



## Overview

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Cisco Aironet 1300 Series Outdoor Access Points/Bridges (hereafter called *access points/bridges*) provide campus building-to-building wireless connectivity. Operating in the 2.4-GHz ISM band and conforming to the 802.11g standard, the 1300 series access point/bridge delivers a 54-Mbps data rate. The access point/bridge communicates with any 802.11b or 802.11g clients when in the access point mode and other 1300 series access points/bridges when in the bridging mode.

The access point/bridge is a self-contained unit designed for outdoor installations but can also be used inside with a window mounting option. You can connect external antennas to the access point/bridge to attain various antenna gains and coverage patterns. The access point/bridge supports both point-to-point and point-to-multipoint configurations. Two point-to-point links (three links if 802.11b) can be stacked in order to increase data throughput or provide cold standby redundancy.

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

This chapter provides information on the following topics:

- [Features, page 1-2](#)
- [Management Options, page 1-2](#)
- [Network Configuration Examples, page 1-2](#)
- [Troubleshooting, page 1-6](#)

# Features

Access point/bridges running Cisco IOS offer these software features:

- VLANs—Allow VLAN trunking on both wireless and Ethernet interfaces.
- QoS—Use this feature to support quality of service for prioritizing traffic on the wireless interface.
- RADIUS Accounting—Enable accounting on the access point/bridge to send accounting data about wireless client devices to a RADIUS server on your network.
- TACACS+ administrator authentication—Enable TACACS+ for server-based, detailed accounting information and flexible administrative control over authentication and authorization processes. It provides secure, centralized validation of administrators attempting to gain access to your access point/bridge.
- Enhanced security—Enable three advanced security features to protect against sophisticated attacks on your wireless network's WEP keys: Message Integrity Check (MIC) and WEP key hashing. Enhanced security for WPA/TKIP is also available.
- Enhanced authentication services—Set up non-root bridges to authenticate to your network like other wireless client devices. After you provide a network username and password for the non-root bridge, it authenticates to your network using LEAP, Cisco's wireless authentication method, and receives and uses dynamic WEP keys.
- Enhanced authentication for CCKM
- Fast Roaming support

## Management Options

You can use the access point/bridge management system through the following interfaces:

- The IOS command-line interface (CLI), which you use through a Telnet session. Most of the examples in this manual are taken from the CLI. [Chapter 4, “Using the Command-Line Interface,”](#) provides a detailed description of the CLI.
- A web-browser interface, which you use through a web browser. [Chapter 3, “Using the Web-Browser Interface,”](#) provides a detailed description of the web-browser interface.
- Simple Network Management Protocol (SNMP). [Chapter 17, “Configuring SNMP,”](#) explains how to configure your access point/bridge for SNMP management.

## Network Configuration Examples

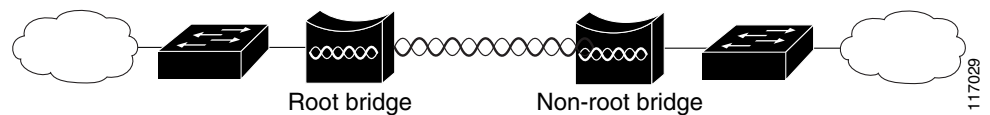
This section describes the access point/bridge's role in common wireless bridging configurations: point-to-point, point-to-multipoint, redundant bridging, access point mode, and workgroup bridge mode. One bridge in any pair or group of bridges must be a root bridge, and the bridge or bridges associated to the root bridge must be set to non-root.

## Point-to-Point Bridging

In a point-to-point configuration, a non-root bridge associates to a root bridge. In installation mode, the bridge listens for another 1300 series bridge. If it does not recognize another bridge, the bridge becomes a root bridge. If it recognizes another bridge, it becomes a non-root bridge associated to the bridge it recognizes. See [Chapter 2, “Configuring the Access Point/Bridge for the First Time,”](#) for instructions on initial bridge setup.

[Figure 1-1](#) shows bridges in a point-to-point configuration.

**Figure 1-1** Point-to-Point Bridge Configuration

**Note**

If your bridges connect one or more large, flat networks (a network containing more than 256 users on the same subnet) we recommend that you use a router to connect the bridge to the large, flat network.

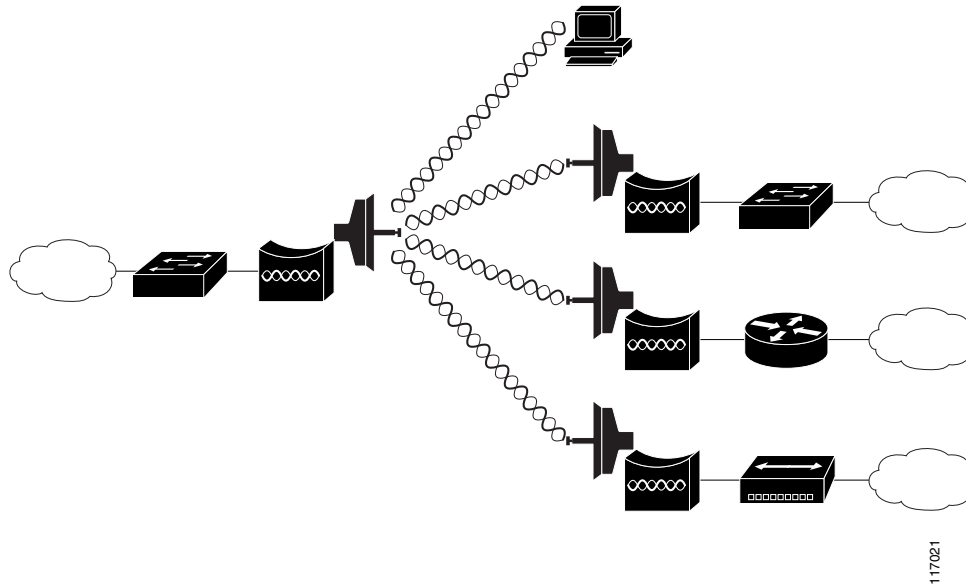
## Point-to-Multipoint Bridging

In a point-to-multipoint configuration, two or more non-root bridges associate to a root bridge. Up to 17 non-root bridges can associate to a root bridge, but the non-root bridges must share the available bandwidth.

See [Chapter 2, “Configuring the Access Point/Bridge for the First Time,”](#) for instructions on initial bridge setup.

[Figure 1-2](#) shows bridges in a point-to-multipoint configuration.

Figure 1-2 Point-to-Multipoint Bridge Configuration



**Note**

If your bridges connect one or more large, flat networks (a network containing more than 256 users on the same subnet) we recommend that you use a router to connect the bridge to the large, flat network.

## Redundant Bridging

You can set up two pairs of bridges to **add redundancy or load balancing to your bridge link**. The bridges must use non-adjacent, non-overlapping radio channels to prevent interference, and they must use Spanning Tree Protocol (STP) to prevent bridge loops. See [Chapter 8, “Configuring Spanning Tree Protocol,”](#) for instructions on configuring STP.

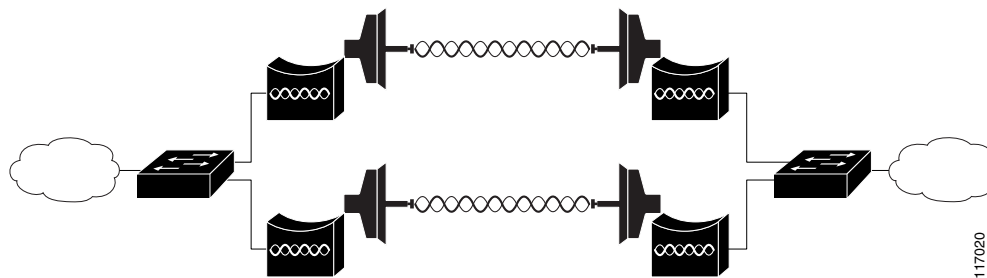


**Note**

STP is disabled by default.

Figure 1-3 shows two pairs of redundant bridges.

Figure 1-3 Redundant Bridge Configuration

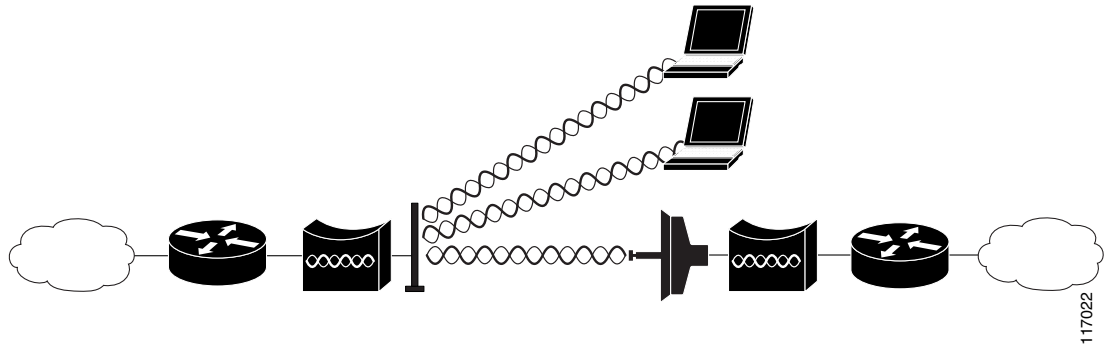


## Access Point Mode

You can configure the access point/bridge to function as an access point. In the access point mode, the access point/bridge emulates a Cisco Aironet 1100 Series Access Point. In the access point mode, the access point/bridge accepts associations from client devices. See [Chapter 20, “Special Configurations,”](#) for instructions on configuring the access point/bridge as an access point.

[Figure 1-4](#) Shows a typical scenario where the access point/bridge functions as an access point.

**Figure 1-4** Access Point Mode

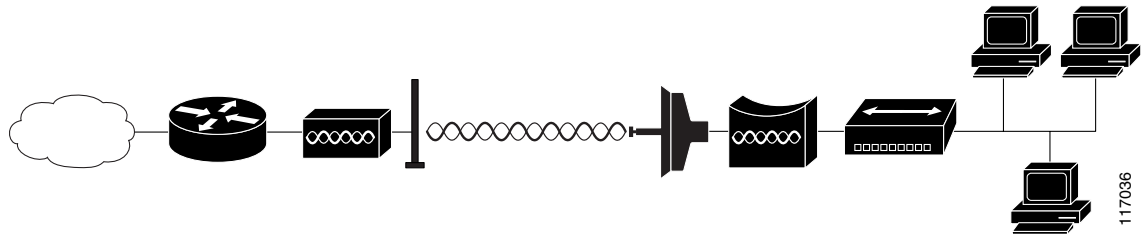


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## Workgroup Bridge Mode

You can configure the access point/bridge to function as a workgroup bridge. In the workgroup bridge mode, the access point/bridge emulates a Cisco Aironet 350 Series Workgroup Bridge; [Figure 1-5](#) shows a typical scenario where the access point/bridge functions as a workgroup bridge. See [Chapter 20, “Special Configurations,”](#) for instructions on how to configure the access point/bridge as a workgroup bridge.

**Figure 1-5 Workgroup Bridge Mode**



## Troubleshooting

For basic troubleshooting procedures, refer to the “Troubleshooting” chapter in the *Cisco Aironet 1300 Series Outdoor Access Point/Bridge Hardware Installation Guide*.

For the most up-to-date, detailed troubleshooting information, refer to the Cisco TAC website at <http://www.cisco.com/tac>. Click **Technology Support**, select **Wireless/Mobility** from the menu on the left, and click **Wireless LAN**.