CHAPTER 1

Overview

Cisco Aironet Access Points (hereafter called *access points*) provide a secure, affordable, and easy-to-use wireless LAN solution that combines mobility and flexibility with the enterprise-class features required by networking professionals. With a management system based on Cisco IOS software, Cisco Aironet access points are Wi-Fi certified, 802.11a-compliant, 802.11b-compliant, 802.11g-compliant, and pre-802.11n-compliant wireless LAN transceivers.

Note The 802.11n standard has not been ratified. Therefore, references to 802.11n throughout this document refer to 802.11n Draft 2.0.

An access point serves as the connection point between wireless and wired networks or as the center point of a stand-alone wireless network. In large installations, wireless users within radio range of an access point can roam throughout a facility while maintaining seamless, uninterrupted access to the network.

You can configure and monitor the wireless device using the command-line interface (CLI), the browser-based management system, or Simple Network Management Protocol (SNMP).

Each access point platform contains one or two radios:

- The 1100 series access point uses a single, 802.11b, 2.4-GHz mini-PCI radio that can be upgraded to an 802.11g, 2.4-GHz radio.
- The 1130 series access point has integrated 802.11g and 802.11a radios and antennas.
- The 1200 series access point can contain two radios: a 2.4-GHz radio in an internal mini-PCI slot and a 5-GHz radio module in an external, modified cardbus slot. The 1200 series access point supports one radio of each type, but it does not support two 2.4-GHz or two 5-GHz radios.
- The 1230 series access point is pre-configured to include both an 802.11g and an 802.11a radio. It has antenna connectors for externally attached antennas for both radios.
- The 1240 series access point uses two externally connected antennas for each band instead of built-in antennas.
- The 1250 series access point uses three externall connected antennas for its pre-802.11n radios operating on the 2.4- or 5-GHz frequency bands.
- The 1300 series outdoor access point/bridge uses an integrated antenna and can be configured to use external, dual-diversity antennas.

This chapter provides information on the following topics:

Features

This section lists features supported on access points running Cisco IOS software.

Note The proxy Mobile-IP feature is not supported in Cisco IOS Releases 12.3(2)JA and later.

Note Cisco IOS Release 12.3(8)JEC is a maintenance release only. No new features are included in this release.

Features Introduced in This Release

Table 1-1 lists the new features in Cisco IOS Release 12.4(10b)JA and the supported platforms.

Table 1-1 New Cisco IOS Software Features for Cisco IOS Release 12.4(10b)JA

Feature	Cisco Aironet 1100 Series Access Points	Cisco Aironet 1240 Series Access Points	Cisco Aironet 1300 Series Outoor Access Point/Bridge	Cisco Aironet 1400 Series Wireless Bridge
J52 to W52 migration on the RM20 radio for Japan.	x	x	–	–
Support for Cisco Aironet 1250 Series Access Points	–	x	–	–
Support for the Cisco 1250 802.11n radio	–	x	–	

Management Options

You can use the wireless device management system through the following interfaces:

- The Cisco IOS command-line interface (CLI), which you use through a console port or Telnet session. Use the **interface dot11radio** global configuration command to place the wireless device into the radio configuration mode. Most of the examples in this manual are taken from the CLI. Chapter 3, "Using the Command-Line Interface," provides a detailed description of the CLI.
- A web-browser interface, which you use through a Web browser. Chapter 2, "Using the Web-Browser Interface," provides a detailed description of the web-browser interface.
- Simple Network Management Protocol (SNMP). Chapter 18, "Configuring SNMP," explains how to configure the wireless device for SNMP management.

Roaming Client Devices

If you have more than one wireless device in your wireless LAN, wireless client devices can roam seamlessly from one wireless device to another. The roaming functionality is based on signal quality, not proximity. When a client's signal quality drops, it roams to another access point.

Wireless LAN users are sometimes concerned when a client device stays associated to a distant access point instead of roaming to a closer access point. However, if a client's signal to a distant access point remains strong and the signal quality is high, the client will not roam to a closer access point. Checking constantly for closer access points would be inefficient, and the extra radio traffic would slow throughput on the wireless LAN.

Using CCKM and a device providing WDS, client devices can roam from one access point to another so quickly that there is no perceptible delay in voice or other time-sensitive applications.

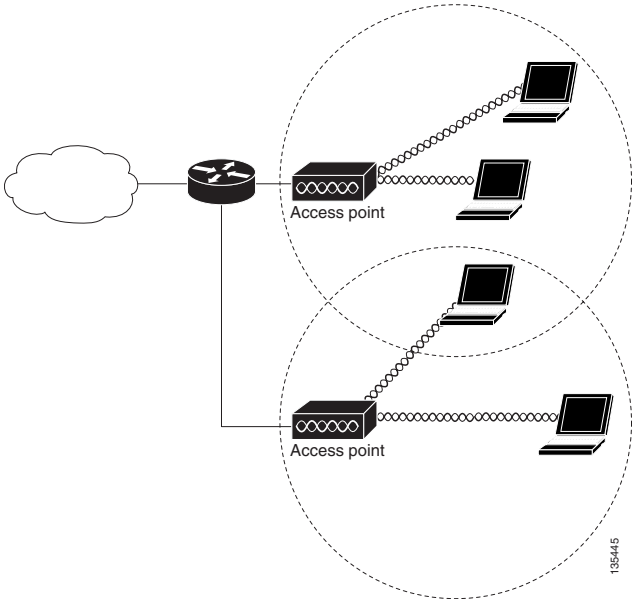
Network Configuration Examples

This section describes the access point's role in common wireless network configurations. The access point's default configuration is as a root unit connected to a wired LAN or as the central unit in an all-wireless network. Access points can also be configured as repeater access points, bridges, and workgroup bridges. These roles require specific configurations.

Root Access Point

An access point connected directly to a wired LAN provides a connection point for wireless users. If more than one access point is connected to the LAN, users can roam from one area of a facility to another without losing their connection to the network. As users move out of range of one access point, they automatically connect to the network (associate) through another access point. The roaming process is seamless and transparent to the user. Figure 1-1 shows access points acting as root units on a wired LAN.

Figure 1-1 Access Points as Root Units on a Wired LAN

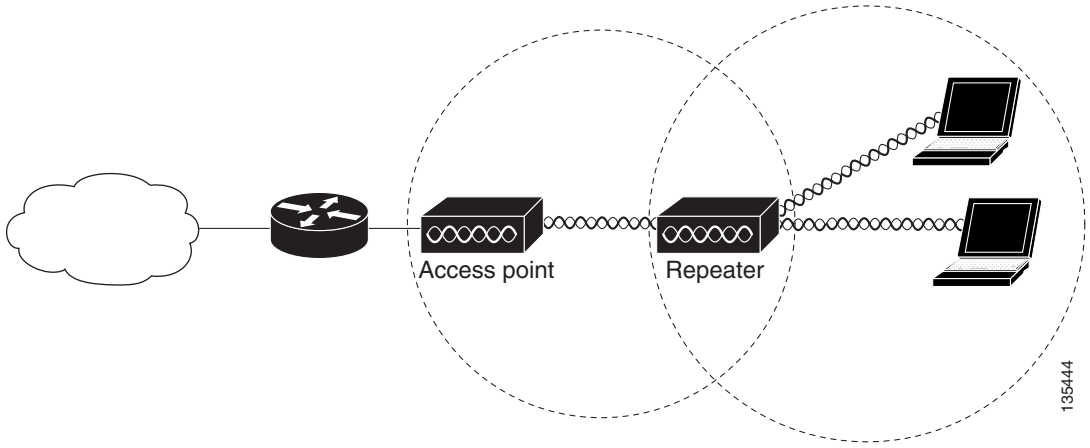


Repeater Access Point

An access point can be configured as a stand-alone repeater to extend the range of your infrastructure or to overcome an obstacle that blocks radio communication. The repeater forwards traffic between wireless users and the wired LAN by sending packets to either another repeater or to an access point connected to the wired LAN. The data is sent through the route that provides the best performance for the client. Figure 1-2 shows an access point acting as a repeater. Consult the "Configuring a Repeater Access Point" section on page 19-3 for instructions on setting up an access point as a repeater.

Note Non-Cisco client devices might have difficulty communicating with repeater access points.

Figure 1-2 Access Point as Repeater



Bridges

The 1200, 1240, and 1250 series access points and the 1300 access point/bridge can be configured as root or non-root bridges. In this role, an access point establishes a wireless link with a non-root bridge. Traffic is passed over the link to the wired LAN. Access points in root and non-root bridge roles can be configured to accept associations from clients. Figure 1-3 shows an access point configured as a root bridge with clients. Figure 1-4 shows two access points configured as a root and non-root bridge, both accepting client associations. Consult the "Configuring the Role in Radio Network" section on page 6-2 for instructions on setting up an access point as a bridge.

When wirless bridges are used in a point-to-multipoint configuration the throughput is reduced depending on the number of non-root bridges that associate with the root bridge. The maximum throughput is about 25 Mbps in a point to point link. The addition of three bridges to form a point-to-multipoint network reduces the throughput to about 12.5 Mbps.

Figure 1-3 Access Point as a Root Bridge with Clients

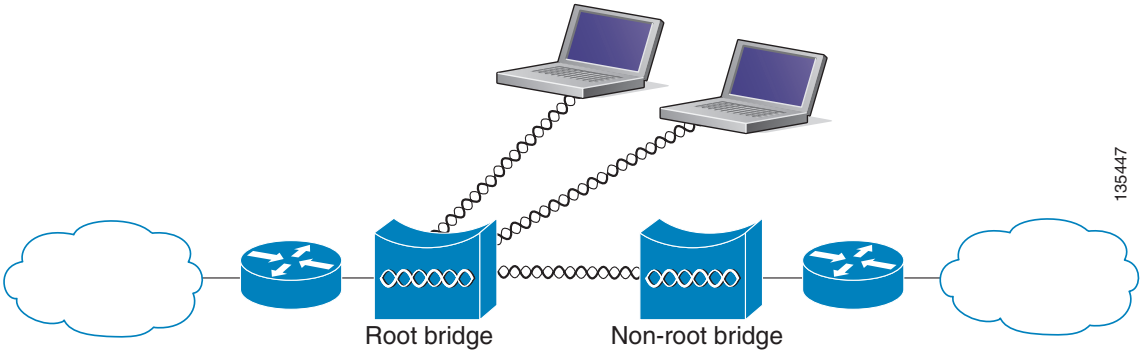
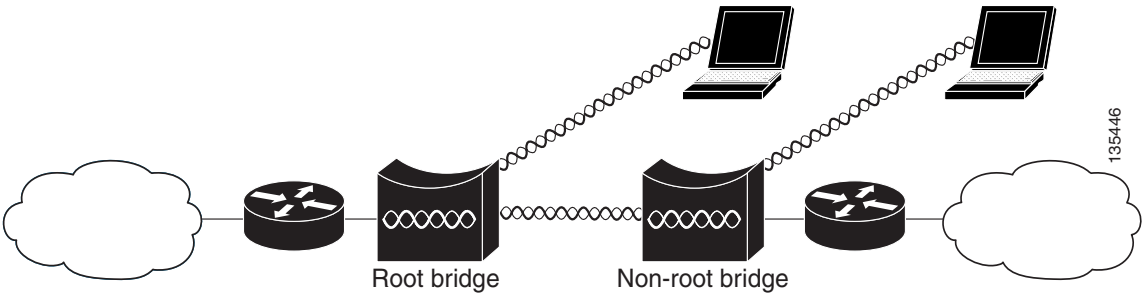


Figure 1-4 Access Points as Root and Non-root Bridges with Clients



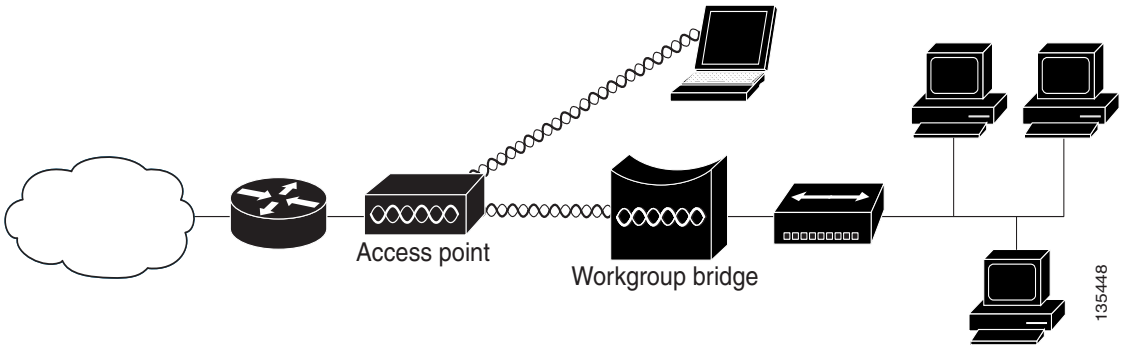
Workgroup Bridge

You can configure access points as workgroup bridges. In workgroup bridge mode, the unit associates to another access point as a client and provides a network connection for the devices connected to its Ethernet port. For example, if you need to provide wireless connectivity for a group of network printers, you can connect the printers to a hub or to a switch, connect the hub or switch to the access point Ethernet port, and configure the access point as a workgroup bridge. The workgroup bridge associates to an access point on your network.

If your access point has multiple radios, either radio can function in workgroup bridge mode. When you configure one radio interface as a workgroup bridge, the other radio interface is automatically disabled.

Figure 1-5 shows an access point configured as a workgroup bridge. Consult the "Understanding Workgroup Bridge Mode" section on page 19-13 and the "Configuring Workgroup Bridge Mode" section on page 19-16 for information on configuring your access point as a workgroup bridge.

Figure 1-5 Access Point as a Workgroup Bridge



Central Unit in an All-Wireless Network

In an all-wireless network, an access point acts as a stand-alone root unit. The access point is not attached to a wired LAN; it functions as a hub linking all stations together. The access point serves as the focal point for communications, increasing the communication range of wireless users. Figure 1-6 shows an access point in an all-wireless network.

Figure 1-6 Access Point as Central Unit in All-Wireless Network