

## CISCO AIRONET 1300 SERIES OUTDOOR ACCESS POINT/BRIDGE

### PRODUCT OVERVIEW

The Cisco Aironet® 1300 Series Outdoor Access Point/Bridge (Figure 1) is an 802.11g access point and bridge that provides high-speed and cost-effective wireless connectivity between multiple fixed or mobile networks and clients. Building a metropolitan-area wireless infrastructure with the Cisco® Aironet 1300 Series provides deployment personnel with a flexible, easy-to-use solution that meets the security requirements of wide-area networking professionals.

**Figure 1.** Cisco Aironet 1300 Series



The Cisco Aironet 1300 Series supports the 802.11g standard—providing 54-Mbps data rates with a proven, secure technology while maintaining full backward compatibility with legacy 802.11b devices. Cisco Systems® makes the maintenance and installation of the Cisco Aironet 1300 Series easy by integrating it with your wired network via the Cisco Structured Wireless-Aware Network (SWAN) framework. Based on Cisco IOS® Software, the Cisco Aironet 1300 Series provides advanced features such as Fast Secure Roaming, quality of service (QoS), and VLANs.

The flexibility of the Cisco Aironet 1300 Series allows it to operate as a wireless bridge, access point, or a workgroup bridge.

### Access Point

Engineered specifically for harsh outdoor environments, yet also capable in indoor deployments, the Cisco Aironet 1300 Series is ideal for wireless LANs (WLANs) requiring external access points. The Cisco Aironet 1300 Series is WiFi-certified as an access point and also supports the innovative features available with Cisco Aironet and Cisco Compatible client devices.

### Bridge

The Cisco Aironet 1300 Series supports either point-to-point or point-to-multipoint configuration to cost-effectively interconnect remote, temporary, or mobile networks. It can serve as an upgrade or replacement to the Cisco Aironet 350 Wireless Bridge by providing over-the-air compatibility with existing Cisco Aironet 350 Series wireless bridges. While in bridge mode, client associations are also accepted—effectively providing simultaneous bridge and access-point capability.

## **Workgroup Bridge**

As a workgroup bridge, the Cisco Aironet 1300 Series quickly connects any Ethernet-enabled device, such as a laptop or other portable computer, to a WLAN. By adding a standard Ethernet hub or switch, you can connect up to 255 of these devices to any Cisco Aironet access point or wireless bridge.

## **USERS AND APPLICATIONS**

The Cisco Aironet 1300 Series can provide an ongoing savings of leased-line expenses, a method to connect networks despite physical barriers such as lakes or highways, and rapid deployment of network connections—often while waiting on other facilities such as fiber-optic installations. Typical organizations that will benefit from the advantages of the Cisco Aironet 1300 Series include: education, enterprise, government, healthcare, military, public safety, transportation, and WLAN service providers. These organizations have a variety of possible applications (Figure 2) that are discussed in the following paragraphs.

### **Campus Networks**

Whether a typical college campus or corporate offices with multiple buildings, IT professionals are faced with interconnecting local area networks in each of the buildings. These LANs require cost-effective, high-bandwidth connections with the flexibility and control often not available via leased lines or cable installations requiring trenching.

### **Nomadic Networks and Users**

More and more, networks are “on the move.” Vehicles such as buses, trains, ambulances, and patrol cars are being equipped with their own LAN-supported devices such as notebooks, personal digital assistants (PDAs), cameras, and scanners. These mobile networks need to be interconnected to provide information-sharing for more informed decisions, improved public service and operational efficiency through more personnel time in the field, and new passenger services.

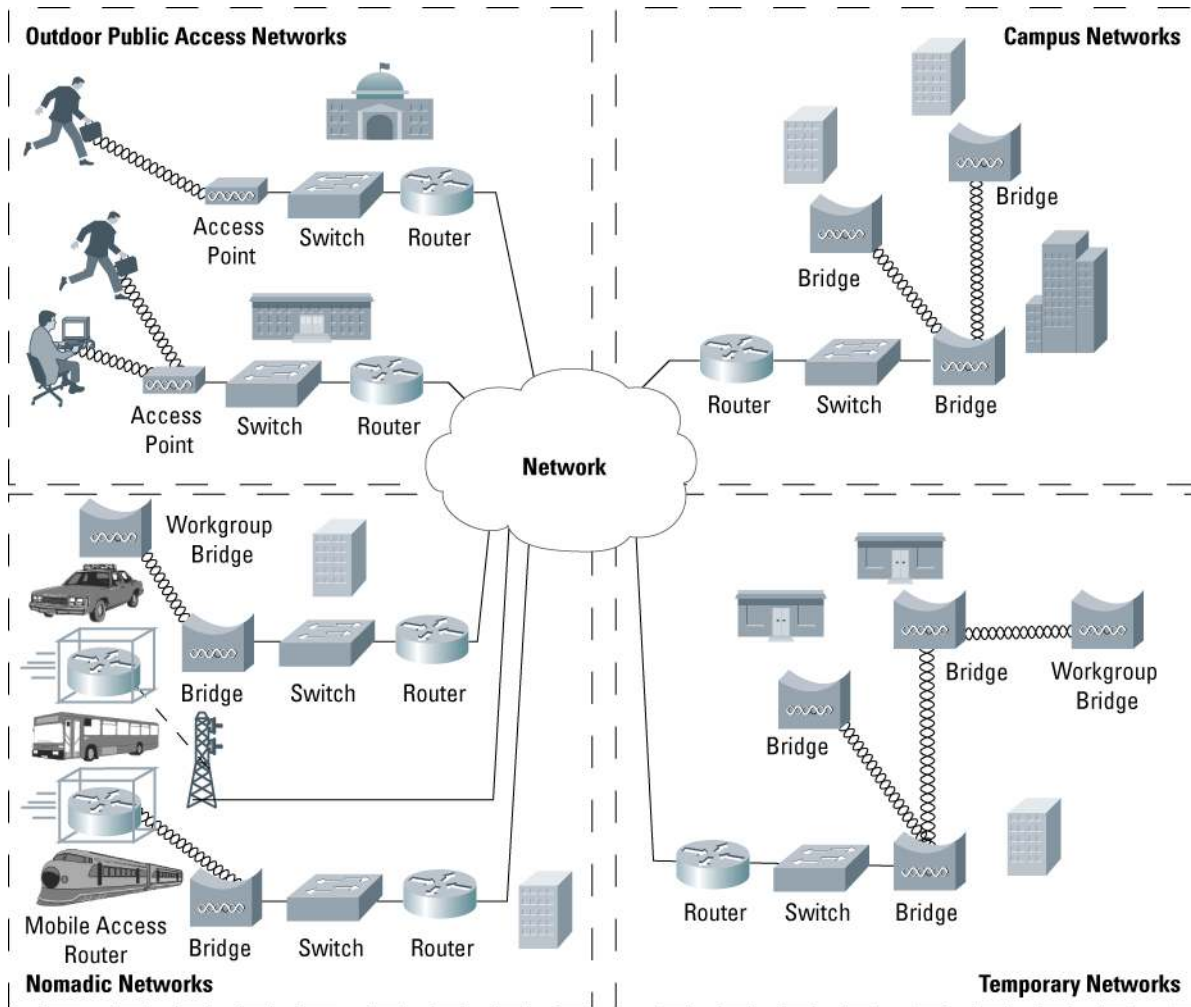
### **Outdoor Public Access**

The proliferation of WLAN hot spots has allowed users to stay connected while in hotels, airports, and even coffee shops. As more users desire ubiquitous connectivity, outdoor hot spots are being added—some of which include multiple city blocks or even town centers. These outdoor hot spots can be cost-effectively deployed with equipment designed for the outdoor environment.

### **Temporary Networks**

The variety of temporary solutions is limitless, with applications such as remote military campaigns, short-term office leases, temporary buildings such as trailers, or even parking lot tent sales. These deployments require a temporary network infrastructure that is rugged, portable, easy to install, and flexible.

**Figure 2.** Cisco Aironet 1300 Series Example Applications



**BENEFITS**

**Industry-Leading Performance**

- Data rates of 54 Mbps in the 2.4 GHz band
- Range of 20 miles (32 kilometers [km]) at 11 Mbps
- Aggregate throughputs approaching 28 Mbps
- Maximum transmit power of 100 milliwatts (mW) for 802.11b and 30 mW for 802.11g
- For vehicle installed deployments, over 100 km per hour speeds at 12 and 24 Mbps with 128 byte packets at 1 percent Packet Error Rate (PER)
- Support for antenna diversity

## Low Total Cost of Ownership

- Compelling return on investment (ROI) compared to cable installation or ongoing leased-line fees
- Low bridging-system cost
- Low outdoor access-point system cost
- Ability to reuse existing Cisco Aironet 350 wireless bridges for low upgrade costs
- Investment protection with future Cisco IOS Software upgrades

## Flexible and Easy to Install

- Small size and light weight allows easy installation in more locations
- Convenient LEDs for alignment feedback and diagnostics
- Quick-hang mounting bracket allows for an easy installation process; roof and wall mounting kits offer more mounting options
- Rapid deployment, redeployment, and recommissioning can be achieved with no reliance upon third-party service providers nor a lengthy license or trenching process
- Multiple, configurable radio network roles for point-to-point and point-to-multipoint network architectures
- Wide DC power-input range allowing a variety of power-supply options such as solar power or vehicle power (+10 to +48 volts direct current [VDC])
- Wide operating temperature range of  $-22^{\circ}\text{F}$  to  $131^{\circ}\text{F}$  ( $-30^{\circ}$  to  $+55^{\circ}\text{C}$ )
- Meets NEMA 4 and IP56 specifications for harsh environments
- Captured antenna for easy mounting and support for external antennas including existing Cisco Aironet 2.4-GHz antennas

## Wired and Wireless Integration

- Inclusion in the Cisco SWAN framework simplifies deployment, management, and operations by allowing remote network deployment and management via the CiscoWorks Wireless LAN Solution Engine (WLSE). This provides a familiar user interface with common capability, scalability, and security for all products.
- Supports Fast Secure Layer 2 Roaming for non-root bridges and workgroup bridges as well as any Cisco or Cisco Compatible clients.
- Supports QoS for trunking in excess of 24 voice over IP (VoIP) circuits and data over point-to-point links.
- Supports Wi-Fi Multimedia (WMM) which improves the user experience for audio, video, and voice applications over a Wi-Fi wireless connection.
- Increased bandwidth between bridged networks can be enabled through the aggregation of multiple links via Layer 2 techniques or Layer 3 load balancing.
- Supports up to 16 VLANs, which allows customers to differentiate LAN policies and services—such as security and QoS—for different users.

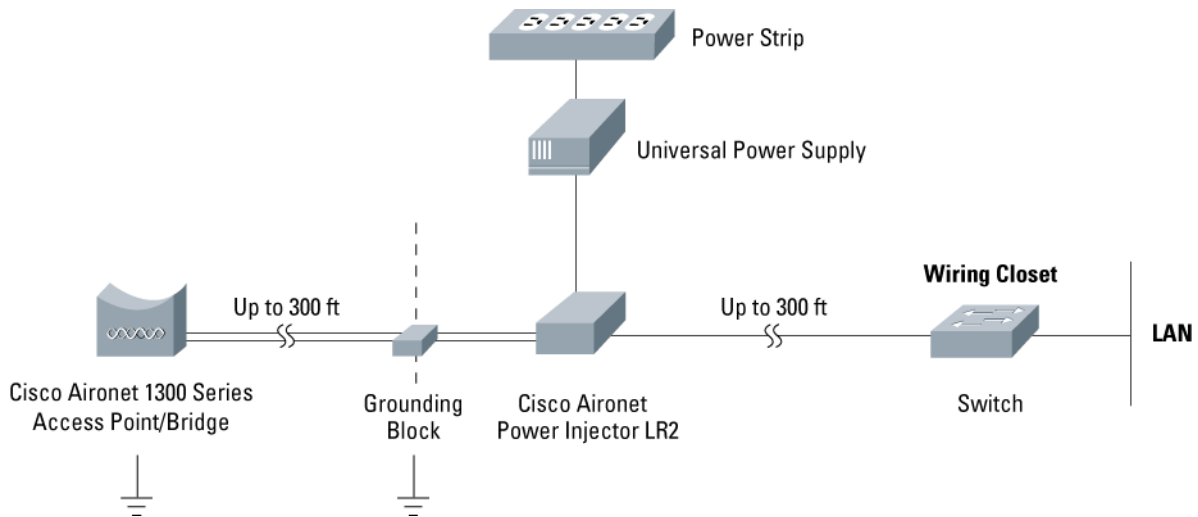
## Enhanced Network Security

- Using the Cisco Wireless Security Suite, the Cisco Aironet 1300 Series provides robust wireless security services that closely parallel the security available in a wired LAN.
- Hassle-free centralized security administration that minimizes the burden on the IT staff is provided, making it easy to install, manage, and update wireless LAN security.
- Supports IEEE 802.11i and includes IEEE 802.1X-based authentication, Temporal Key Integrity Protocol (TKIP) encryption and hardware accelerated Advanced Encryption Standard (AES) encryption enhancements to help ensure that data will remain private and secure.

## PRODUCT ARCHITECTURE

A flexible outdoor wireless-bridge or access-point solution is provided through the combination of the Cisco Aironet 1300 Series, a power injector, and options for both antennas and mounting. Figure 3 shows how the units connect.

**Figure 3.** Network Diagram with Power Injector



**Cisco Aironet 1300 Series**

The Cisco Aironet 1300 Series provides the 802.11g interface for access-point capability or bridge connections. By placing the unit outdoors, close to the antenna, you can minimize the wireless cable losses—thereby maximizing the range of the network. The unit is available with either an integrated antenna, or with connectors for external antennas (Figure 4). The high-gain integrated antenna is designed for easy installations of point-to-point links or non-root nodes of point-to-multipoint networks. The nonintegrated antenna version provides professional installers with an RP-TNC connector that allows the deployment of omni-directional, sector, or high-gain dish antennas for specific application requirements.

**Figure 4.** Cisco Aironet 1300 Series Connector Options



**Power Injector**

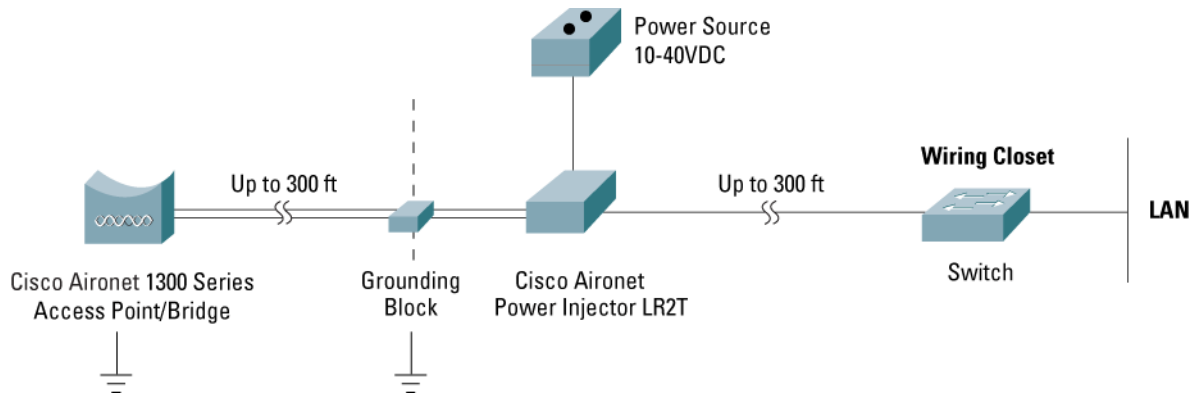
The Cisco Aironet Bridge Power Injector converts the standard 10/100BASE-T Ethernet interface that is suitable for weather-protected areas to a dual F-Type connector interface for coaxial cables that are more suitable for harsh outdoor environments. The power injector also provides power to the outdoor unit over the same cables with a power-discover feature and surge protection. To support longer cabling from your wired switch or router, the power injector enables total cable runs up to 200 meters (Category 5 [Cat5] and coaxial). The Cisco Aironet 1300 Series ships with the Cisco Aironet Power Injector LR2 (Figure 5) and an AC power supply.

**Figure 5.** Cisco Aironet Power Injector AIR-PWRINJ-BLR2/AIRPWRINJ-BLR2T



The optional Cisco Aironet Power Injector LR2T takes power from any +12 to +40 VDC source not supplied by Cisco. Typically the DC source is a vehicle or solar-power source (Figure 5). This power injector provides the flexibility needed when an AC power source is not available.

**Figure 6.** Network Diagram with Optional Power Injector



### Mounting Hardware and Antennas

In addition to having a variety of antennas available from Cisco, the Cisco 1300 Series also has different mounting options (Figure 7). These optional mounting kits are available for mounting to a roof, wall, or pole. The quick-hang mounting bracket allows a simple one-person installation. For more information on available antennas, please refer to the Cisco Aironet Antennas and Accessories Data Sheet and Reference Guide.

**Figure 7.** Cisco Aironet 1300 Series Mounting Hardware and Antennas



## FEATURES

### Antenna Alignment Assistance

The Cisco Aironet 1300 Series provides an autoconfiguration and installation mode for quick deployment of point-to-point links without the need for a configuration via Telnet, FTP, or Simple Network Management Protocol (SNMP). This mode provides LEDs with signal-strength information used in the installation and alignment process. This frees up the installers to perform their installation process and verify the link quality without requiring Cisco IOS Software or data-networking knowledge.

### Automatic Channel Selection

The Cisco Aironet 1300 Series determines and selects the least congested channel to provide the least interference possible.

### Automatic Rate Scaling

The Cisco Aironet 1300 Series scales down the data rate to maintain connectivity at outlying distances.

### Cisco IOS Software

Using Cisco IOS Software, the Cisco Aironet 1300 Series provides end-to-end solution support for intelligent network services. This provides predictable and consistent network behavior with uniform applications and services.

### Cisco Wireless Security Suite

The Cisco Aironet 1300 Series secures the network with a scalable and manageable system featuring the award-winning Cisco Wireless Security Suite. An enterprise-ready, standards-based, WLAN security solution, the Cisco Wireless Security Suite gives network administrators confidence that their data will remain private and secure. The solution provides the following benefits:

- The Cisco Wireless Security Suite supports Wi-Fi Protected Access (WPA) and Wi-Fi Protected Access 2 (WPA2) providing access control via per-user, per-session mutual authentication and data privacy via strong dynamic encryption.
- Only legitimate clients are allowed to associate with legitimate and authorized network RADIUS servers via authorized access points.
- Stronger encryption is provided by WPA with TKIP enhancements such as message integrity check (MIC), per-packet keys via initialization vector hashing, and broadcast key rotation and by WPA2 with AES.
- A variety of IEEE 802.1X extensible authentication protocol (EAP) types are supported including Cisco LEAP, Protected EAP-Generic Token Card (PEAP-GTC), PEAP-Microsoft Challenge Authentication Protocol Version 2 (PEAP-MSCHAPv2), EAP-Transport Layer Security (EAP-TLS), EAP-Tunneled TLS (EAP-TTLS), EAP-Subscriber Identity Module (EAP-SIM), and EAP-Flexible Authentication via Secure Tunneling (EAP-FAST)
- The Cisco Aironet 1300 Series in bridge role supports LEAP for mutual authentication and both Cisco TKIP and WPA TKIP algorithms. However, Cisco TKIP is recommended when the Cisco Aironet 1300 Series is configured as a bridge to support concatenation.
- A wide selection of RADIUS servers, such as the Cisco Secure Access Control Server (ACS), can be used for enterprise-class centralized user management. RADIUS accounting records for all authentication attempts are supported.

### Client Address Resolution Protocol Caching

The Cisco Aironet 1300 Series in access-point role will respond to Address Resolution Protocol (ARP) requests on behalf of IEEE 802.11 Cisco Aironet, Cisco Compatible, and most Wi-Fi certified wireless client devices. This facilitates IP address resolution without requiring the wireless client device to leave power-save or idle modes, which extends battery life.

### Dynamic Host Configuration Protocol Client

The Cisco Aironet 1300 Series automatically obtains an IP address from a Dynamic Host Configuration Protocol (DHCP) server.

## **Fast, Secure, Non-Root Bridge and Workgroup Bridge Layer 2 Roaming**

Fast Secure Roaming allows authenticated non-root bridges and workgroup bridges to roam securely from one root bridge to another without any perceptible delay during reassociation. Fast Secure Roaming supports latency-sensitive applications such as wireless VoIP, enterprise resource planning (ERP), or Citrix-based solutions, without dropping connections during roaming. Fast Secure Roaming requires a Wireless Domain Services (WDS) server that can be provided by other Cisco devices such as the Cisco Aironet 1130 AG and Aironet 1230 AG Series access points. WDS is a collection of Cisco IOS Software features that enhance WLAN client mobility and simplify WLAN deployment and management.

## **Fast Secure Roaming (Access-Point Role)**

Fast Secure Roaming allows authenticated client devices to roam securely from one access point to another without any perceptible delay during reassociation.

## **Support for Port Aggregation Protocol and Cisco Fast EtherChannel Technology**

Bandwidth can be increased between bridged networks through the aggregation of multiple bridges at each site via Cisco Fast EtherChannel<sup>®</sup> technology, Port Aggregation Protocol (PAgP), or routing protocols.

## **Hot Standby**

The Cisco Aironet 1300 Series in access-point mode supports failover to a standby device, thus increasing network uptime.

## **Load Balancing**

The Cisco Aironet 1300 Series distributes user connections across available access points to optimize aggregate throughput.

## **QoS Support**

The Cisco Aironet 1300 Series supports WMM. WMM improves the user experience for audio, video, and voice applications over a Wi-Fi wireless connection. WMM is a subset of the IEEE 802.11e QoS draft standard, supporting QoS-prioritized media access via the Enhanced Distributed Channel Access (EDCA) method. The Cisco Aironet 1300 Series also supports prioritization of traffic based on 802.1P tags and 802.1Q priority values and applies QoS policy accordingly for different application requirements, thus improving the voice and video user's experience.

## **Radio Network Roles**

The Cisco Aironet 1300 Series supports the following radio roles:

- Root access point
- Root bridge, with client association
- Non-root bridge without client association
- Workgroup bridge

## **RADIUS Server per Service Set Identifier**

The Cisco Aironet 1300 Series allows specification of RADIUS servers on a per-Service Set Identifier (SSID) basis by taking advantage of multiple SSID capabilities. This is beneficial for multitenant deployments, such as airports, where each tenant needs a separate RADIUS server for user authentication.

## **VLAN Support**

The Cisco Aironet 1300 Series can manage up to 16 VLANs, which allows customers to differentiate LAN policies and services—such as security and QoS—for different users. The Cisco Aironet 1300 Series also supports 802.1Q trunking.



### Wireless Link-Distance Adjustment

The link-distance parameter allows the user to tune the Carrier Sense Multiple Access/Collision Avoidance (CSMA/CA) parameters for the particular range in use to maximize performance.

### Wireless Packet Concatenation

The concatenation of smaller packets into larger ones allows the Cisco Aironet 1300 Series to more efficiently use the wireless medium and provide higher overall data throughputs.

### Wireless Programmable Clear-Channel Assessment

With a programmable clear-channel assessment, the Cisco Aironet 1300 Series can be configured to the particular background-interference level found in your environment for reduced contention overhead with other wireless systems.

### CiscoWorks Wireless LAN Solution Engine

The CiscoWorks Wireless LAN Solution Engine (WLSE), a component of Cisco SWAN, is available as a management tool for the Cisco Aironet 1300 Series. CiscoWorks WLSE has an HTML-based management interface. It uses SNMP and Secure Shell (SSH)/Secure Sockets Layer (SSL) for managing Cisco Aironet access points and bridges via a Web browser.

For more information on CiscoWorks WLSE, visit: <http://www.cisco.com/go/wlse>

## SUMMARY

The Cisco Aironet 1300 Series is a flexible outdoor 802.11b and 802.11g access point and bridge that provides high-speed and cost-effective wireless connectivity between multiple fixed or mobile networks and clients.

## PRODUCT SPECIFICATIONS

### Product Compatibility

Table 1 outlines the products that are compatible with the Cisco Aironet 1300 Series.

**Table 1.** Product Compatibility

<b>Access-Point Compatibility</b>	<ul style="list-style-type: none"><li>• Compatible with any Wi-Fi certified WPA or WPA2 client device for basic capability</li><li>• Compatible with Cisco Aironet clients and Cisco Compatible Clients for Extended Capability</li></ul>
<b>Workgroup-Bridge Compatibility</b>	Supports operation with Cisco Aironet access points and Cisco bridges
<b>Wireless-Bridge Compatibility</b>	Only compatible with other Cisco Aironet 1300 and Aironet 350 series wireless bridges

### Protocols

Table 2 lists the protocols supported by the Cisco Aironet 1300 Series.

**Table 2.** Protocols

<b>Air Interface Standard</b>	IEEE 802.11b or IEEE 802.11g <b>Note:</b> Bridge mode has enhancements to the standard to allow longer- range bridging communications.
<b>Frequency Band</b>	<ul style="list-style-type: none"> <li>• 2.412 to 2.462 GHz (FCC)</li> <li>• 2.412 to 2.472 GHz (ETSI)</li> <li>• 2.412 to 2.472 GHz (TELEC)</li> </ul>
<b>Wireless Modulation</b>	<p><b>802.11b</b></p> <ul style="list-style-type: none"> <li>• Direct Sequence Spread Spectrum (DSSS): <ul style="list-style-type: none"> <li>– Differential Binary Phase Shift Keying (DBPSK) at 1 Mbps</li> <li>– Differential Quadrature Phase Shift Keying (DQPSK) at 2 Mbps</li> <li>– Complementary Code Keying (CCK) at 5.5 and 11 Mbps</li> </ul> </li> </ul> <p><b>802.11g</b></p> <ul style="list-style-type: none"> <li>• Orthogonal Frequency Divisional Multiplexing (OFDM): <ul style="list-style-type: none"> <li>– BPSK at 6 and 9 Mbps</li> <li>– QPSK at 12 and 18 Mbps</li> <li>– 16-quadrature amplitude modulation (QAM) at 24 and 36 Mbps</li> <li>– 64-QAM at 48 and 54 Mbps</li> </ul> </li> </ul>
<b>Media Access Protocol</b>	Carrier Sense Multiple Access/Collision Avoidance (CSMA/CA)
<b>Operating Channels</b>	<p><b>802.11b/g</b></p> <ul style="list-style-type: none"> <li>• ETSI: 13</li> <li>• Americas: 11</li> <li>• TELEC (Japan): 13</li> </ul>
<b>Non-Overlapping Channels</b>	3
<b>Security—Bridge Role</b>	<p>Cisco Wireless Security Suite, including:</p> <p><b>Authentication</b></p> <ul style="list-style-type: none"> <li>• 802.1X support including LEAP to yield mutual authentication and dynamic per-user, per-session encryption keys</li> </ul> <p><b>Encryption</b></p> <ul style="list-style-type: none"> <li>• Cisco TKIP or WPA TKIP; key hashing (per-packet keying), Message Integrity Check (MIC) and broadcast key rotation</li> <li>• AES (802.11i)</li> </ul>

<b>Security—Access-Point Role</b>	<p>Cisco Wireless Security Suite supporting WPA and WPA2, including:</p> <p><b>Authentication</b></p> <ul style="list-style-type: none"> <li>• 802.1X support including LEAP, PEAP-GTC, PEAP-MSCHAPv2, EAP Message Digest 5 (EAP MD5), EAP-TLS, EAP-TTLS, EAP-SIM, and EAP-FAST to yield mutual authentication and dynamic per-user, per-session encryption keys</li> </ul> <p><b>Encryption</b></p> <ul style="list-style-type: none"> <li>• WPA: Cisco TKIP or WPA TKIP; key hashing (per-packet keying), MIC and broadcast key rotation</li> <li>• WPA2: AES (802.11i)</li> </ul>
<b>Security—Workgroup-Bridge Role</b>	<p>Cisco Wireless Security Suite, including:</p> <p><b>Authentication</b></p> <ul style="list-style-type: none"> <li>• 802.1X support including LEAP to yield mutual authentication and dynamic per-user, per-session encryption keys</li> </ul> <p><b>Encryption</b></p> <ul style="list-style-type: none"> <li>• Cisco TKIP or WPA TKIP; key hashing (per-packet keying), MIC and broadcast key rotation</li> <li>• AES (802.11i)</li> </ul>
<b>SNMP Compliance</b>	<p>Versions 1 and 2</p>

## Components

Table 3 lists the components available for the Cisco Aironet 1300 Series.

**Table 3.** Components

<b>Power Injector LR2</b>	<p>The power injector converts the standard 10/100BASE-T Ethernet Cat5 RJ-45 interface that is suitable for weather-protected areas to a dual F-Type connector interface for dual coaxial cables that are more suitable for harsh outdoor environments. While providing a 100BASE-T interface to the Cisco Aironet 1300 Series, the power injector also provides power to the unit over the same cables with a power-discovery feature that protects other appliances from damage should they accidentally be connected. As an added benefit to the installer, the automatic medium-dependent interface crossover (Auto-MDIX) feature is built in, allowing the dual cables to be swapped while maintaining the same capability. To support longer cable runs from your network switch or router, the power injector is designed to accommodate up to a 100 meter coaxial cable run plus 100 meters of indoor Cat5 cable— enabling total cable runs up to 200 meters. Lightning and surge protection is also included at the F-Type connector interface to provide added protection to your network devices. The power injector requires a 48V DC source supplied by Cisco.</p>
<b>Power Injector LR2T</b>	<p>The Power Injector LR2T supports all the capability of LR2. It is designed for use in transportation applications and operates with an input voltage range of +12 to +40V DC. The DC source is provided by the user. The LR2T can therefore be vehicle or solar powered.</p>
<b>Power Supply</b>	<ul style="list-style-type: none"> <li>• 48V DC supply for AIR-PWRINJ-BLR2=</li> <li>• User-supplied 12 to 40V DC source for AIR-PWRINJ_BLR2T=. Could require an external load- dump-module for automotive and bus installations.</li> </ul>

**AIR-BR1310G- x-K9  
Integrated Antenna**

- Vertical polarization
- 13 dBi gain
- 36° E-plane by 38° H-plane (3 dB beam width)

**Interfaces**

Table 4 lists the Cisco Aironet 1300 Series interfaces.

**Table 4.** Interfaces

	<b>AIR-BR1310G-x-K9 and AIR-BR1310G-x-K9-R</b>	<b>AIR-PWRINJ-BLR2 AIR-PWRINJ-BLR2T</b>
<b>Status LEDs</b>	Four LEDs: Install, Radio, Status, and Ethernet	One bicolor LED showing power status
<b>F-Type Connectors</b>	Dual coaxial cable carries full-duplex Ethernet, DC power, and full-duplex console port (RS-232 connection)	Dual coaxial cable carries full-duplex Ethernet, DC power, and full-duplex console port (RS-232 connection)
<b>Antenna Interface</b>	<ul style="list-style-type: none"><li>• Air-BR1310G-x-k9: Air interface (integrated directional antenna)</li><li>• AIR-BR1310G-x-k9-R: Two RP-TNC type connectors for external antennas</li></ul>	—
<b>DC Power</b>	—	One two-pin Switchcraft connector (with threaded locking sleeve) and matching connector
<b>RJ-45 Interface</b>	—	One RJ-45 connector for console-port access (9600 bps only), a second RJ-45 connector for 10/100BASE-T LAN interface
<b>Grounding Lugs</b>	Two grounding lugs for lightening protection.	—

**Memory**

Table 5 lists the memory requirements for the Cisco Aironet 1300 Series.

**Table 5.** Memory Requirements

<b>Eight Megabytes of Flash Memory</b>	Memory space for future firmware upgrades to support new 802.11 standards and advanced features.
--	--

**Performance**

Table 6 lists the Cisco Aironet 1300 Series performance capabilities.

**Table 6.** Performance Capabilities

	AIR-BR1310G-x-K9	AIR-BR1310G-x-K9-R
<b>Available Transmit Power Settings</b>	<b>802.11b:</b> 100 mW (20 dBm) 50 mW (17 dBm) 30 mW (15 dBm) 20 mW (13 dBm) 10 mW (10 dBm) 5 mW (7 dBm) 1 mW (0 dBm)  <b>802.11g:</b> 30 mW (15 dBm) 20 mW (13 dBm) 10 mW (10 dBm) 5 mW (7 dBm) 1 mW (0 dBm)	<b>802.11b:</b> 100 mW (20 dBm) 50 mW (17 dBm) 30 mW (15 dBm) 20 mW (13 dBm) 10 mW (10 dBm) 5 mW (7 dBm) 1 mW (0 dBm)  <b>802.11g:</b> 30 mW (15 dBm) 20 mW (13 dBm) 10 mW (10 dBm) 5 mW (7 dBm) 1 mW (0 dBm)
	<b>Note:</b> Maximum power setting will vary according to individual country regulations.	
<b>Maximum Operational Receive Level</b>	-20 dBm	-20 dBm
<b>Maximum Survivable Receive Level</b>	10 dBm	10 dBm
<b>Receive Sensitivity (10 percent with 3200 byte packets)</b>	1 Mbps: -94 dBm 2 Mbps: -91 dBm 5.5 Mbps: -89 dBm 11 Mbps: -85 dBm 6 Mbps: -90 dBm 9 Mbps: -89 dBm 12 Mbps: -86 dBm 18 Mbps: -84 dBm 24 Mbps: -81 dBm 36 Mbps: -77 dBm 48 Mbps: -73 dBm 54 Mbps: -72 dBm	1 Mbps: -94 dBm 2 Mbps: -91 dBm 5.5 Mbps: -89 dBm 11 Mbps: -85 dBm 6 Mbps: -90 dBm 9 Mbps: -89 dBm 12 Mbps: -86 dBm 18 Mbps: -84 dBm 24 Mbps: -81 dBm 36 Mbps: -77 dBm 48 Mbps: -73 dBm 54 Mbps: -72 dBm
<b>Maximum Bridge Relative Velocity</b>	Over 100 km per hour at 12 and 24 Mbps with 128 byte packets at 1 percent PER	

	AIR-BR1310G-x-K9	AIR-BR1310G-x-K9-R
<b>Access-Point Role Outdoor Range</b>	<p><b>Americas</b> 865 feet (260 meters) at 54 Mbps 3465 feet (1055 meters) at 11 Mbps</p> <p><b>ETSI</b> 150 feet (45 meters) at 54 Mbps 775 feet (235 meters) at 11 Mbps</p> <p><b>TELEC</b> 485 feet (145 meters) at 54 Mbps 1095 feet (330 meters) at 11 Mbps</p> <p><b>Note:</b> Access Point with 13 dBi integrated antenna and Cisco clients</p>	<p><b>Americas</b> 350 feet (105 meters) at 54 Mbps 1410 feet (430 meters) at 11 Mbps</p> <p><b>ETSI</b> 195 feet (60 meters) at 54 Mbps 630 feet (190 meters) at 11 Mbps</p> <p><b>TELEC</b> 195 feet (60 meters) at 54 Mbps 445 feet (135 meters) at 11 Mbps</p> <p><b>Note:</b> Access Point with 5.2 dBi patch antenna and Cisco clients</p>
<b>Bridge Role Point-to-Point Range*</b>	<p><b>Americas</b> 1.3 miles (2 km) at 54 Mbps 9 miles (15 km) at 11 Mbps</p> <p><b>EMEA</b> 0.2 miles (0.36 km) at 54 Mbps 2.3 miles (3.5 km) at 11 Mbps</p> <p><b>TELEC</b> 0.7 miles (1.1 km) at 54 Mbps 3.2 miles (5 km) at 11 Mbps</p> <p><b>Note:</b> 13 dBi integrated antenna at root and non-root bridge</p>	<p><b>Americas</b> 4.5 miles (7 km) at 54 Mbps 14 miles (23 km) at 11 Mbps</p> <p><b>EMEA</b> 5.5 miles (9 km) at 11 Mbps</p> <p><b>TELEC</b> 4.5 miles (7 km) at 54 Mbps 12 miles (20 km) at 11 Mbps</p> <p><b>Note:</b> 21 dBi dish antenna at root and non-root bridge</p>
<b>Bridge Role Point-to-Multipoint Range*</b>	<p><b>Americas</b> 1.1 miles (1.8 km) at 54 Mbps 8 miles (13 km) at 11 Mbps</p> <p><b>EMEA</b> 0.25 miles (0.4 km) at 54 Mbps 1.1 miles (1.8 km) at 11 Mbps</p> <p><b>TELEC</b> 0.8 miles (1.3 km) at 54 Mbps 3.6 miles (5.8 km) at 11 Mbps</p> <p><b>Note:</b> 14 dBi sector antenna at root and 13 dBi integrated antenna at non-root</p>	<p><b>Americas</b> 2.0 miles (3.3 km) at 54 Mbps 10 miles (16 km) at 11 Mbps</p> <p><b>EMEA</b> 2.5 miles (4 km) at 11 Mbps</p> <p><b>TELEC</b> 2.0 miles (3.3 km) at 54 Mbps 9.0 miles (14 km) at 11 Mbps</p> <p><b>Note:</b> 14 dBi sector at root and 21 dBi dish at non-root</p>

\* The distances referenced here are approximations and should be used for estimation purposes only.

## Reliability and Availability

Table 7 shows the reliability and availability of the Cisco Aironet 1300 Series.

**Table 7.** Reliability and Availability

	<b>AIR-BR1310G-x-K9 and AIR-BR1310G-x-K9-R</b>	<b>AIR-PWRINJ-BLR2 AIR-PWRINJ-BLR2T</b>
<b>Mean Time Between Failure (MTBF)</b>	132,000 hrs	400,000 hrs

## Network Management

Table 8 shows the network management capabilities of the Cisco Aironet 1300 Series.

**Table 8.** Network Management

	<b>AIR-BR1310G-x-K9 and AIR-BR1310G-x-K9-R</b>	<b>AIR-PWRINJ-BLR2 AIR-PWRINJ-BLR2T</b>
<b>Status LEDs</b>	Four LEDs: <ul style="list-style-type: none"><li>• Install</li><li>• Radio</li><li>• Status</li><li>• Ethernet</li></ul>	One LED: <ul style="list-style-type: none"><li>• Power status</li></ul>
<b>Configuration Support</b>	Telnet, HTTP, FTP, Trivial FTP (TFTP), SNMP, console port	—
<b>CiscoWorks WLSE Support</b>	Device discovery, template-based firmware and configuration management, fault and performance monitoring and reporting Note: Can not push configurations when configured as a workgroup bridge	—
<b>CiscoWorks</b>	CiscoWorks RME2, CiscoWorks SWIM3	—

## Physical

Table 9 lists the physical specifications of the Cisco Aironet 1300 Series.

**Table 9.** Physical Specifications

	<b>AIR-BR1310G-x-K9 and AIR-BR1310G-x-K9-R</b>	<b>AIR-PWRINJ-BLR2</b>	<b>AIR-PWRINJ-BLR2T</b>
<b>Dimensions</b>	8 in. x 8.1 in. x 3.12 in. (20.3 cm x 20.57 cm x 7.87 cm)	4.62 in. x 4.76 in. x 1.07 in. (11.73 cm x 12.09 cm x 2.71 cm)	4.62 in. x 4.76 in. x 1.07 in. (11.73 cm x 12.09 cm x 2.71 cm)
<b>Weight</b>	2.5 lb (1.25 kg)	2 lb (1 kg)	2 lb (1 kg)
<b>Operational Temperature</b>	-22° to +131°F (-30° to +55°C)	-22° to +131°F (-30° to +55°C)	-22° to +131°F (-30° to +55°C)
<b>Storage Temperature</b>	-40° to +185°F (-40° to +85°C)	-40° to +185°F (-40° to +85°C)	-40° to +185°F (-40° to +85°C)
<b>Operational Altitude</b>	13,800 ft (4206 m)	13,800 ft (4206 m)	13,800 ft (4206 m)
<b>Storage Altitude</b>	16,000 ft (4877 m)	16,000 ft (4877 m)	16,000 ft (4877 m)
<b>Humidity</b>	0 to 100% at 100°F (38°C) (condensing)	0 to 90% at 100°F (38°C) (non-condensing)	0 to 90% at 100°F (38°C) (non-condensing)
<b>Vibration</b>	SAEJ1455 section 4.9	SAEJ1455 section 4.9	SAEJ1455 section 4.9
<b>Enclosure</b>	NEMA 4; IP56; UL2083; Environmentally sealed	UL2083; metal case	UL2083; metal case

**Power**

Table 10 lists Cisco Aironet 1300 Series power requirements.

**Table 10.** Power Requirements


	<b>AIR-BR1310G-x-K9 and AIR-BR1310G-x-K9-R</b>	<b>AIR-PWRINJ-BLR2</b>	<b>AIR-PWRINJ-BLR2T</b>
<b>AC Power</b>	Not required—uses DC voltage from power injector	100 to 240V AC, +/-10% (Power Supply Provided by Cisco)	Not required
<b>DC Power</b>	—	+48V DC, +/-10% 2 W	+12 to +40V DC, +/-10% 2 W

**Approvals and Compliance**

The Cisco Aironet 1300 Series meets the following approvals and compliance standards (Table 11).



**Table 11.** Approvals and Compliance

<b>Country Compliance</b>	Customers are responsible for verifying approval for use in their country. Please see <a href="http://www.cisco.com/go/aironet/compliance">http://www.cisco.com/go/aironet/compliance</a> to verify approval and to identify the regulatory domain that corresponds to a particular country. Not all regulatory domains have been approved. As they are approved, the part numbers will be available on the Global Price List.	
	<b>AIR-BR1310G-x-K9 and AIR-BR1310G-x-K9-R</b>	<b>AIR-PWRINJ-BLR2 AIR-PWRINJ-BLR2T</b>
<b>Wi-Fi Certification</b>	 In access-point role (WPA and WPA2)	—
<b>Safety</b>	<ul style="list-style-type: none"> <li>• UL 60950 Third Ed.</li> <li>• CSA C22.2 No. 60950-00</li> <li>• IEC 60950 Sec Ed, amendments 1-4</li> <li>• EN 60950; 1992, amendments 1-4</li> <li>• CSA 94/UL50—NEMA Rated</li> </ul>	<ul style="list-style-type: none"> <li>• UL 60950 Third Ed.</li> <li>• CSA C22.2 No. 60950-00</li> <li>• IEC 60950 Sec Ed, amendments 1-4</li> <li>• EN 60950; 1992, amendments 1-4</li> <li>• UL2043</li> </ul>
<b>Radio Approvals</b>	<ul style="list-style-type: none"> <li>• FCC Part 15.247</li> <li>• RSS—139-1, RSS-210 (Canada)</li> <li>• EN 300.328 (Europe)</li> <li>• Telec 33B (Japan)</li> <li>• ARIB-STD-T66 v2.1</li> <li>• FCC Bulletin OET-65CRSS-102</li> <li>• Designed to EN60945</li> </ul>	—
<b>EMI and Susceptibility (Class B)</b>	<ul style="list-style-type: none"> <li>• FCC Part 15.107 and 15.109 Class B</li> <li>• ICES-003 Class B (Canada)</li> <li>• EN 55022 Class B</li> <li>• EN 55024</li> <li>• AS/NZS 3548 Class B</li> <li>• VCCI Class B</li> <li>• EN 301.489-1 and 17 (Europe)</li> <li>• Designed to CISPR 25, ISO 11452-24, EN50121, EN60571 and SAEJ1113</li> </ul>	<ul style="list-style-type: none"> <li>• FCC Part 15.107 and 15.109 Class B</li> <li>• ICES-003 Class B (Canada)</li> <li>• EN 55022 Class B</li> <li>• EN 55024</li> <li>• AS/NZS 3548 Class B</li> <li>• VCCI Class B</li> <li>• EN 301.489-1 and 17 (Europe)</li> </ul>

**Additional Specifications**

<b>Warranty</b>	One year
-----------------	----------

**ORDERING INFORMATION**

To place an order, visit the [Cisco Ordering Home Page](#). For assistance in determining the correct wireless bridge to order, as well as appropriate accessories, please read the [Cisco Aironet 1300 Series Ordering Guide](#).

## TO DOWNLOAD THE SOFTWARE

Visit the [Cisco Software Center](#) to download Cisco IOS Software. Cisco Aironet software can be downloaded at [Wireless Software](#).

## SERVICE AND SUPPORT

Cisco Systems offers a wide range of services programs to accelerate customer success. These innovative services programs are delivered through a unique combination of people, processes, tools, and partners, resulting in high levels of customer satisfaction. Cisco services help you to protect your network investment, optimize network operations, and prepare the network for new applications to extend network intelligence and the power of your business. For more information about Cisco Services, see [Cisco Technical Support Services](#).

## FOR MORE INFORMATION

For more information about the Cisco Aironet 1300 Series, visit <http://www.cisco.com/go/aironet> or contact your local account representative.



### Corporate Headquarters

Cisco Systems, Inc.  
170 West Tasman Drive  
San Jose, CA 95134-1706  
USA  
[www.cisco.com](http://www.cisco.com)  
Tel: 408 526-4000  
800 553-NETS (6387)  
Fax: 408 526-4100

### European Headquarters

Cisco Systems International BV  
Haarlerbergpark  
Haarlerbergweg 13-19  
1101 CH Amsterdam  
The Netherlands  
[www-europe.cisco.com](http://www-europe.cisco.com)  
Tel: 31 0 20 357 1000  
Fax: 31 0 20 357 1100

### Americas Headquarters

Cisco Systems, Inc.  
170 West Tasman Drive  
San Jose, CA 95134-1706  
USA  
[www.cisco.com](http://www.cisco.com)  
Tel: 408 526-7660  
Fax: 408 527-0883

### Asia Pacific Headquarters

Cisco Systems, Inc.  
168 Robinson Road  
#28-01 Capital Tower  
Singapore 068912  
[www.cisco.com](http://www.cisco.com)  
Tel: +65 6317 7777  
Fax: +65 6317 7799

Cisco Systems has more than 200 offices in the following countries and regions. Addresses, phone numbers, and fax numbers are listed on **the Cisco Web site at [www.cisco.com/go/offices](http://www.cisco.com/go/offices).**

Argentina • Australia • Austria • Belgium • Brazil • Bulgaria • Canada • Chile • China PRC • Colombia • Costa Rica • Croatia • Cyprus • Czech Republic • Denmark • Dubai, UAE • Finland • France • Germany • Greece • Hong Kong SAR • Hungary • India • Indonesia • Ireland • Israel • Italy • Japan • Korea • Luxembourg • Malaysia • Mexico • The Netherlands • New Zealand • Norway • Peru • Philippines • Poland • Portugal • Puerto Rico • Romania • Russia • Saudi Arabia • Scotland • Singapore • Slovakia • Slovenia • South Africa • Spain • Sweden • Switzerland • Taiwan • Thailand • Turkey • Ukraine • United Kingdom • United States • Venezuela • Vietnam • Zimbabwe

Copyright © 2004 Cisco Systems, Inc. All rights reserved. CCIP, CCSP, the Cisco *Powered* Network mark, Cisco Unity, Follow Me Browsing, FormShare, and StackWise are trademarks of Cisco Systems, Inc.; Changing the Way We Work, Live, Play, and Learn, and iQuick Study are service marks of Cisco Systems, Inc.; and Aironet, ASIST, BPX, Catalyst, CCDA, CCDP, CCIE, CCNA, CCNP, Cisco, the Cisco Certified Internetwork Expert logo, Cisco IOS, the Cisco IOS logo, Cisco Press, Cisco Systems, Cisco Systems Capital, the Cisco Systems logo, Empowering the Internet Generation, Enterprise/Solver, EtherChannel, EtherSwitch, Fast Step, GigaStack, Internet Quotient, IOS, IP/TV, iQ Expertise, the iQ logo, iQ Net Readiness Scorecard, LightStream, Linksys, MGX, MICA, the Networkers logo, Networking Academy, Network Registrar, *Packet*, PIX, Post-Routing, Pre-Routing, RateMUX, Registrar, ScriptShare, SlideCast, SMARTnet, StrataView Plus, Stratum, SwitchProbe, TeleRouter, The Fastest Way to Increase Your Internet Quotient, TransPath, and VCO are registered trademarks of Cisco Systems, Inc. and/or its affiliates in the United States and certain other countries.

All other trademarks mentioned in this document or Web site are the property of their respective owners. The use of the word partner does not imply a partnership relationship between Cisco and any other company. (0402R)

2004149.11\_ETMG\_DB\_12.04

