CHAPTER 5

Advanced Configuration on Mac OS 9.x

This chapter describes the advanced configuration options of the Cisco Aironet Wireless Client Utility running on the Mac OS 9.x operating system.

The following topics are covered in this chapter:

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- Getting Started, page 5-2
- Loading New Firmware, page 5-4
- Configuring Your Client Adapter, page 5-6
- Turning Your Client Adapter Radio On or Off, page 5-26
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Using the Client Utility on Mac OS 9.x

This section explains how to use pcm3x0PPC, the Mac OS 9.x client utility, to load new firmware, and to configure your client adapter for use in a wireless enterprise or home network. You can set parameters that prepare the adapter for network use, govern how the adapter transmits or receives data, and controls the adapter's operation within an infrastructure or ad hoc network.

Getting Started

To open the pcm3x0PPC client utility, follow the steps below.

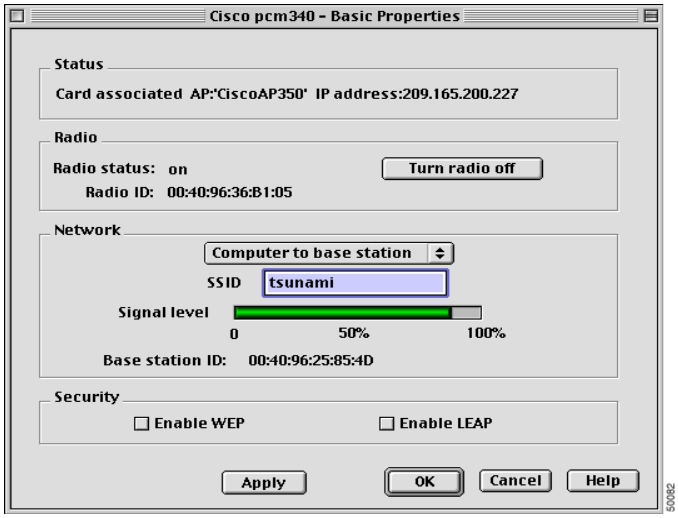
Step 1 Double-click the Macintosh hard disk icon on the desktop.

Step 2 Double-click the **Cisco pcm3x0** folder icon.

Note If you selected a location other than the default (the Cisco pcm3x0 Folder) during the installation process, select the folder in which you directed the utility to be installed.

Step 3 Double-click the **pcm3x0PPC** icon. The computer searches for the client adapter. After the adapter is found, the Basic Properties screen appears (see Figure 5-1).

Figure 5-1 Basic Properties Screen



The Basic Properties screen provides useful information about your client adapter, enables you to set a few key configuration parameters initially, and serves as a quick configuration menu for later use. This screen reflects the information and parameters for either an office network or a home network, depending on which one is set in the System Parameters screen (see Figure 5-6 on page 5-7). Office network is the default value.

The Basic Properties screen displays the following information:

- **Status** – The operational mode of your client adapter. If your client adapter is associated to an access point, the name and IP address of the access point are also displayed, if this information is available.

  Value: "Error retrieving status" – Your client adapter experienced a communication error.
  "Card associated" – Your client adapter is associated to an access point.
  "Card not associated" – Your client adapter is ready and enabled but not associated to an access point.
  "Card not enabled" – Your client adapter is ready but not enabled.
  "Card not configured" – Your client adapter is not ready and not enabled.

- **Radio Status** – Indicates whether your client adapter's radio is on or off. You can click the Turn Radio On/Off button to turn the radio on or off.
- **Radio ID** – The MAC address of your client adapter.
- **Signal Level** – The strength of your client adapter's radio signal (Range: 0 to 100%).
- **Base Station ID** – The MAC address of the access point or base station to which your client adapter is associated.

Table 5-1 lists and describes the parameters that can be set from the Basic Properties screen. Follow the instructions in the table to initially set or change any parameters.

Table 5-1 Basic Properties Parameters

<table>
<tr><th>Parameter</th><th>Description</th></tr>
<tr><td>Network</td><td>Specifies the type of network in which your client adapter is installed.
Default: Computer to Base Station

<table><tr><th>Network Type</th><th>Description</th></tr><tr><td>Computer to Computer</td><td>Also referred to as ad hoc or peer to peer. Used to set up a small network between two or more devices. For example, an ad hoc network could be set up between computers in a conference room so users can share information in a meeting.</td></tr><tr><td>Computer to Base Station</td><td>Also referred to as infrastructure. Used to set up a connection to a wired Ethernet network (through an access point or base station).</td></tr></table></td></tr>
<tr><td>SSID</td><td>The service set identifier (SSID) identifies the wireless network that you want to access.
Range: Up to 32 characters (case sensitive)

Note If you leave this parameter blank, your client adapter can associate to any access point on the network that is configured to allow broadcast SSIDs (see the AP Radio Hardware page in the access point Management System). If the access points with which you wish to communicate are not configured to allow broadcast SSIDs, the value of this parameter must match the SSID of the access points. Otherwise, you will not be able to access the network.</td></tr>
</table>

Table 5-1 Basic Properties Parameters (continued)

Parameter	Description
Enable WEP	Enables or disables Wired Equivalent Privacy (WEP) for your client adapter. • If you want to enable WEP for your client adapter, you must select this check box and create a WEP key. Refer to Chapter 4, "Security Features" for more information on WEP and instructions on setting a WEP key. **Note** This check box can also be used to disable or enable WEP after it is enabled. • If you enable LEAP for your client adapter, this check box is selected automatically. **Default:** Deselected
Enable LEAP	Enables or disables LEAP (also referred to as *EAP - Cisco Wireless*) for your client adapter. If you want to enable LEAP for your client adapter, you must select this check box and set a username and password. Refer to the "LEAP" section on page 4-11 for more information about LEAP and instructions on setting a LEAP username and password. **Note** This check box can also be used to disable or enable LEAP after it is enabled. **Default:** Deselected

Step 4 The menu bar (see Figure 5-2) in the top left-hand corner of the desktop allows you to choose menu options that you can use to configure and diagnose your client adapter.

Figure 5-2 Menu Bar

Loading New Firmware

Your client adapter's firmware is contained in the adapter's Flash memory, which allows it to be easily updated in the future. The current version of your adapter's firmware is provided in the Status screen. See the "Viewing the Current Status of Your Client Adapter" section on page 7-2 for instructions on accessing this screen.

You can find the latest firmware version at http://www.cisco.com/public/sw-center/sw-wireless.shtml. Under "Wireless Software Products," select your client adapter's series (such as Cisco Aironet 340 Series) and copy the radio firmware image file to a directory on your computer's hard drive.

Note The firmware image file available online is a compressed file and you must expand (uncompress) the file before you can use it.

Follow the instructions below to expand the compressed file and load the new firmware into your client adapter.

Note If a power failure occurs while you are loading new firmware, your client adapter may become inoperable. If this occurs, start the procedure again.

Step 1 Locate and use the Stuffit Expander program on your hard drive to expand (uncompress) the radio firmware image file you copied to your hard drive. This creates an image file (filename.img) in the folder where the compressed file is located.

Step 2 Make sure the client adapter is installed in your computer and is operational.

Step 3 Select **Load Firmware** from the Edit pull-down menu (see Figure 5-3). The Firmware window appears (see Figure 5-4).

Figure 5-3 Edit Pull-Down Menu

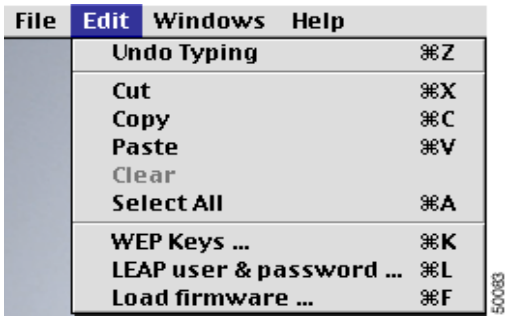
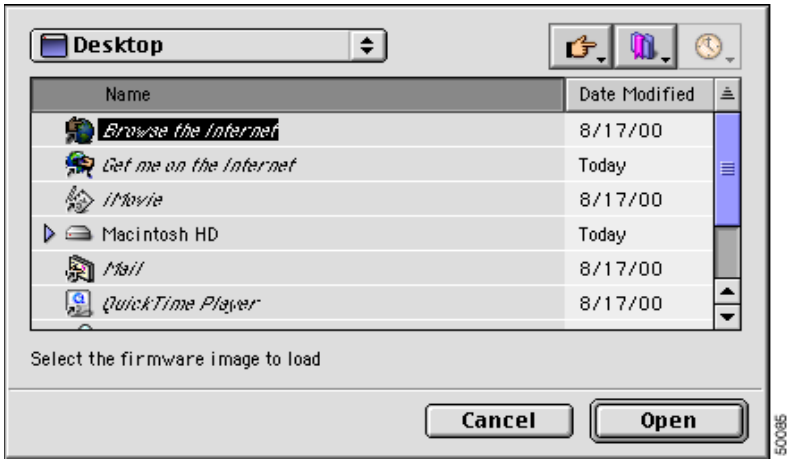


Figure 5-4 Firmware Window



Step 4 Under Name, select the location of the new firmware (for example, Macintosh HD).

Step 5 Click the new firmware image file (*.img).

Step 6 Click the **Open** button. A dialog box appears indicating the progress of the download. The selected image is loaded into the client adapter's Flash memory.

Step 7 When the *Firmware download successful* message appears, click **OK**.

Configuring Your Client Adapter

The pcm3x0PPC client utility enables you to change the configuration parameters of your client adapter. The adapter's parameters are organized into two main categories depending on your network's configuration:

- **Enterprise parameters** – Use these parameters to configure your client adapter for use in an enterprise network, such as that found in a large organization:
  - **System parameters** – Prepare the client adapter for use in a wireless network
  - **RF network parameters** – Control how the client adapter transmits and receives data
  - **Advanced infrastructure parameters** – Control how the client adapter operates within an infrastructure network
  - **Advanced ad hoc parameters** – Control how the client adapter operates within an ad hoc (peer-to-peer) network
- **Home networking parameters** – Use these parameters to prepare your client adapter to operate in a home network.

Note Despite their name, the home networking parameters are not limited to use in a home network. For instance, these parameters, which are confined to one screen, provide a convenient way to minimally configure the client adapter.

Table 5-2 enables you to quickly locate the instructions for modifying the client adapter's parameters.

Table 5-2 Locating Configuration Instructions

Parameter Category	Page Number
Enterprise	5-6
System	5-7
RF network	5-11
Advanced infrastructure	5-15
Advanced ad hoc	5-18
Home networking	5-21

Setting Enterprise Parameters

The parameters in this section can be used to configure your client adapter for use in an enterprise network. If you are planning to use your client adapter in a home network, go to the "Setting Home Networking Parameters" section on page 5-21.

Setting System Parameters

The System Parameters screen (see Figure 5-6) enables you to set parameters that prepare the client adapter for use in a wireless network. To access this screen, select **Edit Properties** from the File pull-down menu (see Figure 5-5) and click the **System Parameters** tab.

Note The Basic Properties screen and the Edit Properties screen cannot be open at the same time. Use the **Close** option from the File menu (see Figure 5-5) or click the square **Close** button in the top left-hand corner to close the screen.

Figure 5-5 File Pull-Down Menu

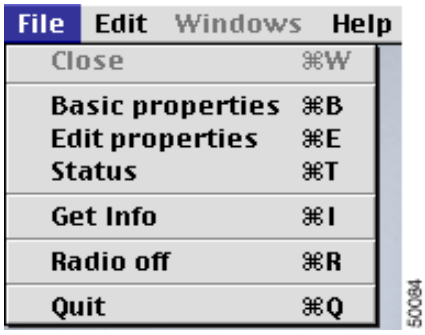


Figure 5-6 System Parameters Screen

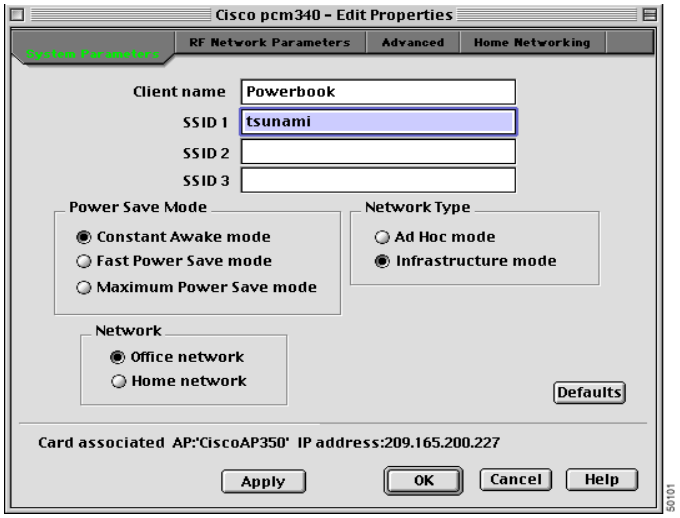


Table 5-3 lists and describes the client adapter's system parameters. Follow the instructions in the table to initially set or change any parameters.

Table 5-3 System Parameters

Parameter	Description
Client Name	A logical name for your workstation. It enables an administrator to determine which devices are connected to the access point without having to memorize every MAC address. This name is included in the access point's list of connected devices. **Range:** Up to 16 characters **Note** Each computer on the network should have a unique client name.
SSID1	The service set identifier (SSID) identifies the specific wireless network that you want to access. **Range:** Up to 32 characters (case sensitive) **Note** If you leave this parameter blank, your client adapter can associate to any access point on the network that is configured to allow broadcast SSIDs (see the AP Radio Hardware page in the Access Point Management System). If the access points with which you wish to communicate are not configured to allow broadcast SSIDs, the value of this parameter must match the SSID of the access points. Otherwise, you cannot access the network.
SSID2	An optional SSID that identifies a second distinct network and enables you to roam to that network without having to reconfigure your client adapter. See the note below. **Range:** Up to 32 characters (case sensitive)
SSID3	An optional SSID that identifies a third distinct network and enables you to roam to that network without having to reconfigure your client adapter. See the note below. **Range:** Up to 32 characters (case sensitive)

Note If your client adapter's firmware version is below 4.04, your optional SSIDs, which are set by the SSID2 and SSID3 parameters, are effective only for access points that are configured to allow broadcast SSIDs (see the AP Radio Hardware page in the Access Point Management System). To take full advantage of the optional SSID feature, upgrade your firmware to version 4.04 or higher.

Table 5-3 System Parameters (continued)

<table>
<tr><th>Parameter</th><th colspan="2">Description</th></tr>
<tr><td>Power Save Mode</td><td colspan="2">Sets your client adapter to its optimum power consumption setting.
Default: Constant Awake Mode (CAM)</td></tr>
<tr><td></td><td>Power Save Mode</td><td>Description</td></tr>
<tr><td></td><td>Constant Awake Mode</td><td>Keeps the client adapter powered up continuously so there is little lag in message response time.
Consumes the most power but offers the highest throughput. Is recommended for desktop computers and devices that use AC power.</td></tr>
<tr><td></td><td>Fast Power Save Mode</td><td>Switches between a PSP mode and CAM mode, depending on network traffic. This mode switches to CAM when retrieving a large number of packets and switches back to PSP after the packets are retrieved.
Is recommended when power consumption is a concern but you need greater throughput than that allowed by Max PSP.</td></tr>
<tr><td></td><td>Maximum Power Save Mode</td><td>Causes the access point to buffer incoming messages for the client adapter, which wakes up periodically and polls the access point to see if any buffered messages are waiting for it. The adapter can request each message and then go back to sleep.
Conserves the most power but offers the lowest throughput. Is recommended for devices for which power consumption is the ultimate concern (such as small battery-powered devices).</td></tr>
</table>

Table 5-3 System Parameters (continued)

<table>
<tr><th>Parameter</th><th>Description</th></tr>
<tr><td>Network Type</td><td>Specifies the type of network in which your client adapter is installed.
Default: Infrastructure Mode

<table><tr><th>Network Type</th><th>Description</th></tr><tr><td>Ad Hoc Mode</td><td>Often referred to as peer to peer. Used to set up a small network between two or more devices. For example, an ad hoc network could be set up between computers in a conference room so users can share information in a meeting.</td></tr><tr><td>Infrastructure Mode</td><td>Used to set up a connection to a wired Ethernet network (through an access point).</td></tr></table></td></tr>
<tr><td>Network</td><td>Specifies the network configuration in which your client adapter is used.
Default: Office Network
Note Select Office Network if your client adapter will be used in an enterprise network. If you are planning to use your client adapter in a home network, go to the “Setting Home Networking Parameters” section on page 5-21.</td></tr>
</table>

Click **Apply** at the bottom of the System Parameters screen to save any changes you have made.

Setting RF Network Parameters

The RF Network Parameters screen (see Figure 5-7) enables you to set parameters that control how and when the client adapter transmits and receives data. To access this screen, select **Edit Properties** from the File pull-down menu (see Figure 5-5 on page 5-7) and click the **RF Network Parameters** tab.

Figure 5-7 RF Network Parameters Screen

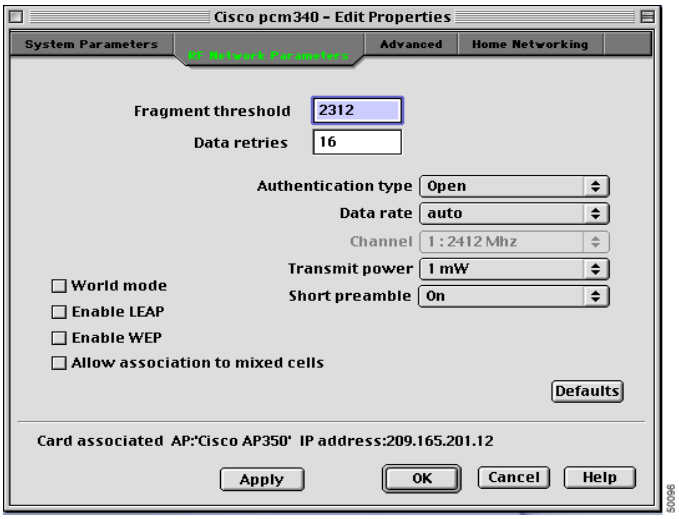


Table 5-4 lists and describes the client adapter's RF network parameters. Follow the instructions in the table to initially set or change any parameters.

Table 5-4 RF Network Parameters

Parameter	Description
Fragment Threshold	Defines the threshold above which an RF data packet is split up or fragmented. If one of those fragmented packets experiences interference during transmission, only that specific packet would need to be resent. Throughput is generally lower for fragmented packets because the fixed packet overhead consumes a higher portion of the RF bandwidth. **Range:** 256 to 2312 **Default:** 2312
Data Retries	Defines the number of times a packet is resent if the initial transmission is unsuccessful. **Range:** 1 to 128 **Default:** 16 **Note** If your network protocol performs its own retries, set this to a smaller value than the default. This way notification of a "bad" packet will be sent up the protocol stack quickly so the application can retransmit the packet if necessary.

Table 5-4 RF Network Parameters (continued)

Parameter	Description	
Authentication Type	Defines how your client adapter will attempt to authenticate to an access point. **Default:** Open	
	Authentication	**Description**
	Open	Allows your client adapter, regardless of its WEP settings, to authenticate and attempt to communicate with an access point.
	Shared Key	Allows your client adapter to communicate only with access points that have the same WEP keys. The access point sends a known unencrypted "challenge packet" to the client adapter, which encrypts the packet and sends it back to the access point. The access point attempts to decrypt the encrypted packet and sends an authentication response packet indicating the success or failure of the decryption back to the client adapter.

Note If LEAP is enabled on your client adapter, Open is the only available option.

Note The Shared Key option is available only if the client adapter has been assigned a WEP key and WEP is enabled. Refer to the Chapter 4, "Security Features" for instructions on setting a WEP key and enabling WEP.

Data Rate	Specifies the rate at which you want your client adapter to transmit or receive packets to or from access points (in infrastructure mode) or other clients (in ad hoc mode). The data rate must be auto or the same as the wireless device with which you wish to communicate. **Default:** Auto	
	Data Rate	**Description**
	Auto	Uses the 11-Mbps data rate when possible but drops to lower rates when necessary.
	1 Mbps	Offers the greatest range but the lowest throughput.
	2 Mbps	Offers less range but greater throughput than the 1 Mbps Only option.
	5.5 Mbps	Offers less range but greater throughput than the 2 Mbps Only option.
	11 Mbps	Offers the greatest throughput but the lowest range.

Table 5-4 RF Network Parameters (continued)

<table>
<tr><th>Parameter</th><th>Description</th></tr>
<tr><td>Channel</td><td>Specifies which frequency your client adapter uses as the channel for communications. These channels conform to the IEEE 802.11 Standard for your regulatory domain.
• In infrastructure mode, this parameter is set automatically and cannot be changed. The client adapter listens to the entire spectrum, selects the best access point to associate to, and uses the same frequency as that access point.
• In ad hoc mode, the channel of the client adapter must be set to match the channel used by the other clients with which you wish to communicate.
Range: Dependent on regulatory domain
Example: 1 to 11 (2412 to 2462 MHz) in North America
Note Refer to Appendix A for a list of channel identifiers, channel center frequencies, and regulatory domains for each channel.</td></tr>
<tr><td>Transmit Power</td><td>Defines the level at which your client adapter transmits power. This value must not be higher than that allowed by your country’s regulatory agency (FCC in the U.S., DOC in Canada, ETSI in Europe, MKK in Japan, etc.). When World Mode is enabled, only the transmit power levels supported by the country of operation’s regulatory agency are available.
Range: 1, 5, 15, 20, 30, 50, or 100 mW (30 mW is the maximum power level supported by 340 series client adapters)
Default: The minimum level allowed by your country’s regulatory agency
Note 15 mW is supported by 340 series client adapters only, and 20 mW is supported by 350 series client adapters only.
Note Reducing the transmit power level conserves battery power but decreases radio range.</td></tr>
<tr><td>Short Preamble</td><td>Specifies if your client adapter uses short radio headers. However, the adapter can use short radio headers only if the access point is also configured to support them. Short radio headers improve throughput performance; long radio headers ensure compatibility with clients and access points that do not support short radio headers.
Default: On
<table><tr><th>Short Preamble</th><th>Description</th></tr><tr><td>Off</td><td>Prevents short radio headers from being used during transmissions</td></tr><tr><td>On</td><td>Allows short radio headers to be used during transmissions</td></tr></table></td></tr>
</table>

Table 5-4 RF Network Parameters (continued)

Parameter	Description
World Mode	Selecting this check box enables the client adapter to assume the legal transmit power level and channel set of the access point to which it is associated. This parameter is available only in infrastructure mode and is designed for users who travel between countries because it allows the adapter to be used in different regulatory domains. **Default:** Deselected **Note** When World Mode is enabled, only the transmit power levels supported by the country of operation's regulatory agency are available.
Enable LEAP	Enables or disables LEAP for your client adapter. If you want to enable LEAP for your client adapter, you must select this check box and set a username and password. Refer to the "LEAP" section on page 4-11 for more information about LEAP and instructions on setting a LEAP username and password. **Note** This check box can also be used to disable or enable LEAP after it is enabled. **Default:** Deselected
Enable WEP	Enables or disables WEP for your client adapter. • If you want to enable WEP for your client adapter, you must select this check box and create a WEP key. Refer to the Chapter 4, "Security Features" for more information on WEP and instructions on setting a WEP key. • If you enable LEAP for your client adapter, this check box is selected automatically. **Default:** Deselected
Allow Association To Mixed Cells	If your network's access points are set to communicate with either WEP-enabled or WEP-disabled clients (that is, if the Use of Data Encryption by Stations parameter on the AP Radio Data Encryption screen is set to Optional), you must select this check box, even if your client adapter is not using WEP. If this setting is not enabled, your client adapter cannot establish a connection with the access point. **Default:** Deselected **Note** For security reasons, Cisco recommends that both WEP-enabled and WEP-disabled clients not be allowed in the same cell because broadcast packets will be sent unencrypted, even to clients running WEP.

Click **Apply** at the bottom of the RF Network Parameters screen to save any changes you have made.

Setting Advanced Infrastructure Parameters

Note You can set advanced infrastructure parameters only if your client adapter has been set to operate in an infrastructure network. See the Network Type parameter in the "Setting System Parameters" section on page 5-7.

The Advanced screen (see Figure 5-8) allows you to set parameters that control how the client adapter operates within an infrastructure network. To access this screen, select **Edit Properties** from the File pull-down menu (see Figure 5-5 on page 5-7) and click the **Advanced** tab.

Figure 5-8 Advanced Screen

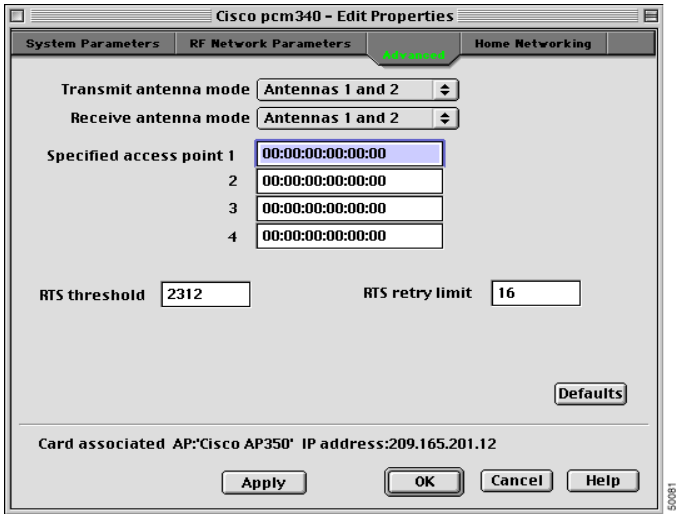


Table 5-5 lists and describes the client adapter's advanced infrastructure parameters. Follow the instructions in the table to initially set or change any parameters.

Table 5-5 Advanced (Infrastructure) Parameters

Parameter	Description
Transmit Antenna Mode	Specifies the antenna that your client adapter uses to transmit data.. • PC card – The PC card's integrated, permanently attached antenna operates best when used in Antennas 1 and 2 mode (also referred to as *diversity mode*). Diversity mode allows the card to use the better signal from its two antenna ports. **Range:** Antenna 1 Only, Antenna 2 Only, Antennas 1 and 2 **Default:** Antennas 1 and 2 • LM card – The LM card is shipped without an antenna; however, an antenna can be connected through the card's external connector. If a snap-on antenna is used, diversity mode is recommended. Otherwise, select the mode that corresponds to the antenna port to which the antenna is connected. **Range:** Antenna 1 Only, Antenna 2 Only, Antennas 1 and 2 **Default:** Antennas 1 and 2 • PCI client adapter – The PCI client adapter must use the Antenna 1 Only option. **Default:** Antenna 1 Only
Receive Antenna Mode	Specifies the antenna that your client adapter uses to receive data. See the Transmit Antenna Mode parameter above for information on the options available for your client adapter.
Specified Access Point 1- 4	Specifies the MAC addresses of up to four preferred access points to which you want to associate. If the specified access points are not found or you roam out of range, you may associate to another access point. You can enter the MAC addresses of the access points in the edit boxes or choose not to specify access points by leaving the boxes blank. **Default:** No access points specified **Note** This parameter should be used only for access points that are in repeater mode. For normal operation, these fields should be left blank because specifying an access point slows down the roaming process.

Table 5-5 Advanced (Infrastructure) Parameters (continued)

Parameter	Description
RTS Threshold	Specifies the size of the data packet that the low-level RF protocol issues to a request-to-send (RTS) packet. Setting this parameter to a small value causes RTS packets to be sent more often. When this occurs, more of the available bandwidth is consumed and the throughput of other network packets is reduced, but the system is able to recover faster from interference or collisions, which may be caused from a high multipath environment characterized by obstructions or metallic surfaces. **Range:** 0 to 2312 **Default:** 2312 **Note** Refer to the IEEE 802.11 Standard for more information on the RTS/CTS mechanism.
RTS Retry Limit	Specifies the number of times the client adapter resends a request-to-send (RTS) packet if it does not receive a clear-to-send (CTS) packet from the previously sent RTS packet. You can type a number in the edit box to change this value. Setting this parameter to a large value decreases the available bandwidth whenever interference is encountered but makes the system more immune to interference and collisions, which may be caused from a high multipath environment characterized by obstructions or metallic surfaces. **Range:** 1 to 128 **Default:** 16 **Note** Refer to the IEEE 802.11 Standard for more information on the RTS/CTS mechanism.

Click **Apply** at the bottom of the Advanced screen to save any changes you have made.

Setting Advanced Ad Hoc Parameters

Note You can set advanced ad hoc parameters only if your client adapter has been set to operate in an ad hoc network. See the Network Type parameter in the "Setting System Parameters" section on page 5-7.

The Advanced screen (see Figure 5-9) enables you to set parameters that control how the client adapter operates within an ad hoc network. To access this screen, select **Edit Properties** from the File pull-down menu (see Figure 5-5 on page 5-7) and click the **Advanced** tab.

Figure 5-9 Advanced Screen

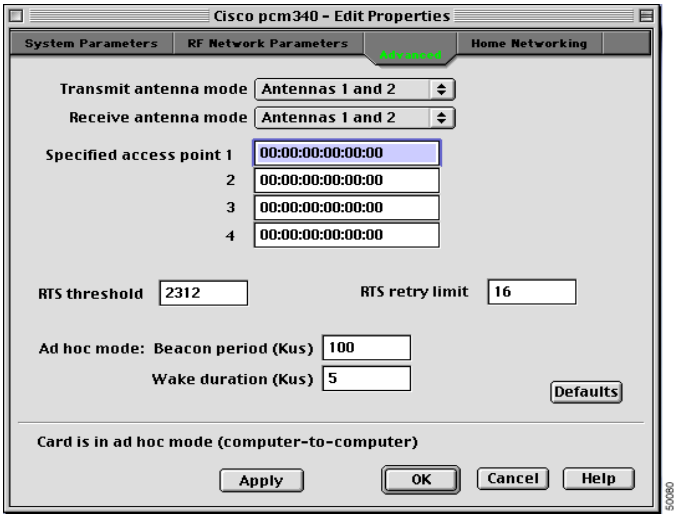


Table 5-6 lists and describes the client adapter's advanced ad hoc parameters. Follow the instructions in the table to initially set or change any parameters.

Table 5-6 Advanced (Ad Hoc) Parameters

Parameter	Description
Transmit Antenna Mode	Specifies the antenna that your client adapter uses to transmit data. • PC card – The PC card's integrated, permanently attached antenna operates best when used in Antennas 1 and 2 mode (also referred to as *diversity mode*). Diversity mode allows the card to use the better signal from its two antenna ports. **Range:** Antenna 1 Only, Antenna 2 Only, Antennas 1 and 2 **Default:** Antennas 1 and 2 • LM card – The LM card is shipped without an antenna; however, an antenna can be connected through the card's external connector. If a snap-on antenna is used, diversity mode is recommended. Otherwise, select the mode that corresponds to the antenna port to which the antenna is connected. **Range:** Antenna 1 Only, Antenna 2 Only, Antennas 1 and 2 **Default:** Antennas 1 and 2 • PCI client adapter – The PCI client adapter must use the Antenna 1 Only option. **Default:** Antenna 1 Only
Receive Antenna Mode	Specifies the antenna that your client adapter uses to receive data. See the Transmit Antenna Mode parameter above for information on the options available for your client adapter.
Specified Access Point 1- 4	These parameters are not available in ad-hoc mode.
RTS Threshold	Specifies the size of the data packet that the low-level RF protocol issues to a request-to-send (RTS) packet. Setting this parameter to a small value causes RTS packets to be sent more often. When this occurs, more of the available bandwidth is consumed and the throughput of other network packets is reduced, but the system is able to recover faster from interference or collisions, which may be caused from a high multipath environment characterized by obstructions or metallic surfaces. **Range:** 0 to 2312 **Default:** 2312 **Note** Refer to the IEEE 802.11 Standard for more information on the RTS/CTS mechanism.

Table 5-6 Advanced (Ad Hoc) Parameters (continued)

Parameter	Description
RTS Retry Limit	Specifies the number of times the client adapter resends a request-to-send (RTS) packet if it does not receive a clear-to-send (CTS) packet from the previously sent RTS packet. Setting this parameter to a large value decreases the available bandwidth whenever interference is encountered but makes the system more immune to interference and collisions, which may be caused from a high multipath environment characterized by obstructions or metallic surfaces. **Range:** 1 to 128 **Default:** 16 **Note** Refer to the IEEE 802.11 Standard for more information on the RTS/CTS mechanism.
Beacon Period (Kμs)	Specifies the duration between beacon packets, which are used to help clients find each other in ad hoc mode. **Range:** 20 to 976 Kμs **Default:** 100 Kμs **Note** Kμs is a unit of measurement in software terms. K = 1024, $\mu = 10^{-6}$, and s = seconds, so Kμs = .001024 seconds, 1.024 milliseconds, or 1024 microseconds.
Wake Duration (Kμs)	Specifies the amount of time following a beacon that the client adapter stays awake to receive announcement traffic indication message (ATIM) packets, which are sent to the adapter to keep it awake until the next beacon. This parameter is used only in Power Save Mode (Max PSP or Fast PSP). Refer to the Power Save Mode parameter in the "Setting System Parameters" section on page 5-7. **Range:** 5 to 60 Kμs **Default:** 5 Kμs

Click **Apply** at the bottom of the Advanced screen to save any changes you have made.

Setting Home Networking Parameters

The parameters in this section can be used to configure your client adapter for use in a home (non-enterprise) network. If you are planning to use your client adapter in an enterprise network, go to the "Setting Enterprise Parameters" section on page 5-6.

The Home Networking screen (see Figure 5-10) enables you to set parameters that prepare the client adapter to operate in a home network. To access this screen, select **Edit Properties** from the File pull-down menu (see Figure 5-5 on page 5-7) and click the **Home Networking** tab.

Figure 5-10 Home Networking Screen

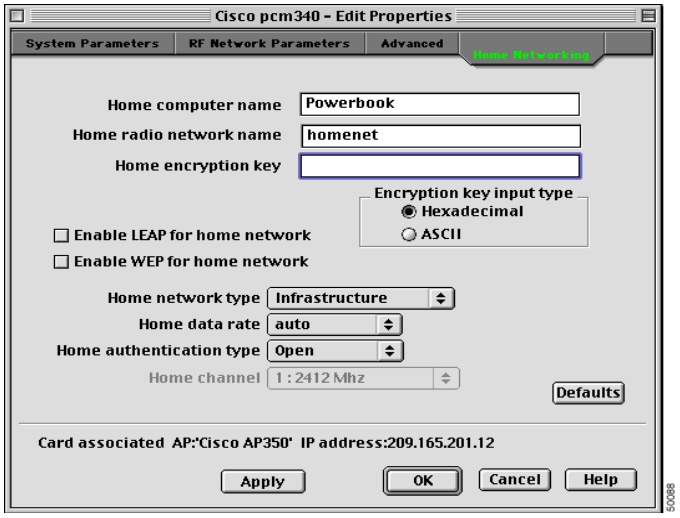


Table 5-7 lists and describes the client adapter's home networking parameters. Follow the instructions in the table to initially set or change any parameters.

Table 5-7 Home Networking Parameters

<table>
<tr><th>Parameter</th><th>Description</th></tr>
<tr><td>Home Computer Name</td><td>The client name for the home network. It is a logical name for your workstation. It allows you to determine which devices are connected to the base station (the home equivalent of an access point) without having to memorize every MAC address. This name is included in the base station's list of connected devices.
Range: Up to 16 characters
Note Each computer on the home network must have a unique computer name.</td></tr>
<tr><td>Home Radio Network Name</td><td>The service set identifier (SSID) for the home network. It allows you to access the home network.
Range: Up to 32 characters (case sensitive)
Note Only one SSID can be set in a home network, and each device on the network must use the same SSID.</td></tr>
<tr><td>Encryption Key Input Type</td><td>Specifies whether the WEP key is entered in hexadecimal characters or ASCII text.
Default: Hexadecimal
<table><tr><th>Encryption Key Input Type</th><th>Description</th></tr><tr><td>Hexadecimal</td><td>Specifies that the WEP key be entered in hexadecimal characters, which include 0-9, A-F, and a-f.
Example:ADC423BE04</td></tr><tr><td>ASCII Text</td><td>Specifies that the WEP key be entered in ASCII text, which includes alpha characters, numbers, and punctuation marks.
Example:ZZ18YXPRA3</td></tr></table></td></tr>
<tr><td>Home Encryption Key</td><td>The WEP key for the home network. Refer to the Chapter 4, "Security Features" for information on WEP keys.
Range: Up to 13 characters (case sensitive in ASCII format)
Note Only one WEP key can be set in a home network, and each device on the network must use the same key.</td></tr>
</table>

Table 5-7 Home Networking Parameters (continued)

<table>
<tr><th>Parameter</th><th>Description</th></tr>
<tr><td>Enable LEAP for Home Network</td><td>Enables or disables LEAP for your client adapter.

If you want to enable LEAP for your client adapter, you must select this check box and set a username and password. Refer to Chapter 4, “Security Features” for more information about LEAP and instructions on setting a LEAP username and password.

Note This check box can also be used to disable or enable LEAP after it is enabled.

Default: Deselected</td></tr>
<tr><td>Enable WEP for Home Network</td><td>Enables or disables WEP for your client adapter.

• If you want to enable WEP for your client adapter, you must select this check box and create a WEP key. Refer to the Chapter 4, “Security Features” for more information on WEP and instructions on setting a WEP key.

Note This check box can also be used to disable or enable WEP after it is enabled.

• If you enable LEAP for your client adapter, this check box is selected automatically.

Default: Deselected

Note 40-bit client adapters cannot be used with the Cisco Aironet 340 Series Base Station.</td></tr>
<tr><td>Home Network Type</td><td>Specifies the type of network in which your client adapter is installed.

Default: Infrastructure

<table><tr><th>Home Network Type</th><th>Description</th></tr><tr><td>Ad Hoc</td><td>Also referred to as peer to peer. Used to set up a small network between two or more devices. For example, a network without a base station could be set up between computers in a room so information can be shared.</td></tr><tr><td>Infrastructure</td><td>Used to set up a connection to a wired Ethernet network (through a base station).</td></tr></table></td></tr>
</table>

Table 5-7 Home Networking Parameters (continued)

Parameter	Description
Home Data Rate	Specifies the rate at which you want your client adapter to transmit or receive packets to or from other devices on the home network. The data rate must be auto or the same as the wireless device with which you wish to communicate. **Default:** Auto

Home Data Rate	Description
Auto	Uses the 11-Mbps data rate when possible but drops to lower rates when necessary.
1 Mbps	Offers the greatest range but the lowest throughput.
2 Mbps	Offers less range but greater throughput than the 1 Mbps Only option.
5.5 Mbps	Offers less range but greater throughput than the 2 Mbps Only option.
11 Mbps	Offers the greatest throughput but the lowest range.

Table 5-7 Home Networking Parameters (continued)

<table>
<tr><th>Parameter</th><th>Description</th></tr>
<tr><td>Home Authentication Type</td><td>Defines how your client adapter attempts to authenticate to a base station.

If LEAP is enabled on your client adapter, Open is the only available option.

The Shared Key option is available only if the client adapter is assigned a WEP key and WEP is enabled. For additional information, refer to the Chapter 4, “Security Features.”

Default: Open

<table>
<tr><th>Authentication</th><th>Description</th></tr>
<tr><td>Open</td><td>Allows your client adapter, regardless of its WEP settings, to authenticate and attempt to communicate with a base station.</td></tr>
<tr><td>Shared Key</td><td>Allows your client adapter to communicate only with base stations that have the same WEP keys.

The base station sends a known unencrypted “challenge packet” to the client adapter, which encrypts the packet and sends it back to the base station. The base station attempts to decrypt the encrypted packet and sends an authentication response packet indicating the success or failure of the decryption back to the client adapter.</td></tr>
</table>
</td></tr>
<tr><td>Home Channel</td><td>Specifies which frequency your client adapter uses as the channel for communications. These channels conform to the IEEE 802.11 Standard for your regulatory domain.

• If your home network uses a base station, this parameter does not appear because it is set automatically and cannot be changed. The client adapter uses the same frequency as the base station.

• If your home network does not use a base station, the channel of the client adapter must be set to match the channel used by the other clients with which you wish to communicate.

Range: Dependent on regulatory domain
Example: 1 to 11 (2412 to 2462 MHz) in North America

Note Refer to Appendix A for a list of channel identifiers, channel center frequencies, and regulatory domains for each channel.</td></tr>
</table>

Click **Apply** at the bottom of the Home Networking screen to save any changes you have made.

Go to the “Specifying a Home Network Configuration” section below for instructions on activating a home network configuration.

Specifying a Home Network Configuration

After you have set the parameters to prepare your client adapter for use in a home network, you must specify a home network configuration. To do so, follow the instructions below.

Step 1 Select **Edit Properties** from the File pull-down menu (see Figure 5-5 on page 5-7) and click the **System Parameters** tab. The System Parameters screen appears (see Figure 5-6 on page 5-7).

Step 2 Select **Home Network** under Network.

Step 3 Click **Apply** to save this setting.

Turning Your Client Adapter Radio On or Off

Your client adapter radio can be turned on or off. Turning the radio off prevents the adapter from transmitting RF energy. You might want to turn off the client adapter radio when you are not transmitting data and want to conserve battery power or when you are using a laptop on an airplane and want to prevent the adapter's transmissions from potentially interfering with electronic devices.

If the radio is not turned off, it periodically sends out inquiry packets even if it is not associated to an access point, as required by the 802.11 specification. Therefore, it is important to turn it off around devices that are susceptible to RF interference.

Note Your client adapter is not associated while the radio is off.

Follow the steps below to turn the client adapter radio on or off.

Step 1 If your client adapter radio is on, select **Radio Off** from the File pull-down menu (see Figure 5-11) or click the **Turn Radio Off** button on the Basic Properties screen (see Figure 5-12) to turn the radio off.

Step 2 If your client adapter radio is off, select **Radio On** from the File pull-down menu or click the **Turn Radio On** button on the Basic Properties screen to turn the radio on.

Figure 5-11 File Pull-Down Menu

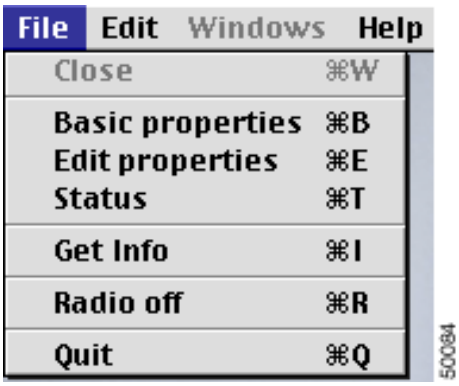
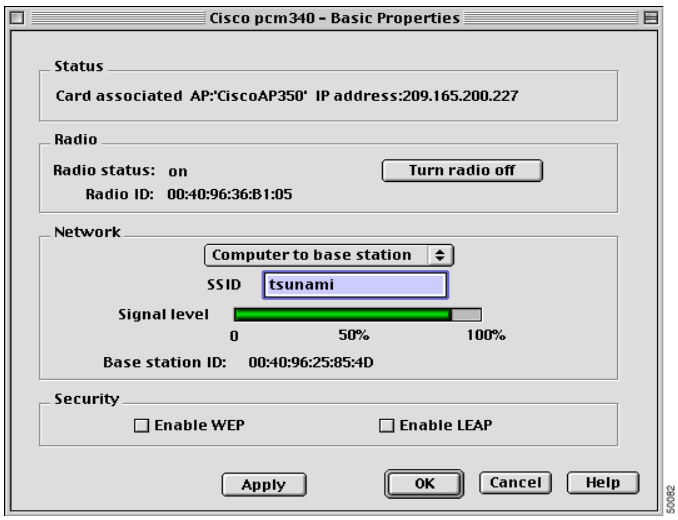


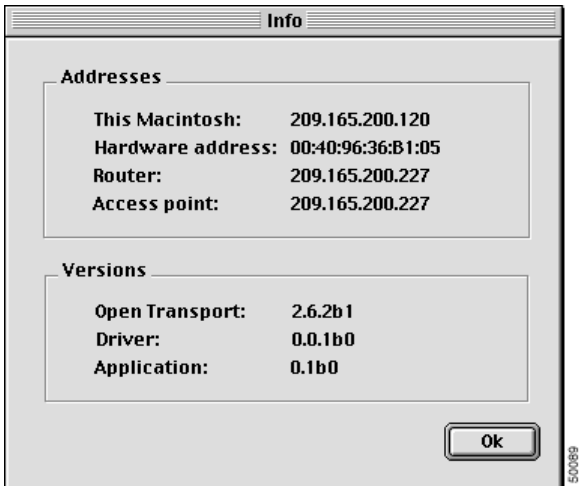
Figure 5-12 Basic Properties Screen



Obtaining System Address and Software Version Information

To obtain information on system addresses and versions of software, select **Get Info** from the File pull-down menu (see Figure 5-11 on page 5-26). The Info screen (see Figure 5-13) appears.

Figure 5-13 Info Screen



The top of the screen displays the IP address and MAC address of your computer, the IP address of your network's router, and the IP address of the access point. The bottom of the screen displays the version of the open transport software that is used with the driver, the version of the driver, and the version of the pcm3x0PPC client utility.

You can also determine the pcm3x0PPC version by selecting the **apple** icon (see Figure 5-14) from the menu bar and clicking **About pcm3x0PPC**.

Figure 5-14 Apple Pull-Down Menu

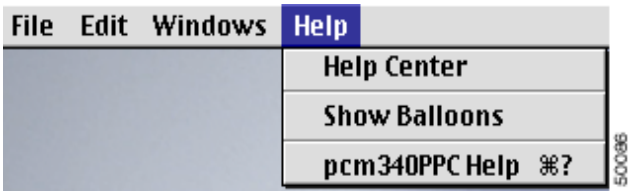
The About pcm3x0PPC screen appears (see Figure 5-15).

Figure 5-15 About pcm3x0PPC Screen

Getting Help

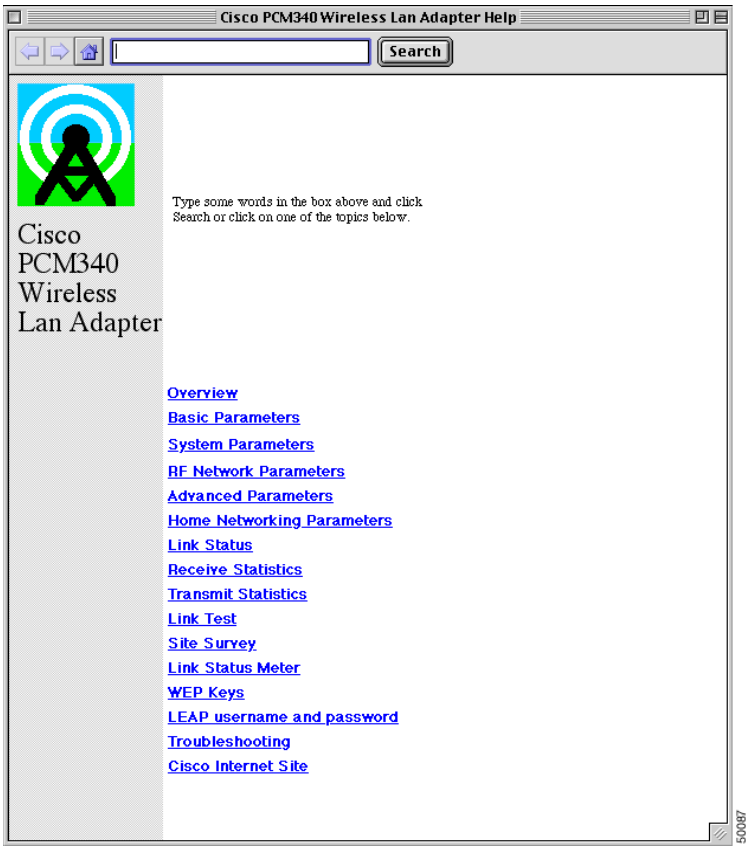
To access information about the pcm3x0PPC client utility, select **pcm3x0PPC Help** from the Help pull-down menu (see Figure 5-16).

Figure 5-16 Help Pull-Down Menu



The Cisco PCM3x0 Wireless LAN Adapter screen (see Figure 5-17) appears.

Figure 5-17 Cisco PCM3x0 Wireless LAN Adapter Screen



From the Cisco PCM3x0 Wireless LAN Adapter screen, you can access additional information.

- To search for a specific word or phrase, enter the word in the Search box at the top of the screen and click **Search**.
- To access information on a specific topic, click the desired topic in the middle of the screen.

Exiting the Client Utility

To exit the pcm3x0PPC client utility, select **Quit** from the File pull-down menu (see Figure 5-11 on page 5-26).