Cisco Aironet 1140 Series Access Point

Performance with Investment Protection
- Six times faster than 802.11a/g networks
- Backward-compatible with 802.11a/b/g clients
- M-Drive technology optimizes RF

Easy Installation and Power Efficient
- 802.11n performance with existing PoE switches
- Sleek design blends into a variety of indoor environments

Secure Interoperability
- 802.11n draft 2.0 compliant
- Intel Connect with Centrino Certified

Simplified Network Management
- Controller-based or standalone* deployment options
- CleanAir[1] technology reduces troubleshooting and performance impacts

Secure Connections
- Supports rogue access point detection and denial of service attacks
- Management frame protection detects malicious users and alerts network administrators

Greater Network Capacity
- Dynamic frequency selection 2 (DFS-2) compliant

Easy-to-Install, Multipurpose Mounting Bracket
- Designed for easy replacement of existing access points
- UL 2043 plenum rated for above ceiling installation options or suspended from drop ceilings.
- Locks for theft protection

*Standalone version will be available in 2009.

Taking Business Mobility Mainstream

The Cisco® Aironet® 1140 Series Access Point is a business-ready, 802.11n 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, prepares the business for the next wave of mobile devices and applications. Building on the Cisco Aironet heritage of RF excellence, the 1140 Series 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.

RF Excellence

The Cisco Unified Wireless Network with M-Drive technology removes the mystery associated with design, implementation, and ongoing optimization of enterprise wireless networks. With Cisco M-Drive technology, IT has the tools needed to build and operate a high performance wireless network without the need for extensive RF engineering skills. Cisco M-Drive technology is a systemwide approach that manages the corporate RF spectrum, improves wireless coverage, and increases system capacity and performance. Features include:

- Radio resource management (RRM): Automated self-healing optimizes the unpredictability of RF to reduce dead spots and help ensure high availability client connections. RRM optimizes network capacity and mitigates interference by continuously monitoring and

adjusting access point power and channel settings and then load balancing clients to enhance wireless coverage.

- CleanAir[1] technology: Only Cisco offers a comprehensive solution to detect, classify, locate, and mitigate sources of interference, including non-Wi-Fi sources such as Bluetooth, microwave ovens, cordless phones, and more. With the ability to visualize performance-impacting interference directly from Wireless Control System (WCS), you can proactively manage the challenges of a shared wireless spectrum and optimize network performance.

Environmentally Responsible

The Cisco Aironet 1140 Series offers 802.11n performance with standard 802.3af Power over Ethernet (PoE). At only 12.95 watts of power, the 1140 Series is the only platform to combine the power of dual-radio 802.11n with the efficiency of standard PoE. Additionally, the 1140 Series is designed to operate more efficiently during off-peak hours when fewer clients are connected to the access point.

For quicker staging and installation, you can order the 1140 Series in multiunit eco-packs, which offer 10 access points in a single, easy-to-open carton. Eco-packs reduce product packaging by 50 percent, preserving natural resources and reducing emissions. By eliminating unnecessary components and offering digital instead of paper documentation, the 1140 Series eco-packs will save over 2200 trees per year, which is equal to the amount of power required to heat over 65 homes for an entire year.

Product Specifications

Table 1 lists the product specifications for Cisco Aironet 1140 Series Access Points.

Table 1. Product Specifications for Cisco Aironet 1140 Series Access Points

Item	Specification
Part Numbers	**Cisco Aironet 1140 Series Access Point** • AIR-LAP1142N-x-K9—Dual-band Unified 802.11a/g/n • AIR-LAP1141N-x-K9—Single-band Unified 802.11g/n • AIR-AP1142N-x-K9—Dual-band Standalone 802.11a/g/n • AIR-AP1141N-x-K9—Single-band Standalone 802.11g/n • AIR-LAP1142-xK9-10—Eco-pack (dual-band 802.11a/g/n) 10 quantity access points **Regulatory domains: (x = regulatory domain)** Customers are responsible for verifying approval for use in their individual countries. To verify approval and to identify the regulatory domain that corresponds to a particular country, please visit http://www.cisco.com/go/aironet/compliance. Not all regulatory domains have been approved. As they are approved, the part numbers will be available on the Global Price List.
Software	• Cisco Unified Wireless Network Software Release 5.2 or later.
Draft 802.11n Version 2.0 (and Related) Capabilities	• 2x3 multiple-input multiple-output (MIMO) with two spatial streams • Maximal ratio combining (MRC) • Legacy beamforming (hardware supports this capability; not yet enabled in software) • 20- and 40-MHz channels • PHY data rates up to 300 Mbps • Packet aggregation: A-MPDU (Tx/Rx), A-MSDU (Tx/Rx) • 802.11 dynamic frequency selection (DFS) (Bin 5) • Cyclic shift diversity (CSD) support
Data Rates Supported	**802.11a: 6, 9, 12, 18, 24, 36, 48, and 54 Mbps**
	802.11g: 1, 2, 5.5, 6, 9, 11, 12, 18, 24, 36, 48, and 54 Mbps

[1] Requires Cisco Wireless Control System and Cisco Spectrum Expert Wi-Fi

<table>
<tr><th>Item</th><th>Specification</th></tr>
<tr><td></td><td>
802.11n data rates (2.4 GHz and 5 GHz):
<table>
<tr><th rowspan="2">MCS Index[2]</th><th colspan="2">GI[3] = 800ns</th><th colspan="2">GI = 400ns</th></tr>
<tr><th>20-MHz Rate (Mbps)</th><th>40-MHz Rate (Mbps)</th><th>20-MHz Rate (Mbps)</th><th>40-MHz Rate (Mbps)</th></tr>
<tr><td>0</td><td>6.5</td><td>13.5</td><td>7.2</td><td>15</td></tr>
<tr><td>1</td><td>13</td><td>27</td><td>14.4</td><td>30</td></tr>
<tr><td>2</td><td>19.5</td><td>40.5</td><td>21.7</td><td>45</td></tr>
<tr><td>3</td><td>26</td><td>54</td><td>28.9</td><td>60</td></tr>
<tr><td>4</td><td>39</td><td>81</td><td>43.3</td><td>90</td></tr>
<tr><td>5</td><td>52</td><td>108</td><td>57.8</td><td>120</td></tr>
<tr><td>6</td><td>58.5</td><td>121.5</td><td>65</td><td>135</td></tr>
<tr><td>7</td><td>65</td><td>135</td><td>72.2</td><td>150</td></tr>
<tr><td>8</td><td>13</td><td>27</td><td>14.4</td><td>30</td></tr>
<tr><td>9</td><td>26</td><td>54</td><td>28.9</td><td>60</td></tr>
<tr><td>10</td><td>39</td><td>81</td><td>43.3</td><td>90</td></tr>
<tr><td>11</td><td>52</td><td>108</td><td>57.8</td><td>120</td></tr>
<tr><td>12</td><td>78</td><td>162</td><td>86.7</td><td>180</td></tr>
<tr><td>13</td><td>104</td><td>216</td><td>115.6</td><td>240</td></tr>
<tr><td>14</td><td>117</td><td>243</td><td>130</td><td>270</td></tr>
<tr><td>15</td><td>130</td><td>270</td><td>144.4</td><td>300</td></tr>
</table>
</td></tr>
<tr><td>Frequency Band and 20-MHz Operating Channels</td><td>
A (Americas (FCC)):

2.412 to 2.462 GHz; 11 channels
5.180 to 5.320 GHz; 8 channels
5.500 to 5.700 GHz, 8 channels (excludes 5.600 to 5.640 GHz)
5.745 to 5.825 GHz; 5 channels

C (China):

2.412 to 2.472 GHz; 13 channels
5.745 to 5.825 GHz; 5 channels

E (ETSI):

2.412 to 2.472 GHz; 13 channels
5.180 to 5.320 GHz; 8 channels
5.500 to 5.700 GHz, 11 channels

I (Israel):

2.412 to 2.472 GHz, 13 channels
5.180 to 5.320 GHz; 8 channels

K (Korea):

2.412 to 2.472 GHz; 13 channels
5.180 to 5.320 GHz; 8 channels
5.500 to 5.620 GHz, 7 channels
5.745 to 5.805 GHz, 4 channels

</td><td>
N (Non-FCC):

2.412 to 2.462 GHz; 11 channels
5.180 to 5.320 GHz; 8 channels
5.745 to 5.825 GHz; 5 channels

P (Japan2):

2.412 to 2.472 GHz; 13 channels
5.180 to 5.320 GHz; 8 channels

S (Singapore):

2.412 to 2.472 GHz; 13 channels
5.180 to 5.320 GHz; 8 channels
5.745 to 5.825 GHz; 5 channels

T (Taiwan):

2.412 to 2.462 GHz; 11 channels
5.280 to 5.320 GHz; 3 channels
5.500 to 5.700 GHz, 11 channels
5.745 to 5.825 GHz; 5 channels

</td></tr>
<tr><td colspan="3">Note: This varies by regulatory domain. Refer to the product documentation for specific details for each regulatory domain.</td></tr>
<tr><td>Maximum Number of Non-Overlapping Channels</td><td>
2.4 GHz

802.11b/g:

20 MHz: 3

802.11n:

20 MHz: 3
40 MHz: 1

</td><td>
5 GHz

802.11a:

20 MHz: 21

802.11n:

20 MHz: 21
40 MHz: 9

</td></tr>
<tr><td colspan="3">Note: This varies by regulatory domain. Refer to the product documentation for specific details for each regulatory domain.</td></tr>
</table>

[2] MCS Index: The **M**odulation and **C**oding **S**cheme (MCS) index determines the number of spatial streams, the modulation, the coding rate**,** and data rate values.
[3] GI: A **G**uard **I**nterval **(GI)** between symbols helps receivers overcome the effects of multipath delays.

Item	Specification			
Receive Sensitivity	**802.11b** -91 dBm @ 1 Mb/s -91 dBm @ 2 Mb/s -91 dBm @ 5.5 Mb/s -88 dBm @ 11 Mb/s	**802.11g** -86 dBm @ 6 Mb/s -86 dBm @ 9 Mb/s -86 dBm @ 12 Mb/s -86 dBm @ 18 Mb/s -85 dBm @ 24 Mb/s -83 dBm @ 36 Mb/s -78 dBm @ 48 Mb/s -77 dBm @ 54 Mb/s	**802.11a** -90 dBm @ 6 Mb/s -90 dBm @ 9 Mb/s -90 dBm @ 12 Mb/s -90 dBm @ 18 Mb/s -88 dBm @ 24 Mb/s -85 dBm @ 36 Mb/s -80 dBm @ 48 Mb/s -79 dBm @ 54 Mb/s	
	2.4-GHz **802.11n (HT20)** -88 dBm @ MCS0 -87 dBm @ MCS1 -86 dBm @ MCS2 -83 dBm @ MCS3 -80 dBm @ MCS4 -76 dBm @ MCS5 -74 dBm @ MCS6 -73 dBm @ MCS7 -87 dBm @ MCS8 -85 dBm @ MCS9 -83 dBm @ MCS10 -80 dBm @ MCS11 -77 dBm @ MCS12 -73 dBm @ MCS13 -71 dBm @ MCS14 -70 dBm @ MCS15	**2.4-GHz** **802.11n (HT40)** -85 dBm @ MCS0 -85 dBm @ MCS1 -83 dBm @ MCS2 -80 dBm @ MCS3 -77 dBm @ MCS4 -72 dBm @ MCS5 -71 dBm @ MCS6 -70 dBm @ MCS7 -85 dBm @ MCS8 -82 dBm @ MCS9 -80 dBm @ MCS10 -76 dBm @ MCS11 -73 dBm @ MCS12 -69 dBm @ MCS13 -67 dBm @ MCS14 -66 dBm @ MCS15	**5-GHz** **802.11n (HT20)** -91 dBm @ MCS0 -91 dBm @ MCS1 -90 dBm @ MCS2 -87 dBm @ MCS3 -84 dBm @ MCS4 -79 dBm @ MCS5 -77 dBm @ MCS6 -76 dBm @ MCS7 -90 dBm @ MCS8 -89 dBm @ MCS9 -86 dBm @ MCS10 -83 dBm @ MCS11 -80 dBm @ MCS12 -75 dBm @ MCS13 -74 dBm @ MCS14 -72 dBm @ MCS15	**5-GHz** **802.11n (HT40)** -78 dBm @ MCS0 -78 dBm @ MCS1 -78 dBm @ MCS2 -78 dBm @ MCS3 -78 dBm @ MCS4 -75 dBm @ MCS5 -73 dBm @ MCS6 -72 dBm @ MCS7 -76 dBm @ MCS8 -76 dBm @ MCS9 -76 dBm @ MCS10 -76 dBm @ MCS11 -76 dBm @ MCS12 -71 dBm @ MCS13 -69 dBm @ MCS14 -68 dBm @ MCS15
Maximum Transmit Power	**2.4GHz** • 802.11b ◦ 20 dBm with 1 antenna • 802.11g ◦ 17 dBm with 1 antenna • 802.11n (HT20) ◦ 20 dBm with 2 antennas • 802.11n (HT40) ◦ 20 dBm with 2 antennas		**5GHz** • 802.11a ◦ 17 dBm with 1 antenna • 802.11n non-HT duplicate (802.11a duplicate) mode ◦ 17 dBm with 1 antenna • 802.11n (HT20) ◦ 20 dBm with 2 antennas • 802.11n (HT40) ◦ 20 dBm with 2 antennas	
Note: The maximum power setting will vary by channel and according to individual country regulations. Refer to the product documentation for specific details.				
Available Transmit Power Settings	**2.4GHz** 20 dBm (100 mW) 17 dBm (50 mW) 14 dBm (25 mW) 11 dBm (12.5 mW) 8 dBm (6.25 mW) 5 dBm (3.13 mW) 2 dBm (1.56 mW) –1 dBm (0.78 mW)		**5GHz** 20 dBm (100 mW) 17 dBm (50 mW) 14 dBm (25 mW) 11 dBm (12.5 mW) 8 dBm (6.25 mW) 5 dBm (3.13 mW) 2 dBm (1.56 mW) –1 dBm (0.78 mW)	
Note: The maximum power setting will vary by channel and according to individual country regulations. Refer to the product documentation for specific details.				
Integrated Antenna	• 2.4 GHz, Gain 4.0 dBi, horizontal beamwidth 360° • 5 GHz, Gain 3 dBi, horizontal beamwidth 360°			
Interfaces	• 10/100/1000BASE-T autosensing (RJ-45) • Management console port (RJ45)			
Indicators	• Status LED indicates boot loader status, association status, operating status, boot loader warnings, boot loader errors.			
Dimensions (W x L x H)	• Access point (without mounting bracket): 8.7 x 8.7 x 1.84 in. (22.1 x 22.1 x 4.7 cm)			

Item	Specification
Weight	• 2.3 lbs (1.04 kg)
Environmental	• **Nonoperating (storage) temperature:** –22 to 185°F (–30 to 85°C) • **Operating temperature: 32 to104°F (0 to 40°C)** • **Operating humidity:** 10 to 90% percent (non-condensing)
System Memory	• 128 MB DRAM • 32 MB flash
Input Power Requirements	• AP1140: 44 to 57 VDC • Power Supply and Power Injector: 100 to 240 VAC; 50 to 60 Hz
Powering Options	• 802.3af Ethernet Switch • Cisco AP1140 Power Injectors (AIR-PWRINJ4=) • Cisco AP1140 Local Power Supply (AIR-PWR-A=)
Power Draw	• AP1140: 12.95 W **Note:** When deployed using PoE, the power drawn from the power sourcing equipment will be higher by some amount dependent on the length of the interconnecting cable. This additional power may be as high as 2.45W, bringing the total system power draw (access point + cabling) to 15.4W.
Warranty	90 days
Compliance	**Standards** • **Safety:** ◦ UL 60950-1 ◦ CAN/CSA-C22.2 No. 60950-1 ◦ UL 2043 ◦ IEC 60950-1 ◦ EN 60950-1 • **Radio approvals:** ◦ FCC Part 15.247, 15.407 ◦ RSS-210 (Canada) ◦ EN 300.328, EN 301.893 (Europe) ◦ ARIB-STD 33 (Japan) ◦ ARIB-STD 66 (Japan) ◦ ARIB-STD T71 (Japan) ◦ AS/NZS 4268.2003 (Australia and New Zealand) ◦ EMI and susceptibility (Class B) ◦ FCC Part 15.107 and 15.109 ◦ ICES-003 (Canada) ◦ VCCI (Japan) ◦ EN 301.489-1 and -17 (Europe) ◦ EN 60601-1-2 EMC requirements for the Medical Directive 93/42/EEC • **IEEE Standard:** ◦ IEEE 802.11a/b/g, IEEE 802.11n draft 2.0, IEEE 802.11h, IEEE 802.11d • **Security:** ◦ 802.11i, Wi-Fi Protected Access 2 (WPA2), WPA ◦ 802.1X ◦ Advanced Encryption Standards (AES), Temporal Key Integrity Protocol (TKIP) • **EAP Type(s):** ◦ Extensible Authentication Protocol-Transport Layer Security (EAP-TLS) ◦ EAP-Tunneled TLS (TTLS) or Microsoft Challenge Handshake Authentication Protocol Version 2 (MSCHAPv2) ◦ Protected EAP (PEAP) v0 or EAP-MSCHAPv2 ◦ Extensible Authentication Protocol-Flexible Authentication via Secure Tunneling (EAP-FAST) ◦ PEAPv1 or EAP-Generic Token Card (GTC) ◦ EAP-Subscriber Identity Module (SIM) • **Multimedia:** ◦ Wi-Fi Multimedia (WMM™) • **Other:** ◦ FCC Bulletin OET-65C ◦ RSS-102

Service and Support

Cisco and Cisco Wireless LAN Specialized Partners offer a broad portfolio of end-to-end services based on proven methodologies for planning, designing, implementing, operating, and optimizing the performance of a variety of secure voice and data wireless network solutions, technologies, and strategies. Cisco Wireless LAN Specialized Partners bring application expertise to help deliver a secure enterprise mobility solution with a low total cost of ownership. For more information about Cisco 802.11n planning and deployment services, visit http://www.cisco.com/go/wirelesslanservices.

For More Information

For more information about the Cisco Aironet 1140 Series, visit http://www.cisco.com/go/wireless or contact your local account representative.

Americas Headquarters
Cisco Systems, Inc.
San Jose, CA

Asia Pacific Headquarters
Cisco Systems (USA) Pte. Ltd.
Singapore

Europe Headquarters
Cisco Systems International BV
Amsterdam, The Netherlands

Cisco has more than 200 offices worldwide. Addresses, phone numbers, and fax numbers are listed on the Cisco Website at www.cisco.com/go/offices.

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