CISCO
The bridge to possible

Cisco Aironet 1840 Series Access Points

Contents

The Cisco® Aironet 1840 Series Access Points deliver an ideal blend of predictable performance in a compact form factor. Packed with 802.11ac Wave 2 features and Bluetooth Low Energy (BLE) for location-based services, this platform is ideal for small to midsize enterprise deployments.

Figure 1.
Cisco Aironet 1840 Series Access Point

Ideal for small and medium-sized networks, the Cisco® Aironet® 1840 Series delivers industry-leading performance for enterprise and service provider markets via enterprise-class 4x4 MU-MIMO, four-spatial-stream access points that support the Institute of Electrical and Electronic Engineers (IEEE) 802.11ac Wave 2 standard. Integrated BLE radio enables location-based use cases such as wayfinding and asset tracking. The 1840 Series t 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.

With the 1840 Series, you can secure 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, 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 is 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.

Features and benefits

Table 1. Features and benefits

Feature	Benefit
802.11ac Wave 1 and 2 capabilities	The IEEE 802.11ac standard delivers a better experience in typical environments, and a more predictable performance for advanced applications such as 4K or 8K video, high-density high-definition collaboration apps, all-wireless offices and Internet-of-Things (IoT).
Multiuser Multiple-Input Multiple-Output (MU-MIMO) technology	Supporting four spatial streams, MU-MIMO enables access points to split spatial streams between client devices, to maximize throughput.
Intelligent Capture[*]	Intelligent Capture probes the network and provides DNA Center with deep analysis. The software can track over 240 anomalies and instantaneously review all packets on demand, emulating the onsite network administrator. Intelligent Capture allows for more informed decisions on your wireless networks.
Cisco Mobility Express[*]	Mobility Express is designed for networks of all sizes, including small and medium-sized businesses and distributed enterprises. It provides industry-leading wireless LAN technology without the need for a physical controller or additional licenses.
Bluetooth 4.2	Integrated BLE 4.2 radio to enable IoT use cases such as location tracking.

* Available in a future release.

Cisco DNA support

Pairing the 1840 Series Access Points with Cisco DNA allows for a total network transformation. Cisco DNA allows you to truly understand your network with real-time analytics, quickly detect and contain security threats, and easily provide network-wide consistency through automation and virtualization. By decoupling network functions from the hardware, you can build and manage your entire wired and wireless network from a single user interface.

Working together, the Aironet 1840 Series and Cisco DNA offer such features as:

- Cisco DNA Spaces
- Fast Lane
- Cisco Identity Services Engine
- Cisco DNA Analytics and Assurance
- And much more

The result? Your network stays relevant, becomes digital-ready, and is the lifeblood of your organization.

Product specifications

Table 2.   Specifications

Item	Specification
Part numbers	**Cisco Aironet 1840 Series Access Point: Indoor environments, with internal antennas** ● AIR-AP1840I-x-K9: Aironet 1840 **Cisco Aironet 1840 Series Access Point with Mobility Express: Indoor environments, with internal antennas** ● AIR-AP1840I-x-K9C: Aironet 1840 Series with Mobility Express **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, visit https://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. **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
Software	● Cisco Unified Wireless Network Software Release 8.8 MR2 or later ● Cisco IOS® XE Software Release 16.12 or later
Supported wireless LAN controllers	● Cisco Catalyst 9800 Wireless Controllers ● Cisco 3500, 5520 and 8540 Series Wireless Controllers, Cisco Virtual Wireless Controller ● Cisco Mobility Express
802.11n version 2.0 (and related) capabilities	● 5 GHz, 4x4 MIMO with four spatial streams ● 2.4 GHz, 2x2 MIMO with two spatial streams ● Maximal Ratio Combining (MRC) ● 802.11n and 802.11a/g beamforming ● 20 and 40 MHz channels ● PHY data rates up to 744 Mbps (40 MHz with 5 GHz and 20MHz with 2.4GHz) ● Packet aggregation: A-MPDU (Tx/Rx), A-MSDU (Tx/Rx) ● 802.11 Dynamic Frequency Selection (DFS) ● Cyclic Shift Diversity (CSD) support
802.11ac	● 4x4 DL MU-MIMO with four spatial streams ● MRC ● 802.11ac beamforming ● 20, 40, 80 MHz channels ● PHY data rates up to 1733 Mbps (80MHz with 5 GHz) ● Packet aggregation: A-MPDU (Tx/Rx), A-MSDU (Tx/Rx) ● 802.11 DFS ● CSD support
Integrated antenna	● 2.4 GHz, peak gain 4 dBi, internal antenna, omnidirectional in azimuth ● 5 GHz, peak gain 5 dBi, internal antenna, omnidirectional in azimuth

Item	Specification	
Interfaces	• 2 x 10/100/1000BASE-T autosensing (RJ-45), Power over Ethernet (PoE) • 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 brackets): AIR-AP1840I: 7 x 7 x 1.5 in	
Weight	**Cisco AIR-AP1840I** • 0.94 lb (0.43 kg)	
Input power requirements	• 802.3at PoE+, Cisco Universal PoE (Cisco UPOE®) • Cisco power injector, AIR-PWRINJ6= • 802.3af PoE • Cisco power injector, AIR-PWRINJ5= (note: this injector only supports 802.3af) Note: When 802.3af PoE is the source of power, then USB port will be off	
Power draw	**Cisco AIR-AP1840I** • 13.2W at the PSE (12.1W at the PD) with all features enabled except for the USB port • 17.8W at the PSE (16.0W at the PD) with the USB port enabled	
Environmental	**Cisco AIR-AP1840I** • Nonoperating (storage) temperature: -22° to 158°F (-30° to 70°C) • Nonoperating (storage) altitude test: 25°C, 15,000 ft. • Operating temperature: 32° to 122°F (0° to 50°C) • Operating humidity: 10% to 90% (noncondensing) • Operating altitude test: 40°C, 9843 ft. Note: when ambient operating temperature exceeds 40°C, then the radio transmit duty cycle may be limited to not greater than 50%.	
System memory	• 1GB MB DRAM • 256 MB flash	
Warranty	Limited lifetime hardware warranty	
Available transmit power settings[3]	**2.4 GHz** • 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) • -1dBm (0.79 mW)	**5 GHz** • 23 dBm (200 mW) • 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)

Item	Specification	
Frequency band and 20-MHz operating channels	**A (A regulatory domain):** • 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 **B (B regulatory domain):** • 2.412 to 2.462 GHz; 11 channels • 5.180 to 5.320 GHz; 8 channels • 5.500 to 5.700 GHz; 11 channels • 5.745 to 5.865 GHz; 7 channels **C (C regulatory domain):** • 2.412 to 2.472 GHz; 13 channels • 5.745 to 5.825 GHz; 5 channels **D (D regulatory domain):** • 2.412 to 2.462 GHz; 11 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 **E (E regulatory domain):** • 2.412 to 2.472 GHz; 13 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; 13 channels • 5.250 to 5.350 GHz; 4 channels • 5.725 to 5.825 GHz; 4 channels **G (G regulatory domain):** • 2.412 to 2.472 GHz; 13 channels • 5.745 to 5.865 GHz; 7 channels **H (H regulatory domain):** • 2.412 to 2.472 GHz; 13 channels • 5.180 to 5.320 GHz; 8 channels • 5.745 to 5.825 GHz; 5 channels	**I (I regulatory domain):** • 2.412 to 2.472 GHz; 13 channels • 5.180 to 5.320 GHz; 8 channels **K (K regulatory domain):** • 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 **N (N regulatory domain):** • 2.412 to 2.462 GHz; 11 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; 13 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; 13 channels • 5.180 to 5.320 GHz; 8 channels • 5.660 to 5,825 GHz; 8 channels (excludes 5.700 to 5.745 GHz) **S (S regulatory domain):** • 2.412 to 2.472 GHz; 13 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; 11 channels • 5.180 to 5.320 GHz; 8 channels • 5.500 to 5.700 GHz; 12 channels • 5.745 to 5.825 GHz; 5 channels **Z (Z regulatory domain):** • 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

Note: 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, visit https://www.cisco.com/go/aironet/compliance.

Item	Specification	

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: 26 FCC, 16 EU
		• 802.11n:
		  ◦ 20 MHz: 26 FCC, 16 EU
		  ◦ 40 MHz: 12 FCC, 7 EU
		• 802.11ac:
		  ◦ 20 MHz: 26 FCC, 16 EU
		  ◦ 40 MHz: 12 FCC, 7 EU
		  ◦ 80 MHz: 5 FCC, 3 EU

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

Compliance standards	• **Safety:**
	  ◦ IEC 60950-1
	  ◦ EN 60950-1
	  ◦ AS/NZS 60950.1
	  ◦ UL 60950-1
	  ◦ CAN/CSA-C22.2 No. 60950-1
	  ◦ UL 2043
	  ◦ Class III Equipment
	• **EMC/EMI:**
	• **Emissions:**
	  ◦ CISPR 32 (rev. 2015)
	  ◦ EN 55032 (rev. 2012/AC:2013)
	  ◦ EN 55032 (rev. 2015)
	  ◦ EN61000-3-2 (rev. 2014)
	  ◦ EN61000-3-3 (rev. 2013)
	  ◦ KN61000-3-2
	  ◦ KN61000-3-3
	  ◦ AS/NZS CISPR 32 Class B (rev. 2015)
	  ◦ 47 CFR FCC Part 15B
	  ◦ ICES-003 (rev. 2016 Issue 6, Class B)
	  ◦ VCCI (V3)
	  ◦ CNS (rev. 13438)
	  ◦ KN-32
	  ◦ TCVN 7189 (rev. 2009)
	• **Immunity:**
	  ◦ CISPR 24 (rev. 2010)
	  ◦ EN 55024/EN 55035 (rev. 2010)
	• **Emissions and Immunity:**
	  ◦ EN 301 489-1 (v2.1.1 2017-02)
	  ◦ EN 301 489-17 (v3.1.1 2017-02)
	  ◦ QCVN (18:2014)
	  ◦ KN 489-1		

Item	Specification
	○ KN 489-17
	○ EN 60601 (1-1:2015)
	● **Radio:**
	○ EN 300 328 (v2.1.1)
	○ EN 301 893 (v2.1.1)
	○ AS/NZS 4268 (rev. 2017)
	○ 47 CFR FCC Part 15C, 15.247, 15.407
	○ RSP-100
	○ RSS-GEN
	○ RSS-247
	○ China regulations SRRC
	○ LP0002 (rev 2018.1.10)
	○ Japan Std. 33a, Std. 66, and Std. 71
	● **RF Safety:**
	○ EN 50385 (rev. Aug 2002)
	○ ARPANSA
	○ AS/NZS 2772 (rev. 2016)
	○ EN 62209-1 (rev. 2016)
	○ EN 62209-2 (rev. 2010)
	○ 47 CFR Part 1.1310 and 2.1091
	○ RSS-102
	● **IEEE standards:**
	○ IEEE 802.3
	○ IEEE 802.3ab
	○ IEEE 802.3af/at
	○ IEEE 802.11 a/b/g/n/ac
	○ IEEE 802.11h, 802.11d
	● **Energy efficiency:**
	○ Reg. 278/2009 EuP Lot 7, Tier 1 4/27/2010, Tier 2 4/27/2010 Level V
	○ Reg. 1275/2008 EuP Lot 6, Tier 1 1/7/2010, Tier 2 4/27/2013. Applies to EMC Class B products
	○ EISA 2007, Level V
	○ NRCan Level V
	○ AS/NZS 4665.2, MEPS Level V
	○ CECP Level V
	● **Security:**
	○ 802.11i, Wi-Fi Protected Access 3 (WPA3), WPA2, WPA
	○ 802.1X
	○ Advanced Encryption Standards (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 (EAP-FAST)
	○ PEAP v1 or EAP-Generic Token Card (GTC)
	○ EAP-Subscriber Identity Module (SIM)

Item	Specification
Data rates supported	802.11b: 1, 2, 5.5, and 11 Mbps
	802.11a/g: 6, 9, 12, 18, 24, 36, 48, and 54 Mbps
	802.11n data rates on 2.4 GHz (only 20 MHz and MCS 0 to MCS 15) and 5GHz

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
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	43.4	90

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[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.

[3] Actual maximum transmit power is dependent up the regulatory settings for the AP domain.

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
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

Item	Specification							
	9	1	–	180	390	–	200	433.3
	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	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
	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
	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	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

Item	Specification							
	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	4	26	54	117	28.8	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
	9	4	–	720	1560	–	800	1733.3

Transmit Power and Receive Sensitivity

	Spatial Streams	5-GHz Radio		2.4-GHz Radio	
		Total Tx Power (dBm)	Rx Sensitivity (dBm)	Total Tx Power (dBm)	Rx Sensitivity (dBm)
802.11/11b					
1 Mbps	1	–	–	20	–99
11 Mbps	1	–	–	20	–91
802.11a/g					
6 Mbps	1	23	–94	20	–93
24 Mbps	1	23	–86	20	–85
54 Mbps	1	23	–77	20	–76

Item		Specification			
802.11n HT20					
MCS0	1	23	-94	20	-93
MCS4	1	23	-81	20	-81
MCS7	1	23	-74	20	-73
MCS8	2	23	-93	20	-93
MCS12	2	23	-81	20	-81
MCS15	2	23	-75	20	-75
MCS16	3	23	-93	-	-
MCS20	3	23	-81	-	-
MCS23	3	23	-74	-	-
MCS24	4	23	-92	-	-
MCS28	4	23	-82	-	-
MCS31	4	23	-75	-	-
802.11n HT40					
MCS0	1	23	-91	-	-
MCS4	1	23	-79	-	-
MCS7	1	23	-72	-	-
MCS8	2	23	-90	-	-
MCS12	2	23	-78	-	-
MCS15	2	23	-71	-	-
MCS16	3	23	-89	-	-
MCS20	3	23	-78	-	-
MCS23	3	23	-70	-	-
MCS24	4	23	-90	-	-
MCS28	4	23	-79	-	-
MCS31	4	23	-72	-	-

Item		Specification			
802.11ac VHT20					
MCS0	1	23	–94	–	–
MCS4	1	23	–81	–	–
MCS7	1	23	–74	–	–
MCS8	1	23	–70	–	–
MCS9	1	23	NA	–	–
MCS0	2	23	–92	–	–
MCS4	2	23	–81	–	–
MCS7	2	23	–73	–	–
MCS8	2	23	–68	–	–
MCS9	2	23	NA	–	–
MCS0	3	23	–92	–	–
MCS4	3	23	–81	–	–
MCS7	3	23	–73	–	–
MCS8	3	23	–68	–	–
MCS9	3	23	–67	–	–
MCS0	4	23	–91	–	–
MCS4	4	23	–80	–	–
MCS7	4	23	–73	–	–
MCS8	4	23	–68	–	–
MCS9	4	23	NA	–	–
802.11ac VHT40					
MCS0	1	23	–91	–	–
MCS4	1	23	–79	–	–
MCS7	1	23	–72	–	–
MCS8	1	23	–67	–	–
MCS9	1	23	–66	–	–

Item		Specification			
MCS0	2	23	–90	–	–
MCS4	2	23	–78	–	–
MCS7	2	23	–71	–	–
MCS8	2	23	–66	–	–
MCS9	2	23	–65	–	–
MCS0	3	23	–89	–	–
MCS4	3	23	–78	–	–
MCS7	3	23	–71	–	–
MCS8	3	23	–64	–	–
MCS9	3	23	–62	–	–
MCS0	4	23	–88	–	–
MCS4	4	23	–78	–	–
MCS7	4	23	–70	–	–
MCS8	4	23	–65	–	–
MCS9	4	23	–64	–	–
802.11ac VHT80					
MCS0	1	23	–88	–	–
MCS4	1	23	–76	–	–
MCS7	1	23	–68	–	–
MCS8	1	23	–64	–	–
MCS9	1	23	–62	–	–
MCS0	2	23	–87	–	–
MCS4	2	23	–75	–	–
MCS7	2	23	–68	–	–
MCS8	2	23	–63	–	–
MCS9	2	23	–62	–	–
MCS0	3	23	–86	–	–

Item		Specification			
MCS4	3	23	–75	–	–
MCS7	3	23	–67	–	–
MCS8	3	23	–62	–	–
MCS9	3	23	–61	–	–
MCS0	4	23	–85	–	–
MCS4	4	23	–74	–	–
MCS7	4	23	–67	–	–
MCS8	4	23	–61	–	–
MCS9	4	23	–59	–	–
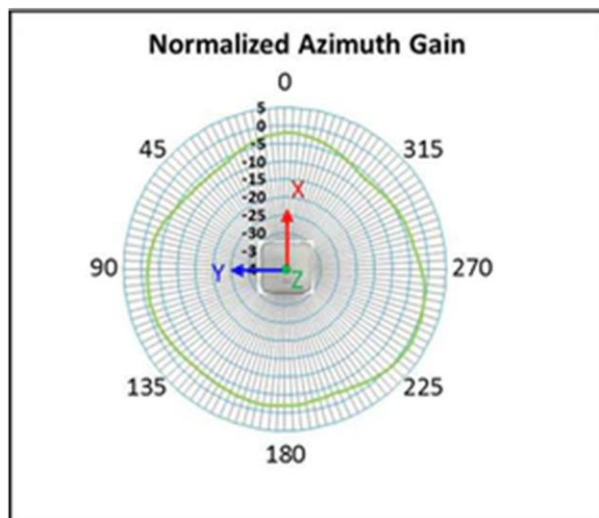
2.4 GHz Azimuth
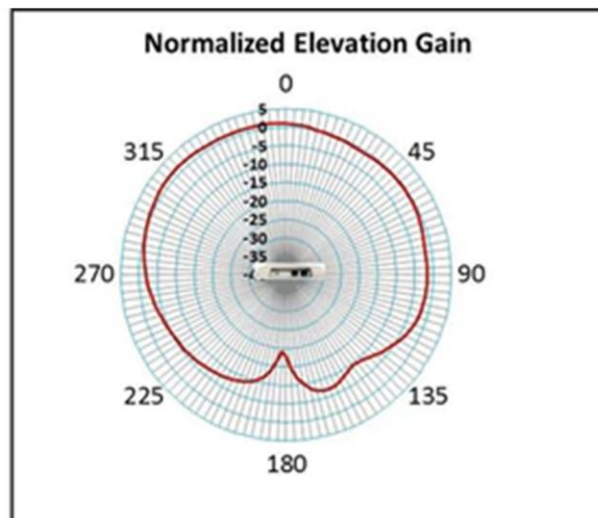
2.4 GHz Elevation
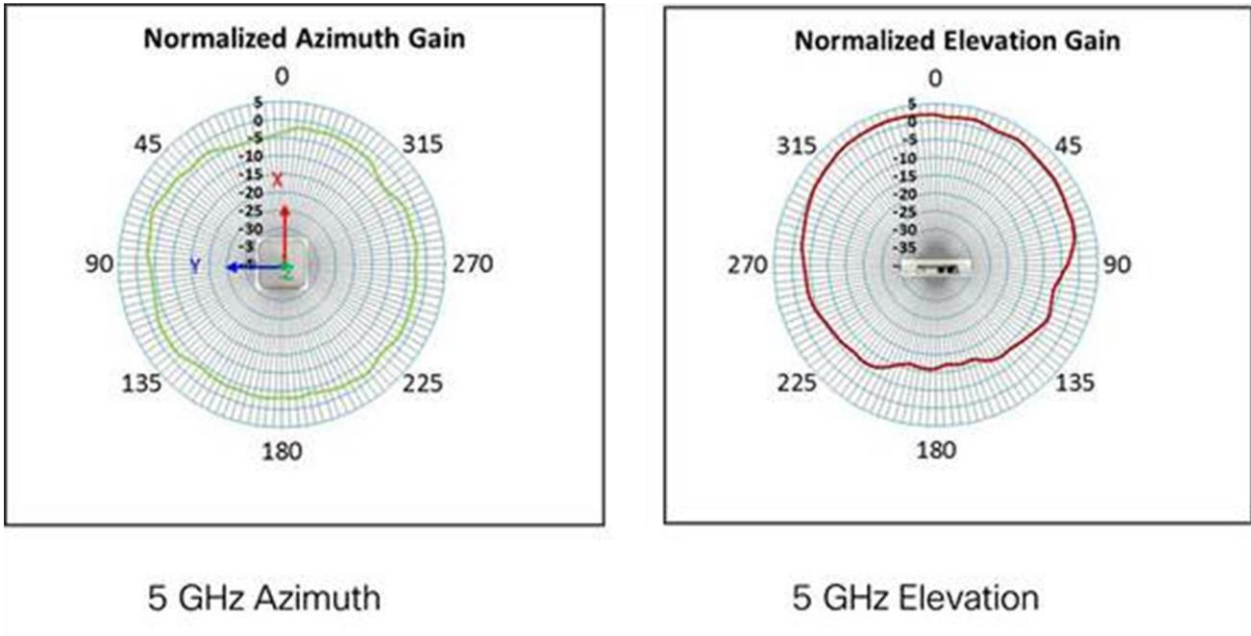
Figure 2.
Antenna patterns for AP1840I

Licensing

In order to connect any access points to the **controller**, Cisco DNA software subscriptions are required. To be entitled to connect to Cisco Catalyst 9800 Series Wireless Controller, the access point requires a Cisco DNA subscription license.
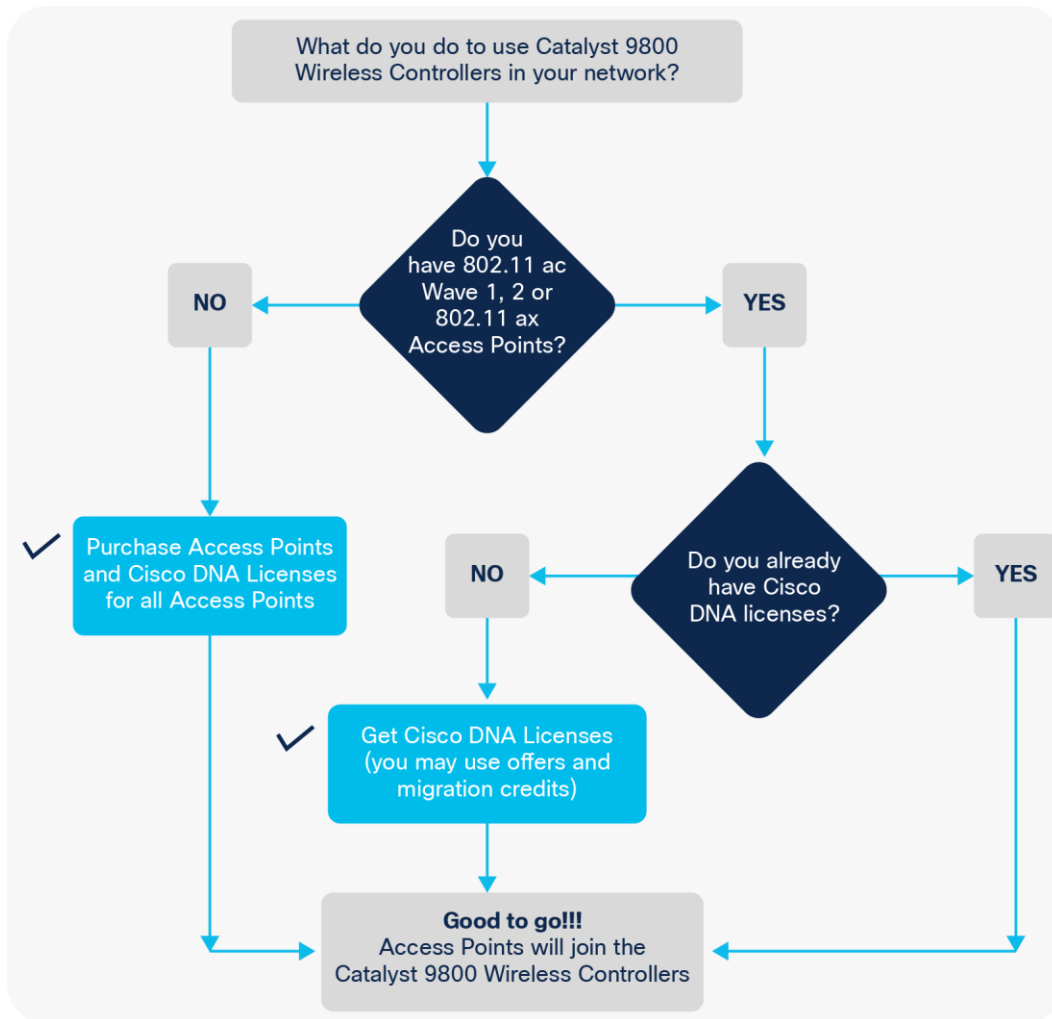
Figure 3.
Determining license requirements for access points connecting to Cisco Catalyst 9800 Series Wireless Controllers

The 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 1840 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 3.

Table 3.   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.

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