

## Cisco Aironet 1140 Series and 1250 Series Access Point

### General Questions

**Q. What is the Cisco® Aironet® 1140 Series Access Point?**

**A.** The Cisco® Aironet® 1140 Series Access Point is a business-ready, 802.11n indoor access point designed for simple deployment and energy efficiency. The high-performance platform, which offers at least six times the throughput of existing 802.11a/g networks combines the industry's most widely deployed 802.11n technology with a sleek industrial design that blends seamlessly into any enterprise environment. Designed for sustainability, the 1140 Series delivers high performance from standard 802.3af Power over Ethernet while decreasing waste with multiunit eco-packs and Energy Star certified power supplies. As part of the Cisco Unified Wireless Network, the 1140 Series provides the industry's lowest total cost of ownership and investment protection by integrating seamlessly with the existing network.

**Q. What is the Cisco® Aironet® 1250 Series Access Point?**

**A.** The Cisco® Aironet® 1250 Series is a rugged indoor access point designed for challenging RF environments that require the antenna versatility associated with connectorized antennas, a rugged metal enclosure, and a broad operating temperature range. The first enterprise-class access point to support the IEEE 802.11n draft 2.0 standard, it offers combined data rates of up to 600 Mbps to provide users with mobile access to high-bandwidth data, voice, and video applications. 802.11n provides reliable and predictable WLAN coverage to improve the end-user experience for both existing 802.11a/g clients and new 802.11n clients..

**Q. How do the Cisco Aironet 1140 and 1250 Series Access Points fit in the Cisco WLAN product portfolio?**

**A.** The Cisco Aironet 1140 and 1250 Series Access Points are components of the [Cisco Unified Wireless Network](#) solution. The 1250 Series can be deployed in either standalone (autonomous) or unified (light weight) mode. The 1140 Series is currently available in a unified version and the standalone (autonomous) version will be available in 2009. The full breadth of Cisco unified wireless features and mobility services is only available when deployed in lightweight mode with a wireless LAN controller, and the Cisco Wireless Control System (WCS) management solution. The unified feature set represents the most comprehensive set of capabilities in the industry, including guest access, wireless intrusion detection and intrusion prevention, voice-ready services, scalable Layer 3 mobility, and location services. When configured with LWAPP, the Cisco Aironet 1250 Series can automatically detect the best-available Cisco Wireless LAN Controller and download appropriate policies and configuration information with no manual intervention. Access points deployed in standalone mode have a subset of capabilities suitable for basic enterprise deployments. Access points deployed in standalone mode may later be upgraded in the field to lightweight mode, thereby providing customers a smooth path to benefit from the complete set of unified features.

**Q. What is M-Drive Technology?**

**A.** Cisco M-Drive Technology is a system-wide feature for the Cisco Unified Wireless Network that improves the predictability of the RF environment, while simplifying RF management for the enterprise. RF management is an area that enterprises consistently identify as a pain

point. Most enterprises do not have the RF expertise necessary to properly manage their RF environment. Most also complain that the RF frequency is unpredictable, and that they have trouble ensuring that their wireless network scales and maintains the uptime they require. In addition, they feel that securing the wireless network is a complex and time-consuming process. Cisco M-Drive addresses these issues by providing innovations in RF management that improve predictability, reduce downtime and simplify previously-complex management tasks. With existing 802.11n solutions, the beam strength is not directed to the client, resulting in a sub-optimal client connection for 802.11a/g clients and coverage holes. Cisco M-Drive with ClientLink is a new, intelligent beam forming technology that directs the signal to improve performance (by up to 40%) and coverage for 802.11a/g devices. M-Drive also improves predictability of wired networks with wireless through interference mitigation, automated channel assignment, load balancing for optimized client connections and automated removal of coverage holes. Finally, M-Drive's centralized RF and system management removes the complexity from these management tasks—saving time and money for enterprise IT departments.

**Q. Is Cisco M-Drive specific to the Cisco Aironet 1140 Series?**

**A.** No. Cisco M-Drive is a system-wide feature of the Cisco Unified Wireless Network.

**Q. Is Cisco M-Drive software? Does it operate on the controller or the management system?**

**A.** Cisco M-Drive is software that runs on the wireless controller.

**Q. What is the cost of M-Drive to an existing Cisco Unified Wireless Network customer?**

**A.** Cisco M-Drive Technology is available as a free software upgrade for existing customers.

**Q. What is Cisco ClientLink technology?**

**A.** The Cisco M-Drive solution and Cisco ClientLink technology help solve one of the key challenges associated with 802.11n adoption by extending the useful life of existing 802.11a/g devices in mixed-client networks. Cisco ClientLink is a new intelligent beam forming technology that directs the signal to 802.11a/g devices to improve performance and coverage by up to 40%. Unlike most 802.11n access points, which only improve the uplink performance, Cisco ClientLink technology improves performance on both the uplink and downlink providing a better user experience during web browsing, email, and file downloads. Similarly, the improved robustness of the link benefits connectivity-oriented applications such as voice and SAP database on handheld appliances. ClientLink technology is based on signal processing enhancements to the access point chipset and does not require changes to network parameters. It is beneficial for organizations that want to ensure that all clients on the network, regardless of type, are guaranteed the bandwidth and throughput they need.

### **Cisco Aironet Series Detailed Questions**

**Q. What are the powering options for the Cisco Aironet 1140 Series? Is the Cisco Aironet 1140 Series 802.3af-compliant?**

**A.** The Cisco Aironet 1140 Series can be powered with an 802.3af switch, a power supply, or power injector. Since many enterprise WLANs rely on 802.3af switches, an infrastructure upgrade would not be required—powering the 1140 Series is as easy as plugging into any 802.3af Ethernet port to gain the full performance of 802.11n. For more information on power options, visit

[http://www.cisco.com/en/US/prod/collateral/wireless/ps5678/ps10092/datasheet\\_c78-502793.html](http://www.cisco.com/en/US/prod/collateral/wireless/ps5678/ps10092/datasheet_c78-502793.html).

**Q. What are the powering options for the Cisco Aironet 1250 Series?**

**A.** The Cisco Aironet 1250 Series Access Point may be powered by any 802.3af switch, a Cisco Enhanced Power over Ethernet (PoE) switch, a power injector, or a local power supply.

For more information on power options, visit

[http://www.cisco.com/en/US/prod/collateral/wireless/ps5678/ps6973/ps8382/product\\_data\\_sheet0900aecd806b7c5c.html](http://www.cisco.com/en/US/prod/collateral/wireless/ps5678/ps6973/ps8382/product_data_sheet0900aecd806b7c5c.html).

**Q. What antenna options are available for the Cisco Aironet 1250 Series?**

**A.** Cisco offers a variety of dipole, indoor and outdoor omni directional, and directional antennas that provide different mounting options and coverage patterns. For more information on antenna options, visit

[http://www.cisco.com/en/US/prod/collateral/wireless/ps7183/ps469/at\\_a\\_glance\\_c45-513837.pdf](http://www.cisco.com/en/US/prod/collateral/wireless/ps7183/ps469/at_a_glance_c45-513837.pdf).

**Q. Are the Cisco Aironet 1140 and 1250 Series UL 2043 plenum rated?**

**A.** Yes. UL 2043 is a standard specified by Underwriters Laboratories. In the United States, most municipal building codes require certain UL certifications for equipment used in buildings. Municipalities often specify UL 2043 certification for equipment used in the plenum air spaces. Municipalities also define what they consider to be plenum air space. In some U.S. municipalities, the plenum air space includes only the area above a suspended ceiling. In others, the area below the suspended ceiling may also be considered the plenum area.

**Q. What client devices are compatible with the Cisco Aironet 1140 and 1250 Series?**

**A.** The Cisco Aironet 1140 Series and 1250 Series are interoperable with any 802.11n draft 2.0, 802.11a, 802.11b, or 802.11g Wi-Fi-certified clients. Cisco has also conducted extensive testing to ensure interoperability with enterprise-class 802.11n draft 2.0 clients from leading manufacturers such as Intel and other major silicon vendors. Cisco has also completed Intel's Connect with Centrino compatibility testing program to help ensure high performance and complete interoperability between our respective next-generation 802.11n draft 2.0 solutions. In addition, Cisco clients and third-party Cisco Compatible Extensions (CCX) clients enjoy the enhanced wireless security and mobility capabilities provided by the Cisco Unified Wireless Network solution.

**Q. Will the Cisco Aironet 1140 and 1250 Series support the Cisco Unified Wireless IP Phone 7921?**

**A.** Yes. The Cisco Unified Wireless IP Phone 7921 is Wi-Fi-compliant and will interoperate with any Wi-Fi-compliant access point, including the Cisco Aironet 1250 Series. The 802.11n standard ensures backwards compatibility for 802.11a/b/g devices.

**Q. Will my current WLAN controllers support the Cisco Aironet 1140 and 1250 Series?**

**A.** All currently shipping WLAN controllers support the Cisco Aironet 1250 Series. These include:

- Cisco Wireless LAN Controller Modules for Integrated Services Routers
- Cisco 2100 Series Wireless LAN Controller
- Cisco Catalyst 3750G Integrated Wireless LAN Controller
- Cisco 4400 Series Wireless LAN Controller
- Cisco Catalyst 6500 Series Wireless Services Module

**Q. What considerations do I need to take into account when designing my controller infrastructure?**

**A.** With a wide range of WLAN controllers to choose from, flexible controller deployment options, and 'n+1' controller scalability, Cisco's Unified Wireless Network is designed to support both a gradual migration to 802.11n as well as an immediate large scale 802.11n deployment. This scale-as-you-grow flexibility is an ideal solution for customers looking for a flexible, customized solution for their pervasive wireless deployments. As customers migrate from 802.11a/b/g deployment to 802.11n, no major redesign or re-architecture is needed for most customer deployments.

**Q. Does the Cisco Aironet 1250 Series support bridging and backhaul functions, in addition to its access point function?**

**A.** Yes. When operating in the standalone (autonomous) mode, the Cisco Aironet 1250 Series supports link role flexibility, providing both access point and bridge functions through configuration of each radio as an access point, repeater, root bridge, non-root bridge, or workgroup bridge (Table 2). This array of configuration flexibility enables the Cisco Aironet 1250 Series to address applications including basic wireless LAN coverage, wireless LAN coverage with wireless backhaul, and more traditional bridging applications.

**Table 1.** Cisco Aironet 1250 Series Deployment Options Overview

Radio 1 (2.4 or 5GHz)	Radio 2 (2.4 or 5GHz)	RJ45 State
<b>Root Bridge</b>	Root bridge, non-root bridge, access point, or workgroup bridge	Uplink
<b>Non-root Bridge</b>	Root bridge, non-root bridge, access point, or workgroup bridge	Uplink
<b>Workgroup Bridge</b>	Root bridge, non-root bridge, or access point	Uplink
<b>Access Point</b>	Root bridge, non-root bridge, access point, or workgroup bridge	Uplink
<b>Repeater</b>	Root bridge, non-root bridge, or access point	Downlink

**Q. Do the Aironet 1140 and 1250 Series support dynamic frequency selection (DFS) to provide access to the channels in the UNII-2 and UNII-2 Extended bands?**

**A.** Yes. The Cisco Aironet 1140 and 1250 Series support a very robust DFS algorithm, enabling the effective use of the UNII-2 and UNII-2 Extended bands in the United States, Europe, and other countries around the world. This is especially important for 802.11n deployments, where the additional channels can be leveraged to support a greater number of 40-MHz wide channels.

**Q. In which countries is the Cisco Aironet 1140 and 1250 Series available?**

**A.** The Cisco Aironet 1140 and 1250 Series operate in both the 2.4-GHz and 5-GHz frequency bands and is available in a large number of countries throughout the world. To determine the availability of for your country, please visit [Wireless LAN Compliance Status](#)

**Q. What is the warranty for the Cisco Aironet 1140 and 1250 Series Access Points?**

**A.** Both access points come with the standard Cisco 90-day limited warranty for hardware and software, as described at [http://www.cisco.com/en/US/products/prod\\_warranties\\_item09186a00800e79ab.html](http://www.cisco.com/en/US/products/prod_warranties_item09186a00800e79ab.html).

## 802.11n

### **Q. What is IEEE 802.11n?**

**A.** IEEE 802.11n is a new wireless standard designed to deliver up to nine times the performance of existing 802.11a/g networks performance. The standard allows operation in both the 2.4-GHz and 5-GHz frequencies, and is backward-compatible with existing 802.11a/b/g networks. The Wi-Fi Alliance has begun certification of 802.11n products adhering to the draft 2.0 standard. This certification will ensure interoperability between access points and devices.

### **Q. What is the status of the Draft 802.11n version 2.0 standard?**

**A.** The IEEE 802.11n working group has passed letter ballot, and this is what is known as 802.11 Draft 2.0. Subsequently, the Wi-Fi Alliance commenced compatibility testing in June 2007 to ensure interoperability of products adhering to the 802.11n draft 2.0 standard. The Cisco Aironet 1250 Series Access Point was selected as the reference platform for the Wi-Fi Alliance test bed. All products receiving Wi-Fi Alliance draft 2.0 certification must be tested with the Cisco Aironet 1250 Series Access Point. Further information can be found here **Error! Hyperlink reference not valid..**

### **Q. What is the status of the final 802.11n standard?**

**A.** The final standard is expected to be ratified in January 2010 but this date may change as the working group continues its work. The current IEEE timeline for 802.11n ratification may be found at [http://grouper.ieee.org/groups/802/11/Reports/802.11\\_Timelines.htm](http://grouper.ieee.org/groups/802/11/Reports/802.11_Timelines.htm).

### **Q. When will the final 802.11n solution from Cisco be available?**

**A.** Cisco works closely with and monitors all relevant IEEE standards, including 802.11n. Shortly after 802.11n ratification occurs, Cisco plans to deliver solutions that are compliant with the final 802.11n standard. Cisco has taken great care to ensure a smooth migration for our customers between today's de facto standard and the version that will eventually be ratified, and we expect the differences to be minimal.

### **Q. Aren't customers concerned about deploying 802.11n gear when the standard has not been ratified yet?**

**A.** Wi-Fi Alliance certification has become the de facto standard for 802.11n and the Alliance has certified 450 products to date. Intel has shipped over 30 million .11n clients. It's fair to say that enterprises are seeing the benefits in moving forward with the de facto standard.

### **Q. What are the benefits of moving to 802.11n now, as opposed to waiting until the standard has been ratified?**

**A.** The reasons for moving to 802.11n are compelling. The de facto standard is in place with broad support, the means to ensure backward-compatibility with existing wireless investments, and the ability to migrate smoothly to any changes that may take place between now and the time the standard is officially ratified. Migrating to 802.11n can provide investment protection for refresh and new installations—enterprises are refreshing or expanding their wireless networks every 3-4 years to accommodate the surge of new, mobile devices being brought into the corporate network. Cisco's next-generation wireless with 802.11n provides the highest levels of performance for these new mobile devices, with backward-compatibility to protect existing investments and simplify the technology transition. In addition, moving to 802.11n means that enterprise can now support an increasing number of users who are placing greater demands on the wireless network with bandwidth-intensive and real-time collaborative applications like voice and video. Finally, by moving to 802.11n, enterprises can save time

and money and increase their flexibility. Using 802.11n avoids labor-intensive moves, adds and changes and decreases the costs associated with cabling for new or unwired buildings.

**Q. What about my investment in 802.11a/b/g?**

- A.** 802.11a and 802.11g each offer a 54-Mbps data rate, supporting a broad range of applications, including voice and video. With the relative under-utilization of these frequencies, especially the 5-GHz band, and the large installed base of 802.11a/b/g clients, most enterprises should anticipate their investments in business-class 802.11a/b/g access points to have many years of service. Additionally, the 802.11n standard requires backward compatibility with existing 802.11a/b/g infrastructure. Cisco expects 802.11a/b/g and 802.11n technologies to coexist for a long time.

**Q. Do Distributed Antenna Systems (DAS) work with 802.11n?**

- A.** MIMO technology relies extensively on multiple transmitters and multiple receivers to attain the throughput, reliability, and predictability benefits of 802.11n. The current generation of DAS systems only support a single transmit/receive chain per access point. Therefore, the throughput, reliability, and predictability benefits of 802.11n will be lost when used in conjunction with a DAS.

**Q. What are the differences in performance between a 2x3 and a 3x3 MIMO implementation?**

- A.** Theoretical calculations show that a 3x3 radio will have slightly better performance over a 2x3 radio. However, in our real world performance testing we have not seen any significant performance differences between 2x3 and 3x3 implementations. Note that the current generation of both 2x3 and 3x3 802.11n silicon supports up to 2 spatial streams, so there is no throughput advantage for a 3x3 implementation.



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