Data Sheet

Cisco Aironet 350 Series Access Points

The Cisco Aironet 350 Series Standard and Rugged Access Points

The Cisco Aironet® 350 Series Access Point (AP) delivers a cost-effective, reliable, secure, and easily managed wireless LAN (WLAN) solution for enterprise, small- and medium-sized businesses (see Figure 1). The Cisco Aironet 350 Series leads the industry in performance, range, reliability, security and mobility. It is easy to deploy and manage and reduces overall cost of ownership.

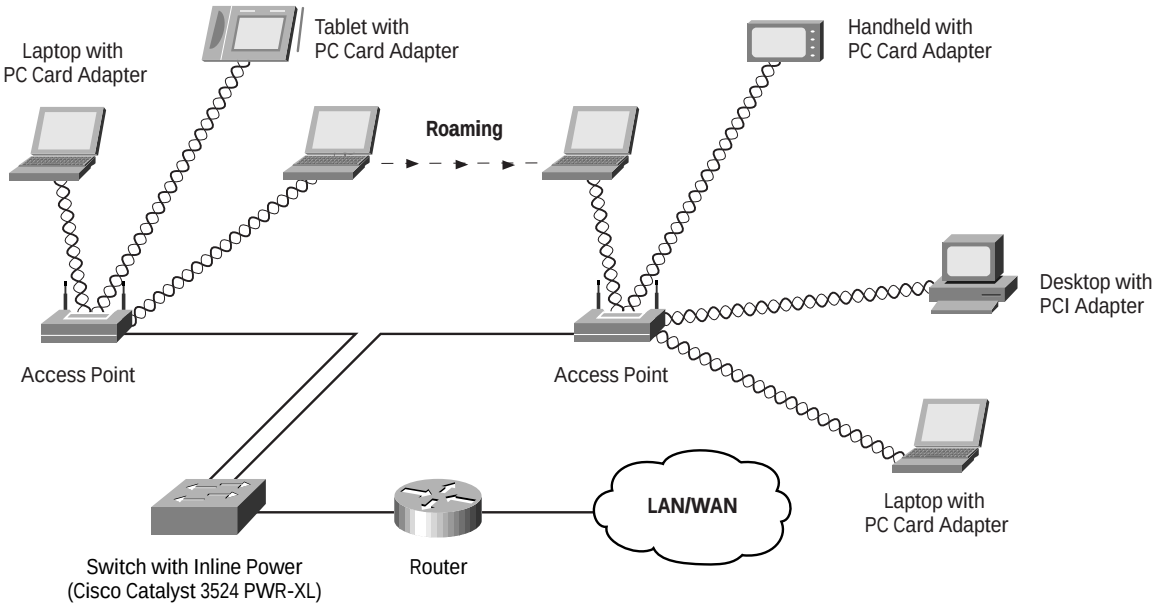
The Cisco Aironet 350 Series AP supports data rates of up to 11 Mbps, is IEEE 802.11b compliant, and offers key features that meet all enterprise requirements:

- Support for inline power over Ethernet, simplifying and reducing the total cost of installation and ownership
- High-performance 100-milliwatt (mW) radio design with power management capabilities, delivering industry-leading throughput, range, and reliability
- Architecture that protects user investments by supporting future software features
- Available in two versions: standard and rugged. The standard AP has a plastic case, standard operating temperature, and integrated antennas. The rugged AP has an extended operating temperature range, external antenna connectors for auxiliary antennas, and a metal case for durability and plenum rating.

The Cisco Aironet 350 Series supports the following software features:

- IEEE 802.1x-based Extensible Authentication Protocol (EAP) services that provide centralized, user-based authentication and single-user, single-session encryption keys for hassle-free security administration and user-based privacy
- Automatic channel selection, Cisco Discovery Protocol (CDP), Dynamic Host Configuration Protocol (DHCP), and BOOTP services to simplify installation and management of WLANs
- High-availability services, such as load balancing and hot-standby redundancy, for dependable performance
- Rich filtering options on both the Ethernet and radio side to provide performance and application tuning to meet specific business requirements

Figure 1 An AP is the center point in an all-wireless network or serves as a connection point between a wired and wireless network. Multiple APs can be placed throughout a facility to give users with WLAN adapters the ability to roam freely throughout an extended area while maintaining uninterrupted access to all network resources.



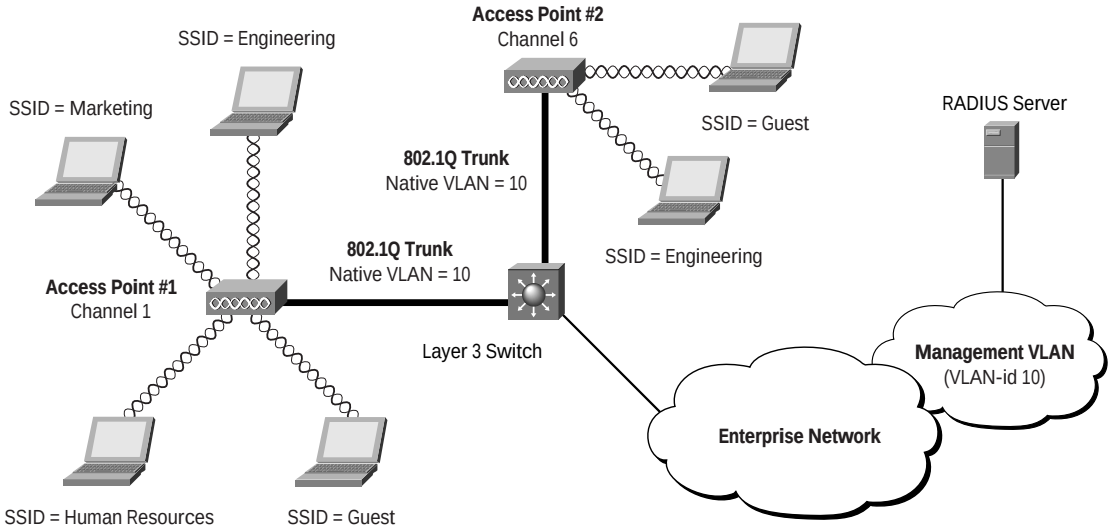
A Rugged Design to Increase Deployment Options

The Cisco Aironet 350 Series AP is available in a rugged version (AIR-AP352E2R-x-K9). This enhanced version includes two RP-TNC connectors for use with optional antennas, an extended operating temperature range of -20 to 55 C, allowing for placement outdoors in a NEMA case or in harsh indoor environments such as warehouses and factories, and a durable metal enclosure. With its metal enclosure, the Cisco Aironet 350 Series AP is UL 2043 certified, and designed to achieve plenum rating as defined by various municipal fire codes. The Cisco Aironet 350 Series AP is also available in a standard version (AIR-AP352E2C) with a plastic enclosure and two captured, nonremovable 2.2 dBi diversity dipole antennas.

Intelligent Networking Features for a Scalable, Manageable Solution

The Cisco Aironet 350 Series extends end-to-end intelligent networking to the wireless access point with support for enterprise-class virtual LANs (VLANs) and quality of service (QoS). An ideal choice for enterprise installations, the Cisco Aironet 350 Series can manage up to 16 VLANs (Figure 2), which allows customers to differentiate LAN policies and services, such as security and QoS, for different users. For example, enterprise customers can use different VLANs to segregate employee traffic from guest traffic, and further segregate those traffic groups from high-priority voice traffic. Traffic to and from wireless clients with varying security capabilities can be segregated into VLANs with varying security policies. For example, VLANs allow educational institutions to secure faculty and administrator traffic from student traffic traveling over the same infrastructure. Implementing VLAN segmentation increases wireless LAN manageability and security.

Figure 2 Indoor Wireless VLAN Deployment



With support for 802.1p QoS, the Cisco Aironet 350 Series provides traffic prioritization for packets traveling to and from the access point over Ethernet. Delay-sensitive traffic, such as voice and video, can be prioritized over data traffic for improved user experience and optimal network utilization. Software and radio firmware upgrades provide the capability to upgrade to future QoS standards such as 802.11e. Supporting the voice prioritization schemes for 802.11b mobile phones, the Aironet 350 Series further enables quality voice-over-wireless-LAN solutions.

Simplified Deployment and Reduced Total Cost of Installation and Ownership

The Cisco Aironet 350 Series AP includes a 10/100 Ethernet uplink for seamless integration with existing wired LANs. To minimize installation costs, the Cisco Aironet 350 Series AP draws operating power from a powered Ethernet port. This line power configuration works with all Cisco line power-enabled devices such as Catalyst switches and line power patch panels (see Figures 3-5) A line power injector, included with the product, can also be used to power the Cisco Aironet 350 Series AP.

Figure 3 The AP can utilize a Cisco Catalyst 3524-PWR-XL for its power

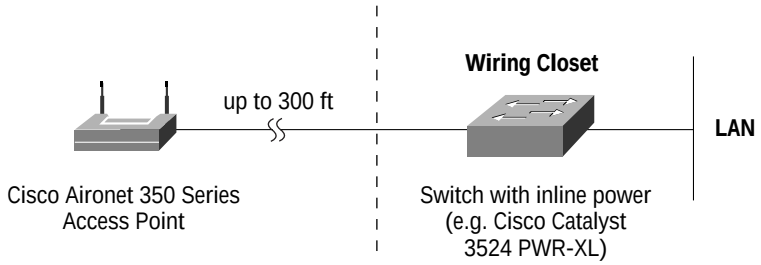


Figure 4 A Cisco Catalyst Inline Power Patch Panel may be used to power the AP

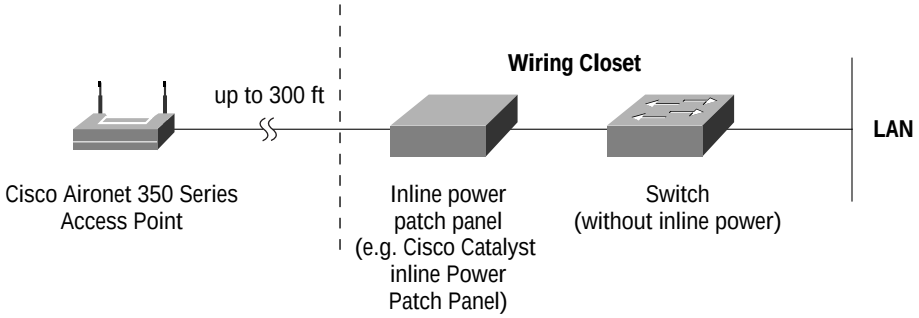
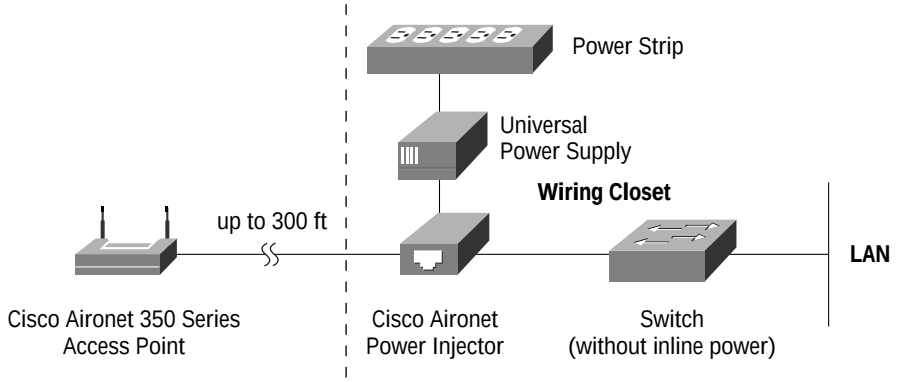


Figure 5 Cisco also offers a power injector to power the Cisco Aironet 350 Series AP



Industry-Leading WLAN Performance, Range, and Reliability

The 100-mW transmit power and receive sensitivity of the Cisco Aironet 350 Series AP leads the industry in range and reliability. Antenna diversity and superior delay spread (multipath) characteristics of the Cisco Aironet 350 Series deliver improved performance even in harsh environments such as warehouses, factories, and metal buildings.

Administrators can configure the radio transmit power (1, 5, 20, 30, 50, and 100 mW) on the Cisco Aironet 350 Series to meet specific coverage requirements and minimize interference. In addition to an AP with two captured 2.2 dBi antennas, an AP with two RP-TNC connectors is offered for more challenging applications, where a broad portfolio of removable antennas can be used to further increase range and reliability.

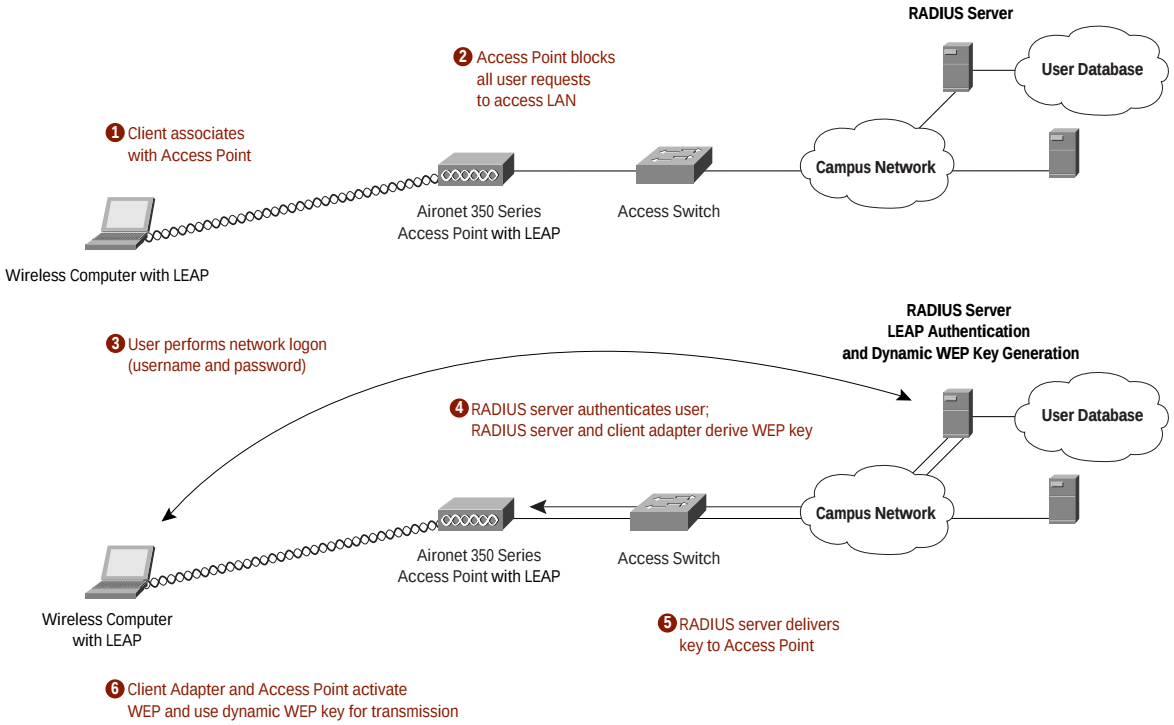
Investment Protection

To protect the users' investment, all Cisco Aironet 350 Series APs and bridges feature sufficient Flash memory to handle future firmware upgrades.

Enterprise-Class Wireless LAN Security

Wireless LAN security is a primary concern. The Cisco Aironet 350 Series secures the enterprise network with a scalable and manageable system featuring the award-winning Cisco Wireless Security Suite. Based on the 802.1X standard for port-based network access, the Cisco Wireless Security Suite takes advantage of the Extensible Authentication Protocol (EAP) framework for user-based authentication (Figure 6).

Figure 6 The Cisco Wireless Security Suite is an Enterprise-Class Security System Based on the 802.1X Architecture



The Cisco Wireless Security Suite interoperates with a range of client devices. It supports all 802.1X authentication types, including EAP Cisco Wireless (LEAP), Extensible Authentication Protocol-Transport Layer Security (EAP-TLS) and types that operate over EAP-TLS, such as Protected Extensible Authentication Protocol (PEAP), EAP-Tunneled TLS (EAP-TTLS) and EAP-Subscriber Identity Module (EAP-SIM). A wide selection of Remote Access Dial-In User Service (RADIUS) servers, such as the Cisco Secure Access Control Server (ACS), can be used for enterprise-class centralized user management that includes:

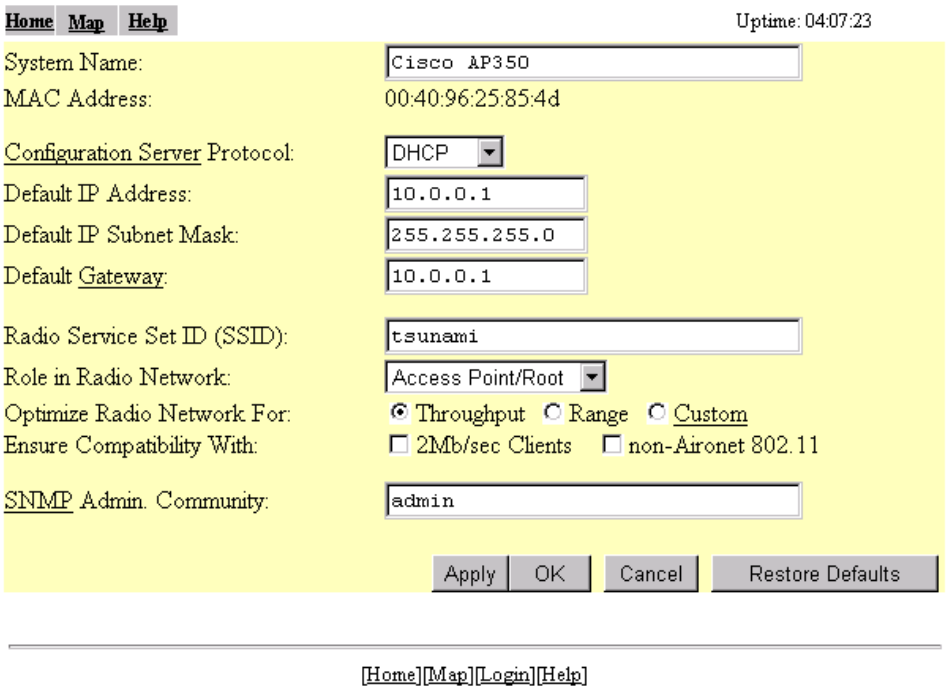
- Strong, mutual authentication to ensure that only legitimate clients associate with legitimate and authorized network RADIUS servers
- Dynamic per-user, per-session encryption keys that automatically change on a configurable basis to protect the privacy of transmitted data
- Stronger WEP keys provided by pre-standard Temporal Key Integrity Protocol (TKIP) enhancements such as message integrity check (MIC), per-packet keys via initialization vector hashing and broadcast key rotation
- RADIUS accounting records for all authentication attempts.

Integrated Management for Configuration, Monitoring, and Troubleshooting

The Cisco Aironet Series offers simplified installation and configuration, for rapid, anytime, anywhere installation, configuration, and management (see Figure 7). The series supports Web-based management and Simple Network Management Protocol (SNMP) features to aid monitoring, troubleshooting, software download, and event logging.

The frequency agility option of the Cisco Aironet Series takes the guesswork out of channel configuration. In this mode, the AP automatically scans the area and selects the least-congested channel. The installer does not need to be aware of the settings of other Cisco APs in the coverage area. For enterprise management, the Cisco Aironet Series provides support for Cisco Discovery Protocol (CDP) to enable auto discovery of Cisco Aironet APs and bridges using Cisco enterprise management applications such as CiscoWorks2000. Additionally, Cisco Aironet APs support standard SNMP Management Information Base (MIB) II, Cisco Aironet Series private MIB, and 802.11b MIB. Cisco Aironet Series APs can also be managed via the console or the Telnet interface.

Figure 7 The Access Point Management System's Express Setup screen provides all the settings required for basic configuration of the access point.



Industry-Leading WLAN Performance and Scalability

All Cisco Aironet Series APs feature load-balancing services. Up to three APs, configured for different channels, can be colocated to achieve aggregate peak capacity of 33 Mbps for a single coverage area. Load-balancing policies based on number of users, error rates, and signal strengths redistribute users to deliver more balanced collision domains—improving overall performance for installations covering a large number of users.

Broadcast and multicast filtering also enhance scalability. Filtering allows administrators to select the amount of such frames that enter the WLAN, conserving the shared bandwidth. Layer 3 IP Net and IP Socket filters are also provided.

Reliability and High-Availability that Enterprise Installations Count On

For business-critical deployments, a Cisco Aironet AP can be configured as a redundant hot standby to another AP in the same coverage area. The hot-standby AP continually monitors the primary AP on the same channel, and assumes its role in the rare case of a failure of the primary AP.

Comprehensive WLAN Solution

Cisco offers a comprehensive WLAN solution including APs and bridges, a variety of client adapters supporting all popular operating systems, a broad selection of antennas, as well as a security server and enterprise management applications.

Because it is a part of the Cisco Aironet Series, the Cisco Aironet 350 AP delivers the high level of security, manageability, scalability, and cost-effectiveness needed to deliver ubiquitous enterprise wireless services that extend user mobility and enhance overall productivity. Table 1 provides specifications on the Cisco Aironet 350 Series AP.

Table 1 Cisco Aironet 350 Series Specifications

Part Numbers	AIR-AP352E2C, the standard AP AIR-AP352E2R-A-K9, the rugged AP configured for operation in most of the Americas AIR-AP352E2R-E-K9, the rugged AP configured for operation in most of Europe AIR-AP352E2R-J-K9, the rugged AP configured for operation in Japan AIR-AP352E2R-S-K9, the rugged AP configured for operation in Singapore and France For more details on country specific ordering information see the following link: http://www.cisco.com/go/aironet/compliance
Data Rates Supported	1, 2, 5.5, and 11 Mbps
Network Standard	IEEE 802.11b
Uplink	Auto-sensing 10/100BaseT Ethernet
Frequency Band	2.4 to 2.497 GHz
Network Architecture Types	Infrastructure
Wireless Medium	Direct Sequence Spread Spectrum (DSSS)
Media Access Protocol	Carrier sense multiple access with collision avoidance (CSMA/CA)
Modulation	DBPSK @1 Mbps; DQPSK @ 2 Mbps; CCK @ 5.5 and 11 Mbps
Operating Channels	North America: 11; ETSI: 13; Japan: 14
Non-overlapping Channels	Three
Receive Sensitivity	1 Mbps: –94 dBm 2 Mbps: –91 dBm 5.5 Mbps: –89 dBm 11 Mbps: –85 dBm
Delay Spread	1 Mbps: 500 ns 2 Mbps: 400 ns 5.5 Mbps: 300 ns 11 Mbps: 140 ns
Available Transmit Power Settings	100 mW (20 dBm) 50 mW (17 dBm) 30 mW (15 dBm) 20 mW (13 dBm) 5 mW (7 dBm) 1 mW (0 dBm) Maximum power setting will vary according to individual country regulations.
Range (typical @ 100-mW transmit power setting with 2.2 dBi diversity dipole antenna)	Indoor: 130 ft (39.6 m) @ 11 Mbps 350 ft (107 m) @ 1 Mbps Outdoor: 800 ft (244 m) @ 11 Mbps 2000 ft (610 m) @ 1 Mbps
Compliance	Operates license free under FCC Part 15 and complies as a Class B device; complies with DOC regulations; complies with ETS 300.328, FTZ 2100, and MPT 1349 standards; rugged version complies with UL 2043

Table 1 Cisco Aironet 350 Series Specifications (Continued)

SNMP Compliance	MIB I and MIB II
Antenna	AIR-AP352E2C: Two nonremovable 2.2-dBi diversity dipoles AIR-AP352E2R-x-K9: Two RP-TNC connectors (antennas optional, none supplied with unit)
Encryption Key Length	128-bit
Virtual LAN (VLAN) Support	Allows segmentation of up to 16 user groups creating increased system flexibility by allowing differentiation of LAN policies and services, such as security and QoS, for different users.
Quality of Service (QoS) Support	Prioritization of traffic for different application requirements to improve the voice and video user-experience.
Security	Cisco Wireless Security Suite including: Authentication: • 802.1X support including LEAP, PEAP, EAP-TLS, EAP-TTLS, and EAP-SIM to yield mutual authentication and dynamic, per-user, per-session WEP keys • MAC address and by standard 802.11 authentication mechanisms Encryption: • Support for static and dynamic IEEE 802.11 WEP keys of 40 bits and 128 bits • Pre-standard TKIP WEP enhancements: key hashing (per-packet keying), message integrity check (MIC) and broadcast key rotation
Status Indicators	Three indicators on the top panel provide information concerning association status, operation, error/warning, firmware upgrade, and configuration, network/modem, and radio status
Automatic Configuration Support	BOOTP and DHCP
Remote Configuration Support	Telnet, HTTP, FTP, TFTP, and SNMP
Local Configuration	Direct console port (with supplied serial cable)
Dimensions	6.30 in. (16 cm) wide x 4.72 in. (12 cm) deep x 1.45 in. (3.7 cm) high
Weight	Standard version: 12.3 oz (350g) Rugged version: 1.43 lbs (.648 kg)
Plenum Rated Enclosure	Metal case available with AIR-AP352E2R-x-K9
Environmental	AIR-AP352E2C: Temperature: 32^{o} to 122^{o} F (0^{o} to 50^{o} C) 10 to 90% (noncondensing) AIR-AP352E2R-x-K9 Temperature: -4^{o} to 131^{o}F (-20^{o} to 55^{o} C) 10 to 90% (noncondensing)
Input Power Requirements	24VDC +/- 10% to 60 VDC (Ethernet line power)
Warranty	One year

Table 1 Cisco Aironet 350 Series Specifications (Continued)

Wi-Fi Certification	

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Cisco Systems, Inc.
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