

# 1

## Overview

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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 802.11n-compliant wireless LAN transceivers.

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 1040 series access point has dual-band (2.4 GHz and 5 GHz), integrated 802.11n radios and integrated antennas.
- 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 1140 series access point has integrated antennas for its pre-802.11n radios operating on the 2.4- or 5-GHz frequency bands.
- 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 external connected antennas for its pre-802.11n radios operating on the 2.4- or 5-GHz frequency bands.
- The 1260 series access point uses three external 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.
- The 2600 series access point contains dual-band radios (2.4 GHz and 5 GHz) with integrated and external antenna options. The access points support full inter-operability with leading 802.11n clients, and support a mixed deployment with other access points and controllers.

This chapter provides information on the following topics:

- [Features, page 1-2](#)

- [Management Options, page 1-3](#)
- [Roaming Client Devices, page 1-4](#)
- [Network Configuration Examples, page 1-4](#)

## 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.

## Features Introduced in This Release

[Table 1-1](#) lists the new features and supported platforms in Cisco IOS Release 15.2(2)JA, and [Table 1-2](#) lists new features and supported platforms in Cisco IOS Releases 12.4(24d)JA and 12.3(8)JEEE.

**Table 1-1** *New Cisco IOS Software Features for Cisco IOS Release 15.2(2)JA*

Feature	Cisco Aironet 1040 Series Access Points	Cisco Aironet 1100 Series Access Points	Cisco Aironet 1130 Series Access Points	Cisco Aironet 1140 Series Access Points	Cisco Aironet 1240 Series Access Points	Cisco Aironet 1250 Series Access Points	Cisco Aironet 1260 Series Access Points	Cisco Aironet 2600 Series Access Points	Cisco Aironet 1300 Series Outdoor Access Point/Bridge	Cisco Aironet 1400 Series Wireless Bridge
Support for Cisco Aironet 2600 Series Access Points								x		
PEAP support for Workgroup Bridges	x	x	x	x	x	x	x	x	x	x
VideoStream support on workgroup bridges (when used as a client)	x	x	x	x	x	x	x	x	x	x
Site-Survey Only Mode for 3600, 3500, and 1550 Access Points	(Supported on 3600 and 3500 series access points and 1550 series outdoor access points.)									

Table 1-2 New Cisco IOS Software Features for Cisco IOS Release 15.2(2)JA

Feature	Cisco Aironet 1040 Series Access Points	Cisco Aironet 1100 Series Access Points	Cisco Aironet 1130 Series Access Points	Cisco Aironet 1140 Series Access Points	Cisco Aironet 1240 Series Access Points	Cisco Aironet 1250 Series Access Points	Cisco Aironet 1260 Series Access Points	Cisco Aironet 2600 Series Access Points	Cisco Aironet 1300 Series Outdoor Access Point/Bridge	Cisco Aironet 1400 Series Wireless Bridge
Support for Cisco Aironet 1040 Series Access Points	x						x			
Support for Cisco Aironet 1260 Series Access Points	x						x			
Workgroup Bridge (WGB) support/enable WGB radio to keep connections to client alive	x	-		-	-	-	x	x	-	-
VLAN Tagging	x	-	x	x	x	x	x	x	-	-
Framed Radius Attribute on APs	x	x	x	x	x	x	x	x	x	x
WLSE/WLSE Express support	x	-		-	-	-	x	x	-	-
WGB wireless client support	x						x	x		
Russian regulatory domain support	x						x	x		

**Note**

Cisco IOS Release 12.4(25d)JA supports the Cisco 3201 Wireless Mobile Interface Card (WMIC) in the 3200 Series Mobile Access Router (MAR). It does not support the 3202 and 3205 MAR WMIC modules. Use the **c3201-k9w7-tar** autonomous image for 3201 WMIC.

**Note**

For information on the above features, see *Release Notes for Cisco Aironet Access Points and Bridges* on Cisco.com.

## 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 signal quality drops from a client, 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 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.

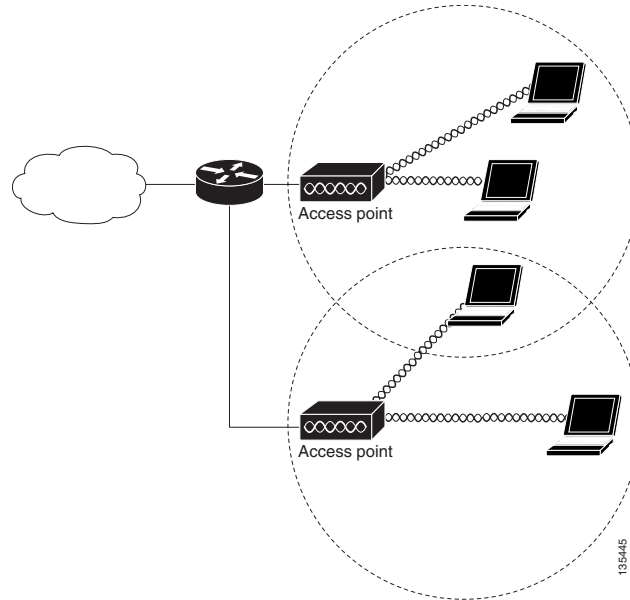
## Network Configuration Examples

This section describes the role of an access point in common wireless network configurations. The access point 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

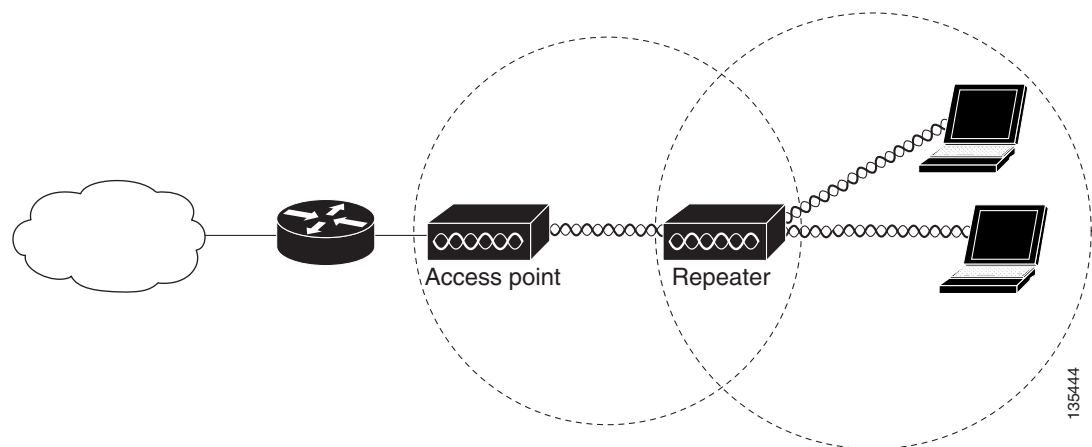
An access point can be configured as a stand-alone repeater to extend the range of your infrastructure or to overcome an obstacle that blocks radio communication. The repeater forwards traffic between wireless users and the wired LAN by sending packets to either another repeater or to an access point 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

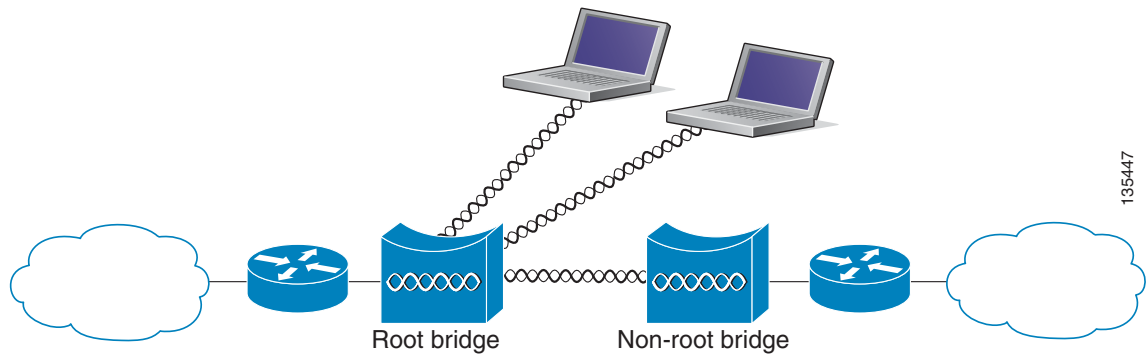


# Bridges

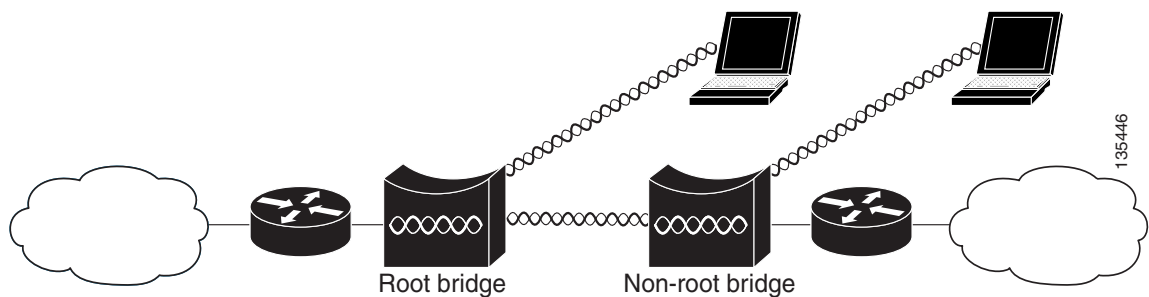
The 1140, 1200, 1240, and 1250 series access points and the 1300 access point/bridge can be configured as root or non-root bridges. In this role, an access point establishes a wireless link with a non-root bridge. Traffic is passed over the link to the wired LAN. Access points in root and non-root bridge 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 wireless 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

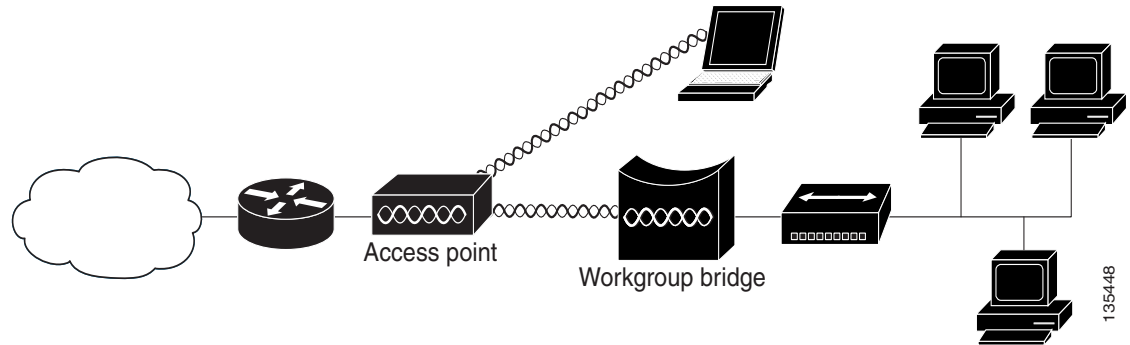
You can configure access points as workgroup bridges. In workgroup bridge mode, the unit associates to another access point as a client and provides a network connection for the devices connected to its Ethernet port. For example, if you need to provide wireless connectivity for a group of network printers,

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..

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 19-18 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**

