Cisco Aironet 1850 Access Point

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Figure 1.
Cisco Aironet 1850 Series

Product overview

Ideal for small and medium-sized networks, the Cisco® Aironet® 1850 Series delivers industry-leading performance for enterprise and service provider markets via enterprise-class 4x4 MIMO, four-spatial-stream access points that support the IEEE's new 802.11ac Wave 2 specification. The Aironet 1850 Series extends support to a new generation of Wi-Fi clients, such as smartphones, tablets, and high-performance laptops that have integrated 802.11ac Wave 1 or Wave 2 support.

Features and benefits

With 802.11ac Wave 2, the Aironet 1850 Series provides a data rate of up to 1.7 Gbps on the 5-GHz radio, more than triple the rates offered by today's high-end 802.11n access points. It also enables a total aggregate dual-radio data rate of 2.0 Gbps, providing the necessary foundation for enterprise and service provider networks to stay ahead of the performance and bandwidth expectations and needs of their wireless users.

Due to its convenience, wireless access is increasingly the preferred form of network connectivity for corporate users. Along with this shift, there is an expectation that wireless should not slow down users' day-to-day work, but should enable a high-performance experience while allowing users to move freely. The 1850 Series delivers industry-leading performance for highly secure and reliable wireless connections and provides a robust mobility experience that includes:

- 802.11ac Wave 2 with 4x4 Multiple-Input Multiple-Output (MIMO) technology with four spatial streams when operating in single-user MIMO mode and three spatial streams while operating in multiuser MIMO mode, offering 1.7-Gbps rates for more capacity and reliability than competing access points.

- Multiuser MIMO, allowing transmission of data to multiple 802.11ac Wave 2 capable clients simultaneously to improve client experience. Prior to multiuser MIMO, 802.11n and 802.11ac Wave 1 access points could transmit data to only one client at a time, typically referred to as single-user MIMO.

- Transmit beamforming technology to improve downlink performance to mobile devices, including one-, two-, and three-spatial-stream devices on 802.11ac, while improving battery life on mobile devices such as smartphones and tablets.

- Flexible deployment mode through Cisco Mobility Express is ideal for small to medium-sized deployments that require multiple access points. Easy setup allows the 1850 Series to be deployed on networks without a physical controller.

- Secure connections for remote workers or the micro-office. Any Cisco Aironet or Catalyst access point can function as an OfficeExtend Access Point (OEAP). With an OEAP, an employee at home or in a

temporary micro-office will have access to the corporate SSID and the corporate network without the need to set up a VPN or have any advanced technical know-how.

- Cisco User Defined Network, a feature available in Cisco DNA Center, that allows IT to give end users control of their very own wireless network partition on a shared network. End users can then remotely and securely deploy their devices on this network. Perfect for university dormitories or extended hospital stays, Cisco User Defined Network grants both device security and control, allowing each user to choose who can connect to their network. (Available second half of calendar year 2020.)

- The Wi-Fi 6 readiness dashboard, a new dashboard in the Assurance menu of Cisco DNA Center. It will look through the inventory of all devices on the network and verify device, software, and client compatibility with the new Wi-Fi 6 standard. After upgrading, advanced wireless analytics will indicate performance and capacity gains as a result of the Wi-Fi 6 deployment. This is an incredible tool that will help your team define where and how the wireless network should be upgraded. It will also give you insights into the access point distribution by protocol (802.11 ac/n/abg), wireless airtime efficiency by protocol, and granular performance metrics.

All of these features help ensure the best possible end-user experience on the wireless network. Cisco also offers the industry's broadest selection of 802.11n and 802.11ac antennas, delivering optimal coverage for a variety of deployment scenarios.

The Cisco Aironet 1850 Series Access Points also support:

- The Onyx **BLE Beacon Solution**, which provides a feature that the Aironet access points are missing: built-in Bluetooth Low Energy (BLE). The Onyx BLE Beacons work smoothly with indoor location-based services. Used for indoor navigation, proximity marketing, and asset tracking, BLE is a tool that is becoming more and more useful with each passing day. With the Onyx BLE Beacons, customers can add BLE to their networks.

Product specifications

Table 1.   Product specifications

Feature	Specifications
Software	Cisco Unified Wireless Network Software Release with AireOS wireless controllers: • 8.1 MR1 or later for the Cisco Aironet 1850 Series Access Points
Deployment modes	Centralized local, Standalone*, Sniffer, Cisco FlexConnect™, Monitor**, OfficeExtend**, Mesh**
Supported wireless LAN controllers	• Cisco 2500 Series Wireless Controllers, Cisco 3500 Series Wireless Controllers, Cisco Wireless Controller Module for ISR G2, Cisco Wireless Services Module 2 (WiSM2) for Catalyst® 6500 Series Switches, Cisco 5500 Series Wireless Controllers, Cisco Flex® 7500 Series Wireless Controllers, Cisco 8500 Series Wireless Controllers, Cisco Catalyst 9800 Series Wireless Controllers, Cisco 5760 Series Wireless Controllers,** Cisco Catalyst 3650/3850 Series Switches with integrated controller** • Cisco Mobility Express

Feature	Specifications
802.11n version 2.0 (and related) capabilities	• 4x4 MIMO with four spatial streams • Maximal Ratio Combining (MRC) • 20- and 40-MHz channels • PHY data rates up to 600 Mbps (40 MHz with 5 GHz) • Packet aggregation: A-MPDU (Tx/Rx), A-MSDU (Tx/Rx) • 802.11 Dynamic Frequency Selection (DFS) • Cyclic Shift Diversity (CSD) support
802.11ac Wave 1 and 2 capabilities	• 4x4 MIMO with four spatial streams, single-user MIMO • 4x4 MIMO with three spatial streams, multiuser MIMO • MRC • 802.11ac beamforming (transmit beamforming) • 20-, 40-, and 80-MHz channels • PHY data rates up to 1.7 Gbps (80 MHz in 5 GHz) • Packet aggregation: A-MPDU (Tx/Rx), A-MSDU (Tx/Rx) • 802.11 DFS • CSD support • Rogue device detection
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

802.11n data rates on 2.4 GHz (only 20 MHz and MCS 0 to MCS 23) and 5 GHz:

MCS Index[1]	GI[2] = 800 ns	GI = 800 ns	GI = 400 ns	GI = 400 ns
	20-MHz Rate (Mbps)	**40-MHz Rate (Mbps)**	**20-MHz Rate (Mbps)**	**40-MHz Rate (Mbps)**
0	6.5	13.5	7.2	15
1	13	27	14.4	30
2	19.5	40.5	21.7	45
3	26	54	28.9	60
4	39	81	43.3	90
5	52	108	57.8	120
6	58.5	121.5	65	135

[1] MCS Index: The Modulation and Coding Scheme (MCS) index determines the number of spatial streams, the modulation, the coding rate, and data rate values.

[2] GI: A Guard Interval (GI) between symbols helps receivers overcome the effects of multipath delay spreads.

Feature	Specifications				
Data rates supported	MCS Index[3]	GI[4] = 800 ns	GI = 800 ns	GI = 400 ns	GI = 400 ns
		20-MHz Rate (Mbps)	40-MHz Rate (Mbps)	20-MHz Rate (Mbps)	40-MHz Rate (Mbps)
	7	65	135	72.2	150
	8	13	27	14.4	30
	9	26	54	28.9	60
	10	39	81	43.3	90
	11	52	108	57.8	120
	12	78	162	86.7	180
	13	104	216	115.6	240
	14	117	243	130	270
	15	130	270	144.4	300
	16	19.5	40.5	21.7	45
	17	39	81	43.3	90
	18	58.5	121.5	65	135
	19	78	162	86.7	180
	20	117	243	130	270
	21	156	324	173.3	360
	22	175.5	364.5	195	405
	23	195	405	216.7	450
	24	26	54	28.9	60
	25	52	108	57.8	120
	26	78	162	86.7	180
	27	104	216	115.6	240
	28	156	324	173.3	360
	29	208	432	231.1	480
	30	234	486	260	540

Feature	Specifications				
	31	260	540	288.9	600

802.11ac data rates (5 GHz):

MCS Index	Spatial Streams	GI = 800 ns			GI = 400 ns		
		20-MHz Rate (Mbps)	40-MHz Rate (Mbps)	80-MHz Rate (Mbps)	20-MHz Rate (Mbps)	40-MHz Rate (Mbps)	80-MHz Rate (Mbps)
0	1	6.5	13.5	29.3	7.2	15	32.5
1	1	13	27	58.5	14.4	30	65
2	1	19.5	40.5	87.8	21.7	45	97.5
3	1	26	54	117	28.9	60	130
4	1	39	81	175.5	43.3	90	195
5	1	52	108	234	57.8	120	260
6	1	58.5	121.5	263.3	65	135	292.5
7	1	65	135	292.5	72.2	150	325
8	1	78	162	351	86.7	180	390

[3] MCS Index: The Modulation and Coding Scheme (MCS) index determines the number of spatial streams, the modulation, the coding rate, and data rate values.

[4] GI: A Guard Interval (GI) between symbols helps receivers overcome the effects of multipath delay spreads.

Feature	Specifications				
	MCS index	Spatial streams	GI = 800 ns			GI = 400 ns		
			20-MHz rate (Mbps)	40-MHz rate (Mbps)	80-MHz rate (Mbps)	20-MHz rate (Mbps)	40-MHz rate (Mbps)	80-MHz rate (Mbps)
	9	1	–	180	390	–	200	433.3
	0	2	13	27	58.5	14.4	30	65
	1	2	26	54	117	28.9	60	130
	2	2	39	81	175.5	43.3	90	195
	3	2	52	108	234	57.8	120	260

Feature	Specifications						
	4	2	78	162	351	86.7	180	390
	5	2	104	216	468	115.6	240	520
	6	2	117	243	526.5	130	270	585
	7	2	130	270	585	144.4	300	650
	8	2	156	324	702	173.3	360	780
	9	2	–	360	780	–	400	866.7
	0	3	19.5	40.5	87.8	21.7	45	97.5
	1	3	39	81	175.5	43.3	90	195
	2	3	58.5	121.5	263.3	65	135	292.5
	3	3	78	162	351	86.7	180	390
	4	3	117	243	526.5	130	270	585
	5	3	156	324	702	173.3	360	780
	6	3	175.5	364.5	–	195	405	–
	7	3	195	405	877.5	216.7	450	975
	8	3	234	486	1053	260	540	1170
	9	3	260	540	1170	288.9	600	1300
	0	4	26	54	117	28.9	60	130
	1	4	52	108	234	57.8	120	260
	2	4	78	162	351	86.7	180	390
	3	4	104	216	468	115.6	240	520
	4	4	156	324	702	173.3	360	780
	5	4	208	432	936	231.1	480	1040
	6	4	234	486	1053	260	540	1170
	7	4	260	540	1170	288.9	600	1300
	8	4	312	648	1404	346.7	720	1560

Feature	Specifications							
	9	4	–	720	1560	–	800	1733.3
Maximum number of nonoverlapping channels	**A (A regulatory domain):** • 2.412 to 2.462 GHz; 3 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 **B (B regulatory domain):** • 2.412 to 2.462 GHz; 3 channels • 5.180 to 5.320 GHz; 8 channels • 5.500 to 5.720 GHz; 12 channels • 5.745 to 5.825 GHz; 5 channels **C (C regulatory domain):** • 2.412 to 2.472 GHz; 3 channels • 5.745 to 5.825 GHz; 5 channels **D (D regulatory domain):** • 2.412 to 2.462 GHz; 3 channels • 5.180 to 5.320 GHz; 8 channels • 5.745 to 5.825 GHz; 5 channels **E (E regulatory domain):** • 2.412 to 2.472 GHz; 3 channels • 5.180 to 5.320 GHz; 8 channels • 5.500 to 5.700 GHz; 8 channels (excludes 5.600 to 5.640 GHz) **F (F regulatory domain):** • 2.412 to 2.472 GHz; 3 channels • 5.250 to 5.350 GHz; 4 channels • 5.725 to 5.825 GHz; 4 channels **H (H regulatory domain):** • 2.412 to 2.472 GHz; 3 channels • 5.150 to 5.350 GHz; 8 channels • 5.745 to 5.825 GHz; 5 channels **I (I regulatory domain):** • 2.412 to 2.472 GHz; 3 channels • 5.180 to 5.320 GHz; 8 channels			**K (K regulatory domain):** • 2.412 to 2.472 GHz; 3 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 **N (N regulatory domain):** • 2.412 to 2.462 GHz; 3 channels • 5.180 to 5.320 GHz; 8 channels • 5.745 to 5.825 GHz; 5 channels **Q (Q regulatory domain):** • 2.412 to 2.472 GHz; 3 channels • 5.180 to 5.320 GHz; 8 channels • 5.500 to 5.700 GHz; 11 channels **R (R regulatory domain):** • 2.412 to 2.472 GHz; 3 channels • 5.180 to 5.320 GHz; 8 channels • 5.660 to 5,805 GHz; 7 channels **S (S regulatory domain):** • 2.412 to 2.472 GHz; 3 channels • 5.180 to 5.320 GHz; 8 channels • 5.500 to 5.700 GHz; 11 channels • 5.745 to 5.825 GHz; 5 channels **T (T regulatory domain):** • 2.412 to 2.462 GHz; 3 channels • 5.280 to 5.320 GHz; 3 channels • 5.500 to 5.700 GHz; 8 channels (excludes 5.600 to 5.640 GHz) • 5.745 to 5.825 GHz; 5 channels **Z (Z regulatory domain):** • 2.412 to 2.462 GHz; 3 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			

Note: Customers are responsible for verifying approval for use in their individual countries. To verify approval that corresponds to a particular country, visit https://www.cisco.com/go/aironet/compliance.

Feature	Specifications			
Maximum number of nonoverlapping channels	**2.4 GHz** • 802.11b/g: 　◦ 20 MHz: 3 • 802.11n: 　◦ 20 MHz: 3		**5 GHz** • 802.11a: 　◦ 20 MHz: 25 • 802.11n: 　◦ 20 MHz: 25 　◦ 40 MHz: 12 • 802.11ac: 　◦ 20 MHz: 21 　◦ 40 MHz: 12 　◦ 80 MHz: 6		

Note: This varies by regulatory domain. Refer to the product documentation for specific details for each regulatory domain.

| **Receive sensitivity** | • 802.11b (CCK)
　◦ -101 dBm @ 1 Mbps
　◦ -98 dBm @ 2 Mbps
　◦ -92 dBm @ 5.5 Mbps
　◦ -89 dBm @ 11 Mbps | • 802.11g (non HT20)
　◦ -96 dBm @ 6 Mbps
　◦ -95 dBm @ 9 Mbps
　◦ -94 dBm @ 12 Mbps
　◦ -92 dBm @ 18 Mbps
　◦ -88 dBm @ 24 Mbps
　◦ -85 dBm @ 36 Mbps
　◦ -81 dBm @ 48 Mbps
　◦ -79 dBm @ 54 Mbps | • 802.11a (non HT20)
　◦ -96 dBm @ 6 Mbps
　◦ -95 dBm @ 9 Mbps
　◦ -94 dBm @ 12 Mbps
　◦ -92 dBm @ 18 Mbps
　◦ -88 dBm @ 24 Mbps
　◦ -85 dBm @ 36 Mbps
　◦ -80 dBm @ 48 Mbps
　◦ -79 dBm @ 54 Mbps | |
| | **2.4 GHz**
• 802.11n (HT20)
　◦ -96 dBm @ MCS0
　◦ -93 dBm @ MCS1
　◦ -90 dBm @ MCS2
　◦ -87 dBm @ MCS3
　◦ -84 dBm @ MCS4
　◦ -79 dBm @ MCS5
　◦ -78 dBm @ MCS6
　◦ -76 dBm @ MCS7
　◦ -93 dBm @ MCS8
　◦ -90 dBm @ MCS9
　◦ -87 dBm @ MCS10
　◦ -84 dBm @ MCS11
　◦ -81 dBm @ MCS12
　◦ -76 dBm @ MCS13
　◦ -75 dBm @ MCS14
　◦ -73 dBm @ MCS15
　◦ -91 dBm @ MCS16
　◦ -88 dBm @ MCS17
　◦ -85 dBm @ MCS18
　◦ -82 dBm @ MCS19
　◦ -79 dBm @ MCS20

　◦ -74 dBm @ MCS21
　◦ -73 dBm @ MCS22
　◦ -71 dBm @ MCS23 | | **5 GHz**
• 802.11n (HT20)
　◦ -96 dBm @ MCS0
　◦ -92 dBm @ MCS1
　◦ -90 dBm @ MCS2
　◦ -86 dBm @ MCS3
　◦ -83 dBm @ MCS4
　◦ -79 dBm @ MCS5
　◦ -77 dBm @ MCS6
　◦ -76 dBm @ MCS7
　◦ -93 dBm @ MCS8
　◦ -89 dBm @ MCS9
　◦ -87 dBm @ MCS10
　◦ -83 dBm @ MCS11
　◦ -80 dBm @ MCS12
　◦ -76 dBm @ MCS13
　◦ -74 dBm @ MCS14
　◦ -73 dBm @ MCS15
　◦ -91 dBm @ MCS16
　◦ -87 dBm @ MCS17
　◦ -85 dBm @ MCS18
　◦ -81 dBm @ MCS19
　◦ -78 dBm @ MCS20

　◦ -74 dBm @ MCS21
　◦ -72 dBm @ MCS22
　◦ -71 dBm @ MCS23
　◦ -89 dBm @ MCS24
　◦ -85 dBm @ MCS25
　◦ -83 dBm @ MCS26
　◦ -79 dBm @ MCS27
　◦ -76 dBm @ MCS28
　◦ -72 dBm @ MCS29 | **5 GHz**
• 802.11n (HT40)
　◦ -93 dBm @ MCS0
　◦ -90 dBm @ MCS1
　◦ -87 dBm @ MCS2
　◦ -84 dBm @ MCS3
　◦ -80 dBm @ MCS4
　◦ -76 dBm @ MCS5
　◦ -75 dBm @ MCS6
　◦ -73 dBm @ MCS7
　◦ -90 dBm @ MCS8
　◦ -87 dBm @ MCS9
　◦ -84 dBm @ MCS10
　◦ -81 dBm @ MCS11
　◦ -77 dBm @ MCS12
　◦ -73 dBm @ MCS13
　◦ -72 dBm @ MCS14
　◦ -70 dBm @ MCS15
　◦ -88 dBm @ MCS16
　◦ -85 dBm @ MCS17
　◦ -82 dBm @ MCS18
　◦ -79 dBm @ MCS19
　◦ -75 dBm @ MCS20

　◦ -71 dBm @ MCS21
　◦ -70 dBm @ MCS22
　◦ -68 dBm @ MCS23
　◦ -86 dBm @ MCS24
　◦ -83 dBm @ MCS25
　◦ -80 dBm @ MCS26
　◦ -77 dBm @ MCS27
　◦ -73 dBm @ MCS28
　◦ -69 dBm @ MCS29 |

Feature	Specifications			
			◦ −70 dBm @ MCS30 ◦ −69 dBm @ MCS31	◦ −68 dBm @ MCS30 ◦ −66 dBm @ MCS31
	802.11ac receive sensitivity			
	802.11ac (non HT80) • −89 dBm @ 6 Mbps • −73 dBm @ 54 Mbps			

MCS index	Spatial streams	VHT20	VHT40	VHT80
0	1	−96 dBm	−93 dBm	−89 dBm
7	1	−76 dBm	−73 dBm	−70 dBm
8	1	−71 dBm	−69 dBm	−66 dBm
9	1	NA	−67 dBm	−64 dBm
0	2	−93 dBm	−90 dBm	−86 dBm
7	2	−73 dBm	−70 dBm	−67 dBm
8	2	−68 dBm	−66 dBm	−63 dBm
9	2	NA	−64 dBm	−61 dBm
0	3	−91 dBm	−88 dBm	−84 dBm
7	3	−71 dBm	−68 dBm	−65 dBm
8	3	−66 dBm	−64 dBm	−61 dBm
9	3	−64 dBm	−62 dBm	−59 dBm

Feature	Specifications					
	MCS index	Spatial streams				
				VHT20	VHT40	VHT80
	0	4		–89 dBm	–86 dBm	–82 dBm
	7	4		–69 dBm	–66 dBm	–63 dBm
	8	4		–64 dBm	–62 dBm	–59 dBm
	9	4		NA	–60 dBm	–57 dBm

Maximum transmit power	**2.4 GHz**
	• 802.11b
	  ◦ 22 dBm, 3 antennas
	• 802.11g
	  ◦ 22 dBm, 3 antennas
	• 802.11n (HT20)
	  ◦ 22 dBm, 3 antennas
			5 GHz
			• 802.11a
			  ◦ 23 dBm, 4 antennas
			• 802.11n (HT20)
			  ◦ 23 dBm, 4 antennas
			• 802.11n (HT40)
			  ◦ 23 dBm, 4 antennas
			• 802.11ac
			  ◦ non–HT80: 23 dBm, 4 antennas
			  ◦ VHT20: 23 dBm, 4 antennas
			  ◦ VHT40: 23 dBm, 4 antennas
			  ◦ VHT80: 23 dBm, 4 antennas			

Note: The maximum power setting will vary by channel and according to individual country regulations. Refer to the product documentation for specific details.

Feature	Specifications					
Available transmit power settings	**2.4 GHz** • 22 dBm • 19 dBm • 16 dBm • 13 dBm • 10 dBm • 7 dBm • 4 dBm • 1 dBm		**5 GHz** • 23 dBm • 20 dBm • 17 dBm • 14 dBm • 11 dBm • 8 dBm • 5 dBm • 2 dBm			

Note: The maximum power setting will vary by channel and according to individual country regulations. Refer to the product documentation for specific details.

Feature	Specifications
Integrated antenna	• 2.4 GHz, gain 3 dBi, internal omni, horizontal beamwidth 360° • 5 GHz, gain 5 dBi, internal omni, horizontal beamwidth 360°
External antenna (sold separately)	• Certified for use with antenna gains up to 6 dBi (2.4 GHz and 5 GHz) • Cisco offers the industry's broadest selection of antennas, delivering optimal coverage for a variety of deployment scenarios

| Feature	Specifications
Interfaces	• 1 x 10/100/1000BASE-T autosensing (RJ-45), Power over Ethernet (PoE) • 1 x 10/100/1000BASE-T autosensing (RJ-45), AUX (used for Link Aggregation) • Management console port (RJ-45) • USB 2.0 (enabled via future software)
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): 8.3 x 8.3 x 2 in. (210.8 x 210.8 x 50.8 mm)
Weight	• 3.12 lb (1.41 kg)
Environmental	**Cisco Aironet 1850i** • Nonoperating (storage) temperature: -22° to 158°F (-30° to 70°C) • Nonoperating (storage) altitude test: 25°C, 15,000 ft. • Operating temperature: 32° to 104°F (0° to 50°C) • Operating humidity: 10% to 90% (noncondensing) • Operating altitude test: 40°C, 9843 ft. **Cisco Aironet 1850e** • Nonoperating (storage) temperature: -22° to 158°F (-30° to 70°C) • Nonoperating (storage) altitude test: 25°C, 15,000 ft. • Operating temperature: -4° to 122°F (-20° to 50°C) • Operating humidity: 10% to 90% (noncondensing) • Operating altitude test: 40°C, 9843 ft.
System memory	• 1 GB DRAM • 256 MB flash
Input power requirements	• AP1850: 44 to 57 VDC • Power supply and power injector: 100 to 240 VAC; 50 to 60 Hz
Power draw	• 20.9W **Note:** When deployed using a Power over Ethernet (PoE) specification, the power drawn from the power sourcing equipment will be higher by some amount, depending on the length of the interconnecting cable.
Powering options	• 802.3at • Enhanced PoE • Cisco power injector, AIR-PWRINJ4= • Cisco local power supply, AIR-PWR-C= • Cisco power injector, AIR-PWRINJ5= (**Note**: this injector supports 802.3af only) • 802.3af **Note:** If 802.3af PoE is the source of power, (1) the 1852e 2.4-GHz radio will shift to 2x3 from 3x4, (2) The USB port and AUX Ethernet port are disabled on both the 1852i and 1852e.
Warranty	Limited lifetime hardware warranty

Feature	Specifications
Compliance standards	○ UL 60950-1 ○ CAN/CSA-C22.2 No. 60950-1 ○ UL 2043 ○ IEC 60950-1 ○ EN 60950-1 ○ EN 50155 for 2800e (Operating temperature -20° to 50°C) • Radio approvals: ○ FCC Part 15.247, 15.407* ○ RSS-210 (Canada) ○ EN 300.328, EN 301.893 (Europe) ○ ARIB-STD 66 (Japan) ○ ARIB-STD T71 (Japan) ○ 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 standards: ○ IEEE 802.11a/b/g, 802.11n, 802.11h, 802.11d ○ IEEE 802.11ac Draft 5 • Security: ○ 802.11i, Wi-Fi Protected Access 3 (WPA3), (WPA2), WPA ○ 802.1X ○ Advanced Encryption Standard (AES) • Extensible Authentication Protocol (EAP) types: ○ EAP-Transport Layer Security (TLS) ○ EAP-Tunneled TLS (TTLS) or Microsoft Challenge Handshake Authentication Protocol Version 2 (MSCHAPv2) ○ Protected EAP (PEAP) v0 or EAP-MSCHAPv2 ○ EAP-Flexible Authentication via Secure Tunneling (FAST) ○ PEAP v1 or EAP-Generic Token Card (GTC) ○ EAP-Subscriber Identity Module (SIM) • Multimedia: ○ Wi-Fi Multimedia (WMM) • Other: ○ FCC Bulletin OET-65C ○ RSS-102

* Supported via Cisco Mobility Express with controller function running on the access point - not Cisco IOS® Software Autonomous based.

** Future.

Licensing

In order to connect any access points to the **controller**, Cisco DNA software subscriptions are required. To be entitled to connect to a Cisco Catalyst 9800 Series Wireless Controller, the access point requires a Cisco DNA subscription license.
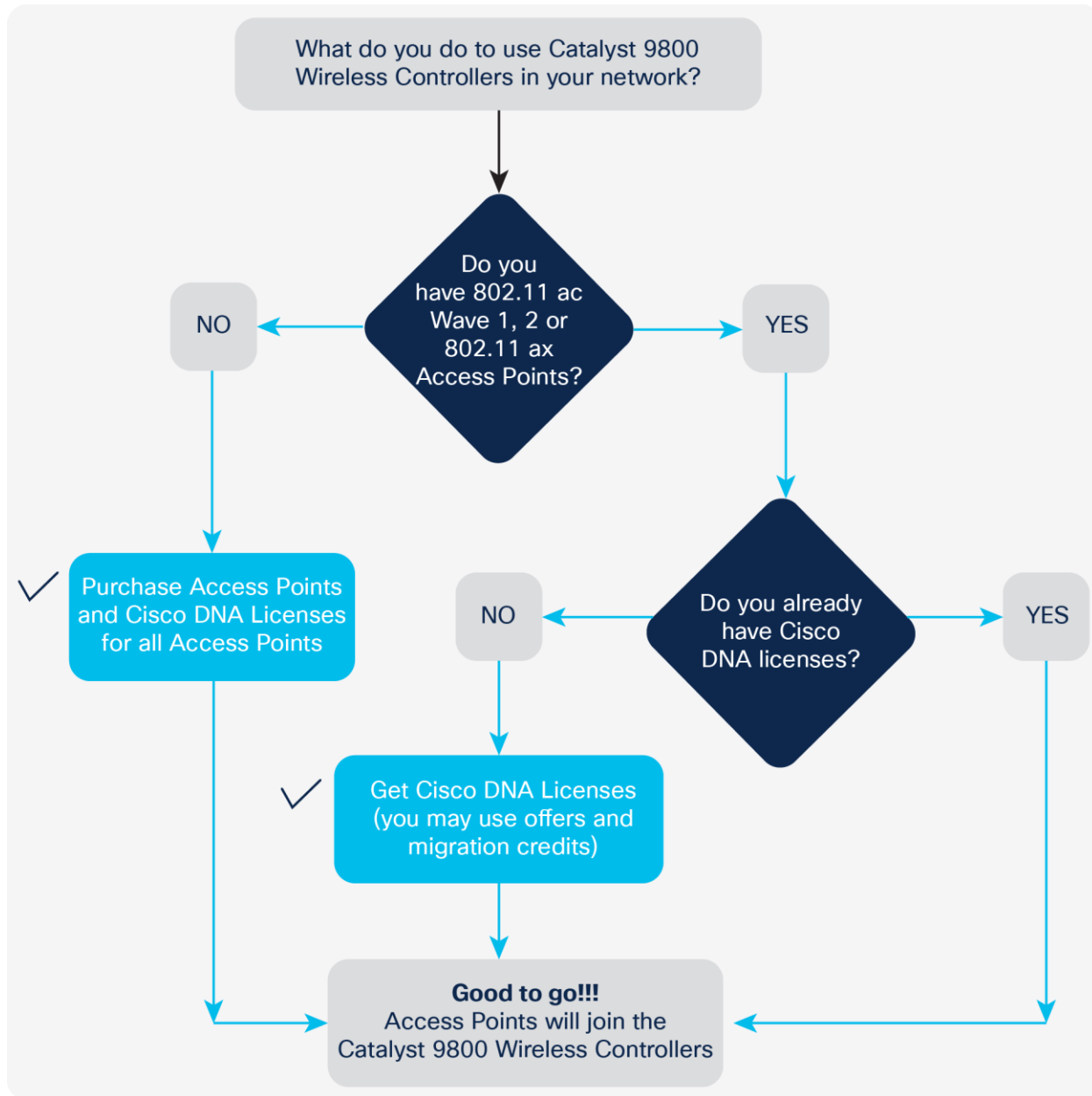
Figure 2.
Determining license requirements for access points connecting to Cisco Catalyst 9800 Series Wireless Controllers

Access points connecting to a Cisco Catalyst 9800 Series controller have new and simplified software subscription packages. They can support three tiers of Cisco DNA software: Cisco DNA Essentials, Cisco DNA Advantage or Cisco DNA Premier.

Cisco DNA software subscriptions provide Cisco innovations on the access point. They also include perpetual Network Essentials and Network Advantage licensing options, which cover wireless fundamentals such as 802.1X authentication, Quality of Service (QoS), and Plug and Play (PnP); telemetry and visibility, and Single Sign-On (SSO), as well as security controls.

Cisco DNA subscription software has to be purchased for a 3-, 5-, or 7-year subscription term. If not renewed by the end of the term, Cisco DNA features will expire, whereas Network Essentials and Network Advantage features will remain.

For the full feature list of Cisco DNA Software, including the perpetual Network Essentials and Network Advantage, please see the feature matrix: https://www.cisco.com/c/m/en_us/products/software/dna-subscription-wireless/en-sw-sub-matrix-wireless.html?oid=porew018984

Two modes of licensing are available:

- Smart Licensing (SL) simplifies and adds flexibility to licensing. It is:

  ◦ Simple: Procure, deploy, and manage licenses easily. Devices self-register, removing the need for Product Activation Keys (PAKs).

  ◦ Flexible: Pool license entitlements in a single account. Move licenses freely through the network, wherever you need them.

  ◦ Smart: Manage your license deployments with real-time visibility into ownership and consumption.

- Specific License Reservation (SLR) is a feature used in highly secure networks. It provides a method for customers to deploy a software license on a device (product instance) without communicating usage information to Cisco. There is no communication with Cisco or a satellite. The licenses are reserved for every controller. It is node-based licensing.

Four levels of license are supported on the **Cisco Catalyst 9800 Series Wireless Controllers.** The controllers can be configured to function at any one of the four levels.

- Cisco DNA Essentials: At this level the Cisco DNA Essentials feature set will be supported.

- Cisco DNA Advantage: At this level the Cisco DNA Advantage feature set will be supported.

- NE: At this level the Network Essentials feature set will be supported.

- NA: At this level the Network Advantage feature set will be supported.

Cisco DNA Premier is a bundle with ISE licenses and Cisco DNA Spaces Extend. It is inclusive of Cisco DNA Advantage, so at this level the Cisco DNA Advantage feature set will be supported. For customers who purchase Cisco DNA Essentials, Network Essentials will be supported and will continue to function even after term expiration. And for customers who purchase Cisco DNA Advantage or Cisco DNA Premier, Network Advantage will be supported and will continue to function even after term expiration.

Initial bootup of the controller will be at the Cisco DNA Advantage level.

For questions, contact the Cisco Catalyst 9800 Series Wireless Controllers Licensing mailer group at ask-catalyst9800licensing

Warranty information

The Cisco Aironet 1850 Series Access Points come with a limited lifetime warranty that provides full warranty coverage of the hardware for as long as the original end user continues to own or use the product. The warranty includes 10-day advance hardware replacement and ensures that software media are defect-free for 90 days. For more details, visit https://www.cisco.com/go/warranty.

Cisco environmental sustainability

Information about Cisco's environmental sustainability policies and initiatives for our products, solutions, operations, and extended operations or supply chain is provided in the "Environment Sustainability" section of Cisco's Corporate Social Responsibility (CSR) Report.

Reference links to information about key environmental sustainability topics (mentioned in the "Environment Sustainability" section of the CSR Report) are provided in Table 2.

Table 2.   Links to sustainability information

Sustainability topic	Reference
Information on product material content laws and regulations	Materials
Information on electronic waste laws and regulations, including products, batteries, and packaging	WEEE compliance
Sustainability inquiries	Contact: csr_inquiries@cisco.com

Cisco makes the packaging data available for informational purposes only. It may not reflect the most current legal developments, and Cisco does not represent, warrant, or guarantee that it is complete, accurate, or up to date. This information is subject to change without notice.

Ordering information

To place an order, visit the Cisco How to Buy page. To download software, visit the Cisco Software Center.

Table 3.   Ordering information

Product name	Part number
Aironet 1850 Series	**Cisco Aironet 1852i Access Point: Indoor environments, with internal antennas** • AIR-AP1852I-x-K9: Dual-band, controller-based 802.11a/g/n/ac, Wave 2 • AIR-AP1852I-x-K9C: Dual-band, controller-based 802.11a/g/n/ac, Wave 2, configurable • Regulatory domains: (x = regulatory domain) **Cisco Aironet 1852e Access Point: Indoor, challenging environments, with external antennas** • AIR-AP1852E-x-K9: Dual-band, controller-based 802.11a/g/n/ac, Wave 2 • AIR-AP1852E-x-K9C: Dual-band, controller-based 802.11a/g/n/ac, Wave 2, configurable • Regulatory domains: (x = regulatory domain) Customers are responsible for verifying approval for use in their individual countries. To verify approval that corresponds to a particular country or the regulatory domain used in a specific country, visit https://www.cisco.com/go/aironet/compliance.

Product name	Part number
	Not all regulatory domains have been approved. As they are approved, the part numbers will be available on the Global Price List.

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Cisco Wireless LAN Services

- AS-WLAN-CNSLT: Cisco Wireless LAN Network Planning and Design Service

- AS-WLAN-CNSLT: Cisco Wireless LAN 802.11n Migration Service

- AS-WLAN-CNSLT: Cisco Wireless LAN Performance and Security Assessment Service

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