



Product Overview

This chapter describes the Cisco Aironet 340 and 350 Series Wireless LAN Client Adapters and illustrates their role in a wireless network.

The following topics are covered in this chapter:

- [Introduction to the Client Adapters, page 1-2](#)
- [Hardware Components, page 1-3](#)
- [Software Components, page 1-4](#)
- [Network Configurations Using the Client Adapter, page 1-6](#)

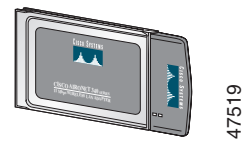
Introduction to the Client Adapters

The Cisco Aironet 340 and 350 Series Wireless LAN Client Adapters are 30- and 100-milliwatt (mW) radio modules that provide transparent wireless data communications between fixed, portable, or mobile devices and other wireless devices or a wired network infrastructure. The client adapters are fully compatible when used in devices supporting Plug-and-Play (PnP) technology.

The primary function of the client adapters is to transfer data packets transparently through the wireless infrastructure through an access point connected to a wired LAN. The adapters operate similarly to a standard network product except that the cable is replaced with a radio connection and an access point is required to make the connection to the wire. No special wireless networking functions are required, and all existing applications that operate over a network can operate using the adapters.

This document covers two types of client adapters:

- **PC card** (model number: AIR-PCM3xx) – A PCMCIA card radio module that can be inserted into any device equipped with an *external* Type II or Type III PC card slot. Host devices can include laptops, notebook computers, personal digital assistants, and handheld or portable devices.
- **LM card** (model number: AIR-LMC3xx) – A PCMCIA card radio module that can be inserted into any device equipped with an *internal* Type II or Type III PC card slot. Host devices usually include handheld or portable devices.



47519



47893



Note

The first *x* in the product model number represents the client adapter series (340 or 350). The second *x* indicates the wired equivalent privacy (WEP) level of the card, where 0 = no WEP capability, 1 = 40-bit WEP, and 2 = 128-bit WEP. However, if the second *x* is a 0 but the model number contains K9, the card is 128-bit WEP capable.

Terminology

The following terms are used throughout this document:

- **client adapter** – Refers to both PC cards and LM cards.
- **PC card** or **LM card** – Refers to only a specific adapter.
- **workstation** (or **station**) – Refers to a computing device with an installed client adapter.
- **infrastructure device** – Refers to a device that connects client adapters to a wired LAN, such as an access point, bridge, or base station. Throughout this document, *access point* is used to represent infrastructure devices in general.

Hardware Components

The client adapter has three major hardware components: a radio, a radio antenna, and two LEDs.

Radio

The 340 and 350 series client adapters contain a direct-sequence spread spectrum (DSSS) radio that operates in the 2.4-GHz license-free Industrial Scientific Medical (ISM) band. The radio transmits data over a half-duplex radio channel operating at up to 11 Mbps.

DSSS technology distributes a radio signal over a wide range of frequencies and then returns the signal to the original frequency range at the receiver. The benefit of this technology is its ability to protect the data transmission from interference. For example, if a particular frequency encounters noise or interference or both, enough redundancy is built into the signal on other frequencies that the client adapter usually will still be successful in its transmission.

Radio Antenna

The type of antenna used depends on your client adapter:

- PC cards have an integrated, permanently attached diversity antenna. The benefit of the diversity antenna system is improved coverage. The system works by allowing the card to switch and sample between its two antenna ports in order to select the optimum port for receiving data packets. As a result, the card has a better chance of maintaining the radio frequency (RF) connection in areas of interference. The antenna is housed within the section of the card that hangs out of the PC card slot when the card is installed.
- LM cards are shipped without an antenna; however, an antenna can be connected through the card's external connector.



Note

External antennas used in combination with a power setting resulting in a radiated power level above 100 mW equivalent isotropic radiated power (EIRP) are not allowed for use within the European community and other countries that have adopted the European R&TTE directive or the CEPT recommendation Rec 70.03 or both. For more details on legal combinations of power levels and antennas in those countries, refer to the [“Declaration of Conformity with Regard to the R&TTE Directive 1999/5/EC”](#) section on page C-4 and the [“Maximum Power Levels and Antenna Gains”](#) section on page D-3.

LEDs

The client adapter has two LEDs that glow or blink to indicate the status of the adapter or to convey error messages. Refer to the [Chapter 8](#) for an interpretation of the LED codes.

Software Components

The client adapter has three major software components: radio firmware, a driver, and client utilities.

Radio Firmware

The firmware, which is contained in the client adapter's Flash memory, controls the adapter's radio. The client adapter is shipped with the firmware installed; however, a more recent version of the firmware may be available from Cisco.com.

**Note**

Cisco recommends using the most current version of radio firmware. [Chapter 7](#) provides instructions for determining the version of your client adapter's firmware and upgrading it if necessary.

Driver

The driver provides an interface between the Windows CE device and the client adapter, thereby enabling Windows CE and the applications it runs to communicate with the adapter. The driver is provided on the Cisco Aironet Wireless LAN Client Adapters CD that shipped with the client adapter and must be installed before the adapter can be used. [Chapter 3](#) provides instructions for installing the driver.

**Note**

The CD has the latest version of the driver available at the time of pressing; however, a more recent version of the driver may be available from Cisco.com. Cisco recommends installing the most current version of the driver. [Chapter 3](#) provides instructions for installing the driver from either location.

Client Utilities

The client utilities are optional applications that interact with the radio firmware to adjust client adapter settings and display information about the adapter. The client utilities and online help files are installed with the driver.

**Note**

The CD has the latest version of the client utilities available at the time of pressing; however, a more recent version of the client utilities may be available from Cisco.com. Cisco recommends installing the most current version of the client utilities. [Chapter 3](#) provides instructions for installing the client utilities from either location.

Overview of the Client Utilities

Table 1-1 lists the client utilities supported by Windows CE, describes their function, and indicates the chapter where they are explained.

Table 1-1 Overview of the Client Utilities

Client Utility	Description	Location
Aironet Client Utility (ACU)	Configures your client adapter for use in a wireless network and enables the adapter's security features	Chapter 4 and Chapter 5
Cisco Link Status (CLS)	Enables you to view the current status of your client adapter	Chapter 6
Client Encryption Manager (CEM)	Enables you to set a static Wired Equivalent Privacy (WEP) key for your client adapter	Chapter 4
Client Statistics Utility (CSU)	Enables you to view statistics that indicate how data is being received and transmitted by your client adapter	Chapter 6
Load New Firmware (LNF)	Enables you to load new firmware for your client adapter	Chapter 7
Site Survey Tool (SST)	Enables people responsible for conducting a site survey to determine the best placement for infrastructure devices within a wireless network	Appendix E
Wireless Login Module (WLM)	Enables you to set a LEAP username and password to be used to authenticate to a RADIUS server	Chapter 4

Buttons on the Client Utility Screens

The buttons on the client utility screens are used to perform specific functions. Table 1-2 describes the most common buttons.

Table 1-2 Buttons on the Client Utility Screens

Button	Description
About	Displays the version of the client utility
Cancel	Exits the screen without saving any changes
Defaults	Displays the default value of each parameter
OK	Saves any changes and exits the screen
Start	Initiates a test
Stop	Stops a test that is running
X	Exits the screen without saving any changes
? (available on HPCs only)	Provides information on the screen and its parameters

Network Configurations Using the Client Adapter

The client adapter can be used in a variety of network configurations. In some configurations, access points provide connections to your network or act as repeaters to increase wireless communication range. The maximum communication range is based on how you configure your wireless network.

This section describes and illustrates the two most common network configurations:

- Ad hoc wireless local area network (LAN)
- Wireless infrastructure with workstations accessing a wired LAN

For examples of more complex network configurations involving client adapters and access points, refer to the *Cisco Aironet Access Point Hardware Installation Guide*.

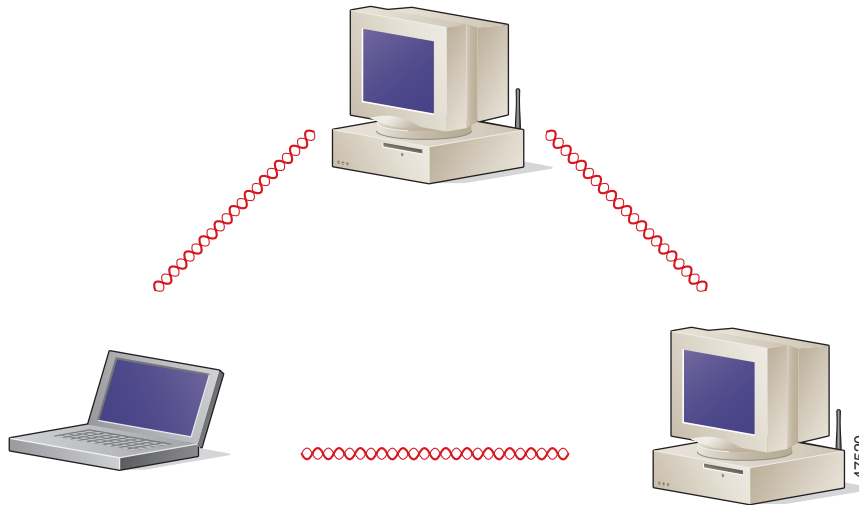
**Note**

Refer to [Chapter 5](#) for information on setting the client adapter's network mode.

Ad Hoc Wireless LAN

An ad hoc (or *peer-to-peer*) wireless LAN (see [Figure 1-1](#)) is the simplest wireless LAN configuration. In a wireless LAN using an ad hoc network configuration, all devices equipped with a client adapter can be linked together and communicate directly with each other.

Figure 1-1 Ad Hoc Wireless LAN



Wireless Infrastructure with Workstations Accessing a Wired LAN

A microcellular network can be created by placing two or more access points on a LAN. [Figure 1-2](#) shows a microcellular network with workstations accessing a wired LAN through several access points.

This configuration is useful with portable or mobile stations because it allows them to be directly connected to the wired network even while moving from one microcell domain to another. This process is transparent, and the connection to the file server or host is maintained without disruption. The mobile station stays connected to an access point as long as it can. However, once the transfer of data packets needs to be retried or beacons are missed, the station automatically searches for and associates to another access point. This process is referred to as *seamless roaming*.

Figure 1-2 Wireless Infrastructure with Workstations Accessing a Wired LAN

