



54/108Mbps Super-G Wireless Access Point with Bridge

WAP-4000A

User Manual

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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 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 or more of the following measures:

1. Reorient or relocate the receiving antenna.
2. Increase the separation between the equipment and receiver.
3. Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
4. Consult the dealer or an experienced radio technician for help.

FCC Caution

To assure continued compliance. (example-use only shielded interface cables when connecting to computer or peripheral devices). Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the 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.

Federal Communication Commission (FCC) Radiation Exposure Statement

This equipment complies with FCC radiation exposure set forth for an uncontrolled environment. In order to avoid the possibility of exceeding the FCC radio frequency exposure limits, human proximity to the antenna shall not be less than 20 cm (8 inches) during normal operation.

R&TTE Compliance Statement

This equipment complies with all the requirements of DIRECTIVE 1999/5/CE OF THE EUROPEAN PARLIAMENT AND THE COUNCIL OF 9 March 1999 on radio equipment and telecommunication terminal Equipment and the mutual recognition of their conformity (R&TTE)

The R&TTE Directive repeals and replaces in the directive 98/13/EEC (Telecommunications Terminal Equipment and Satellite Earth Station Equipment) As of April 8,2000.

Safety

This equipment is designed with the utmost care for the safety of those who install and use it. However, special attention must be paid to the dangers of electric shock and static electricity when working with electrical equipment. All guidelines of this and of the computer manufacture must therefore be allowed at all times to ensure the safe use of the equipment.

WEEE regulation



To avoid the potential effects on the environment and human health as a result of the presence of hazardous substances in electrical and electronic equipment, end users of electrical and electronic equipment should understand the meaning of the crossed-out wheeled bin symbol. Do not dispose of WEEE as unsorted municipal waste and have to collect such WEEE separately.

REVISION

User's Manual for PLANET 54/108 Mbps Super-G Wireless Access Point with Bridge

Model: WAP-4000A

Rev: 1.0 (May. 2007)

Part No. EM-WAP4000A

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Chapter 1 Introduction

Thank you for purchasing WAP-4000A. This device features the latest innovation wireless technology making the wireless networking world happened. This manual guides you on how to install and properly use the WAP-4000A in order to take full advantage of its features.

1.1 Package Contents

Make sure that you have the following items:

- One WAP-4000A
- One DC Power Adapter
- One dipole antenna
- One User's Manual and Utility CD
- One Quick Installation Guide

Note:	If any of the above items are missing, contact your supplier as soon as possible.
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1.2 System Requirements

Before installation, please check the following requirements with your equipment.

- Pentium Based (And Above) IBM-Compatible PC System
- CD-ROM drive
- Windows 98/ME/2000/XP/2003/Vista Operating System with TCP/IP protocol

1.3 Features

- Wireless LAN IEEE802.11g and IEEE802.11b compliant
- Strong network security with RADIUS authentication, and 64/128-bit WEP encryption
- Supports WPA (Wi-Fi Protected Access) / WPA2 (Wi-Fi Protected Access)
- One detachable reverse-polarity SMA connectors can connect to external antenna for expanding connection distance
- Super G mode efficiently raises the data transfer rate up to 108Mbps
- Five operation modes selectable: AP / AP Client / Wireless Bridge / Multiple Bridge / Repeater
- Auto Fall-Back Data Rate for Long-Distance Communication and Noisy Environments
- Adjustable antenna transmit power
- Features Roaming, Best Access Point Selection, Load Balancing, and Network Traffic Filtering
- Provide Windows-base configuration utility and Web Configuration

- Support DHCP Server and Client
- Support MAC Filter

1.4 Specification

Standard	IEEE 802.11b, IEEE 802.11g	
Signal Type	DSSS (Direct Sequence Spread Spectrum)	
Modulation	BPSK / QPSK / CCK / OFDM	
Port	10/100Base-TX (RJ-45) * 1	
Antenna	Detachable Dipole Antenna * 1	
Antenna Connector	Reversed Polarity SMA Male	
Output Power	17dBm (Max)	
Operating Mode	AP, AP Client, Wireless Bridge, Multiple Bridge, Repeater	
Security	64/128-bit WEP encryption WPA-PSK / WAP2-PSK WPA-EAP / WAP2-EAP MAC Filtering SSID Broadcast Disable function	
Frequency Band	2.412 GHz ~2.484GHz	
Channel	FCC: 11 Channels (US, Canada) ETSI: 13 Channels (Europe) TELEC: 14 Channels (Japan)	
Data Rate	Super G mode	Up to 108Mbps
	802.11g	Up to 54Mbps (6/9/12/18/24/36/48/54)
	802.11b	Up to 11Mbps (1/2/5.5/11)
Temperature	Operation	0~40°C
	Storage	-10~70°C
LED	Power: steady green WLAN: green for wireless connectivity/activity LAN: green for link, blink for activity	
Input Power	DC 7.5V, 1A	
Certification	FCC, CE	

1.5 Wireless Performance

The following information will help you utilizing the wireless performance, and operating coverage of WAP-4000A.

1. Site selection

To avoid interferences, please locate WAP-4000A and wireless clients away from transformers, microwave ovens, heavy-duty motors, refrigerators, fluorescent lights, and other industrial equipments. Keep the number of walls, or ceilings between AP and clients as few as possible; otherwise the signal strength may be seriously reduced. Place

WAP-4000A in open space or add additional WAP-4000A as needed to improve the coverage.

2. Environmental factors

The wireless network is easily affected by many environmental factors. Every environment is unique with different obstacles, construction materials, weather, etc. It is hard to determine the exact operating range of WAP-4000A in a specific location without testing.

3. Antenna adjustment

The bundled antenna of WAP-4000A is adjustable. Firstly install the antenna pointing straight up, then smoothly adjust it if the radio signal strength is poor. But the signal reception is definitely weak in some certain areas, such as location right down the antenna.

Moreover, the original antenna of WAP-4000A can be replaced with other external antennas to extend the coverage. Please check the specification of the antenna you want to use, and make sure it can be used on WAP-4000A.

4. WLAN type

If WAP-4000A is installed in an 802.11b and 802.11g mixed WLAN, its performance will be reduced significantly. Because every 802.11g OFDM packet needs to be preceded by an RTS-CTS or CTS packet exchange that can be recognized by legacy 802.11b devices. This additional overhead lowers the speed. If there are no 802.11b devices connected, or if connections to all 802.11b devices are denied so that WAP-4000A can operate in 11g-only mode, then its data rate should actually be 54Mbps and 108Mbps in Super G mode.

Chapter 2 Hardware Installation

Before you proceed with the installation, it is necessary that you have enough information about the WAP-4000A.

- 1. Locate an optimum location for the WAP-4000A.** The best place for your WAP-4000A is usually at the center of your wireless network, with line of sight to all of your mobile stations.
- 2. Assemble the antennas to WAP-4000A.** Try to place them to a position that can best cover your wireless network. The antenna's position will enhance the receiving sensitivity.
- 3. Connect RJ-45 cable to WAP-4000A.** Connect this WAP-4000A to your LAN switch/hub or a single PC.
- 4. Plug in power adapter and connect to power source.** After power on, WAP-4000A will start to operate.

Note: ONLY use the power adapter supplied with the WAP-4000A. Otherwise, the product may be damaged.

If you want to reset your WAP-4000A to default settings, press the Reset button 5 second. And then wait for 10 seconds for WAP-4000A to reboot.

Chapter 3 Configuring the Wireless Access Point

WAP-4000A can be configured via web browser. It is strongly recommended to configure and manage WAP-4000A using a wired LAN computer.

3.1 Configure through Web Browser

Web configuration provides a user-friendly graphical user interface (web pages) to manage your WAP-4000A. An AP with an assigned IP address (e.g. <http://192.168.1.1>) will allow you to monitor and configure via web browser (e.g., MS Internet Explorer or Netscape).

1. Open your web browser.
2. Enter the IP address of your WAP-4000A in the address field (default IP address is <http://192.168.1.1>). Please note that your PC's IP address should be on the same IP subnet of the WAP-4000A. For example, you can configure your PC's IP address to 192.168.1.2 if WAP-4000A is with IP 192.168.1.1.
3. A User Name and Password dialog box will appear. Please enter your User Name and Password here. Default User Name and Password are both "admin". Click Ok.



Figure1

4. Then you will see the WAP-4000A web configuration page.

3.2 Wizard

Setup wizard provides a simple way to configure your WAP-4000A. Clicking **Wizard** button on top panel of WAP-4000A's web page, **Setup Wizard** will pop up as below.



Figure2

To quick configure WAP-4000A, please follow the steps below to complete the configuration. Click **Next>** to continue.

Step 1. Set your new password



Figure3

The default password for administrator (login name is “admin”) is “admin”. You can change the Password in this step. Click **Next>**.

Step 2. Set the SSID and Channel

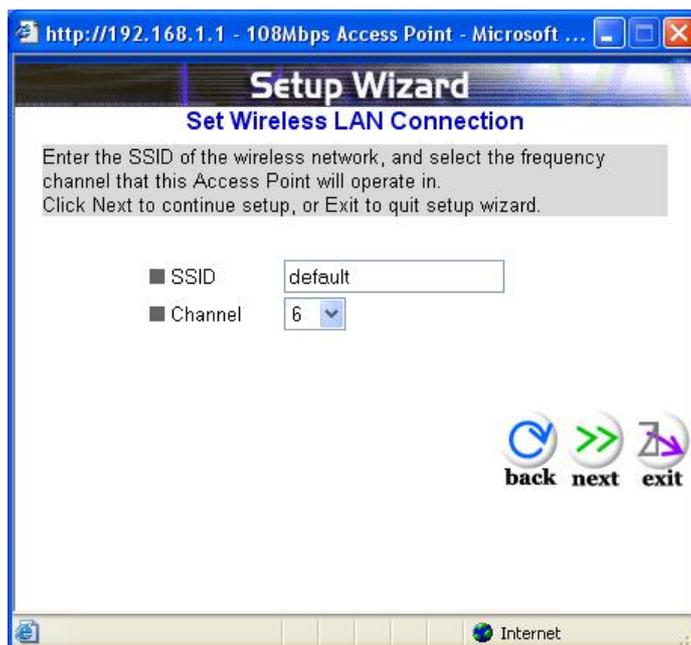


Figure4

Enter the SSID of your WLAN and select the frequency channel. Click **Next>**.

Step 3. Set Encryption

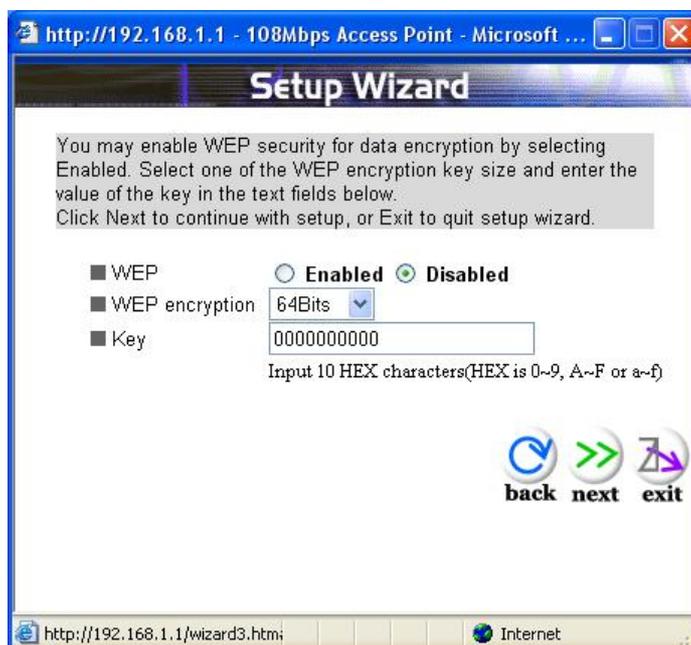


Figure5

You can enable WEP encryption and set WEP key in this screen. Click **Next>** to continue.

Step 4. Restart

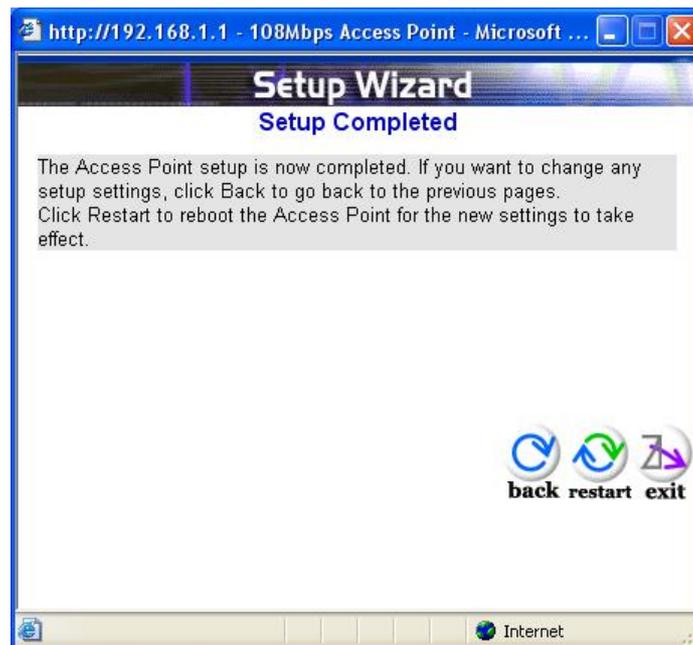


Figure6

Please click the **Restart** button to save the settings and restart WAP-4000A. In the next web page, please click **Close** to close the Setup Wizard window.

3.3 Status

You can check your WAP-4000A settings and status in this screen.

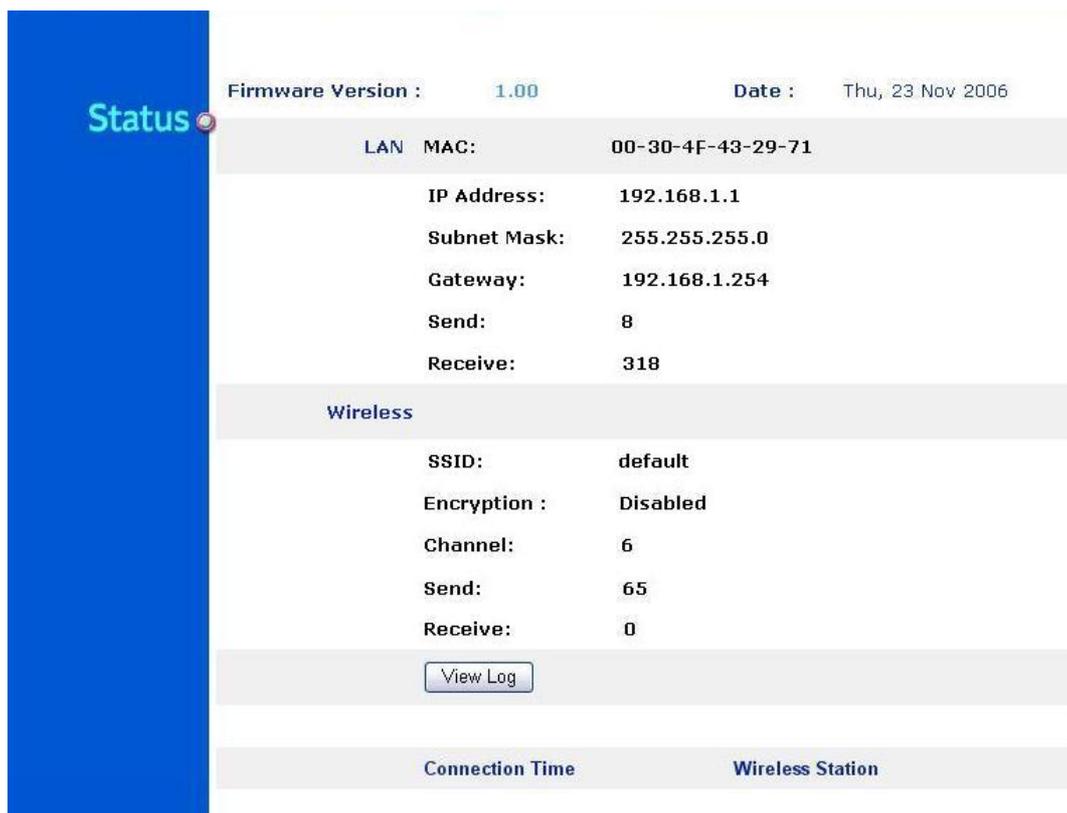


Figure7

You can click the **View Log** button, and then the screen below will appear. You can view the logged message here. You can also clear or refresh the log record.



Figure8

3.4 Basic Settings

You can set the **AP Name**, **SSID**, **Channel** and **Authentication** method to this Access Point. After configuration, please click **Apply** to save your settings.

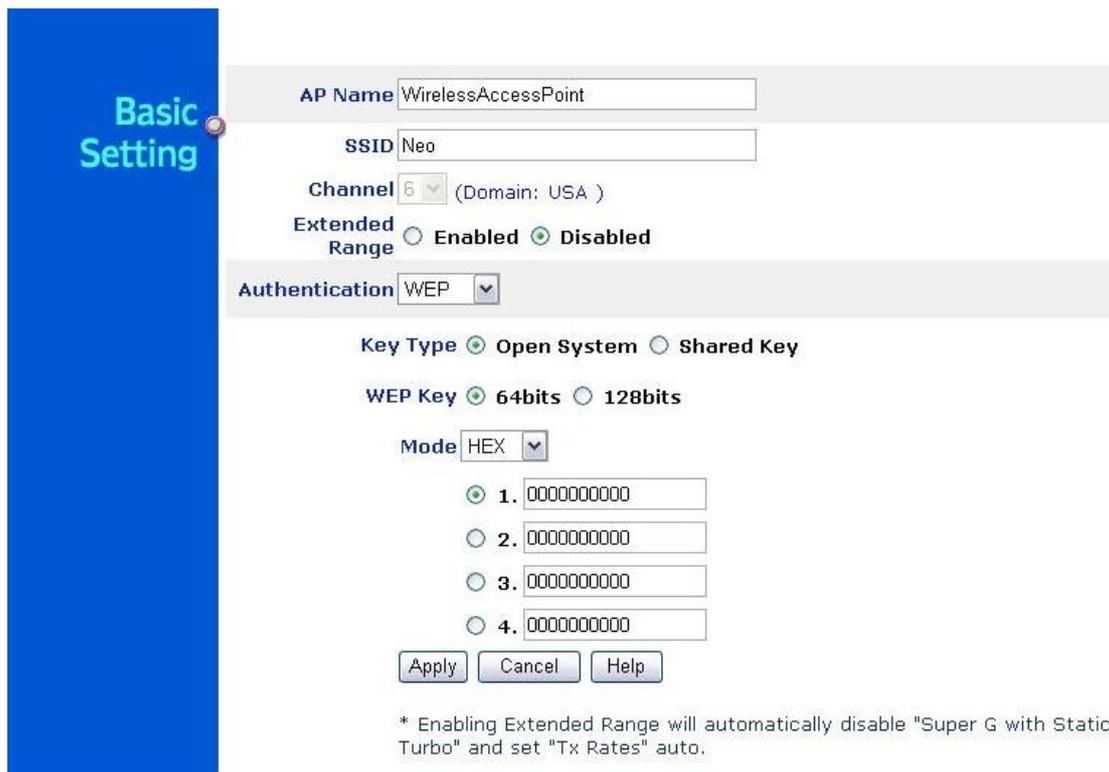


Figure9

AP Name: The host name of the WAP-4000A. This can be any name for you to easily identify this access point.

SSID: The SSID is the name shared among all points in the wireless network system, must be identical for all points.

Channel: The value of channel can be selected from channel 1 to 11 for FCC domain, channels 1 to 13 for ETSI domain and 1 to 14 for Japan domain.

Authentication: Select the type from the listed options. If **Open System** or **Shared Key** is selected, the screen would appear as above.

WEP Key: Select the level of encryption you want among the options. WAP-4000A supports 64, and 128-bit encryption.

Mode: Select the key code you want to use for WEP Key, HEX or ASCII. When Hex is selected, you may enter alphanumeric characters in the range of “A-F”, “a-f” and “0-9” in the WEP Key entry field. Alternatively, you may enter digit hexadecimal values in the range of “a-z”, “A-Z” and “0-9”.

Key 1 ~ Key 4: There are 4 keys available, please ensure you have enter correct number for the key values with different Key Length and coding (Hex or ASCII) as 64bit (10 Hex digit / 5 ASCII) or 128bit (26 Hex digit / 13 ASCII), please select one of them and enter the key you want to use. Click “Clear” to erase key values.

Note: 128bit WEP encryption will require more system resources than 64bit encryption. Use 64-bit encryption for better performance.

If you want to use **WPA** for authentication, please go to **WPA-EAP/WAP2-EAP** page and complete relative RADIUS server settings first. The detailed settings of

WPA-EPA/WPA2-EAP page are described in section 3.8.

If **WPA-PSK/WPA2-PSK** is selected, the screen appears as below. Please enter a hard-to-guess passphrase (between 8 and 63 characters) in the field.

Basic Setting

AP Name: WirelessAccessPoint

SSID: Neo

Channel: 6 (Domain: USA)

Extended Range: Enabled Disabled

Authentication: WPA

PSK / EAP: PSK EAP

Passphrase: _____

Confirmed Passphrase: _____

Apply Cancel Help

* Enabling Extended Range will automatically disable "Super G with Static Turbo" and set "Tx Rates" auto.

Figure10

Basic Setting

AP Name: WirelessAccessPoint

SSID: Neo

Channel: 6 (Domain: USA)

Extended Range: Enabled Disabled

Authentication: WPA2

PSK / EAP: PSK EAP

Passphrase: _____

Confirmed Passphrase: _____

Apply Cancel Help

* Enabling Extended Range will automatically disable "Super G with Static Turbo" and set "Tx Rates" auto.

Figure11

3.5 IP Settings

You can set the **IP, Gateway, DHCP** and **DNS** to this Access Point on this field. After configuration, please click **Apply** to save your settings.

IP Setting

LAN IP Obtain IP Automatically

Fixed IP

Address . . .

Subnet Mask . . .

Gateway . . .

DHCP Server On Off

From . . .

IP Range To . . .

DNS Server . . .

Figure12

LAN IP: You can configure this Access Point to obtain its IP address automatically or manually assign. If you select **Fixed IP**, please fill in the following fields with proper parameters.

Address: This address is a unique numbers that identifies a computer or device on the WAN or LAN. These numbers are usually shown in groups separated by periods, for example: 123.123.23.2.

Subnet Mask: Subnets allow network traffic between hosts to be separated based on the network's configuration. In IP networking, traffic takes the form of packets. IP subnets advance network security and performance to some level by organizing hosts into logical groups. Subnet masks contain four bytes and usually appear in the same "dotted decimal" data. For example, a very common subnet mask in its binary demonstration 11111111 11111111 11111111 00000000 will usually be shown in the corresponding, more readable form as 255.255.255.0.

Gateway: A gateway is a piece of software or hardware that passes information between networks. You'll see this term most often when you either log in to an Internet site or when you're transient email between different servers.

DHCP: DHCP is a protocol for dynamically assigning IP addresses to networked computers. With DHCP, a computer can automatically be given an exclusive IP address each time it logs on to a network--making IP address management an easier job for network administrators. When a computer connects to the network, the DHCP server selects an IP address from a master list and assigns it to the system. The device must set to "Obtain the IP address automatically". The Wireless Access Point Gateway's DHCP server is disabled by default. If you would like to enable the DHCP server, click on the "On" button, then specify the IP range and DNS server IP.

DNS: When you send email or position a browser to an Internet domain such as xxxxx.com, the domain name system translates the names into IP addresses. The term refers to two things: the conventions for naming hosts and the way the names are control across the Internet.

WAP-4000A has build-in DHCP server. By default is "Off". If you have a DHCP server in your network already, please disable the DHCP server function. When you assign an IP

address to this access point, please ensure this IP address is on the same IP range as DHCP Server settings.

Note: When you select Obtain IP Automatically, DHCP Sever will be disabled automatically.

3.6 Advanced Settings

You can set the WAP-4000A operation mode and relative settings. After configuration, please click **Apply** to save your settings.

The screenshot shows the 'Advanced Setting' page for the PLANET WAP-4000A. The page is divided into several sections with various configuration options:

- AP Mode:** Set to **AP** (selected). Other options include AP Client, Wireless Bridge, Multiple Bridge, and Repeat Mode. A **Site Survey** button is present.
- Beacon Interval:** 100 (msec, range: 20~1000, default: 100)
- RTS Threshold:** 2346 (range: 256~2346, default: 2346)
- Fragmentation Threshold:** 2346 (range: 1500~2346, default: 2346, even number only)
- DTIM Interval:** 1 (range: 1~255, default: 1)
- SSID broadcast:** **Enable** (selected), Disable
- TX Rates:** Auto (Mbps)
- CTS mode:** None, Always, **Auto** (selected)
- WDS:** **Enable** (selected), Disable (MAC clone), Disable (proxy mode)
- 11g Only Mode:** Enable, **Disable** (selected)
- Super G Mode:** Super G with Static Turbo
- Antenna transmit power:** full
- Aging Interval:** 86400 seconds

At the bottom, there are three buttons: **Apply**, **Cancel**, and **Help**.

Figure13

AP Mode: WAP-4000A has five operation modes. By default, it is set to AP mode.

AP: This mode is set to WAP-4000A by default. This connects your wireless PCs to a wired network. In most cases, no change is necessary. Up to 63 wireless clients can be connected through WAP-4000A.

AP Client: A WAP-4000A set to AP Client mode is able to connect to another WAP-4000A functioning in AP mode and wireless client within its range. This mode allows your WAP-4000A client to be wirelessly bridged to the main WAP-4000A. When you select this mode, please enter the LAN MAC address of the main WAP-4000A into **Remote AP BSS ID** field, or you can click **Site Survey** button to search and connect an available AP.

Wireless Bridge: This mode connects two physically separated LAN segments by using two WAP-4000As. The remote WAP-4000A also needs to be set up as a Wireless Bridge. The "Remote Bridge MAC" field must be filled with the LAN MAC

address of the remote WAP-4000A.

Multiple Bridge: This mode allows you to construct a network that has multiple WAP-4000As bridging multiple LANs wirelessly. For all bridged WAP-4000As, configure them in Multiple Bridge mode and all the WAP-4000As must be configured on the same channel. You can have up to 14 WAP-4000A to be bridged together. For performance reason, it is suggested to bridge no more than 6 WAP-4000As in a WLAN.

Repeater Mode: This mode allows you to extend the range of your wireless network. When the AP is configured to repeater mode, it will repeat the wireless signal from wireless client to access point. Thus, the wireless connection distance can be extended. However, the performance will become half of normal performance since the WAP-4000A use the same wireless channel to receive and transmit. Besides, when the WAP-4000A is configured to repeater mode, you can only manage the AP through LAN interface and the PC(s) connected to its LAN port cannot communicate with other wireless clients. You need to input the remote AP's SSID or you can click **Site Survey** button to search and connect an available AP when this mode is enabled.

Beacon Interval: Specify the Beacon Interval value. Enter a value between 20 and 1000. Beacons are packets sent by an Access Point to synchronize a wireless network.

RTS Threshold: Use this field to specify a value for the RTS Threshold. Enter a value between 256 and 2346. This value should remain at its default setting of 2346. Should you encounter inconsistent data flow, only minor modifications are recommended.

Fragmentation Threshold: This field is used to specify the fragmentation threshold. Enter a value between 1500 and 2346. If you experience a high packet error rate, try to slightly increase your Fragmentation Threshold. The value should remain at its default setting of 2346. Setting the Fragmentation Threshold too low may result in poor performance.

DTIM Interval: Specify the Beacon Rate. Enter a value between 1 and 255 that specifies the Delivery Traffic Indication Message (DTIM). A DTIM is a countdown informing clients of the next window for listening to broadcast and multicast messages. When the AP has buffered broadcast or multicast messages for associated clients, it sends the next DTIM with a DTIM Interval value. AP Clients hear the beacons and awaken to receive the broadcast and multicast messages.

SSID Broadcast: Enable or disable a Service Set Identifier broadcast. When enabled, the SSID of the WAP-4000A is sent to wireless enabled devices on the area. Set the WAP-4000A's SSID in the Basic Setting screen. Enabling this function may cause unauthorized user to connect your wireless networks.

TX Rates: Select the desired transmission rates by clicking on the drop down list. The default setting is "Auto".

CTS Mode: There are three options: None, Always, and Auto. This feature focuses on minimizing collisions among hidden stations or ensuring better coexistence of 802.11b and 802.11g wireless stations. However, its implementation would cause additional overhead to the network, and thus greatly affect wireless performance, which you should be take great care of before adopting it. If the performance of your WLAN is normal, please select "None". Only when there are too many collisions (you can judge it from the low throughput and high latency) on your WLAN can you enable it (select "Always"). The default setting is "Auto," which means the AP will employ this mechanism optionally, which may affect the performance of your 802.11g wireless stations.

WDS: There are two options: Enable and Disable. If you want to set the AP in repeater, AP client, or bridge mode to communicate with another WAP-4000A, please enable this function to ensure smooth operation. Otherwise, disable this option for better

interoperability if you want to set the AP in the above-mentioned modes to associate with other brands of APs or routers.

11g Only Mode: Enabling 11g only mode maximizes the performance of WAP-4000A in a pure 802.11g WLAN, but 802.11b clients are not allowed to connect to it. Disabling this option allows both 802.11g and 802.11b clients to connect to WAP-4000A.

Super G Mode: There are four options selectable: **Disabled**, **Super G without Turbo**, **Super G with Dynamic Turbo**, and **Super G with Static Turbo**. When you use Super G mode, it is recommended to enable 11g only for best performance.

Antenna Transmit Power: You can control the transmit power of WAP-4000A here. There are five options available: full, half (-3dB), quarter (-6dB), eighth (-9dB), and min.

Aging Interval: To limited STA connect timing

3.7 Security

You can change **Administrator ID**, **Password** and set the **MAC Filter** settings in this option.

Figure14

Password: Enter the new password in the **AP Password New** field and again in the next field to confirm. Click on **Apply** to execute the password change. The Password is case-sensitive, and can be made up of any keyboard characters. The new password must be between 0 and 15 characters in length.

MAC Filters: Filter function is for the administrator to authorize who can gain network

access through the Access Point by using MAC address filtering. By choosing the **Allow** option, only MAC addresses in the **Authorization** table will be allowed to communicate with the Access Point. By choosing the **Deny** option, any MAC address in the table will be denied association with the Access Point. You can have up to 50 MAC addresses configured on it.

3.8 WPA-EAP/WPA2-EAP

This screen enables you to configure WPA-EAP/WPA2-EAP authentication.

Basic Setting

AP Name: WirelessAccessPoint

SSID: Neo

Channel: 6 (Domain: USA)

Extended Range: Enabled Disabled

Authentication: WPA

PSK / EAP: PSK EAP

RADIUS Server 1

IP: 0 . 0 . 0 . 0

Port: 1812

Shared Secret: [Empty]

RADIUS Server 2 (optional)

IP: 0 . 0 . 0 . 0

Port: 1812

Shared Secret: [Empty]

Buttons: Apply, Cancel, Help

* Enabling Extended Range will automatically disable "Super G with Static Turbo" and set "Tx Rates" auto.

Figure15

Basic Setting

AP Name:

SSID:

Channel: (Domain: USA)

Extended Range: Enabled Disabled

Authentication:

PSK / EAP: PSK EAP

RADIUS Server 1

IP: . . .

Port:

Shared Secret:

RADIUS Server 2 (optional)

IP: . . .

Port:

Shared Secret:

* Enabling Extended Range will automatically disable "Super G with Static Turbo" and set "Tx Rates" auto.

Figure16

RADIUS Server 1: Enter the IP address, communicate port number, and shared secret key of your primary RADIUS server.

RADIUS Server 2 (optional): Enter the IP address, communicate port number, and shared secret key of your secondary RADIUS server.

3.9 Tools

You can backup or restore WAP-4000A settings, reset WAP-4000A to factory default and upgrade firmware in this option.

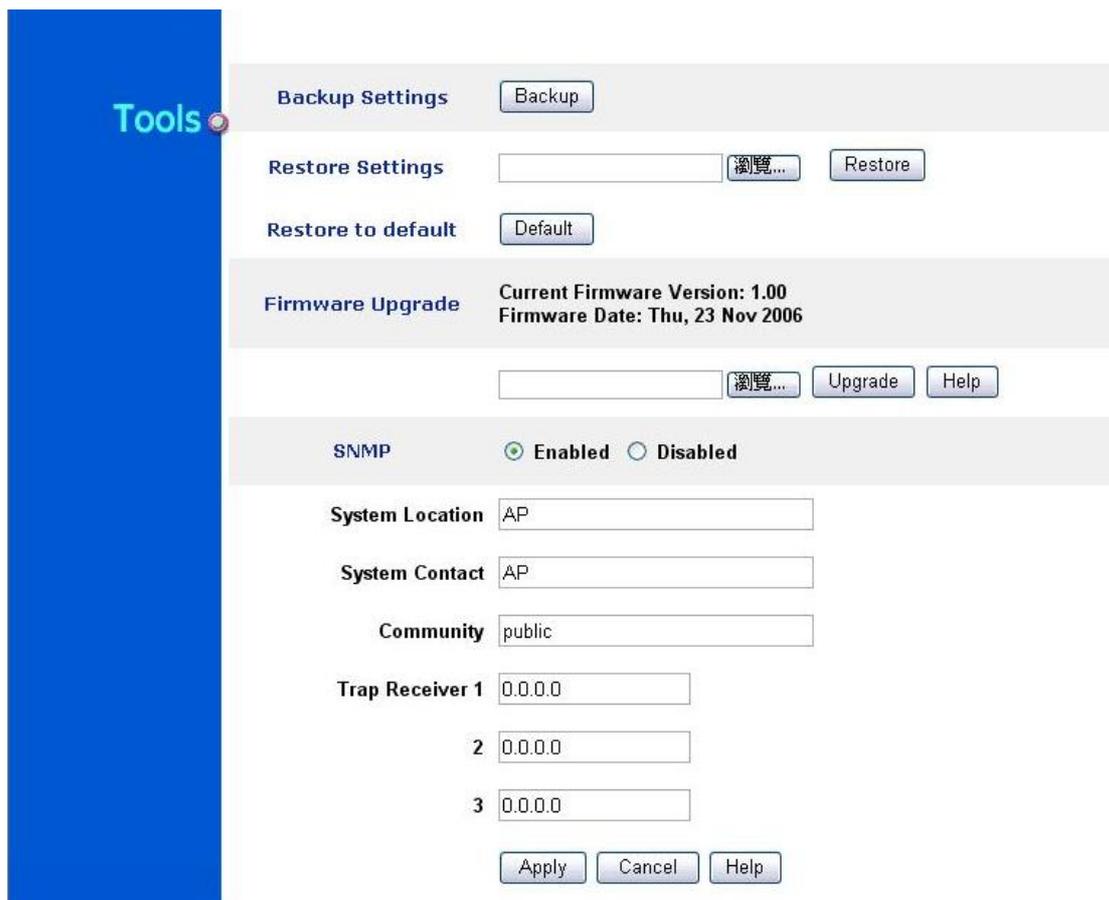


Figure17

Backup Settings: You can backup current settings to a file. Press “Backup” button, it will prompt you a location to save the backup file (config.bin).

Restore Settings: When you try to restore the settings you have saved, please press “Browse...” to find out the backup file and then press “Restore”.

Restore to default settings: It is used to reset WAP-4000A’s configuration to factory default.

Firmware Upgrade: You can upload the newest firmware of the WAP-4000A. You may either enter the file name in the entry field or browse the file by clicking the Browse button.

SNMP: Enable or disable the SNMP agent on the AP.

System Location: Description the location of the AP.

System Contact: Description the contact information for the person responsible for the AP.

Community: SNMP system name for exchanging SNMP community messages. The name can be used to limit SNMP messages passing through the network. The default name is “public”.

Trap Receiver: Type the name of the destination PC that will receive trap messages.

Chapter 4 Application

This chapter describe the four operating mode of your WAP-4000A. The four working modes of WAP-4000A are Access Point, Access Point Client Mode, Wireless Bridge mode and Multiple Bridge mode.

4.1 Access Point mode

With this mode, your Wireless network connection could act as following.

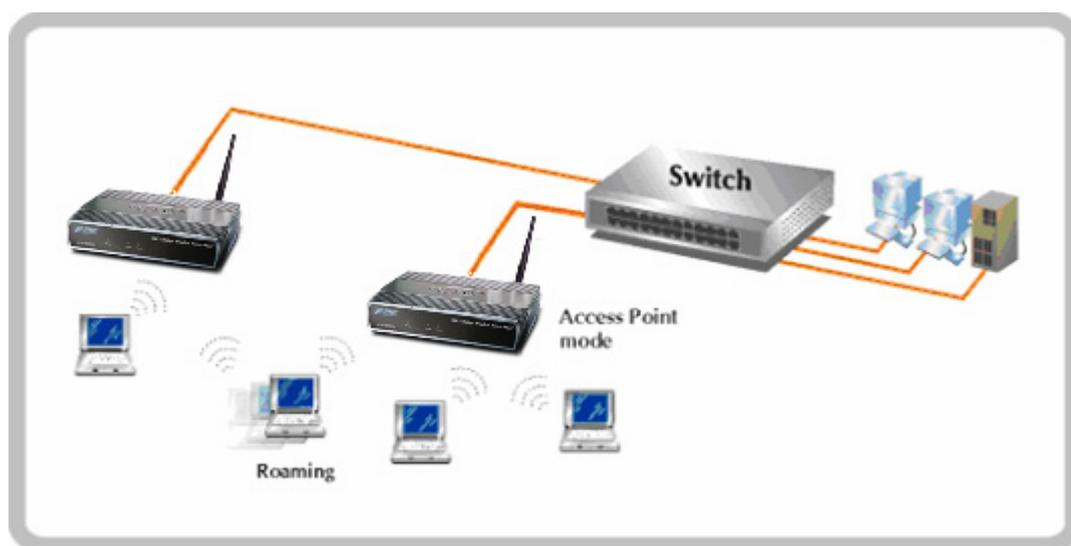


Figure18

Any of your IEEE802.11b and 802.11g end nodes should find the nearest Access Point to communicate with any other Wireless end-nodes or the wired Ethernet network.

There are two things need to be check for your wireless end nodes, the services set ID (SSID) and the Wired Equivalent Protocol (WEP), both parameters should the same with your Access Point.

4.2 Wireless AP Client mode

The WAP-4000A can also act as a client on a wireless LAN. When configured as AP Client mode, WAP-4000A soon makes your connected PC a wireless end node. This mode can be deployed if your end nodes (already installed with an Ethernet Adapter) do not want to make any change but want to move it somewhere not easy to have the wire.

In this mode, WAP-4000A will need to accompany with an existing WAP-4000A in access point mode in the wireless network.



Figure19

4.3 Wireless Bridge mode

The Wireless Bridge mode help to make the two Ethernet networks connected without any wire. With two WAP-4000As in this mode, the two LANs in distance can communicate to each other. This could be deployed if the networks are hard to make the wire in between. Please be noted, key in the LAN MAC address to make the WAP-4000A communicate with a specific remote Access Point, you can find the MAC address either from the utility or from the label under the Access Point. It is suggested to fix the transmission rate when WAP-4000As are configured in bridge mode.

The omni antenna is with 17dBm transmitting power, if you would like to make longer distance that the default antenna cannot reach, consult your local dealer for more about how to extend your distance.



Figure20

Note: Please do consult your local dealer about the external or directional antenna you would like to install and get the connection. Improper outdoor antenna installation could damage the Access Point or get injured or get killed in some condition like thunders or strong winds.

4.4 Multiple Bridge mode

For multiple LANs, the WAP-4000A also helps to make the connections. With this mode, three or more LANs can bridge to each other. All WAP-4000As in this mode must be within the operating range of one another.

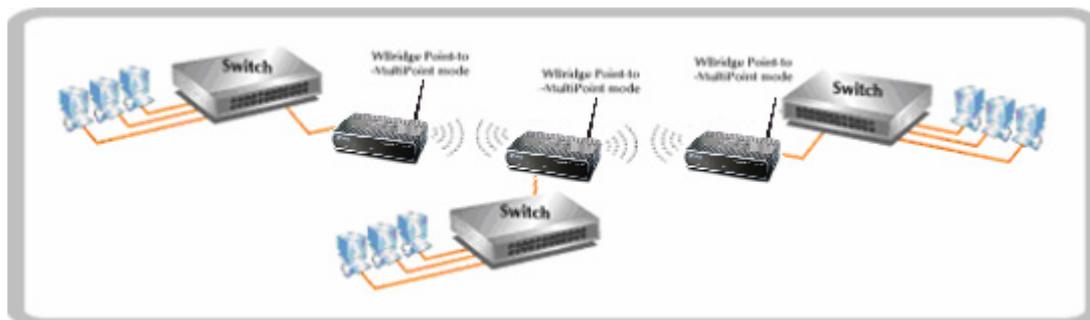


Figure21

Note: The mode “Multiple Bridge” will turns the Access Points, for example the above three Access point in the figure, into one network domain. It is suggested to fix the transmission rate when WAP-4000As are configured in bridge mode. For performance reason, please connect no more than 6 WAP-4000A in Multiple Bridge mode in one WLAN.

4.5 Repeater mode

When WAP-4000A works in repeater mode, it will repeat the wireless signal from AP to wireless client or from wireless client to AP. Thus, the distance between wireless client to AP can be double. However, the trade off is the connection speed between wireless client to AP become half since the WAP-4000A repeat the wireless signal on same channel. Besides, when the WAP-4000A is configured to repeater mode, you can only manage the AP through LAN interface and the PC(s) connected to its LAN port cannot communicate with other wireless clients. You need to input the remote AP’s SSID when this mode is enabled.

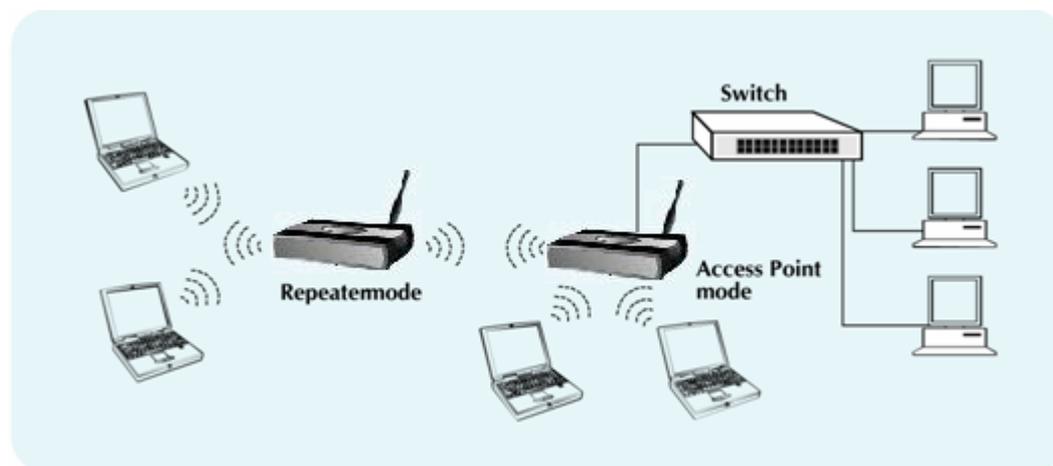


Figure22

Chapter 5 Troubleshooting

This chapter provides solutions to problems usually encountered during the installation and operation of the WAP-4000A.

The WAP-4000A cannot power up.

Use an electrical test meter to determine the output voltage of the power supply. Check if it matched the specification of WAP-4000A.

Cannot communicate with WAP-4000A through a wired LAN computer.

Check the following:

- ◆ WAP-4000A is properly installed, LAN connections are OK, and it is powered ON.
- ◆ Ensure that your PC and WAP-4000A are on the same network segment.
- ◆ If your PC is set to "Obtain an IP Address automatically" (DHCP client), restart it.
- ◆ If your PC uses a Fixed (Static) IP address, ensure that it is using an IP Address within the range 192.168.1.2 to 192.168.1.254 and thus compatible with WAP-4000A's default IP Address of 192.168.1.1.
Also, the Network Mask should be set to 255.255.255.0 to match WAP-4000A.
In Windows, you can check these settings by using Control Panel-Network to check the Properties for the TCP/IP protocol.

My wireless client cannot associate with WAP-4000A.

Check the following:

- ◆ Make sure the wireless adapter is compatible with IEEE 802.11b or 802.11g.
- ◆ Move the wireless client closer to WAP-4000A.
- ◆ Ensure WAP-4000A and the wireless client have the same SSID.
- ◆ Ensure WAP-4000A and the wireless client have the same WEP encryption settings, if enabled.
- ◆ Confirm the WLAN LED of WAP-4000A is on.
- ◆ If the MAC filter is enabled, please make sure the wireless client is allowed to build the link.
- ◆ Ensure the operating mode is in "AP" mode.

The throughput rate is slow.

Check the following:

- ◆ Verify the antenna, connector, and cabling are well connected.
- ◆ Adjust the antenna, and make sure the antenna is not behind metal or any obstacle. If the throughput increases after you move the client closer to WAP-4000A, please consider to add additional WAP-4000A and implement roaming.
- ◆ Verify the network traffic does not exceed 37% of bandwidth.
- ◆ Lower the broadcast rate of wired network to no more than 10 broadcast messages

per second

- ◆ Verify wired network topology and configuration.