



Cisco Catalyst 9800 Series Wireless Controllers



Overview

Q: What are Cisco Catalyst 9800 Series Wireless Controllers?

A: Cisco® Catalyst® 9800 Series Wireless Controllers are the next generation of wireless controllers built from the ground up for intent-based networking. They are Cisco IOS® XE-based and integrate the Radio Frequency (RF) excellence from Aironet® with the intent-based networking capabilities of Cisco IOS XE to create a best-in-class wireless experience for your evolving and growing organization.

The Cisco Catalyst 9800 Series Wireless Controllers are feature rich and enterprise ready to power your business-critical operations and transform end customer experiences.

Key features include:

1. High availability and seamless software updates, enabled by hot and cold patching, to keep your clients and services always on in planned and unplanned events.
2. The ability to secure air, devices, and users. Wireless infrastructure becomes the strongest first line of defense with Encrypted Traffic Analytics and SD-Access. The controllers come with built-in security, including secure boot, runtime defenses, image signing, integrity verification, and hardware authenticity.

3. The flexibility to deploy anywhere to enable wireless connectivity everywhere. Whether on premises, in a public or private cloud, or embedded on an access point, the Cisco Catalyst 9800 Series Wireless Controllers have multiple deployment and scale options to best meet your organization's needs.
4. Open and programmable APIs built on a modular operating system to enable automation of your day 0 to N network operations while model-driven streaming telemetry provides deep insights into your network and client health.

Cisco Catalyst 9800 Series Wireless Controllers are available in multiple form factors to enrich your deployment options:

- Cisco Catalyst 9800 Series Wireless Controller appliances
- Cisco Catalyst 9800-L
- Cisco Catalyst 9800-40
- Cisco Catalyst 9800-80
- Cisco Catalyst 9800 Wireless Controllers for Cloud
- Cisco Embedded Wireless Controller on Catalyst Access Points

Cisco Catalyst 9800 Series Wireless Controller product portfolio and positioning

Q: What is the Cisco Catalyst 9800 Series Wireless Controller appliance?

A: The Cisco Catalyst 9800 Series Wireless Controller appliances are an addition to the Cisco Catalyst access product family. The new wireless controller appliances are purpose-built for intent-based networks powered by fully programmable multi-core network processors. They offer high scale, performance, and resiliency to address deployment, starting from the medium-sized campus to large enterprises and service providers.

Built with an agile Cisco IOS® XE operating system, the Cisco Catalyst 9800 Series Wireless Controller appliances are industry-leading secure wireless controllers that are always on and can be deployed anywhere.

The Cisco Catalyst 9800 Series Wireless Controller appliance is available in three form factors:

- Cisco Catalyst 9800-L Wireless Controller—compact controller appliance that is the perfect complement to the small to medium-sized network deployment. Data ports can operate in 1 GE and 10 GE mode, supporting different SFP/SFP+ transceivers and up to 5 Gbps of throughput.
- Cisco Catalyst 9800-40 Wireless Controller—fixed wireless controller with seamless software updates. Data ports can operate in 1 GE and 10 GE mode, supporting different SFP/SFP+ transceivers and up to 40 Gbps of throughput.
- Cisco Catalyst 9800-80 Wireless Controller—modular wireless controller with 100 GE modular uplink and seamless software updates. Fixed data ports can operate in 1 GE and 10 GE mode, supporting different SFP/SFP+ transceivers and up to 80 Gbps of throughput. Modular uplink provides flexible connectivity options, supporting 10 GE, 40 GE, and 100 GE QSFP hot-swappable transceivers.

Seamless software updates include Software Maintenance Upgrade (SMU) for hot and cold patching on wireless controllers, AP Service Pack for maintenance update on access points, AP Device Pack for introduction of new access point hardware into the network, and Intelligent Rolling AP Upgrade for hitless controller and access point upgrade.

Q: What are Cisco Catalyst 9800 Series Wireless Controllers for Cloud?

A: The Cisco Catalyst 9800 Series Wireless Controllers for Cloud (C9800-CL) are an addition to the Cisco Catalyst access product family.

The next-generation virtual wireless controllers are purpose-built for intent-based networks powered by the Cisco IOS XE operating system, which supports model-driven programmability and streaming telemetry. They offer high scale, performance, and resiliency to address deployment, ranging from distributed branches and medium-sized campuses to large enterprises and service providers.

Built with an agile Cisco IOS XE operating system, the Cisco Catalyst 9800 Series Wireless Controllers for Cloud are industry-leading, secure wireless controllers that are always on and can be deployed anywhere.

Cisco Catalyst 9800 Series Wireless Controllers for Cloud are available to deploy in:

- Private cloud—wireless controller for private cloud with seamless software updates runs the same Cisco IOS XE operating system as other Cisco Catalyst wireless platforms, enabling customers to deploy a virtual wireless controller inside their private data center on hypervisors like VMware ESXi, open-source KVM, Microsoft Hyper-V, and Cisco Enterprise Network Compute System (ENCS).
- Public cloud—wireless controller for public cloud with seamless software updates runs the same Cisco IOS XE operating system as other Catalyst wireless platforms, enabling customers to deploy and fully manage a virtual wireless controller available on Amazon Web Services (AWS) Marketplace and Google Cloud (GCP) Marketplace.

Seamless software updates include Software Maintenance Upgrade (SMU) for hot and cold patching on wireless controllers, AP Service Pack for maintenance update on access points, AP Device Pack for introduction of new access point hardware into the network, and Intelligent Rolling AP Upgrade for hitless controller and access point software upgrade.

Q: What is the Cisco Embedded Wireless Controller on Catalyst Access Points?

A: The Cisco Embedded Wireless Controller (EWC) on Catalyst Access Points is a next-generation enterprise Wi-Fi solution in which the Cisco Catalyst 9800 Series Wireless Controller is embedded on Cisco Catalyst 9100 Access Points. Powered by Cisco IOS XE, the Cisco Embedded Wireless Controller adds another choice to the Cisco Catalyst 9800 Series Wireless Controller deployment options and provides a clear upgrade path as your network needs grow.

The Embedded Wireless Controller is specifically designed and built for single or multisite enterprise locations. Like the 9800 Series Wireless Controllers, the Cisco Embedded Wireless Controller on Catalyst Access Points is resilient, secure, and intelligent; open and programmable; supports streaming telemetry; and is simple to deploy and manage.

Seamless software updates include Software Maintenance Upgrade (SMU) for hot and cold patching on wireless controllers, AP Service Pack for maintenance update on access points, and AP Device Pack for introduction of new access point hardware into the network.

For Embedded Wireless Controller-specific information, please refer to the Embedded Wireless Controller FAQ.

Q: What is the relative positioning among the Cisco Catalyst 9800 Series Wireless Controllers?

A: The Cisco Catalyst 9800 Series Wireless Controllers are industry-leading, secure wireless controllers that are always on and can be deployed anywhere. They offer high performance and resiliency to address deployments ranging from distributed branches to small and medium-sized campuses and large enterprises.

Platform	Positioning
Catalyst 9800-L	Lead physical controller for small to medium-sized campuses
Catalyst 9800-40	Lead physical controller for medium-sized campuses
Catalyst 9800-80	Lead physical controller for large enterprises and service providers
Catalyst 9800 for Private Cloud	Lead virtual controller for small, medium, and large campuses
Catalyst 9800 for Public Cloud	Virtual controller for small, distributed branches
Catalyst 9800 Embedded Wireless	Wireless controller for distributed branch SD-Access deployments
Embedded Wireless Controller	Wireless controller for midmarket and distributed branches

Q: What is the portfolio transition from the Aironet wireless controllers to the Cisco Catalyst 9800 Series Wireless Controllers?

A: The Cisco Catalyst 9800 Series Wireless Controllers are industry-leading, secure wireless controllers that are always on and can be deployed anywhere.

Current Aironet Wireless Controllers	Transition to Cisco Catalyst 9800 Wireless Controller
Mobility Express	Embedded Wireless Controller
Virtual Wireless Controller	Catalyst 9800 for Private and Public Cloud
2504 and 3504 Wireless Controllers (flex deployment)	Embedded Wireless Controller
2504 and 3504 Wireless Controllers	Cisco Catalyst 9800-L, 9800 for private and public cloud, 9800 Embedded Wireless for SD-Access deployment
5508 and 5520 wireless controller	Catalyst 9800-40, 9800 for private and public cloud
7510, 8510, and 8540 Wireless Controllers	Catalyst 9800-80, 9800 for private cloud

Cisco Catalyst 9800 Series Wireless Controller appliances

Q: What is the Cisco Catalyst 9800 Series Wireless Controller appliance?

A: Cisco Catalyst 9800 Series Wireless Controllers are an addition to the Cisco Catalyst access product family. The Cisco Catalyst 9800 Series Wireless Controllers are purpose-built for intent-based networks powered by fully programmable multicore network processors offering high scale, performance, and resiliency to address deployments from medium-sized campuses to large enterprises and service providers.

Built with the modular Cisco IOS XE operating system, the Cisco Catalyst 9800 Series Wireless Controllers are secure controllers that are always on and can be deployed anywhere.

The Cisco Catalyst 9800 Series consists of three controllers:

- Cisco Catalyst 9800-L Wireless Controller
- Cisco Catalyst 9800-40 Wireless Controller
- Cisco Catalyst 9800-80 Wireless Controller

Q: Which deployment modes are supported on the Cisco Catalyst 9800 Series Wireless Controller appliances?

A: Cisco Catalyst 9800 Series Wireless Controller appliances support all deployment modes, including centralized wireless, Cisco FlexConnect®, and fabric.

Q: What is the 9800-L performance license (LIC-C9800L-PERF)?

A: The 9800-L performance license lets you use the 9800-L with up to 500 access points, 10,000 clients, and 9 Gbps throughput.

Q: What is the scale and performance of the Cisco Catalyst 9800 Series Wireless Controller appliances?

A:

Table 1. Cisco Catalyst 9800 Series Wireless Controller appliances scale and performance

Product	Number of access points	Number of clients	Throughput
9800-L	250	5,000	Up to 5 Gbps
9800-L with performance license	500	10,000	Up to 9 Gbps
9800-40	2,000	32,000	Up to 40 Gbps
9800-80	6,000	64,000	Up to 80 Gbps

Q: Which access point models are supported with the Cisco Catalyst 9800 Series Wireless Controller appliances?

A: The Cisco Catalyst 9800 Series Wireless Controller appliances support wave 1 and wave 2 Cisco Aironet access points as well as Cisco Catalyst 802.11ax access points. Note that there is no support for 802.11n, a, b, or g access points.

Q: Which access point modes are supported with the Cisco Catalyst 9800 Series Wireless Controller appliances?

A: The Cisco Catalyst 9800 Series Wireless Controller appliances support Cisco access points in **Local mode** (centralized and SD-Access deployment), **FlexConnect mode**, and **Bridge** and **Flex+Bridge modes**.

Q: Can an existing AireOS wireless controller coexist with the Cisco Catalyst 9800 Series Wireless Controllers?

A: Yes, AireOS wireless controllers can coexist with Cisco Catalyst 9800 Series Wireless Controllers. Inter-Release Controller Mobility (IRCM) is supported with AireOS 8.5 MR3 (special), AireOS 8.5 MR4 (special), and AireOS 8.8 MR2 release.

Q: What are the 9800-L SKUs/PIDs?

A:

Table 2. Cisco Catalyst 9800-L product information

SKU/PID	Description	Comments
C9800-L-F-K9	Cisco Catalyst 9800-L Wireless Controller fiber uplink	Base and HA SKU (fiber uplink)
C9800-L-C-K9	Cisco Catalyst 9800-L Wireless Controller copper uplink/base and HA SKU	Base and HA SKU (copper uplink)
C9800-L-F-CA-K9	Cisco 9800-L Wireless Controller fiber service	Service 9800-L (fiber)
C9800-L-C-CA-K9	Cisco 9800-L Wireless Controller copper service	Service 9800-L (copper)
LIC-9800-DTLS-K9	Cisco 9800 Wireless Controller license	Optional DTLS license
LIC-C9800L-PERF	Cisco Catalyst 9800-L Wireless Controller performance license	Optional performance license
LIC-C9800L-PERF=	Spare Cisco Catalyst 9800-L Wireless Controller performance license	Spare optional performance license
C9800-AC-110W	Cisco Catalyst 9800-L Wireless Controller power supply	9800-L PSU
C9800-AC-110W=	Cisco Catalyst 9800-L Wireless Controller 110W AC power supply	9800-L 110W AC PSU
C9800L-RMNT	Cisco 9800 Wireless Controller rack mount tray	9800 Rack mount tray
C9800L-RMNT=	Spare Cisco 9800 Wireless Controller rack mount tray	Spare 9800 Rack mount tray

Q: What are the 9800-40 SKUs/PIDs?

A:

Table 3. Cisco Catalyst 9800-40 product information

SKU/PID	Description	Comments
C9800-40-K9	Cisco Catalyst 9800-40 Wireless Controller b	Base and HA SKU
C9800-40-CA-K9	Cisco Catalyst 9800-40 Wireless Controller (service only)	service SKU for customer sale
LIC-C9800-DTLS-K9	Cisco 9800 Wireless Controller DTLS license	Optional DTLS license
C9800-AC-750W-R	Cisco Catalyst 9800-40 750W AC power supply reverse air	Default power supply
C9800-AC-750W-R=	Cisco Catalyst 9800-40 750W AC power supply reverse air (spare)	Spare power supply for RMA or to add a redundant power supply

Q: What are the 9800-80 SKUs/PIDs?

A:

Table 4. Cisco Catalyst 9800-80 product information

SKU/PID	Description	Comments
C9800-80-K9	Cisco Catalyst 9800-80 Wireless Controller	base and HA SKU
C9800-80-CA-K9	Cisco Catalyst 9800-80 Wireless Controller (service only)	service SKU for customer sale
LIC-C9800-DTLS-K9	Cisco 9800 Wireless Controller DTLS license	Optional DTLS license
C9800-AC-1100W	Cisco Catalyst Wireless Controller 1100W AC power supply	AC power supply

SKU/PID	Description	Comments
C9800-AC-1100W=	Cisco Catalyst Wireless Controller 1100W AC power supply	Spare AC power supply
C9800-DC-950W	Cisco Catalyst Wireless Controller 950W DC power supply	DC power supply
C9800-DC-950W=	Cisco Catalyst Wireless Controller 950W DC power supply	Spare DC power supply
C9800-18X1GE=	Cisco Catalyst 9800-80 GE module	Optional modular GE uplink
C9800-10X10GE=	Cisco Catalyst 9800-80 10 GE module	Optional modular 10 GE uplink
C9800-1X40GE=	Cisco Catalyst 9800-80 1-port 40G module	Optional modular 1-port 40 GE uplink
C9800-2X40GE(=)	Cisco Catalyst 9800-80 2-port 40G module	Optional modular 2-port 40 GE uplink
C9800-1X100GE(=)	Cisco Catalyst 9800-80 1-port 100G module	Optional modular 1-port 100 GE uplink
C9800-BLANK	Cisco 9800 module blank	Blank for module slot

Q: What are the High-Availability (HA) SKUs for the Cisco Catalyst 9800-40 and 9800-80 Wireless Controllers?

A: The Cisco Catalyst 9800-L Wireless Controller HA SKU (fiber uplink) is C9800-L-F-K9.

The Cisco Catalyst 9800-L Wireless Controller HA SKU (copper uplink) is C9800-L-C-K9.

The Cisco Catalyst 9800-40 Wireless Controller HA SKU is C9800-40-K9.

The Cisco Catalyst 9800-80 Wireless Controller HA SKU is C9800-80-K9.

Q: When will the Cisco Catalyst 9800-L Wireless Controller support copper or fiber uplinks?

A: There are two different versions of the Cisco Catalyst 9800-L Wireless Controller; one supports copper uplinks and the other supports fiber uplinks.

Q: What is the SKU for the redundant power supply for the Cisco Catalyst 9800-L Wireless Controller?

A: The SKUs for the Cisco Catalyst 9800-L Wireless Controller redundant power supplies are C9800-AC-110W and C9800-AC-110W=.

Q: What is the SKU for the redundant power supply for the Cisco Catalyst 9800-40 Wireless Controller?

A: The SKU for the Cisco Catalyst 9800-40 Wireless Controller redundant power supply is C9800-AC-750W-R=.

Q: What is the SKU for the redundant power supply for the Cisco Catalyst 9800-80 Wireless Controller?

A: The Cisco Catalyst 9800-80 Wireless Controllers by default ship with redundant power supplies; AC or DC based on power supply selection at the time of order placement.

Q: What are the SFP/SFP+ optics supported with the Cisco Catalyst 9800 Series Wireless Controller appliances?

A:

Supported SFP/SFP+ optics			
SFP-10G-SR	GLC-SX-MMD	GLC-TE	DWDM-SFP10G-30.33=
SFP-10G-LR	GLC-LH-SMD	SFP-10G-SR-X	SFP-10G-AOC2M
SFP-10G-ER	GLC-ZXSMD	SFP-10G-LR-X	SFP-H10GB-ACU7M
GLC-EX-SMD			

Q: Are power supplies and modules hot swappable in the Cisco Catalyst 9800 Series Wireless Controller appliances?

A: Yes, the power supplies and modules are hot swappable.

Q: Can the Cisco Catalyst 9800-40 and 9800-80 Wireless Controllers be deployed using two post rack mounts?

A: Yes, the Cisco Catalyst 9800-40 and 9800-80 Wireless Controllers can be deployed using two post rack mounts. The Cisco Catalyst 9800-L Wireless Controller is only a one-rack mount.

Q: Is Cisco IOS XE Software preinstalled when shipping?

A: Yes. The latest 17.x manufacturing default release.

Q: What is the product warranty for the Cisco Catalyst 9800-L, 9800-40, and 9800-80 Wireless Controllers?

A: One-year limited hardware warranty. Please check for details at <https://www.cisco.com/c/en/us/products/warranty-listing.html>.

Q: What is the maximum power draw for the Cisco Catalyst 9800-L, 9800-40, and 9800-80 Wireless Controllers?

A: The Cisco Catalyst 9800-L draws 110W of power, the 9800-40 draws 381W of power, and the 9800-80 (with modules) draws 600W of power.

Q: What are the Mean Time Between Failure (MTBF) rates for the Cisco Catalyst 9800-L, 9800-40, and 9800-80 Wireless Controllers?

A: The MTBF for the Cisco Catalyst C9800-L is 100,000 hours, the MTBF for the C9800-40 is 123,450 hours, and the MTBF for the C9800-80 is 85,450 hours.

Q: Can I configure the Cisco Catalyst 9800-40 Wireless Controller to be a High Availability (HA)/standby to the Cisco Catalyst 9800-80 Wireless Controller, or vice versa?

A: No, high availability is supported only between the same models of wireless controllers, when configured as active and standby.

Q: Is there a redundancy port in the Cisco Catalyst 9800 Series Wireless Controller appliances?

A: Yes, a separate copper and fiber Redundancy Port is available. Only one can be used at the same time for high availability connectivity between active and standby wireless controllers.

Q: Are the Cisco Catalyst 9800 Series Wireless Controller appliances Wi-Fi certified?

A: Refer to datasheet for all certifications.

Q: Are the Cisco Catalyst 9800 Series Wireless Controller appliances certified by the Federal Information Processing Standard (FIPS), Common Criteria (CC), and Department of Defense Unified Capabilities Approved Products List (UCAPL)?

A: Yes, the Cisco Catalyst 9800 series Wireless Controllers are FIPS certified via a compliance review for R17.x manufacturing default release and via National Institute of Standards and Technology (NIST) validation for R16.12. For a listing of all Cisco compliance reviews, go to <https://www.cisco.com/c/en/us/solutions/industries/government/global-government-certifications/fips-140.html>. Cisco is fully committed to the compliance review and NIST validation process and will continue to pursue certifications for newer versions of software on the Cisco Catalyst 9800 Series Wireless Controllers.

Q: Does the customer replace the entire appliance for a power supply failure?

A: No, the power supply is field replaceable, with no requirement to replace the appliance.

Q: Are the uplink modules in the Cisco Catalyst 9800-80 Wireless Controller field replaceable?

A: Yes, all the modules are field replaceable.

Q: When does the customer replace the entire appliance?

A: For any component failure, except for the power supply and uplink modules, the entire appliance should be replaced.

Cisco Catalyst 9800 Series Wireless Controllers for Cloud

Q: What are the Cisco Catalyst 9800 Wireless Controllers for Cloud?

A: The Cisco Catalyst 9800 Wireless Controllers for Cloud (9800-CL) are the next generation of enterprise-class virtual wireless controllers built for high availability and security. They are based on an x86 CPU and run a modern operating system and open Cisco IOS XE Software, which supports model-driven programmability, streaming telemetry, and patching.

The Cisco Catalyst 9800-CL Wireless Controller for Cloud provides customers with flexibility and complete customization in deployment modes as well as feature richness in private and public clouds. It delivers high-speed, secure wireless

services with differentiating features like zero-touch access point provisioning, high availability, application visibility and control, and more. The Cisco IOS XE Software enables customers to deploy a virtual wireless controller inside their private data center on hypervisors like VMware ESXi, open-source KVM, Cisco ENCS, Microsoft Hyper-V, or in a public cloud on Amazon Web Services (AWS) or Google Cloud Platform (GCP) with the same enterprise-class networking features and services that they currently have on their hardware-based appliance, all configured and monitored via standard programmable interfaces.

Q: What is the customer value proposition for the Cisco Catalyst 9800 Wireless Controllers for Cloud?

A: Work environments are transforming to digital workplaces. To provide an always-on network with the desired performance for high-density environments, enterprises must deliver a wireless network that accommodates digital workspace transformation requirements with the efficiency and flexibility of a Virtual Machine (VM) deployment to move businesses at much higher speeds. The Cisco Catalyst 9800-CL Wireless Controller for Cloud is the next generation of enterprise-class virtual wireless controllers. It runs Cisco IOS XE Software and provides customers with the flexibility to deploy

in private and public clouds. The benefits of the virtual version of the next-generation wireless controller include:

- **Agility**—Faster time to test, deploy, and roll out wireless network and services.
- **Scalability**—The option to scale up to 6,000 access points and 64,000 wireless clients on a single virtual instance and can be quickly replicated, spawning multiple virtual instances to manage the increasing demands of wireless networks.
- **Global footprint**—The availability of the same virtual controller software in different regions for private and public clouds provides customers the flexibility to deploy and manage the wireless network the way they want, quickly and efficiently.
- **Cost-effectiveness**—Customers who already have a VM environment in a private or public cloud can benefit from operational cost savings by deploying a virtual controller, since it can reside with other VMs sharing existing virtualization infrastructure with no extra cost of hardware, power, and rack space.
- **Ease of operation**—Customers have the flexibility to deploy a next-generation virtual wireless controller as a VM, benefiting from ease of operation and deployment to remote locations. The VM form factor makes it easy

to dynamically scale to support the needs of a rapidly growing enterprise, enabling a much more efficient use of resources by adding more CPU and storage resources. By moving to a VM-based deployment that has more memory and compute, more services can be managed on the network.

Q: What does “CL” stand for in the Cisco Catalyst 9800-CL Wireless Controller for Cloud model number?

A: “CL” in the Cisco Catalyst 9800-CL Wireless Controller for Cloud model number stands for the cloud option within the new Cisco Catalyst 9800 Series Wireless Controllers. The 9800-CL is the next generation of enterprise-class virtual wireless controllers that runs Cisco IOS XE Software and provides customers the flexibility to deploy in private and public clouds.

Q: Are there multiple Cisco IOS XE Software images to install private and public clouds for different scale?

A: No, there is a single Cisco IOS XE Software image that can be used to deploy VM in private or public clouds for any scale. Customers can go to Cisco.com to download a Cisco IOS XE Software image for VMware ESXi, open-source KVM, Microsoft Hyper-V, and Cisco ENCS to deploy in a private cloud and can also go to Amazon Marketplace or Google Cloud Platform

(GCP) to deploy and manage the wireless controller in a public cloud.

Q: What mechanisms support onboarding access points with the Cisco Catalyst 9800 Wireless Controller for Cloud?

A: For easy onboarding of access points, the customer can use the plug-and-play functionality of Cisco DNA Center for private cloud or the Cisco plug-and-play connect server for private and public cloud. The customer can also use any regular Control and Provisioning of Wireless Access Points (CAPWAP) discovery methods, such as layer 3 CAPWAP discovery, locally stored wireless controller IPv4 or IPv6 address discovery, DHCP server discovery using option 43, DHCP server discovery using option 52, DNS discovery, and others to onboard Cisco access points on private and public clouds.

Q: Which Cisco access points are supported with the Cisco Catalyst 9800 Wireless Controller for Cloud?

A: All 802.11ac wave 1 and wave 2 indoor and outdoor Cisco Aironet access points and 802.11ax Cisco Catalyst 9100 access points are supported.

Q: Is there a tool to migrate my existing AireOS wireless controller configuration to the Cisco IOS XE Software-based wireless controller configuration?

A: Yes, there is an integrated tool in the WebUI of the Cisco Catalyst 9800-CL Wireless Controller for Cloud that can help migrate existing AireOS wireless controller configurations. A standalone tool is available on Cisco.com, which can help in migrating an existing AireOS wireless controller configuration to 9800 WLC.

Q: Is programmability supported on the Cisco Catalyst 9800 Wireless Controller for Cloud?

A: Yes, the Cisco Catalyst 9800-CL Wireless Controller for Cloud runs a modern operating system—the open Cisco IOS XE Software—that supports model-driven programmability and streaming telemetry. More information can be found on the deployment guide.

Q: How many Cisco access points and wireless clients are supported for private cloud?

A: The Cisco Catalyst 9800-CL Wireless Controller for Cloud is the next generation of enterprise-class virtual wireless controllers that runs Cisco IOS XE Software and supports up to 6,000 access points and 64,000 wireless clients on a single VM in a private cloud.

Q: What are the different scale options supported by the Cisco Catalyst 9800-CL Wireless Controller for Cloud for a private cloud?

A: While installing VM in a private cloud using a single Cisco IOS XE Software image, the customer will have the flexibility to choose different templates based on their wireless scale requirements. Three templates (small, medium, and large) are supported while installing VM. Based on the template selected, CPU and memory are allocated, which in turn will decide how many access points and clients can be supported.

- Small template: Up to 1,000 access points and 10,000 wireless clients
- Medium template: Up to 3,000 access points and 32,000 wireless clients
- Large template: Up to 6,000 access points and 64,000 wireless clients for FlexConnect and SD-Access deployments

Q: What is the maximum throughput supported in a private cloud?

A: The Cisco Catalyst 9800-CL Wireless Controller for Cloud, when deployed in a private cloud, supports up to 2.1 Gbps of throughput.

Q: Which deployment modes are supported for a private cloud?

A: The Cisco Catalyst 9800-CL Wireless Controller for Cloud, when deployed in a private cloud, supports Cisco access points in Local mode, centralized and SD-Access deployment, FlexConnect mode, and Bridge and Flex+Bridge modes.

Q: Will the private cloud support all the features supported on the appliance?

A: Yes. The Cisco Catalyst 9800-CL Wireless Controller for Cloud, when deployed in a private cloud, will support all the features and deployment modes supported by the hardware appliance with 2.1 Gbps of throughput.

Q: Will a private cloud support high availability?

A: Yes. The Cisco Catalyst 9800-CL Wireless Controller for Cloud, when deployed in a private cloud, will support high availability with access point and client Stateful Switchover (SSO) between VMs residing on the same or different virtualization infrastructures.

Q: Can the Cisco Catalyst 9800-CL Wireless Controller for Cloud work as a guest anchor when deployed in a private cloud?

A: Yes. The Cisco Catalyst 9800-CL Wireless Controller for Cloud can be configured as a guest anchor wireless controller when deployed in a private cloud.

Q: Which management capabilities are available for the Cisco Catalyst 9800-CL Wireless Controller for Cloud when deployed in a private cloud?

A: When deployed in a private cloud, the Cisco Catalyst 9800-CL Wireless Controller for Cloud can be managed using the on-board Cisco IOS XE Software WebUI, using Cisco Prime Infrastructure, Netconf/YANG, and the Cisco IOS Software Command-Line Interface (CLI). The Cisco Catalyst 9800-CL Wireless Controller for Cloud has been designed to work with Cisco Catalyst Center using the Cisco Catalyst Center appliance.

Q: Can Cisco Catalyst Center manage the Cisco Catalyst 9800-CL Wireless Controller for Cloud for automation and assurance?

A: Yes, the Cisco Catalyst 9800-CL Wireless Controller for Cloud, when deployed in a private cloud, can be managed from Cisco Catalyst Center for automation and assurance workflows.

Q: Which hypervisor tools and functionality are supported for a private cloud?

A: The Cisco Catalyst 9800-CL Wireless Controller for Cloud runs Cisco IOS XE Software and can be deployed as a VM inside the customer's data center on hypervisors such as VMware ESXi, open-source KVM, Microsoft Hyper-V, and as Cisco NFVIS on the Cisco ENCS.

Table 5 lists the supported functionality on different VMware tools.

Table 5. Supported functionality on VMware tools.

VMware functionality	vCenter	vSphere client
VM snapshot	Yes	Yes
VM migration	Yes	N/A
VM backup and restore	Yes	N/A
NIC teaming	Yes	Yes
vMotion	Yes	N/A

For Hyper-V, the Network Interface Card (NIC) teaming and checkpoint features are supported.

Q: Which network adapters are supported for a private cloud?

A: The Cisco Catalyst 9800-CL Wireless Controller for Cloud runs Cisco IOS XE Software and can be deployed as a VM inside a customer’s data center on hypervisors such as VMware ESXi, open-source KVM, Microsoft Hyper-V, and as Cisco NFVIS on the Cisco ENCS.

Table 6 lists the supported network adapters for VMware ESXi, open-source KVM, and Microsoft Hyper-V hypervisors.

Table 6. Supported network adapters

Adapter	VMware ESXi	Open-source KVM	Microsoft Hyper-V
vNIC adaptors support	VMXNET3		
	E1000E	VIRTIO	NetVSC
	E1000		

Q: Can an existing AireOS wireless controller coexist with a Cisco Catalyst 9800-CL Wireless Controller for Cloud private cloud?

A: Yes. An AireOS wireless controller can coexist with a Cisco Catalyst 9800-CL Wireless Controller for Cloud private cloud. Inter-Release Controller Mobility (IRCM) is supported with AireOS 8.5 MR3 (special), AireOS 8.5 MR4 (special), and AireOS 8.8 MR2 release.

Q: How many Cisco access points and wireless clients are supported for a public cloud?

A: The Cisco Catalyst 9800-CL Wireless Controller for Cloud is the next generation of enterprise-class virtual wireless controllers that run Cisco IOS XE Software, supporting up to 6,000 access points and 64,000 wireless clients on a single VM in a public cloud.

Q: What are the scale options for a Cisco Catalyst 9800-CL Wireless Controller for Cloud for a public cloud?

A: The Cisco Catalyst 9800-CL Wireless Controller for Cloud in a public cloud supports a single template, which will install resources on virtualization infrastructure to support up to 6,000 access points and 64,000 wireless clients on a single VM. The Cisco Catalyst 9800-CL Wireless Controller for Cloud in a public cloud supports three templates: small, medium, or

large for different wireless scale requirements.

- **Small template:** Up to 1,000 access points and 10,000 wireless clients
- **Medium template:** Up to 3,000 access points and 32,000 wireless clients
- **Large template:** Up to 6,000 access points and 64,000 wireless clients

Q: Which deployment modes are supported for a public cloud?

A: The Cisco Catalyst 9800-CL Wireless Controller for Cloud supports Cisco access points in FlexConnect mode when deployed in a public cloud. It will also support FlexConnect central authentication and local switching deployment when the access points are configured in FlexConnect mode.

Q: What is the maximum throughput supported in a public cloud?

A: Since the Cisco Catalyst C9800-CL Wireless Controller for Cloud, when deployed in public cloud, supports FlexConnect local switching deployment only, there is no data traffic that goes to the wireless controller.

Q: Will a public cloud support all the features supported with FlexConnect deployment?

A: Yes. The Cisco Catalyst 9800-CL Wireless Controller for Cloud, when deployed in a public

cloud, supports all the features supported for FlexConnect central authentication and local switching deployment.

Q: Will a public cloud support high availability?

A: When deployed in a public cloud, the Cisco Catalyst 9800-CL Wireless Controller for Cloud supports FlexConnect local switching deployment only. There is no need to support access point and client SSO in the public cloud. If, for any reason, a Cisco access point loses connectivity to the wireless controller, that Cisco access point moves to stand-alone mode and will be able to serve new and existing wireless clients with no network downtime.

Q: Is guest anchor supported in a public cloud?

A: No, guest anchor deployment is not supported when the Cisco Catalyst 9800-CL Wireless Controller for Cloud is deployed in a public cloud. For guest onboarding, the WLAN can be configured with local web authentication or central web authentication, and traffic will be switched locally from a Cisco access point to reach the guest portal.

Q: Which management capabilities are available for the Cisco Catalyst 9800-CL Wireless Controller for Cloud when deployed in a public cloud?

A: When deployed in a public cloud, the Cisco Catalyst 9800-CL Wireless Controller for Cloud can be managed using the onboard Cisco IOS XE Software WebUI, Netconf/YANG, or Cisco IOS Software CLI.

Q: Is managed VPN mandatory to deploy the Cisco Catalyst 9800-CL Wireless Controller for Cloud in a public cloud?

A: Yes, managed VPN is mandatory to deploy the Cisco Catalyst 9800-CL Wireless Controller for Cloud in a public cloud.

Q: Can the Cisco Cloud Services Router 1000V (CSR) be used to deploy managed VPN in a public cloud?

A: Yes. The Cisco CSR can be used to deploy managed VPN when the Cisco Catalyst 9800-CL Wireless Controller for Cloud is deployed in a public cloud.

Q: For public cloud deployment, where are the AAA server and Active Directory (AD) located?

A: When deployed in a public cloud only, the Cisco Catalyst 9800-CL Wireless Controller for Cloud supports FlexConnect central authentication and local switching deployment. It is recommended to locate the AAA server and AD in the customer's on-premises data center.

Q: What is the recommended EC2 instance for a public cloud deployment?

A: The recommended Amazon EC2 instance when the Cisco Catalyst 9800-CL Wireless Controller for Cloud is deployed in a public cloud is “c5.xlarge” for the small template, “c5.2xlarge” for the medium template, and “c5.4xlarge” for the large template.

Q: Is the Cisco Catalyst 9800-CL Wireless Controller for Cloud available in all regions for public cloud deployment?

A: Yes, the Cisco Catalyst 9800-CL Wireless Controller for Cloud is available in all regions for deploying a virtual wireless controller in a public cloud.

Q: Is the Cisco Catalyst 9800-CL Wireless Controller for Cloud available in the AWS GovCloud region?

A: Yes, the Cisco Catalyst 9800-CL Wireless Controller for Cloud is available in the AWS GovCloud region to deploy a virtual wireless controller.

Q: Can I have multiple managed VPN connections from every branch to terminate on a cloud router?

Q: Yes. Multiple VPN connections can be established from every branch router to the Cisco CSR for direct reachability from Cisco

access points in the branch to the Cisco Catalyst 9800-CL Wireless Controller for Cloud when deployed in a public cloud.

Q: Can I deploy an N+1 wireless controller in the public cloud for high availability?

A: Yes. An N+1 wireless controller can be deployed with the Cisco Catalyst 9800-CL Wireless Controller for Cloud in the public cloud by configuring a primary, secondary, and tertiary wireless controller per access point.

Q: Can I have a hybrid model with a wireless controller in the cloud configured as a secondary controller for access points joined on a private cloud?

A: Yes, the Cisco Catalyst 9800-CL Wireless Controller for Cloud, when deployed in a public cloud, can be configured as a secondary or tertiary wireless controller per access point when access points have joined the wireless controller in a private cloud as primary controller.

Q: What is the SKU/PID for the Cisco Catalyst 9800-CL Wireless Controller for Cloud?

A: The SKU/PID is C9800-CL-K9. There is a single PID/SKU for private and public cloud.

Cisco Embedded Wireless Controller on Catalyst Access Points

Q: What is the Cisco Embedded Wireless Controller on Catalyst Access Points?

A: The Cisco Embedded Wireless Controller on Catalyst Access Points is a next-generation enterprise Wi-Fi solution in which the Cisco Catalyst 9800 Series Wireless Controller is embedded on Cisco Catalyst 9100 Access Points.

The Embedded Wireless Controller on Catalyst Access Points is specifically designed and built for single or multisite enterprise locations. Like the Cisco Catalyst 9800 Series Wireless Controller, the Embedded Wireless Controller on Catalyst Access Points is resilient, secure, and intelligent; open and programmable; supports streaming telemetry; and is simple to deploy and manage.

Q: Which operating system does the Embedded Wireless Controller on Catalyst Access Points run?

A: The Embedded Wireless Controller on Catalyst Access Points uses the same code as the Cisco Catalyst 9800 Series Wireless Controllers; Cisco IOS XE.

Q: Which Cisco Catalyst 9100 Access Points can run the Embedded Wireless Controller on Catalyst Access Points?

A: All Cisco Catalyst 9100 Access Points (the 9115AX, 9117AX, 9120AX, and 9130AX Series) can run the Embedded Wireless Controller on Catalyst Access Points.

Q: What are the scale limits for the Embedded Wireless Controller on Catalyst Access Points?

A: The Cisco Catalyst 9115AX and 9117AX Series Access Points running the Embedded Wireless Controller on Catalyst Access Points support up to 50 access points and 1,000 clients. The Cisco Catalyst 9120AX and 9130AX Series Access Points running the Embedded Wireless Controller on Catalyst Access Points support up to 100 access points and 2,000 clients.

Q: Can the access point running the Embedded Wireless Controller on Catalyst Access Points also service wireless clients?

A: Yes, the access point running the Embedded Wireless Controller on Catalyst Access Points can also service wireless clients at the same time.

Q: Can 802.11ac wave 1 or wave 2 access points join an Embedded Wireless Controller on Catalyst Access Points network?

A: 802.11ac wave 2 access points can join an Embedded Wireless Controller on Catalyst Access Points network and service clients, but they cannot run the Embedded Wireless Controller on Catalyst Access Points function on the access points. Please note that the Embedded Wireless Controller on Catalyst Access Points does not support 802.11ac wave 1 access points.

Q: Can I mix and match different access points in an Embedded Wireless Controller on Catalyst Access Points deployment?

A: Yes, you can mix and match different Cisco Catalyst 9100 Access Points in an Embedded Wireless Controller on Catalyst Access Points deployment.

Q: What are the Embedded Wireless Controller on Catalyst Access Points SKUs/PIDs?

A:

Table 7. Ordering specifics for Embedded Wireless Controller on Catalyst Access Points

SKU/PID	Description
C9115AXI-EWC-x	Cisco Catalyst 9115AXI Access Point, internal antenna
C9115AXE-EWC-x	Cisco Catalyst 9115AXE Access Point, external antenna
C9117AXI-EWC-x	Cisco Catalyst 9117AXI Access Point, internal antenna
C9120AXI-EWC-x	Cisco Catalyst 9120AXI Access Point, internal antenna
C9120AXE-EWC-x	Cisco Catalyst 9120AXE Access Point, external antenna
C9120AXP-EWC-x	Cisco Catalyst 9120AXP Access Point, professional install
C9130AXI-EWC-x	Cisco Catalyst 9130AXI Access Point, internal antenna

Note: x = regulatory domain. Please visit <https://www.cisco.com/go/aironet/compliance> for details.

Cisco Catalyst 9800 Series Wireless Controller licensing

Q: Do I need any licenses for the Cisco Catalyst 9800 Series Wireless Controllers?

A: There are no licenses required to boot up a Cisco Catalyst 9800 Series Wireless Controller. However, in order to connect any access points to the Cisco Catalyst 9800 Series Wireless Controller, Cisco DNA licenses are required. Each access point that connects to the Cisco Catalyst 9800 Series Wireless Controller requires a Cisco DNA license to be entitled to connect.

Q: Is it mandatory to have Cisco DNA licenses for every access point to connect to the Cisco Catalyst 9800 Series Wireless Controllers?

A: Yes. It is mandatory to have a Cisco DNA license for every access point that is connected to the Cisco Catalyst 9800 Series Wireless Controllers. The access points without a valid license will be out of license compliance and Cisco retains the right to conduct audits to check license compliance.

Q: What steps are required to purchase a Cisco Catalyst 9800 Series Wireless Controller license?

A: Follow these steps to enable day 1 licensing:

1. Create a Smart Account. (Visit <https://www.cisco.com/go/smartlicensing> to create a Smart Account.)
2. Register the Cisco Catalyst 9800 Series Wireless Controller using the Smart Account.
3. For customers who are refreshing Wireless LAN Controllers (WLCs):
 - a. Deposit existing Cisco DNA licenses, if any, into the Smart Account.
 - b. Leverage offers to migrate existing perpetual licenses to Cisco DNA licenses.
4. For customers who are scaling up their deployments and for new customers:
 - a. Purchase Cisco DNA licenses for access points connecting to the Cisco Catalyst 9800 Series Wireless Controller.
 - b. Configure the license level on the box post-bootup.

Q: Is a Smart Account mandatory for the Cisco Catalyst 9800 Series Wireless Controllers?

A: Yes, a Smart Account is mandatory for the Cisco Catalyst 9800 Series Wireless Controllers.

Q: How do I create a Smart Account?

A: Refer to <https://www.cisco.com/go/smartlicensing> to create Smart Accounts.

Q: How do I use licenses on my Cisco Catalyst 9800 Series Wireless Controller upon purchase?

A: To register a Cisco Catalyst 9800 Series Wireless Controller, refer to the guide at https://www.cisco.com/c/dam/en/us/td/docs/wireless/controller/9800/tech-notes/c9800_sl_slr_dg.pdf.

Q: What happens if I don't register my Cisco Catalyst 9800 Series Wireless Controller?

A: If the device is not registered it will be in evaluation mode for 90 days. After the expiration of the evaluation period, a device that is not registered will display "syslog evaluation" expiration messages. These error messages are purely informational and will not affect the functionality of the wireless controller.

Q: How do I deposit my existing Cisco DNA licenses into my Smart Account?

A: Customers who have Cisco DNA licenses and don't have Smart Accounts will have to deposit the licenses into the Smart Account. This can be done by contacting the Cisco Technical Assistance Center (TAC).

Q: How do I migrate my existing perpetual licenses to Cisco DNA licenses?

A: You can leverage wireless promotions to migrate your perpetual access point licenses to Cisco DNA licenses. All access points must be covered by Cisco DNA licenses.

Q: What are the Smart Licensing levels that Cisco Catalyst controllers support?

A: Cisco Catalyst controllers can be configured to function at any one of these four levels.

- **Cisco DNA E:** At this level, the Cisco DNA Essentials feature set will be supported.
- **Cisco DNA A:** 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.

For a more detailed overview on Cisco licensing, go to: cisco.com/go/licensingguide.

Q: How are the Smart License levels configured for Cisco Catalyst 9800 Series Wireless Controllers?

A: License levels can be configured through the WLC UI and Cisco Catalyst Center. Following are sample configurations for license levels:

- Config t

#license air level ?

air-network-advantage AIR Network advantage license level

air-network-essentials AIR Network essential license level

#license air level air-network-essentials
addon?

air-dna-essentials AIR DNA essential license level

#license air level air-network-advantage
addon?

air-dna-advantage AIR DNA advantage license level

Q: Can I mix different licensing levels for the access points connected to the same Cisco Catalyst 9800 Series Wireless Controller?

A: No. A Cisco Catalyst 9800 Series Controller requires all connected access points to have the same license level because the license level is set up at the controller level.

Q: How can I track my Cisco DNA license consumption on a Cisco Catalyst 9800 Series Wireless Controller?

A: Cisco DNA license consumption can be tracked through the Cisco Catalyst Center appliance. Cisco Catalyst Center will help to track license entitlement, license levels, license mode, and license consumption.

Q: Is there licensing enforcement on the Cisco Catalyst 9800 Series Wireless Controller?

A: The Cisco Catalyst 9800 Series Wireless Controllers perform soft enforcement by displaying an out-of-compliance message if sufficient Cisco DNA licenses are not available to cover all the connected access points. There is no hard enforcement and hence no impact on wireless functionality.

Q: What happens when the Cisco DNA subscription term expires for access points connected to a Cisco Catalyst 9800 Series Wireless Controller?

A: Upon expiration of the Cisco DNA term, customers have two options:

- Renew the Cisco DNA license term.
- Configure the controller at the Network Essentials or Network Advantage license level.

Q: What is the impact of hardware RMA on the Cisco Catalyst 9800 Series Controller's licensing?

A: There is no impact on licenses due to hardware RMA. Customers can reconnect their access points to the new wireless controller post-RMA without any licensing impact.

Q: I noticed that WLC-AP-T was removed from Cisco DNA configurations. What has changed?

A: Short answer: not much. WLC-AP-T was an included component in the AIR-DNA configuration. We have recently implemented a change and removal of WLC-AP-T does not cause any functional change. WLC-AP-T isn't required for licenses; it is covered by network stack Essentials/Advantage. WLC-AP-T was previously supposed to reflect the access point adder license, however the same feature set and value is derived via network stack licenses now making WLC-AP-T redundant.

Cisco Catalyst 9800 Series Wireless Controller and Cisco Catalyst Center integration

Q: What is the minimum Cisco Catalyst Center release version needed to support the Cisco Catalyst 9800 Series Wireless Controller?

A: Starting with Release 1.2.8 of Cisco Catalyst Center, the Cisco Catalyst 9800 Series Wireless Controllers will be supported for automation and assurance workflows.

Q: Will Cisco Catalyst Center support the Cisco Catalyst 9800 Series Wireless Controllers for all deployment modes?

A: Yes, starting with Release 1.2.8 of Cisco Catalyst Center, all deployment modes, including centralized wireless, FlexConnect, and fabric (SD-Access), will be supported for automation and assurance workflows.

Q: Will Cisco Catalyst Center support all form factors of the Cisco Catalyst 9800 Series Wireless Controllers?

A: Cisco Catalyst Center will support the following form factors of the Cisco Catalyst 9800 Series Wireless Controllers:

- Cisco Catalyst 9800-80 Wireless Controller

- Cisco Catalyst 9800-40 Wireless Controller
- Cisco Catalyst 9800-L Wireless Controller
- Cisco Catalyst 9800 Wireless Controller for private cloud
- Cisco Embedded Wireless Controller on Catalyst Access Points

Q: What is the supported scale for Cisco Catalyst Center Release 1.2.8 with the Cisco Catalyst 9800 Series Wireless Controllers?

A: Cisco Catalyst Center Release 1.2.8 will support 3,000 access points and 25,000 wireless clients for the Cisco Catalyst 9800 Series Wireless Controller.

Q: Can I learn configurations from a brownfield AireOS wireless controller and transfer them to a Cisco Catalyst 9800 Series Wireless Controller?

A: Yes. Cisco Catalyst Center will learn configurations from an AireOS wireless controller and automate the supported design workflows for a site. The customer can provision a new Cisco Catalyst 9800 Series Wireless Controller with the learned design. There is no need to manually convert the configuration in the above scenario.

Q: How do I push advanced configurations that are not supported using Cisco Catalyst Center?

A: Command-line interface templates can be used as a mechanism to push advanced configuration onto Cisco Catalyst 9800 Series Wireless Controllers.

Q: I have an existing Cisco Prime instance. Can Cisco Prime and Cisco Catalyst Center coexist?

A: Yes. In a coexisting scenario, you can use Cisco Prime and Cisco Catalyst Center for the following:

- Cisco Catalyst Center for assurance and Cisco Prime for automation and reporting
- Cisco Catalyst Center for automation and assurance and Cisco Prime for additional monitoring and reporting functionalities
- Cisco does not recommend using both Cisco Prime and Cisco Catalyst Center for automation and configuration changes.

Q: Does Cisco Catalyst Center Release 1.2.8 support all assurance workflows for the Cisco Catalyst 9800 Series Wireless Controllers as supported today with AireOS wireless controllers?

A: Yes. All assurance workflows supported in Cisco DNA Center Release 1.2.8 for AireOS wireless controllers will be supported for Cisco Catalyst 9800 Series Wireless Controllers.

Cisco Catalyst 9800 Series Wireless Controller product documentation and migration

Q: Where can I find the data sheet for the Cisco Catalyst 9800-80 Wireless Controller?

A: [Cisco Catalyst 9800-80 Wireless Controller Data Sheet](#).

Q: Where can I find the data sheet for the Cisco Catalyst 9800-40 Wireless Controller?

A: [Cisco Catalyst 9800-40 Wireless Controller Data Sheet](#).

Q: Where can I find the data sheet for the Cisco Catalyst 9800-L Wireless Controller?

A: [Cisco Catalyst 9800-L Wireless Controller Data Sheet](#).

Q: Where can I find the data sheet for the Cisco Catalyst 9800-CL Wireless Controller?

A: [Catalyst 9800-CL Data Sheet](#)

Q: Where can I find the data sheet for the Embedded Wireless Controller on Catalyst Access Points?

A: [Embedded Wireless Controller on Catalyst Access Points Data Sheet](#).

Q: Where can I find FAQs for the Embedded Wireless Controller on Catalyst Access Points?

A: [Cisco Embedded Wireless Controller on Catalyst Access Points FAQ](#).