

Cisco Aironet Wireless Bridges FAQ

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Questions

Introduction

- What is the Cisco Aironet Wireless Bridge?
- What are the different platforms of wireless bridges that Cisco offers?
- Where can I download the latest firmware, drivers, and software?
- How do I connect to my Cisco Aironet Wireless Bridge using the console port?
- Can any of the Cisco wireless products perform a wireless bridge at full duplex?
- Why do two bridges not communicate automatically, right out of the box?
- How do I set the IP address on a wireless bridge?
- How do I upgrade the firmware on a bridge?
- Can wireless clients associate to the bridge?
- How do I save the configuration of the bridge?
- Can I disable Aironet extensions on the Cisco Aironet Wireless Bridge?
- What devices can associate with a bridge?
- At what frequency does a bridge communicate?
- What are the different encryption options available with Cisco Aironet Wireless Bridges?
- What are the different authentication mechanisms supported with Cisco Aironet Wireless Bridges?
- What is a Wired Equivalent Privacy (WEP) key?
- How can I recover forgotten passwords on a bridge?
- What is the typical range for a wireless bridge?
- How fast is the Ethernet port of the bridge?
- What are the possible sources of interference for the radio frequency link of the bridge?
- How do I set the bridge back to the factory default settings?
- What are the different modes supported on wireless bridges?
- Do antennas need line of sight to function?
- Can the 340 and 350 Series Wireless Bridges be converted to Cisco IOS®?
- I just purchased two Cisco 1310 Bridges, which work together. However, the Cisco 342 Bridges that also are in this wireless network do not work with the Cisco 1300 Bridges. Are these bridges compatible?
- Can I configure multiple VLANs on a Cisco 340 Series Wireless Bridge?
- When should I set an SSID for infrastructure mode, and how do I set this parameter in a wireless bridge, access point (AP) or a WGB?
- Can a wireless bridge support Netflow, just like Cisco routers?
- Can a Cisco 1410 Wireless Bridge support Wi-Fi Protected Access2 (WPA2) or Advanced Encryption Standard (AES)?
- What is the maximum range covered by a 1310 Wireless Bridge when acting in bridge mode as well as in access point (AP) mode?
- Is it possible to combine the wall mount kit with an internal antenna on the 1300 Bridge?
- Is it possible to adjust a 1310 Wireless Bridge with an internal antenna that is installed on a wall mount kit, or is it fixed?

Related Information

Introduction

This document provides information on the most frequently asked questions about Cisco Aironet Wireless Bridges.

Refer to Cisco Technical Tips Conventions for more information on document conventions.

Q. What is the Cisco Aironet Wireless Bridge?

A. Cisco Aironet Bridges are wireless LAN transceivers that connect two or more remote networks into a single LAN. They can be used to provide campus building-to-building wireless connectivity.

Q. What are the different platforms of wireless bridges that Cisco offers?

A. Cisco offers these platforms of wireless bridges:

- ◆ Cisco Aironet 1400 Series
- ◆ Cisco Aironet 1300 Series

These platforms of Cisco Aironet Bridges have reached End-of-Life status, which means they can no longer be ordered from Cisco and might not be supported directly by Cisco.

- ◆ Cisco Aironet 350 Series Bridges
- ◆ Cisco Aironet 340 Series Bridges

Q. Where can I download the latest firmware, drivers, and software?

A. Cisco Aironet equipment operates best when you load all components with the latest version of the software. You can download the latest software and drivers from the [Wireless Downloads Page](#).

Q. How do I connect to my Cisco Aironet Wireless Bridge using the console port?

A. Not all the Cisco Aironet Wireless Bridges come with a console port. The Cisco Aironet 1300 Series and the 350 Series Wireless Bridges come with a console port.

In order to connect to the 350 Series Wireless Bridge using the console port, complete these steps:

1. Use a straight-through cable with 9-pin male to 9-pin female connectors to connect the COM1 or COM2 port on your computer to the RS-232 port on the wireless bridge.
2. Use a terminal-emulation program on your computer, for example, HyperTerminal, ProComm, or Minicom.
3. Set port settings to these values:
 - ◇ Speed: 9600 bits per second (bps)
 - ◇ Data bits: 8
 - ◇ Stop bits: 1
 - ◇ Parity: none
 - ◇ Flow Control: Xon/Xoff

In order to connect to the 1300 Series Wireless Bridge using the console port, complete this step:

Connect a nine-pin, female DB-9 to RJ-45 serial cable to the RJ-45 serial port on the power injector and to the COM port on your PC.

For a 1400 Series Wireless Bridge which does not have a console port, if you need to configure the bridge locally (without connecting the bridge to a wired LAN), you can connect a PC to the Ethernet port on the long-reach power injector using a Category 5 Ethernet cable. You can use a local connection to the power injector's Ethernet port much as you would use a serial port connection. You do not need a special crossover cable to connect your PC to the power injector. You can use either a straight-through cable or a crossover cable.

Q. Can any of the Cisco wireless products perform a wireless bridge at full duplex?

A. No. The 802.11 standard specifies a Carrier Sense Multiple Access/Collision Avoidance (CSMA/CA) transmit-recvie environment. Therefore, all 802.11 are half-duplex/simplex in nature.

Q. Why do two bridges not communicate automatically, right out of the box?

A. For two bridges to communicate with each other, one of the bridges should be in *root* mode and the other bridge must be in *non-root* mode.

The default setting of a bridge is *root*. Therefore, two bridges that are in *root* mode cannot talk to each other.

Q. How do I set the IP address on a wireless bridge?

A. You can use these methods in order to assign an IP address to the wireless bridge.

- ◆ Use a DHCP server (if available) to automatically assign an IP address.
- ◆ Assign a static IP address using the bridge console port (if the bridge comes with a console port).

When you connect a 1300 Series Access Point (AP)/Bridge with a default configuration to your LAN, the AP/bridge attempts to receive an IP address from the DHCP server. If no DHCP server is found, the AP/bridge continues to request a DHCP address. In order to eliminate this condition, you must connect to the AP/bridge using its console port and configure a static IP address.

When you connect a 1400 Series Bridge with a default configuration to your LAN, the bridge attempts to receive an IP address from the DHCP server. If no DHCP server is found, the bridge uses the default IP address 10.0.0.1/255.255.255.224.

When you connect a 350 Series Bridge with a default configuration to your LAN, the bridge attempts to receive an IP address from the DHCP server. If no DHCP server is found, the bridge uses the default IP address 10.0.0.1/255.255.255.224.

Q. How do I upgrade the firmware on a bridge?

A. For information on how to upgrade the software image on the wireless bridge, refer to these documents:

- ◆ For upgrading the 350 Series Wireless Bridge
- ◆ For upgrading the 1300 Series Wireless Bridge
- ◆ For upgrading the 1400 Series Wireless Bridge

Q. Can wireless clients associate to the bridge?

A. This depends on the platform of the bridge.

The 350 Series Wireless Bridge supports servicing clients when configured as a non-root bridge.

The 1300 Series Wireless Bridge supports servicing wireless clients in both the root mode and the non-root mode.

Note: For this, you need to select *Root Bridge with Wireless Clients* or *Non-Root Bridge with Wireless Clients* when you define the role of the bridge under *Role in Radio Network* in the *Network Interfaces* page of the Wireless Bridge GUI.

The 1400 Series does not support servicing wireless clients.

Q. How do I save the configuration of the bridge?

A. Modifications to the configuration are saved immediately. You can also send the current configuration. This is explained in these documents:

For the 350 Series Wireless Bridge, refer to the Downloading, Uploading, and Resetting the Configuration section of *Cisco Aironet 350 Series Bridge Software Configuration Guide*.

For the 1300 Series Wireless Bridge, refer to the Working with Configuration Files section of *Cisco IOS Software Configuration Guide for Cisco Aironet 1300 Series Outdoor Access Point/Bridge 12.3(7)JA*.

For the 1400 Series Wireless Bridge, refer to the Working with Configuration Files section of *Cisco Aironet 1400 Series Bridge Software Configuration Guide, 12.2(15)JA*.

Q. Can I disable Aironet extensions on the Cisco Aironet Wireless Bridge?

A. By default, the bridges use Cisco Aironet 802.11 extensions in order to improve communication with other wireless bridges.

Aironet extensions can be disabled only on the 350 Series Bridges. Aironet extensions cannot be disabled on the Cisco Aironet 1300 Series and the 1400 Series Wireless Bridges.

Q. What devices can associate with a bridge?

A. **Root Bridge:**

- ◆ Accepts associations and communications with non–root bridge devices and clients.
- ◆ Does not communicate with other root bridge devices.
- ◆ Communicates with multiple non–root bridge devices.

Non–Root Bridge:

- ◆ Can associate and communicate with root devices or clients.
- ◆ Does not communicate with other non–root devices, unless the other non–root devices communicates with the root bridge.

Note: Both the root bridge and the non–root bridge will service clients only if the role in the radio network *Root Bridge with Wireless Clients* or *Non–Root Bridge with Wireless clients* is supported by the bridge and is enabled.

Q. At what frequency does a bridge communicate?

A. Cisco Aironet 350 Series Bridges operate in the 2.4Ghz ISM band and conform to the 802.11b standard and deliver up to 11Mbps data rate.

Cisco Aironet 1300 Series Outdoor APs/Bridges (hereafter called APs/bridges) provide campus building–to–building wireless connectivity. The 1300 Series AP/Bridge operates in the 2.4–GHz ISM band and conforms to the 802.11g standard, and delivers a 54–Mbps data rate. The AP/bridge communicates with any 802.11b or 802.11g clients when in the AP mode and other 1300 Series APs/Bridges when in the bridging mode.

Cisco Aironet 1400 Series Bridges (hereafter called bridges) provide building–to–building wireless connectivity. The 1400 Series Bridge operates in the 5.8–GHz, UNII–3 band and conforms to the 802.11a standard, and delivers a 54–Mbps data rate. The bridge is a self–contained unit designed for outdoor installations. You can connect external antennas to the bridge in order to attain various antenna gains and coverage patterns. The bridge supports both point–to–point and point–to–multipoint configurations.

Q. What are the different encryption options available with Cisco Aironet Wireless Bridges?

A. All the platform of Cisco Aironet Wireless Bridges support Wired Equivalent Privacy (WEP). WEP is not the most secure method to encrypt data across a wireless link connected through wireless bridges. Wireless bridges do support other encryption methods which are more secure than WEP.

The 1300 Bridges support AES encryption, Temporal Key Integrity Protocol (TKIP), Cisco Key Integrity Protocol (CKIP), Cisco Message Integrity Check (CMIC) with WPA in addition to Dynamic WEP with 802.1x. Dynamic WEP keys are more secure than static WEP keys. Because they change frequently, dynamic WEP keys are even more difficult to crack. The 1400 Bridges support WEP, Temporal Key Integrity Protocol (TKIP), Cisco Key Integrity Protocol (CKIP), Cisco Message Integrity Check (CMIC) with WPA in addition to dynamic WEP with 802.1x.

Q. What are the different authentication mechanisms supported with Cisco Aironet Wireless Bridges?

A. The 350 Series Wireless Bridges support Open Authentication, shared key authentication, MAC based authentication, and EAP authentication. For more information on the authentication methods supported on the 350 Series Bridges and how to configure them, refer to the Security Setup section of *Cisco Aironet 350 Series Bridge Software Configuration*

Guide.

The 1300 Series Wireless Bridges support Open Authentication, Shared Key Authentication, EAP Authentication, MAC Address Authentication, Combining MAC-Based, EAP, Open Authentication, Cisco Centralized Key Management (CCKM), and WPA Key Management. For more information on the authentication methods supported on the 1300 Series Bridges and how to configure them, refer to the Configuring Authentication Types section of *Cisco IOS Software Configuration Guide for Cisco Aironet 1300 Series Outdoor Access Point/Bridge 12.3(7)JA*.

The 1400 Series Wireless Bridges support Open Authentication, Shared Key Authentication, EAP Authentication, and WPA Key Management. For more information on the authentication methods supported on the 1400 Series Bridges and how to configure them, refer to the Configuring Authentication Types section of *Cisco Aironet 1400 Series Bridge Software Configuration Guide, 12.2(15)JA*.

Q. What is a Wired Equivalent Privacy (WEP) key?

A. WEP is used to encrypt and decrypt data signals that transmit between WLAN devices. WEP is an optional IEEE 802.11 feature that prevents disclosure and modification of packets in transit and also provides access control for the use of the network. As the standard specifies, WEP uses the RC4 algorithm with a 40-bit or 10-bit key. RC4 is a symmetric algorithm because RC4 uses the same key for the encryption and the decryption of data. When WEP is enabled, each radio "station" has a key. The key is used to scramble the data before transmission of the data through the airwaves. If a station receives a packet that is not scrambled with the appropriate key, the station discards the packet and never delivers such a packet to the host.

WEP is not the most secure method to encrypt data across a wireless link connected through wireless bridges. Wireless bridges do support other encryption methods which are more secure than WEP.

For example, the 1300 Bridges support AES encryption, Temporal Key Integrity Protocol (TKIP), Cisco Key Integrity Protocol (CKIP), Cisco Message Integrity Check (CMIC) with WPA in addition to Dynamic WEP with 802.1x. Dynamic WEP keys are more secure than static WEP keys. Because they change frequently, dynamic WEP keys are even more difficult to crack. The 1400 Bridges support WEP, Temporal Key Integrity Protocol (TKIP), Cisco Key Integrity Protocol (CKIP), Cisco Message Integrity Check (CMIC) with WPA in addition to dynamic WEP with 802.1x.

Q. How can I recover forgotten passwords on a bridge?

A. If you forget the password that allows you to configure the Cisco Aironet Wireless Bridges through the console port, you must completely reset the configuration.

For information on how to reset the configuration on the 350 Series Wireless Bridge, refer to the Aironet 350 Series Bridge section of *Password Recovery Procedure for the Cisco Aironet Equipment*.

For information on how to reset the configuration on the 1300 Series Wireless Bridge, refer to the Aironet 1310 Series Bridge section of *Password Recovery Procedure for the Cisco Aironet Equipment*.

For information on how to reset the configuration on the 1400 Series Wireless Bridge, refer to the Aironet 1410 Series Bridge section of *Password Recovery Procedure for the Cisco Aironet Equipment*.

Q. What is the typical range for a wireless bridge?

A. The answer to this question depends on many factors. The factors include data rate (bandwidth) desired, line of sight, antenna type, antenna cable length, and the device that receives the transmission. In an optimal installation, the range can be up to 25 miles. You can use the Outdoor Bridge Range Calculation Utility in order to calculate the range of the wireless bridge.

Q. How fast is the Ethernet port of the bridge?

A. The Ethernet port of the bridge supports 10 Mbps over a 10BaseT RJ-45 connector, a 10Base2 BNC connector, or a 10Base5 with an attachment unit interface (AUI) transceiver. Regardless of the connector you use, only half-duplex is supported.

Q. What are the possible sources of interference for the radio frequency link of the bridge?

A. Interference can come from a number of sources, which include 2.4 GHz cordless phones, improperly shielded microwave ovens, and wireless equipment manufactured by other companies. Police radar, electrical motors, and moving metal parts of machinery can also cause interference. For more information on radio frequency (RF) interference, refer to *Troubleshooting Problems Affecting Radio Frequency Communication*.

For information on issues that might cause intermittent connectivity issues with wireless bridges, refer to *Intermittent Connectivity Issues in Wireless Bridges*.

Q. How do I set the bridge back to the factory default settings?

A. For information on how to reset the configuration on the 350 Series Wireless Bridge, refer to the Aironet 350 Series Bridge section of *Password Recovery Procedure for the Cisco Aironet Equipment*.

For information on how to reset the configuration on the 1300 Series Wireless Bridge, refer to the Aironet 1310 Series Bridge section of *Password Recovery Procedure for the Cisco Aironet Equipment*.

For information on how to reset the configuration on the 1400 Series Wireless Bridge, refer to the Aironet 1410 Series Bridge section of *Password Recovery Procedure for the Cisco Aironet Equipment*.

Q. What are the different modes supported on wireless bridges?

A. The wireless bridges can operate in one of these modes:

- ◆ install Places the AP/bridge in a bridge link setup mode for antenna alignment purposes. The automatic option configures the AP/bridge to automatically search for a link to another AP/bridge or an AP in bridge mode. The root and non-root options allow you to manually configure the AP/bridge.

- ◆ non-root Places the AP/bridge in non-root bridge mode. The wireless clients option allows clients to associate to the non-root AP/bridge while it is in the non-root bridge mode.
- ◆ root Places the AP/bridge in root bridge mode. The ap-only option makes the AP act as a root AP (the default station role).
- ◆ scanner Causes the AP/bridge to operate as a scanner only and does not accept associations from client devices. As a scanner, the AP/bridge collects radio data and sends it to the WDS server on your network. The scanner mode is supported only when used with a WLSE device on your network.

Note: Not all wireless bridges support all the modes mentioned here. Refer to the configuration guides specific to the wireless bridges for detailed information on the modes supported by the wireless bridge.

Q. Do antennas need line of sight to function?

A. The antennas that connect to a bridge need not only visual line of sight, but also radio line of sight. Radio line of sight includes an elliptical region around the visual line of sight called the Fresnel zone. For optimal performance, make sure the Fresnel zone is clear of all obstructions like trees, power lines, buildings, and geographic obstacles. Refer to Troubleshooting Connectivity in a Wireless LAN Network for more information.

Q. Can the 340 and 350 Series Wireless Bridges be converted to Cisco IOS®?

A. No. The 340 and 350 Series Wireless Bridges cannot be converted to Cisco IOS. You can upgrade the 350 Series Access Points that run VxWorks to Cisco IOS, but you cannot upgrade the 340 and 350 Series Wireless Bridges to Cisco IOS. Only the 1300 and 1400 Series Wireless Bridges work with Cisco IOS.

Q. I just purchased two Cisco 1310 Bridges, which work together. However, the Cisco 342 Bridges that also are in this wireless network do not work with the Cisco 1300 Bridges. Are these bridges compatible?

A. No. Cisco 1300 Bridges are not compatible with the Cisco 340 Bridges, and hence cannot communicate with each other. Refer to Cisco Aironet 1300 Series Outdoor Access Point/Bridge Q&A for more information on the Cisco 1300 Bridges.

Q. Can I configure multiple VLANs on a Cisco 340 Series Wireless Bridge?

A. No. The Cisco 340 Series Wireless Bridge supports only one VLAN. The Cisco Aironet 340 Series Bridge allows the connection of two or more remote Ethernet LANs into a single virtual LAN (VLAN).

Q. When should I set an SSID for infrastructure mode, and how do I set this parameter in a wireless bridge, access point (AP) or a WGB?

A. Infrastructure SSID is used to instruct a non-root AP/bridge or WGB radio to associate with this SSID.

In order to configure this, add these CLI commands:

```
bridge#configure terminal
bridge(config)#interface dot11radio 0
bridge(config-if)#ssid bridgeman
bridge(config-ssid)#infrastructure-ssid
bridge(config-ssid)#end
```

Refer to Configuring SSIDs for more information on SSID. When you configure APs and WGBs, they must have identical SSIDs in order to associate.

Q. Can a wireless bridge support Netflow, just like Cisco routers?

A. No. Cisco Aironet Wireless Bridges do not support Netflow. However, you can use SNMP MIBs to report the number of input and output packets and bytes.

Q. Can a Cisco 1410 Wireless Bridge support Wi-Fi Protected Access2 (WPA2) or Advanced Encryption Standard (AES)?

A. No. The Cisco 1410 Wireless Bridge does not support WPA2 or AES.

Q. What is the maximum range covered by a 1310 Wireless Bridge when acting in bridge mode as well as in access point (AP) mode?

A. The 1310 series has the antenna built into the unit. If the bridge acts in the bridge mode, it can give a bridge – bridge range of several kilometers. If the bridge acts in AP mode, then you will be restricted to the range that the clients can achieve.

The client might see the bridge even from 1 kilometer away. However, it will not have the power to reach back and connect to the bridge. A wireless client can access and reach an 802.11g AP or 1310 that acts as an AP at about 200 meters maximum, or probably a lesser distance.

Q. Is it possible to combine the wall mount kit with an internal antenna on the 1300 Bridge?

A. No. The internal antenna would point into the wall when you use the wall mount. Also, the wall mount can accommodate the antenna.

Q. Is it possible to adjust a 1310 Wireless Bridge with an internal antenna that is installed on a wall mount kit, or is it fixed?

A. It is a fixed solution. Therefore, you should use an external antenna when you use a wall mount kit.

Related Information

- Password Recovery Procedure for the Cisco Aironet Equipment
- Troubleshooting Problems Affecting Radio Frequency Communication
- Troubleshooting Connectivity in a Wireless LAN Network
- Cisco Aironet 350 Series Tech Notes
- Cisco Wireless Downloads (registered customers only)

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