

Release Notes for Cisco Embedded Wireless Controller on Catalyst Access Points, Cisco IOS XE 17.1.x

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Introduction to Cisco Embedded Wireless Controller on Catalyst Access Points

The Cisco Embedded Wireless Controller on Catalyst Access Points is a version of the Cisco IOS XE-based controller software on Catalyst access points. In this solution, a Catalyst access point (AP) that is running the Cisco Embedded Wireless Controller on Catalyst Access Points software, is designated as the primary AP. Other APs, referred to as subordinate APs, associate to this primary AP.

The Cisco Embedded Wireless Controller on Catalyst Access Points provides enterprise-level WLAN features while maintaining operational simplicity and affordability. This solution is targeted at small and medium-sized business (SMB) customers or distributed enterprises, and can be run at single site deployments.

- The controllers come with high availability (HA) and seamless software updates. This keeps your services on always, both during planned and unplanned events.
- The deployment can be managed using a mobile application, Cisco Digital Network Architecture (DNA) Center, Netconf/Restconf, web-based GUI, or CLI.

What's New in Cisco IOS XE Amsterdam 17.1.1t

There are no new features or enhancements in this release.

What's New in Cisco IOS XE Amsterdam 17.1.1s

This section provides information about the new features and enhancements in this release.

CCO Image Download Method: This feature allows you download the AP and controller software images from the CCO server. The CCO image download method can be triggered using both the GUI and CLI.

Cisco Umbrella Integration: From this release onwards, Cisco Umbrella Integration is supported on the Embedded Wireless Controller APs.

Controller SMU: This feature is supported on the Embedded Wireless Controller APs from release 17.1.1s. The Software Maintenance Upgrade is a package that can be installed on the system to provide a patch fix or a security resolution to a released image.

Day 0 Behavior : PnP Config Download (Device): The Cisco Network Plug and Play solution provides a simple and near-zero touch deployment experience for enterprise network customers using Cisco Embedded Wireless Controller for Catalyst Access Points. The PNP server is hosted on the Cisco DNA Center.

EoGRE: Ethernet over GRE (EoGRE) is an aggregation solution for grouping Wi-Fi traffic from hotspots. This solution enables customer premises equipment (CPE) devices to bridge the Ethernet traffic coming from an end-host, and encapsulate the traffic in Ethernet packets over an IP GRE tunnel.

IPv6: This feature is supported from version 17.1.1s onwards. IPv6 is a packet-based protocol used to exchange data, voice, and video traffic over digital networks. IPv6 is based on IP, but with a much larger address space, and improvements such as a simplified main header and extension headers. The architecture of IPv6 has been designed to allow existing IPv4 users to transition easily to IPv6 while continuing to use services such as end-to-end security, quality of service (QoS), and globally unique addresses. The larger IPv6 address space allows networks to scale and provide global reachability.

HTTPS, DNS, and URL Filtering: The DNS-based ACLs are used for wireless client devices. When using these devices, you can set pre-authentication ACLs on the embedded wireless controller to determine the data requests that are allowed or blocked.

NAT Support for M&M Cloud: Network Address Translation - Network Address Translation (NAT) allows a device to act as an agent between the Internet (public) and a local network (private). It maps the controller's intranet IP addresses to a corresponding external address.

Scheduled download of controller configuration: In a Cisco Embedded Wireless Controller network, you can schedule the download of a configuration file from the server. This enables reuse of the software configuration conveniently across the deployment wherever similar configuration is required. Scheduled download operations will not impact routine data transfer over the network.

SMU: AP Device Pack This feature introduces a new AP model in your wireless network using the SMU infrastructure without the need to upgrade to the new controller version. This solution is termed as AP Device Package (APDP).

SMU: AP Service Pack This feature provides a fix for a subset of AP models. It helps you to pre-download the AP images and activate these images (through rolling upgrade) to a subset of AP models. This solution is termed as AP Service Package (APSP).

Support for SFTP and SCP to upload core file: This feature enhancement adds SFTP as an additional mechanism for the transfer of files from the AP to an external server.

Supported Cisco Access Point Platforms

The following Cisco access points are supported in the Cisco Embedded Wireless Controller on Catalyst Access Points network. Note that the APs listed as primary APs can also function as subordinate APs.

Table 1: Cisco APs Supported in Cisco Embedded Wireless Controller on Catalyst Access Points

Primary AP	Subordinate AP
Cisco Catalyst 9115 Series	Cisco Aironet 1540 Series
Cisco Catalyst 9117 Series	Cisco Aironet 1560 Series
Cisco Catalyst 9120 Series	Cisco Aironet 1815i
Cisco Catalyst 9130 Series ¹	Cisco Aironet 1815w
	Cisco Aironet 1830 Series
	Cisco Aironet 1840 Series
	Cisco Aironet 1850 Series
	Cisco Aironet 2800 Series
	Cisco Aironet 3800 Series
	Cisco Aironet 4800 Series
	Cisco Catalyst 9115 Series
	Cisco Catalyst 9117 Series
	Cisco Catalyst 9120 Series
	Cisco Catalyst 9130 Series

¹ Cisco Catalyst 9130AXE is not supported in Cisco IOS XE 16.12.2s and 16.12.3.

Table 2: Image Types and Supported APs in Cisco Embedded Wireless Controller on Catalyst Access Points

Image Type	Supported APs
ap1g4	Cisco Aironet 1810 Series Cisco Aironet 1830 Series Cisco Aironet 1850 Series
ap1g5	Cisco Aironet 1815i Cisco Aironet 1815w Cisco Aironet 1540 Series Cisco Aironet 1840 Series
ap1g6	Cisco Catalyst 9117 Series
ap1g6a	Cisco Catalyst 9130 Series
ap1g7	Cisco Catalyst 9115 Series Cisco Catalyst 9120 Series

Image Type	Supported APs
ap3g3	Cisco Aironet 2800 Series Cisco Aironet 3800 Series Cisco Aironet 4800 Series Cisco Aironet 1560 Series

Maximum APs and Clients Supported

Table 3: Scale Supported in Cisco EWC Network

Primary AP Model	Maximum APs Supported	Maximum Clients Supported
Cisco Catalyst 9105 AWI	50	1000
Cisco Catalyst 9115 Series	50	1000
Cisco Catalyst 9117 Series	50	1000
Cisco Catalyst 9120 Series	100	2000
Cisco Catalyst 9130 Series	100	2000



Note If 25 to 100 APs have joined the EWC network, the maximum clients on the EWC internal AP is limited to 20.

Compatibility Matrix

The following table provides software compatibility information:

Table 4: Compatibility Information

Cisco Embedded Wireless Controller on Catalyst Access Points	Cisco ISE	Cisco CMX	Cisco DNA Center
Amsterdam 17.1.1t	2.6	10.6.2	1.3.3.0
Amsterdam 17.1.1s	2.4	10.6	
	2.3	10.5.1	

Supported Browsers and Operating Systems for Web UI



Note The following list of Supported Browsers and Operating Systems is not comprehensive at the time of writing this document and the behavior of various browser for accessing the GUI of the EWC is as listed below.

Table 5: Supported Browsers and Operating Systems

Browser	Version	Operating System	Status	Workaround
Google Chrome	77.0.3865.120	macOS Mojave Version 10.14.6	Works	Proceed through the browser warning.
Safari	13.0.2 (14608.2.40.1.3)	macOS Mojave Version 10.14.6	Works	Proceed through the browser warning.
Mozilla Firefox	69.0.1	macOS Mojave Version 10.14.6	Works only if exception is added.	Set the exception.
Mozilla Firefox	69.0.3	macOS Mojave Version 10.14.6	Works only if exception is added.	Set the exception.
Google Chrome	77.0.3865.90	Windows 10 Version 1903 (OS Build 18362.267)	Works	Proceed through the browser warning.
Microsoft Edge	44.18362.267.0	Windows 10 Version 1903 (OS Build 18362.267)	Works	Proceed through the browser warning.
Mozilla Firefox	68.0.2	Windows 10 Version 1903 (OS Build 18362.267)	Works	Proceed through the browser warning.
Mozilla Firefox	69.0.3	Windows 10 Version 1903 (OS Build 18362.267)	Works only if exception is added.	Set the exception.
Google Chrome	78.0.3904.108	macOS Catalina 10.15.1	Does not work	NA

Upgrading the Controller Software

This section covers the various aspects of upgrading the controller software.



Note Before converting from CAPWAP to embedded wireless controller (EWC), ensure that you upgrade the corresponding AP with the CAPWAP image in Cisco AireOS Release 8.10.105.0. If this upgrade is not performed, the conversion will fail.

Finding the Software Version

The following table lists the Cisco IOS XE 17.1.1s software for Cisco Embedded Wireless Controller on Catalyst Access Points.



Note An AP that joins the Embedded Wireless Controller (EWC) network, should already be running the software Version 8.10.x or later, or Version 16.12.x or later. If this is not the case, upgrade the AP with either of these options *before* the AP joins the EWC network.

Choose the appropriate AP software based on the following:

- Cisco Embedded Wireless Controller on Catalyst Access Points software to be used for converting the AP from an unified wireless network CAPWAP lightweight AP to a Cisco Embedded Wireless Controller on Catalyst Access Points-capable AP (primary AP)
- AP software image bundle to be used either for upgrading the Cisco Embedded Wireless Controller on Catalyst Access Points software on the primary AP or for updating the software on the subordinate APs or both

Prior to ordering Cisco APs, see the corresponding ordering guide for your Catalyst or Aironet access point.

Table 6: Cisco Embedded Wireless Controller on Catalyst Access Points Software

Primary AP	AP Software for Conversion from CAPWAP to Cisco EWC	AP Software Image Bundle for Upgrade	AP Software in the Bundle
Cisco Catalyst 9115 Series	C9800-AP-universalk9.17.01.01s.zip	C9800-AP-universalk9.17.01.01s.zip	ap1g7
Cisco Catalyst 9117 Series	C9800-AP-universalk9.17.01.01s.zip	C9800-AP-universalk9.17.01.01s.zip	ap1g6
Cisco Catalyst 9120 Series	C9800-AP-universalk9.17.01.01s.zip	C9800-AP-universalk9.17.01.01s.zip	ap1g7
Cisco Catalyst 9130 Series	C9800-AP-universalk9.17.01.01s.zip	C9800-AP-universalk9.17.01.01s.zip	ap1g6a

Guidelines and Restrictions

Internet Group Management Protocol (IGMP)v3 is not supported on Cisco Aironet Wave 2 APs.

Embedded Wireless Controller SNMP configuration is supported in DNAC.

High memory usage on AP running Embedded Wireless Controller. Enabling **crash kernel** on the AP consumes additional memory on the AP. Hence, if **crash kernel** is enabled, the overall memory usage of the device will increase and will impact the scale numbers. On Cisco Catalyst 9130 Series Access Points, the memory consumption is a high of 128 MB.

Interoperability with Clients

This section describes the interoperability of the controller software with client devices.

The following table describes the configurations used for testing client devices.

Table 7: Test Configuration for Interoperability

Hardware or Software Parameter	Hardware or Software Type
Release	Cisco IOS XE Amsterdam 17.1.1s
Access Points	<ul style="list-style-type: none"> • Cisco Aironet Series Access Points <ul style="list-style-type: none"> • 1540 • 1560 • 1815i • 1815w • 1830 • 1840 • 1850 • 2800 • 3800 • 4800 • Cisco Catalyst 9115AX Access Points • Cisco Catalyst 9117AX Access Points • Cisco Catalyst 9120AX Access Points • Cisco Catalyst 9130AX Access Points
Radio	<ul style="list-style-type: none"> • 802.11ax • 802.11ac • 802.11a • 802.11g • 802.11n (2.4 GHz or 5 GHz)
Security	Open, PSK (WPA2-AES), 802.1X (WPA2-AES) (EAP-FAST, EAP-TLS), WPA3.
Cisco ISE	

Hardware or Software Parameter	Hardware or Software Type
Types of tests	Connectivity, traffic (ICMP), and roaming between two APs

The following table lists the client types on which the tests were conducted. Client types included laptops, hand-held devices, phones, and printers.

Table 8: Client Types

Client Type and Name	Driver / Software Version
Wi-Fi 6 Devices (Mobile Phone and Laptop)	
Apple iPhone 11	iOS 14.1
Apple iPhone SE 2020	iOS 14.1
Dell Intel AX1650w	Windows 10 (21.90.2.1)
DELL LATITUDE 5491 (Intel AX200)	Windows 10 Pro (21.40.2)
Samsung S20	Android 10
Samsung S10 (SM-G973U1)	Android 9.0 (One UI 1.1)
Samsung S10e (SM-G970U1)	Android 9.0 (One UI 1.1)
Samsung Galaxy S10+	Android 9.0
Samsung Galaxy Fold 2	Android 10
Samsung Galaxy Flip Z	Android 10
Samsung Note 20	Android 10
Laptops	
Acer Aspire E 15 E5-573-3870 (Qualcomm Atheros QCA9377)	Windows 10 Pro (12.0.0.832)
Apple Macbook Air 11 inch	OS Sierra 10.12.6
Apple Macbook Air 13 inch	OS Catalina 10.15.4
Apple Macbook Air 13 inch	OS High Sierra 10.13.4
Macbook Pro Retina	OS Mojave 10.14.3
Macbook Pro Retina 13 inch early 2015	OS Mojave 10.14.3
Dell Inspiron 2020 Chromebook	Chrome OS 75.0.3770.129
Google Pixelbook Go	Chrome OS 84.0.4147.136
HP chromebook 11a	Chrome OS 76.0.3809.136
Samsung Chromebook 4+	Chrome OS 77.0.3865.105

Client Type and Name	Driver / Software Version
DELL Latitude 3480 (Qualcomm DELL wireless 1820)	Win 10 Pro (12.0.0.242)
DELL Inspiron 15-7569 (Intel Dual Band Wireless-AC 3165)	Windows 10 Home (18.32.0.5)
DELL Latitude E5540 (Intel Dual Band Wireless AC7260)	Windows 7 Professional (21.10.1)
DELL XPS 12 v9250 (Intel Dual Band Wireless AC 8260)	Windows 10 (19.50.1.6)
DELL Latitude 5491 (Intel AX200)	Windows 10 Pro (21.40.2)
DELL XPS Latitude12 9250 (Intel Dual Band Wireless AC 8260)	Windows 10 Home (21.40.0)
Lenovo Yoga C630 Snapdragon 850 (Qualcomm AC 2x2 Svc)	Windows 10(1.0.10440.0)
Lenovo Thinkpad Yoga 460 (Intel Dual Band Wireless-AC 9260)	Windows 10 Pro (21.40.0)
Note	For clients using Intel wireless cards, we recommend you to update to the latest Intel wireless drivers if advertised SSIDs are not visible.
Tablets	
Apple iPad Pro	iOS 13.5
Apple iPad Air2 MGLW2LL/A	iOS 12.4.1
Apple iPad Mini 4 9.0.1 MK872LL/A	iOS 11.4.1
Apple iPad Mini 2 ME279LL/A	iOS 12.0
Microsoft Surface Pro 3 – 11ac	Qualcomm Atheros QCA61x4A
Microsoft Surface Pro 3 – 11ax	Intel AX201 chipset. Driver v21.40.1.3
Microsoft Surface Pro 7 – 11ax	Intel Wi-Fi chip (HarrisonPeak AX201) (11ax, WPA3)
Microsoft Surface Pro X – 11ac & WPA3	WCN3998 Wi-Fi Chip (11ac, WPA3)
Mobile Phones	
Apple iPhone 5	iOS 12.4.1
Apple iPhone 6s	iOS 13.5
Apple iPhone 8	iOS 13.5
Apple iPhone X MQA52LL/A	iOS 13.5
Apple iPhone 11	iOS 14.1
Apple iPhone SE MLY12LL/A	iOS 11.3
ASCOM SH1 Myco2	Build 2.1

Client Type and Name	Driver / Software Version
ASCOM SH1 Myco2	Build 4.5
ASCOM Myco 3 v1.2.3	Android 8.1
Drager Delta	VG9.0.2
Drager M300.3	VG2.4
Drager M300.4	VG2.4
Drager M540	DG6.0.2 (1.2.6)
Google Pixel 2	Android 10
Google Pixel 3	Android 11
Google Pixel 3a	Android 11
Google Pixel 4	Android 11
Huawei Mate 20 pro	Android 9.0
Huawei P20 Pro	Android 9.0
Huawei P40	Android 10
LG v40 ThinQ	Android 9.0
One Plus 8	Android 10
Oppo Find X2	Android 10
Redmi K20 Pro	Android 10
Samsung Galaxy S7	Android 6.0.1
Samsung Galaxy S7 SM - G930F	Android 8.0
Samsung Galaxy S8	Android 8.0
Samsung Galaxy S9+ - G965U1	Android 9.0
Samsung Galaxy SM - G950U	Android 7.0
Sony Xperia 1 ii	Android 10
Sony Xperia xz3	Android 9.0
Xiaomi Mi10	Android 10
Spectralink 8744	Android 5.1.1
Spectralink Versity Phones 9540	Android 8.1
Vocera Badges B3000n	4.3.2.5
Vocera Smart Badges V5000	5.0.4.30
Zebra MC40	Android 5.0
Zebra MC40N0	Android Ver: 4.1.1

Client Type and Name	Driver / Software Version
Zebra MC92N0	Android Ver: 4.4.4
Zebra TC51	Android 7.1.2
Zebra TC52	Android 8.1.0
Zebra TC55	Android 8.1.0
Zebra TC57	Android 8.1.0
Zebra TC70	Android 6.1
Zebra TC75	Android 6.1.1
Printers	
Zebra QLn320 Printer	LINK OS 6.3
Zebra ZT230 Printer	LINK OS 6.3
Zebra ZQ310 Printer	LINK OS 6.3
Zebra ZD410 Printer	LINK OS 6.3
Zebra ZT410 Printer	LINK OS 6.3
Zebra ZQ610 Printer	LINK OS 6.3
Zebra ZQ620 Printer	LINK OS 6.3
Wireless Module	
Intel I1ax 200	Driver v22.20.0
Intel AC 9260	Driver v21.40.0
Intel Dual Band Wireless AC 8260	Driver v19.50.1.6

Caveats

Caveats describe unexpected behavior in Cisco IOS releases. Caveats that are listed as Open in a prior release are carried forward to the next release as either Open or Resolved.



Note All incremental releases will cover fixes from the current release.

Cisco Bug Search Tool

The Cisco [Bug Search Tool](#) (BST) allows partners and customers to search for software bugs based on product, release, and keyword, and aggregates key data such as bug details, product, and version. The BST is designed to improve the effectiveness in network risk management and device troubleshooting. The tool has a provision to filter bugs based on credentials to provide external and internal bug views for the search input.

To view the details of a caveat, click the corresponding identifier.

Open Caveats for Cisco IOS XE Amsterdam 17.1.1t

There are no new open caveats for this release.

Open Caveats for Cisco IOS XE Amsterdam 17.1.1s

Caveat ID	Description
CSCvr80334	Pubd process on the controller goes down, managed by DNA-C 1.3.2
CSCvr82989	Standby AP goes to recovery mode if the controller is stopped, while explode is going on.
CSCvr74833	[EWC-SIT] RRM crashed on standby when the active controller was coming back up after a reload
CSCvr39352	Traceback is observed after a switchover on the Cisco Catalyst 9120AXI AP.
CSCvs23423	After an image upgrade or a network reboot the preferred controller might not become the active EWC controller.
CSCvq58496	The write erase command is not activating startup-config sync to all the EWC-capable devices.
CSCvr44175	System displays memory warning during the controller image download.

Resolved Caveats for Cisco IOS XE Amsterdam 17.1.1t

Caveat ID	Description
CSCvt47413	IW-6300H/1562/2800/3800/4800 series APs are failing DFS compliance.
CSCvs87888	Evaluation of Cisco Catalyst 9100 Series APs for Kr00k attack.
CSCvt17801	AP 2800/3800/4800/1560/IW 6300 gets into a loop after attempting to join controller with FIPS enabled.
CSCvu02495	Wave 2 AP boot failure with message saying bad lzma header and AP unable to boot and join controller.

Resolved Caveats for Cisco IOS XE Amsterdam 17.1.1s

Caveat ID	Description
CSCvq82908	Error message seen on the EWC device after HA switchover

Troubleshooting

For the most up-to-date, detailed troubleshooting information, visit the Cisco TAC website at:

<https://www.cisco.com/en/US/support/index.html>

Go to **Product Support** and select your product from the list, or enter the name of your product. Look under **Troubleshoot and Alerts** to find information about the problem that you are experiencing.

Related Documentation

Information about Cisco IOS XE 16 is available at:

<https://www.cisco.com/c/en/us/products/ios-nx-os-software/ios-xe/index.html>

All the support documentation for Cisco Catalyst 9100 Access Points are available at: <https://www.cisco.com/c/en/us/support/wireless/catalyst-9100ax-access-points/tsd-products-support-series-home.html>

Cisco Validated Designs documents are available at:

<https://www.cisco.com/go/designzone>

Cisco Embedded Wireless Controller on Catalyst Access Points

For support information, see the following documents:

- [Cisco Wireless Solutions Software Compatibility Matrix](#)
- [Cisco Embedded Wireless Controller on Catalyst Access Points Online Help](#)
- [Cisco Embedded Wireless Controller on Catalyst Access Points Software Configuration Guide](#)
- [Cisco Embedded Wireless Controller on Catalyst Access Points Command Reference Guide](#)

Installation guides for Catalyst Access Points are available at:

<https://www.cisco.com/c/en/us/support/wireless/catalyst-9100ax-access-points/products-installation-guides-list.html>

For all Cisco Wireless Controller software-related documentation, see:

<https://www.cisco.com/c/en/us/support/wireless/catalyst-9800-series-wireless-controllers/tsd-products-support-series-home.html>

Wireless Products Comparison

- Use this tool to compare the specifications of Cisco wireless APs and controllers:
<https://www.cisco.com/c/en/us/products/wireless/wireless-lan-controller/product-comparison.html>
- Product Approval Status:
https://prdapp.cloudapps.cisco.com/cse/prdapp/jsp/externalsearch.do?action=externalsearch&page=EXTERNAL_SEARCH
- Wireless LAN Compliance Lookup:
<https://www.cisco.com/c/dam/assets/prod/wireless/wireless-compliance-tool/index.html>

Cisco Mobility Services Engine

[Cisco Mobility Services Engine Documentation](#)

Cisco Connected Mobile Experiences

[Cisco Connected Mobile Experiences Documentation](#)

Cisco DNA Center

[Cisco DNA Center Documentation](#)

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