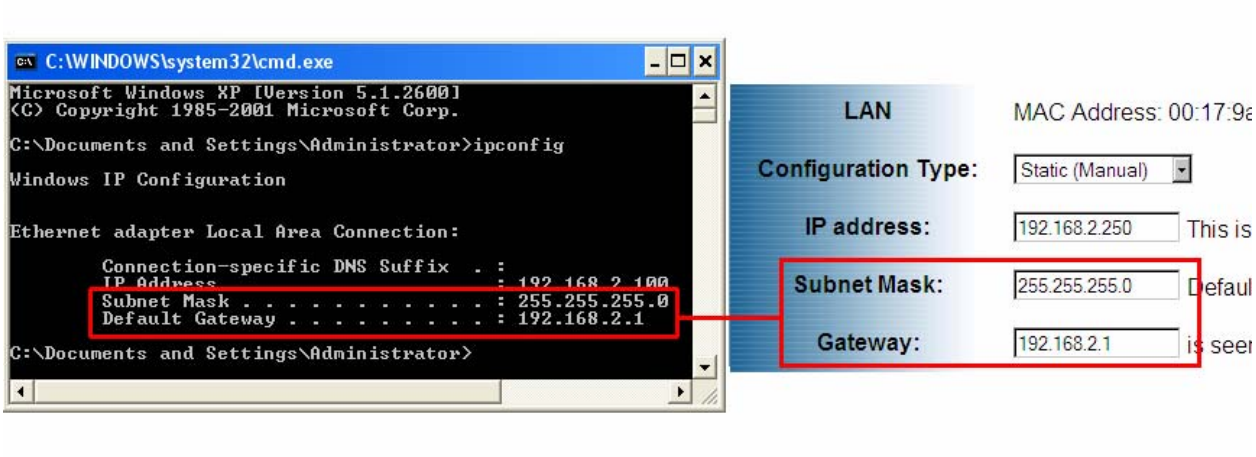


Step 9 Refer to the Network Settings you've written down from the previous section and change the first three numbers of the IP Address to match your local network address.

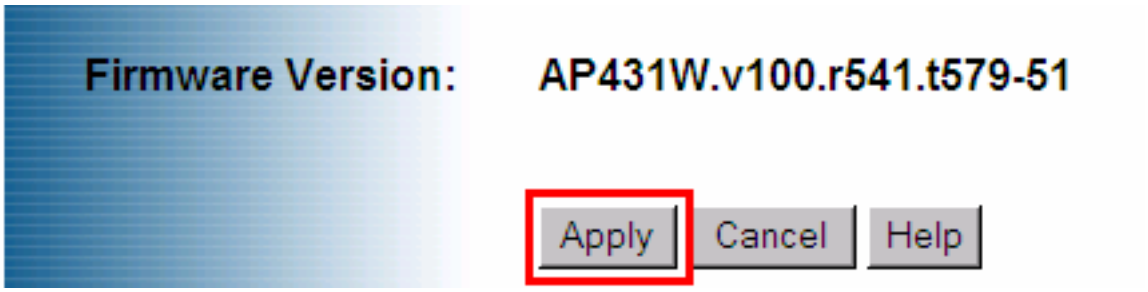
For example: If your computer's **IP Address** is **192.168.2.100**, change the first three numbers to **192.168.2** as well but leave the last number **250** alone.



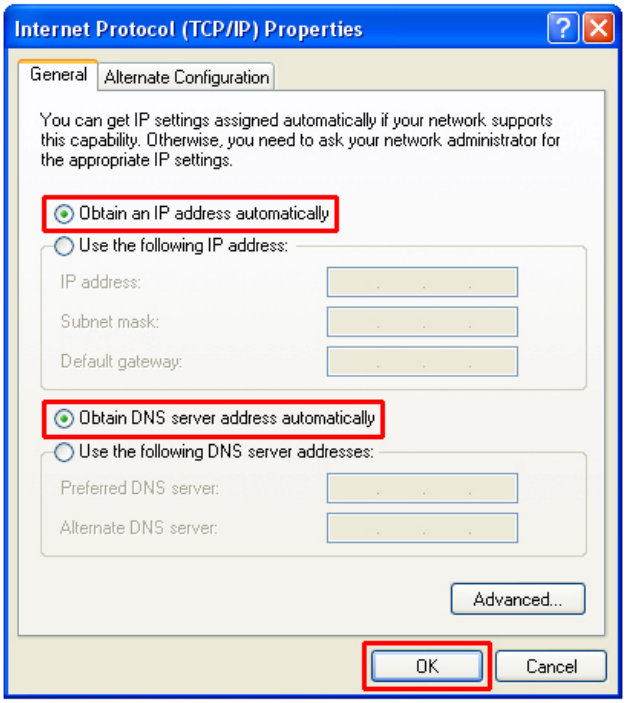
Step 10 Enter the **Subnet Mask** and **Gateway** fields with exactly the same values as you got from running **ipconfig**.



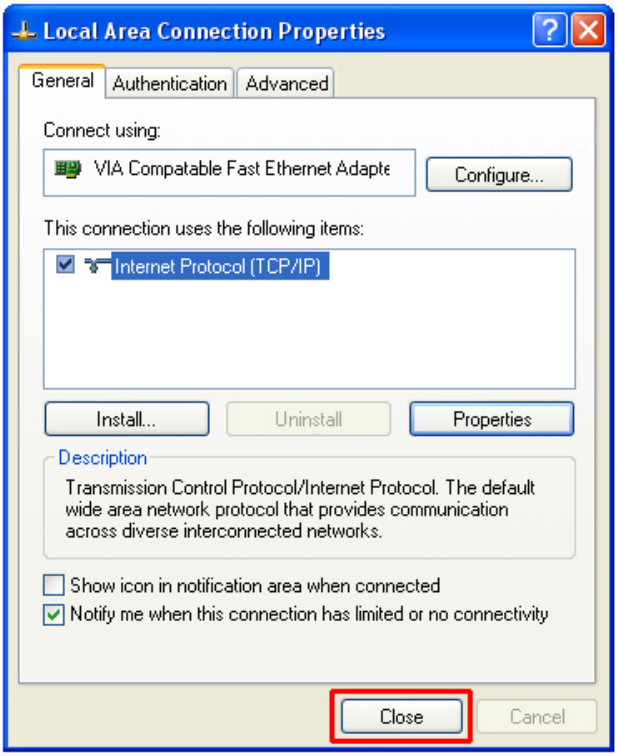
Step 11 Click **Apply** to save the changes.



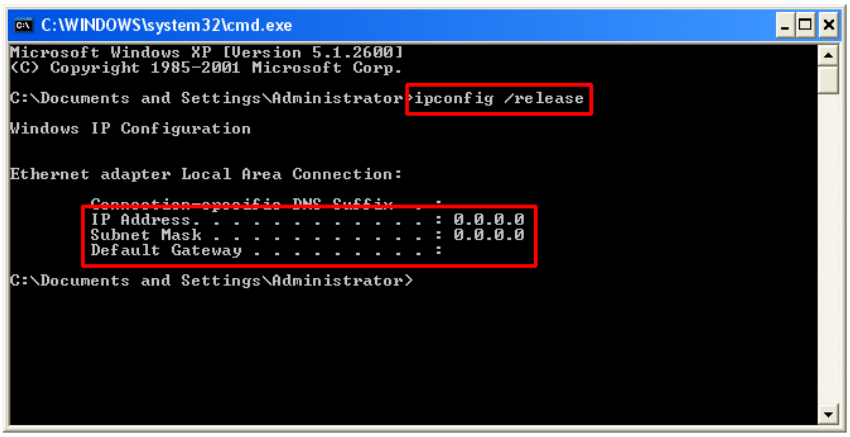
Step 12 Return to **Internet Protocol (TCP/IP) Properties** and select **Obtain an IP address automatically** and **Obtain DNS server address automatically** and click **OK**.



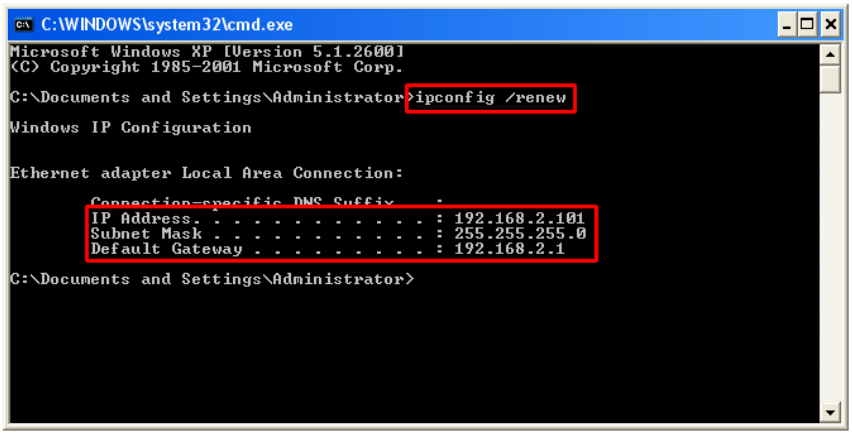
Step 13 Click **Close**.



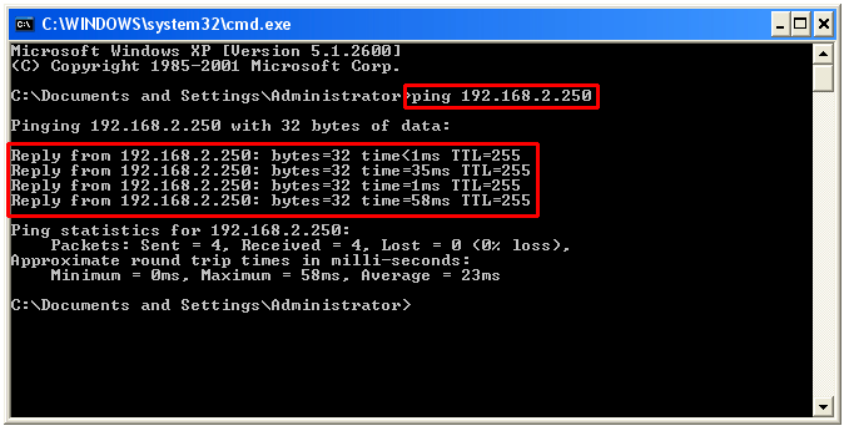
Step 14 At the Command Prompt, type **ipconfig /release** and press **Enter**. You should see all 0's as shown below.



Step 15 Type **ipconfig /renew** and press **Enter**. You should receive a valid IP address as shown below.



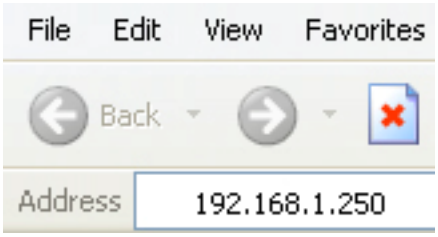
Step 16 Type **ping 192.168.2.250** and press **Enter**. You should receive four Reply from messages as shown below.



5. Using Web Configuration Utility

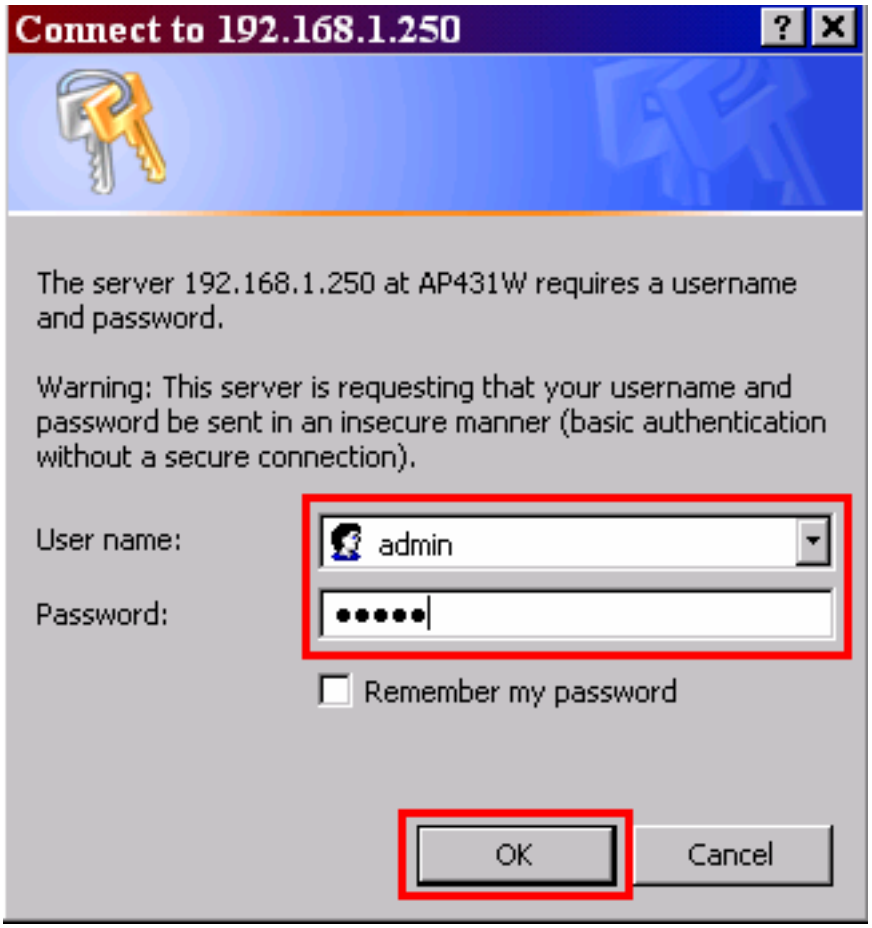
You can use the Access Point's built-in Web Configuration Utility to configure the encryption settings and operating modes. This section describes how to configure the Access Point's wireless and security settings.

Step 1 Open your Web Browser (Internet Explorer or Netscape), enter the IP Address of the Access Point (default: **192.168.1.250**) in the address bar and press **Enter**.

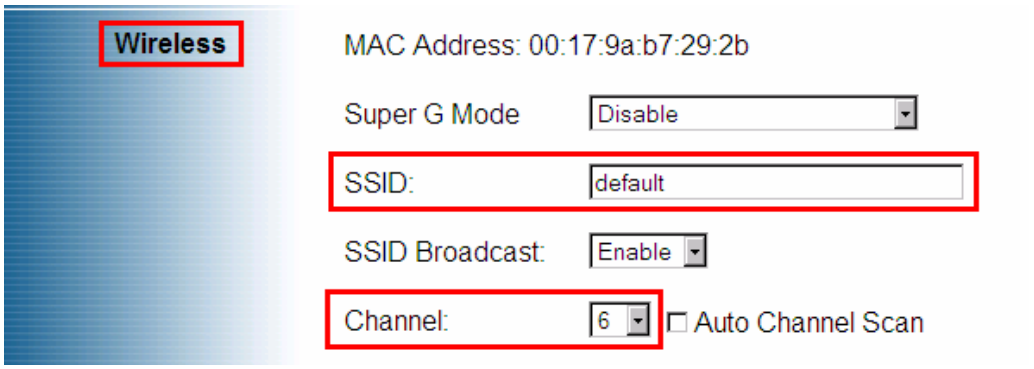


Note: *If you have changed the IP Address of the Access Point, as described in the previous section, enter its new IP Address instead of the default.*

Step 2 Enter **admin** for both the **User name** and **Password** and click **OK**.

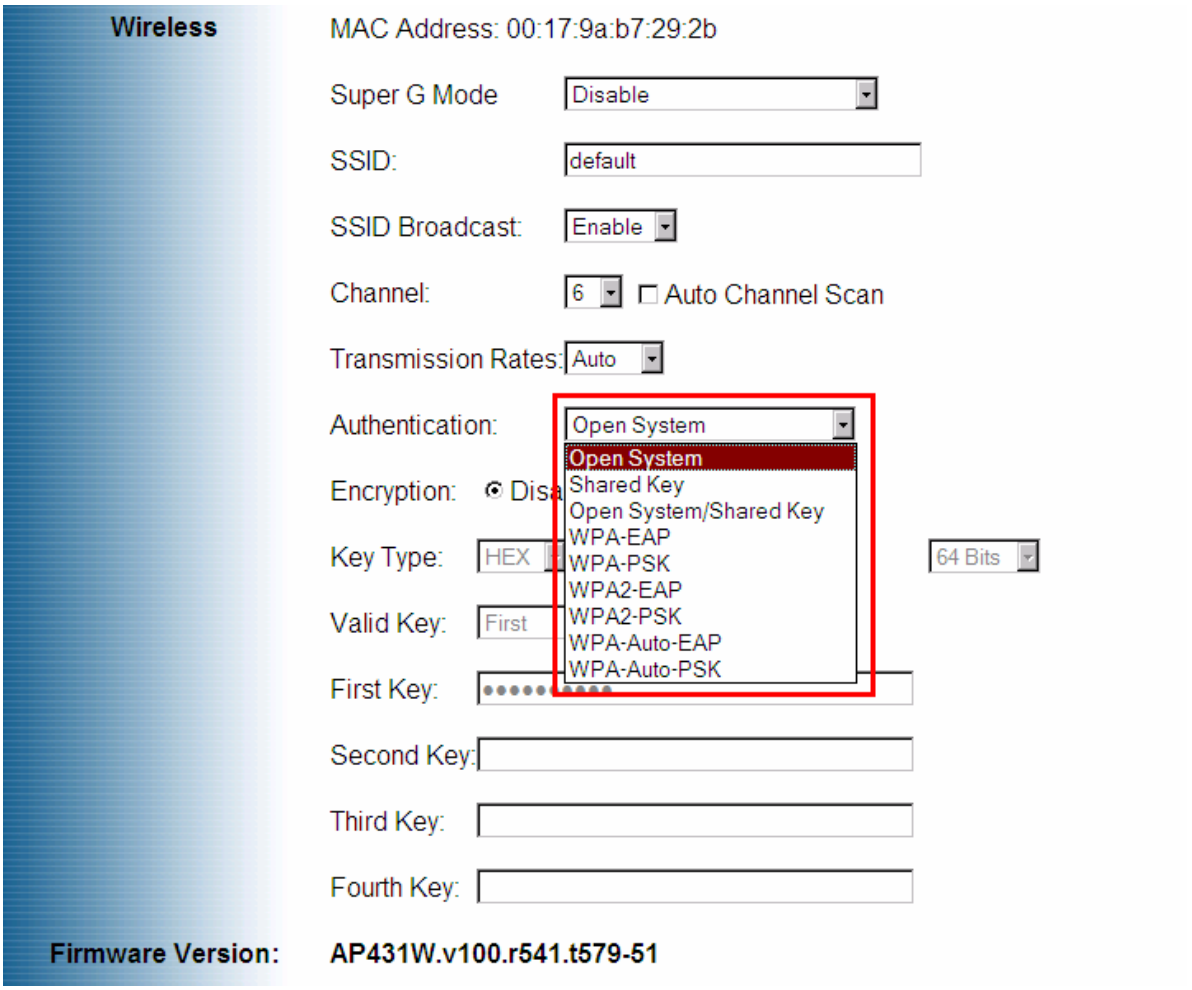


Step 3 At the Wireless section, enter the **SSID (Network Name)** for your wireless network and select a **channel** number.



Step 4 You may enable encryption (authentication) for your wireless network for security purpose, or to match the encryption settings of your existing Access Point. Select an encryption mode from the **Authentication** drop-down list.

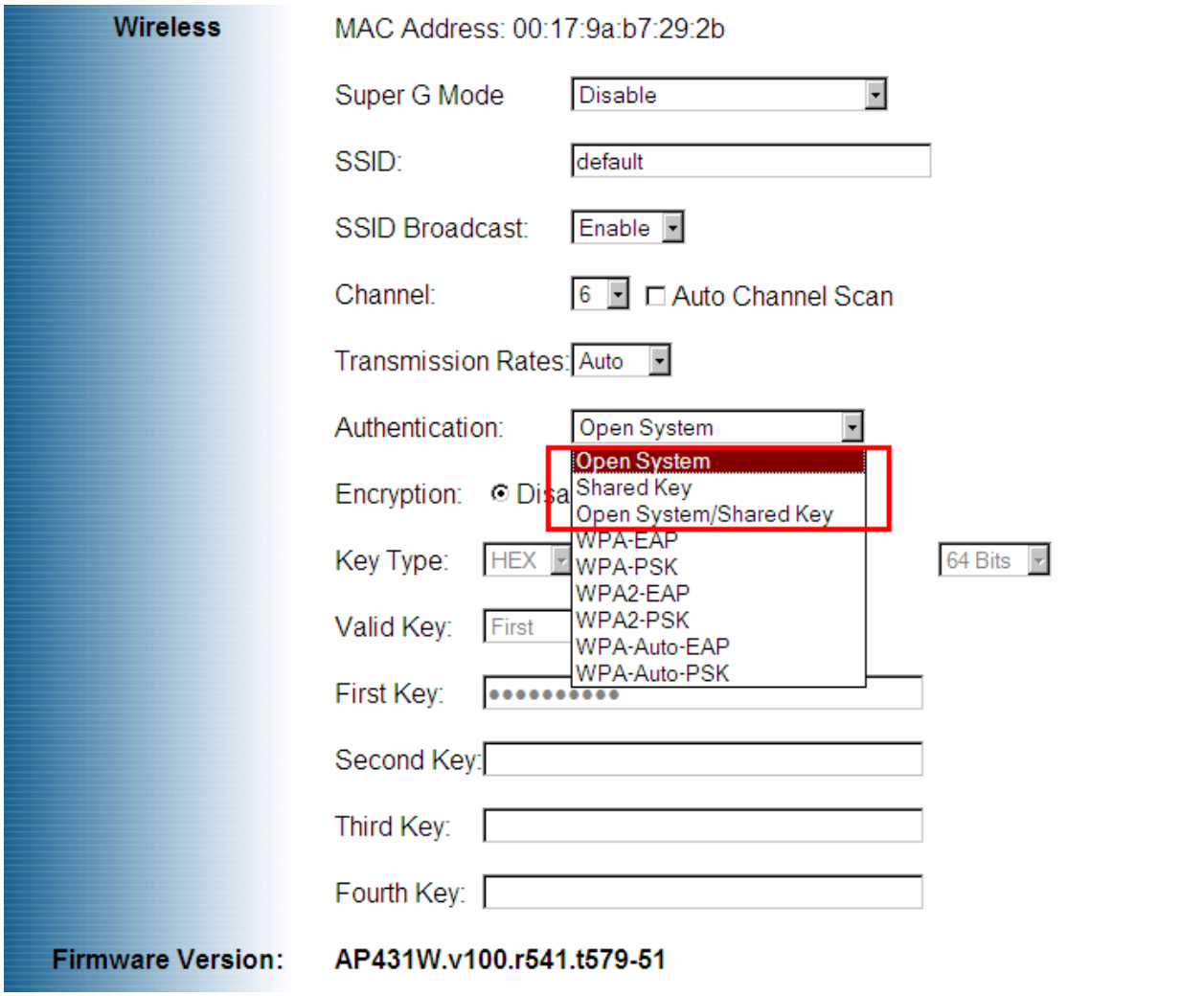
For more detailed information, please go to Page 24, Wireless Encryption Settings.



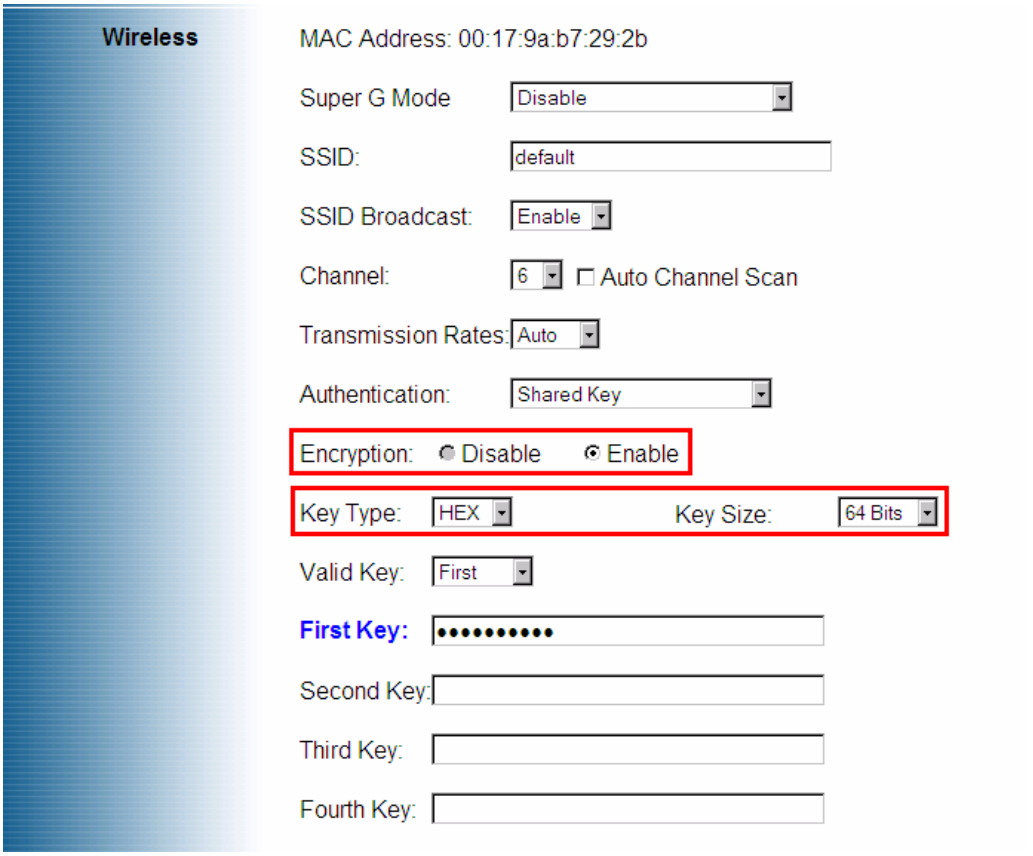
WEP (Wired Equivalent Privacy)

Step 4a WEP is a basic encryption type for wireless network.

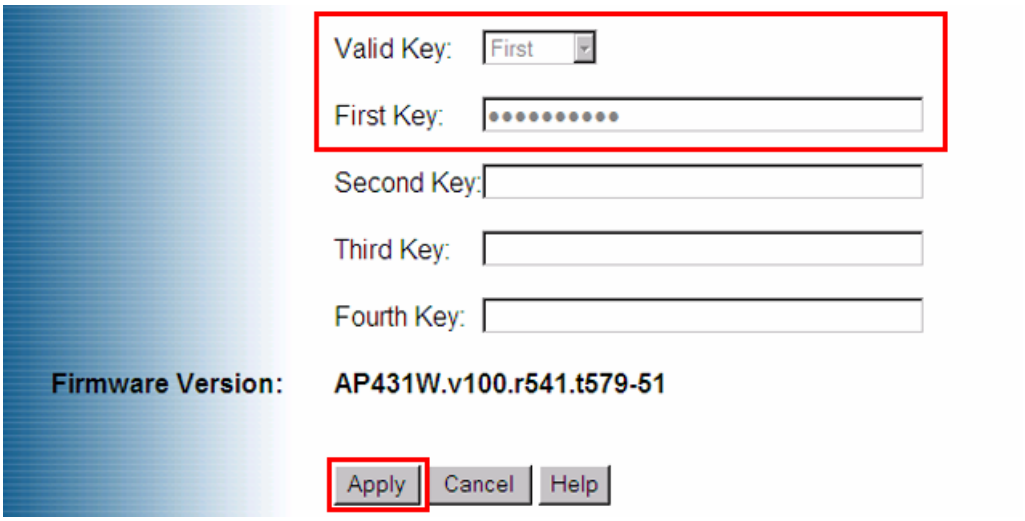
- Open System and disabling encryption implies no encryption
- Open System and enabling encryption implies WEP open system mode
- Shared Key and enabling encryption implies WEP shared key mode
- Open System/Shared Key and enabling encryption implies WEP auto switch mode



Step 4b Enable **Encryption**, select the same **Key Type** and **Key Size** (64-Bits / 128-Bits / 152 Bits) from the drop-down menus, as the WEP settings in your wireless network.

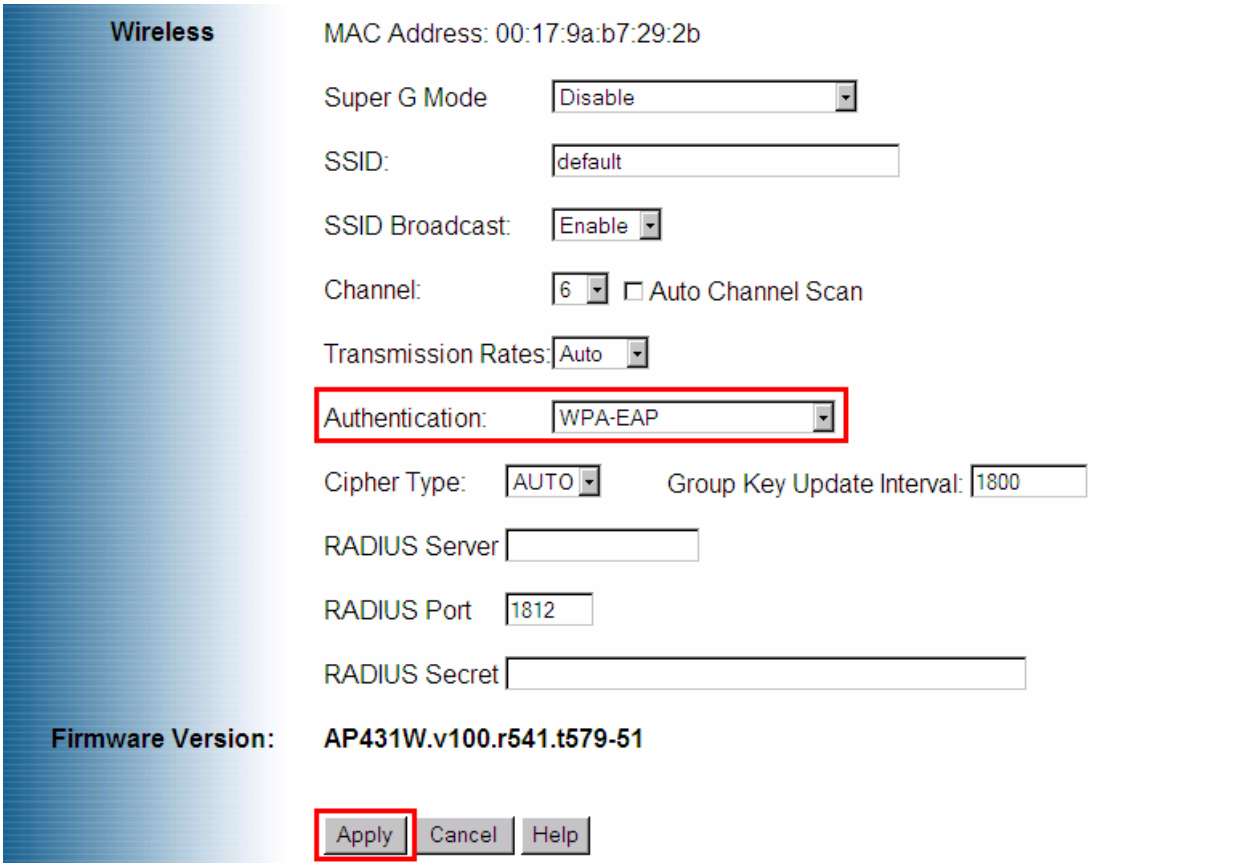


Step 4c Enter the same **key (password)** of your wireless network in the **First Key** field and click **Apply**.



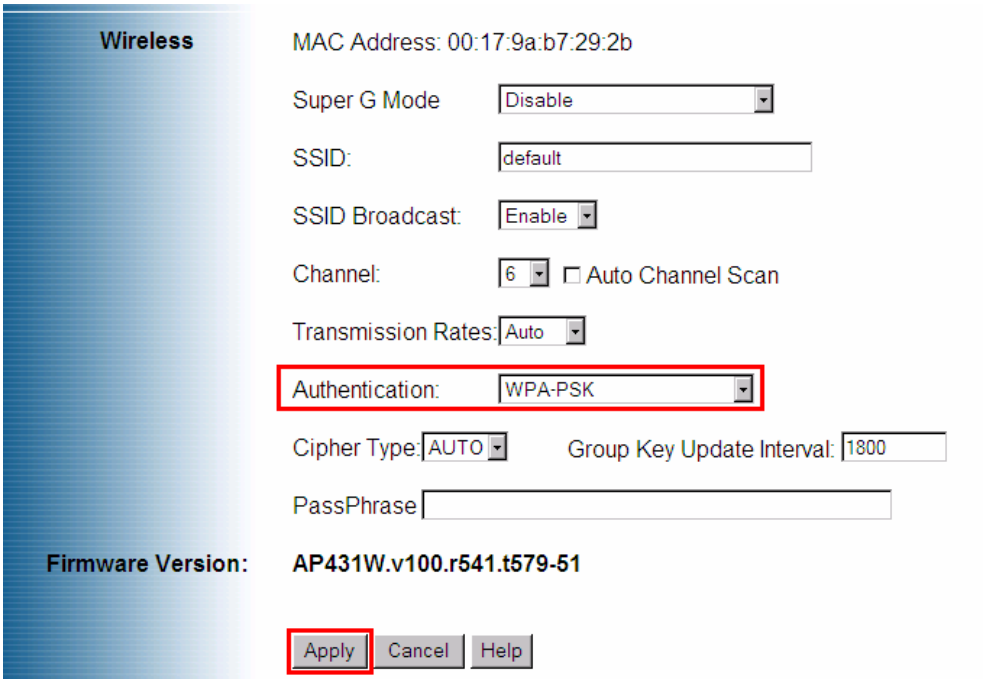
WPA-EAP

Step 4d If your network uses a Radius Server, select **WPA-EAP** from the drop-down menu and enter all the applicable fields. Click **Apply** and proceed to.



WPA-PSK (WiFi Protected Access-Pre Shared Key)

Step 4e WPA-PSK and WPA-2PSK are more secured than WEP and highly recommended. Select **WPA-PSK** from the drop-down menu and enter the key value in the **PassPhrase**. Click **Apply**.



Step 5 For best result, place the Access Point at a central location where it is accessible to all the wireless computers.

6. Connecting to the Access Point

Once you have properly configured the Access Point, your wireless computers should be able to detect its signal.

Use your wireless network adapter's utility to detect and connect to the Access Point. You can identify the Access Point by its **MAC Address**, which is displayed in the **BSSID** field of your wireless network adapter's utility.

You can check the Access Point's **MAC Address** on its bottom label.

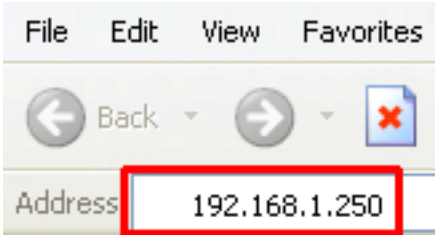
If the signal is weak, try reorienting the Access Point's antenna or relocate the Access Point to a different place.

7. Web Configuration Utility

The Access Point comes with a built-in Web Configuration Utility that allows you to easily configure its various features. This section describes how to use the Web Configuration Utility.

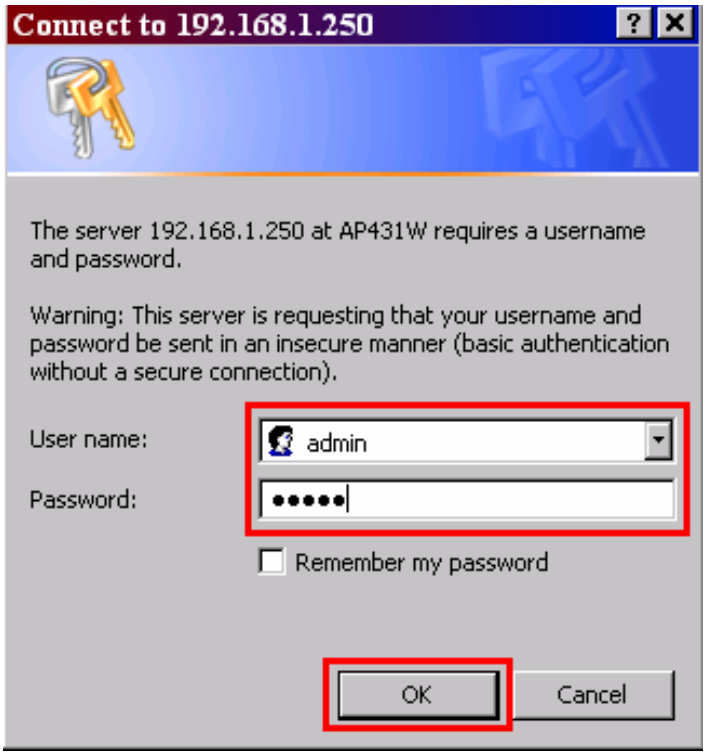
7.1 Primary Setup

Step 1 Open your Web Browser (Internet Explorer or Netscape), enter the default IP Address of the Access Point **192.168.1.250** in the Address Bar and press **Enter**.



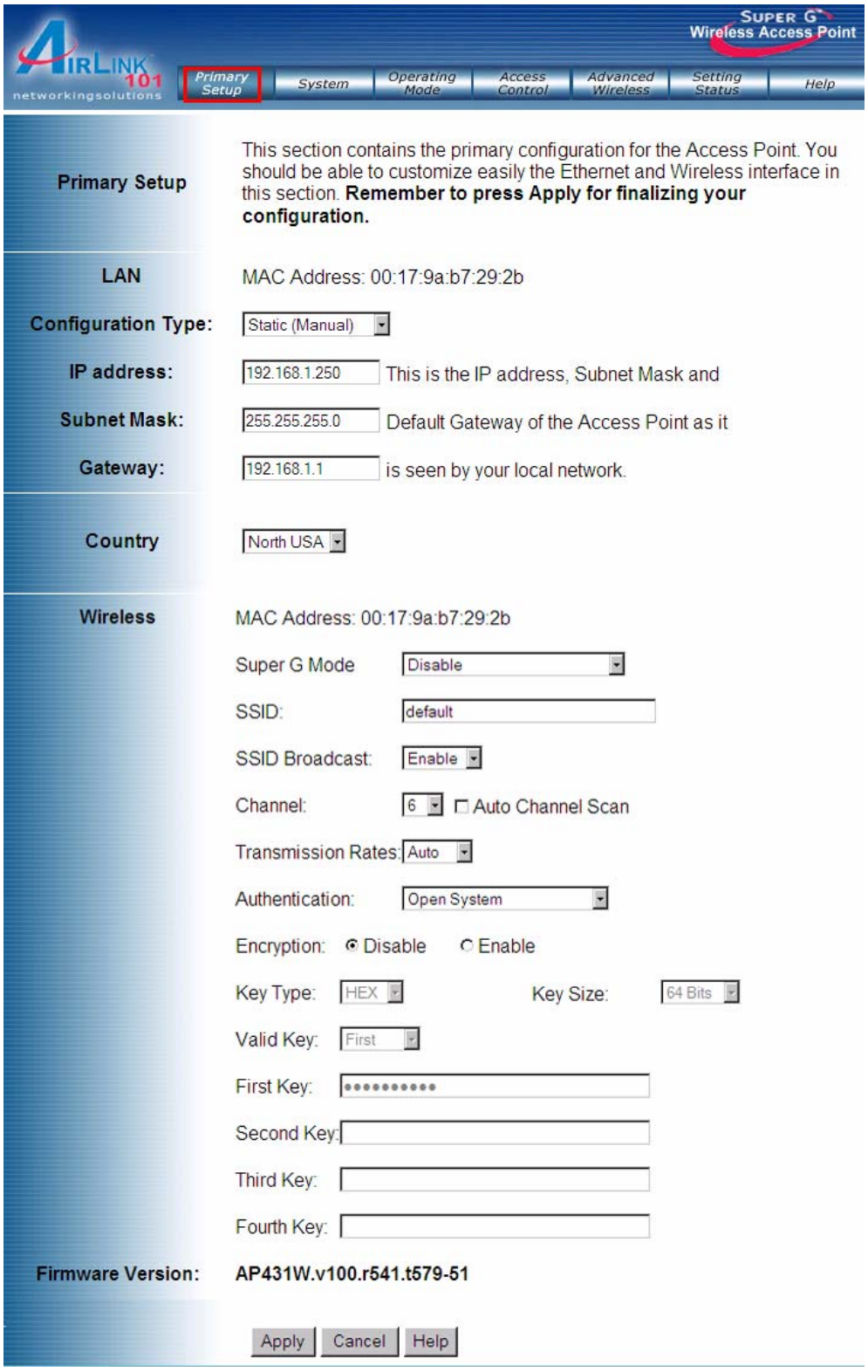
Note: *If you have changed the IP Address of the Access Point, enter its new IP Address instead of the default.*

Step 2 Enter **admin** for both the User name and Password fields and click **OK**.

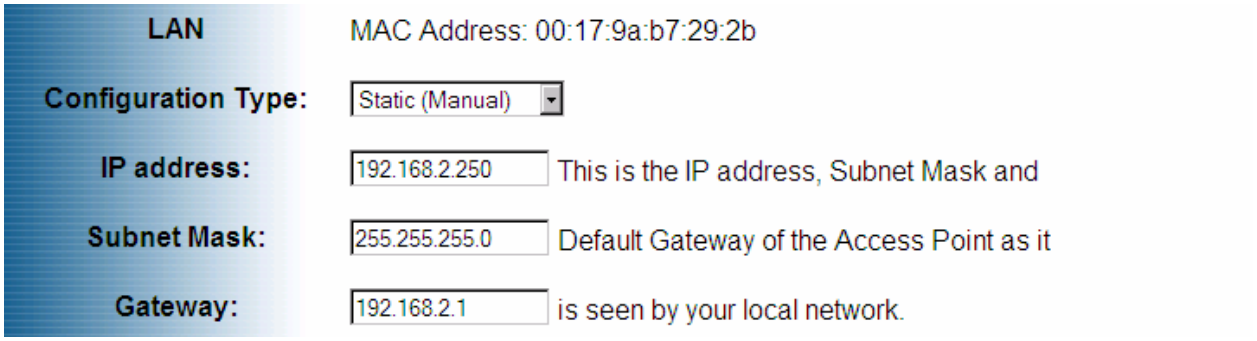


The **Primary Setup** page is the main screen for configuring the Access Point.

You can configure its IP Address and Wireless settings from this page.



LAN

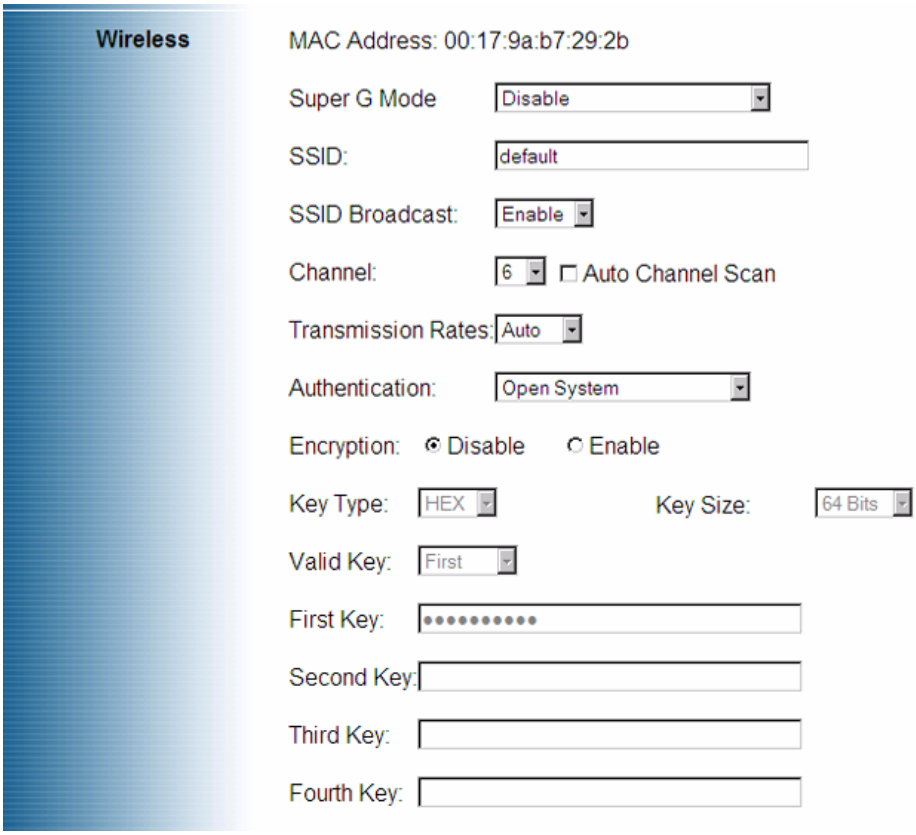


MAC Address: Displays the Access Point's MAC Address.

Configuration Type: If you want the Access Point to obtain an IP address automatically from a DHCP server, then select **Dynamic (DHCP)**. If you will assign the Access Point a static IP address, then select **Static (Manual)** and enter an IP Address, Subnet Mask, and Default Gateway address in the corresponding fields.

Note: It is recommended that you assign a static IP Address for the Access Point so you can access its web configuration utility with ease.

Wireless



Super G Mode: Choose from **Disable**, **Super G™ without Turbo** or **Super G™ with Dynamic Turbo** as the wireless mode that your wireless network is using. **Disable** implies using **11b/11g**.

SSID: The SSID is the network name shared among all devices in a wireless network. It must be identical for all devices in the wireless network.

SSID Broadcast: To broadcast the Access Point's SSID, select **Enable**. When wireless clients survey the local area for wireless networks to associate with, they will pick up the SSID broadcast by the Access Point. If you do not want to broadcast the Access Point's SSID, then select **Disable**.

Channel: Select the appropriate channel (1 to 11) from the list provided to correspond with your network settings, All devices in your wireless network must use the same channel in order to function correctly. Enable **Auto Channel Scan** allows the Access Point to automatically scan for a clear channel.

Note: If you enable Auto Channel Scan, then you cannot specify a channel setting.

Transmission Rates: The default setting is **Auto**. The range is different according to the Wireless Mode you select.

You can select a range of transmission speeds, or you can keep the default setting-Auto to have the Access Point automatically uses the fastest possible data rate. Auto-Fallback will negotiate the best possible connection speed between the Access Point and a wireless client.

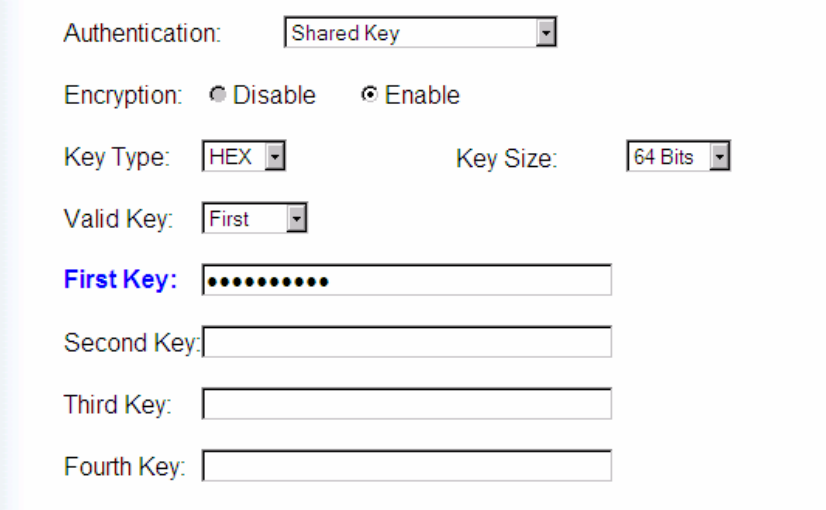
Authentication: Select the proper authentication for the encryption of your network.

Encryption: Choose **Enable** to select your security type, or the default setting **Disable** to connect with better performance. Disabling security setting will make your network more vulnerable to intrusion.

Wireless Encryption Settings

WEP

Wired Equivalent Privacy (WEP) is an encryption method used to protect your data during wireless communications. These settings must be identical to your existing wireless network's WEP settings. If your network supports WPA or WPA-PSK security, it is recommended that you use those encryptions for better security.



Authentication Type: Choose between **Open System** or **Shared Key**.

Encryption: Choose **Disable** or **Enable**.

Key Type: Choose **HEX** or **ASCII**

Key Size: Choose between **64-bit, 128-bit** and **152-bit** encryption.

Valid Key: Select a key to be the active key.

Key 1 – 4: Manually assign a passphrase for each key.

- If you selected **HEX** and **64 bits** encryption, enter **10** HEX characters.
- If you selected **HEX** and **128 bits** encryption, enter **26** HEX characters.
- If you selected **HEX** and **152 bits** encryption, enter **32** HEX characters.
- If you selected **ASCII** and **64 bits** encryption, enter **5** ASCII characters.
- If you selected **ASCII** and **128 bits** encryption, enter **13** ASCII characters.
- If you selected **ASCII** and **152 bits** encryption, enter **16** ASCII characters.

Note: HEX number is a number from 0 to 9 and a letter from A to F. ASCII is any alphanumeric character.

Click **Apply** to save the changes.

WPA-EAP

If your network uses a RADIUS server for authentication, you may select WPA-EAP as your encryption setting.

Authentication Type: Choose between **WPA-EAP**.

Cipher Type: Select the WPA Algorithm (**AUTO, AES** or **TKIP**) that your network uses.

Group Key Update Interval: Enter the key renewal time in seconds. Default is 1800 seconds.

RADIUS Server: Enter the **IP Address** of your RADIUS server.

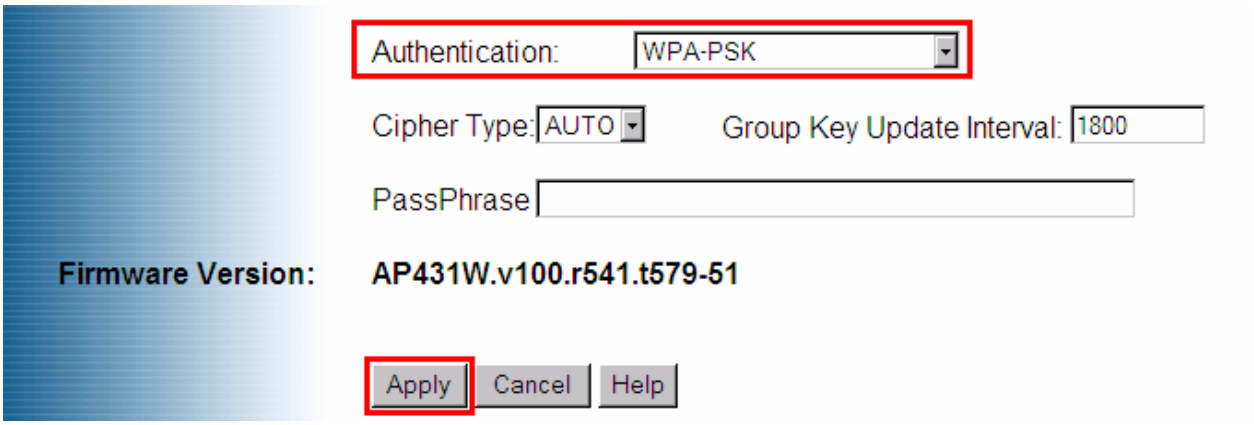
RADIUS Port: Enter the Authentication Port number of your RADIUS server.

RADIUS Secret: Enter the Shared Key for your RADUS server.

Click **Apply** to save the changes.

WPA-PSK / WPA2-PSK

WPA-PSK and WPA-2PSK are more secured than WEP and highly recommended. Select **WPA-PSK or WPA2-PSK** from the drop-down menu and enter the key value in the **PassPhrase**. Click **Apply**.



Authentication Type: Choose between **WPA-PSK**.

Cipher Type: Select the WPA Algorithm (**AUTO, AES** or **TKIP**) that your network uses.

Group Key Update Interval: Enter the desired key renewal time in seconds. Default is 1800 seconds.

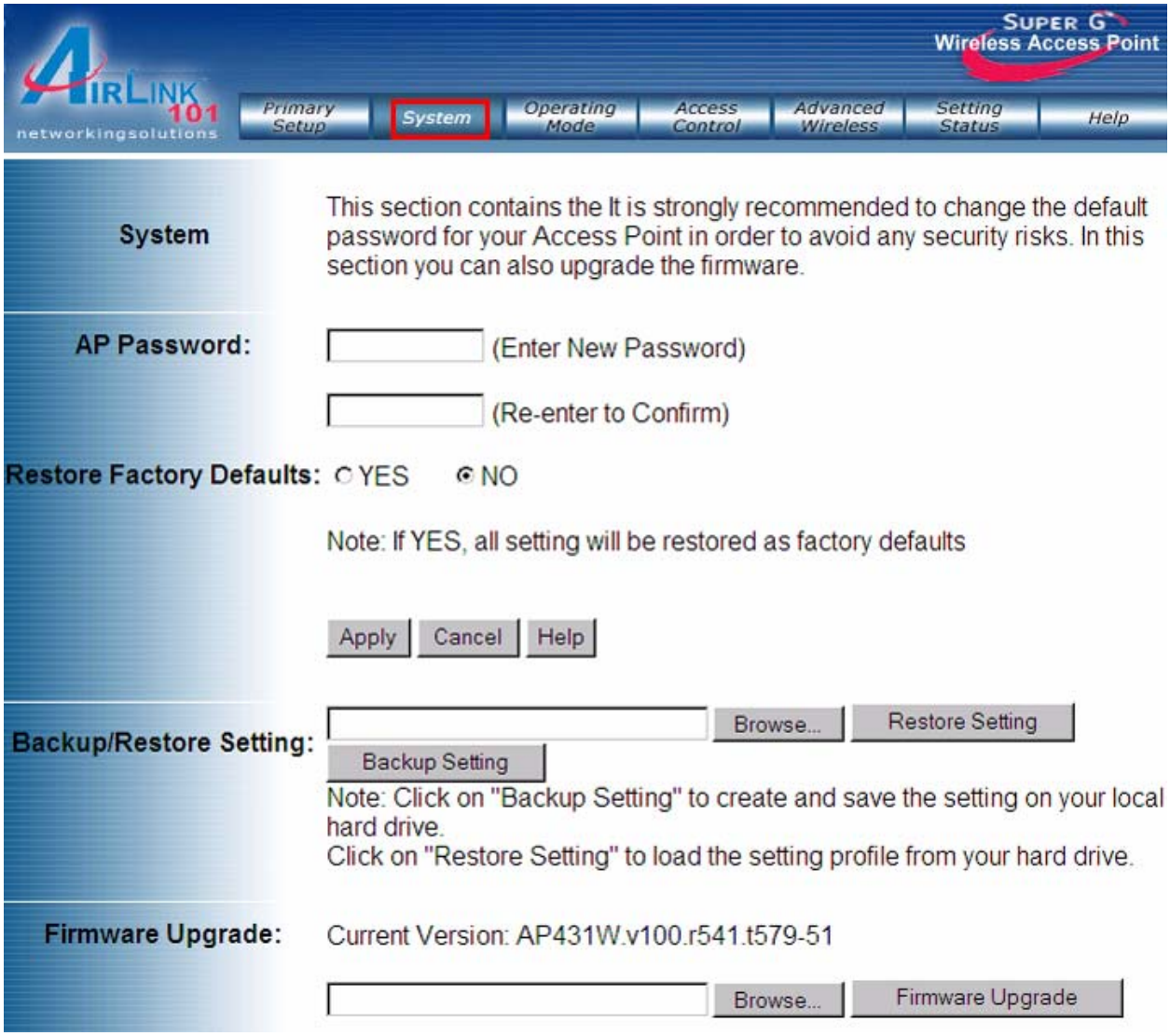
PassPhrase: Enter a password for your wireless network. The key should be 8 ~ 63 characters in alphanumeric.

Note that these settings must be exactly the same as your access point/wireless router.

Click **Apply** to save the changes.

7.2 System

The System page allows you to change the Access Point's login password as well as other administrative functions.



AP Password: Enter the new login password and re-enter to confirm the new password. This is the password used for logging into the Access Point's Web Configuration Utility.

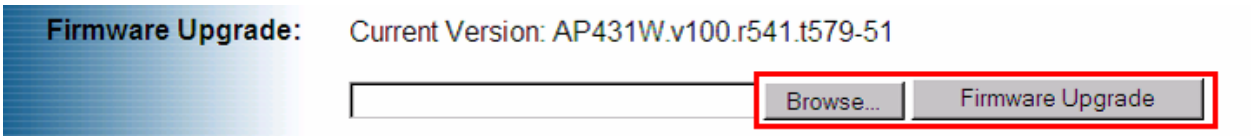
Restore Factory Defaults: Select **Yes** and click **Apply** to reset all of the settings to factory default.

Backup/Restore Setting: Click on the **Backup Setting** button to save your settings as a file in your PC. Later when you want to restore the settings, just **Browse** for the previously saved file and click on the **Restore Setting** button.

Firmware Upgrade: Click on the Firmware Upgrade button to update the firmware. You can download the updated firmware from our web site at www.airlink101.com

Step 1 Unzip the new firmware.

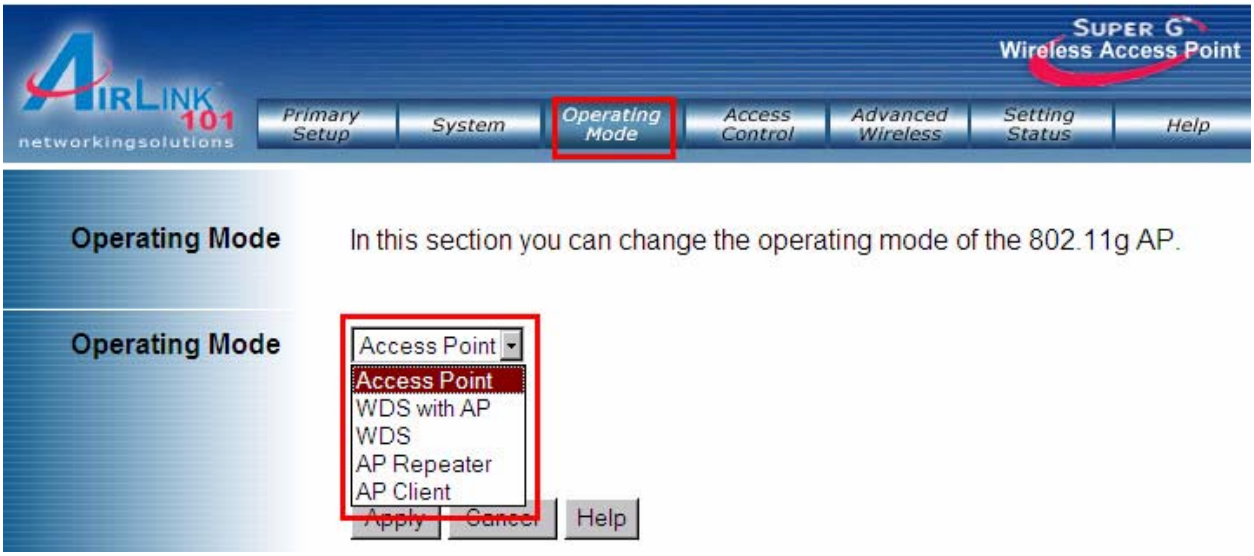
Step 2 Click on **Browse** to locate the new firmware and click on **Firmware Upgrade** to change the AP firmware.



Warning: Upgrading firmware may take a few minutes, please don't turn off the power or press the reset button.

7.3 Operating Mode

The Operating Mode page allows you to select different functions according to your needs.



Access Point: This mode allows your wireless computers to connect to your wired network. (Default mode)

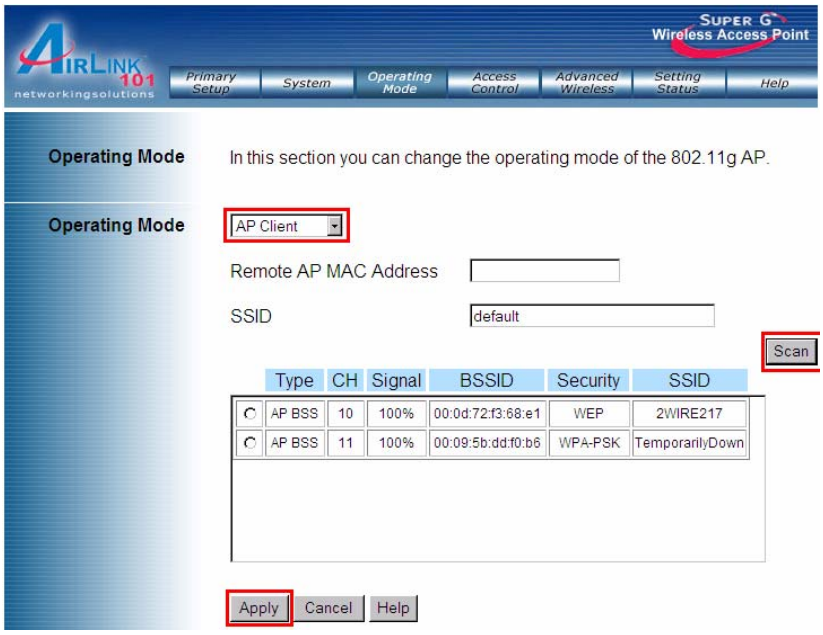
AP Client

The AP Client mode converts the Access Point to a wireless network adapter, allowing the network device such as your computer or game console to become a wireless client.

Step 1 Select **AP Client** and enter the MAC address of the remote AP or click on the **Scan** button for any available wireless network.

Step 2 Select the desired wireless network from the list.

Step 3 Click **Apply** to save the changes.



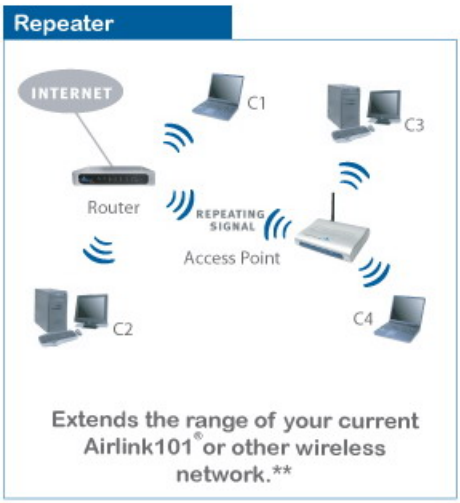
Step 4 Once the Access Point has restarted, you may disconnect it from the wireless router and connect it to the Ethernet port of your computer or game console, and *reboot* the Access Point.

AP Repeater

The AP Repeater mode converts the Access Point to a wireless repeater. By extending the wireless signal of the source AP/wireless router, the wireless coverage is expanded.

Step 1 Select **AP Repeater** and enter the MAC address or use the **Scan** button to search for the remote AP (source AP/wireless router). Click **Apply** to save the changes.

Step 2 Once the Repeater has restarted, you may disconnect it from the wireless router. For best result, place the Repeater at a central location between the wireless router and your wireless computers.



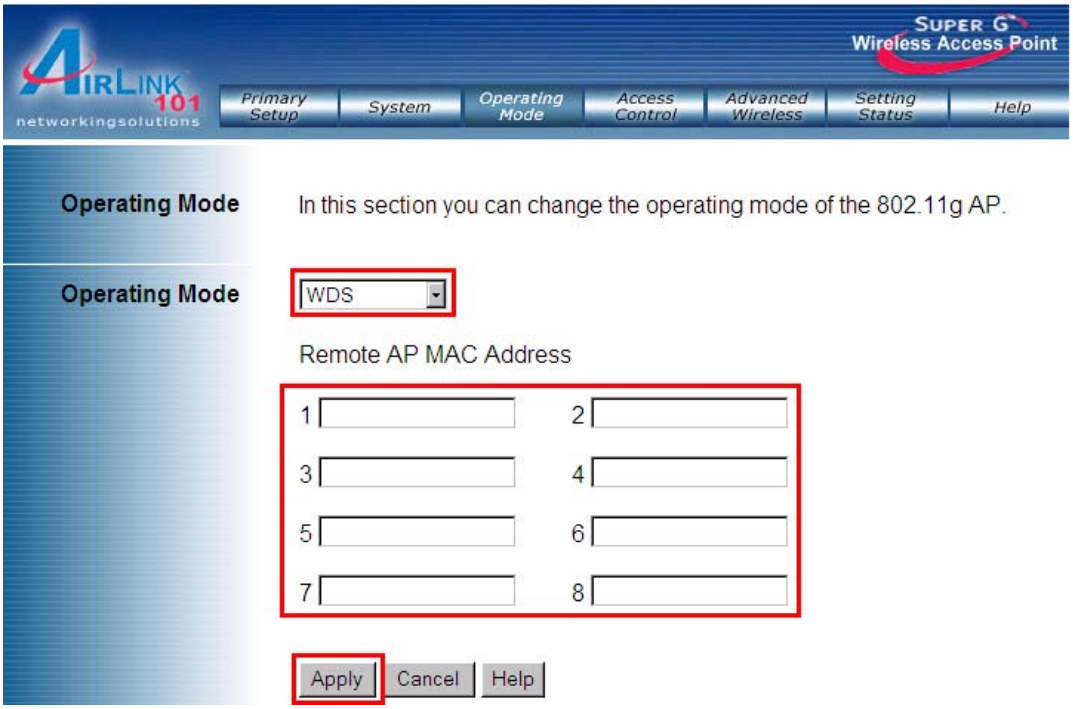
Note: The repeater mode may not be compatible with all routers due to the lack of a standard protocol for repeater mode.

WDS (Bridge)

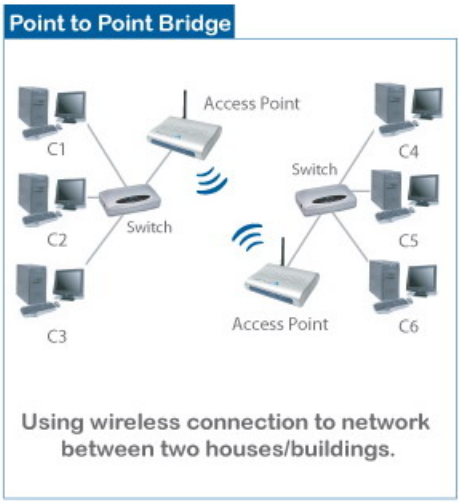
The WDS mode converts the Access Point to a wireless bridge. It bridges the network clients from physically separate LANs into one virtual LAN. You will need to use ap431w

access points throughout your network. This mode will not work if you try to use them with any other brand of access point.

Step 1 Select **WDS** and enter the MAC address of the remote APs. Click **Apply** to save the changes.



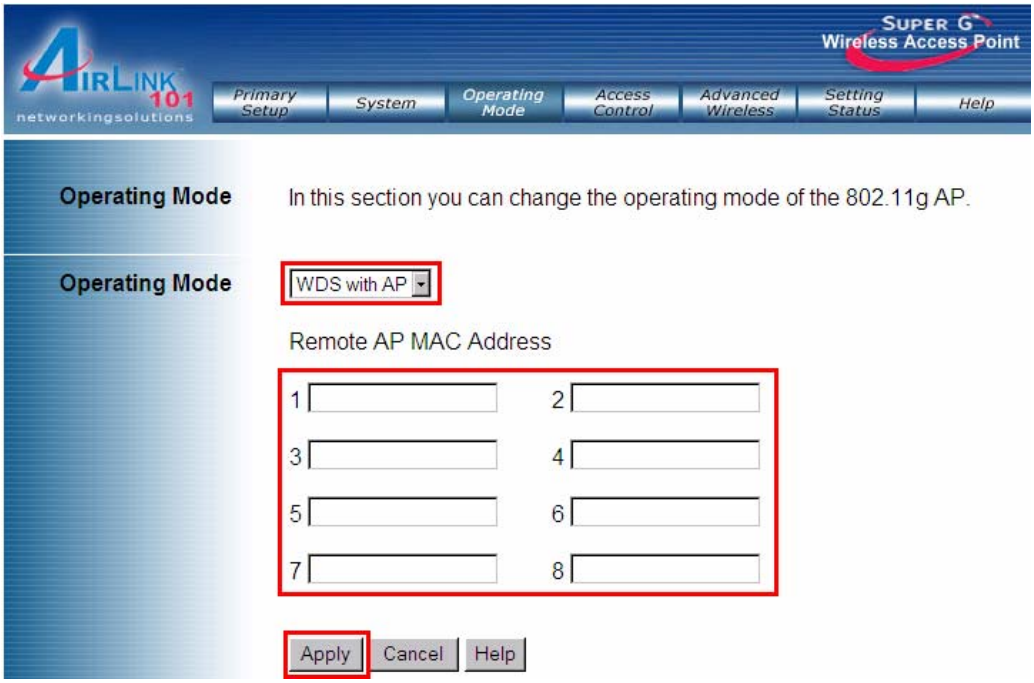
Step 2 Configure other Access Points in the same way.



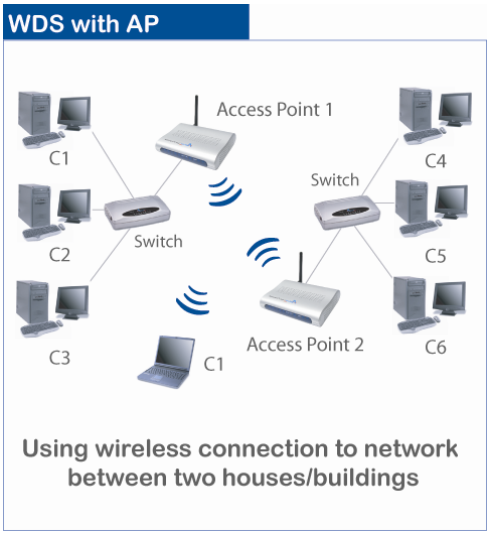
WDS with AP

The WDS mode converts the Access Point to a wireless bridge. It bridges the network clients from physically separate LANs into one virtual LAN and allows wireless clients to connect to the network via the Access Point. You will need to use ap431w access points throughout your network. This mode will not work if you try to use them with any other brand of access point.

Step 1 Select **WDS with AP** and enter the MAC address of the remote APs. Click **Apply** to save the changes.

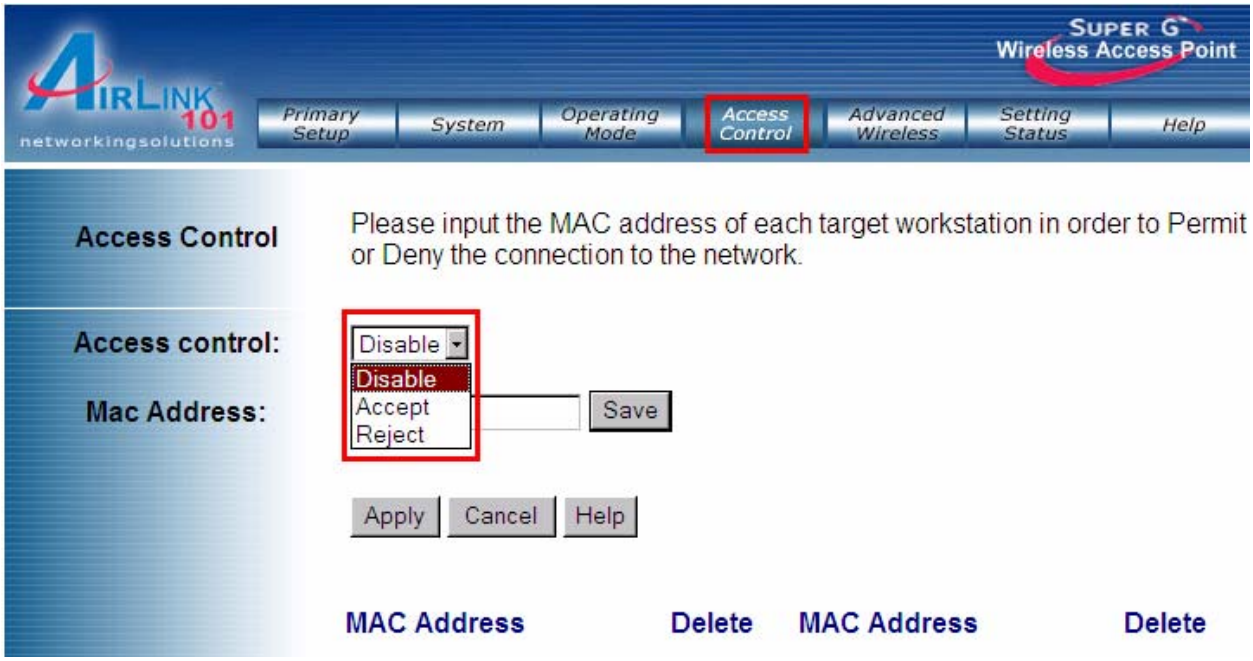


Step 2 Configure other Access Points in the same way.

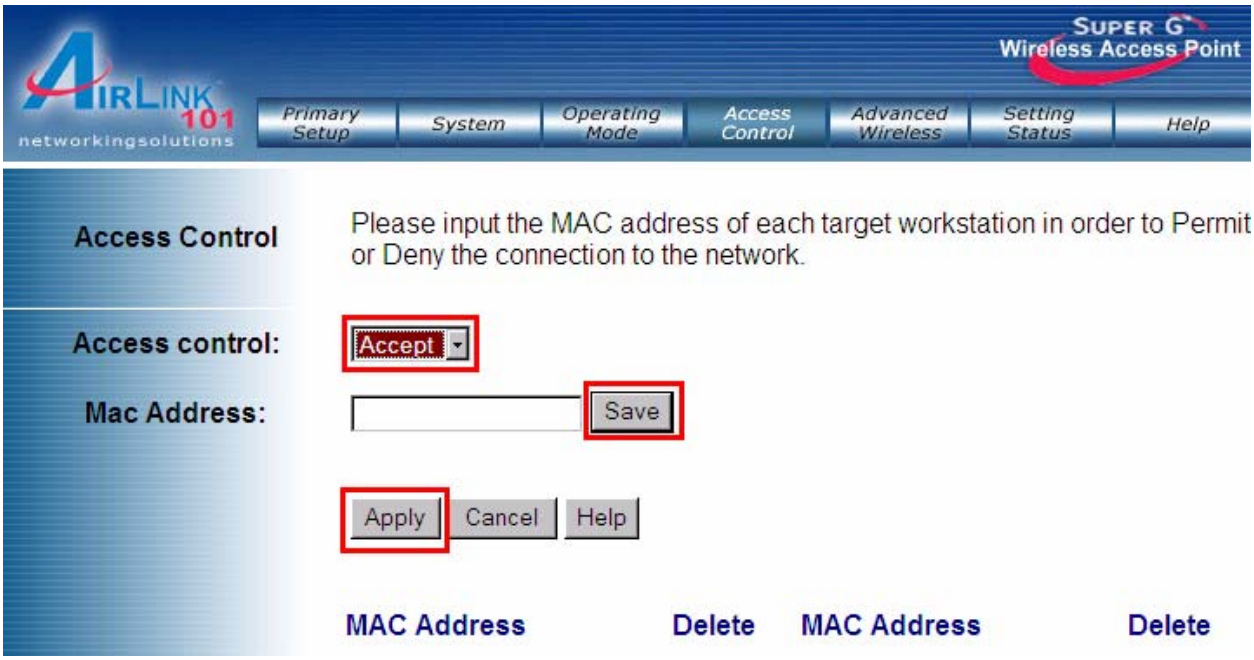


7.4 Access Control

The Access Control page allows you to control which PCs may or may not communicate with the Access Point depending on their MAC address.



Select **Accept** from the drop-down menu to enable Access Control.

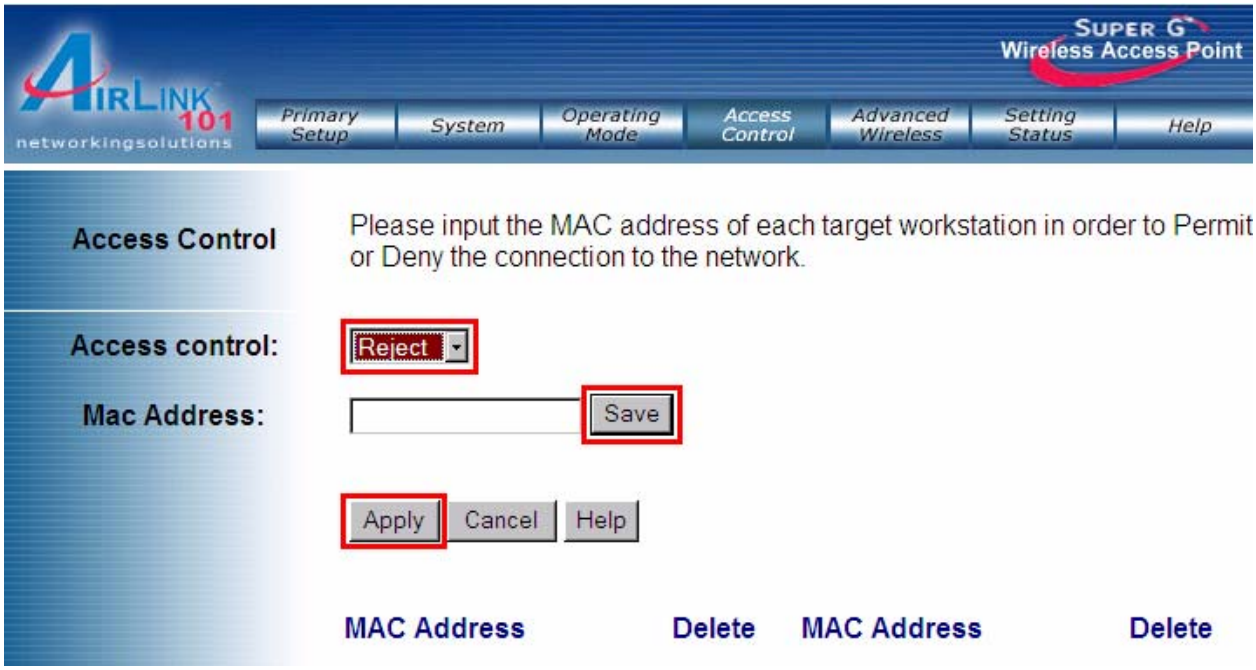


Enter a **MAC Address**, then the **Save** button to create a list of PCs that can communicate with the AP.

Note: Each MAC address should be entered in this format: xxxxxxxxxxxx ("x" represents the actual characters of the MAC address).

Click **Apply** to save the changes.

If you want to block specific PCs from communicating with the Access Point, set Access Control to **Reject**. Enter a **MAC Address**, then click the **Save** button to create a list of PCs that cannot communicate with the AP.

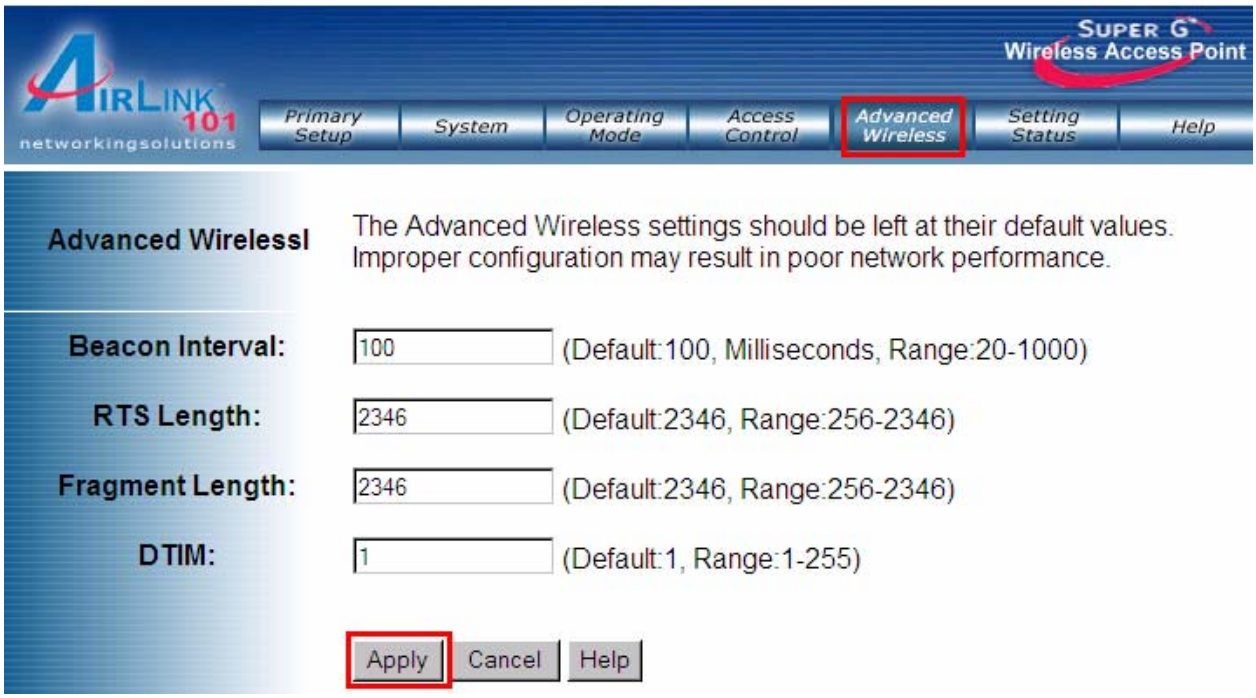


Note: Each MAC address should be entered in this format: xxxxxxxxxxxx ("x" represents the actual characters of the MAC address).

Click **Apply** to save the changes.

7.5 Advanced Wireless

The Advanced Wireless page allows you to customize data transmission settings. In most cases, the advanced settings on this page should remain at their default values.



Beacon Interval: The default value is **100**. Enter a value between 20 and 1000 milliseconds. The Beacon Interval value indicates the frequency interval of the beacon. A beacon is a packet broadcast by the Access Point to synchronize the wireless network.

RTS Threshold: This value should remain at its default setting of **2346**. The range is 256-2346 bytes.

Should you encounter inconsistent data flow, only minor modifications are recommended. If a network packet is smaller than the preset RTS threshold size, the RTS/CTS mechanism will not be enabled. The Access Point sends Request to Send (RTS) frames to a particular receiving station and negotiates the sending of a data frame. After receiving an RTS, the wireless station responds with a Clear to Send (CTS) frame to acknowledge the right to begin transmission.

Fragmentation Length: This value should remain at its default setting of **2346**. The range is 256-2346 bytes. It specifies the maximum size for a packet before data is fragmented into multiple packets. A smaller setting means smaller packets, which will create more packets for each transmission. Setting the Fragmentation Threshold too small may result in poor network performance. Only minor modifications of this value are recommended.

DTIM: The default value is **1**. This value, between 1 and 255 milliseconds, indicates the interval of the Delivery Traffic Indication Message (DTIM). A DTIM field is a countdown field informing clients of the next window for listening to broadcast and multicast messages. When the Access Point has buffered broadcast or multicast messages for associated clients, it sends the next DTIM with a DTIM Interval value. Its clients hear the beacons and awaken to receive the broadcast and multicast messages.

Click **Apply** to save the changes.

7.6 Setting Status

The Setting Status page displays the Access Point's current status and configuration. All information is read-only.

Setting Status This section contains setting information of the system.

AP Name: AP431W

Firmware Version: AP431W.v100.r541.t579-51

LAN **MAC Address: 00:17:9a:b7:29:2b**

Configuration Type	Manual
IP address:	192.168.1.250
Subnet Mask:	255.255.255.0
Default Gateway:	192.168.1.1

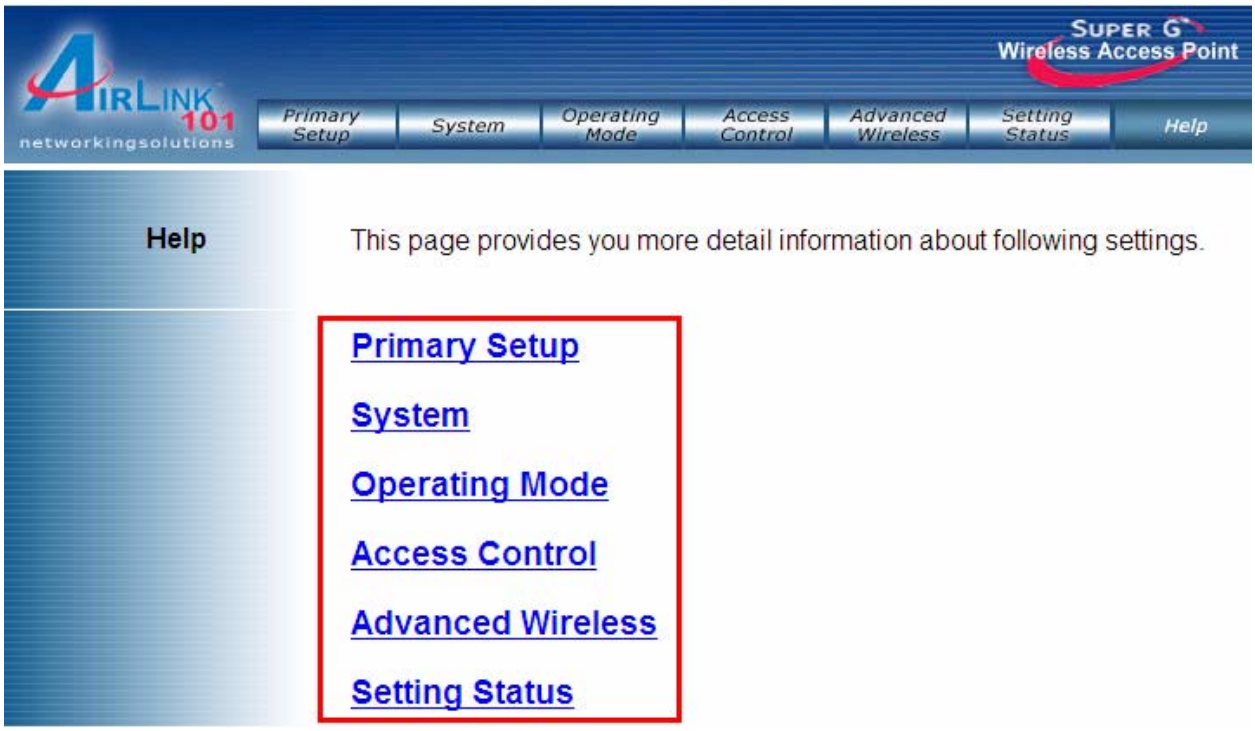
Wireless **MAC Address: 00:17:9a:b7:29:2b**

Operating Mode:	Normal AP
SSID:	default
Super G Mode:	Disabled
Channel:	6
Encryption Mode:	Open System / Encryption Disabled

Refresh Help

7.7 Help

The Help page provides links to online help files regarding each page of the Web Configuration Utility.



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 thatto 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.

Industry Canada Statement

This device complies with RSS-210 of the Industry Canada Rules. Operation is subject to the following two conditions:
1) this device may not cause interference and
2) this device must accept any interference, including interference that may cause undesired operation of the device

This device has been designed to operate with an antenna having a maximum gain of 2dBi.

Antenna having a higher gain is strictly prohibited per regulations of Industry Canada. The required antenna
impedance is 50 ohms.

To reduce potential radio interference to other users, the antenna type and its gain should be so chosen that the EIRP is not more than required for successful communication.

IMPORTANT NOTE:
IC Radiation Exposure Statement:
This equipment complies with IC 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.

Technical Support

E-mail: support@airlink101.com

Toll Free: 1-888-746-3238

Web Site: www.airlink101.com

* Super G™ technology (108Mbps) can only be obtained when using products with Atheron Super G™ chipset.
* Theoretical maximum wireless signal rate based on Atheros™ Super G™ and IEEE standard 802.11g specifications. Actual data throughput will vary. Network conditions and environmental factors, including volume of network traffic, building materials and construction, mix of wireless products used, radio frequency interference (e.g., cordless telephones and microwaves) as well as network overhead lower actual data throughput rate.