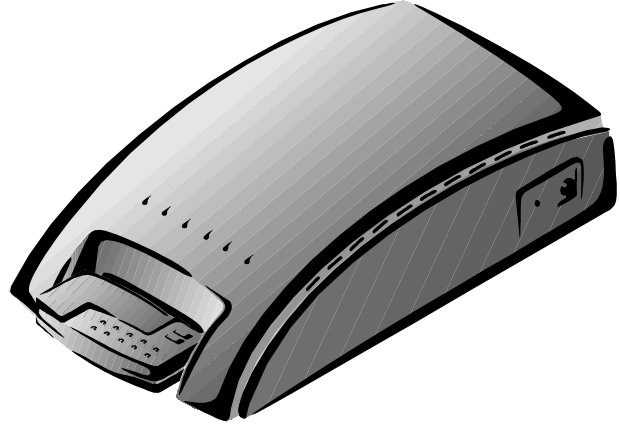
Wireless LAN Access Point

User's Guide



Contents

Introduction

This User's Guide contains information on how to install and configure your Wireless LAN Access Point.

A local area network (LAN) is a network that exists in a relatively limited area. A network is two or more computers connected together sharing files and peripheral devices, such as printers.

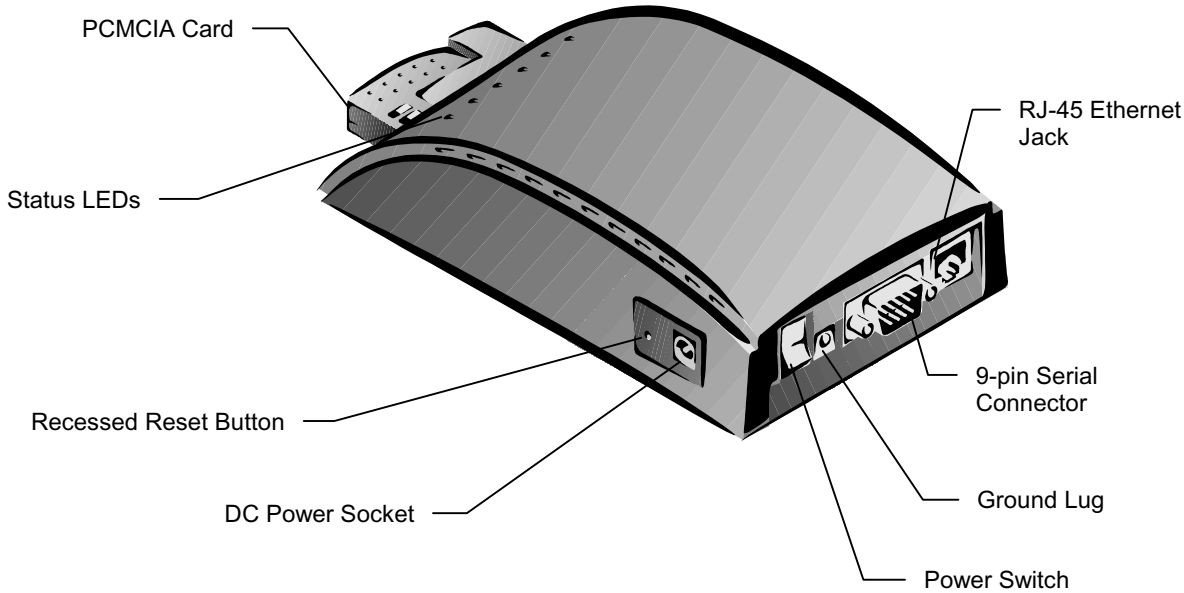
A wireless LAN allows you to interact with other computers without having to run cables normally associated with networks, and the Wireless LAN Access Point allows computers equipped with wireless LAN cards (wireless clients) to have access to an existing wired LAN, forming an infrastructure wireless network.

The Access Point is capable of being used in a wide variety of applications, and offers the following functions:

- stand-alone wireless intranet relay station that increases communication range
- wireless access to Ethernet intranet
- wireless access to Internet
- DHCP server to automate IP address assignment
- Internet connection to a single ISP shared by multiple wireless intranet clients

Identifying External Components on the Access Point

Component	Description
• PCMCIA slot	Accepts Access Point PCMCIA card only
• 6 LEDs	Status/Function. See table on page 4.
• DC power socket	DC power cable connection
• Recessed reset button	Restores Access Point to factory settings
• Power switch	Turns power to Access Point on and off
• 9-pin serial/RS-232 connector	Modem connection
• RJ-45/10BaseT jack	Network interface connection
• 2 slotted holes	Vertical mounting screw holes

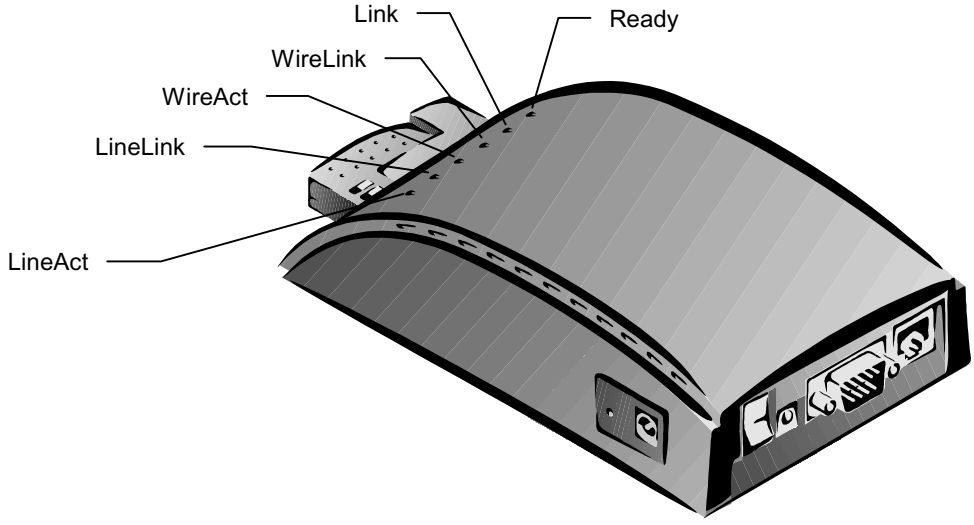

PCMCIA Card
Status LEDs
RJ-45 Ethernet Jack
9-pin Serial Connector
Recessed Reset Button
Ground Lug
DC Power Socket
Power Switch

Access Point Status LEDs

When the power to the Access Point is turned on, the Access Point will perform its startup diagnostics and initialization. After a few seconds, the LEDs will display the operating mode of the Access Point.

Six LEDs on the Access Point indicate the connection status and data transfer operation status of the Access Point. Viewing the Access Point from the PCMCIA slot end, the LEDs are described in the table below, starting from the left side.

LED	Color	State	Description
Ready	Green	On	Access Point is in ready mode.
Link	Green	Blinking	Wireless station communicating with the Access Point.
WireLink	Orange	On	Access Point is connected to an Ethernet network hub or switch through the RJ-45 port.
WireAct	Orange	Blinking	Access Point is transmitting or receiving data through the Ethernet port.
LineLink	Red	On	Access Point is connected to a modem.
LineAct	Red	Blinking	Access Point is transmitting or receiving data through the COM port to a modem.


Link
Ready
WireLink
WireAct
LineLink
LineAct

Wireless LAN Networking

Introduction to Networks

A network is a group of computers and associated devices that can communicate with each other through permanent connections, such as cables, or temporary connections made through telephone or other communication links. A network can be as small as a local area network (LAN) consisting of a few computers, printers, and other devices, or it can consist of many small and large computers distributed over a vast geographic area as a wide area network (WAN).

A network allows you to share files, programs, scanners, printers, fax machines, etc.

Wireless LAN Networks

A wireless LAN is a network that uses radio signals to send and receive data between individual devices. Wireless LANs are often used in office or factory settings where a user must carry a portable computer from place to place. Wireless LANs are also becoming a popular and convenient way of connecting computers in a home environment.

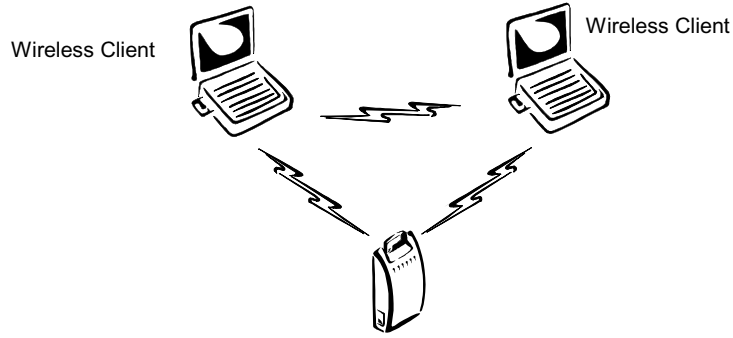
Wireless LANs perform the same functions as a wired LAN, but without the wire. The network devices are connected to each other by radio waves. By using the Wireless LAN Access Point, the wireless LAN can be connected to a wired network.

The Wireless LAN Access Point provides connectivity between wireless clients and Ethernet (wired) clients. The Access Point complies with the IEEE 802.11 standard, enabling communication among all wireless clients that meet this standard.

Stand-Alone Wireless Network

The stand-alone wireless network is the simplest use of an Access Point. In this configuration, the Access Point acts as a relay between wireless clients. This enables the transfer of information among all computers within the Access Point coverage area.

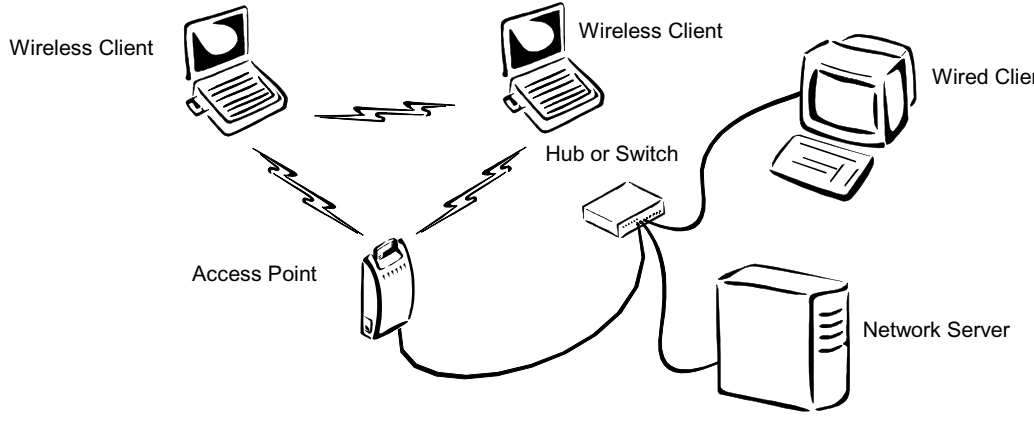
To communicate with the Access Point and other computers in the network, the Access Point and all computers in the network must have the same Group ID. While an Access Point is not required, its relay capability effectively doubles the communication distance between two computers.



Infrastructure Network

In an infrastructure network, the Access Point connects clients to a wired network. This enables the wireless clients to access all computers and peripherals on the wired network.

Multiple Access Points can be used to achieve seamless wireless access throughout an extended service area. All Access Points and wireless clients must have the same Group ID. Roaming among different Access Points is controlled automatically to maintain the wireless connection at all times.



TCP/IP Addressing

TCP/IP (Transmission Control Protocol/Internet Protocol) has become the standard for network data transmission. The Wireless LAN Access Point uses TCP/IP addressing to communicate between both wired and wireless clients.

For correct IP address information for your wireless LAN installation, contact your network administrator.

If you are installing the Wireless LAN Access Point into a wired LAN, you must obtain a static IP address and a subnet mask for the Access Point from the wired network administrator. See Configuring the Wireless LAN Settings.

If you don't have a network administrator, you will have to select an IP address from one of the available blocks of addresses.

Selecting an IP Address

An IP address consists of four components. Each component can contain up to 256 numbers (0 to 255). Thus, you can select a unique address from a range of addresses (0.0.0.0 to 255.255.255.255) to identify a device within a network.

For more information on IP addresses, see the Network Working Group Specification RFC 1918 on the Internet.

Not all addresses are available for private networks. Only the addresses in the following three blocks are available:

10. 0 . 0. 0 — 10.255.255.255

172. 16. 0. 0 — 172. 31.255.255

192.168. 0. 0 — 192.168.255.255

Define your network by determining the number of addresses you will need (allow for expansion).

For example:

If your network will consist of 10 wired clients and 10 wireless clients, you could define the first 3 components of your address as 10.100.100. Next, you would define the fourth component range. You need 20 (allowing for an expansion of 10) addresses for your wired clients and 20 (allowing for an expansion of 10) addresses for your wireless clients.

You could then reserve a block of addresses for the wired clients of 10.100.100.0 through 10.100.100.19 and another block for wireless clients of 10.100.100.20 through 10.100.100.39. Now you can start assigning appropriate addresses to individual clients.

Creating a Subnet Mask

In addition to an IP address, you will need to define a subnet mask to ensure that your computers only communicate with other computers and devices that are within your network.

A subnet mask has four components that correspond to the four components of the IP address. Like the IP address, each component can contain up to 256 numbers (0 to 255). These numbers determine if an IP address component must be an exact match or if a range of numbers is acceptable.

If the subnet mask number for an IP component is 255, that component must be an exact match for communication to take place. If the mask number is 0, any number in the component is acceptable. A mask number between 0 and 255 determines a range of numbers between the number and 255 that are acceptable. If you use a mask number of 250, IP address numbers between 250 and 255 are acceptable.

For example: if you choose an IP address of 10.100.100.1 and a subnet mask of 255.255.255.0, the first three components of the IP address must match exactly, and any number from 0 to 255 in the fourth component is acceptable for communication to take place.

The use of these addresses and masks is limited only by your imagination. You can use any rationale you like to select your addressing scheme.

DHCP Server

DHCP (Dynamic Host Configuration Protocol) is a TCP/IP protocol that enables a host connected to a network to assign a temporary IP address to a client automatically when the client connects to the network.

The Access Point can function as a DHCP server to dynamically assign IP addresses and provide other configuration parameters to wireless LAN clients when requested by the client. This function reduces the network administrator's workload and increases the usage efficiency of the IP addresses by recycling the addresses when the lease time is up.

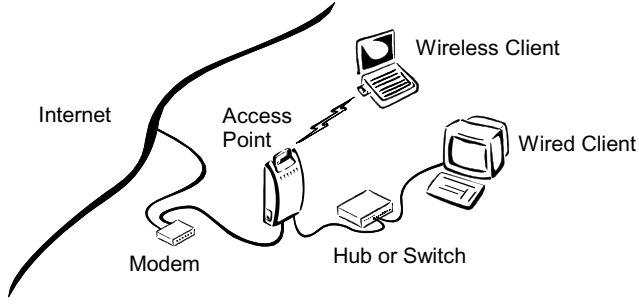
The DHCP function of the Access Point can be enabled or disabled. You can also define a lower boundary and an upper boundary to establish a range of addresses that can be assigned. The Access Point can manage a maximum of 256 IP addresses (0 to 255).

In addition to providing an IP address, the Access Point provides the subnet mask, DNS IP address, domain name, gateway IP address, and lease period to complete the configuration of the wireless LAN clients. The Access Point maintains a mapping table with IP address, MAC (Media Access Control) address, and lease period for each client to control and manage the dynamic configuration.

Internet Connection Sharing (ICS)

Internet connection sharing (ICS) enables you to configure your network to share a single connection to the Internet. The Wireless LAN Access Point acts as a gateway that allows multiple clients to connect to the Internet by sharing a single modem and ISP (Internet Service Provider) account.

When a client on your network sends a request to the Internet, its private IP address is transmitted to the Access Point, which translates it to the Internet IP address (specified by the ISP) of the Access Point, and then sends it on to the Internet. When the results are returned, the Access Point translates the IP address back again and routes it to the correct client on your network. The only device on your network visible to the Internet is the Access Point. None of the computers on your network have a direct connection to the Internet.



Access Point Manager

When Access Point Manager (APM) is installed on a computer in the network, you can change all operating parameters of the Access Point. The APM enables you to configure and monitor the operational performance of your network.

You can install the APM on as many computers in your network as you want, either wired or wireless. The choice for a wireless or wired computer depends on your preferences and your network configuration.

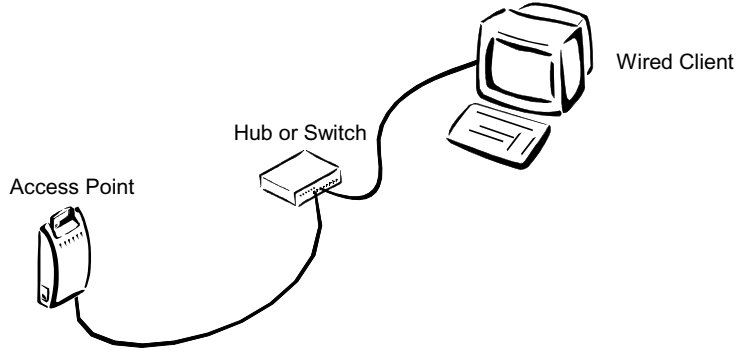
All Access Points are shipped with a factory-set IP Address of 192.168.1.1 to allow your APM computer to communicate with new Access Points.

Verifying the TCP/IP Protocol Settings

Any computer you install the APM on must have TCP/IP networking protocol installed to be able to communicate with the Access Point. Using Windows Control Panel, double-click Network and check that TCP/IP is installed. If TCP/IP is not installed, install it (refer to TCP/IP Addressing on page 10 for a proper IP addressing).

Configuring Access Point with Wired Clients

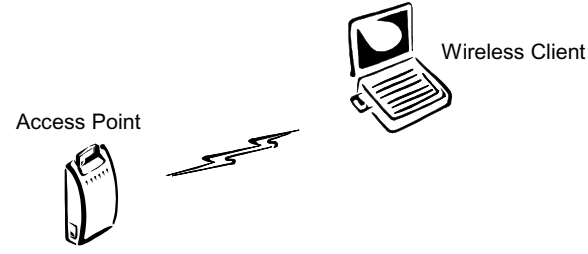
If your Access Point is connected to an established wired network, you can install APM on any computer on the network. The first time you run APM, you will need to change the IP address of the Access Point to be compatible with the IP address of your network.



Configuring Access Point with Wireless Clients

If you want to configure an Access Point from a wireless client, you need to install APM on the wireless client. The SSID of the wireless client must match the SSID factory setting of the Access Point, or be set to “any”, or left blank.

The first time you run APM, you will need to change the IP address of the Access Point to be compatible with the IP address of your network.

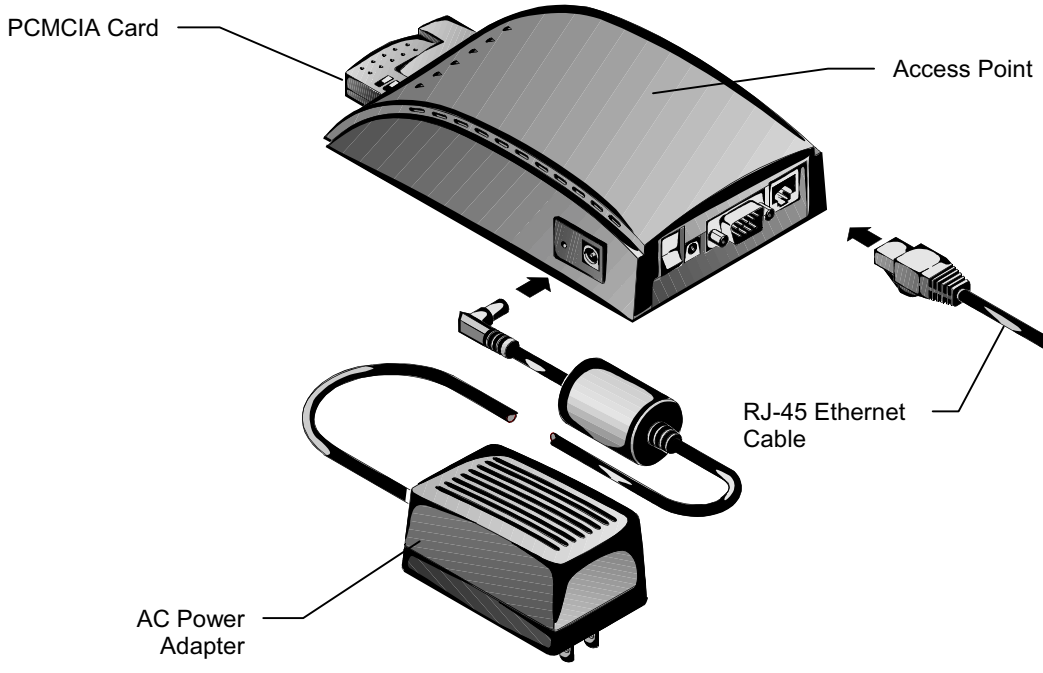


Installing the Wireless LAN Access Point

Verifying Supplied Access Point Components

When you unpack the Access Point, you should have the following components:

- Access Point
- Mounting screws (2), 3/16-inch (5-mm) diameter head
- PCMCIA Card
- RJ-45 Ethernet cable
- AC Power Adapter


PCMCIA Card
Access Point
RJ-45 Ethernet Cable
AC Power Adapter

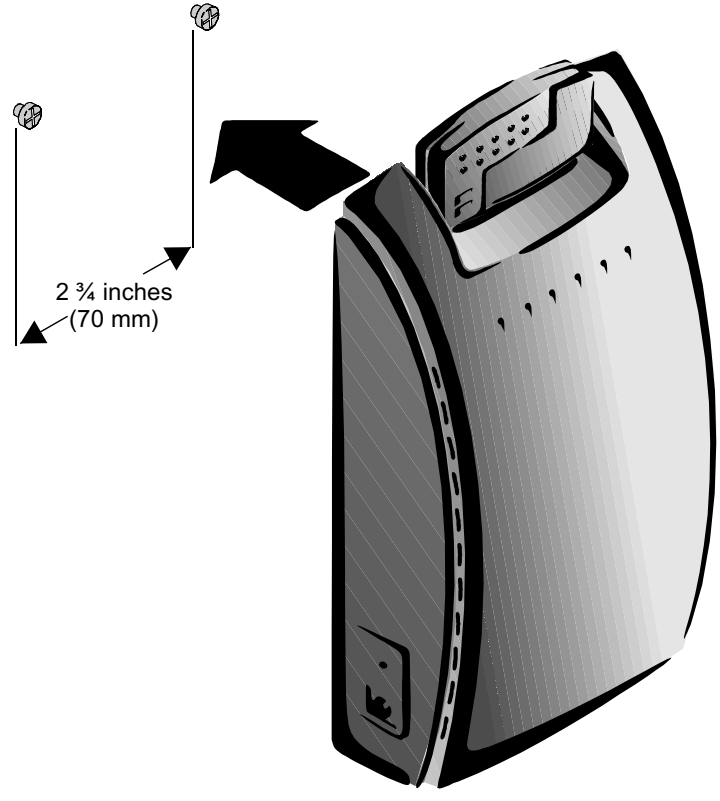
Mounting the Access Point to a Vertical Surface

The Access Point module can sit on a horizontal surface or it can be mounted to a wall or other vertical surface. Select a location that provides both convenient access and a clear radio signal path to wireless clients.

The Access Point case has two slotted holes on its underside that enable you to mount the Access Point securely to two screws.

To mount the Access Point to a vertical surface:

1. Install the two mounting screws to a suitable vertical surface at a distance of 2-3/4 inches (70 mm) apart. Tighten the screws, leaving about 1/16 inch (1.5 mm) between screw head and surface.
2. Position the Access Point so the connector end is pointing downward. Engage the slotted holes on the bottom with the screw heads, and slide the unit down slightly until it is firmly seated.


2 ¾ inches
(70 mm)

Making Network Connections

You can install the APM on as many computers in your network as you want, either wired or wireless. The choice for a wireless or wired computer depends on your preferences and your network configuration.

Connecting to a Wired Client

An alternate connection method is to use a null-modem RJ-45 Ethernet network cable that has the transmit and receive connections reversed on one end of the cable. This cable can be used to connect the Access Point directly to the computer NIC.

The RJ-45 Ethernet connector jack on the Access Point is used to connect to a network switch that is connected to your wired client. Connect one end of an RJ-45 Ethernet network cable to the jack on the Access Point and connect the other end of the cable to a jack on the network switch that is connected to the wired client.

Connecting to a Wireless Client

You can run APM (Access Point Manager) from a wireless client if you configure the wireless client properly.

1. In the **Wireless LAN Configuration Utility** dialog box, click the **Configuration** tab.
2. In the **Mode** list, click **Infrastructure**.

*You can also enter "any" in the **SSID** box, or leave it blank.*

3. In the **SSID** list, enter the SSID used by Access Point.
4. Click **Apply Changes**, and then click **OK**.

Making Modem Connections (Optional)

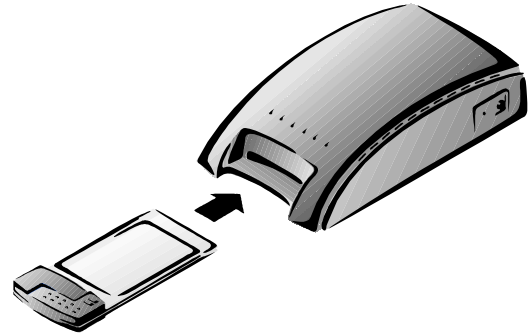
If you will be using an external modem and the Wireless Gateway function to connect to an Internet Service Provider (ISP), connect the modem to the Access Point using a 9-pin RS-232 cable connector, and turn on the power to the modem.

Making Power Connections

Connect the power cord's AC plug into an AC power socket, plug the single DC plug at the other end of the power cord into the DC power jack on the side of the Access Point, and turn on the power.

Installing the PCMCIA Card

Insert the PCMCIA card into the Access Point PCMCIA slot and push it straight in until it is firmly seated.

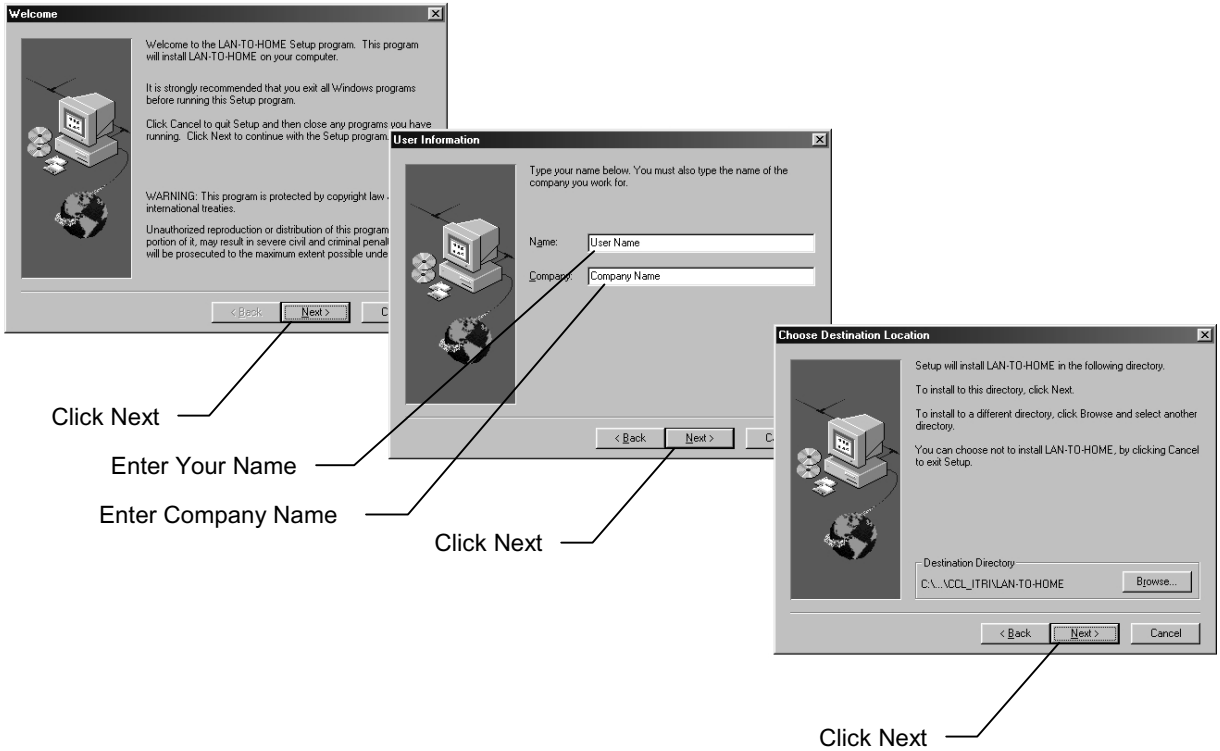


Installing the Access Point Manager

To install the Access Point Manager:

1. Run setup.exe from the Wireless LAN Access Point Installation disc.
2. Close all Windows programs that are running, and then click **Next**.
3. In the **Welcome** dialog box, click **Next**.
4. In the User Information **Name** and **Company** boxes, enter your name and company name, and then click **Next**.
5. In the **Choose Destination Location** dialog box, click **Next**.

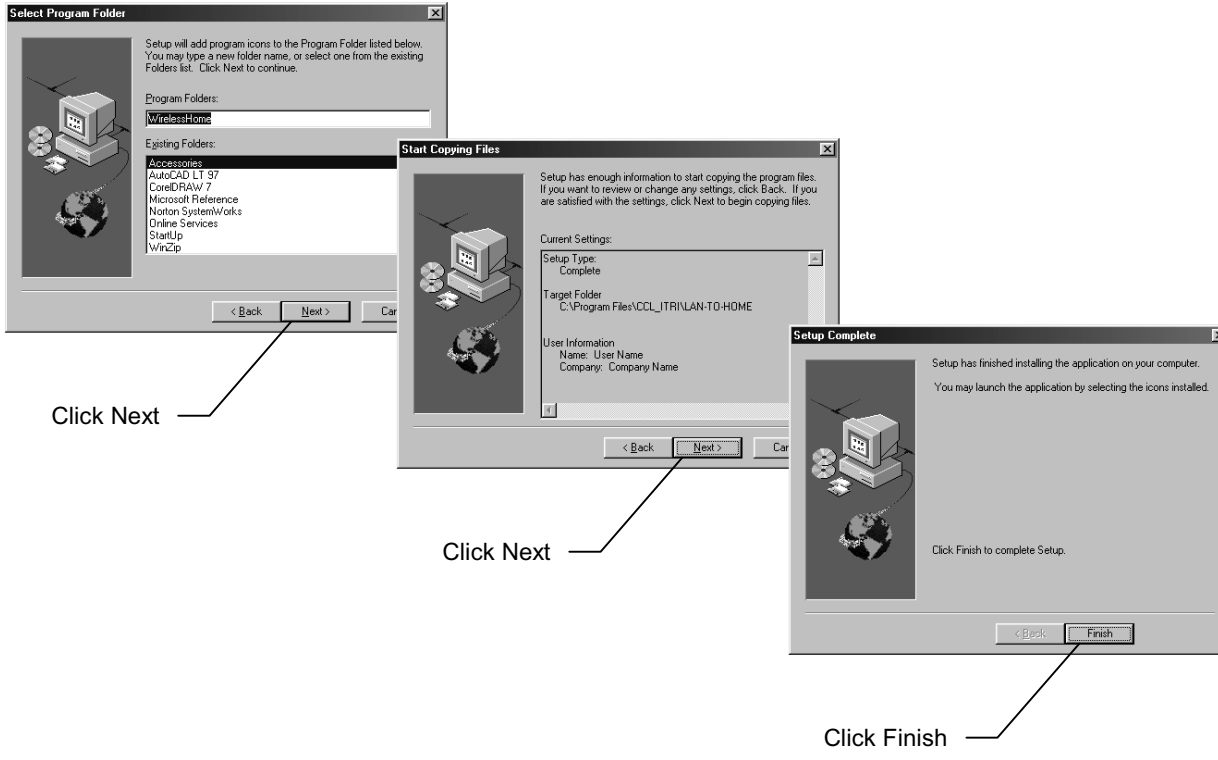
Continue with step 6 on page 26.


Welcome
Welcome to the LAN-TO-HOME Setup program. This program will install LAN-TO-HOME on your computer.
It is strongly recommended that you exit all Windows programs before running this Setup program.
Click Cancel to quit Setup and then close any programs you have running. Click Next to continue with the Setup program.
WARNING: This program is protected by copyright law and international treaties.
Unauthorized reproduction or distribution of this program or any portion of it, may result in severe civil and criminal penalties, and will be prosecuted to the maximum extent possible under the law.
< Back
Next >
User Information
Type your name below. You must also type the name of the company you work for.
Name:
User Name
Company:
Company Name
< Back
Next >
Choose Destination Location
Setup will install LAN-TO-HOME in the following directory.
To install to this directory, click Next.
To install to a different directory, click Browse and select another directory.
You can choose not to install LAN-TO-HOME, by clicking Cancel to exit Setup.
Destination Directory
C:\...\CCL_ITRI\LAN-TO-HOME
Browse...
< Back
Next >
Cancel
Click Next
Enter Your Name
Enter Company Name
Click Next
Click Next

6. In the **Select Program Folder** dialog box, click **Next** to accept the default folder.

   A new group named **Wireless Home** is created that will be listed in the **Start\Programs** menu.

7. In the **Start Copying Files** dialog box, click **Next**.
8. In the **Setup Complete** dialog box, click **Finish**.


Select Program Folder
Setup will add program icons to the Program Folder listed below. You may type a new folder name, or select one from the existing Folders list. Click Next to continue.
Program Folders:
WirelessHome
Existing Folders:
Accessories
AutoCAD LT 97
CorelDRAW 7
Microsoft Reference
Norton SystemWorks
Online Services
StartUp
WinZip
< Back
Next >
Start Copying Files
Setup has enough information to start copying the program files. If you want to review or change any settings, click Back. If you are satisfied with the settings, click Next to begin copying files.
Current Settings:
Setup Type:
Complete
Target Folder
C:\Program Files\CCL_ITRI\LAN-TO-HOME
User Information
Name: User Name
Company: Company Name
< Back
Next >
Setup Complete
Setup has finished installing the application on your computer.
You may launch the application by selecting the icons installed.
Click Finish to complete Setup.
< Back
Finish
Click Next
Click Next
Click Finish

Configuring the Access Point

Using the Default Access Point Configuration Settings

Your Access Point is supplied with operating firmware pre-installed at the factory. After making all the proper connections, when you turn on its power, Access Point will use the factory settings shown in the table on the opposite page.

Access Point Parameter	**Factory Setting**
IP Address	192.168.1.1
Subnet Mask	255.255.255.0
Password	“1234567890”
RF-Channel Number	Channel 1 (2.412 GHz)
SSID	“WLAN_abcdef” (where “abcdef” represents the first three-byte characters of the unique MAC address)
MAC Address	MAC address of network device
Encryption Key	12345 (Encryption disabled)
Transmission Rate	Auto

Starting the Access Point Manager

Click **Start**, point to **Programs**, point to **WirelessHome**, and then click **APM** (Access Point Manager).

Changing the Access Point IP Address

1. In the **Access Point Manager** dialog box, click **Search** to display your Access Point device, and then click the **Change IP** button.
2. In the **Confirm** message box, to continue click **OK**.
3. In the **New Access Point's IP Address** box, enter a valid static four-component IP address for the Access Point.

   The following three blocks of IP addresses are available for private networks:

   10. 0 . 0. 0 — 10.255.255.255

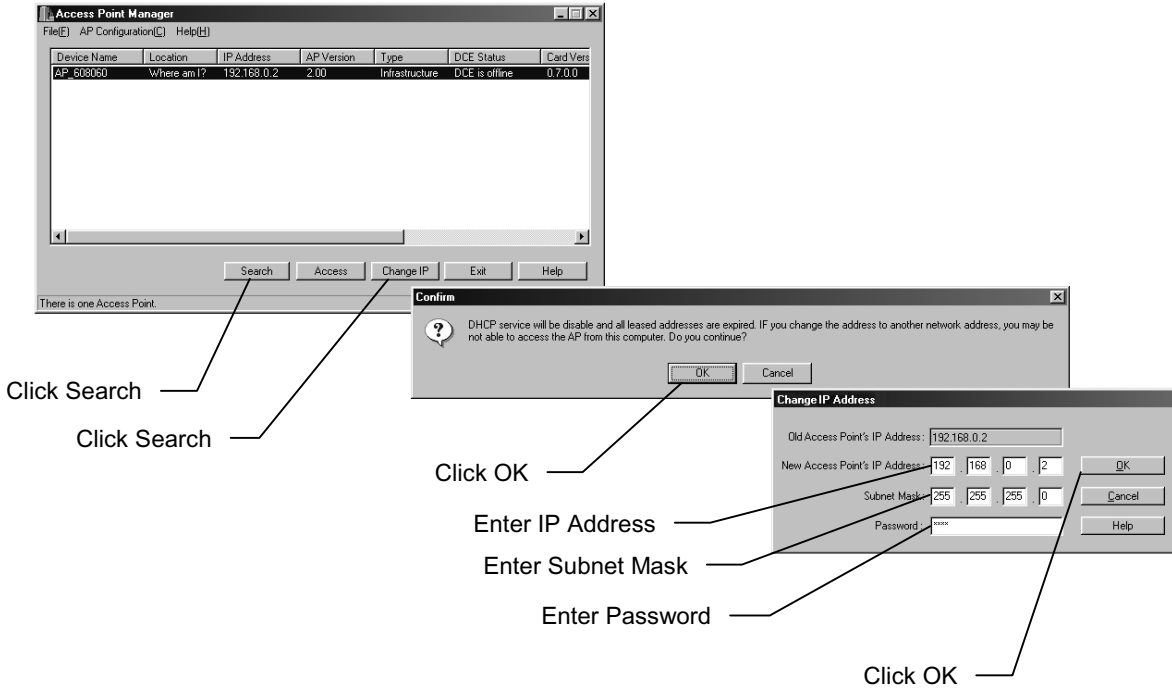
   172. 16. 0. 0 — 172. 31.255.255

   192.168. 0. 0 — 192.168.255.255
4. In the **Subnet Mask** box, enter a valid four-component IP address for the Access Point.
5. In the **Password** box, enter the Password (the default password is "1234567890"), and then click **OK**.
6. Wait 5 seconds and click **Search** to find and display the Access Point with the new IP address.

For correct IP address information for your wireless LAN installation, contact your network administrator.

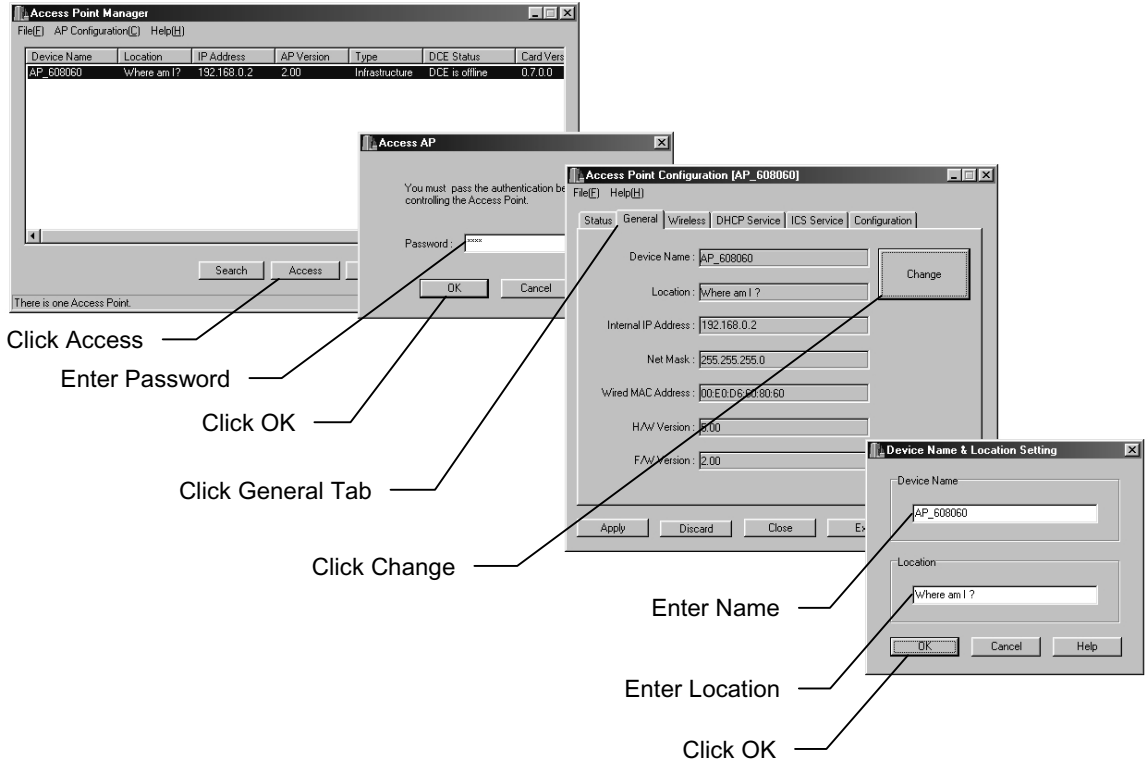
For more information on IP addresses, see the Network Working Group Specification RFC 1918 on the Internet.

The subnet mask is a value that defines whether your computer communicates only within your LAN (for example, 255.255.255.0) or communicates outside of your LAN.


Access Point Manager
File(F) AP Configuration(C) Help(H)
Device Name
Location
IP Address
AP Version
Type
DCE Status
Card Vers
AP_608060
Where am I?
192.168.0.2
2.00
Infrastructure
DCE is offline
0.7.0.0
Search
Access
Change IP
Exit
Help
There is one Access Point.
Confirm
DHCP service will be disable and all leased addresses are expired. IF you change the address to another network address, you may be not able to access the AP from this computer. Do you continue?
OK
Cancel
Change IP Address
Old Access Point's IP Address:
192.168.0.2
New Access Point's IP Address:
192 . 168 . 0 . 2
Subnet Mask:
255 . 255 . 255 . 0
Password:
OK
Cancel
Help
Click Search
Click Search
Click OK
Enter IP Address
Enter Subnet Mask
Enter Password
Click OK

Changing the Device Name and Location Description

1. In the **Access Point Manager** dialog box, click **Access**.
2. In the **Access AP** dialog box, enter the Password (the default password is "1234567890"), and then click **OK**.
3. In the **Access Point Configuration** dialog box, click the **General** tab, and then click **Change**.
4. In the **Device Name** box, enter a name you want to use to identify your Access Point.
5. In the **Location** box, enter a description of where your Access Point is being used.
6. Click **OK**.

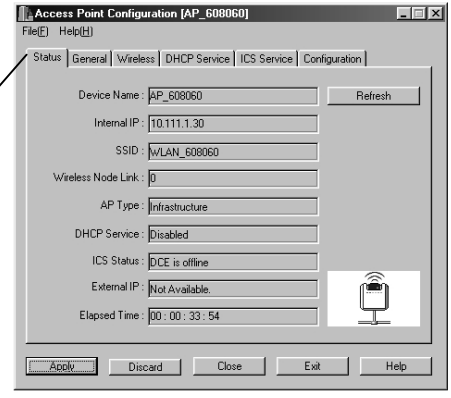

Access Point Manager
File(F) AP Configuration(C) Help(H)
Device Name
Location
IP Address
AP Version
Type
DCE Status
Card Vers
AP_608060
Where am I?
192.168.0.2
2.00
Infrastructure
DCE is offline
0.7.0.0
Search
Access
There is one Access Point.
Access AP
You must pass the authentication be
controlling the Access Point.
Password :
OK
Cancel
Access Point Configuration [AP_608060]
File(F) Help(H)
Status
General
Wireless
DHCP Service
ICS Service
Configuration
Device Name : AP_608060
Location : Where am I ?
Internal IP Address : 192.168.0.2
Net Mask : 255.255.255.0
Wired MAC Address : 00:E0:D6:60:80:60
H/W Version : 0.00
F/W Version : 2.00
Change
Apply
Discard
Close
Device Name & Location Setting
Device Name
AP_608060
Location
Where am I ?
OK
Cancel
Help
Click Access
Enter Password
Click OK
Click General Tab
Click Change
Enter Name
Enter Location
Click OK

Viewing the Status Page

To view the read-only Status page, which displays the current Access Point Configuration settings:

In the **Access Point Configuration** dialog box, click the **Status** tab.

Click Status Tab



Configuring the Wireless LAN Settings

To connect wireless clients to the Access Point using the default startup configuration settings, you will need to reconfigure the wireless clients so that the following parameters are the same as the Access Point:

- SSID (Service Set ID) setting, see Configuring the SSID

  All wireless clients that you want to communicate with the Access Point must have the same SSID as the Access Point.

- Privacy setting (optional, if enabled), see Configuring the Privacy Setting

  If the Privacy Setting is set to Plain, wireless clients can communicate freely with the Access Point.

- Channel setting (optional, if enabled), see Configuring the Channel Setting

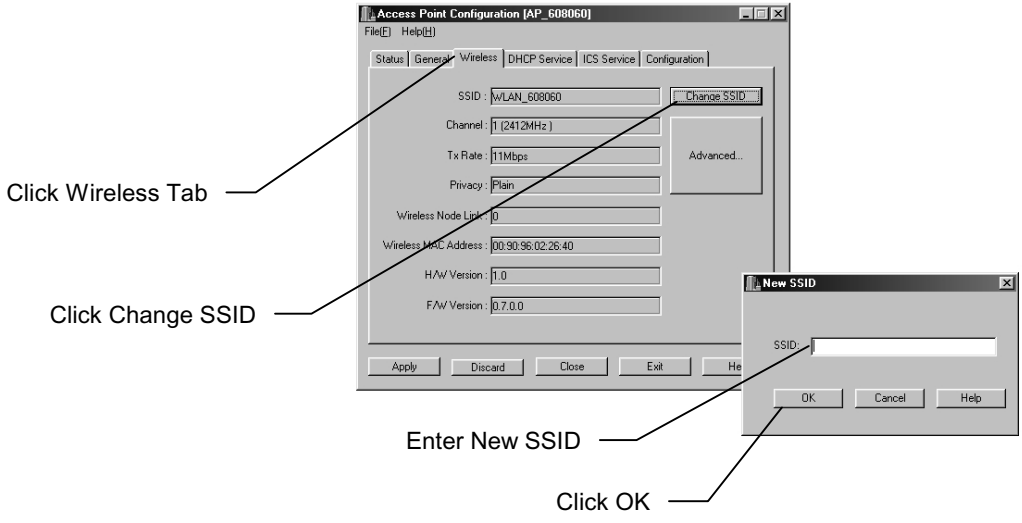
  If the Channel Setting is set to Auto, wireless clients can automatically select the correct communications channel.

Configuring the SSID

The SSID must be the same for each client computer so that they can establish a connection with each other on the network.

The Service Set ID (SSID) is a group name that is shared by every computer on a wireless network. To set up the SSID for the Access Point:

1. In the **Access Point Configuration** dialog box, click the **Wireless** tab.
2. Click **Change SSID**.
3. In the **New SSID** dialog box, in the **SSID** box, enter the wireless LAN group name, and then click **OK**.


Access Point Configuration [AP_608060]
File(F) Help(H)
Status
General
Wireless
DHCP Service
ICS Service
Configuration
SSID : WLAN_608060
Change SSID
Channel : 1 (2412MHz)
Tx Rate : 11Mbps
Advanced...
Privacy : Plain
Wireless Node Link : 0
Wireless MAC Address : 00:90:96:02:26:40
H/W Version : 1.0
F/W Version : 0.7.0.0
Apply
Discard
Close
Exit
New SSID
SSID:
OK
Cancel
Help
Click Wireless Tab
Click Change SSID
Enter New SSID
Click OK

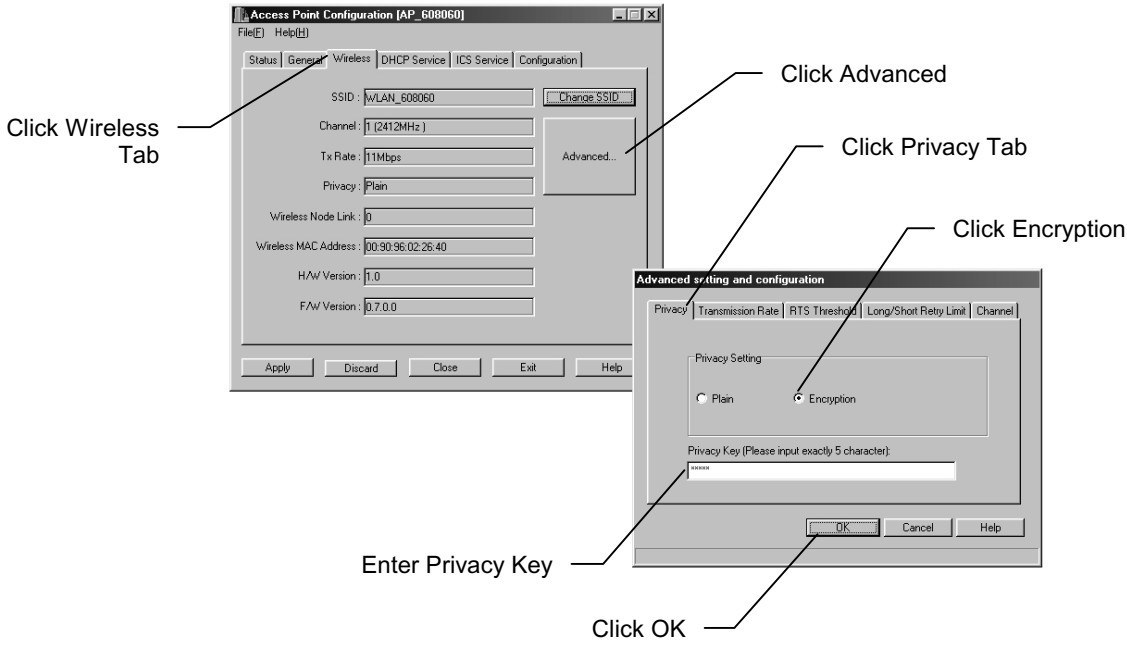
Configuring the Privacy Setting

The Encryption option of the Privacy Setting allows you to enter a five-digit encryption/decryption key to enable wireless clients to transmit and receive data in a secure communications mode. All users must use the same encryption key to ensure that they can communicate with the Access Point properly. The default five-digit encryption key is "12345."

For no encryption, the default Privacy Setting is Plain, which allows any wireless client computer to communicate with the Access Point without encryption.

To change the Privacy Setting from Plain to Encryption:

1. In the **Access Point Configuration** dialog box, click the **Wireless** tab.
2. Click **Advanced**.
3. In the **Advanced setting and configuration** dialog box, click the **Privacy** tab.
4. Click **Encryption**.
5. In the **Privacy Key** box, enter a five-digit letter or number combination with no spaces.
6. Click **OK**.

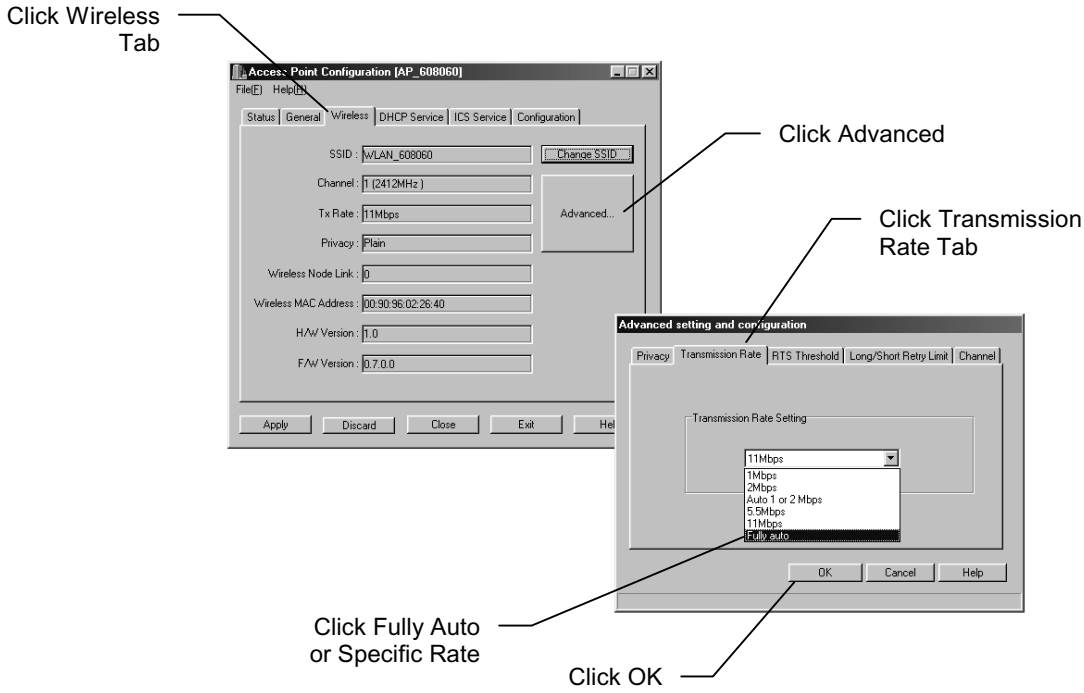

Access Point Configuration [AP_608060]
File(F) Help(H)
Status General Wireless DHCP Service ICS Service Configuration
SSID : WLAN_608060
Change SSID
Channel : 1 (2412MHz)
Tx Rate : 11Mbps
Advanced...
Privacy : Plain
Wireless Node Link : 0
Wireless MAC Address : 00:90:96:02:26:40
H/W Version : 1.0
F/W Version : 0.7.0.0
Apply Discard Close Exit Help
Advanced setting and configuration
Privacy Transmission Rate RTS Threshold Long/Short Retry Limit Channel
Privacy Setting
Plain
Encryption
Privacy Key (Please input exactly 5 character):
OK Cancel Help
Click Wireless Tab
Click Advanced
Click Privacy Tab
Click Encryption
Enter Privacy Key
Click OK

Configuring the Transmission Rate Setting

The Transmission Rate Setting allows you to select the speed at which data is sent between the Access Point and wireless clients. You may choose a single rate setting between 1 Megabits per second (Mbps) and 11 Mbps, or Fully Auto. Fully Auto mode enables the Access Point to automatically set the best transmission rate for the current conditions and location.

To change the Transmission Rate Setting:

1. In the **Access Point Configuration** dialog box, click the **Wireless** tab.
2. Click **Advanced**.
3. In the **Advanced setting and configuration** dialog box, click the **Transmission Rate** tab.
4. Click **Fully auto** or a specific rate.
5. Click **OK**.

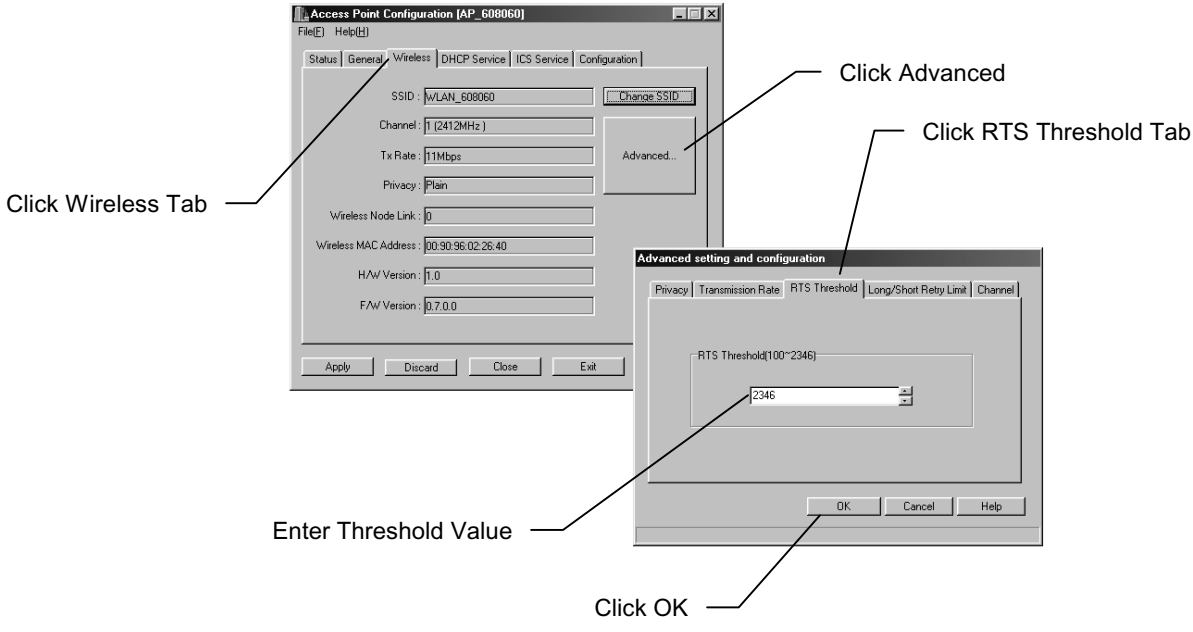

Click Wireless Tab
Access Point Configuration [AP_608060]
File(F) Help(H)
Status
General
Wireless
DHCP Service
ICS Service
Configuration
SSID : WLAN_608060
Change SSID
Channel : 1 (2412MHz)
Tx Rate : 11Mbps
Advanced...
Privacy : Plain
Wireless Node Link : 0
Wireless MAC Address : 00:90:96:02:26:40
H/W Version : 1.0
F/W Version : 0.7.0.0
Apply
Discard
Close
Exit
Click Advanced
Click Transmission Rate Tab
Advanced setting and configuration
Privacy
Transmission Rate
RTS Threshold
Long/Short Retry Limit
Channel
Transmission Rate Setting
11Mbps
1Mbps
2Mbps
Auto 1 or 2 Mbps
5.5Mbps
11Mbps
Fully auto
OK
Cancel
Help
Click Fully Auto or Specific Rate
Click OK

Configuring the RTS Threshold Setting

The RTS (Request To Send) Threshold sets the minimum data block size that is sent for any connection speed to avoid transmission collision and the resulting errors, loss of data, or throughput decrease. CSMA/CA protocol defines that an RTS-CTS frame exchange shall be performed to avoid transmission collision before the actual data frame is sent. RTS Threshold range is between 100 and 2346, with 2346 being the default setting.

To change the RTS Threshold:

1. In the **Access Point Configuration** dialog box, click the **Wireless** tab.
2. Click **Advanced**.
3. In the **Advanced setting and configuration** dialog box, click the **RTS Threshold** tab.
4. In the **RTS Threshold** box, enter a number between 100 and 2346.
5. Click **OK**.


Access Point Configuration [AP_608060]
File(F) Help(H)
Status General Wireless DHCP Service ICS Service Configuration
SSID : WLAN_608060
Change SSID
Channel : 1 (2412MHz)
Tx Rate : 11Mbps
Advanced...
Privacy : Plain
Wireless Node Link : 0
Wireless MAC Address : 00:90:96:02:26:40
H/W Version : 1.0
F/W Version : 0.7.0.0
Apply Discard Close Exit
Advanced setting and configuration
Privacy Transmission Rate RTS Threshold Long/Short Retry Limit Channel
RTS Threshold(100~2346)
2346
OK Cancel Help
Click Wireless Tab
Click Advanced
Click RTS Threshold Tab
Enter Threshold Value
Click OK

Configuring the Long/Short Retry Limit Setting

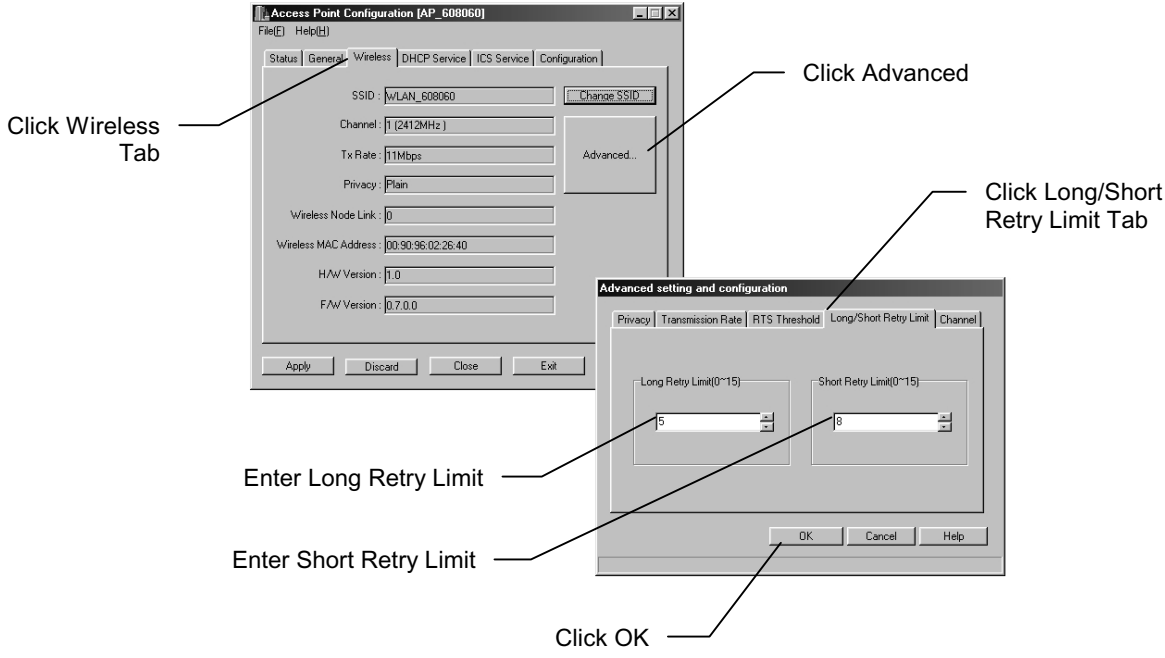
The Retry Limit Setting sets the maximum number of transmission attempts the wireless client will make for a frame before it determines a frame transmission failure.

The Long Retry Limit setting determines the number of retries for frames longer than the RTS threshold setting.

The Short Retry Limit setting determines the number of retries for frames shorter than or equal to the RTS threshold setting.

To change the Long/Short Retry Limit:

1. In the **Access Point Configuration** dialog box, click the **Wireless** tab.
2. Click **Advanced**.
3. In the **Advanced setting and configuration** dialog box, click the **Long/Short Retry Limit** tab.
4. In the **Long Retry Limit** box, enter a number between 0 and 15.
5. In the **Short Retry Limit** box, enter a number between 0 and 15.
6. Click **OK**.


Access Point Configuration [AP_608060]
File(F) Help(H)
Status General Wireless DHCP Service ICS Service Configuration
SSID : WLAN_608060
Change SSID
Channel : 1 (2412MHz)
Tx Rate : 11Mbps
Advanced...
Privacy : Plain
Wireless Node Link : 0
Wireless MAC Address : 00:90:96:02:26:40
H/W Version : 1.0
F/W Version : 0.7.0.0
Apply Discard Close Exit
Advanced setting and configuration
Privacy Transmission Rate RTS Threshold Long/Short Retry Limit Channel
Long Retry Limit(0~15)
5
Short Retry Limit(0~15)
8
OK Cancel Help
Click Wireless Tab
Click Advanced
Click Long/Short Retry Limit Tab
Enter Long Retry Limit
Enter Short Retry Limit
Click OK

Configuring the Channel Setting

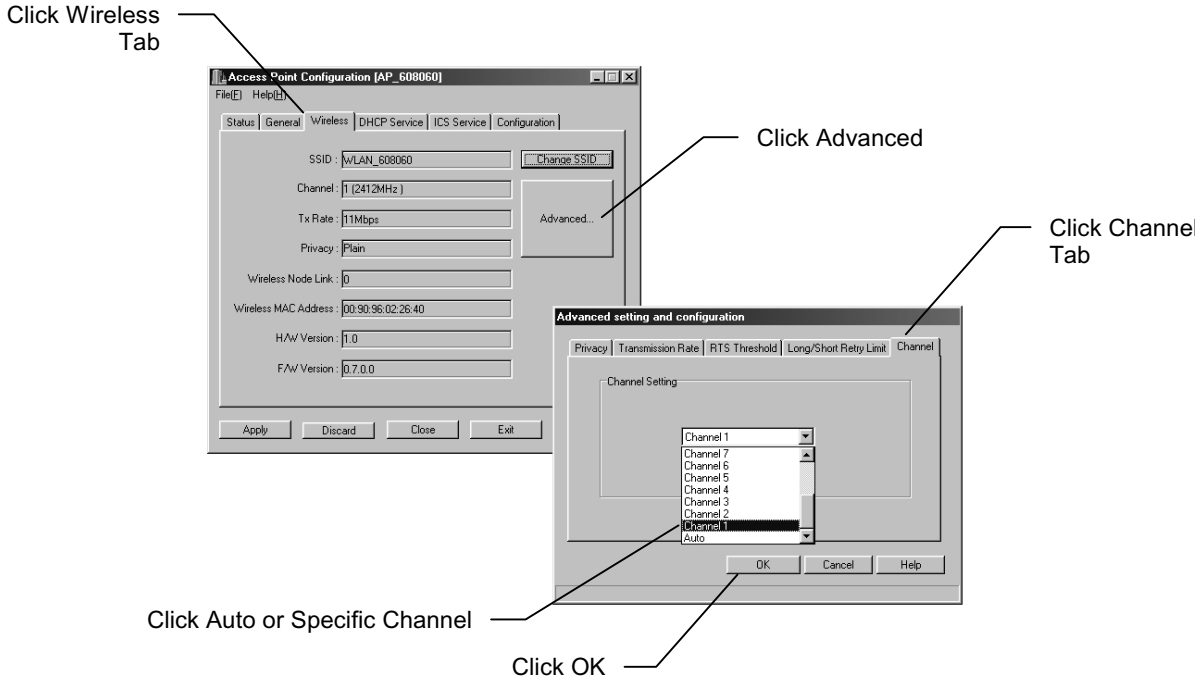
The Access Point can be configured to automatically select a channel to communicate with a wireless client, or you can select a fixed channel if you are experiencing interference or need to use a specific channel.

The table below lists the channels between 1 and 14 that are available for your region.

Region	Communication Authority	Channel Range
North America	FCC	1 – 11
Europe	ETSI	1 – 13
Japan		14 (2.471 – 2.497 GHz frequency band)

To change the Channel Settings:

1. In the **Access Point Configuration** dialog box, click the **Wireless** tab.
2. Click **Advanced**.
3. In the **Advanced setting and configuration** dialog box, click the **Channel** tab.
4. In the **Channel Setting** list, click **Auto** or a specific channel.
5. Click **OK**.


Click Wireless Tab
Access Point Configuration [AP_608060]
File(F) Help(H)
Status General Wireless DHCP Service ICS Service Configuration
SSID : WLAN_608060
Change SSID
Channel : 1 (2412MHz)
Tx Rate : 11Mbps
Advanced...
Privacy : Plain
Wireless Node Link : 0
Wireless MAC Address : 00:90:96:02:26:40
H/W Version : 1.0
F/W Version : 0.7.0.0
Apply Discard Close Exit
Click Advanced
Click Channel Tab
Advanced setting and configuration
Privacy Transmission Rate RTS Threshold Long/Short Retry Limit Channel
Channel Setting
Channel 1
Channel 7
Channel 6
Channel 5
Channel 4
Channel 3
Channel 2
Channel 1
Auto
OK Cancel Help
Click Auto or Specific Channel
Click OK

Setting Up DHCP Service

The DHCP (Dynamic Host Configuration Protocol) Service enables the Access Point host computer to assign available IP addresses dynamically to other computers on the network. The Access Point host computer assigns IP addresses on an as-needed basis and controls the traffic between those computers and the Internet.

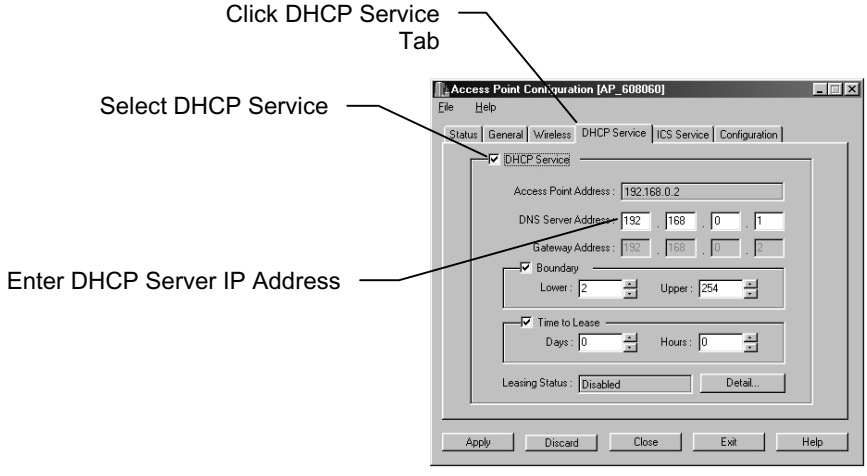
To find addresses on the Internet, your computer needs to connect to a Domain Name Service (DNS) computer, called a DNS server. The DNS server answers DNS queries and keeps a database of host computers and their corresponding IP addresses. The DNS Server Address is the IP address of the computer to which the Access Point is connected.

The Boundary area is where the range of IP addresses for computers connected to the Access Point wireless LAN are defined, using the fourth component of the IP Address.

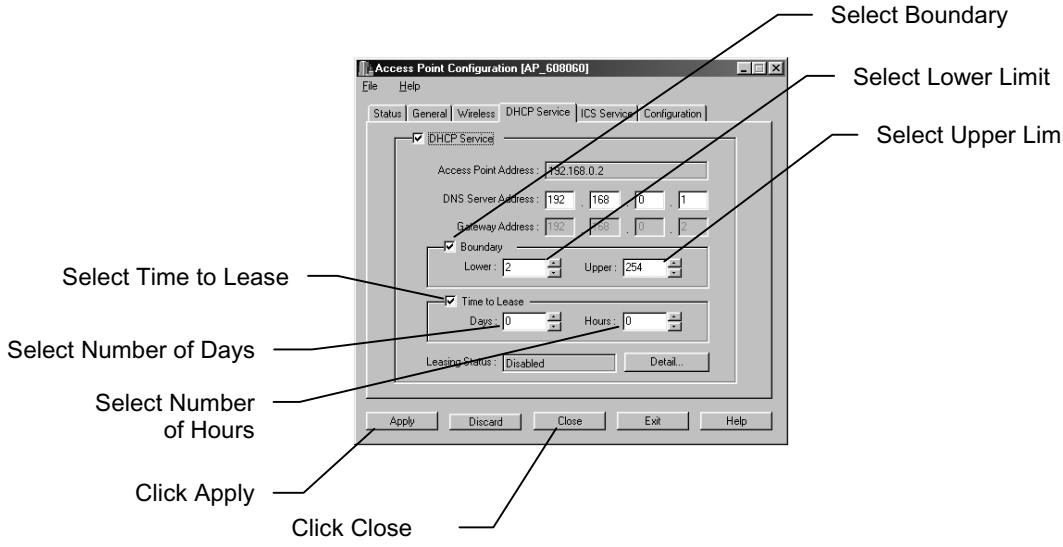
To set up DHCP Service:

1. In the **Access Point Configuration** dialog box, click the **DHCP Service** tab.
2. Select the **DHCP Service** check box.
3. In the **DNS Server Address** box, enter the IP Address for the DHCP Server.

Continue with step 4 on page 50.


Click DHCP Service Tab
Select DHCP Service
Enter DHCP Server IP Address
Access Point Configuration [AP_608060]
File
Help
Status
General
Wireless
DHCP Service
ICS Service
Configuration
DHCP Service
Access Point Address :
192.168.0.2
DNS Server Address :
192
168
0
1
Gateway Address :
192
168
0
2
Boundary
Lower :
2
Upper :
254
Time to Lease
Days :
0
Hours :
0
Leasing Status :
Disabled
Detail...
Apply
Discard
Close
Exit
Help

4. Select the **Boundary** check box.
5. In the **Lower** and **Upper** boxes, select the numbers between 1 and 256 that define the range of IP addresses you want to make available.
6. Select the **Time to Lease** check box.
7. In the **Days** and **Hours** boxes, select numbers that define the amount of time that the DHCP server grants permission to use a particular IP address.
8. Click **Apply**, and then click **Close**.


Select Boundary
Select Lower Limit
Select Upper Limit
Select Time to Lease
Select Number of Days
Select Number of Hours
Click Apply
Click Close
Access Point Configuration [AP_608060]
File
Help
Status
General
Wireless
DHCP Service
ICS Service
Configuration
DHCP Service
Access Point Address : 192.168.0.2
DNS Server Address : 192 . 168 . 0 . 1
Gateway Address : 192 . 168 . 0 . 2
Boundary
Lower : 2
Upper : 254
Time to Lease
Days : 0
Hours : 0
Leasing Status : Disabled
Detail...
Apply
Discard
Close
Exit
Help

Setting Up Internet Connection Sharing (ICS)

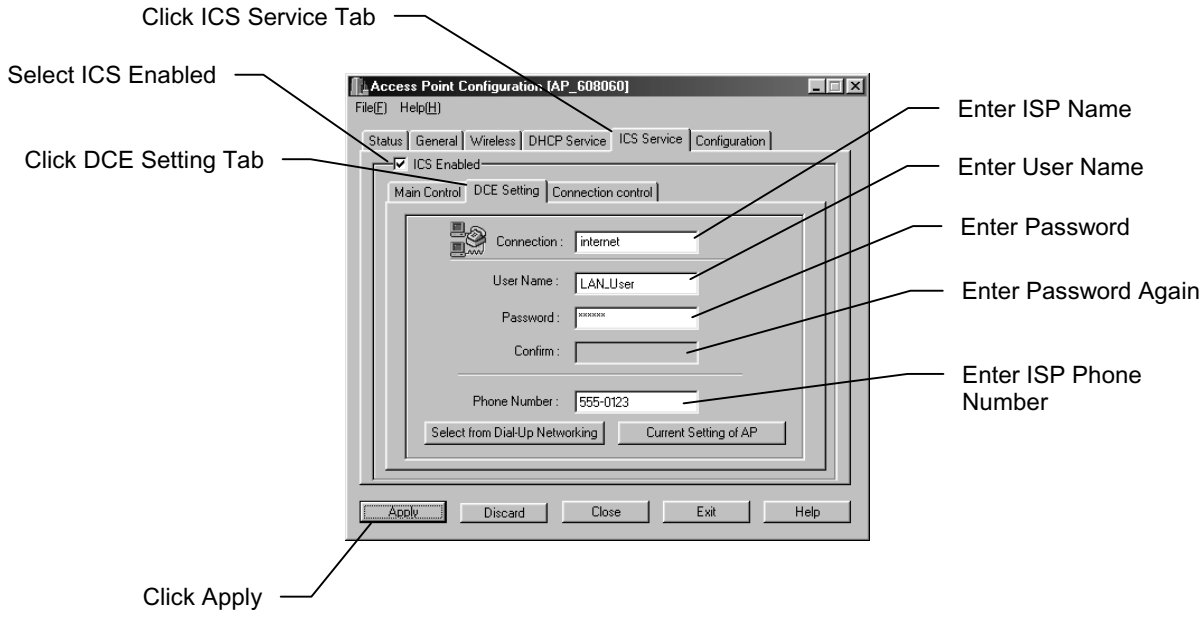
The Access Point allows multiple wireless clients to share a modem and a single ISP account. Use the ICS Service page of the Access Point Configuration dialog box to connect to an Internet Service Provider using an external modem that is connected to the Access Point.

To connect to an ISP:

1. In the **Access Point Configuration** dialog box, click the **ICS Service** tab.
2. Select the **ICS Enabled** check box.
3. Click the **DCE Setting** tab.
4. In the **Connection** box, enter the name of an ISP.
5. In the **User Name** box, enter a user name.
6. In the **Password** box, enter a valid password.
7. In the **Confirm** box, enter the password again.
8. In the **Phone Number** box, enter the ISP access phone number.
9. Click **Apply**.

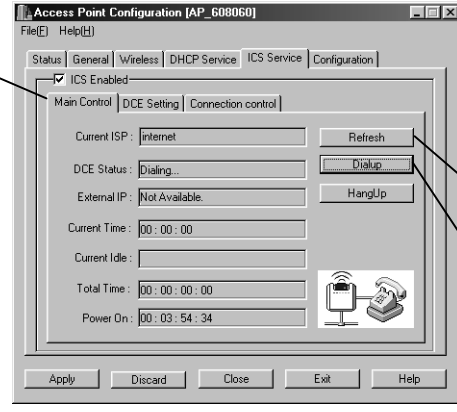
Continue with step 10 on page 54.

*If you have already set up and saved an ISP connection configuration in Dial-Up Networking, click the **Select from Dial-Up Networking** button, select the ISP, then click **OK**.*


Click ICS Service Tab
Select ICS Enabled
Click DCE Setting Tab
Click Apply
Enter ISP Name
Enter User Name
Enter Password
Enter Password Again
Enter ISP Phone Number
Access Point Configuration [AP_608060]
File(F) Help(H)
Status
General
Wireless
DHCP Service
ICS Service
Configuration
ICS Enabled
Main Control
DCE Setting
Connection control
Connection :
internet
User Name :
LAN_User
Password :
******
Confirm :
Phone Number :
555-0123
Select from Dial-Up Networking
Current Setting of AP
Apply
Discard
Close
Exit
Help

10. Click the **Main Control** tab.
11. Click the **Refresh** button.
12. Click **Dialup** to connect to the ISP.

Click Main Control Tab

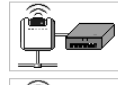


Click Refresh

Click Dialup

ICS Status Icons

Access Point has a PCMCIA card and is connected to wired client



Modem is connected to Access Point

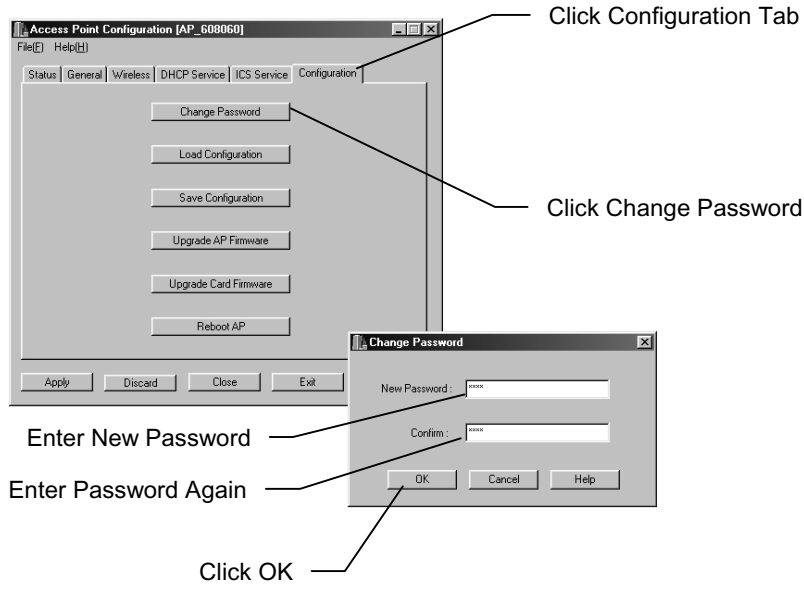
Modem is dialing ISP phone number

Changing Your Password

The default password that is used by Access Point when it is installed is "1234567890." You should change this password to one that is easy to remember. The password must consist of at least 1 character and up to 32 characters with no spaces.

To change your password:

1. In the **Access Point Configuration** dialog box, click the **Configuration** tab.
2. Click **Change Password**.
3. In the **New Password** box, enter a new password.
4. In the **Confirm** box, enter the new password again.
5. Click **OK**.

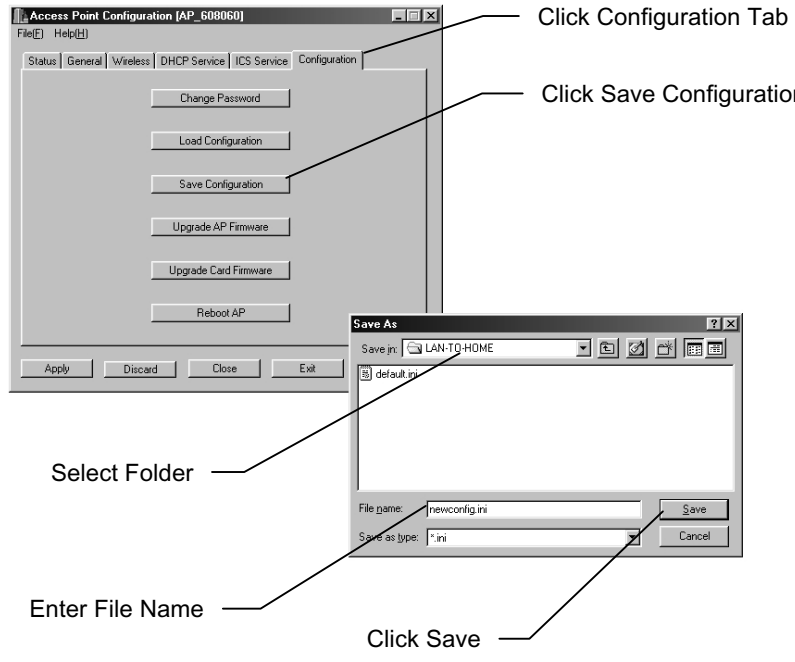

Access Point Configuration [AP_608060]
File(F) Help(H)
Status
General
Wireless
DHCP Service
ICS Service
Configuration
Change Password
Load Configuration
Save Configuration
Upgrade AP Firmware
Upgrade Card Firmware
Reboot AP
Apply
Discard
Close
Exit
Change Password
New Password :
Confirm :
OK
Cancel
Help
Click Configuration Tab
Click Change Password
Enter New Password
Enter Password Again
Click OK

Saving a Configuration

If you need to create a different configuration for your Access Point that has different settings, such as one that has a different SSID name or DHCP settings, you can save it as a file on your hard drive with an .ini extension.

To save a configuration:

1. In the **Access Point Configuration** dialog box, click the **Configuration** tab.
2. Click **Save Configuration**.
3. In the **Save As** dialog box, select the folder you want to save the file in, enter the name of the new configuration file in the **File name** box, and then click **Save**.

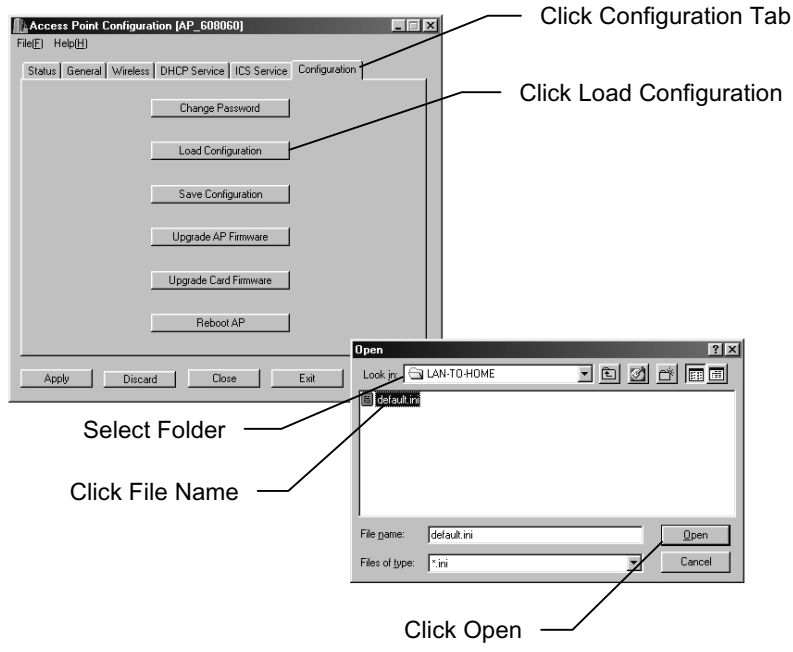

Access Point Configuration [AP_608060]
File(F) Help(H)
Status
General
Wireless
DHCP Service
ICS Service
Configuration
Change Password
Load Configuration
Save Configuration
Upgrade AP Firmware
Upgrade Card Firmware
Reboot AP
Apply
Discard
Close
Exit
Save As
Save in:
LAN-TO-HOME
default.ini
File name:
newconfig.ini
Save as type:
*.ini
Save
Cancel
Click Configuration Tab
Click Save Configuration
Select Folder
Enter File Name
Click Save

Loading a Configuration

If you have created and saved more than one Access Point configuration file, you can easily load the file for the current session.

To load a configuration:

1. In the **Access Point Configuration** dialog box, click the **Configuration** tab.
2. Click **Load Configuration**.
3. In the **Open** dialog box, select the folder that contains the configuration file that has an .ini extension you want to load, and then click the file name.
4. Click **Open**.


Access Point Configuration [AP_608060]
File(F) Help(H)
Status
General
Wireless
DHCP Service
ICS Service
Configuration
Change Password
Load Configuration
Save Configuration
Upgrade AP Firmware
Upgrade Card Firmware
Reboot AP
Apply
Discard
Close
Exit
Click Configuration Tab
Click Load Configuration
Open
Look in:
LAN-TO-HOME
default.ini
File name:
default.ini
Open
Files of type:
*.ini
Cancel
Select Folder
Click File Name
Click Open

Rebooting the Access Point

If the Access Point has stopped responding to commands for any reason, it can be rebooted either remotely or manually.

Rebooting Remotely

Do not press the Reset button on the side of the Access Point to reboot, as this will replace your network configuration settings with the default factory settings.

To reboot the Access Point remotely from the Access Point Manager:

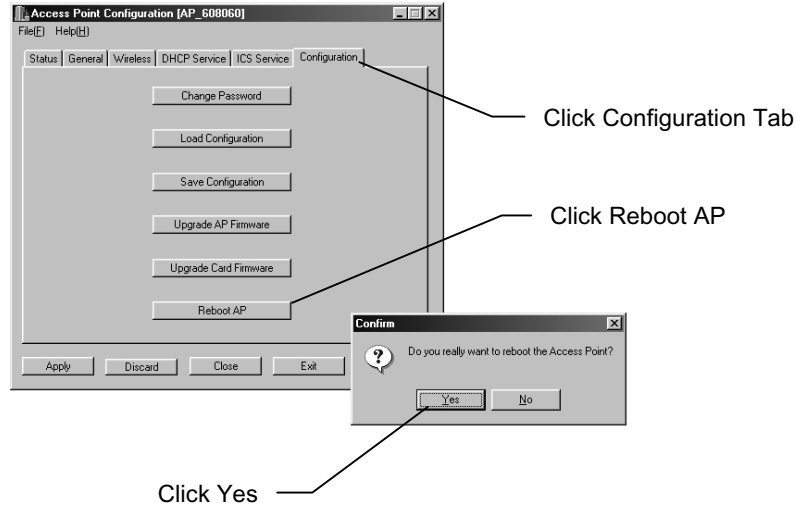
1. In the **Access Point Configuration** dialog box, click the **Configuration** tab.
2. Click **Reboot AP**.
3. In the **Confirm** dialog box, click **Yes**.

   The Access Point will cycle its power and then restart, using its current network configuration settings. The startup diagnostics take approximately 60 seconds to complete.

Rebooting Manually

To reboot the Access Point manually:

1. Turn off the power to the Access Point by using the power switch on the back.
2. Remove the power cable from its connection on the side of the Access Point.
3. Wait 5 seconds.
4. Plug in the power cable to the connector on the side of the Access Point.
5. Turn on the power to the Access Point using the switch on the back.


Access Point Configuration [AP_608060]
File(F) Help(H)
Status General Wireless DHCP Service ICS Service Configuration
Change Password
Load Configuration
Save Configuration
Upgrade AP Firmware
Upgrade Card Firmware
Reboot AP
Apply Discard Close Exit
Confirm
Do you really want to reboot the Access Point?
Yes No
Click Configuration Tab
Click Reboot AP
Click Yes

Upgrading

There may be situations where you need to upgrade your Access Point Manager or firmware; for example, if:

- errors have been corrected
- a new version is required to support new functions
- you were advised to do so by a wireless LAN technical support technician

Upgrading Access Point Manager

Do not uninstall an earlier version of Access Point Manager.

To upgrade the Access Point Manager:

1. Close all programs and dialog boxes.
2. Download updated files from the FTP site as instructed by a technical support technician.
3. Run the updated file.
4. Install the new version to the same folder where your previous version is installed.

Upgrading Access Point Firmware

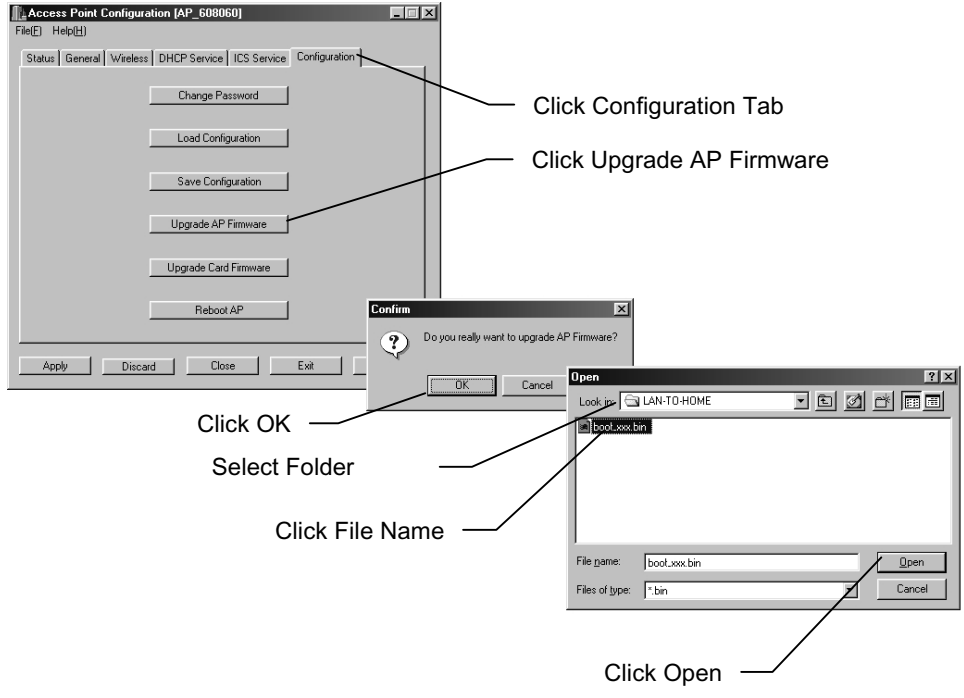
The Access Point operates using firmware, which is a set of factory-installed software instructions stored in read-only memory (ROM). The Access Point firmware is in the form of a binary file of the format "wlan_xxx" (where "xxx" identifies the Access Point firmware version). A copy of this file is stored in the folder where the Access Point Manager was installed.

To upgrade the Access Point firmware:

1. Download the updated file from the FTP site as instructed by a technical support technician.
2. Copy the file into the same folder where Access Point Manager is installed.
3. In the **Access Point Configuration** dialog box, click the **Configuration** tab.
4. Click **Upgrade AP Firmware**.
5. In the **Confirm** dialog box, click **OK**.

If directed to do so by a technical support technician, go to the directory where you saved the firmware upgrade file that you downloaded from the website.

6. In the **Open** dialog box, go to the folder where Access Point Manager is installed, click the file named wlan_xxx.bin, where "xxx" represents the Access Point firmware version, and then click **Open**.
7. When the file has been loaded and saved, an "Upgrade success" message will be displayed, and the Access Point will reboot.

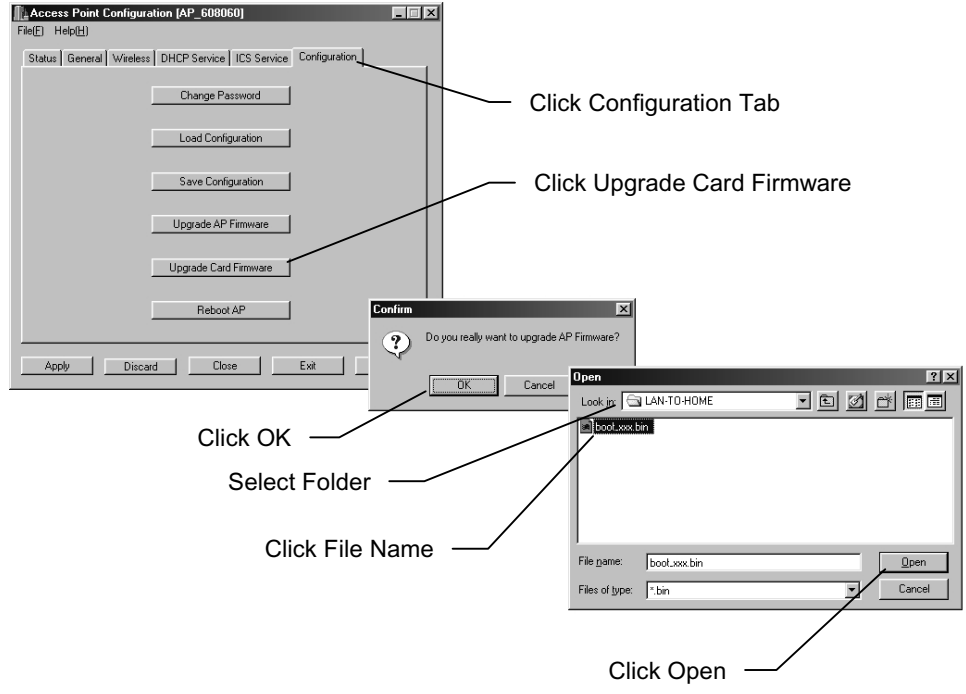

Access Point Configuration [AP_608060]
File(F) Help(H)
Status General Wireless DHCP Service ICS Service Configuration
Change Password
Load Configuration
Save Configuration
Upgrade AP Firmware
Upgrade Card Firmware
Reboot AP
Apply Discard Close Exit
Click Configuration Tab
Click Upgrade AP Firmware
Confirm
Do you really want to upgrade AP Firmware?
OK Cancel
Click OK
Open
Look in: LAN-TO-HOME
boot_xxx.bin
Select Folder
Click File Name
File name: boot_xxx.bin
Files of type: *.bin
Open Cancel
Click Open

Upgrading PCMCIA Card Firmware

To upgrade the PCMCIA card firmware:

1. Download the updated file from the FTP site as instructed by a technical support technician.
2. Copy the file into the same folder where Access Point Manager is installed.
3. In the **Access Point Configuration** dialog box, click the **Configuration** tab.
4. Click **Upgrade Card Firmware**.
5. In the **Confirm** dialog box, click **OK**.
6. In the **Open** dialog box, go to the folder where Access Point Manager is installed, and click the file named boot_xxx.bin, where "xxx" represents the Access Point firmware version, and then click **Open**.
7. When the file has been loaded and saved, an "Upgrade success" message will be displayed, and the Access Point will reboot.

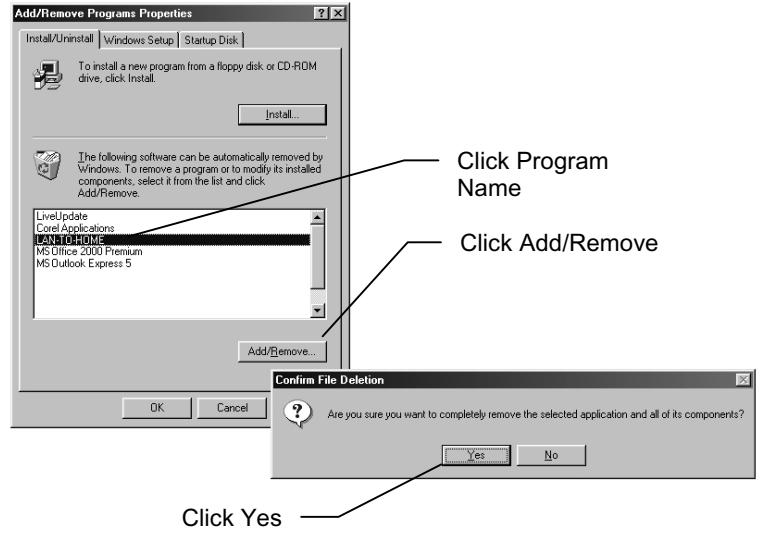
If directed to do so by a technical support technician, go to the directory where you saved the firmware upgrade file that you downloaded from the website.


Access Point Configuration [AP_608060]
File(F) Help(H)
Status General Wireless DHCP Service ICS Service Configuration
Change Password
Load Configuration
Save Configuration
Upgrade AP Firmware
Upgrade Card Firmware
Reboot AP
Apply Discard Close Exit
Click Configuration Tab
Click Upgrade Card Firmware
Confirm
Do you really want to upgrade AP Firmware?
OK Cancel
Click OK
Open
Look in: LAN-TO-HOME
boot_xxx.bin
Select Folder
Click File Name
File name: boot_xxx.bin
Files of type: *.bin
Open
Cancel
Click Open

Uninstalling the Access Point Manager

To uninstall Access Point Manager:

1. Close all open applications.
2. Click **Start**, point to **Settings**, and then click **Control Panel**.
3. In the **Control Panel** dialog box, double-click **Add/Remove Programs**.
4. In the **Add/Remove Programs Properties** dialog box, click **LAN-TO-HOME** in the list of software, and then click **Add/Remove**.
5. In the **Confirm File Deletion** dialog box, click **Yes**.


Add/Remove Programs Properties
Install/Uninstall
Windows Setup
Startup Disk
To install a new program from a floppy disk or CD-ROM drive, click Install.
Install...
The following software can be automatically removed by Windows. To remove a program or to modify its installed components, select it from the list and click Add/Remove.
LiveUpdate
Corel Applications
LAN-TO-HOME
MS Office 2000 Premium
MS Outlook Express 5
Add/Remove...
OK
Cancel
Confirm File Deletion
Are you sure you want to completely remove the selected application and all of its components?
Yes
No
Click Program Name
Click Add/Remove
Click Yes

Troubleshooting

Cannot Establish Wireless Link to Access Point

You may be able to establish a wireless link to the Access Point by trying the following:

- Make sure the power to the Access Point is connected and turned on (LEDs will light on the Access Point).
- Make sure there are no physical connection problems. Make sure the PCMCIA card is firmly seated and the cables are plugged in securely.
- Make sure the Access Point and wireless clients are configured with the same SSID and channel. If you don't know the SSID, use "any" in the **SSID** box on the wireless client **Configuration** page, or leave it blank.
- If you are sure that the Access Point is configured properly, reboot the Access Point.

Radio Interference

You may be able to eliminate any interference by trying the following:

- Reseat the PCMCIA card in the Access Point and in each wireless client.
- Increase the distance between the wireless clients, the Access Point, and the device causing the radio interference.
- Plug the wireless client into an outlet on a different branch circuit from that used by the affecting device.
- Keep the wireless client away from microwave ovens and large metal objects.
- Consult the dealer or an experienced radio technician for help.

PCMCIA Card Not Detected

If the PCMCIA card is not detected by Windows, try the following:

- Make sure the card is properly inserted in the PCMCIA slot.
- Make sure the PCMCIA slot in your computer is working.
- Contact your dealer for additional testing if there is a hardware problem with the PCMCIA card.

Cannot Connect to Another Wireless Client

If you cannot make a connection to another wireless client from your computer, it could be due to one of the following reasons:

- Incorrect SSID. Make sure the SSID is the same for all wireless clients. If you don't know the SSID, use "any" in the **SSID** box on the wireless client **Configuration** page, or leave it blank.
- Changes not recognized by your computer. Restart your computer.
- Make sure the **Log on to Windows NT domain** check box is not selected in the **Client for Microsoft Networks Properties** dialog box in the **Network Configuration** tab.
- Incorrect IP Address or Subnet Mask. Check these settings in the **TCP/IP Properties** dialog box in the **Network Configuration** tab.

Wireless Client Cannot Connect to Access Point

If you cannot make a connection to the Access Point, it could be due to one of the following reasons:

- Make sure the wireless client and Access Point have no physical connection problems.
- Make sure the SSID for the wireless client is the same as the Access Point, set to "any", or is blank.
- Make sure the Channel for the wireless client is set to the same number or is the same as the Access Point.
- Make sure the Tx Rate for the wireless client is set to Fully Automatic or is the same as the Access Point.

- Make sure the privacy type is the same as that of Access Point. If both are using a Passphrase, make sure it is the same. Also, make sure the Default Key is the same.

Technical Support

If problems are still not solved, please contact our Technical Support Department to obtain further assistance.

Taiwan Voice: +886-3-591-8089
Fax: +886-3-582-0037

Glossary

10BaseT	An IEEE standard (802.3) for operating 10 Mbps Ethernet networks (LANs) with twisted pair cabling and a wiring hub.
Access Point	An internetworking device that seamlessly connects wired and wireless networks. Several Access Points combined with a distributed system support the creation of multiple radio cells that enable roaming throughout a facility.
Ad Hoc	A network composed solely of stations within mutual communication range of each other (no Access Point connected).
BSS	*Basic Service Set*. A set of stations controlled by a single coordination function.
Channel	A medium used to pass protocol data units that can be used simultaneously in the same volume of space by other channels of the same physical layer, with an acceptably low frame error ratio due to mutual interference.
ESS	*Extended Service Set*. A set of one or more interconnected Basic Service Sets (BSSs) and integrated Local Area Networks (LANs) can be configured as an Extended Service Set.
Ethernet	The most widely used medium access method, which is defined by the IEEE 802.3 standard. Ethernet is normally a shared media LAN; i.e., all the devices on the

network segment share total bandwidth. Ethernet networks operate at 10Mbps using CSMA/CD to run over 10BaseT cables, which typically use an RJ-45 connector.

Gateway A network component that acts as an entrance to another network.

IEEE 802.11 The IEEE 802.xx is a set of specifications for LANs from the Institute of Electrical and Electronic Engineers (IEEE). Most wired networks conform to 802.3, the specification for CSMA/CD based Ethernet networks or 802.5, the specification for token ring networks. 802.11 defines the standard for wireless LANs encompassing three incompatible (non-interoperable) technologies: Frequency Hopping Spread Spectrum (FHSS), Direct Sequence Spread Spectrum (DSSS), and Infrared.

Infrastructure A wireless network centered around an Access Point. In this environment, the Access Point not only provides communication with the wired network but also mediates wireless network traffic in the immediate neighborhood.

IP *Internet Protocol*. The standard protocol within TCP/IP that defines the basic unit of information passed across an Internet connection by breaking down data messages into packets, routing and transporting the packets over network connections, then reassembling the packets at their destination. IP corresponds to the network layer in the ISO/OSI model.

IP Address An IP address is a 32-bit number that identifies each sender or receiver of information sent across the Internet. An IP address has two parts: the identifier of a particular network on the Internet and an identifier of the particular device (which can be a server or a workstation) within that network.

ISP *Internet Service Provider*. An organization that provides access to the Internet. Small ISPs provide service via modem and ISDN while the larger ones also offer private line hookups (T1, fractional T1, etc.).

LAN *Local Area Network*. A communications network that serves users within a defined geographical area. The benefits include the sharing of Internet access, files, and equipment, such as printers and storage devices. Special network cabling (10BaseT) is often used to connect the PCs together.

MAC Address *Media Access Code Address*. A unique, 48-bit number assigned to network interface cards by the manufacturer. MAC addresses are used for mapping in TCP/IP network communication.

NAT *Network Address Translation*. The translation of an Internet Protocol address (IP address) used within one network to a different IP address known within another network. One network is designated the internal network and the other is the external. The internal network then appears as one entity to the outside world.

PCMCIA *Personal Computer Memory Card International Association*. This Association develops standards for PC cards, formerly known as PCMCIA cards. These cards are available in three types, and are about the same length and width as credit cards. However, the different cards range in thickness from 3.3 mm (Type I) to 5.0 mm (Type II) to 10.5 mm (Type III). These cards can be used for various functions, including memory storage, landline modems, and wireless modems.

PS *Power Save* Mode. This mode is recommended for devices where power consumption is a major concern, such as battery-powered devices.

Radio Frequency *RF*, Terms: GHz, MHz, Hz —The international unit for measuring frequency is Hertz (Hz), equivalent to the older unit of cycles per second. One megahertz

(MHz) is one Million-Hertz. One gigahertz (GHz) is one Billion-Hertz. The standard U.S. electrical power frequency is 60 Hz, the AM broadcast radio frequency band is 0.55–1.6 MHz, the FM broadcast radio frequency band is 88–108 MHz, and wireless 802.11 LANs operate at 2.4GHz.

SSID *Service Set ID*. A group name shared by every member of a wireless network. Only client PCs with the same SSID are allowed to establish a connection.

Subnet Mask A value that defines whether your computer communicates only within your LAN or communicates outside of your LAN, where it is routed out to the rest of the Internet. A Subnet Mask that has the same first three components (for example, 255.255.255.0) is the routing pattern for a Class C address.

TCP *Transmission Control Protocol*. The standard transport level protocol that provides the full duplex, stream service on which many applications' protocols depend. TCP allows a process on one machine to send a stream of data to a process on another. Software implementing TCP usually resides in the operating system and uses the IP to transmit information across the network.

WEP *Wired Equivalent Privacy*. The optional cryptographic confidentiality algorithm specified by 802.11 used to provide data confidentiality that is subjectively equivalent to the confidentiality of a wired LAN medium that does not employ cryptographic techniques to enhance privacy.

Index

P

R

S

T

U

W