

Wireless LAN Access Point(RFMD)

WA110

User Manual

Version 1.0
Dec 2002

Copyright Statement

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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 Certifications

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 or more of the following measures:

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

FCC Caution:

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 part responsible for compliance could void your authority to operate the equipment.

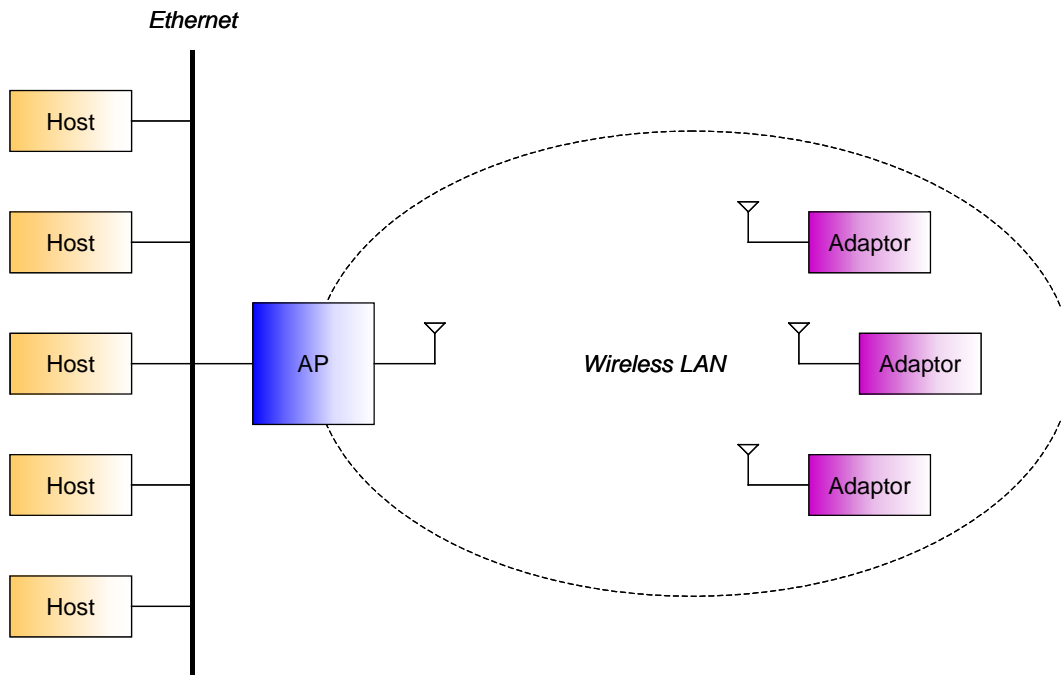
FCC RF Radiation Exposure Statement

This equipment complies with FCC RF radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with a minimum distance of 20 centimeters between the radiator and your body.

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1. Introduction:



Access Point (AP) provides capabilities of connecting Wireless LAN to Ethernet. Adaptors can connect to Ethernet through AP.

2. Features:

- Comply with 11 Mbps IEEE802.11b high data rate specification
- Seamless roaming within the 802.11 and 802.11b wireless LAN infrastructure
- Support 10Base-T networks
- Optimized wired-to-wireless data transfer
- Independent network operating system
- Enables roaming capability
- Antenna diversity for maximum communication, reliability and operating range
- Support SNMP and web-based management
- Watchdog timer
- Easy to install and user friendly
- Bridge function including point-to-point, and point-to-multipoint.
- Wireless Repeater Mode increase the coverage area of an ESS.

3. Environment Requirement:

You will need the following equipments to set up Access Point:

- Access Point Manager Installation CD or Disk
- Wireless LAN Access Point
- PC with Windows 95/98/ME/2000/XP (Only need one of OS)
- Ethernet or a RJ-45 Cross-Over cable

4. Install AP SNMP Manager:

4.1. InstallShield Wizard



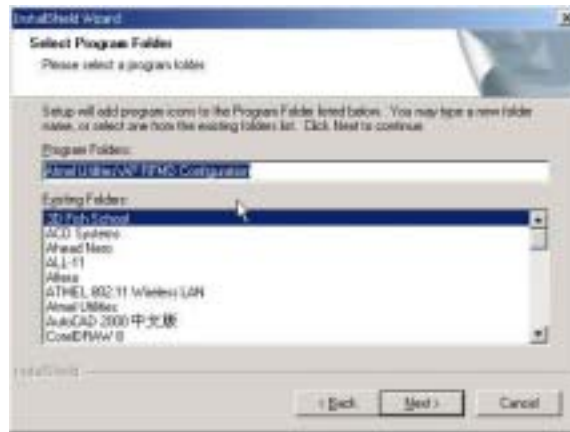
Insert Access Point Manager Installation CD into the CD Drive, and execute the installation program **Setup.exe**. The screen of "InstallShield Wizard" will pop up. For the next step, click **Next** to continue.

4.2. Choose Destination Location



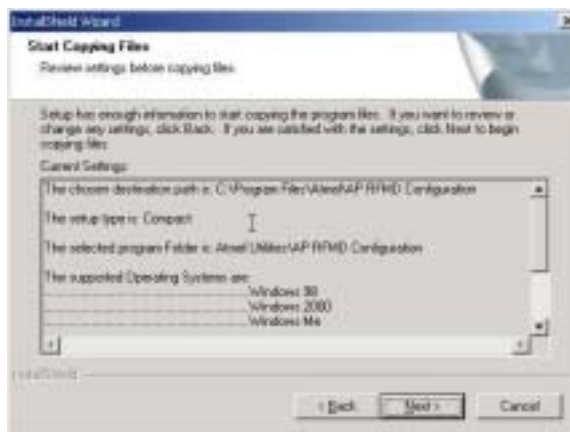
To install to "C:\Program Files\Access Point", click **Next** to continue. If you want to change the destination folder, please click **Browse...** and select the folder to install. For the next step, click **Next** to continue.

4.3. Select Program Folder



Type a new folder name or select one from the existing folders list. For the next step, click **Next** to continue.

4.4. Start Copying Files



Please review settings before copying files. If you want to review or change any settings, please click **Back**. Otherwise, click **Next** to continue.

4.5. InstallShield Wizard Complete



After the installation is completed, click **Finish** to exit the wizard.

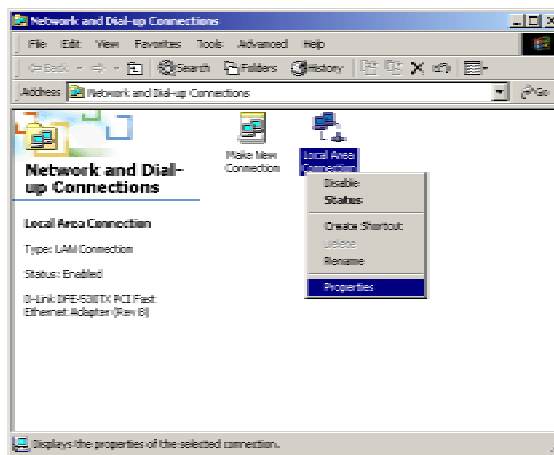
Quick Start to Connect Access Point:

4.6. Connect Access Point (AP) to Computer

You can either connect AP to an Ethernet or AP to a computer by RJ-45 Cross-Over cable. Please avoid other computers to use any IP addresses on the Ethernet.

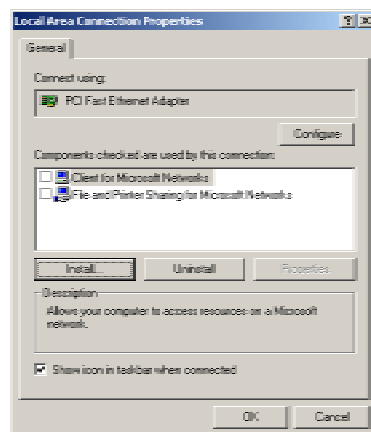
4.7. Setting Up IP address of Windows 2000

4.7.1. Open Network Properties



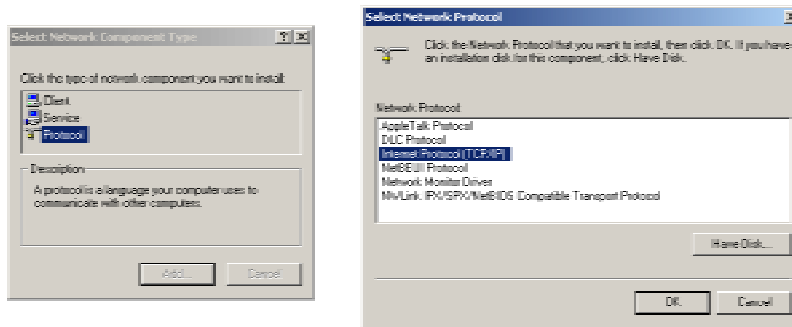
Double-click on **Network and Dial-up Connections** on **Control Panel** and Right-Click on the connection and select **Properties**.

4.7.2. Check the Existence of Internet Protocol (TCP/IP)



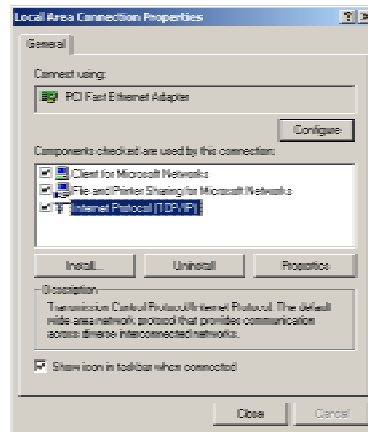
If Internet Protocol (TCP/IP) exists, please skip to 5.2.4. If Internet Protocol (TCP/IP) does not exist, please continue the procedure of 5.2.3.

4.7.3. Install Internet Protocol (TCP/IP)

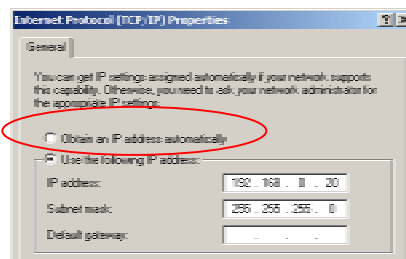


Click **Install...** in connection properties frame. Select **Protocol** and click **Add...**. After all the procedures, select **Internet Protocol (TCP/IP)** and click **OK**. Windows 2000 will install TCP/IP protocol.

4.7.4. Set Up Configurations of Internet Protocol (TCP/IP)



Select **Internet Protocol (TCP/IP)**, and click **Properties**.



Select DHCP server in your network.

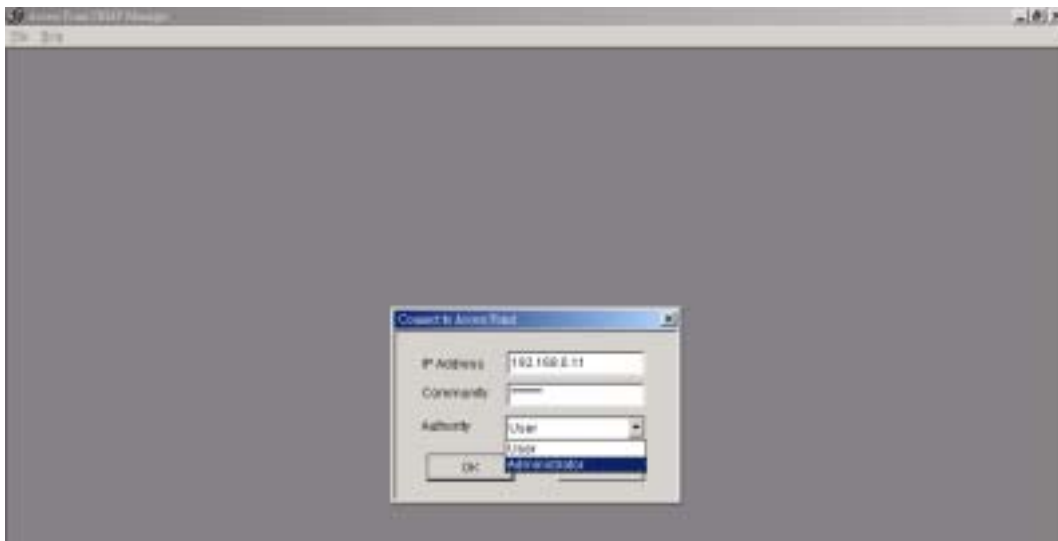
Internet Protocol (TCP/IP) settings for Windows 95/98/ME/XP are similar to Windows 2000. Please refer to User Manual of Windows 95/98/ME/XP to learn more.

5. Modify Configurations by AP SNMP Manager:

5.1. AP SNMP Manager

Atmel Utilities → AP Configuration → AP Configuration

5.1.1. Connect to Access Point



Select **File** → **Connect to Access Point**.

A screen **Connect to Access Point** will pop up:

- IP Address: Type IP address of AP (Please refer to section: 5.4.1 IP Address)
- Community: Type a password to connect AP. (The default password is “public”)
- Authority:
 1. User: Read Only! You can only read AP configurations.
 2. Administrator: Read and modify! You can not only read but also modify AP configurations.

After completing all settings, click **OK** to connect to AP.

5.1.2. Find Access Point

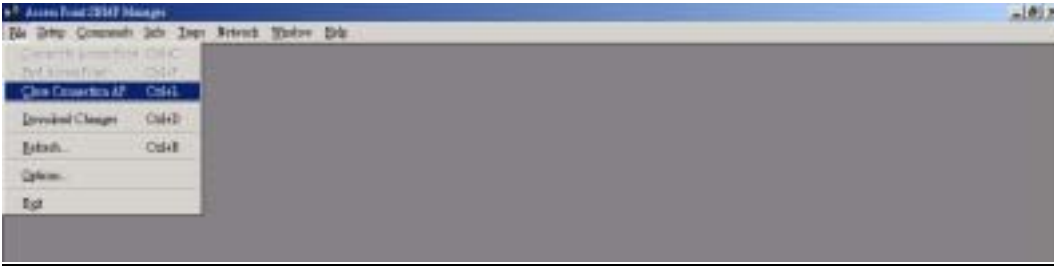
Select **File** → **Find Access Point**.

A screen **Available Access Points** will pop up and list all the available Access Points on the same subnet. Choose one of the AP and Click **Connect** to connect it.

A screen **Connect to Access Point** will pop up. Please repeat the procedures shown on section 5.1.1.

5.2. Close Connection of AP

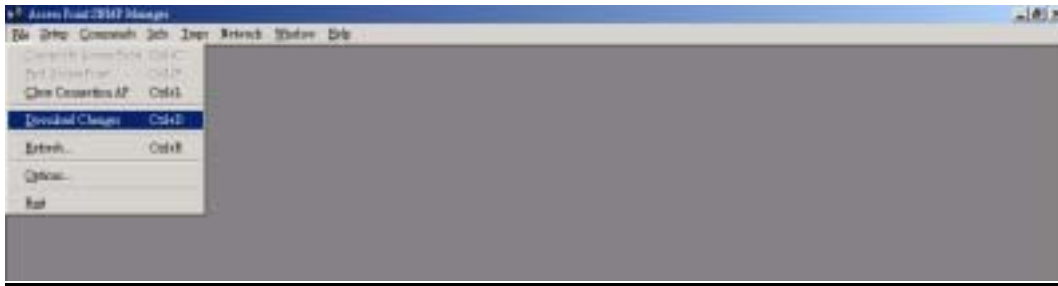
Select **File** → **Close Connection AP**.



To disconnect between AP and computer.

5.3. Download Changes to AP or Refresh Setting from AP

Select **File** → **Download Changes**.

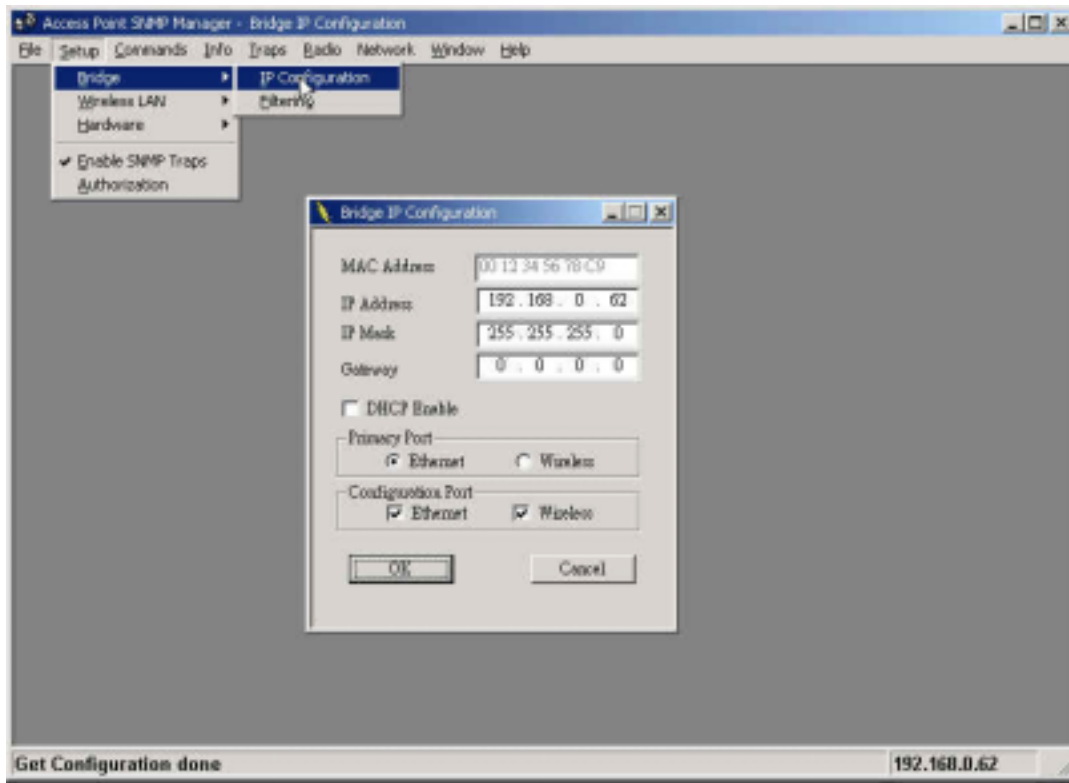


All settings will download to AP, and AP SNMP Manager will command AP to reset.
If you want to get the original settings on AP, please select **Refresh** of **File** menu.

5.4. Modify Bridge

5.4.1. Modify Bridge IP Configuration

Select **Setup** → **Bridge** → **IP Configuration**.

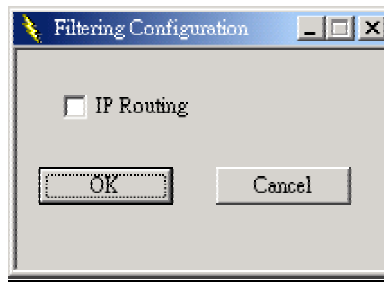


You can change configurations of IP Address, IP Mask, Gateway, DHCP Enable, and Primary Port here.

- MAC Address: The MAC address of the AP. Default setting, which is not allowed to modify in this field.
- IP Address: AP IP address
- IP Mask: AP mask
- Gateway: AP gateway
- DHCP enable: Enable DHCP client service that gets IP settings from DHCP server.
- Primary Port: Choose the location of DHCP server

5.4.2. Modify Bridge Filtering Configuration

Select **Setup** → **Bridge** → **Filtering**

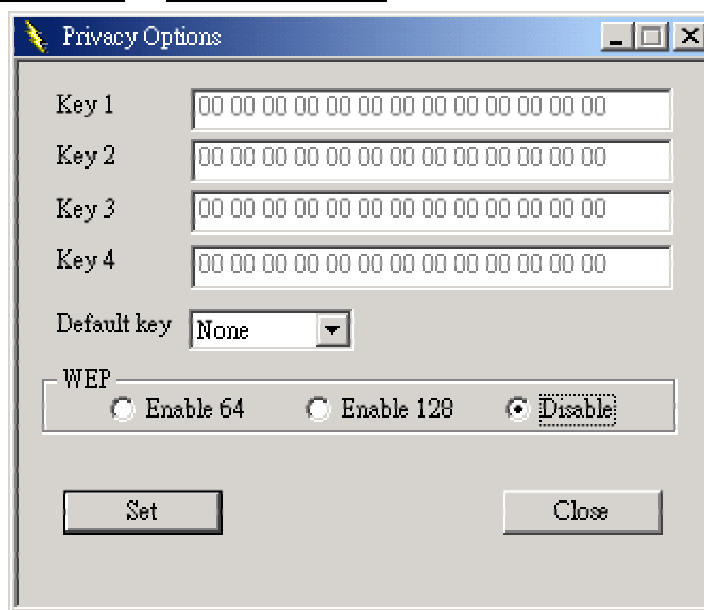


If you check IP Routing, only IP Packets will pass through AP between Ethernet and Wireless LAN.

5.5. Modify Wireless LAN

5.5.1. Modify Privacy Options

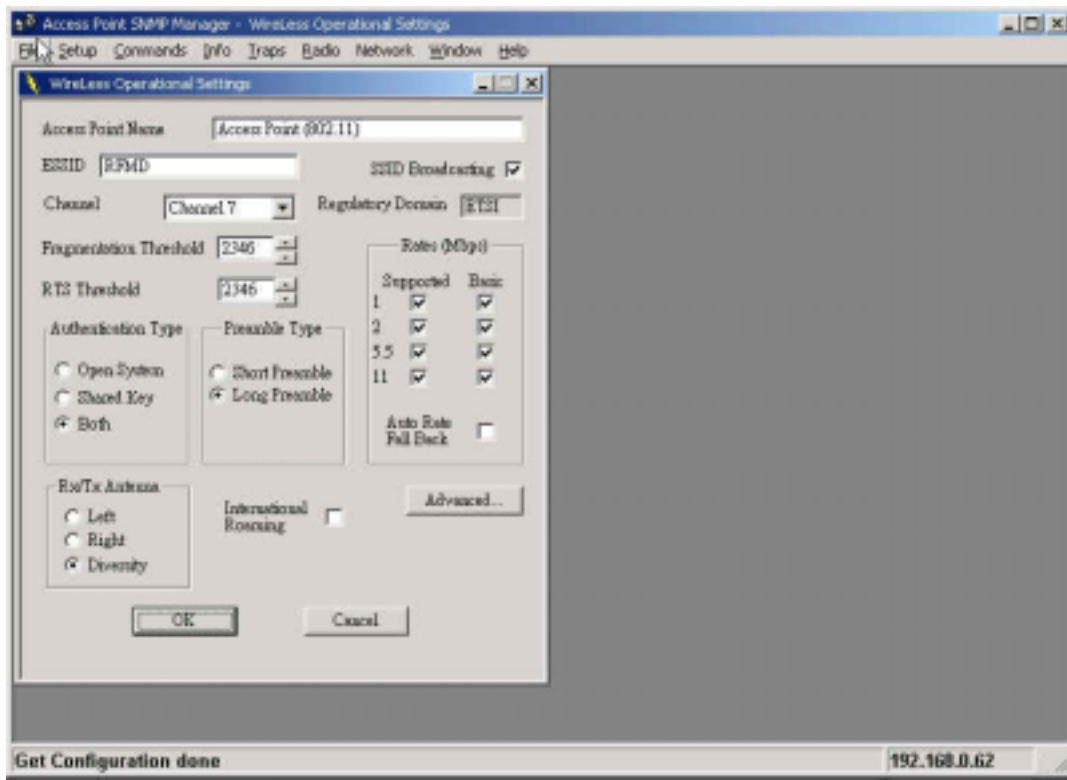
Select **Setup** → **Wireless LAN** → **Privacy Options**



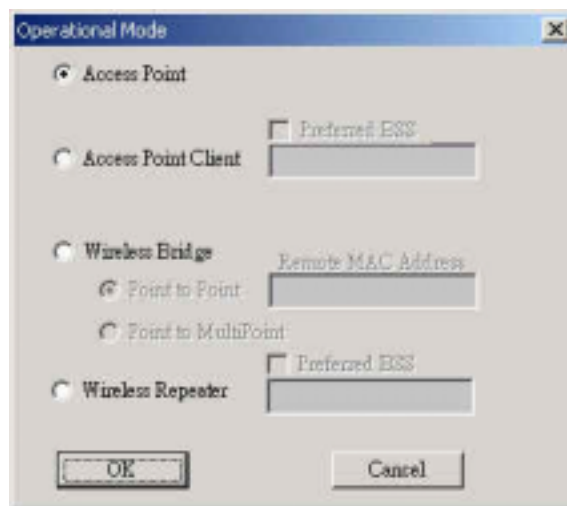
- Key 1 ~ Key 4: Fill keys for WEP. 13 octets for 128-bit WEP, and 5 octets for 64-bit WEP.
- Default Key: Select default key from Key 1 ~ Key 4.
- WEP: Select WEP mode. 64-bit WEP, 128-bit WEP, or disable WEP.

5.5.2. Modify Operational Settings

Select **Setup** → **Wireless LAN** → **Operational Settings**



Most of the settings will not download to AP immediately after modifying. You should download the settings by selecting **Download Changes** of **File** menu to make the settings valid.



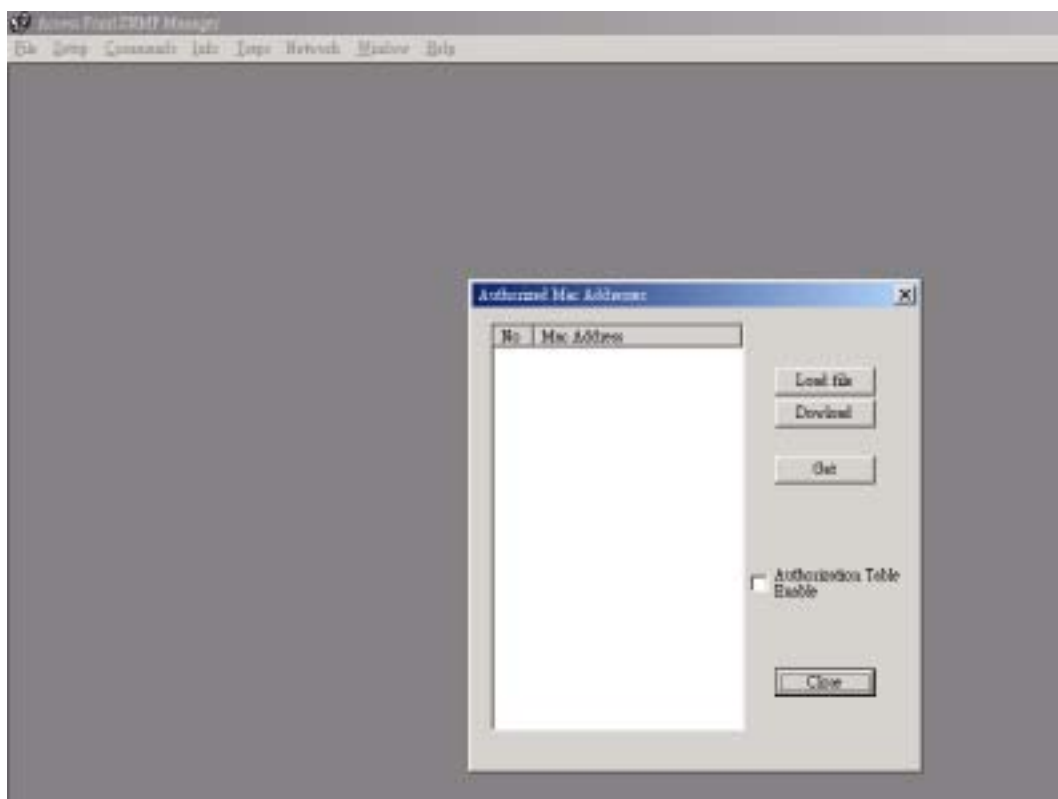
Click **Advanced...**, the screen of Operational Mode will pop up.

- Access Point: Normal AP mode
- Access Point Client: You have to fill AP BSSID in Preferred BSSID field. The ESSID and Channel of AP Client should be the same as AP.

- Wireless Bridge: All Bridges should use the same channel in the same connection.
 - ◆ Point-to-Point: You have to fill in the MAC address of the Bridge that you want to connect.
 - ◆ Point-to-Multipoint: In Point-to-Multipoint mode, you don't have to set MAC addresses.
- Wireless Repeater Mode: This mode is used in order to increase the coverage area of an ESS. The Wireless Repeater starts acting as an AP after it has associated itself with another AP (Parent AP). From that point on, STAs can get associated to it and the user can configure the device with the utilities available. You have to fill AP BSSID in Preferred BSSID field. The ESSID and Channel of AP Client should be the same as AP.

5.5.3. Modify Authorized MAC Addresses

Select **Setup** → **Wireless LAN** → **Authorized Mac Address**



Different from most other configurations on **Setup** menu, all settings could be valid in this frame.

- Load file: You can build a text file, which contains a list of MAC Addresses.
i.e. 001122334455
998877665544

00:11:22:33:44:55 and 99:88:77:66:55:44 will be loaded to the list of MAC addresses.

- Download: Download MAC addresses from the list to AP.
- Get: Get MAC addresses from AP to the list.
- Authorization Table Enable: If checked, only devices using MAC address in authorization table could connect to the AP.
- Close: Close the Frame

5.6. Get Statistics

Select **Info** → **Wireless Statistics** or **Ethernet Statistics**

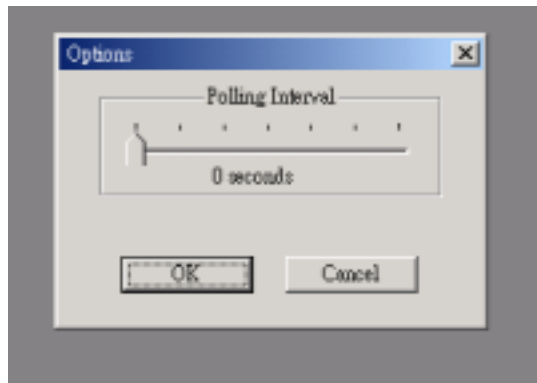


The screen “Wireless Statistics” or “Ethernet Statistics” will pop up and show all network statistics, but the data will not update automatically.



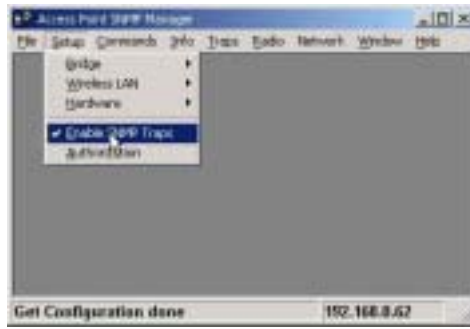
To enable statistics update automatically, select **Options** of **File** menu.

On Options, you can decide the polling interval, and the statistics can automatically update. Click OK to make the setting valid.



5.7. Enable SNMP Traps

Select **Setup** → **Enable SNMP Traps**

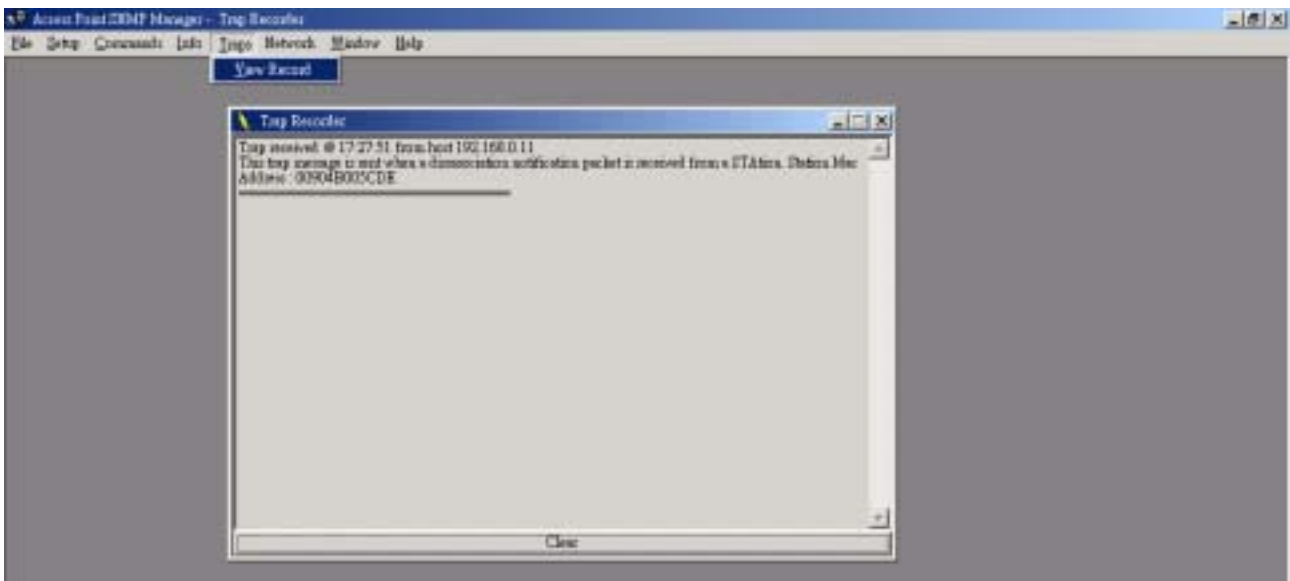


If checked, AP SNMP Manager may receive trap messages from AP.



When AP SNMP Manager receives trap messages from AP, " # <Trap Received> " will appear on bottom-right of AP SNMP Manager.

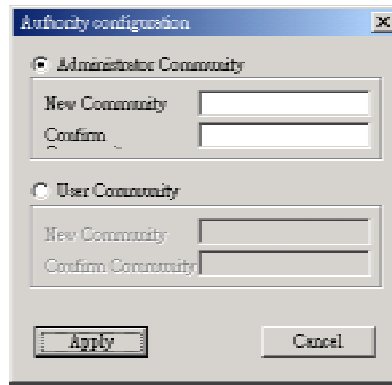
Select **Traps** → **View Records**



You can read all traps in this frame. Click **Clear** to clear all traps and leave.

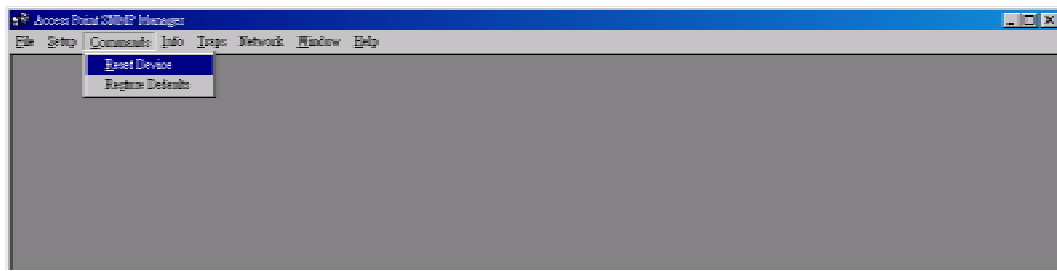
5.8. Modify Authority Configuration

Select **Setup** → **Authorization Configuration**



You can change a password on Administrator Community or User Community.

5.9. Reset AP or Restore Defaults



Select **Commands** → **Reset Device**

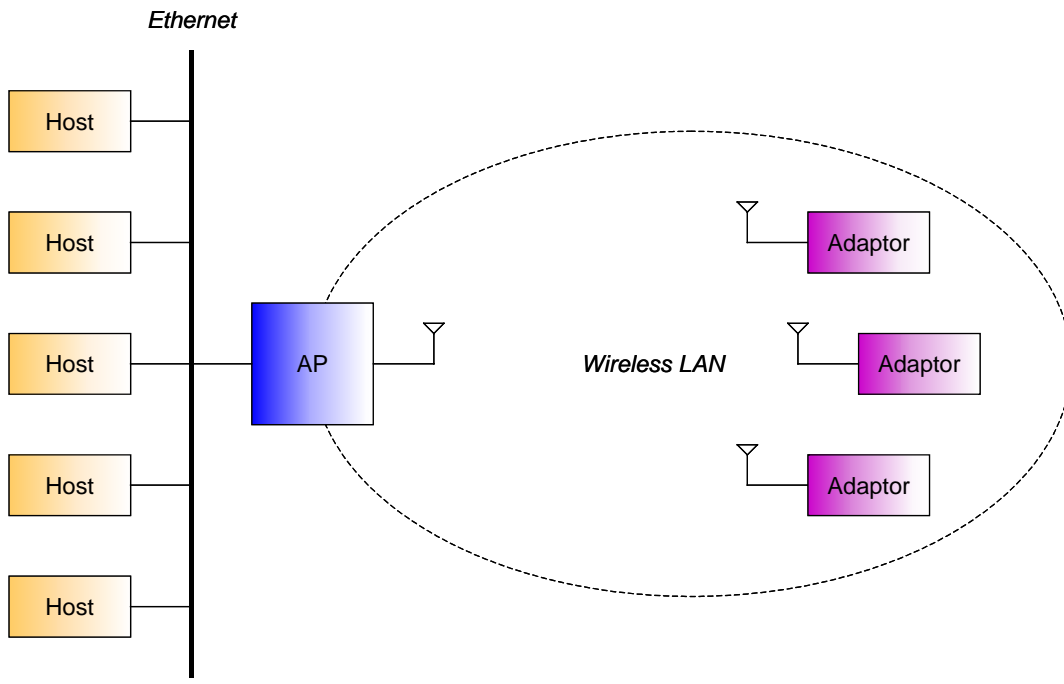
The AP will reset.

Select **Commands** → **Restore Defaults**

The AP will restore the default settings.

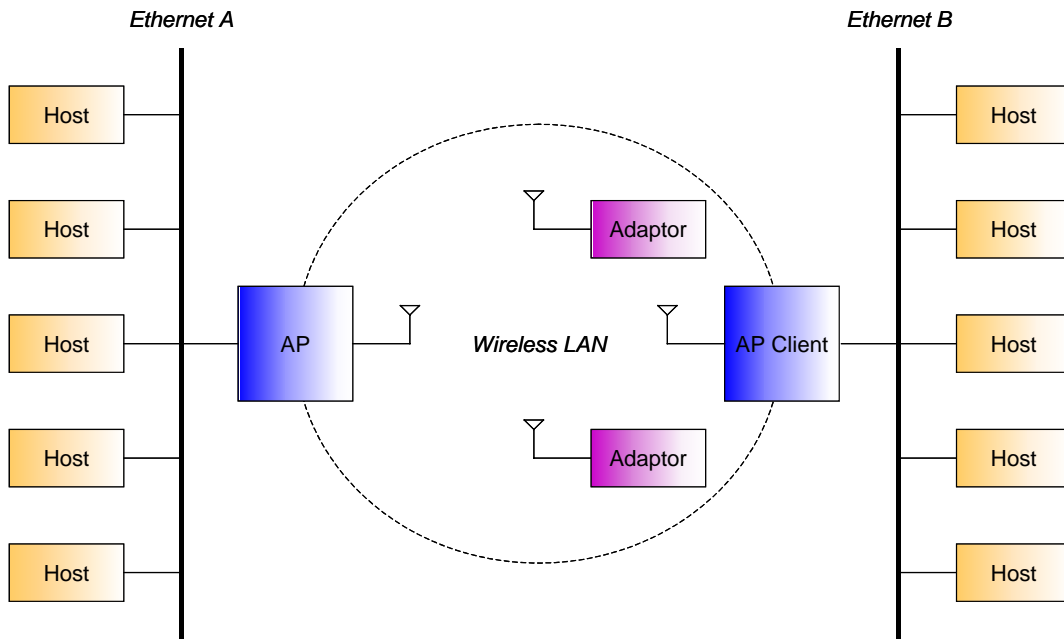
6. Wireless Lan AP Operation Modes:

6.1. Wireless LAN Access Point Mode



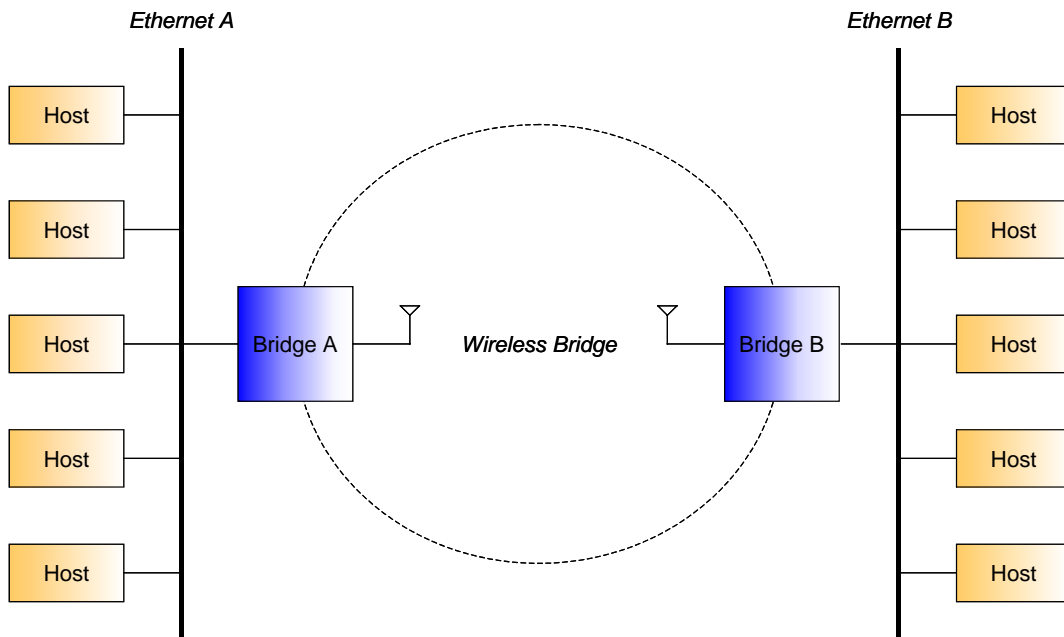
AP provides the capability of connecting Wireless LAN to Ethernet. Adaptors can connect to Ethernet through AP.

6.2. AP Client Mode



AP Client can connect to the AP like an adaptor. The figure shows that Ethernet B is connected to Ethernet A. Adaptors still could connect to the AP that the AP Client has connected to.

6.3. AP Bridge Mode

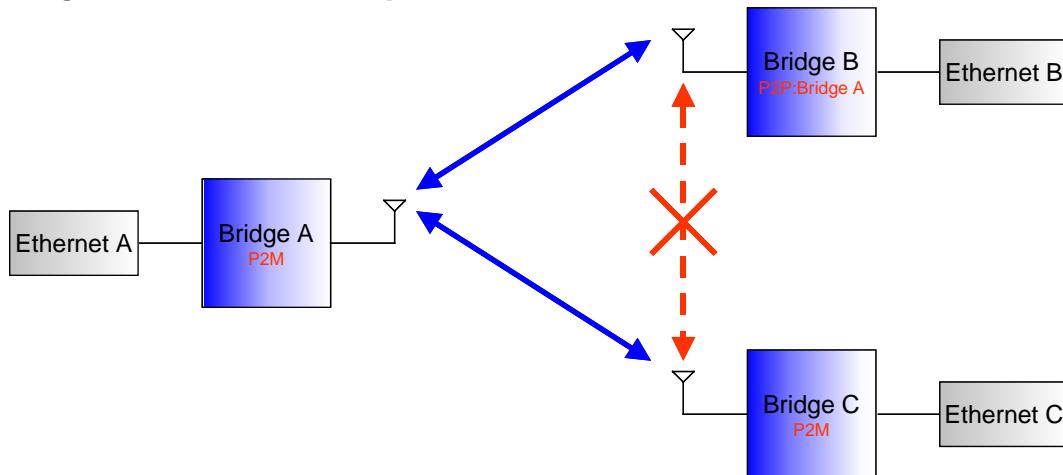


Different from the AP Client mode to bridge mode, no adaptors could connect to any bridge

in bridge mode. And there are two bridge modes.

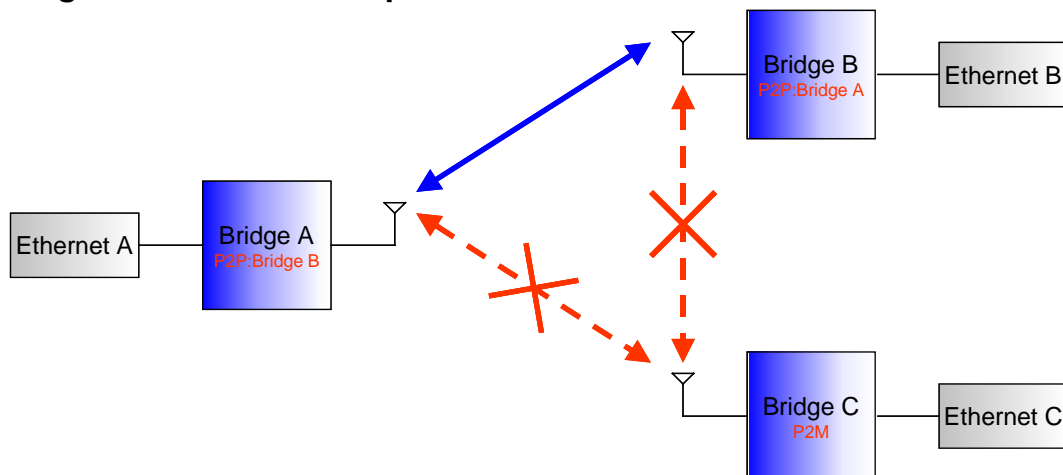
- Point-to-Point Mode
Bridge in this mode will only connect to one fixed bridge.
- Point-to-Multipoint Mode
Bridge in this mode will connect to any other bridges nearby.

6.3.1. Bridge Connection Example 1



Bridge A and Bridge C are in Point-to-Multipoint mode, Bridge B is in Point-to-Point mode that only connect to Bridge A. In this case, Bridge A could connect to both Bridge B and Bridge C, but Bridge C could only connect to Bridge A.

6.3.2. Bridge Connection Example 2



If we set Bridge A to be Point-to-Point mode that only connects to Bridge B. Bridge C can't connect to either Bridge A or Bridge B.

(Note: Please refer to 6.2.2 Modify Operational Settings for more information.)

7. Specifications:

Standard compatibility	
	IEEE802.11b, FCC, RTSI, Wi-Fi compatible
	All major networking standards, including IP, IPX
	Wireless Network Interface: IEEE 802.11b (CSMA/CA)
	Wired Network Interface: RJ45(10Base-T)
	Encryption: 64-bit WEP and 128-bit WEP
Environmental	
	Operating Temperature is from 32 to 131 (0 to 55)
	Humidity (non-condensing): 10 to 90%
<u>Power specification</u>	
	Power Consumption: 5V±5%@700mA
	Power Requirements: 110-120V/220-240V
Radio Specifications	
	RF Output Power: 15 dBm
	Modulation Technique: Direct Sequence Spread Spectrum CCK@5Mbps/11Mbps DQPSK@2Mbps DBPSK@1Mbps
	Typical Range: *50m indoors, 100m outdoors when 11Mbps (May vary depending on operation environment)
	Frequency range: 2.4-2.4835 GHz
	Number of channels :14 channels
	Antenna: Embedded Antenna Modulation with diversity support
Physical Dimensions	
	Length 130mm*Height 190mm*Width 66mm
	Weight: 330g
Other Function	
	Led Indicators: Status, network activity and RF Activity