

# Cisco Catalyst 9300 Series Switches

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## Built to reimagine connection, reinforce security and redefine experience

Cisco Catalyst 9300 Series switches are Cisco's lead stackable enterprise access switching platform and as part of the Catalyst 9000 family, are built to transform your network to handle a hybrid world where the workplace is anywhere, endpoints could be anything, and applications are hosted all over the place.

The Catalyst 9300 Series, including the new Catalyst 9300X models, continues to shape the future with continued innovation that helps you reimagine connections, reinforce security and redefine the experience for your hybrid workforce big and small.

The many industry's first include:

- **Up to 1TB of stacking bandwidth:** With Stackwise-1T, Catalyst 9300 switches are the industry's highest-density stacking bandwidth solution with the most flexible uplink architecture
- **Flexible and dense uplink offerings** with 100G, 40G, 25G, Multigigabit, 10G, and 1G modular uplinks
- **Mixed Stacking with Backward Compatibility** – Stack your Catalyst 9300X fiber switches with Catalyst 9300 and Catalyst 9300X Multigigabit switches, bringing stackable high-speed fiber to the access
- **Highest Multigigabit Ports:** With standalone and Stackwise-1T, Catalyst 9300X models enable 48 mGig ports in standalone and 448 mGig ports with an 8-member stack
- **Highest 90W UPOE+ Density:** Enable your OT/IT needs with up to 36 ports of 90W UPOE+ for standalone or 288 ports of 90W UPOE+ with a 8-member stack.
- **StackPower with Backward Compatibility:** Enable power resiliency with higher power budgets in mixed Catalyst 9300 and Catalyst 9300X stack.
- **100G IPsec in hardware:** With the new 2.0Sec UADP ASIC, the Catalyst 9300X comes with 100G line rate IPsec to enable various options for new edge connectivity
- **Secure Tunnel connectivity:** With the new edge, the C9300X enables secure connections to Secure Internet Gateway, Cloud Service Providers and Site to Site connectivity using IPsec tunnel with AES-256 Encryption and speeds up to 100G.
- **Enhanced Application Hosting:** With 2x capacity and additional RAM, QAT, and 2 x 10G AppGig Ports, multiple Cisco Signed performance savvy applications can be hosted on Catalyst 9300X
- **ThousandEyes Enabled:** End-to-end visualization of the path from campus/branch to clouds/DC with Cisco ThousandEyes Network and Application Synthetics (included with Cisco DNA Advantage licenses)
- **Investment Protection:** Catalyst 9300X redundant fans and power supplies, data stack and StackPower cables are backward compatible with the Catalyst 9300.

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## The Foundation of Software-Defined access

Advanced persistent security threats. The exponential growth of Internet of Things (IoT) devices. Mobility everywhere. Cloud adoption. All of these require a network fabric that integrates advanced hardware and software innovations to automate, secure, and simplify customer networks. The goal of this network fabric is to enable customer revenue growth by accelerating the rollout of business services.

The Cisco Digital Network Architecture (Cisco DNA) with Software-Defined Access (SD-Access) is the network fabric that powers business. It is an open and extensible, software-driven architecture that accelerates and simplifies your enterprise network operations. The programmable architecture frees your IT staff from time-consuming, repetitive network configuration tasks so they can focus instead on innovation that positively transforms your business. SD-Access enables policy-based automation from edge to cloud with foundational capabilities. These include:

- Simplified device deployment
- Unified management of wired and wireless networks
- Network virtualization and segmentation
- Group-based policies
- Context-based analytics

## Cisco DNA Software

Cisco DNA Software offers a valuable and flexible way to buy software for the access, WAN, and data center domains. At each stage in the product lifecycle, Cisco DNA Software helps make buying, managing, and upgrading your network and infrastructure software easier. Cisco DNA Software provides:

- Flexible licensing models to smoothly distribute customers' software spending over time
- Investment protection for software purchases through software services-enabled license portability
- Access to updates, upgrades, and new technology from Cisco through Cisco Software Support Services (SWSS)
- Lower cost of entry with the new Cisco DNA Subscription for Switching model
- Access to end-to-end network visibility with Cisco DNA Spaces and service assurance through Cisco ThousandEyes Network and Application Synthetics (included with Cisco DNA Advantage license)

Cisco DNA lets you manage your entire switching structure as a single, converged component. With one management system and one policy for wired and wireless networks, it offers an efficient way to provide more secure access.

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## Product overview: Features

### Product highlights

- Highest wireless scale for Wi-Fi 6 and 802.11ac Wave 2 access points supported on a single switch with select models
- Catalyst 9300 and Catalyst 9300L/LM models are based on the Cisco UADP 2.0 Application-Specific Integrated Circuit (ASIC) with programmable pipeline and microengine capabilities, along with template-based, configurable allocation of Layer 2 and Layer 3 forwarding, Access Control Lists (ACLs), and Quality of Service (QoS) entries
- Catalyst 9300X models are based on UADP 2.0sec ASIC which adds line rate support for Crypto, including 100G hardware-based IPsec
- x86 CPU complex with 8-GB memory, and 16 GB of flash and external USB 3.0 SSD pluggable storage slot (delivering up to 240GB of storage with an option SSD drive) to host containers. C9300X models support 16GB of memory
- USB 2.0 slot to load system images and set configurations
- Up to 1 TBps of local stackable switching bandwidth with Catalyst 9300X models
- Deeper buffer and higher scale model options for rich multi-media content delivery applications
- Flexible and dense uplink offerings with 100G, 40G, 25G, Multigigabit, 10G, and 1G as fixed or modular uplinks
- Easy transition from 40G to 100G and 10G to 25G with dual-rate optics
- Flexible downlink options with 25G, 10G and 1G Copper and Fiber as well as the densest Multigigabit links
- With a mix of Copper (1G up to 10G) and Fiber (1G up to 25G) supported in a single stack, multiple flexible deployment scenarios are enabled, including 2-Tier, 3-Tier and Hybrid architectures
- Leading PoE capabilities with up to 384 ports of PoE per stack, PoE+, and 288 ports high density IEEE 802.3bt - 90W UPOE+, and 60W Cisco UPOE
- Intelligent Power Management with Cisco StackPower technology, providing power stacking among members for power redundancy. Stackpower pools the power supplies across the stack to be used redundancy and supplemental power purposes
- Line-rate, hardware-based Flexible NetFlow (FNF), delivering flow collection of up to 128,000 flows with select models
- IPv6 support in hardware, providing wire-rate forwarding for IPv6 networks
- Dual-stack support for IPv4/IPv6 and dynamic hardware forwarding table allocations, for ease of IPv4-to-IPv6 migration
- Support for both static and dynamic NAT and Port Address Translation (PAT)
- IEEE 802.1ba AV Bridging (AVB) built in to provide a better audio and video experience through improved time synchronization and QoS

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- Precision Time Protocol (PTP; IEEE 1588v2) provides accurate clock synchronization with sub-microsecond accuracy making it suitable for distribution and synchronization of time and frequency over network
  - Cisco IOS XE, a modern operating system for the enterprise with support for model-driven programmability including NETCONF, RESTCONF, YANG, on-box Python scripting, streaming telemetry, container-based application hosting, and patching for critical bug fixes. The OS also has built-in defenses to protect against runtime attacks
  - End-to-end visualization of the path from campus/branch to clouds/DC with Cisco ThousandEyes Network and Application Synthetics (included with Cisco DNA Advantage license)
  - **SD-Access:** Cisco Catalyst 9300 Series switches form the foundational building block for SD-Access, Cisco's lead enterprise architecture:
    - Policy-based automation from edge to cloud
    - Simplified segmentation and micro-segmentation, with predictable performance and scalability
    - Automation through Cisco DNA Center
    - Policy handled through the Cisco Identity Services Engine (ISE)
    - Network assurance provided through the Cisco DNA Center
    - Faster launch of new business services and significantly improved issue resolution time
  - Plug and Play (PnP) enabled: A simple, secure, unified, and integrated offering to ease new branch or campus device rollouts or updates to an existing network
  - Advanced security
    - Encrypted Traffic Analytics (ETA): You benefit from the power of machine learning to identify and take actions toward threats or anomalies in your network, including malware detection in encrypted traffic (without decryption) and distributed anomaly detection
    - Support for AES-256 with the powerful MACsec 256-bit encryption algorithm available on all models
    - Trustworthy solutions: Hardware anchored Secure Boot and Secure Unique Device Identification (SUDI) support for Plug and Play, to verify the identity of the hardware and software

## Platform details

### Switch models and configurations

**Table 1.** Product Family Configurations

Models	Modular Uplinks and Speeds	Stacking Bandwidth Support	mGig Density	Cisco StackPower	HW-Based IPSEC	App-Hosting Capacity
<b>Catalyst 9300X</b>	10G, 25G, 40G, mGig and 100G	Stackwise-1T (480G when stacking with Catalyst 9300 model)	48x 10G	✓ (Larger Power Budget)	Up to 100G IPsec*	✓ (2x hosting resources over Catalyst 9300 models)
<b>Catalyst 9300</b>	10G, 25G, 40G and mGig	Stackwise-480	48x5G and 24x10G	✓	✗	✓
<b>Catalyst 9300L /LM</b>	✗	Stackwise-320	12x10G	✗	✗	✓

\*Need to order HSec Key for IPsec Feature.

The Cisco Catalyst 9300 Series is made up of nineteen modular uplink switch models and fourteen fixed uplink switch models.



**Figure 1.**  
Cisco Catalyst 9300 Series switches

Table 2 lists port scale and power details for the Cisco Catalyst 9300 Series models.

**Table 2.** Cisco Catalyst 9300 Series switch configurations

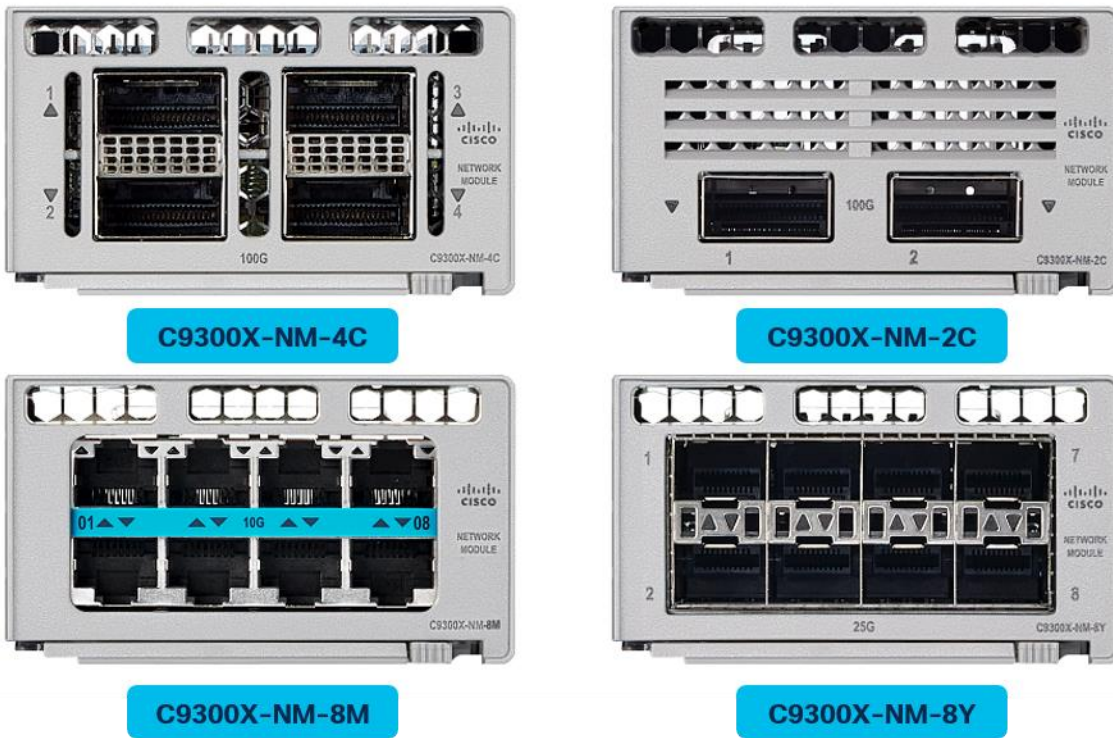
Model	Total 10/100/1000, Multigigabit copper or SFP Fiber	Uplink Configuration	Default AC power supply
<b>Modular uplink models</b>			
<b>C9300X-48HX</b>	48 port Cisco UPOE+, 48x 10G Multigigabit (10G/5G/2.5G/1G/100M) with 90W UPOE+	Modular Uplinks	1100W AC
<b>C9300X-48TX</b>	48 port Data, 48x 10G Multigigabit (10G/5G/2.5G/1G/100M)	Modular Uplinks	715W AC
<b>C9300X-48HXN</b>	48 port Cisco UPOE+, 8x 10G Multigigabit (10G/5G/2.5G/1G/100M) + 40x 5G Multigigabit	Modular Uplinks	1100W AC

Model	Total 10/100/1000, Multigigabit copper or SFP Fiber	Uplink Configuration	Default AC power supply
	(5G/2.5G/1G/100M)		
<b>C9300X-24HX</b>	24 port Cisco UPOE+, 24x 10G Multigigabit (10G/5G/2.5G/1G/100M)	Modular Uplinks	1100W AC
<b>C9300X-12Y</b>	12 port 25G/10G/1G SFP28	Modular Uplinks	715W AC
<b>C9300X-24Y</b>	24 port 25G/10G/1G SFP28	Modular Uplinks	715W AC
<b>C9300-24T</b>	24 port Data	Modular Uplinks	350W AC
<b>C9300-48T</b>	48 port Data	Modular Uplinks	350W AC
<b>C9300-24P</b>	24 port PoE+	Modular Uplinks	715W AC
<b>C9300-48P</b>	48 port PoE+	Modular Uplinks	715W AC
<b>C9300-24U</b>	24 port Cisco UPOE	Modular Uplinks	1100W AC
<b>C9300-48U</b>	48 port Cisco UPOE	Modular Uplinks	1100W AC
<b>C9300-24UX</b>	24 port Multigigabit Cisco UPOE (10G/5G/2.5G/1G/100M)	Modular Uplinks	1100W AC
<b>C9300-48UXM</b>	48 port Cisco UPOE, 36 ports 100M/1G/2.5G + 12 ports Multigigabit (10G/5G/2.5G/1G/100M)	Modular Uplinks	1100W AC
<b>C9300-48UN</b>	48 port 5Gbps Multigigabit UPOE ports (5G/2.5G/1G/100M)	Modular Uplinks	1100W AC
<b>C9300-24UB</b>	24 port Cisco UPOE	Modular Uplinks	1100W AC
<b>C9300-24UXB</b>	24 port Multigigabit Cisco UPOE (10G/5G/2.5G/1G/100M)	Modular Uplinks	1100W AC
<b>C9300-48UB</b>	48 port Cisco UPOE	Modular Uplinks	1100W AC
<b>C9300-24H</b>	24 port Cisco UPOE+	Modular Uplinks	1100W AC
<b>C9300-48H</b>	48 Cisco UPOE+	Modular Uplinks	1100W AC
<b>C9300-24S</b>	24 1G SFP	Modular Uplinks	715W AC
<b>C9300-48S</b>	48 port 1G SFP	Modular Uplinks	715W AC



Model	Total 10/100/1000, Multigigabit copper or SFP Fiber	Uplink Configuration	Default AC power supply
<b>Fixed uplink models</b>			
<b>C9300L-24T-4G</b>	24 port Data	4x 1G fixed uplinks	350W AC
<b>C9300L-24T-4X</b>	24 port Data	4x 10G/1G fixed uplinks	350W AC
<b>C9300L-48T-4G</b>	48 port Data	4x 1G fixed uplinks	350W AC
<b>C9300L-48T-4X</b>	48 port Data	4x 10G/1G fixed uplinks	350W AC
<b>C9300L-24P-4G</b>	24 port PoE+	4x 1G fixed uplinks	715W AC
<b>C9300L-24P-4X</b>	24 port PoE+	4x 10G/1G fixed uplinks	715W AC
<b>C9300L-48P-4G</b>	48 port PoE+	4x 1G fixed uplinks	715W AC
<b>C9300L-48P-4X</b>	48 port PoE+	4x 10G/1G fixed uplinks	715W AC
<b>C9300L-48PF-4G</b>	48 port PoE+	4x 1G fixed uplinks	1100W AC
<b>C9300L-48PF-4X</b>	48 port PoE+	4x 10G/1G fixed uplinks	1100W AC
<b>C9300L-24UXG-4X</b>	24 port Cisco UPOE, 8 ports Multigigabit (10G/5G/2.5G/1G/100M) + 16 ports 1G (1G/100M/10M)	4x 10G/1G fixed uplinks	1100W AC
<b>C9300L-24UXG-2Q</b>	24 port Cisco UPOE, 8 ports Multigigabit (10G/5G/2.5G/1G/100M) + 16 ports 1G (1G/100M/10M)	2x 40G fixed uplinks	1100W AC
<b>C9300L-48UXG-4X</b>	48 port Cisco UPOE, 12 ports Multigigabit (10G/5G/2.5G/1G/100M) + 36 port 1G (1G/100M/10)	4x 10G/1G fixed uplinks	1100W AC
<b>C9300L-48UXG-2Q</b>	48 port Cisco UPOE, 12 port Multigigabit (10G/5G/2.5G/1G/100M) + 36 port 1G (1G/100M/10M)	2x 40G fixed uplinks	1100W AC
<b>C9300LM-48UX-4Y</b>	48 port Cisco UPOE, 8 port 10G Multigigabit (10G/5G/2.5G/1G/100M) + 40 port 1G (1G/100M/10M)	4x25G fixed uplinks	715W AC
<b>C9300LM-48U-4Y</b>	48 port 1G (1G/100M/10M) with Cisco UPOE	4x25G fixed uplinks	715W AC
<b>C9300LM-24U-4Y</b>	24 port 1G (1G/100M/10M) with Cisco UPOE	4x25G fixed uplinks	715W AC
<b>C9300LM-48T-4Y</b>	48 port 1G (1G/100M/10M) Data	4x25G fixed uplinks	715W AC

Cisco Catalyst 9300 Series switches (C9300X and C9300 SKUs) support optional network modules for uplink ports (Figure 2). These field-replaceable network modules with 25G and 40G speeds in the Cisco Catalyst 9300 Series enable greater architectural flexibility and infrastructure investment protection by allowing a nondisruptive migration from 10G to 25G and beyond. The default switch configuration does not include the network module. When you purchase the switch, you can choose from the network modules described in Table 2.



**Figure 2.**  
Cisco Catalyst 9300X Network Modules



**Figure 3.**  
Cisco Catalyst 9300 Series Network Modules

**Table 3.** Network module numbers and descriptions

Network module	Description
<b>C9300X-NM-8M</b>	Catalyst 9300X 8x 10G/1G Multigigabit Network Module
<b>C9300X-NM-8Y</b>	Catalyst 9300X 8x 25G/10G/1G Network Module
<b>C9300X-NM-2C</b>	Catalyst 9300X 2x 100G/40G Network Module
<b>C9300X-NM-4C*</b>	Catalyst 9300X 4x 100G/40G Network Module
<b>C9300-NM-4G</b>	Catalyst 9300 Series 4x 1G Network Module
<b>C9300-NM-4M</b>	Catalyst 9300 Series 4x Multigigabit Network Module
<b>C9300-NM-8X</b>	Catalyst 9300 Series 8x 10G/1G Network Module
<b>C9300-NM-2Q</b>	Catalyst 9300 Series 2x 40G Network Module
<b>C9300-NM-2Y</b>	Catalyst 9300 Series 2x 25G/10G/1G Network Module

\*C9300X-NM-4C is compatible only with C9300X-48HX, C9300X-48TX and C9300X-24Y models

**Please note:** Catalyst 3850 and Catalyst 9300 network modules are supported on the Catalyst 9300 models. Catalyst 9300X network modules are only supported on the Catalyst 9300X models.

For additional details, please refer to the Hardware Installation Guide.

<https://www.cisco.com/c/dam/en/us/products/collateral/switches/catalyst-9300-series-switches/nb-09-cat-9k-faq-cte-en.pdf>.

## Power supplies

Cisco Catalyst 9300 Series switches support dual redundant power supplies. The switches ship with one power supply by default, and the second power supply can be purchased when the switch is ordered or at a later time. If only one power supply is installed, it should always be in power supply bay #1. The switches also ship with three field-replaceable fans. Power Supplies are common across the Catalyst 9300 Series.



**Figure 4.** Cisco Catalyst 9300 Series Dual Redundant power supplies

Table 4 lists the different power supplies available in these switches and available PoE power.

**Table 4.** Power supply models

Model	Primary power supply	Available PoE power	Available PoE power			
			With 350W Secondary PS	With 715W Secondary PS	With 1100W Secondary PS	With 1900W Secondary PS
C9300-24H	PWR-C1-1100WAC-P	830W	1180W	1545W*	1930W*	2160W
C9300-48H	PWR-C1-1100WAC-P	822W	1172W	1537W	1922W*	2722W
C9300-24H	PWR-C1-1900WAC-P	1630W	1980W	2160W	2160W	2160W
C9300-48H	PWR-C1-1900WAC-P	1622W	1972W	2337W	2722W	2880W

Model	Default power supply	Available PoE power	With 350W Secondary PS	With 715W Secondary PS	With 1100W Secondary PS
C9300X-48TX	PWR-C1-715WAC-P	No PoE	No PoE	No PoE	No PoE
C9300X-48HX	PWR-C1-1100WAC-P	590W	940W	1305W	1690W
C9300X-48HXN	PWR-C1-1100WAC-P	690W	1040W	1405W	1790W
C9300X-24HX	PWR-C1-1100WAC-P	735W	1085W	1450W	1835W
C9300X-12Y	PWR-C1-715WAC-P	No PoE	No PoE	No PoE	No PoE
C9300X-24Y	PWR-C1-715WAC-P	No PoE	No PoE	No PoE	No PoE
C9300-24T	PWR-C1-350WAC***	No PoE	No PoE	No PoE	No PoE
C9300-48T	PWR-C1-350WAC***	No PoE	No PoE	No PoE	No PoE
C9300-24P	PWR-C1-715WAC***	445W	720W*	720W*	720W*
C9300-48P	PWR-C1-715WAC***	437W	787W	1152W	1440W*
C9300-24U	PWR-C1-1100WAC	830W	1180W	1440W*	1440W*
C9300-48U	PWR-C1-1100WAC	822W	1172W	1537W	1800W**
C9300-24UX	PWR-C1-1100WAC-P	560W	910W	1275W	1440W*
C9300-48UXM	PWR-C1-1100WAC-P	490W	840W	1205W	1590W
C9300-48UN	PWR-C1-1100WAC-P	645W	995W	1360W	1745W
C9300-24UB	PWR-C1-1100WAC	830W	1180W	1440W*	1440W*
C9300-24UXB	PWR-C1-1100WAC-P	560W	910W	1275W	1440W*
C9300-48UB	PWR-C1-1100WAC	822W	1172W	1537W	1800W**

Model	Default power supply	Available PoE power	With 350W Secondary PS	With 715W Secondary PS	With 1100W Secondary PS
C9300-24S	PWR-C1-715WAC-P	No PoE	No PoE	No PoE	No PoE
C9300-48S	PWR-C1-715WAC-P	No PoE	No PoE	No PoE	No PoE
C9300L-24T-4G	PWR-C1-350WAC-P	No PoE	No PoE	No PoE	No PoE
C9300L-24T-4X	PWR-C1-350WAC-P	No PoE	No PoE	No PoE	No PoE
C9300L-48T-4G	PWR-C1-350WAC-P	No PoE	No PoE	No PoE	No PoE
C9300L-48T-4X	PWR-C1-350WAC-P	No PoE	No PoE	No PoE	No PoE
C9300L-24P-4G	PWR-C1-715WAC-P	505W	720W*	720W*	720W*
C9300L-24P-4X	PWR-C1-715WAC-P	505W	720W*	720W*	720W*
C9300L-48P-4G	PWR-C1-715WAC-P***	505W	855W	1220W	1440W*
C9300L-48P-4X	PWR-C1-715WAC-P***	505W	855W	1220W	1440W*
C9300L-48PF-4G	PWR-C1-1100WAC-P	890W	1240W	1440W	1440W*
C9300L-48PF-4X	PWR-C1-1100WAC-P	890W	1240W	1440W	1440W*
C9300L-24UXG-4X	PWR-C1-1100WAC-P	880W	1230W	1440W	1440W*
C9300L-24UXG-2Q	PWR-C1-1100WAC-P	722W	1072W	1440W	1440W*
C9300L-48UXG-4X	PWR-C1-1100WAC-P***	675W	1025W	1390W	1775W
C9300L-48UXG-2Q	PWR-C1-1100WAC-P***	675W	1025W	1390W	1775W

\*Limited by port number and port rating (e.g. 24 PoE+ 30W ports = 720W)

\*\*Limited by design

\*\*\*Upgrade options for 715W and 1100W PSU are available

## Stacking

Cisco Catalyst 9300 Series switch models are designed for stacking switches as a single virtual switch, enabling customers to have a single management plane and control plane for up to 448 access ports.



**Figure 5.** Cisco Catalyst 9300 Series modular uplink models stack (C9300/C9300X SKUs) and fixed uplink models stack (C9300L SKUs)

Table 5 lists the supported stacking options.

**Table 5.** Supported stacking options

Model	Stacking support	Stacking bandwidth support	Optional Stacking hardware	Number of members	Supported stack members
<b>C9300X SKUs</b>	StackWise-1T	1 Tbps	StackWise cable	8	Stacks with other Catalyst 9300X models at StackWise-1T speeds with same license level  Stacks with C9300 SKUs at StackWise-480 speeds with same license level
<b>C9300 SKUs</b>	StackWise-480	480 Gbps	StackWise Cable	8	Other C9300 SKUs with same license level  C9300 higher scale SKUs only stack with other like higher scale models
<b>C9300L SKUs</b>	StackWise-320	320 Gbps	C9300L-STACK-KIT	8	Other C9300L SKUs with same license level

Mixed stacking between Catalyst 9300X and Catalyst 9300 models are supported at StackWise-480 speeds.

Mixed stacking between Catalyst 9300 and Catalyst 9300X and Catalyst 9300 higher scale models (C9300-24UB, C9300-24UXB, C9300-48UB) is **not supported**. You cannot stack fixed uplink models (C9300L SKUs) with modular uplink models (C9300 SKUs) or other Catalyst switches, e.g. Cisco Catalyst 3850 and 3650 Series. Any combination of Catalyst 9300 models can form a stack. Separately, any combination of Catalyst 9300L models can form a stack.

Catalyst 9300 higher scale SKUs (C9300-24UB, C9300-24UXB, C9300-48UB) need to be stacked with other higher scale models.

StackWise cables that are available to configure stacking with Catalyst 9300 Series modular uplink models (C9300X and C9300 SKUs) come in lengths of 0.5m, 1m and 3m.

The optional StackWise-320 kit for Catalyst 9300 Series fixed uplink models (C9300L SKUs) consists of two stack adapters and a stacking cable. The default stacking cable is 0.5 m, but options of 1m and 3m are also available. Table 6 lists the stacking accessories.

**Table 6.** Stacking accessories

Model	Description
<b>STACK-T1-50CM</b>	Data stack 50 cm (cable option with C9300 and C9300X SKUs)
<b>STACK-T1-1M</b>	Data stack 1m (cable option with C9300 and C9300X SKUs)
<b>STACK-T1-3M</b>	Data stack 3m (cable option with C9300 and C9300X SKUs)
<b>C9300L-STACK-KIT</b>	Stack kit for C9300L SKUs only: Two data stack adapters and one data stack cable
<b>STACK-T3-50CM</b>	Data stack 50cm cable (default cable with C9300L Stack Kit)
<b>STACK-T3-1M</b>	Data stack 1m cable (cable option with C9300L Stack Kit)
<b>STACK T3-3M</b>	Data stack 3m cable (cable option with C9300L Stack Kit)



**Figure 6.** Cisco Catalyst 9300 Series fixed uplink models with optional stack kit

## Fan

Cisco Catalyst 9300 Series switches also come with three field-replaceable fans and support (N+1) redundancy. Table 7 lists the fan module part number.

**Table 7.** Fan modules

Model	Description
<b>FAN-T2=</b>	Fan module

## Performance and scalability

Performance and scalability metrics for the Cisco Catalyst 9300 Series are provided in Table 8.

**Table 8.** Performance specifications

Description	Catalyst 9300X modular uplink models	Catalyst 9300 modular uplink models	Catalyst 9300 higher scale, models	Catalyst 9300L fixed uplink models
<b>Total number of MAC addresses</b>	32,000	32,000	64,000	32,000
<b>Total number of IPv4 routes (ARP plus learned routes)</b>	39,000 (24,000 direct routes and 15,000 indirect routes)	32,000 (24,000 direct routes and 8000 indirect routes)	112,000 (48,000 direct routes and 64,000 indirect routes)	32,000 (24,000 direct routes and 8000 indirect routes)
<b>IPv6 routing entries</b>	19,500	16,000	56,000	16,000
<b>Multicast routing scale</b>	8,000	8,000	16,000	8,000
<b>QoS scale entries</b>	4,000	5,120	18,000	5,120
<b>ACL scale entries</b>	8,000	5,120	18,000	5,120
<b>Packet buffer per SKU</b>	16 MB buffer for 48-port 5G Multigigabit, 24-port 10G Multigigabit and 12-port Fiber  32 MB buffer for 48-port 10G Multigigabit and 24-port Fiber	16 MB buffer for 24- or 48-port Gigabit Ethernet models  32 MB buffer for 24 and 48-port Multigigabit	32 MB buffer for 24- and 48-port Gigabit Ethernet models  64 MB buffer for 24-port Multigigabit model (24UXB)	16 MB buffer for 24 and 48 port Gigabit Ethernet models
<b>FNF entries</b>	64,000 flows on 48-port 5G Multigigabit and 24-port 10G Multigigabit and 12-port Fiber 128,000 flows on 48-port 10G Multigigabit and 24-port Fiber	64,000 flow on 24- and 48-port Gigabit Ethernet models  128,000 flows on 24-port Multigigabit	128,000 flow on 24- and 48-port Gigabit Ethernet models  256,000 flows on 24-port Multigigabit	64,000 flow on 24- and 48-port Gigabit Ethernet models
<b>DRAM</b>	16 GB	8 GB	8 GB	8 GB
<b>Flash</b>	16 GB	16 GB	16 GB	16 GB
<b>VLAN IDs</b>	4094	4094	4094	4094
<b>Total Switched Virtual Interfaces (SVIs)</b>	1000	1000	1000	1000



Description	Catalyst 9300X modular uplink models	Catalyst 9300 modular uplink models	Catalyst 9300 higher scale, models	Catalyst 9300L fixed uplink models
Jumbo frames	9198 bytes	9198 bytes	9198 bytes	9198 bytes
Total routed ports per Catalyst 9300 Series stack	448	448	448	416

**Table 9.** Bandwidth specifications

SKU	Switching capacity	Switching capacity with stacking	Forwarding rate	Forwarding rate with stacking
C9300X-48TX	2,000 Gbps	3,000 Gbps	1488 Mpps	2232 Mpps
C9300X-48HX	2,000 Gbps	3,000 Gbps	1488 Mpps	2232 Mpps
C9300X-48HXN	2,000 Gbps	3,000 Gbps	1488 Mpps	2232 Mpps
C9300X-24HX	880 Gbps	1,880 Gbps	327.38 Mpps	1398.80 Mpps
C9300X-12Y	1,000 Gbps	2,000 Gbps	744.04 Mpps	1488 Mpps
C9300X-24Y	2,000 Gbps	3,000 Gbps	1488 Mpps	2232 Mpps
C9300-24T	208 Gbps	688 Gbps	154.76 Mpps	511.90 Mpps
C9300-48T	256 Gbps	736 Gbps	190.47 Mpps	547.62 Mpps
C9300-24P	208 Gbps	688 Gbps	154.76 Mpps	511.90 Mpps
C9300-48P	256 Gbps	736 Gbps	190.47 Mpps	547.62 Mpps
C9300-24U	208 Gbps	688 Gbps	154.76 Mpps	511.90 Mpps
C9300-48U	256 Gbps	736 Gbps	190.48 Mpps	547.62 Mpps
C9300-24UX	640 Gbps	1120 Gbps	476.19 Mpps	833.33 Mpps
C9300-48UXM	580 Gbps	1060 Gbps	431.54 Mpps	788.69 Mpps
C9300-48UN	640 Gbps	1120 Gbps	476.19 Mpps	833.33 Mpps
C9300-24UB	208 Gbps	688 Gbps	154.76 Mpps	511.90 Mpps
C9300-48UB	256 Gbps	736 Gbps	190.48 Mpps	547.62 Mpps
C9300-24UXB	640 Gbps	1120 Gbps	476.19 Mpps	833.33 Mpps
C9300-24H	208 Gbps	688 Gbps	154.76 Mpps	511.90 Mpps
C9300-48H	256 Gbps	736 Gbps	190.48 Mpps	547.62 Mpps

SKU	Switching capacity	Switching capacity with stacking	Forwarding rate	Forwarding rate with stacking
<b>C9300-24S</b>	208 Gbps	688 Gbps	154.76 Mpps	511.90 Mpps
<b>C9300-48S</b>	256 Gbps	736 Gbps	190.47 Mpps	547.62 Mpps
<b>C9300X-12Y</b>	1,000 Gbps	2,000 Gbps	744.04 Mpps	1488 Mpps
<b>C9300X-24Y</b>	2,000 Gbps	3,000 Gbps	1488 Mpps	2232 Mpps
<b>C9300L-24T-4G</b>	56 Gbps	376 Gbps	41.66 Mpps	279.76 Mpps
<b>C9300L-24T-4X</b>	128 Gbps	448 Gbps	95.23 Mpps	333.33 Mpps
<b>C9300L-48T-4G</b>	104 Gbps	424 Gbps	77.38 Mpps	315.48 Mpps
<b>C9300L-48T-4X</b>	176 Gbps	496 Gbps	130.95 Mpps	369.05 Mpps
<b>C9300L-24P-4G</b>	56 Gbps	376 Gbps	41.66 Mpps	279.76 Mpps
<b>C9300L-24P-4X</b>	128 Gbps	448 Gbps	95.23 Mpps	333.33 Mpps
<b>C9300L-48P-4G</b>	104 Gbps	424 Gbps	77.38 Mpps	315.48 Mpps
<b>C9300L-48P-4X</b>	176 Gbps	496 Gbps	130.95 Mpps	369.05 Mpps
<b>C9300L-48PF-4G</b>	104 Gbps	424 Gbps	77.38 Mpps	315.48 Mpps
<b>C9300L-48PF-4X</b>	176 Gbps	496 Gbps	130.95 Mpps	369.05 Mpps
<b>C9300L-24UXG-4X</b>	272 Gbps	592 Gbps	202.38 Mpps	440.47 Mpps
<b>C9300L-24UXG-2Q</b>	352 Gbps	672 Gbps	261.90 Mpps	500.00 Mpps
<b>C9300L-48UXG-4X</b>	392 Gbps	712 Gbps	291.66 Mpps	529.76 Mpps
<b>C9300L-48UXG-2Q</b>	472 Gbps	792 Gbps	351.19 Mpps	589.28 Mpps

All models are at wire-speed nonblocking performance for both IPv4 and IPv6. The forwarding rates in the table above are measured with 64 byte IPv4 packet sizes.

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## SD-Access architecture

What if you could give time back to IT? Provide network access in minutes for any user or device to any application – without compromise? SD-Access is the industry’s first policy-based automation from network edge to cloud. Your foundation for your digital network, Cisco SD-Access. Built on the principles of the Cisco DNA, SD-Access provides end-to-end segmentation to keep user, device and application traffic separate without a redesign of the network. It automates user access policy so organizations can make sure the right policies are set for any user or device with any application across the network. This is accomplished with a single network fabric across LAN and WLAN which creates a consistent user experience anywhere without compromising on security.

There are many challenges today in managing the network to drive business outcomes. These limitations are due to manual configuration and fragmented tool offerings. SD-Access provides:

- A transformational management solution that reduces operational expenses and enhances business agility
- Consistent management of wired and wireless network provisioning and policy
- Automated network segmentation and group-based policy
- Contextual insights for fast issue resolution and capacity planning
- Open and programmable interfaces for integration with third-party solutions

For an overview of key use-cases SD-Access addresses, refer to [SD-Access Solution Overview](#).

## Platform benefits

**Cisco IOS XE** opens a completely new paradigm in network configuration, operation, and monitoring through network automation. Cisco’s automation solution is open, standards-based, and extensible across the entire lifecycle of a network device. The various automation mechanisms are outlined below.

- **Automated device provisioning** is the ability to automate the process of upgrading software images and installing configuration files on Cisco Catalyst switches when they are being deployed in the network for the first time. Cisco provides both turnkey solutions such as Plug and Play and off-the-shelf tools such as Zero-Touch Provisioning (ZTP) and Preboot Execution Environment (PXE) that enable an effortless and automated deployment.
- **API-driven configuration** is available with modern network switches such as the Cisco Catalyst 9300 Series. It supports a wide range of automation features and provides robust open APIs over NETCONF and RESTCONF and GNMI using YANG data models for external tools, both off-the-shelf and custom built, to automatically provision network resources.
- **Granular visibility** enables model-driven telemetry to stream data from a switch to a destination. The data to be streamed is identified through subscription to a data set in a YANG model. The subscribed data set is streamed to the destination at specified intervals. Additionally, Cisco IOS XE enables the push model. It provides near-real-time monitoring of the network, leading to quick detection and rectification of failures.
- **Seamless software upgrades and patching** supports OS resilience. Cisco IOS XE supports patching, which provides fixes for critical bugs and security vulnerabilities between regular maintenance releases. This support lets you add patches without having to wait for the next maintenance release.

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## Security

- **Encrypted Traffic Analytics (ETA)** is a unique capability for identifying malware in encrypted traffic coming from the access layer. Since more and more traffic is becoming encrypted, the visibility this feature affords for threat detection is critical for keeping your network secure at different layers.
- **AES-256 MACsec encryption** is the IEEE 802.1AE standard for authenticating and encrypting packets between switches. The Cisco Catalyst 9300 Series switches support 256-bit and 128-bit Advanced Encryption Standard (AES), providing the most secure link encryption.
- **IPSec encryption** delivers secure end-to-end encrypted traffic between sites and connectivity to the Cloud. C9300X models support line rate IPSEC up to 100 Gbps delivering uncompromised secure connectivity.
- **Trustworthy solutions built with Cisco Trust Anchor Technologies** provide a highly secure foundation for Cisco products. With the Catalyst 9300 Series, these technologies enable hardware and software authenticity assurance for supply chain trust and strong mitigation against man-in-the-middle attacks that compromise software and firmware. Trust Anchor capabilities include:
  - **Image signing:** Cryptographically signed images provide assurance that the firmware, BIOS, and other software are authentic and unmodified. As the system boots, the system's software signatures are checked for integrity.
  - **Secure Boot:** Cisco Secure Boot technology anchors the boot sequence chain of trust to immutable hardware, mitigating threats against a system's foundational state and the software that is to be loaded, regardless of a user's privilege level. It provides layered protection against the persistence of illicitly modified firmware.
  - **Cisco Trust Anchor module:** A tamper-resistant, strong cryptographic, single-chip solution provides hardware authenticity assurance to uniquely identify the product so that its origin can be confirmed to Cisco. This provides assurance that the product is genuine.

## Cloud Security

- **Umbrella DNS Integration:**

Small to midsize networks reliant on managed service providers can now host Cisco Umbrella agent directly on their Catalyst 9300 series switches. This allows the business to easily customize their DNS filtering policies granularly at user or group level to prevent BYOD or IoT guest or corporate users from accessing malicious or inappropriate websites, without having to rely on the MSP to push the policies out. It also lets them optimize use of bandwidth by allowing direct cloud access for trusted apps. Requires DNA-Advantage License and Umbrella License per device.

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## Service Assurance

- **Cisco ThousandEyes Integration:**

Deliver superior network and service experience for your users, employees and partners with groundbreaking observability from network to app. Cisco ThousandEyes network tests are now integrated into Cisco Catalyst 9300 series switches with Cisco DNA Advantage licenses, giving you visibility beyond your campus perimeter so you solve issues faster. The Cisco ThousandEyes Network and Application Synthetics license is included by default upon the selection of a Cisco DNA Advantage option with a 3 year, 5 year or a 7 year subscription. Each Catalyst 9300 Cisco DNA Advantage subscription entitles the customer to run the equivalent of one Cisco ThousandEyes network or web test every 5 mins from a Cisco ThousandEyes enterprise agent (22 units per month), up to a maximum of 110,000 units per month of Cisco ThousandEyes test capacity per customer.

## Resiliency and high availability

- **StackWise-1T:** Cisco Catalyst 9300 Series modular uplink models (C9300X SKUs) support the industry's highest back-panel stacking bandwidth solution (1Tbps) with StackWise-1T. Up to 8 Switches can be configured in a StackWise-1T with the special connector at the back of the switch using dedicated stack cables.
- **StackWise-480:** Cisco Catalyst 9300 Series modular uplink models (C9300 SKUs) support high-speed back-panel stacking bandwidth solution (480 Gbps) with StackWise-480. Up to 8 Switches can be configured in a StackWise-480 with the special connector at the back of the switch using dedicated stack cables.
- **StackWise-320:** Cisco Catalyst 9300 Series fixed uplink models (C9300L SKUs) support stacking bandwidth solution (320 Gbps) with StackWise-320. Up to 8 Switches can be optionally configured in a StackWise-320 with the special Stack Kit at the back of the switch using dedicated stack cables.
- **Cisco StackPower:** Cisco StackPower is an innovative power interconnect system that allows the power supplies in a stack to be shared as a common resource among all the switches. This allows you to simply add one extra power supply in any switch of the stack and either provide power redundancy for any of the stack members or simply add more power to the shared pool. Up to 4 switches can be configured in a StackPower stack with the special connector at the back of the switch. However, with the use of XPS-2200 appliance, up to 8 switches can be configured in the StackPower stack. **Cisco StackPower is only supported on the models with modular uplink stack - C9300 and C9300X SKUs. C9300X models support StackPower+ delivering more power over StackPower cables compared to C9300 models.**



**Figure 7.**  
Cisco Catalyst 9300 Series StackPower

- **High availability:** The Catalyst 9300 Series supports high-availability features, including the following:
  - Cross-stack EtherChannel provides the ability to configure Cisco EtherChannel technology across different members of the stack for high resiliency.
  - **Flexlink+:** Flexlink+ allows the setting up of active and backup interfaces or port channels, which can provide Layer 2 failover redundancy without the use of Spanning Tree Protocol (STP).
  - **Extended Fast Software Upgrade** provides the ability to upgrade the platform software or to reload the system in under 30 seconds of traffic impact; both stand-alone and stack configurations.
  - IEEE 802.1s Multiple Spanning Tree Protocol (MSTP) provides rapid spanning tree convergence independent of spanning tree timers and also offers the benefit of Layer 2 load balancing and distributed processing.
  - Per-VLAN Rapid Spanning Tree (PVRST+) allows rapid spanning tree (IEEE 802.1w) reconvergence on a per-VLAN spanning tree basis, providing simpler configuration than MSTP. In both MSTP and PVRST+ modes, stacked units behave as a single spanning tree node.
  - Switch-port auto-recovery (“err-disable” recovery) automatically attempts to reactivate a link that is disabled because of a network error.
  - The Catalyst 9300 Series platform delivers the best NSF/SSO resiliency architecture in a stackable solution with sub-50-ms failover.
  - Always-On wireless network with stateful switchover when wireless functionality is enabled on stack of Catalyst 9300 Series switches.

### Deep buffer Technology

Cisco Catalyst 9300 higher scale models have a deeper buffer to address the requirements of rich multi-media lossless content delivery and large routing tables in a fixed access solution with a wide range of uplink choices for deployment flexibility.

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## Flexible Netflow

- **Flexible NetFlow (FNF):** Cisco IOS Software FNF is the next generation in flow visibility technology. It enables optimization of the network infrastructure, reduces operation costs, and improves capacity planning and security incident detection with increased flexibility and scalability. The Catalyst 9300 Series is capable of up to 64,000 flow entries on 48-port, 24-port and 12-port models and up to 128,000 flow entries on Multigigabit models.

## Application visibility and control

- **NBAR2:** Next-Generation Network-Based Application Recognition (NBAR2) enables advanced application classification techniques, accuracy with up to 1400 predefined and well-known application signatures and up to 150 encrypted applications on the Cisco Catalyst 9000 switches. The most popular applications included are Skype, Office 365, Microsoft Lync, Cisco WebEx, and Facebook, among many others that are predefined and easy to configure. NBAR2 provides the network administrator with an important tool to identify, control, and monitor end-user application usage while helping ensure a quality user experience and securing the network from malicious attacks. NBAR2 leverages FNF to report application performance and activities within the network to any supported NetFlow collector, such as Cisco Prime, Cisco Stealthwatch, or any compliant third-party tool.

## QoS

- **Superior QoS:** The Cisco Catalyst 9300 Series offers Gigabit Ethernet speeds with intelligent services that keep traffic flowing smoothly, even at 10 times the normal network speed. Industry-leading mechanisms for cross-stack marking, classification, and scheduling deliver superior performance for data, voice, and video traffic at wire speed. Superior QoS includes granular wireless bandwidth management and fair sharing, 802.1p Class of Service (CoS) and Differentiated Services Code Point (DSCP) field classification, Shaped Round Robin (SRR) scheduling, Committed Information Rate (CIR), and eight egress queues per port.

## Service discovery

- **Multicast DNS (mDNS) gateway:** This service discovery gateway capability facilitates sharing of services advertised using the Apple mDNS (Bonjour) protocol, such as printers, Apple TVs, and file services across the network. Additionally, the administrator can create policies defining which services can be seen and accessed by the users in the network. This capability facilitates a Bring-Your-Own-Device (BYOD) rollout.

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## Smart operation

- **WebUI:** WebUI is an embedded GUI-based device-management tool that provides the ability to provision the device, to simplify device deployment and manageability, and to enhance the user experience. It comes with the default image, so there is no need to enable anything or install any license on the device. You can use WebUI to build configurations, and to monitor and troubleshoot the device without having CLI expertise.
- **Efficient switch operation\*:** Cisco Catalyst 9300 Series switches provide optimum power saving with Energy Efficient Ethernet (EEE) on the RJ-45 ports and low-power operations for industry best-in-class power management and power consumption capabilities. The ports support reduced power modes so that ports not in use can move into a lower power utilization state. Other efficient switch operation features are as follows:
  - Per-port power consumption command allows customers to specify a maximum power setting on an individual port.
  - Per-port PoE power sensing measures actual power being drawn, enabling more intelligent control of powered devices. The PoE MIB provides proactive visibility into power usage and allows you to set different power-level thresholds.
- **RFID tags:** Catalyst 9300 Series switches have an embedded RFID tag that facilitates easy asset and inventory management using commercial RFID readers.
- **Blue beacon:** Catalyst 9300 Series switches support a blue beacon LED for easy identification of the switch being accessed.

## Open standards based fabric

The Cisco Catalyst 9300 Series Switches support modern fabric technologies such as VXLAN with BGP-EVPN control plane, with open APIs. This technology provides the flexibility to build open standards based fabrics to secure infrastructure, users and data. This fabric architecture provides rich unicast and multicast protocol support to optimally route or bridge traffic as well as support for integrated campus services all of which can be automated via open APIs to effectively configure and monitor the network.

## Programmability

Cisco IOS-XE provides open standards based APIs such as NETCONF, RESTCONF, gNMI to simplify provisioning and configuration, that allows network administrators to save time when provisioning new network devices and to prevent the human errors that often are a byproduct of manual configuration. Integrating Zero Touch Provisioning with various Devops toolkits allows network admins to drastically reduce the time and resources needed to onboard a device onto their network. The ability to collect real-time statistics through model driven telemetry through gRPC and gNMI allows administrator to integrate to many health monitoring tools to optimize their environments and to troubleshoot and provide alerts about any potential problems.



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## High-Performance IP routing

The Cisco Express Forwarding hardware routing architecture delivers extremely high-performance IP routing in Cisco Catalyst 9300 Series switches, based on:

- IP unicast routing protocols (including static, Routing Information Protocol Version 1 [RIPv1], RIPv2, RIPv3, and Open Shortest Path First [OSPF], Routed Access) are supported for small network routing applications with the Network Essentials stack. Equal-cost routing facilitates Layer 3 load balancing and redundancy across the stack.
- Advanced IP unicast routing protocols (including Full [OSPF], Enhanced Interior Gateway Routing Protocol [EIGRP], Border Gateway Protocol Version 4 [BGPv4], and Intermediate System-to-Intermediate System Version 4 [IS-ISv4]) are supported for load balancing and for constructing scalable LANs. IPv6 routing (using OSPFv3 and BGPv6) is supported in hardware for maximum performance.
- Protocol-Independent Multicast (PIM) for IP multicast routing is supported, including PIM Sparse Mode (PIM SM), and Source-Specific Multicast (SSM).
- IPv6 addressing is supported on interfaces with appropriate show commands for monitoring and troubleshooting.

## Audio Video Bridging (AVB)

Starting with Cisco IOS XE Software Release 16.8, the Cisco Catalyst 9300 Series supports the IEEE 802.1 AVB standard. This standard provided the means for highly reliable delivery of low-latency, time-synchronized audio and video streaming services through Layer 2 Ethernet networks. The standard also makes it easier to integrate new services and for AV equipment from different vendors to interoperate.

### Benefits

- Improves quality of experience by lowering jitter and latency for time-synchronized delivery of high-quality AV.
- Provides scalability of applications across networked deployments, including expansive and complex AV infrastructure.
- Lowers Total Cost of Ownership (TCO) with reduced cabling (lowers CapEx) and no license fees (lowers OpEx).

For more details about AVB and specific models supported, check <https://www.cisco.com/go/avb>.

**Multigigabit Ethernet technology:** Cisco Multigigabit Ethernet technology allows you to achieve bandwidth speeds from 1 Gbps to 10 Gbps over traditional Category 5e/6 cabling or above. This technology addresses the need for exponential increases in bandwidth with the enormous growth of 802.11ac Wave 2, to be eclipsed by the growth of Wi-Fi 6 and new wireless applications without having to replace current cabling infrastructure.

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## Multiprotocol label switching (MPLS)

The Cisco Catalyst 9300 Series Switches support Multiprotocol label switching (MPLS) which combines the performance and capabilities of Layer 2 (data link layer) switching with the proven scalability of Layer 3 (network layer) routing. MPLS enables the explosive growth in network utilization while providing the opportunity to differentiate services without sacrificing the existing network infrastructure. MPLS support includes

- **MPLS L3 VPN:** An MPLS Virtual Private Network (VPN) consists of a set of sites that are interconnected by means of a Multiprotocol Label Switching (MPLS) provider core network. At each customer site, one or more customer edge (CE) devices attach to one or more provider edge (PE) devices.
- **VPLS:** VPLS (Virtual Private LAN Service) enables enterprises to link together their Ethernet-based LANs from multiple sites via the infrastructure provided by their service provider.
- **EoMPLS:** EoMPLS is a category of Any Transport over MPLS (AToM) to transport Layer 2 packets over an MPLS backbone.
- **MPLS over GRE:** L3VPN over GRE and VPLS over GRE, are supported to tunnel MPLS/VPLS packets over non-MPLS networks utilizing GRE tunneling

## Power over ethernet leadership

**Cisco Universal Power over Ethernet (Cisco UPOE and Cisco UPOE+):** PoE removes the need for wall sockets to power each PoE-enabled device and eliminates the cost of additional electrical cabling and circuits that would otherwise be necessary in IP phone and WLAN deployments. Cisco UPOE extends the IEEE PoE+ standard to double the power per port to 60 watts. This facilitates delivery of network power to a broad range of devices requiring higher power, including virtual desktop terminals, IP turrets, compact switches, building management gateways, LED lights, wireless access points, and IP phones. Designed for smart building and IoT applications, Cisco Catalyst 9300 UPOE+ switches (delivering PoE power up to 90W) provide data and power over a single cable to power devices like wireless access points, digital signage, security cameras, thermal cameras with PTZ features, LED lighting fixtures and large display screens. UPOE+ offers reduced cabling and installation costs without need for permits, device daisy-chaining application that require higher power draw, real-time device information, centralized management and remote control, faster and flexible device installation where devices can be positioned in a practical location instead of proximity to the electrical outlets.

Catalyst 9300 Series modular uplink (C9300 and C9300X SKUs) models support Cisco UPOE+, Cisco UPOE, PoE+ and PoE, thereby addressing the largest range of network power needs.

Catalyst 9300 Series fixed uplink (C9300L SKUs) models support Cisco UPOE or PoE+ and PoE.

Tables 10 and 11 show the power supply combinations required for different PoE needs.

**Table 10.** Power supply requirements for Catalyst 9300 Series modular uplink PoE/PoE+ models (C9300-xxP SKUs)

	24-port PoE switch	48-port PoE switch
<b>PoE on all ports (15.4W per port)</b>	1 PWR-C1-715WAC/PWR-C1-715WAC-P/PWR-C1-715WDC	1 PWR-C1-1100WAC/PWR-C1-1100WAC-P or 2 PWR-C1-715WAC/PWR-C1-715WAC-P/PWR-C1-715WDC
<b>PoE+ on all ports (30W per port)</b>	1 PWR-C1-1100WAC/PWR-C1-1100WAC-P or 2 PWR-C1-715WAC/PWR-C1-715WAC-P/PWR-C1-715WDC	2 PWR-C1-1100WAC/PWR-C1-1100WAC-P or 1 PWR-C1-1100WAC/PWR-C1-1100WAC-P and 1 PWR-C1-715WAC/PWR-C1-715WAC-P/PWR-C1-715WDC

**Table 11.** Power supply requirements for Catalyst 9300 Series UPOE models (C9300-xxU/UB/UXM/UN, C9300L-xxUXG-xx SKUs)

	24-port Cisco UPOE switch	48-port Cisco UPOE switch	48 and 24-port Multigigabit Cisco UPOE switch*
<b>Cisco UPOE (60W per port) &amp; IEEE 802.3bt type3 on all ports (24-port switch) or up to 30 ports (48-port switch)</b>	1 PWR-C1-1100WAC/PWR-C1-1100WAC-P and 1 PWR-C1-715WAC/PWR-C1-715WAC-P/PWR-C1-715WDC	2 PWR-C1-1100WAC/PWR-C1-1100WAC-P	2 PWR-C1-1100WAC/PWR-C1-1100WAC-P

**Table 12.** Power supply requirements for Catalyst 9300 Series UPOE+ models (C9300-xxH SKUs)

	24-port Cisco UPOE+ switch	48-port Cisco UPOE+ switch
<b>Cisco UPOE+ (90W per port) &amp; IEEE 802.3bt type4 on 21 ports (24-port and 48-port switch)</b>	1 PWR-C1-1100WAC/PWR-C1-1100WAC-P and 1 PWR-C1-715WAC/PWR-C1-715WAC-P/PWR-C1-715WDC	2 PWR-C1-1100WAC/PWR-C1-1100WAC-P or 2 PWR-C1-1900WAC-P

**Table 13.** Power supply requirements for Catalyst 9300 Series fixed uplink PoE/PoE+ models (C9300L-xxP SKUs)

	24-port PoE switch	48-port PoE switch
<b>PoE on all ports (15.4W per port)</b>	1 PWR-C1-715WAC-P/PWR-C1-715WDC	1 PWR-C1-1100WAC-P or 2 PWR-C1-715WAC-P
<b>PoE+ on all ports (30W per port)</b>	1 PWR-C1-1100WAC-P or 2 PWR-C1-715WAC-P/PWR-C1-715WDC	2 PWR-C1-1100WAC-P or 1 PWR-C1-1100WAC-P and 1 PWR-C1-715WAC-P/PWR-C1-715WDC

- **Perpetual PoE:** With Perpetual PoE, the PoE power is maintained during a switch reload. This is important for IoT endpoints such as PoE-powered lights, so that there is no disruption during switch reboot.
- **Fast PoE:** When power is restored to a switch, PoE starts delivering power to endpoints without waiting for the operating system to fully load, thereby speeding up the time for the endpoint to start up.

\*C9300-48UN, C9300-24UX, C9300-48UXM are available with PWR-C1-1100WAC-P Platinum-rated power supply. Platinum-rated power supplies are more efficient, lowering operating power costs

\*PWR-C1-1100WAC-UP and PWR-C1-715WAC-UP Platinum-rated power supply upgrade options are available to upgrade the default AC power supply to 1100W or 715W

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## Software requirements

### Cisco DNA Software for Access Switching is available for the Cisco Catalyst 9300 Series.

Cisco DNA Software for Access Switching offers comprehensive solutions for the enterprise campus and branch offices. Cisco DNA for Access Switching introduces a simpler and more economical way to deploy access, aggregation, and core switches across enterprise campus and branch locations.

The Cisco DNA Subscription for Switching offer delivers an unbound network on an open and extensible architecture to help you navigate the digital journey. This subscription offer simplifies the buying process and includes lower initiation costs and flexible terms. It includes: Cisco DNA Advantage with full Cisco DNA capabilities and SD-Access, bundled with ISE Base, ISE Plus, and StealthWatch.

For ordering information for Cisco DNA Software for the Cisco Catalyst 9300 Series, go to <https://www.cisco.com/c/en/us/products/software/one-access/switching-part-numbers.html>.

Cisco Catalyst 9300 Series switches run on Cisco IOS XE 16.5.1a release or later with the following exceptions. Catalyst 9300 Series 1G fiber models (C9300-xxS SKUs) are supported on Cisco IOS XE 16.11.1a release or later. Catalyst 9300 Series fixed uplink models (C9300L SKUs) are supported on Cisco IOS XE 16.11.1b release or later. These software releases includes all the features listed earlier in the Platform Benefits section.

## Licensing

### Packaging

The Cisco Catalyst 9000 family of switches introduces a new and simplified licensing package in the form of base and add-on licenses.

- **The perpetual licensing** package includes the Network Essentials and Network Advantage licensing options that are tied to the hardware. Between them, the base licensing packages cover switching fundamentals, management automation, troubleshooting, and advanced switching features. These Network licenses are perpetual.

**The subscription licensing** package includes the Cisco DNA Essentials and Cisco DNA Advantage options. In addition to on-box capabilities, the features available with this package provide Cisco innovations on the switch, as well as on Cisco DNA Center. The Cisco DNA subscription licenses are mandatory at the time of configuration. With Cisco DNA software licenses, customers receive embedded SWSS - which covers 24x7x365 Cisco Technical Assistance Center (TAC) support, software release updates, advanced support analytics, and designated service management. This is valid only for the Cisco DNA software subscription stacks (Cisco DNA Essentials or Advantage).

**Note:** For full hardware support, including the perpetual network stack, customers will require Smart Net Total Care for 24x7x365 Cisco Technical Assistance Center (TAC) support, proactive security and product alerts, and product lifecycle management. An additional option for hardware support is Solution Support for your multivendor Cisco solution environment.

**License consumption** is easily determined by the package itself. While perpetual licenses are always permanent and without an expiration date, subscription licenses have to be purchased for a 3-, 5-, or 7-year term (and hence are also known as term-based licenses). Table 13 shows the combinations of perpetual and subscription licenses that must be purchased.

**Table 14.** Licensing combinations

	Cisco DNA Essentials	Cisco DNA Advantage
<b>Network Essentials</b>	Yes**	Yes**
<b>Network Advantage</b>	No*	Yes

\*At the time of Cisco DNA license renewal, the Cisco DNA Essentials license can be purchased to be used with Network Advantage

\*\*Network Advantage is inclusive of Network Essentials features.

**Managing licenses with Smart Accounts:** Creating Smart Accounts by using the Cisco Smart Software Manager (SSM) enables you to manage your software licenses from a centralized website. You can set up Cisco SSM to receive daily email alerts and to be notified of expiring subscription licenses that you want to renew.

You must order a Cisco DNA subscription term license in order to purchase a switch. When the license term expires, you can either renew the add-on license to continue using it or deactivate the add-on license and then reload the switch to continue operating with the base license capabilities.

Both the base and add-on licenses are also available for a 90-day evaluation period. An evaluation license is activated temporarily, without purchase. An expired evaluation license cannot be reactivated after reload.

**Note:** It is not required to deploy Cisco DNA Center just to use one of the above packages.

### Introduction to Smart Licensing

Cisco Smart Licensing is a flexible licensing model that provides you with an easier, faster, and more consistent way to purchase and manage software across the Cisco portfolio and across your organization. And it's secure – you control what users can access. With Smart Licensing you get:

- **Easy Activation:** Smart Licensing establishes a pool of software licenses that can be used across the entire organization—no more PAKs (Product Activation Keys).
- **Unified Management:** My Cisco Entitlements (MCE) provides a complete view into all of your Cisco products and services in an easy-to-use portal, so you always know what you have and what you are using.
- **License Flexibility:** Your software is not node-locked to your hardware, so you can easily use and transfer licenses as needed.

To use Smart Licensing, you must first set up a Smart Account on Cisco Software Central ([software.cisco.com](https://software.cisco.com)).

For a more detailed overview on Cisco Licensing, go to [cisco.com/go/licensingguide](https://cisco.com/go/licensingguide).

Table 15 shows the features included in the Cisco DNA Essentials and Advantage packages.

**Table 15.** Network Essentials and Advantage package features

Features	Network Essentials	Network Advantage
<b>Switch fundamentals</b> Layer 2, Routed Access (RIP, EIGRP Stub, OSPF - 1000 routes), PBR, PIM Stub Multicast (1000 routes)), PVLAN, VRRP, PBR, CDP, QoS, FHS, 802.1X, MACsec-128, CoPP, SXP, IP SLA Responder, SSO	✓	✓
<b>Advanced switch capabilities and scale</b> BGP, EIGRP, HSRP, IS-IS, BSR, MSDP, PIM-BIDIR,* IP SLA, OSPF	x	✓
<b>Network segmentation</b> VRF, VXLAN, LISP, TrustSec, SGT, MPLS, mVPN	x	✓
<b>Automation</b> NETCONF, RESTCONF, gRPC, YANG, PnP Agent, ZTP/Open PnP, GuestShell (On-Box Python)	✓	✓
<b>Telemetry and visibility</b> Model-driven telemetry, sampled NetFlow, SPAN, RSPAN	✓	✓
<b>High availability and resiliency</b> Nonstop Forwarding (NSF), Graceful Insertion and Removal (GIR), Extended Fast Software Upgrade (xFSU), Software Patching (CLI Based)	x	✓
<b>IOT integration</b> AVB, PTP, CoAP	x	✓
<b>Security</b> MACsec-256	x	✓

**Table 16.** Cisco DNA Essentials and Advantage package features (add a section for other software support and add Prime, ISE and Stealthwatch support)

Features	Cisco DNA Essentials	Cisco DNA Advantage
<b>Switch features</b>		
<b>Optimized network deployments</b> Cisco DNA Service for Bonjour	x	✓
<b>Advanced telemetry and visibility</b> Full Flexible NetFlow, EEM	✓	✓
<b>Optimized telemetry and visibility</b> ERSPAN, AVC (NBAR2), app hosting (in containers/VMs), Wireshark	x	✓

Features	Cisco DNA Essentials	Cisco DNA Advantage
<b>Advanced security</b> Encrypted Traffic Analytics (ETA), IPsec	X	✓
<b>Cisco DNA Center features</b>		
<b>Day-0 network bring-up automation</b> Cisco Network Plug-and-Play application, network settings, device credentials, LAN automation, host onboarding	✓	✓
<b>Element management</b> Discovery, inventory, topology, software image, licensing, and configuration management	✓	✓
<b>Element management</b> Patch management	X	✓
<b>Basic Assurance</b> Health dashboards – Network, Client, Application; switch and wired client health monitoring	✓	✓
<b>Cisco ThousandEyes Network and Application Synthetics</b> Network performance metrics, dashboarding, visibility into app and service experience, end-to-end visibility across cloud and DC applications	X	✓
<b>SD-Access</b> Policy-based automation and assurance for wired and wireless	X	✓
<b>Network assurance and analytics</b> Global insights, trends, compliance, custom reports; switch 360, wired client 360; fabric and non-fabric insights; app health, app 360, app performance (loss, latency, jitter)	X	✓

## Specifications

### Dimensions, Weight, Acoustic, Mean time between failures

The table below shows the dimensions, weights, acoustic and mean time between failures of all models of Cisco Catalyst 9300 Series switches.

**Table 17.** Model Dimensions, Weight, and Mean Time between failures metrics

General Specifications			
Dimensions (H x W x D) inches			
Model	Chassis only	W/ Default Power Supply	W/ 1100W Power Supply
C9300X-48HX	1.73 x 17.5 x 19	1.73 x 17.5 x 22.03	1.73 x 17.5 x 22.03
C9300X-48TX	1.73 x 17.5 x 19	1.73 x 17.5 x 20.56	1.73 x 17.5 x 22.03
C9300X-48HXN	1.73 x 17.5 x 17.57	1.73 x 17.5 x 20.63	1.73 x 17.5 x 20.63
C9300X-24HX	1.73 x 17.5 x 17.57	1.73 x 17.5 x 20.63	1.73 x 17.5 x 20.63
C9300X-12Y	1.73 x 17.5 x 16.1	1.73 x 17.5 x 17.6	1.73 x 17.5 x 19.2
C9300X-24Y	1.73 x 17.5 x 17.6	1.73 x 17.5 x 19.2	1.73 x 17.5 x 20.7
C9300-24T	1.73 x 17.5 x 16.1	1.73 x 17.5 x 17.7	1.73 x 17.5 x 19.2
C9300-24P	1.73 x 17.5 x 16.1	1.73 x 17.5 x 17.7	1.73 x 17.5 x 19.2
C9300-24U	1.73 x 17.5 x 16.1	1.73 x 17.5 x 19.2	1.73 x 17.5 x 19.2
C9300-24UX	1.73 x 17.5 x 17.1	1.73 x 17.5 x 20.2	1.73 x 17.5 x 20.2
C9300-24UB	1.73 x 17.5 x 16.1	1.73 x 17.5 x 19.2	1.73 x 17.5 x 19.2
C9300-24UXB	1.73 x 17.5 x 17.1	1.73 x 17.5 x 20.2	1.73 x 17.5 x 20.2
C9300-24H	1.73 x 17.5 x 16.1	1.73 x 17.5 x 19.2	1.73 x 17.5 x 19.2
C9300-48T	1.73 x 17.5 x 16.1	1.73 x 17.5 x 17.7	1.73 x 17.5 x 19.2
C9300-48P	1.73 x 17.5 x 16.1	1.73 x 17.5 x 17.7	1.73 x 17.5 x 19.2
C9300-48U	1.73 x 17.5 x 16.1	1.73 x 17.5 x 19.2	1.73 x 17.5 x 19.2
C9300-48UXM	1.73 x 17.5 x 19.1	1.73 x 17.5 x 22.2	1.73 x 17.5 x 22.2
C9300-48UN	1.73 x 17.5 x 19.1	1.73 x 17.5 x 22.2	1.73 x 17.5 x 22.2
C9300-48UB	1.73 x 17.5 x 16.1	1.73 x 17.5 x 19.2	1.73 x 17.5 x 19.2
C9300-48H	1.73 x 17.5 x 16.1	1.73 x 17.5 x 19.2	1.73 x 17.5 x 19.2



General Specifications			
C9300-24S	1.73 X 17.5 X 17.7	1.73 X 17.5 X 19.2	1.73 X 17.5 X 20.7
C9300-48S	1.73 X 17.5 X 17.7	1.73 X 17.5 X 19.2	1.73 X 17.5 X 20.7
C9300L-24T-4G	1.73 X 17.5 X 16.1	1.73 X 17.5 X 17.7	1.73 X 17.5 X 19.2
C9300L-24T-4X	1.73 X 17.5 X 16.1	1.73 X 17.5 X 17.7	1.73 X 17.5 X 19.2
C9300L-48T-4G	1.73 X 17.5 X 16.1	1.73 X 17.5 X 17.7	1.73 X 17.5 X 19.2
C9300L-48T-4X	1.73 X 17.5 X 16.1	1.73 X 17.5 X 17.7	1.73 X 17.5 X 19.2
C9300L-24P-4G	1.73 X 17.5 X 16.1	1.73 X 17.5 X 17.7	1.73 X 17.5 X 19.2
C9300L-24P-4X	1.73 X 17.5 X 16.1	1.73 X 17.5 X 17.7	1.73 X 17.5 X 19.2
C9300L-48P-4G	1.73 X 17.5 X 16.1	1.73 X 17.5 X 17.7	1.73 X 17.5 X 19.2
C9300L-48P-4X	1.73 X 17.5 X 16.1	1.73 X 17.5 X 17.7	1.73 X 17.5 X 19.2
Dimensions (H x W x D) Cms			
C9300X-48HX	4.4 x 44.5 x 48.3	4.4 x 44.5 x 56.0	4.4 x 44.5 x 56.0
C9300X-48TX	4.4 x 44.5 x 48.3	4.4 x 44.5 x 52.2	4.4 x 44.5 x 56.0
C9300X-48HXN	4.4 x 44.5 x 44.6	4.4 x 44.5 x 52.4	4.4 x 44.5 x 52.4
C9300X-24HX	4.4 x 44.5 x 44.6	4.4 x 44.5 x 52.4	4.4 x 44.5 x 52.4
C9300X-12Y	4.4 x 44.5 x 40.9	4.4 x 44.5 x 44.7	4.4 x 44.5 x 48.8
C9300X-24Y	4.4 x 44.5 x 44.7	4.4 x 44.5 x 48.8	4.4 x 44.5 x 52.6
C9300-24T	4.4 x 44.5 x 40.9	4.4 x 44.5 x 44.9	4.4 x 44.5 x 48.8
C9300-24P	4.4 x 44.5 x 40.9	4.4 x 44.5 x 44.9	4.4 x 44.5 x 48.8
C9300-24U	4.4 x 44.5 x 40.9	4.4 x 44.5 x 48.8	4.4 x 44.5 x 48.8
C9300-24UX	4.4 x 44.5 x 43.4	4.4 x 44.5 x 51.3	4.4 x 44.5 x 51.3
C9300-24H	4.4 x 44.5 x 40.9	4.4 x 44.5 x 48.8	4.4 x 44.5 x 48.8
C9300-48T	4.4 x 44.5 x 40.9	4.4 x 44.5 x 44.9	4.4 x 44.5 x 48.8
C9300-48P	4.4 x 44.5 x 40.9	4.4 x 44.5 x 44.9	4.4 x 44.5 x 48.8
C9300-48U	4.4 x 44.5 x 40.9	4.4 x 44.5 x 48.8	4.4 x 44.5 x 48.8
C9300-48UXM	4.4 x 44.5 x 48.5	4.4 x 44.5 x 56.4	4.4 x 44.5 x 56.4
C9300-48UN	4.4 x 44.5 x 48.5	4.4 x 44.5 x 56.4	4.4 x 44.5 x 56.4

## General Specifications

<b>C9300-48H</b>	4.4 x 44.5 x 40.9	4.4 x 44.5 x 48.8	4.4 x 44.5 x 48.8
<b>C9300-24S</b>	4.3 x 44.4 x 44.9	4.3 x 44.4 x 48.8	4.3 x 44.4 x 52.6
<b>C9300-48S</b>	4.3 x 44.4 x 44.9	4.3 x 44.4 x 48.8	4.3 x 44.4 x 52.6
<b>C9300L-24T-4G</b>	4.4 x 44.5 x 40.9	4.4 x 44.5 x 44.9	4.4 x 44.5 x 48.8
<b>C9300L-24T-4X</b>	4.4 x 44.5 x 40.9	4.4 x 44.5 x 44.9	4.4 x 44.5 x 48.8
<b>C9300L-48T-4G</b>	4.4 x 44.5 x 40.9	4.4 x 44.5 x 44.9	4.4 x 44.5 x 48.8
<b>C9300L-48T-4X</b>	4.4 x 44.5 x 40.9	4.4 x 44.5 x 44.9	4.4 x 44.5 x 48.8
<b>C9300L-24P-4G</b>	4.4 x 44.5 x 40.9	4.4 x 44.5 x 44.9	4.4 x 44.5 x 48.8
<b>C9300L-24P-4X</b>	4.4 x 44.5 x 40.9	4.4 x 44.5 x 44.9	4.4 x 44.5 x 48.8
<b>C9300L-48P-4G</b>	4.4 x 44.5 x 40.9	4.4 x 44.5 x 44.9	4.4 x 44.5 x 48.8
<b>C9300L-48P-4X</b>	4.4 x 44.5 x 40.9	4.4 x 44.5 x 44.9	4.4 x 44.5 x 48.8
<b>C9300L-48PF-4G</b>	4.4 x 44.5 x 40.9	4.4 x 44.5 x 48.8	4.4 x 44.5 x 48.8
<b>C9300L-48PF-4X</b>	4.4 x 44.5 x 40.9	4.4 x 44.5 x 48.8	4.4 x 44.5 x 48.8
<b>C9300L-24UXG-4X</b>	4.4 x 44.5 x 40.9	4.4 x 44.5 x 48.8	4.4 x 44.5 x 48.8
<b>C9300L-24UXG-2Q</b>	4.4 x 44.5 x 40.9	4.4 x 44.5 x 48.8	4.4 x 44.5 x 48.8
<b>C9300L-48UXG-4X</b>	4.4 x 44.5 x 40.9	4.4 x 44.5 x 48.8	4.4 x 44.5 x 48.8
<b>C9300L-48UXG-2Q</b>	4.4 x 44.5 x 40.9	4.4 x 44.5 x 48.8	4.4 x 44.5 x 48.8

## Weight (with default power supply)

Model	Pounds	Kilograms
<b>C9300X-48HX</b>	14.6	6.62
<b>C9300X-48TX</b>	14.6	6.62
<b>C9300X-48HXN</b>	14.2	6.44
<b>C9300X-24HX</b>	13.8	6.25
<b>C9300X-12Y</b>	15.0	6.80
<b>C9300X-24Y</b>	16.2	7.35
<b>C9300-24T</b>	16.03	7.27
<b>C9300-24P</b>	16.33	7.4

General Specifications		
C9300-24U	16.63	7.54
C9300-24UX	18.18	8.25
C9300-24UB	16.63	7.54
C9300-24UXB	18.18	8.25
C9300-24H	16.63	7.54
C9300-48T	16.43	7.45
C9300-48P	16.73	7.59
C9300-48U	17.03	7.72
C9300-48UXM	20.50	9.34
C9300-48UN	20.05	9.09
C9300-48UB	17.03	7.72
C9300-48H	17.03	7.72
C9300-24S	16.84	7.64
C9300-48S	17.32	7.86
C9300L-24T-4G	14.93	6.78
C9300L-24T-4X	14.93	6.78
C9300L-48T-4G	15.41	7.0
C9300L-48T-4X	15.41	7.0
C9300L-24P-4G	14.99	6.81
C9300L-24P-4X	14.99	6.81
C9300L-48P-4G	15.46	7.03
C9300L-48P-4X	15.46	7.03
C9300L-48PF-4G	15.48	7.03
C9300L-48PF-4X	15.48	7.03
C9300L-24UXG-4X	15.73	7.13
C9300L-24UXG-2Q	16.01	7.26
C9300L-48UXG-4X	16.86	7.65

## General Specifications

C9300L-48UXG-2Q	16.86	7.65
<b>Mean Time Between Failures - MTBF (hours)</b>		
C9300X-48HX	TBD	
C9300X-48TX	TBD	
C9300X-48HXN	TBD	
C9300X-24HX	TBD	
C9300X-12Y	265,650	
C9300X-24Y	249,350	
C9300-24T	314,790	
C9300-24P	299,000	
C9300-24U	238,410	
C9300-24UX	214,760	
C9300-24UB	354,300	
C9300-24UXB	288,520	
C9300-24H	238,410	
C9300-48T	305,870	
C9300-48P	277,770	
C9300-48U	227,410	
C9300-48UXM	202,160	
C9300-48UN	198,647	
C9300-48UB	337,170	
C9300-48H	227,410	
C9300-24S	284,130	
C9300-48S	281,920	
C9300L-24T-4G	395,800	
C9300L-24T-4X	387,700	
C9300L-48T-4G	387,860	

General Specifications	
C9300L-48T-4X	380,080
C9300L-24P-4G	346,940
C9300L-24P-4X	340,710
C9300L-48P-4G	314,140
C9300L-48P-4X	309,020
C9300L-48PF-4G	303,660
C9300L-48PF-4X	298,880
C9300L-24UXG-4X	332,640
C9300L-24UXG-2Q	291,670
C9300L-48UXG-4X	273,820
C9300L-48UXG-2Q	275,010
PWR-C1-350WAC-P	1,335,012 (ranges from 1.3M to 3.1M depending on temperature, input voltage and vendor)
PWR-C1-715WAC-P	1,054,881 (ranges from 1.05M to 2.6M depending on temperature, input voltage and vendor)
PWR-C1-1100WAC-P	1,217,904 (ranges from 1.2M to 2.8M depending on temperature, input voltage and vendor) (investigating an anomaly in MTBF data received from 1 Power Supply vendor - Artesyn)
PWR-C1-1900WAC-P	
PWR-C1-715WDC	1,812,103 (-48V input at 40C and vendor Delta)
C9300-NM-2Q	10,778,230
C9300-NM-2Y	7,568,820
C9300-NM-4G	8,953,570
C9300-NM-4M	10,549,060
C9300-NM-8X	7,151,930
C9300X-NM-8Y	
C9300X-NM-2C	
FAN-T2	4,521,330

## General Specifications

### Environmental ranges

<p><b>Acoustic noise</b></p> <p><b>Measured per ISO 7779 and declared per ISO 9296</b></p> <p><b>Bystander positions operating to an ambient temperature of 25° C</b></p>	<p>With AC power supply (with 24 PoE+ ports loaded for C9300 SKUs)</p> <ul style="list-style-type: none"> <li>• LpA: 45dB typical, 48 dB max</li> <li>• LwA: 5.6B typical, 5.9B max</li> </ul> <p>With AC power supply (with half the number of PoE+ ports loaded for C9300L SKUs)</p> <ul style="list-style-type: none"> <li>• LpA: 44dB typical, 47 dB max</li> <li>• LwA: 5.5B typical, 5.8B max</li> </ul> <p>Typical: Noise emission for a typical configuration</p> <p>Maximum: Statistical maximum to account for variation in production</p>
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## Connectors

Table 18 shows the supported connectors for the Cisco Catalyst 9300 Series.

**Table 18.** Connectors

<p><b>Connectors and cabling</b></p>	<ul style="list-style-type: none"> <li>• 1000BASE-T ports: RJ-45 connectors, 4-pair Cat 5E UTP cabling</li> <li>• Multigigabit-T ports: RJ-45 connectors, 4-pair Cat 5E, Cat 6, Cat 6A UTP cabling</li> <li>• 1000BASE-T SFP-based ports: RJ-45 connectors, 4-pair Cat 5E UTP cabling</li> <li>• SFP transceivers: LC fiber connectors (single-mode or multimode fiber)</li> <li>• SFP+ transceivers: LC fiber connectors (single-mode or multimode fiber)</li> <li>• QSFP+ transceivers: MPO and LC fiber connectors (single-mode or multimode fiber)</li> <li>• QSFP+ connector</li> <li>• SFP+ connector</li> <li>• Cisco StackWise stacking ports: copper-based Cisco StackWise cabling</li> <li>• Cisco StackPower: Cisco proprietary power stacking cables</li> <li>• Ethernet management port: RJ-45 connectors, 4-pair Cat 5 UTP cabling</li> <li>• Management console port: RJ-45-to-DB9 cable for PC connections</li> </ul>
<p><b>Power connectors</b></p>	<ul style="list-style-type: none"> <li>• Customers can provide power to a switch by using the internal power at the back of the switch</li> <li>• Internal power supply connector: The internal power supply is an auto-ranging unit. It supports input voltages between 100 (115 for 1100WAC) and 240 VAC. Use the supplied AC power cord to connect the AC power connector to an AC power outlet</li> </ul>

For the latest Cisco transceiver module compatibility information, refer to

<https://www.cisco.com/c/en/us/support/interfaces-modules/transceiver-modules/products-device-support-tables-list.html>.

## Management and standards support

Table 19 shows management and standards support for the Cisco Catalyst 9300 Series.

**Table 19.** Management and standards support\*

Description	Specification	
Management	BRIDGE-MIB	CISCO-PORT-STORM-CONTROL-MIB
	CISCO-BRIDGE-EXT-MIB	CISCO-POWER-ETHERNET-EXT-MIB
	CISCO-BULK-FILE-MIB	CISCO-PRIVATE-VLAN-MIB
	CISCO-CABLE-DIAG-MIB	CISCO-PROCESS-MIB
	CISCO-CALLHOME-MIB	CISCO-PRODUCTS-MIB
	CISCO-CEF-MIB	CISCO-RF-MIB
	CISCO-CIRCUIT-INTERFACE-MIB	CISCO-RTP-METRICS-MIB
	CISCO-CONFIG-COPY-MIB	CISCO-RTTMON-ICMP-MIB
	CISCO-CONFIG-MAN-MIB	CISCO-STACKWISE-MIB
	CISCO-DEVICE-LOCATION-MIB	CISCO-STP-EXTENSIONS-MIB
	CISCO-DHCP-SNOOPING-MIB	CISCO-SYSLOG-MIB
	CISCO-EIGRP-MIB	CISCO-TCP-MIB
	CISCO-EMBEDDED-EVENT-MGR-MIB	CISCO-UDLDP-MIB
	CISCO-ENTITY-FRU-CONTROL-MIB	CISCO-VLAN-IFTABLE-RELATIONSHIP-MIB
	CISCO-ENTITY-SENSOR-MIB	ENTITY-MIB
	CISCO-ENTITY-VENDORTYPE-OID-MIB	HC-ALARM-MIB
	CISCO-ERR-DISABLE-MIB	HC-RMON-MIB
	CISCO-FLASH-MIB	IEEE8023-LAG-MIB
	CISCO-FLOW-MONITOR-MIB	IF-MIB
	CISCO-FTP-CLIENT-MIB	IP-FORWARD-MIB
	CISCO-HSRP-EXT-MIB	IP-MIB
	CISCO-HSRP-MIB	LLDP-EXT-MED-MIB
	CISCO-IETF-BFD-MIB	LLDP-MIB
	CISCO-IETF-PPVPN-MPLS-VPN-MIB	MAU-MIB
	CISCO-IETF-PW-MPLS-MIB	MPLS-L3VPN-STD-MIB
	CISCO-IF-EXTENSION-MIB	MPLS-LSR-STD-MIB
	CISCO-IGMP-FILTER-MIB	MPLS-VPN-MIB
	CISCO-IMAGE-LICENSE-MGMT-MIB	OLD-CISCO-CHASSIS-MIB
	CISCO-IMAGE-MIB	OLD-CISCO-CPU-MIB
	CISCO-IP-CBR-METRICS-MIB	OLD-CISCO-INTERFACES-MIB
	CISCO-IP-STAT-MIB	OLD-CISCO-IP-MIB
	CISCO-IP-TAP-MIB	OLD-CISCO-MEMORY-MIB
	CISCO-IP-URPF-MIB	OLD-CISCO-SYS-MIB

Description	Specification	
	CISCO-IPSEC-FLOW-MONITOR-MIB CISCO-IPSEC-MIB CISCO-IPSEC-PROVISIONING-MIB CISCO-IPSLA-AUTOMEASURE-MIB CISCO-IPSLA-ECHO-MIB CISCO-IPSLA-JITTER-MIB CISCO-L2-CONTROL-MIB CISCO-L2L3-INTERFACE-CONFIG-MIB CISCO-LAG-MIB CISCO-LICENSE-MGMT-MIB CISCO-LOCAL-AUTH-USER-MIB CISCO-MAC-NOTIFICATION-MIB CISCO-MDI-METRICS-MIB CISCO-MEDIA-METRICS-MIB CISCO-MEMORY-POOL-MIB CISCO-MPLS-LSR-EXT-STD-MIB CISCO-NBAR-PROTOCOL-DISCOVERY-MIB CISCO-NHRP-EXT-MIB CISCO-NTP-MIB CISCO-PAGP-MIB CISCO-PORT-SECURITY-MIB	OLD-CISCO-TCP-MIB OLD-CISCO-TS-MIB POWER-ETHERNET-MIB RFC1213-MIB RMON-MIB RMON2-MIB SMON-MIB SNMPv2-MIB SONET-MIB TCP-MIB UDP-MIB
<b>Standards</b>	IEEE 802.1s IEEE 802.1w IEEE 802.1x IEEE 802.1x-Rev IEEE 802.3ad IEEE 802.3ae IEEE 802.3af IEEE 802.3at IEEE 802.3x full duplex on 10BASE-T, 100BASE-TX, and 1000BASE-T ports IEEE 802.1D Spanning Tree Protocol IEEE 802.1p CoS prioritization IEEE 802.1Q VLAN IEEE 802.3 10BASE-T specification IEEE 802.3u 100BASE-TX specification IEEE 802.3ab 1000BASE-T specification IEEE 802.3z 1000BASE-X specification IEEE 802.3bz Multirate 2.5G/5G specification	RMON I and II standards SNMPv1, v2c, and v3



Description	Specification
	IEEE 802.3an 10G BASE-T specification

## Power supply specifications

Table 20 lists the power specifications for the Cisco Catalyst 9300 Series based on the kind of power supply used.

**Table 20.** Power specifications

Description	Specification			
	PWR-C1-1100WAC**	PWR-C1-715WAC**	PWR-C1-350WAC**	PWR-C1-715WDC
<b>Power supply rated maximum</b>	1100W	715W	350W	715W
<b>Total output BTU (note: 1000 BTU/hr = 293W)</b>	3793 BTU/hr, 1100W	2465 BTU/hr, 715W	1207 BTU/hr, 350W	2440 BTU/hr
<b>Input-voltage range and frequency</b>	115V to 240 VAC, 50 to 60 Hz	100 to 240 VAC, 50 to 60 Hz	100 to 240 VAC, 50 to 60 Hz	-36V to -72 VDC
<b>Input current</b>	12-6A	10-5A	4-2A	24-12A
<b>Output ratings</b>	-56V at 19.64A	-56V at 12.8A	-56V at 6.25A	-56V at 12.8A
<b>Output holdup time</b>	10 ms minimum at 100VAC	16.7 ms minimum at 100VAC	16.7 ms minimum at 100VAC	2 ms minimum at -48Vdc
<b>Power-supply input receptacles</b>	IEC 320-C16 (IEC60320-C16)	IEC 320-C16 (IEC60320-C16)	IEC 320-C14 (IEC60320-C14)	Right angle barrier style terminal block
<b>Power cord rating</b>	15A	15A	10A	25A@100VDC
<b>Physical specifications</b>	(H x W x D): 1.58 x 3.25 x 13.7 in Weight: 3.1 lb (1.4 kg)	(H x W x D): 1.58 x 3.25 x 12.20 in Weight: 2.6 lb (1.2 kg)	(H x W x D): 1.58 x 3.25 x 12.20 in Weight: 2.3 lb (1.2 kg)	(H x W x D): 1.58 x 3.25 x 12.20 in Weight: 2.2 lb (1kg)

\*\*These Power Supply options will not be available as options for purchase with C9300 in CCW starting Q2 FY21

**Table 21.** Power specifications – platinum rated power supplies

Description	Specification				
	*PWR-C1-1900WAC-P		*PWR-C1-1100WAC-P	*PWR-C1-715WAC-P	PWR-C1-350WAC-P
<b>Power supply rated maximum output power</b>	1500W With 115V	1900W With 230 V	1100W	715W	350W
<b>Total output BTU</b>	5118 BTU/hr,	6483 BTU/hr,	3754 BTU/hr, 1100W	2440 BTU/hr, 715W	1194 BTU/hr, 350W

Description	Specification				
(note: 1000 BTU/hr = 293W)	with 115V	With 230V			
<b>Input-voltage range and frequency</b>	115V to 127 VAC, 50 to 60 Hz	200V to 240 VAC 55 to 60 Hz	115V to 240 VAC, 50 to 60 Hz	100 to 240 VAC, 50 to 60 Hz	100 to 240 VAC, 50 to 60 Hz
<b>Input current</b>	16A maximum	12A maximum	12-6A	10-5A	4-2A
<b>Output ratings</b>	-56V at 26.78A	-56V at 33.92A	-56V at 19.64A	-56V at 12.8A	-56V at 6.25A
<b>Output holdup time</b>	20 ms minimum at 100VAC	20 ms minimum at 100VAC	20 ms minimum at 100VAC	20 ms minimum at 100VAC	20 ms minimum at 100VAC
<b>Power-supply input receptacles</b>	IEC 320-C22	IEC 320-C22	IEC 320-C16 (IEC60320-C16)	IEC 320-C16 (IEC60320-C16)	IEC 320-C14 (IEC60320-C14)
<b>Power cord rating</b>	20A	16A	15A	15A	10A
<b>Physical specifications</b>	(H x W x D): 1.58 x 3.25 x 13.7 in Weight: xxx lb (x.x kg)		(H x W x D): 1.58 x 3.25 x 13.7 in Weight: 3.1 lb (1.4 kg)	(H x W x D): 1.58 x 3.25 x 12.20 in Weight: 2.6 lb (1.2 kg)	(H x W x D): 1.58 x 3.25 x 12.20 in Weight: 2.3 lb (1.2 kg)
<b>Operating temperature</b>	<p>Normal operating temperature* and altitudes:</p> <ul style="list-style-type: none"> <li>-5° C to +45° C, up to 5000 feet (1500m)</li> <li>-5° C to +40° C, up to 10,000 feet (3000m)</li> <li>-5° C to +35° C, up to 15,000 feet (5000m)</li> </ul> <p>* Minimum ambient temperature for cold start is 32° F (0° C)</p> <p>Short-term* exceptional conditions:</p> <ul style="list-style-type: none"> <li>-5° C to +55° C, at sea level</li> <li>-5° C to +50° C, up to 5000 feet (1500m)</li> <li>-5° C to +45° C, up to 10,000 feet (3000m)</li> <li>-5° C to +35° C, up to 15,000 feet (5000m)</li> </ul> <p>*Not more than following in one year period: 96 consecutive hours, or 360 hours total, or 15 occurrences</p>		<p>Normal operating temperature* and altitudes:</p> <ul style="list-style-type: none"> <li>-5° C to +45° C, up to 5000 feet (1500m)</li> <li>-5° C to +40° C, up to 10,000 feet (3000m)</li> </ul> <p>*Minimum ambient temperature for cold start is 32° F (0° C)</p> <p>Short-term* exceptional conditions:</p> <ul style="list-style-type: none"> <li>-5° C to +50° C, up to 5000 feet (1500m)</li> <li>-5° C to +45° C, up to 10,000 feet (3000m)</li> <li>-5° C to +45° C, at sea level with single fan failure</li> </ul> <p>*Not more than following in one-year period: 96 consecutive hours, or 360 hours total, or 15 occurrences</p>		

Description	Specification	
<b>Storage temperature</b>	40° to 158° F (-40° to 70° C)	-40° to 158° F (-40° to 70° C)
<b>Relative humidity operating and nonoperating noncondensing</b>	5% to 90% noncondensing	5% to 90% noncondensing
<b>Altitude</b>	10,000 ft. (3000 meters), up to 45° C	10,000 ft. (3000 meters), up to 45° C
<b>EMI and EMC compliance</b>	FCC Part 15 (CFR 47) Class A ICES-003 Class A EN 55032 Class A CISPR 32 Class A AS/NZS 3548 Class A BSMI Class A (AC input models only) VCCI Class A EN 55024, EN300386, EN 61000-3-2, EN 61000-3-3 EN61000-4-2, EN61000-4-3, EN61000-4-4, EN61000-4-5, EN61000-4-6	FCC Part 15 (CFR 47) Class A ICES-003 Class A EN 55032 Class A CISPR 32 Class A AS/NZS 3548 Class A BSMI Class A (AC input models only) VCCI Class A EN 55024, EN300386, EN 61000-3-2, EN 61000-3-3 EN61000-4-2, EN61000-4-3, EN61000-4-4, EN61000-4-5, EN61000-4-6
<b>Safety compliance</b>		
<b>LED indicators</b>	“AC OK”: Input power to the power supply is OK “PS OK”: Output power from the power supply is OK	“AC OK”: Input power to the power supply is OK “PS OK”: Output power from the power supply is OK

\*PWR-C1-1900WAC-UP is available as an PSU upgrade option to 1900W primary PSU

\*PWR-C1-1100WAC-UP is available as an PSU upgrade option to 1100W primary PSU

\*PWR-C1-715WAC-UP is available as an PSU upgrade option to 715W primary PSU

## Power consumption of standalone 9300 Series Switches

Table 22 shows the power consumption of standalone Cisco Catalyst 9300 Series Switches based on Alliance for Telecommunications Industry Solutions (ATIS) testing using Internet Mix (IMIX) distribution stream traffic, with input voltage of 115VAC at 60 Hz and no PoE loading. The values given are the maximum possible power consumption numbers under the respective test scenarios.

**Table 22.** Power Consumption of Standalone 9300 Series Switches (tested on IOS XE 16.5.1)

				Measured P(W)																	
				Half port traffic					Full port traffic					Weighted average Pw	No link	PoE test (no traffic)					
SKU	FEP	Uplink	Input	0.01%/EEE	10%	30%	50%	100%	0.01%/EEE	10%	30%	50%	100%					25%	50%	90%	100%
C9300-24P	715W	Not Installed	115Vac	82.6	91.0	93.4	93.7	93.9	82.0	94.8	95.9	96.1	96.6	93.7	82.9	202.3	325.8	527.5	579.0		
			230Vac	81.6	89.8	92.2	92.4	92.6	81.7	93.7	94.6	94.7	95.2	92.6	82.3	199.0	318.2	510.6	559.9		
		C9300-NM-4G	115Vac	87.5	93.0	96.5	97.7	98.5	89.8	99.5	102.4	103.0	103.4	98.9	85.4	211.4	334.5	537.8	585.7		
			230Vac	86.1	91.3	94.4	95.8	96.6	88.9	98.5	101.5	101.9	102.4	97.9	84.6	207.9	328.0	520.3	568.2		
		C9300-NM-4M	115Vac	90.4	100.4	101.6	101.9	102.3	94.1	106.8	107.8	108.2	109.1	105.7	90.8	214.9	337.9	539.4	590.8		
			230Vac	89.4	99.1	100.3	100.5	100.7	92.8	106.1	106.5	106.9	107.8	104.9	89.6	211.0	329.7	522.2	571.0		
		C9300-NM-2Q	115Vac	88.1	98.6	99.5	99.6	99.9	91.1	104.4	105.2	105.6	106.5	103.3	88.4	212.2	335.2	536.2	586.5		
			230Vac	87.1	97.2	98.1	98.3	98.8	90.0	103.3	103.9	104.3	105.2	102.1	87.5	208.0	326.8	519.3	567.6		
		C9300-NM-8X	115Vac	90.0	99.4	101.0	101.2	101.6	94.2	107.1	107.9	108.3	109.2	106.0	88.7	215.3	339.6	541.4	591.3		
			230Vac	89.0	97.9	99.8	100.0	100.5	93.1	105.8	106.7	107.1	108.1	104.8	87.8	211.7	331.9	524.2	572.3		
		C9300-24S	715W	C9300-NM-4G	115Vac	99.40	100.30	101.50	102.10	102.50	116.20	117.70	119.10	119.50	119.80	117.76	91.70				
					230Vac	98.00	98.90	99.70	100.60	101.60	114.40	115.80	116.70	117.20	117.70	115.85	90.90				
C9300-NM-2Q	115Vac			101.90	104.80	105.30	105.40	106.10	117.60	120.50	121.10	121.70	123.10	120.47	85.40						
	230Vac			100.20	103.00	103.50	103.70	104.30	115.70	118.70	119.30	119.50	120.70	118.60	84.40						
C9300-NM-8X	115Vac			104.60	107.40	108.30	108.50	109.10	121.30	124.10	124.80	125.40	126.40	124.05	85.90						
	230Vac			103.40	105.70	106.40	106.70	107.00	119.40	122.50	122.90	123.20	124.30	122.37	84.60						
C9300-NM-4M	115Vac			99.15	101.80	102.50	102.70	103.30	116.60	119.70	120.30	121.00	122.20	119.64	82.10						
	230Vac			97.64	100.30	100.80	101.00	101.60	115.40	118.30	118.90	119.30	120.20	118.20	81.20						
C9300-NM-2Y	115Vac			101.24	104.48	104.75	104.81	105.42	116.40	119.01	120.31	120.58	121.31	118.98	85.02						
	230Vac			99.17	102.36	102.63	102.85	103.57	114.10	117.42	118.00	118.46	119.62	117.31	83.03						

				Measured P(W)																	
				Half port traffic					Full port traffic					Weighted average Pw	No link	PoE test (no traffic)					
SKU	FEP	Uplink	Input	0.01%/EEE	10%	30%	50%	100%	0.01%/EEE	10%	30%	50%	100%					25%	50%	90%	100%
C9300-24T	350W	Not Installed	115Vac	77.7	86.1	89.1	89.5	89.7	77.5	91.0	91.7	91.9	92.5	89.8	78.1						
			230Vac	77.4	85.4	88.5	88.7	88.8	77.0	89.8	90.7	90.9	91.3	88.7	77.7						
		C9300-NM-4G	115Vac	82.5	88.4	92.1	93.3	94.1	85.9	96.0	98.9	99.7	100.0	95.4	81.2						
			230Vac	81.8	87.6	90.4	92.0	92.9	84.9	94.2	96.9	97.9	98.3	93.7	80.5						
		C9300-NM-4M	115Vac	86.4	96.3	98.0	98.2	98.7	90.2	103.7	104.5	104.9	105.9	102.6	87.0						
			230Vac	85.4	95.1	96.6	96.8	97.3	89.1	102.1	102.9	103.3	104.2	101.0	86.0						
		C9300-NM-2Q	115Vac	84.0	94.7	95.7	95.9	96.1	87.1	101.1	101.7	102.1	103.0	99.9	83.9						
			230Vac	83.2	93.6	94.4	94.6	95.1	86.2	99.2	100.1	100.5	101.4	98.1	83.2						
		C9300-NM-8X	115Vac	86.3	95.6	97.5	97.8	98.2	90.7	103.9	104.7	105.1	106.1	102.8	85.0						
			230Vac	85.4	94.5	96.2	96.4	97.0	89.7	102.2	103.2	103.6	104.5	101.2	84.3						
		C9300-24U	1100W	Not Installed	115Vac	87.4	95.9	99.0	99.2	99.4	87.0	100.8	101.5	101.8	102.3	99.6	87.8	313.7	547.9	940.3	1041.4
					230Vac	85.9	94.7	97.3	97.6	97.8	85.5	98.0	99.6	99.8	100.3	96.9	86.4	306.2	529.1	895.6	988.7
C9300-NM-4G	115Vac			92.2	97.8	101.2	102.7	103.6	95.4	105.2	108.3	109.0	109.4	104.6	94.4	321.0	554.0	943.5	1045.5		
	230Vac			90.6	96.1	99.4	100.9	101.7	93.7	103.4	106.4	107.2	107.6	102.8	93.2	313.5	536.6	901.5	994.6		
C9300-NM-4M	115Vac			96.0	106.2	107.6	107.8	108.4	99.7	113.4	114.2	114.6	115.6	112.3	96.1	325.7	559.0	950.6	1053.0		
	230Vac			94.3	104.5	105.8	106.1	106.6	97.9	112.1	112.8	113.2	114.0	110.8	94.4	318.3	541.9	906.2	997.8		
C9300-NM-2Q	115Vac			93.4	103.9	104.8	105.0	105.5	96.5	110.4	111.3	111.5	112.4	109.2	93.4	323.2	555.8	946.7	1048.6		
	230Vac			91.8	102.0	103.0	103.3	103.7	94.8	108.7	109.4	109.8	110.6	107.5	91.8	314.9	538.4	902.2	994.5		
C9300-NM-8X	115Vac			95.8	105.4	107.3	107.6	108.1	100.2	114.0	114.8	115.2	116.2	112.8	94.4	324.4	557.7	946.6	1049.0		
	230Vac			94.0	103.0	105.1	105.4	106.0	98.4	112.0	113.1	113.5	114.5	110.9	93.2	317.8	541.8	907.7	999.1		

				Measured P(W)																	
				Half port traffic					Full port traffic					Weighted average Pw	No link	PoE test (no traffic)					
SKU	FEP	Uplink	Input	0.01%/EEE	10%	30%	50%	100%	0.01%/EEE	10%	30%	50%	100%					25%	50%	90%	100%
C9300-24UB	1100W	Not Installed	115Vac	87.4	95.9	99.0	99.2	99.4	87.0	100.8	101.5	101.8	102.3	99.6	87.8	313.7	547.9	940.3	1041.4		
			230Vac	85.9	94.7	97.3	97.6	97.8	85.5	98.0	99.6	99.8	100.3	96.9	86.4	306.2	529.1	895.6	988.7		
		C9300-NM-4G	115Vac	92.2	97.8	101.2	102.7	103.6	95.4	105.2	108.3	109.0	109.4	104.6	94.4	321.0	554.0	943.5	1045.5		
			230Vac	90.6	96.1	99.4	100.9	101.7	93.7	103.4	106.4	107.2	107.6	102.8	93.2	313.5	536.6	901.5	994.6		
		C9300-NM-4M	115Vac	96.0	106.2	107.6	107.8	108.4	99.7	113.4	114.2	114.6	115.6	112.3	96.1	325.7	559.0	950.6	1053.0		
			230Vac	94.3	104.5	105.8	106.1	106.6	97.9	112.1	112.8	113.2	114.0	110.8	94.4	318.3	541.9	906.2	997.8		
		C9300-NM-2Q	115Vac	93.4	103.9	104.8	105.0	105.5	96.5	110.4	111.3	111.5	112.4	109.2	93.4	323.2	555.8	946.7	1048.6		
			230Vac	91.8	102.0	103.0	103.3	103.7	94.8	108.7	109.4	109.8	110.6	107.5	91.8	314.9	538.4	902.2	994.5		
		C9300-NM-8X	115Vac	95.8	105.4	107.3	107.6	108.1	100.2	114.0	114.8	115.2	116.2	112.8	94.4	324.4	557.7	946.6	1049.0		
			230Vac	94.0	103.0	105.1	105.4	106.0	98.4	112.0	113.1	113.5	114.5	110.9	93.2	317.8	541.8	907.7	999.1		
		C9300-24UX	1100W	C9300-NM-8X	115Vac	188.0	195.7	196.8	197.4	198.9	208.8	224.6	227.0	228.6	232.0	223.8	168.6	364.2	521.6	784.3	851.4
					230Vac	184.4	192.2	192.9	193.5	195.1	204.6	220.0	222.0	223.5	226.9	219.2	165.3	354.2	505.0	749.7	810.6
C9300-24UXB	1100W	C9300-NM-8X	115Vac	188.0	195.7	196.8	197.4	198.9	208.8	224.6	227.0	228.6	232.0	223.8	168.6	364.2	521.6	784.3	851.4		
			230Vac	184.4	192.2	192.9	193.5	195.1	204.6	220.0	222.0	223.5	226.9	219.2	165.3	354.2	505.0	749.7	810.6		
C9300-24H	1100W	Not Installed	115Vac	87.4	95.9	99.0	99.2	99.4	87.0	100.8	101.5	101.8	102.3	99.6	87.8	313.7	547.9	940.3	1041.4		
			230Vac	85.9	94.7	97.3	97.6	97.8	85.5	98.0	99.6	99.8	100.3	96.9	86.4	306.2	529.1	895.6	988.7		
		C9300-NM-4G	115Vac	92.2	97.8	101.2	102.7	103.6	95.4	105.2	108.3	109.0	109.4	104.6	94.4	321.0	554.0	943.5	1045.5		
			230Vac	90.6	96.1	99.4	100.9	101.7	93.7	103.4	106.4	107.2	107.6	102.8	93.2	313.5	536.6	901.5	994.6		
		C9300-NM-4M	115Vac	96.0	106.2	107.6	107.8	108.4	99.7	113.4	114.2	114.6	115.6	112.3	96.1	325.7	559.0	950.6	1053.0		
			230Vac	94.3	104.5	105.8	106.1	106.6	97.9	112.1	112.8	113.2	114.0	110.8	94.4	318.3	541.9	906.2	997.8		
		C9300-NM-2Q	115Vac	93.4	103.9	104.8	105.0	105.5	96.5	110.4	111.3	111.5	112.4	109.2	93.4	323.2	555.8	946.7	1048.6		
			230Vac	91.8	102.0	103.0	103.3	103.7	94.8	108.7	109.4	109.8	110.6	107.5	91.8	314.9	538.4	902.2	994.5		
		C9300-NM-8X	115Vac	95.8	105.4	107.3	107.6	108.1	100.2	114.0	114.8	115.2	116.2	112.8	94.4	324.4	557.7	946.6	1049.0		
			230Vac	94.0	103.0	105.1	105.4	106.0	98.4	112.0	113.1	113.5	114.5	110.9	93.2	317.8	541.8	907.7	999.1		

				Measured P(W)																	
				Half port traffic					Full port traffic					Weighted average Pw	No link	PoE test (no traffic)					
				0.01%/EEE	10%	30%	50%	100%	0.01%/EEE	10%	30%	50%	100%			25%	50%	90%	100%		
SKU	FEP	Uplink	Input																		
C9300-48P	715W	Not Installed	115Vac	90.5	103.2	104.5	104.7	105.2	89.9	104.9	107.8	109.2	110.2	103.9	91.3	206.1	324.1	514.4	563.2		
			230Vac	89.4	102.2	103.4	103.6	104.1	88.9	103.7	106.9	108.4	109.3	102.7	89.9	202.9	316.9	500.6	547.5		
		C9300-NM-4G	115Vac	95.3	103.5	106.2	108.1	108.8	98.0	112.1	114.9	115.9	116.2	111.1	94.3	215.0	332.6	523.4	572.1		
			230Vac	94.0	102.2	105.2	106.9	107.8	96.4	111.3	114.1	115.2	115.5	110.2	93.1	211.2	324.8	509.3	555.8		
		C9300-NM-4M	115Vac	98.7	111.5	112.3	112.7	113.5	101.5	119.7	120.5	121.2	122.8	118.2	99.2	219.1	336.5	528.8	576.6		
			230Vac	97.1	110.7	111.5	111.9	112.7	100.6	119.2	120.0	120.7	122.3	117.6	97.9	215.5	329.5	514.2	560.5		
		C9300-NM-2Q	115Vac	96.9	110.1	110.7	111.0	111.9	99.3	118.2	119.0	119.7	121.5	116.7	97.6	217.4	335.4	527.4	577.8		
			230Vac	95.6	109.2	109.7	110.1	111.0	98.1	117.5	118.2	119.0	120.6	115.8	96.0	213.0	326.9	511.9	558.8		
		C9300-NM-8X	115Vac	100.5	113.4	114.2	114.6	115.5	106.4	124.5	125.4	126.1	128.0	123.0	99.5	215.1	334.7	520.8	568.8		
			230Vac	99.4	112.8	113.5	113.9	114.9	105.3	124.0	124.9	125.6	127.4	122.5	98.4	212.3	327.4	507.4	553.1		
		C9300-48S	715W	C9300-NM-4G	115Vac	116.30	117.00	118.40	119.10	119.60	149.40	151.10	152.20	152.90	153.50	151.17	93.50				
					230Vac	114.90	115.60	116.70	117.60	118.10	147.10	148.80	150.10	150.30	150.70	148.82	92.10				
C9300-NM-2Q	115Vac			117.70	121.30	121.80	122.40	124.10	150.60	154.10	155.30	156.30	158.60	154.20	88.00						
	230Vac			116.40	119.70	120.20	120.80	122.10	147.70	151.20	152.70	153.80	156.10	151.34	87.60						
C9300-NM-8X	115Vac			120.50	123.60	124.30	125.20	126.00	152.80	156.10	157.60	158.60	160.80	156.24	87.40						
	230Vac			119.00	121.90	122.90	123.40	124.40	150.20	153.90	154.90	155.80	158.30	153.97	88.90						
C9300-NM-4M	115Vac			118.29	121.62	122.36	122.78	124.03	153.80	157.53	158.17	159.28	161.00	157.50	87.53						
	230Vac			117.15	120.62	120.89	121.30	122.35	150.20	153.61	154.60	155.58	157.86	153.69	86.48						
C9300-NM-2Y	115Vac			114.30	119.20	119.70	120.30	121.50	144.40	152.00	152.80	153.10	156.10	151.65	85.80						
	230Vac			112.00	118.00	118.60	118.90	120.10	142.20	149.20	150.20	151.00	153.40	148.92	83.90						

				Measured P(W)																	
				Half port traffic					Full port traffic					Weighted average Pw	No link	PoE test (no traffic)					
SKU	FEP	Uplink	Input	0.01%/EEE	10%	30%	50%	100%	0.01%/EEE	10%	30%	50%	100%					25%	50%	90%	100%
C9300-48T	350W	Not Installed	115Vac	81.5	94.9	95.7	95.9	96.4	80.8	98.6	100.2	101.3	102.3	97.2	82.2						
			230Vac	80.5	93.7	94.6	94.8	95.3	80.1	97.3	99.5	99.9	100.8	96.0	81.5						
		C9300-NM-4G	115Vac	86.4	94.9	97.8	99.4	100.4	89.3	104.6	107.6	108.6	108.9	103.5	85.7						
			230Vac	85.3	93.8	96.6	98.4	99.1	88.2	103.4	106.2	106.9	107.2	102.3	84.8						
		C9300-NM-4M	115Vac	89.6	103.4	104.2	104.6	105.4	93.0	112.7	113.5	114.1	115.7	111.0	90.6						
			230Vac	89.0	102.0	102.8	103.1	103.9	91.9	111.0	111.8	112.4	114.0	109.4	89.3						
		C9300-NM-2Q	115Vac	88.3	102.4	102.9	103.3	104.2	91.0	110.5	111.3	112.1	113.9	108.9	88.6						
			230Vac	87.3	100.9	101.4	101.8	102.7	89.9	108.8	109.6	110.3	112.1	107.2	87.6						
		C9300-NM-8X	115Vac	92.1	105.2	106.1	106.5	107.4	98.6	117.6	118.4	119.1	120.9	116.0	91.0						
			230Vac	91.1	103.9	104.7	105.1	106.0	97.3	115.8	116.6	117.3	119.0	114.3	90.0						
		C9300-48U	1100W	Not Installed	115Vac	96.0	110.2	110.9	111.2	111.7	95.6	112.5	114.3	115.9	116.9	111.3	97.0	315.1	544.0	925.9	1023.0
					230Vac	94.8	108.5	109.2	109.4	109.9	94.2	110.0	112.5	114.1	115.0	108.9	95.6	308.6	529.4	889.9	978.8
C9300-NM-4G	115Vac			97.4	105.8	109.0	110.7	111.0	99.9	115.1	117.8	118.9	119.2	114.0	96.4	319.2	547.3	928.0	1026.3		
	230Vac			95.4	103.9	107.4	108.7	110.0	98.8	113.4	116.2	117.0	117.4	112.4	94.9	314.3	535.6	896.0	984.3		
C9300-NM-4M	115Vac			104.4	118.5	119.0	119.5	120.1	107.4	126.8	127.6	128.3	130.0	125.2	104.9	326.2	556.0	938.6	1035.6		
	230Vac			102.8	116.0	117.1	117.5	118.2	106.4	124.8	125.5	126.2	127.7	123.2	103.6	320.4	541.4	903.0	991.6		
C9300-NM-2Q	115Vac			102.9	117.2	117.6	118.0	119.0	104.8	123.8	124.6	125.3	127.0	122.2	102.5	324.1	552.4	934.4	1032.6		
	230Vac			101.2	114.9	115.5	115.9	117.0	103.9	123.0	123.7	124.4	126.1	121.4	101.7	316.9	537.9	898.2	988.3		
C9300-NM-8X	115Vac			106.7	120.4	121.1	121.5	122.3	112.7	131.5	132.4	133.0	134.8	130.0	105.7	330.0	563.7	941.8	1043.4		
	230Vac			105.0	118.5	119.2	119.6	120.2	110.9	129.4	130.2	131.0	132.6	127.9	104.1	324.5	549.0	908.0	998.9		



				Measured P(W)																	
				Half port traffic					Full port traffic					Weighted average Pw	No link	PoE test (no traffic)					
				0.01%/EEE	10%	30%	50%	100%	0.01%/EEE	10%	30%	50%	100%			25%	50%	90%	100%		
SKU	FEP	Uplink	Input	0.01%/EEE	10%	30%	50%	100%	0.01%/EEE	10%	30%	50%	100%	Weighted average Pw	No link	25%	50%	90%	100%		
C9300-48H	1100W	Not Installed	115Vac	96.0	110.2	110.9	111.2	111.7	95.6	112.5	114.3	115.9	116.9	111.3	97.0	315.1	544.0	925.9	1023.0		
			230Vac	94.8	108.5	109.2	109.4	109.9	94.2	110.0	112.5	114.1	115.0	108.9	95.6	308.6	529.4	889.9	978.8		
		C9300-NM-4G	115Vac	97.4	105.8	109.0	110.7	111.0	99.9	115.1	117.8	118.9	119.2	114.0	96.4	319.2	547.3	928.0	1026.3		
			230Vac	95.4	103.9	107.4	108.7	110.0	98.8	113.4	116.2	117.0	117.4	112.4	94.9	314.3	535.6	896.0	984.3		
		C9300-NM-4M	115Vac	104.4	118.5	119.0	119.5	120.1	107.4	126.8	127.6	128.3	130.0	125.2	104.9	326.2	556.0	938.6	1035.6		
			230Vac	102.8	116.0	117.1	117.5	118.2	106.4	124.8	125.5	126.2	127.7	123.2	103.6	320.4	541.4	903.0	991.6		
		C9300-NM-2Q	115Vac	102.9	117.2	117.6	118.0	119.0	104.8	123.8	124.6	125.3	127.0	122.2	102.5	324.1	552.4	934.4	1032.6		
			230Vac	101.2	114.9	115.5	115.9	117.0	103.9	123.0	123.7	124.4	126.1	121.4	101.7	316.9	537.9	898.2	988.3		
		C9300-NM-8X	115Vac	106.7	120.4	121.1	121.5	122.3	112.7	131.5	132.4	133.0	134.8	130.0	105.7	330.0	563.7	941.8	1043.4		
			230Vac	105.0	118.5	119.2	119.6	120.2	110.9	129.4	130.2	131.0	132.6	127.9	104.1	324.5	549.0	908.0	998.9		
		C9300-48UB	1100W	C9300-NM-8X	115Vac	106.7	120.4	121.1	121.5	122.3	112.7	131.5	132.4	133.0	134.8	130.0	105.7	330.0	563.7	941.8	1043.4
					230Vac	105.0	118.5	119.2	119.6	120.2	110.9	129.4	130.2	131.0	132.6	127.9	104.1	324.5	549.0	908.0	998.9
C9300-48UN	1100W	C9300-NM-8X	115Vac	172.9	176.7	178.7	179.8	181.8	193.8	199.8	201.5	203.1	206.9	199.9	159.1	357.3	525.0	803.9	875.1		
			230Vac	171.2	174.8	176.8	178.1	179.9	191.7	197.8	199.4	201.0	204.7	197.9	157.9	351.5	512.1	777.0	843.8		
C9300-48UXM	1100W	C9300-NM-8X	115Vac	236.2	241.4	246.6	247.8	249.6	253.2	261.5	272.4	278.5	283.0	262.8	219.2	392.3	528.7	750.8	810.1		
			230Vac	232.2	237.4	242.5	243.7	245.6	249.0	256.7	267.6	272.9	277.2	258.0	215.7	382.8	515.2	728.0	784.7		
C9300L-24P-4G	715W	Integrated	115Vac	62.33	68.39	69.42	70.19	70.99	62.74	74.98	76.05	76.93	77.70	74.02	61.92	203.54	341.71	569.96	627.59		
			230Vac	60.91	67.07	68.18	68.91	69.68	61.32	73.88	74.99	75.84	76.58	72.89	60.60	199.69	334.16	552.06	606.54		
			115Vac	62.33	68.39	69.42	70.19	70.99	62.74	74.98	76.05	76.93	77.70	74.02	61.92	203.54	341.71	569.96	627.59		
			230Vac	60.91	67.07	68.18	68.91	69.68	61.32	73.88	74.99	75.84	76.58	72.89	60.60	199.69	334.16	552.06	606.54		
C9300L-24P-4X	715W	Integrated	115Vac	64.32	70.97	72.60	73.02	73.63	69.27	76.96	79.15	79.85	81.00	76.59	64.99	207.17	343.00	569.93	626.15		
			230Vac	64.09	69.90	71.75	72.28	72.92	67.80	76.12	78.34	78.78	79.91	75.67	63.70	203.04	336.39	553.25	607.02		
			115Vac	64.32	70.97	72.60	73.02	73.63	69.27	76.96	79.15	79.85	81.00	76.59	64.99	207.17	343.00	569.93	626.15		
			230Vac	64.09	69.90	71.75	72.28	72.92	67.80	76.12	78.34	78.78	79.91	75.67	63.70	203.04	336.39	553.25	607.02		

				Measured P(W)																
				Half port traffic					Full port traffic					Weighted average Pw	No link	PoE test (no traffic)				
SKU	FEP	Uplink	Input	0.01%/EEE	10%	30%	50%	100%	0.01%/EEE	10%	30%	50%	100%					25%	50%	90%
C9300L-24T-4G	350W	Integrated	115Vac	57.75	63.72	64.67	65.37	66.09	58.39	69.87	70.92	71.74	72.37	68.97	57.30					
			230Vac	56.63	62.65	63.60	64.28	65.02	57.16	68.55	69.59	70.38	70.99	67.65	56.20					
			115Vac	57.75	63.72	64.67	65.37	66.09	58.39	69.87	70.92	71.74	72.37	68.97	57.3					
			230Vac	56.63	62.65	63.60	64.28	65.02	57.16	68.55	69.59	70.38	70.99	67.65	56.2					
C9300L-24T-4X	350W	Integrated	115Vac	58.69	65.61	67.13	67.54	68.03	59.12	71.55	73.49	74.06	75.14	70.66	58.13					
			230Vac	57.36	64.19	65.74	65.94	66.41	57.85	70.03	71.96	72.31	73.54	69.17	56.85					
			115Vac	58.69	65.61	67.13	67.54	68.03	59.12	71.55	73.49	74.06	75.14	70.66	58.13					
			230Vac	57.36	64.19	65.74	65.94	66.41	57.85	70.03	71.96	72.31	73.54	69.17	56.85					
C9300L-48P-4G	715W	Integrated	115Vac	69.21	77.07	78.03	78.82	79.86	70.06	86.76	87.97	88.97	90.01	85.41	68.42	213.65	351.15	575.52	632.46	
			230Vac	67.90	76.03	76.95	77.76	78.78	68.72	85.61	86.74	87.62	88.63	84.22	67.16	209.87	342.56	556.81	611.08	
			115Vac	69.21	77.07	78.03	78.82	79.86	70.06	86.76	87.97	88.94	90.01	85.41	68.42	213.65	351.15	575.52	632.46	
			230Vac	67.90	76.03	76.95	77.76	78.78	68.72	85.61	86.74	87.62	88.63	84.22	67.16	209.87	342.56	556.81	611.08	
C9300L-48P-4X	715W	Integrated	115Vac	68.05	78.83	80.51	80.97	81.98	69.18	90.03	91.95	92.67	94.13	88.35	68.50	203.00	337.40	559.30	616.70	
			230Vac	66.98	77.59	79.12	79.53	80.51	67.76	88.18	90.24	90.79	92.67	86.58	67.40	200.30	331.50	545.00	598.60	
			115Vac	68.05	78.83	80.51	80.97	81.98	69.18	90.03	91.95	92.67	94.13	88.35	68.50	203.0	337.4	559.3	616.7	
			230Vac	66.98	77.59	79.12	79.53	80.51	67.76	88.18	90.24	90.79	92.67	86.58	67.40	200.3	331.5	545.0	598.6	
C9300L-48PF-4G	1100W	Integrated	115Vac	70.41	79.73	81.33	81.58	82.62	71.36	90.17	91.32	92.11	93.00	88.57	69.35	314.03	558.56	973.60	1082.14	
			230Vac	68.66	77.95	78.87	79.64	80.56	69.59	87.79	88.87	89.73	90.72	86.27	67.84	306.85	541.37	928.90	1027.83	
C9300L-48PF-4X	1100W	Integrated	115Vac	69.68	80.51	82.08	82.50	83.37	71.08	91.01	93.09	94.17	96.27	89.54	69.35	310.72	552.92	965.47	1079.44	
			230Vac	68.14	78.81	80.34	80.71	81.61	69.11	88.83	90.73	91.38	93.06	87.28	67.38	305.26	539.36	924.23	1023.56	
C9300L-48T-4G	350W	Integrated	115Vac	60.32	69.53	70.41	71.16	72.00	61.57	79.62	80.62	81.44	82.32	78.083	59.47					
			230Vac	59.75	68.45	69.31	70.05	70.81	60.58	78.05	79.06	79.80	80.67	76.564	59.00					
			115Vac	60.32	69.53	70.41	71.16	72.00	61.57	79.62	80.62	81.44	82.32	78.083	59.47					
			230Vac	59.75	68.45	69.31	70.05	70.84	60.58	78.05	79.06	79.80	80.67	76.564	59.00					

				Measured P(W)															
				Half port traffic					Full port traffic					Weighted average Pw	No link	PoE test (no traffic)			
				0.01%/EEE	10%	30%	50%	100%	0.01%/EEE	10%	30%	50%	100%			25%	50%	90%	100%
SKU	FEP	Uplink	Input	0.01%/EEE	10%	30%	50%	100%	0.01%/EEE	10%	30%	50%	100%	Weighted average Pw	No link	25%	50%	90%	100%
C9300L-48T-4X	350W	Integrated	115Vac	63.28	73.75	75.38	75.85	76.86	64.15	83.82	85.53	86.68	88.72	82.34	62.37				
			230Vac	61.91	72.22	73.73	74.13	75.06	62.82	82.21	84.17	84.97	86.77	80.73	60.97				
			115Vac	63.28	73.75	75.38	75.85	76.86	64.15	83.82	85.53	86.68	88.72	82.34	62.37				
			230Vac	61.91	72.22	73.73	74.13	75.06	62.82	82.21	84.17	84.97	86.77	80.73	60.97				

ATIS Testing - 100%				Measured P(W)															
				Half Port Traffic					Full Port Traffic					Weighted Average Pw	No Link	PoE Test (No Traffic)			
				0.01%/EEE	10%	30%	50%	100%	0.01%/EEE	10%	30%	50%	100%			25%	50%	90%	100%
				SKU	Archer FEP	Uplink	Input	0.01%/EEE	10%	30%	50%	100%	0.01%/EEE	10%	30%	50%	100%	Weighted Average Pw	No Link
C9300L-48UXG-4X	1100W	Integrated	115Vac	107.79	133.06	135.05	136.80	137.79	108.80	156.13	159.76	160.69	163.14	152.09	107.04	332.8	520.2	835.6	918.4
			230Vac	105.60	130.55	132.50	134.12	135.07	106.04	153.51	157.24	158.19	160.17	149.43	104.56	326.0	505.7	801.0	875.3
C9300L-24UXG-4X	1100W	Integrated	115Vac	70.90	87.08	88.80	89.32	90.30	71.26	103.11	105.06	105.80	107.58	100.37	70.87	335.16	579.52	996.96	1108.51
			230Vac	69.20	85.22	87.09	87.51	88.40	69.46	100.48	102.39	103.16	104.94	97.82	68.98	326.96	562.27	951.15	1049.47
C9300L-48UXG-2Q	1100W	Integrated	115Vac	111.73	138.34	140.48	141.17	143.22	112.35	162.30	164.13	165.51	168.68	157.94	111.10	335.47	521.76	835.04	919.11
			230Vac	109.53	135.16	137.16	137.89	139.68	110.21	158.42	161.05	162.32	165.66	154.32	108.86	328.17	507.54	801.77	876.22
C9300L-24UXG-2Q	1100W	Integrated	115Vac	104.07	121.70	122.67	123.44	125.05	104.41	139.04	140.97	142.77	145.33	136.20	103.78	325.38	526.58	861.27	949.66
			230Vac	100.88	118.72	119.46	120.13	122.11	101.16	135.91	137.68	139.26	143.13	133.15	100.52	317.08	510.67	829.62	909.10

**Table 23.** Power consumption of standalone 9300 Series Switches with platinum rated power supply (tested on Cisco IOS XE 16.8.1)

				Measured P(W)															
				Half port traffic					Full port traffic					Weighted average Pw	No link	PoE test (no traffic)			
				0.01%/EEE	10%	30%	50%	100%	0.01%/EEE	10%	30%	50%	100%			25%	50%	90%	100%
SKU	FEP	Uplink	Input	0.01%/EEE	10%	30%	50%	100%	0.01%/EEE	10%	30%	50%	100%	Weighted average Pw	No link	25%	50%	90%	100%
C9300-24P	715W-P	C9300-NM-8X	115Vac	89.2	94.3	99	100.1	100.7	92	98.9	103.5	105.9	107.1	99	85.8	205.6	324.7	518.9	568.4
			230Vac	86.7	91.8	96.4	97.5	98	89.4	97.1	101.4	103.6	104.5	97	84.1	201.9	318.7	507.2	554.4

SKU	FEP	Uplink	Input	Measured P(W)															
				Half port traffic					Full port traffic					Weighted average P <sub>w</sub>	No link	PoE test (no traffic)			
				0.01%/EEE	10%	30%	50%	100%	0.01%/EEE	10%	30%	50%	100%			25%	50%	90%	100%
C9300-24T	350W-P	C9300-NM-8X	115Vac	83.1	88.2	92.9	94	94.5	85.8	92.9	97.2	99.6	100.4	92.9	80.5				
			230Vac	81.9	86.8	91.3	92.4	92.9	84.4	91.6	95.9	98.2	99	91.6	79.2				
C9300-24U	1100W-P	C9300-NM-8X	115Vac	90.5	95.9	100.5	101.6	102.1	93.3	100.6	104.9	107.2	108.1	100.6	87.9	319.9	549.5	935.3	1034.1
			230Vac	88.1	93.1	97.7	98.8	99.4	92.8	98	102.4	104.6	105.5	98.2	85.4	313.4	535.5	899.7	990.3
C9300-24UX	1100W-P	C9300-NM-8X	115Vac	186.8	191	194.9	197.1	198.9	209	215.4	227.2	230.1	233.1	216.6	165.3	367.5	522.1	776.1	842.3
			230Vac	182.8	186.9	190.6	193	194.1	205	211.2	222.7	225.5	229.8	212.5	162.7	361.1	510.2	752.3	809.9
C9300-24H	1100W-P	C9300-NM-8X	115Vac	90.5	95.9	100.5	101.6	102.1	93.3	100.6	104.9	107.2	108.1	100.6	87.9	319.9	549.5	935.3	1034.1
			230Vac	88.1	93.1	97.7	98.8	99.4	92.8	98	102.4	104.6	105.5	98.2	85.4	313.4	535.5	899.7	990.3
C9300-48P	715W-P	C9300-NM-8X	115Vac	99.1	105.5	110.8	111.3	112.4	99.6	112.5	118.2	120.1	122.2	112.2	94.7	214.7	336.1	521.5	569.4
			230Vac	97.3	103.7	108.9	109.4	110.4	99	110.3	115.8	118.3	119.5	110.1	92.6	213.9	329.3	509.4	555
C9300-48T	350W-P	C9300-NM-8X	115Vac	89.8	95.4	100.4	101.1	102	90.4	102.4	107.5	109.8	111.8	102.2	85.4				
			230Vac	88.7	94.5	99.4	100.1	101	88.7	101.2	106	108.1	109.9	100.8	83.9				
C9300-48U	1100W-P	C9300-NM-8X	115Vac	168.9	170.6	172.4	176.6	178.5	190.8	194	198.3	200.1	203.9	194.6	147.3	355.4	524.9	804.6	875.4
			230Vac	165.7	167.3	169.2	169.9	171.5	186.5	189.6	193.9	195.7	199.8	190.3	145	348.8	511.7	777.7	844.9
C9300-48UN	1100W-P	C9300-NM-8X	115Vac	172.9	176.7	178.7	179.8	181.8	193.8	199.8	201.5	203.1	206.9	199.9	159.1	357.3	525	803.9	875.1
			230Vac	171.2	174.8	176.8	178.1	179.9	191.7	197.8	199.4	201	204.7	197.9	157.9	351.5	512.1	777	843.8
C9300-48UXM	1100W-P	C9300-NM-8X	115Vac	241	248.1	254.8	256.4	258.9	260.1	269.4	281.6	286.5	291.6	270.7	225.1	394.8	531.4	755	809.5
			230Vac	237.5	243.1	249	250.3	251.1	253.9	261.8	273.9	279.2	283.6	263.2	218.5	386.8	518.1	731.3	785.5
C9300-48H	1100W-P	C9300-NM-8X	115Vac	168.9	170.6	172.4	176.6	178.5	190.8	194	198.3	200.1	203.9	194.6	147.3	355.4	524.9	804.6	875.4
			230Vac	165.7	167.3	169.2	169.9	171.5	186.5	189.6	193.9	195.7	199.8	190.3	145	348.8	511.7	777.7	844.9

SKU	FEP	Uplink	Input	Measured P(W)																
				Half port traffic					Full port traffic					Weighted average Pw	No link	PoE test (no traffic)				
				0.01%/EEE	10%	30%	50%	100%	0.01%/EEE	10%	30%	50%	100%			25%	50%	90%	100%	
C9300X-12Y	715W	C9300X-NM-8Y	115Vac																	
			230Vac																	
C9300X-12Y	715W	C9300X-NM-2C	115Vac																	
			230Vac																	
C9300X-12Y	1100W	C9300X-NM-8Y	115Vac																	
			230Vac																	
C9300X-12Y	1100W	C9300X-NM-2C	115Vac																	
			230Vac																	
C9300X-12Y	1900W	C9300X-NM-8Y	115Vac																	
			230Vac																	
C9300X-12Y	1900W	C9300X-NM-2C	115Vac																	
			230Vac																	
C9300X-24Y	715W	C9300X-NM-8Y	115Vac																	
			230Vac																	
C9300X-24Y	715W	C9300X-NM-2C	115Vac																	
			230Vac																	
C9300X-24Y	1100W	C9300X-NM-8Y	115Vac																	
			230Vac																	
C9300X-24Y	1100W	C9300X-NM-2C	115Vac																	
			230Vac																	
C9300X-24Y	1900W	C9300X-NM-8Y	115Vac																	
			230Vac																	
C9300X-24Y	1900W	C9300X-NM-2C	115Vac																	
			230Vac																	



SKU	FEP	Uplink	Input	Measured P(W)															
				Half port traffic					Full port traffic					Weighted average Pw	No link	PoE test (no traffic)			
				0.01%/EEE	10%	30%	50%	100%	0.01%/EEE	10%	30%	50%	100%			25%	50%	90%	100%
C9300X-12Y	715W-P	C9300X-NM-8Y	115Vac																
			230Vac																
C9300X-12Y	715W-P	C9300X-NM-2C	115Vac																
			230Vac																
C9300X-12Y	1100W-P	C9300X-NM-8Y	115Vac																
			230Vac																
C9300X-12Y	1100W-P	C9300X-NM-2C	115Vac																
			230Vac																
C9300X-24Y	715W-P	C9300X-NM-8Y	115Vac																
			230Vac																
C9300X-24Y	715W-P	C9300X-NM-2C	115Vac																
			230Vac																
C9300X-24Y	1100W-P	C9300X-NM-8Y	115Vac																
			230Vac																
C9300X-24Y	1100W-P	C9300X-NM-2C	115Vac																
			230Vac																

ATIS Testing - 100%				Measured P(W)															
				Half port traffic					Full port traffic					Weighted average Pw	No link	PoE test (no traffic)			
SKU	Archer FEP	Uplink	Input	0.01% /EEE	10%	30%	50%	100%	0.01% /EEE	10%	30%	50%	100%			25%	50%	90%	100%
C9300-48H	1900W	C9300-NM-4G	115Vac	91.15	96.80	98.07	69.60	99.12	92.85	10.40	104.67	105.25	105.74	102.58	90.17	419.9	750.2	1296.2	1440.9
			230Vac	90.84	95.57	96.73	97.22	97.75	92.19	102.55	103.94	104.25	104.60	101.72	89.35	517.0	939.1	1637.6	1816.5
C9300-48H	1900W	C9300-NM-2Q	115Vac	93.15	100.87	101.21	101.56	102.40	94.69	108.16	108.96	109.71	111.58	107.16	91.53	420.7	749.8	1299.1	1441.8
			230Vac	92.27	99.91	100.35	100.64	101.53	93.81	106.72	107.52	108.35	110.41	105.80	90.66	516.0	940.1	1635.3	1814.6
C9300-48H	1900W	C9300-NM-8X	115Vac	94.48	102.47	102.94	103.46	104.43	97.27	110.25	110.92	111.75	113.79	109.30	92.43	422.9	751.3	1299.6	1441.6
			230Vac	94.02	101.23	101.69	102.10	103.08	96.24	108.89	109.65	110.53	112.55	108.00	91.44	519.2	943.8	1643.5	1821.3
C9300-48H	1900W	C9300-NM-4M	115Vac	94.02	101.47	102.50	102.61	103.41	96.78	109.46	110.25	110.98	112.77	108.53	91.43	421.8	749.9	1297.5	1440.1
			230Vac	93.08	100.78	101.16	101.45	102.31	95.92	108.19	108.96	109.73	111.46	107.29	90.29	518.5	940.8	1635.2	1810.3
C9300-48H	1900W	C9300-NM-2Y	115Vac	93.40	101.26	101.70	102.03	103.06	94.65	108.27	108.91	109.17	111.32	107.22	91.52	421.5	748.9	1295.7	1436.4
			230Vac	92.57	100.14	100.55	100.95	101.93	94.03	106.73	107.56	108.40	110.35	105.82	90.76	517.0	939.3	1635.0	1809.6
C9300-48H	1900W	Not Installed	115Vac	85.65	92.17	93.35	93.63	94.11	84.96	97.07	98.24	98.40	99.50	96.10	85.76	411.4	739.6	1288.7	1430.7
			230Vac	84.89	91.33	92.45	92.68	93.17	84.33	96.45	97.00	97.36	98.37	95.43	85.32	506.8	928.8	1621.9	1799.9
C9300-24H	1900W	Not Installed	115Vac	80.63	84.52	85.17	85.40	85.65	80.79	86.49	87.62	87.83	88.43	86.12	80.41	407.5	741.3	1297.1	1438.1
			230Vac	79.55	83.21	84.70	84.91	85.25	79.70	86.09	87.13	87.36	87.94	85.63	79.39	503.6	931.8	1635.4	1810.3
C9300-24H	1900W	C9300-NM-4G	115Vac	86.38	88.78	89.98	90.51	91.09	87.24	94.12	95.57	96.06	96.63	93.68	85.58	415.5	741.6	1288.9	1433.7
			230Vac	85.98	88.27	89.66	90.6	90.77	86.81	93.47	74.72	95.17	95.73	93.03	84.94	511.5	938.2	1639.5	1818.1
C9300-24H	1900W	C9300-NM-2Q	115Vac	87.16	93.14	93.45	93.62	94.17	89.33	98.20	98.92	99.39	100.11	97.50	85.73	417.1	750.9	1304.4	1448.9
			230Vac	86.66	92.16	92.53	92.8	93.36	88.11	96.56	96.95	97.38	98.39	95.90	84.95	512.7	940.2	1641.6	1818.3
C9300-24H	1900W	C9300-NM-8X	115Vac	88.85	93.82	94.89	95.08	95.69	91.72	99.50	100.50	101.03	102.21	98.99	85.95	419.9	754.5	1307.5	1450.9
			230Vac	88.10	92.69	93.80	94.12	94.71	90.92	98.32	99.29	99.71	100.60	97.81	85.24	515.0	942.7	1644.3	1822.0
C9300-24H	1900W	C9300-NM-4M	115Vac	88.57	93.90	94.22	94.51	96.03	91.37	99.29	100.13	100.44	101.54	98.72	85.83	418.9	744.3	1298.3	1449.9
			230Vac	88.24	93.10	93.33	93.55	94.17	90.90	98.67	99.07	99.65	100.80	98.11	85.65	515.8	943.4	1644.0	1821.9
C9300-24H	1900W	C9300-NM-4M	115Vac	87.81	94.47	94.73	94.79	95.29	89.81	98.27	99.32	100.28	101.12	97.71	86.65	418.6	748.4	1311.1	1448.7
			230Vac	87.26	92.59	92.86	93.13	93.90	88.93	97.03	97.58	97.97	99.03	96.42	85.48	511.9	940.9	1642.0	1819.4

## Safety and compliance

Table 24 lists the safety and compliance information for the Cisco Catalyst 9300 Series.

**Table 24.** Safety and compliance information

Description	Specification
<b>Safety certifications</b>	<ul style="list-style-type: none"> <li>• UL 60950-1</li> <li>• CAN/CSA-C222.2 No. 60950-1</li> <li>• EN 60950-1</li> <li>• IEC 60950-1</li> <li>• AS/NZS 60950.1</li> <li>• IEEE 802.3</li> </ul>
<b>Electromagnetic compatibility certifications</b>	<ul style="list-style-type: none"> <li>• 47 CFR Part 15</li> <li>• EN 300 386 V1.6.1</li> <li>• EN 55032 Class A</li> <li>• CISPR 32 Class A</li> <li>• EN61000-3-2</li> <li>• EN61000-3-3</li> <li>• ICES-003 Class A</li> <li>• TCVN 7189 Class A</li> <li>• V-3 Class A</li> <li>• CISPR 35</li> <li>• EN 300 386</li> <li>• EN 55035</li> <li>• TCVN 7317</li> <li>• V-2/2015.04</li> <li>• V-3/2015.04</li> <li>• CNS13438</li> <li>• KN32</li> <li>• KN35</li> </ul> <p><b>Additional Certifications for C9300L SKUs:</b></p> <ul style="list-style-type: none"> <li>• QCVN 118:2018/BTTTT</li> <li>• VCCI-CISPR 32 Class A</li> </ul>
<b>Environmental</b>	Reduction of Hazardous Substances (ROHS) 5



## Warranty

### Cisco enhanced limited lifetime hardware warranty

The Cisco Catalyst 9300 Series Switches come with a Cisco Enhanced Limited Lifetime hardware Warranty (E-LLW) that includes Next-Business-Day (NBD) delivery of replacement hardware where available and 90 days of 8x5 Cisco Technical Assistance Center (TAC) support.

Your formal warranty statement, including the warranty applicable to Cisco software, appears in the information packet that accompanies your Cisco product. We encourage you to review the warranty statement shipped with your specific product carefully before use.

Cisco reserves the right to refund the purchase price as its exclusive warranty remedy.

For further information about warranty terms, visit <https://www.cisco.com/go/warranty>. Table 23 provides information about the E-LLW.

**Table 25.** E-LLW details

	Cisco E-LLW
<b>Devices covered</b>	Applies to Cisco Catalyst 9300 Series Switches.
<b>Warranty duration</b>	As long as the original customer owns the product.
<b>End-of-life policy</b>	In the event of discontinuance of product manufacture, Cisco warranty support is limited to 5 years from the announcement of discontinuance.
<b>Hardware replacement</b>	Cisco or its service center will use commercially reasonable efforts to ship a replacement for NBD delivery, where available. Otherwise, a replacement will be shipped within 10 working days after receipt of the Return Materials Authorization (RMA) request. Actual delivery times might vary depending on customer location.
<b>Effective date</b>	Hardware warranty commences from the date of shipment to customer (and in case of resale by a Cisco reseller, not more than 90 days after original shipment by Cisco).
<b>TAC support</b>	Cisco will provide during business hours, 8 hours per day, 5 days per week, basic configuration, diagnosis, and troubleshooting of device-level problems for up to a 90-day period from the date of shipment of the originally purchased Cisco Catalyst 9300 Series product. This support does not include solution or network level support beyond the specific device under consideration.
<b>Cisco.com access</b>	Warranty allows guest access only to Cisco.com.

## Product sustainability

Information about Cisco’s environmental, Social and Governance (ESG) initiatives and performance is provided in Cisco’s CSR and sustainability [reporting](#).

Sustainability Topic		Reference
<b>General</b>	Information on product-material-content laws and regulations	<a href="#">Materials</a>
	Information on electronic waste laws and regulations, including our products, batteries and packaging	<a href="#">WEEE Compliance</a>
	Sustainability Inquiries	Contact: <a href="mailto:csr_inquiries@cisco.com">csr_inquiries@cisco.com</a>
	Information on product takeback and reuse program	<a href="#">Cisco Takeback and Reuse Program</a>
	Safety and compliance	<a href="#">Table 23. Safety and compliance information</a>
	Mean Time Between Failures - MTBF (hours)	<a href="#">Table.16 Model Dimensions, Weight, and Mean Time between failures metrics</a>
<b>Power</b>	Default AC power supply	<a href="#">Table 1. Cisco Catalyst 9300 Series switch configurations</a>
	Power supplies	<a href="#">Table 3. Power supply models</a> <a href="#">Table 19. Power specifications</a> <a href="#">Table 20. Power specifications – platinum rated power supplies</a>
	Fan	<a href="#">Table 6. Fan modules</a>
	Energy Efficient Ethernet	<a href="#">Smart operation</a>
	Power over ethernet (Cisco UPOE and UPOE+)	<a href="#">Power over ethernet leadership</a>
	Power connectors	<a href="#">Table 17. Power connectors</a>
	Power consumption (ATIS)	<a href="#">Table 21. Power Consumption of Standalone 9300 Series Switches</a> <a href="#">Table 22. Power consumption of Standalone 9300 Series Switches with platinum rated power supply</a>
<b>Material</b>	Product packaging weight and materials	Contact: <a href="mailto:environment@cisco.com">environment@cisco.com</a>
	Dimensions	<a href="#">Table.16 Model Dimensions, Weight, and Mean Time between failures metrics.</a>
	Weight	<a href="#">Table.16 Model Dimensions, Weight, and Mean Time between failures metrics.</a>
	Elimination of wet paint on plastic bezel	<a href="#">2019 Cisco Corporate Social Responsibility Report</a> , Pg. 19 Stepping up our work on circularity

## Cisco Services

### Cisco Services for next-generation Cisco Catalyst 9000 Switches

Achieve infrastructure excellence faster and with less risk. Cisco Catalyst 9000 Services provide expert guidance to help you successfully deploy, manage and support the new Cisco Catalyst 9000 switching family. With unmatched networking expertise, best practices, and innovative tools, we can help you reduce overall upgrade, refresh, and migration costs as you introduce new hardware, software, and protocols into the network. Offering a comprehensive lifecycle of services – from implementation, optimization, technical, and managed services – Cisco experts help you reduce disruption and achieve operational excellence to extract maximum value from your Cisco DNA ready infrastructure.

[Learn more about Cisco Services for Enterprise Networks](#)

### Software policy for Cisco Catalyst 9300 Series Switches

#### Software policy for network stack components

Customers with the Network Essentials Stack and Network Advantage Stack software feature sets are provided with maintenance updates and bug fixes designed to maintain compliance of the software. This includes compliance with published specifications, release notes, and industry standards as long as the original end user continues to own or use the product or up to one year from the end-of-sale date for the product, whichever occurs earlier.

### Cisco embedded support for Cisco DNA term components

Cisco Embedded Support delivers the right support for Cisco software products and suites. It will keep your business applications performing as expected and protect your investment. Cisco Embedded Support for the Cisco DNA Essentials and Cisco DNA Advantage term components is included. Cisco Embedded Support provides access to TAC support, major software updates, maintenance and minor software releases, and the Cisco Embedded Support site, for increased productivity with anytime access.

## Ordering information

Table 26 lists ordering information for the Cisco Catalyst 9300 Series. To place an order, visit the Cisco Ordering home page at

[https://www.cisco.com/en/US/ordering/or13/or8/order\\_customer\\_help\\_how\\_to\\_order\\_listing.html](https://www.cisco.com/en/US/ordering/or13/or8/order_customer_help_how_to_order_listing.html).

**Table 26.** Ordering information

Switches	
Product number	Product description
<b>C9300X-48HX-E</b>	Catalyst 9300 48-port 10G/mGig with modular uplink, UPOE+, Network Essentials
<b>C9300X-48HX-A</b>	Catalyst 9300 48-port 10G/mGig with modular uplink, UPOE+, Network Advantage
<b>C9300X-48TX-E</b>	Catalyst 9300 48-port 10G/mGig with modular uplink, data only, Network Essentials
<b>C9300X-48TX-A</b>	Catalyst 9300 48-port 10G/mGig with modular uplink, data only, Network Advantage
<b>C9300X-48HXN-E</b>	Catalyst 9300 36-port 5G/mGig, 12-port 10G with modular uplink, UPOE+, Network Essentials

Switches	
<b>C9300X-48HXN-A</b>	Catalyst 9300 36-port 5G/mGig, 12-port 10G with modular uplink, UPOE+, Network Advantage
<b>C9300X-24HX-E</b>	Catalyst 9300 24-port 10G/mGig with modular uplink, UPOE+, Network Essentials
<b>C9300X-24HX-A</b>	Catalyst 9300 24-port 10G/mGig with modular uplink, UPOE+, Network Advantage
<b>C9300X-12Y-E</b>	Catalyst 9300 12-port 25G/10G/1G SFP28 with modular uplinks, Network Essentials
<b>C9300X-12Y-A</b>	Catalyst 9300 12-port 25G/10G/1G SFP28 with modular uplinks, Network Advantage
<b>C9300X-24Y-E</b>	Catalyst 9300 24-port 25G/10G/1G SFP28 with modular uplinks, Network Essentials
<b>C9300X-24Y-A</b>	Catalyst 9300 24-port 25G/10G/1G SFP28 with modular uplinks, Network Advantage
<b>C9300-24T-E</b>	Catalyst 9300 24-port 1G copper with modular uplinks, data only, Network Essentials
<b>C9300-24T-A</b>	Catalyst 9300 24-port 1G copper with modular uplinks, data only, Network Advantage
<b>C9300-24P-E</b>	Catalyst 9300 24-port 1G copper with modular uplinks, PoE+, Network Essentials
<b>C9300-24P-A</b>	Catalyst 9300 24-port 1G copper with modular uplinks, PoE+, Network Advantage
<b>C9300-24U-E</b>	Catalyst 9300 24-port 1G copper with modular uplinks, UPOE, Network Essentials
<b>C9300-24U-A</b>	Catalyst 9300 24-port 1G copper with modular uplinks, UPOE, Network Advantage
<b>C9300-24UB-E</b>	Catalyst 9300 higher scale 24-port 1G copper with modular uplinks, UPOE, Network Essentials
<b>C9300-24UB-A</b>	Catalyst 9300 higher scale 24-port 1G copper with modular uplinks, UPOE, Network Advantage
<b>C9300-24U-E-UL</b>	Catalyst 9300 24-port 1G copper with modular uplinks, UPOE, Network Advantage (Compatible with UL1069 Standard*)
<b>C9300-24U-A-UL</b>	Catalyst 9300 24-port 1G copper with modular uplinks, UPOE, Network Advantage (Compatible with UL1069 Standard*)
<b>C9300-24H-E</b>	Catalyst 9300 24-port 1G copper with modular uplinks, UPOE+, Network Essentials
<b>C9300-24H-A</b>	Catalyst 9300 24-port 1G copper with modular uplinks, UPOE+, Network Advantage
<b>C9300-24UX-E</b>	Catalyst 9300 24-port 10G/mGig with modular uplink, UPOE, Network Essentials
<b>C9300-24UX-A</b>	Catalyst 9300 24-port 10G/mGig with modular uplink, UPOE, Network Advantage
<b>C9300-24UXB-E</b>	Catalyst 9300 higher scale 24-port 10G/mGig with modular uplink, UPOE, Network Essentials
<b>C9300-24UXB-A</b>	Catalyst 9300 higher scale 24-port 10G/mGig with modular uplink, UPOE, Network Advantage
<b>C9300-48T-E</b>	Catalyst 9300 48-port 1G copper with modular uplinks, data only, Network Essentials

Switches	
<b>C9300-48T-A</b>	Catalyst 9300 48-port 1G copper with modular uplinks, data only, Network Advantage
<b>C9300-48P-E</b>	Catalyst 9300 48-port 1G copper with modular uplinks, PoE+, Network Essentials
<b>C9300-48P-A</b>	Catalyst 9300 48-port 1G copper with modular uplinks, PoE+, Network Advantage
<b>C9300-48U-E</b>	Catalyst 9300 48-port 1G copper with modular uplinks, UPOE, Network Essentials
<b>C9300-48U-A</b>	Catalyst 9300 48-port 1G copper with modular uplinks, UPOE, Network Advantage
<b>C9300-48UB-E</b>	Catalyst 9300 higher scale 48-port 1G copper with modular uplinks, UPOE, Network Essentials
<b>C9300-48UB-A</b>	Catalyst 9300 higher scale 48-port 1G copper with modular uplinks, UPOE, Network Advantage
<b>C9300-48U-E-UL</b>	Catalyst 9300 48-port 1G copper with modular uplinks, UPOE, Network Essentials (Compatible with UL1069 Standard*)
<b>C9300-48U-A-UL</b>	Catalyst 9300 48-port 1G copper with modular uplinks, UPOE, Network Advantage (Compatible with UL1069 Standard*)
<b>C9300-48H-E</b>	Catalyst 9300 48-port 1G copper with modular uplinks, UPOE+, Network Essentials
<b>C9300-48H-A</b>	Catalyst 9300 48-port 1G copper with modular uplinks, UPOE+, Network Advantage
<b>C9300-48UXM-E</b>	Catalyst 9300 48-port 2.5G (12 10G/mGig) copper with modular uplinks, UPOE, Network Essentials
<b>C9300-48UXM-A</b>	Catalyst 9300 48-port 2.5G (12 10G/mGig) copper with modular uplinks, UPOE, Network Advantage
<b>C9300-48UN-E</b>	Catalyst 9300 48-port 5G copper with modular uplinks, UPOE, Network Essentials
<b>C9300-48UN-A</b>	Catalyst 9300 48-port 5G copper with modular uplinks, UPOE, Network Advantage
<b>C9300-24S-E</b>	Catalyst 9300 24-port 1G SFP with modular uplinks, Network Essentials
<b>C9300-24S-A</b>	Catalyst 9300 24-port 1G SFP with modular uplinks, Network Advantage
<b>C9300-48S-E</b>	Catalyst 9300 48-port 1G SFP with modular uplinks, Network Essentials
<b>C9300-48S-A</b>	Catalyst 9300 48-port 1G SFP with modular uplinks, Network Advantage
<b>C9300L-24T-4G-E</b>	Catalyst 9300 24-port 1G copper, with fixed 4x1G SFP uplinks, data only Network Essentials
<b>C9300L-24T-4G-A</b>	Catalyst 9300 24-port 1G copper, with fixed 4x1G SFP uplinks, data only Network Advantage
<b>C9300L-24P-4G-E</b>	Catalyst 9300 24-port 1G copper, with fixed 4x1G SFP uplinks, PoE+ Network Essentials
<b>C9300L-24P-4G-A</b>	Catalyst 9300 24-port 1G copper, with fixed 4x1G SFP uplinks, PoE+ Network Advantage
<b>C9300L-48T-4G-E</b>	Catalyst 9300 48-port 1G copper, with fixed 4x1G SFP uplinks, data only Network Essentials

Switches	
<b>C9300L-48T-4G-A</b>	Catalyst 9300 48-port 1G copper, with fixed 4x1G SFP uplinks, data only Network Advantage
<b>C9300L-48P-4G-E</b>	Catalyst 9300 48-port 1G copper, with fixed 4x1G SFP uplinks, PoE+ Network Essentials
<b>C9300L-48P-4G-A</b>	Catalyst 9300 48-port 1G copper with fixed 4x1G SFP uplinks, PoE+ Network Advantage
<b>C9300L-48PF-4G-E</b>	Catalyst 9300 48-port 1G copper with fixed 4x1G SFP uplinks, PoE+ Network Essentials
<b>C9300L-48PF-4G-A</b>	Catalyst 9300 48-port 1G copper with fixed 4x1G SFP uplinks, PoE+ Network Advantage
<b>C9300L-24T-4X-E</b>	Catalyst 9300 24-port 1G copper with fixed 4x10G/1G SFP+ uplinks, data only Network Essentials
<b>C9300L-24T-4X-A</b>	Catalyst 9300 24-port 1G copper with fixed 4x10G/1G SFP+ uplinks, data only Network Advantage
<b>C9300L-24P-4X-E</b>	Catalyst 9300 24-port 1G copper with fixed 4x10G/1G SFP+ uplinks, PoE+ Network Essentials
<b>C9300L-24P-4X-A</b>	Catalyst 9300 24-port 1G copper with fixed 4x10G/1G SFP+ uplinks, PoE+ Network Advantage
<b>C9300L-24UXG-4X-E</b>	Catalyst 9300 24-port 8XmGig (100M/1G/2.5G/5G/10G) + 16x 10M/100M/1G copper with fixed 4x10G/1G SFP+ uplinks, UPOE, Network Essentials
<b>C9300L-24UXG-4X-A</b>	Catalyst 9300 24-port 8XmGig (100M/1G/2.5G/5G/10G) + 16x 10M/100M/1G copper with fixed 4x10G/1G SFP+ uplinks, UPOE, Network Advantage
<b>C9300L-48T-4X-E</b>	Catalyst 9300 48-port 1G copper with fixed 4x10G/1G SFP+ uplinks, data only Network Essentials
<b>C9300L-48T-4X-A</b>	Catalyst 9300 48-port 1G copper with fixed 4x10G/1G SFP+ uplinks, data only Network Advantage
<b>C9300L-48P-4X-E</b>	Catalyst 9300 48-port 1G copper with fixed 4x10G/1G SFP+ uplinks, PoE+ Network Essentials
<b>C9300L-48P-4X-A</b>	Catalyst 9300 48-port 1G copper with fixed 4x10G/1G SFP+ uplinks, PoE+ Network Advantage
<b>C9300L-48PF-4X-E</b>	Catalyst 9300 48-port 1G copper with fixed 4x10G/1G SFP+ uplinks, full PoE+ Network Essentials
<b>C9300L-48PF-4X-A</b>	Catalyst 9300 48-port 1G copper with fixed 4x10G/1G SFP+ uplinks, full PoE+ Network Advantage
<b>C9300L-48UXG-4X-E</b>	Catalyst 9300 48-port fixed uplinks UPOE, 12x mGig (100M/1G/2.5G/5G/10G) + 36x 10M/100M/1G, 4x 10G uplinks, Network Essentials
<b>C9300L-48UXG-4X-A</b>	Catalyst 9300 48-port 12x mGig (100M/1G/2.5G/5G/10G) + 36x 10M/100M/1G copper with fixed 4x 10G/1G SFP+ uplinks, UPOE, Network Advantage
<b>C9300L-24UXG-2Q-E</b>	Catalyst 9300 24-port 8x mGig (100M/1G/2.5G/5G/10G) + 16x 10M/100M/1G copper with fixed 2x 40G QSFP uplinks, UPOE, Network Essentials
<b>C9300L-24UXG-2Q-A</b>	Catalyst 9300 24-port 8x mGig (100M/1G/2.5G/5G/10G) + 16x 10M/100M/1G copper with

Switches	
	fixed 2x 40G QSFP uplinks, UPOE, Network Advantage
<b>C9300L-48UXG-2Q-E</b>	Catalyst 9300 48-port 12x mGig (100M/1G/2.5G/5G/10G) + 36x 10M/100M/1G copper with fixed 2x 40G QSFP uplinks, UPOE, Network Essentials
<b>C9300L-48UXG-2Q-A</b>	Catalyst 9300 48-port 12x mGig (100M/1G/2.5G/5G/10G) + 36x 10M/100M/1G copper with fixed 2x 40G QSFP uplinks, UPOE, Network Advantage
<b>C9300LM-48UX-4Y-E</b>	Catalyst 9300 mini 48-port UPOE, 8-port 10G Multigigabit, 40-port 1G, 4x 10G uplinks, Network Essentials
<b>C9300LM-48UX-4Y-A</b>	Catalyst 9300 mini 48-port UPOE, 8-port 10G Multigigabit, 40-port 1G, 4x 25G uplinks, Network Advantage
<b>C9300LM-48U-4Y-E</b>	Catalyst 9300 mini 48-port 1G UPOE, 4x 10G uplinks, Network Essentials
<b>C9300LM-48U-4Y-A</b>	Catalyst 9300 mini 48-port 1G UPOE, 4x 25G uplinks, Network Advantage
<b>C9300LM-48T-4Y-E</b>	Catalyst 9300 mini 48-port 1G data, 4x 10G uplinks, Network Essentials
<b>C9300LM-48T-4Y-A</b>	Catalyst 9300 mini 48-port 1G data, 4x 25G uplinks, Network Advantage
<b>C9300LM-24U-4Y-E</b>	Catalyst 9300 mini 24-port 1G UPOE, 4x 10G uplinks, Network Essentials
<b>C9300LM-24U-4Y-A</b>	Catalyst 9300 mini 24-port 1G UPOE, 4x 25G uplinks, Network Advantage
Network modules	
Product number	Product description
<b>C9300X-NM-8M</b>	Catalyst 9300X 8 x 10G/mGig Network Module
<b>C9300X-NM-8M=</b>	Catalyst 9300X 8 x 10G/mGig Network Module, spare
<b>C9300X-NM-8Y</b>	Catalyst 9300 8 x 25G/10G/1G multi-rate SFP Network Module
<b>C9300X-NM-8Y=</b>	Catalyst 9300 8 x 25G/10G/1G multi-rate SFP Network Module, spare
<b>C9300X-NM-2C</b>	Catalyst 9300 2 x 100G/40G dual rate QSFP Network Module
<b>C9300X-NM-2C=</b>	Catalyst 9300 2 x 100G/40G dual rate QSFP Network Module, spare
<b>C9300X-NM-4C</b>	Catalyst 9300 4 x 100G/40G dual rate QSFP Network Module
<b>C9300X-NM-4C=</b>	Catalyst 9300 4 x 100G/40G dual rate QSFP Network Module, spare
<b>C9300-NM-4G</b>	Catalyst 9300 4 x 1GE SFP Network Module
<b>C9300-NM-4G=</b>	Catalyst 9300 4 x 1GE SFP Network Module, spare
<b>C9300-NM-8X</b>	Catalyst 9300 8 x 10G/1G SFP+ Network Module
<b>C9300-NM-8X=</b>	Catalyst 9300 8 x 10G/1G SFP+ Network Module, spare
<b>C9300-NM-2Q</b>	Catalyst 9300 2 x 40GE QSFP Network Module

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<b>C9300-NM-2Q=</b>	Catalyst 9300 2 x 40GE QSFP Network Module, spare
<b>C9300-NM-2Y</b>	Catalyst 9300 2 x 25G/10G/1G SFP28 Network Module
<b>C9300-NM-2Y=</b>	Catalyst 9300 2 x 25G/10G/1G SFP28 Network Module, spare
<b>C9300-NM-4M</b>	Catalyst 9300 4 x 10G/mGig Network Module
<b>C9300-NM-4M=</b>	Catalyst 9300 4 x 10G/mGig Network Module, spare
<b>NM-BLANK-T1=</b>	Cisco Catalyst Type 1 Network Module Blank, spare



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### Storage Module

Product number	Product description
SSD-120G	Cisco pluggable USB3.0 120G SSD storage
SSD-120G=	Cisco pluggable USB3.0 120G SSD storage, spare
SSD-240G	Cisco pluggable USB3.0 240G SSD storage
SSD-240G=	Cisco pluggable USB3.0 240G SSD storage, spare

### Software licenses for C9300 SKUs

Product number	Product description
C9300-DNA-E-24-3Y	C9300 Cisco DNA Essentials, 24-port, 3 Year Term license
C9300-DNA-E-24-5Y	C9300 Cisco DNA Essentials, 24-port, 5 Year Term license
C9300-DNA-E-24-7Y	C9300 Cisco DNA Essentials, 24-port, 7 Year Term license
C9300-DNA-A-24-3Y	C9300 Cisco DNA Advantage, 24-port, 3 Year Term license
C9300-DNA-A-24-5Y	C9300 Cisco DNA Advantage, 24-port, 5 Year Term license
C9300-DNA-A-24-7Y	C9300 Cisco DNA Advantage, 24-port, 7 Year Term license
C9300-DNA-E-48-3Y	C9300 Cisco DNA Essentials, 48-port, 3 Year Term license
C9300-DNA-E-48-5Y	C9300 Cisco DNA Essentials, 48-port, 5 Year Term license
C9300-DNA-E-48-7Y	C9300 Cisco DNA Essentials, 48-port, 7 Year Term license
C9300-DNA-A-48-3Y	C9300 Cisco DNA Advantage, 48-port, 3 Year Term license
C9300-DNA-A-48-5Y	C9300 Cisco DNA Advantage, 48-port, 5 Year Term license
C9300-DNA-A-48-7Y	C9300 Cisco DNA Advantage, 48-port, 7 Year Term license
C9300-DNA-E-24S-3Y	C9300 1G Fiber Cisco DNA Essentials, 24-port, 3 Year Term license
C9300-DNA-E-24S-5Y	C9300 1G Fiber Cisco DNA Essentials, 24-port, 5 Year Term license
C9300-DNA-E-24S-7Y	C9300 1G Fiber Cisco DNA Essentials, 24-port, 7 Year Term license
C9300-DNA-A-24S-3Y	C9300 1G Fiber Cisco DNA Advantage, 24-port, 3 Year Term license
C9300-DNA-A-24S-5Y	C9300 1G Fiber Cisco DNA Advantage, 24-port, 5 Year Term license
C9300-DNA-A-24S-7Y	C9300 1G Fiber Cisco DNA Advantage, 24-port, 7 Year Term license
C9300-DNA-E-48S-3Y	C9300 1G Fiber Cisco DNA Essentials, 48-port, 3 Year Term license

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<b>C9300-DNA-E-48S-5Y</b>	C9300 1G Fiber Cisco DNA Essentials, 48-port, 5 Year Term license
<b>C9300-DNA-E-48S-7Y</b>	C9300 Cisco DNA Essentials, 48-port, 7 Year Term license
<b>C9300-DNA-A-48S-3Y</b>	C9300 1G Fiber Cisco DNA Advantage, 48-port, 3 Year Term license
<b>C9300-DNA-A-48S-5Y</b>	C9300 1G Fiber Cisco DNA Advantage, 48-port, 5 Year Term license
<b>C9300-DNA-A-48S-7Y</b>	C9300 1G Fiber Cisco DNA Advantage, 48-port, 7 Year Term license
<b>C9300-DNA-L-E-3Y</b>	C9300 Cisco DNA Essentials license (3Y) for 12Y, 24Y SKU
<b>C9300-DNA-L-E-5Y</b>	C9300 Cisco DNA Essentials license (5Y) for 12Y, 24Y SKU
<b>C9300-DNA-L-E-7Y</b>	C9300 Cisco DNA Essentials license (7Y) for 12Y, 24Y SKU
<b>C9300-DNA-L-A-3Y</b>	C9300 Cisco DNA Advantage license (3Y) for 12Y, 24Y SKU
<b>C9300-DNA-L-A-5Y</b>	C9300 Cisco DNA Advantage license (5Y) for 12Y, 24Y SKU
<b>C9300-DNA-L-A-7Y</b>	C9300 Cisco DNA Advantage license (7Y) for 12Y, 24Y SKU
<b>C9300-LIC=</b>	Electronic Cisco DNA Upgrade License for C9300 switches. Note: when upgrading from Cisco DNA Essentials to Cisco DNA Advantage, Network Essentials is also upgraded to Network Advantage

## Software licenses for C9300L SKUs

Product number	Product number
<b>C9300L-DNA-E-24-3Y</b>	C9300L Cisco DNA Essentials, 24-port, 3 Year Term license
<b>C9300L-DNA-E-24-5Y</b>	C9300L Cisco DNA Essentials, 24-port, 5 Year Term license
<b>C9300L-DNA-E-24-7Y</b>	C9300L Cisco DNA Essentials, 24-port, 7 Year Term license
<b>C9300L-DNA-A-24-3Y</b>	C9300L Cisco DNA Advantage, 24-port, 3 Year Term license
<b>C9300L-DNA-A-24-5Y</b>	C9300L Cisco DNA Advantage, 24-port, 5 Year Term license
<b>C9300L-DNA-A-24-7Y</b>	C9300L Cisco DNA Advantage, 24-port, 7 Year Term license
<b>C9300L-DNA-E-48-3Y</b>	C9300L Cisco DNA Essentials, 48-port, 3 Year Term license
<b>C9300L-DNA-E-48-5Y</b>	C9300L Cisco DNA Essentials, 48-port, 5 Year Term license
<b>C9300L-DNA-E-48-7Y</b>	C9300L Cisco DNA Essentials, 48-port, 7 Year Term license
<b>C9300L-DNA-A-48-3Y</b>	C9300L Cisco DNA Advantage, 48-port, 3 Year Term license
<b>C9300L-DNA-A-48-5Y</b>	C9300L Cisco DNA Advantage, 48-port, 5 Year Term license
<b>C9300L-DNA-A-48-7Y</b>	C9300L Cisco DNA Advantage, 48-port, 7 Year Term license
<b>C9300L-LIC=</b>	Electronic Cisco DNA Upgrade License for C9300L switches. Note: when upgrading from

## Switches

Cisco DNA Essentials to Cisco DNA Advantage, Network Essentials is also upgraded to Network Advantage

### Power supplies

Product number	Product description
<b>PWR-C1-350WAC=</b>	350WAC power supply spare
<b>PWR-C1-715WAC=</b>	715WAC power supply spare
<b>PWR-C1-715WDC=</b>	715WDC power supply spare
<b>PWR-C1-1100WAC=</b>	1100WAC power supply spare
<b>PWR-C1-1900WAC=</b>	1900WAC Power supply spare
<b>PWR-C1-350WAC-P=</b>	350WAC Platinum-rated power supply spare
<b>PWR-C1-715WAC-P=</b>	715WAC Platinum-rated power supply spare
<b>PWR-C1-1100WAC-P=</b>	1100WAC Platinum-rated power supply spare
<b>PWR-C1-715WAC-UP</b>	Upgrade to 715WAC Platinum-rated power supply
<b>PWR-C1-1100WAC-UP</b>	Upgrade to 1100WAC Platinum-rated power supply
<b>PWR-C1-1900WAC-UP</b>	Upgrade to 1900WAC Platinum-rated power supply

### Cisco StackWise-480/1T and StackPower cables

Product number	Product description
<b>STACK-T1-50CM=</b>	Cisco StackWise-480/1T 50cm stacking cable spare
<b>STACK-T1-1M=</b>	Cisco StackWise-480/1T 1m stacking cable spare
<b>STACK-T1-3M=</b>	Cisco StackWise-480/1T 3m stacking cable spare
<b>CAB-SPWR-30CM=</b>	Cisco Catalyst 3850 StackPower cable 30cm spare
<b>CAB-SPWR-150CM=</b>	Cisco Catalyst 3850 StackPower cable 150cm spare

### Cisco StackWise-320 Accessories

Product number	Product description
<b>C9300L-STACK-KIT</b>	Stack Kit for C9300L SKUs - includes 2 Stack Adaptors and 1 Stack Cable
<b>C9300L-STACK-KIT=</b>	Stack Kit for C9300L SKUs - includes 2 Stack Adaptors and 1 Stack Cable, spare
<b>STACK-T3-50CM</b>	50CM Type 3 Stacking Cable - default with Stack Kit for C9300L SKUs
<b>STACK-T3-50CM=</b>	50CM Type 3 Stacking Cable, spare for C9300L SKUs

Switches	
<b>STACK-T3-1M</b>	1M Type 3 Stacking Cable for C9300L SKUs
<b>STACK-T3-1M=</b>	1M Type 3 Stacking Cable, spare for C9300L SKUs
<b>STACK-T3-3M</b>	3M Type 3 Stacking Cable for C9300L SKUs
<b>STACK-T3-3M=</b>	3M Type 3 Stacking Cable, spare for C9300L SKUs
Spare power cords	
<b>CAB-TA-NA=</b>	AC power cord for Cisco Catalyst (North America)
<b>CAB-TA-AP=</b>	AC power cord for Cisco Catalyst (Australia)
<b>CAB-TA-AR=</b>	AC power cord for Cisco Catalyst (Argentina)
<b>CAB-TA-SW=</b>	AC power cord for Cisco Catalyst (Switzerland)
<b>CAB-TA-UK=</b>	AC power cord for Cisco Catalyst (United Kingdom)
<b>CAB-TA-JP=</b>	AC power cord for Cisco Catalyst (Japan)
<b>CAB-TA-250VAC-JP=</b>	Japan 250VAC power cord for Cisco Catalyst (Japan)
<b>CAB-TA-EU=</b>	AC power cord for Cisco Catalyst (Europe)
<b>CAB-TA-IT=</b>	AC power cord for Cisco Catalyst (Italy)
<b>CAB-TA-IN=</b>	AC power cord for Cisco Catalyst (India)
<b>CAB-TA-CN=</b>	AC power cord for Cisco Catalyst (China)
<b>CAB-TA-DN=</b>	AC power cord for Cisco Catalyst (Denmark)
<b>CAB-TA-IS=</b>	AC power cord for Cisco Catalyst (Israel)
<b>CAB-ACBZ-12A=</b>	AC power cord for Cisco Catalyst (Brazil), 12A/125V BR-3-20 plug up to 12A
<b>CAB-ACBZ-10A=</b>	AC power cord for Cisco Catalyst (Brazil), 10A/250V BR-3-10 plug up to 10A
<b>CAB-C15-CBN</b>	Cabinet jumper power cord, 250VAC 13A, C14-C15 connectors

## Optics online reference

The Cisco Catalyst 9300 Series supports a wide range of optics. Because the list of supported optics is updated on a regular basis, consult the tables available here for the latest QSFP28, QSFP+, SFP+, and SFP compatibility information:

[https://www.cisco.com/en/US/products/hw/modules/ps5455/products\\_device\\_support\\_tables\\_list.html](https://www.cisco.com/en/US/products/hw/modules/ps5455/products_device_support_tables_list.html).

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## Document history

New or revised topic	Described In	Date
Added Information about 9300X, copper models	All relevant sections	February 3, 2022
Added Information about 9300X fiber models	All relevant sections	March 2, 2021
Added information about the 1G 90W UPOE+ SKUs	Across different sections	February 10, 2020
Added new SKUs for C9300L - Full PoE+ and mGig SKUs	Content added to all the tables	December 2, 2019
Updates for C9300 - large buffer/scale SKUs	All relevant sections	October 9, 2019
Adding Primary PSU upgrade option for 9300	<a href="#">Table 3: Power supply models</a>	June 20, 2019
Product name change: Cisco ONE to Cisco DNA	<a href="#">Introduction</a>	May 10, 2019
Wi-Fi 6 addition	<a href="#">Product Overview: Features</a>	May 10, 2019
Add: Features	<a href="#">Product Overview: Features</a>	May 10, 2019
Add: Modular uplink models table	<a href="#">Platform Details</a>	May 10, 2019
Edit: Cisco Catalyst 9300 Series modular uplink	<a href="#">Platform Details</a>	May 10, 2019
Edit: Table 1: Cisco Catalyst 9300 Series Switch configurations; uplink configuration add	<a href="#">Platform Details</a>	May 10, 2019
Edit: Table 2: Name change to "Catalyst 9300..."	<a href="#">Platform Details</a>	May 10, 2019
Add: Figure 3: picture for C9300L	<a href="#">Platform Details</a>	May 10, 2019
Edit: Table 3: Power supply models	<a href="#">Platform Details</a>	May 10, 2019

New or revised topic	Described In	Date
<b>Add: Stacking, Table 4</b>	<a href="#">Platform Details</a>	May 10, 2019
<b>Add: Stacking Accessories, Table 5</b>	<a href="#">Platform Details</a>	May 10, 2019
<b>Edit: Replaced C3850 stack picture with C9300 stack picture</b>	<a href="#">Platform Details</a>	May 10, 2019
<b>Add: Fan, Table 6</b>	<a href="#">Platform Details</a>	May 10, 2019
<b>Edit: Table 7</b>	<a href="#">Performance and Scalability</a>	May 10, 2019
<b>Add: Bandwidth Specifications</b>	<a href="#">Performance and Scalability</a>	May 10, 2019
<b>Add: StackWise-320</b>	<a href="#">Resiliency and High Availability</a>	May 10, 2019
<b>Edit: name change from Cisco One to Cisco DNA Software</b>	<a href="#">Software Requirements</a>	May 10, 2019
<b>Edit: text edits</b>	<a href="#">Licensing</a>	May 10, 2019
<b>Edit: Table 13</b>	<a href="#">Licensing</a>	May 10, 2019
<b>Edit: Table 14</b>	<a href="#">Specifications</a>	May 10, 2019
<b>Edit: Table 15</b>	<a href="#">Connectors</a>	May 10, 2019
<b>Edit: Table 17</b>	<a href="#">Power Supply Specifications</a>	May 10, 2019
<b>Edit: Table 21</b>	<a href="#">Safety and Compliance</a>	May 10, 2019
<b>Edit: Table 23</b>	<a href="#">Ordering Information</a>	May 10, 2019
<b>Added support for SD-Access Embedded Wireless</b>	Added support for SD-Access Embedded Wireless Controller functionality.	Nov 13, 2018
<b>Updated Platinum Power Supply specifications</b>	Platinum rated power supplies available on the C9300 switches.	Oct 5, 2018
<b>Updated availability of SSD card</b>	Availability of 120G storage module for the C9300.	Oct 5, 2018

New or revised topic	Described In	Date
Updated <a href="#">Product overview</a>	Added Catalyst 9500 high density platforms and updated associated speeds and densities, e.g. Up to 6.4-Tbps switching capacity with up to 2 Bpps of forwarding performance from “3.2 Tbps/1 Bpps” a. 32 port 100G, b. 32 port 40G, c. 48 port 25G. Added Catalyst 9500 mid density platform a. 24 port 25G, b. 16 port 1/10G. Added new optical interfaces - QSFP28, SFP28. Added new power supply options - 650W, 1600W. Added RESCONF support. Stackwise Virtual extended to all Catalyst 9500 platforms.	Mar 31, 2018
Updated <a href="#">Audio Video Bridging</a>	AVB support noted for certain platforms. Corrected references to Catalyst 9000 switches, rather than Catalyst 9000 Series switches. Corrected references to Cisco IOS XE, rather than IOS-XE.	Dec 15, 2017

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# Cisco Catalyst 9500 Series Switches

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## Introduction

### Reimagine, Reinforce, Redefine

The Catalyst 9500 Series, including the new Catalyst 9500X models, continues to shape the future with continued innovation that helps you reimagine connections, reinforce security and redefine the experience for your hybrid workforce big and small.

Cisco Catalyst 9500 Series switches based on Cisco Unified Access Data Plane (UADP) Application-Specific Integrated Circuit (ASIC) are Cisco's lead fixed enterprise core and aggregation switching platform and as part of the Catalyst 9000 family, are built to transform your network to handle a hybrid world where the workplace is anywhere, endpoints could be anything, and applications are hosted all over the place.

Cisco Catalyst 9500X switch based on Cisco Silicon One Q200 ASIC is purpose built for the next generation core with a programmable pipeline (P4) and is the first network silicon to offer switching capacity upto 25.6 Tbps in the enterprise. The Q200 ASIC offers high-performance along with full routing and switching capabilities without external memories. This is enabled by internal architecture that includes an on-chip High Bandwidth Memory (HBM). The Catalyst 9500X switch leverages a high-performance multiple core x86 CPU, and is Cisco's leading purpose-built fixed core and edge services enterprise switching platform, built for security, IoT, and cloud.

Cisco Catalyst 9500X switch is the industry's first purpose-built fixed 40, 100, 200 and 400 Gigabit Ethernet switch targeted for the enterprise campus. The Catalyst 9500X switch delivers unmatched forwarding scale (MAC addresses, IP unicast and multicast routes, MPLS labels) and deep buffering for enterprise applications. The first Catalyst 9500X models includes non-blocking 100 Gigabit Ethernet Quad Small Form-Factor Pluggable (QSFP28) and non-blocking 400 Gigabit Ethernet Quad Small Form-Factor Pluggable Double Density (QSFP-DD) ports.

Catalyst 9500 Series switches support advanced routing and infrastructure services (such as Multiprotocol Label Switching [MPLS] Layer 2 and Layer 3 VPNs, Multicast VPN [MVPN], and Network Address Translation [NAT]); Cisco Software-Defined Access capabilities (such as a host tracking database, cross-domain connectivity, and VPN Routing and Forwarding [VRF]-aware Locator/ID Separation Protocol [LISP]); and network system virtualization with Cisco StackWise Virtual technology<sup>2</sup> that are critical for their placement in the campus core. The Cisco Catalyst 9500 Series also supports foundational high-availability capabilities such as patching, [Cisco Nonstop Forwarding with Stateful Switchover](#) (NSF/SSO2), redundant platinum-rated power supplies, and fans, while supporting a wide array of optics. Catalyst 9500 Series switches provide operational choice of Cisco DNA Center, or Meraki cloud monitoring.

### The foundation of Software-Defined Access

The enterprise network lies at the heart of digital transformation. A network that is open, programmable, integrated, and secure maximizes business agility, allowing new business opportunities to be pursued and captured.

The Cisco [Digital Network Architecture](#) (Cisco DNA) with [Software-Defined Access](#) (SD-Access) is the network fabric that powers business. Cisco SD-Access is an open and extensible, software-driven architecture that accelerates and simplifies your enterprise network operations. SD-Access enables policy-based automation from edge to cloud with foundational capabilities.

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## Product overview

### Cisco Catalyst 9500X models

- The Cisco [Silicon One Q200](#) Application-Specific Integrated Circuit (ASIC) is purpose built for the next generation network core + edge switch. It is the first enterprise ASIC to offer speeds up to 25.6 Tbps with 8 Bpps of forwarding performance, while supporting high-performance and full routing and switching capabilities without external memories.
- The Cisco Silicon One Q200 ASIC is built on 7nm fabrication technology, capable of high performance while maintaining a low power footprint.
- The Cisco Silicon One Q200 ASIC includes an 8GB on-chip High Bandwidth Memory (HBM), for deep packet buffers and route table expansion.
- Up to 12.0 Tbps switching capacity with 8 Bpps forwarding rate
- 80MB of dedicated low-latency buffer, with up to 8GB of HBM buffer
- Up to 28 nonblocking 40/100 Gigabit Ethernet QSFP28 ports
- Up to 8 nonblocking 40/100/200/400 Gigabit Ethernet QSFPDD ports
- Intel 2.43-GHz x86 CPU with 8 cores and 32-GB of DDR4 memory
- Up to 960 GB of SSD local storage for container-based application hosting (2x 10G KR ports)
- Flexible routing (IPv4, IPv6, and multicast) tables, Layer 2 tables, ACL tables, and QoS tables.
- ASIC tables for switching scale up to 256K MAC addresses and routing scale up to 2M routes.
- Dual-stack IPv4/IPv6 and dynamic hardware forwarding table allocations, for ease of IPv4-to-IPv6 migration
- Hardware support for Application Hosting<sup>1</sup> (e.g. with Cisco ThousandEyes Enterprise Agent).
- Hardware support for Precision Time Protocol (PTP, IEEE 1588v2)<sup>1</sup> with accurate clock synchronization and sub- microsecond accuracy, suitable for distribution and synchronization of time and frequency.
- Hardware support for line-rate 256-bit 802.1ae MACsec and WAN-MACsec<sup>1</sup> data encryption.
- Platinum-rated (90% efficient) 1500 Watt AC and/or DC power supplies.
- Field-replaceable fan-tray units, with an added flexibility to choose the direction of airflow.

---

## Cisco Catalyst 9500 models

- The [Cisco Unified Access Data Plane \(UADP\)](#) Application-Specific Integrated Circuit (ASIC) ready for next-generation technologies with its programmable pipeline, microengine capabilities, and template-based, configurable allocation of Layer 2 and Layer 3 forwarding, Access Control Lists (ACLs), and Quality-of-Service (QoS) entries
- Up to 6.4 Tbps switching capacity with up to 2 Bpps of forwarding performance
- Up to 36 MB of unified buffer per ASIC
- Intel 2.4-GHz x86 CPU with up to 120 GB of USB 3.0 or up to 960 GB of SATA SSD storage for container-based application hosting
- Up to 32 nonblocking 100 Gigabit Ethernet QSFP28 ports
- Up to 32 nonblocking 40 Gigabit Ethernet QSFP+ ports
- Up to 48 nonblocking 25 Gigabit Ethernet SFP28 ports
- Up to 48 nonblocking 10 Gigabit Ethernet SFP+ ports
- Scalable routing (IPv4, IPv6, and multicast) tables and Layer 2 tables
- Up to 256,000 routing entries (IPv4/IPv6) for high-end campus core and aggregation deployments
- Up to 512,000 Flexible NetFlow (FNF) entries in hardware
- IPv6 support in hardware, providing wire-rate forwarding for IPv6 networks
- Dual-stack IPv4/IPv6 and dynamic hardware forwarding table allocations, for ease of IPv4-to-IPv6 migration
- Hardware support for Application Hosting (e.g. with Cisco ThousandEyes Enterprise Agent).
- IEEE 802.1ba AV Bridging (AVB) built in to provide a better AV experience through improved time synchronization and QoS
- Precision Time Protocol (PTP; IEEE 1588v2) provides accurate clock synchronization with sub-microsecond accuracy, making it suitable for distribution and synchronization of time and frequency over the network
- Support for both static and dynamic NAT and Port Address Translation (PAT)
- Cisco StackWise Virtual technology, a network system virtualization technology that increases operational efficiency and boosts nonstop communications and scaled system bandwidth. Multichassis EtherChannel can be configured across StackWise-Virtual members for high resiliency
- Platinum-rated (90% efficient) AC and/pr DC power supplies
- Field-replaceable fan-tray units
- Meraki Cloud monitoring option

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## Cisco IOS XE

This modern operating system for the enterprise provides support for model-driven programmability, on-box Python scripting, streaming telemetry, container-based application hosting, and patching for critical bug fixes. Cisco IOS XE also has built-in defenses to protect against runtime attacks.

- **Cisco Plug and Play (PnP) enabled:** A simple, secure, unified, and integrated offering to ease new branch or campus device rollouts or updates to an existing network
- **Automated device provisioning:** This is the ability to automate the process of upgrading software images and installing configuration files on Cisco Catalyst switches when they are being deployed in the network for the first time. Cisco provides both turnkey solutions such as Plug and Play (PnP) and off-the-shelf tools such as Zero-Touch Provisioning (ZTP) and Preboot Execution Environment (PXE) that enable an effortless and automated deployment.
- **API-driven configuration:** Modern network switches such the Cisco Catalyst 9500 Series support a wide range of automation features and provide robust open APIs over Network Configuration Protocol (NETCONF, RESTCONF and gNMI) using YANG data models for external tools, both off-the-shelf and custom built, to automatically provision network resources.
- **Granular visibility:** Model-driven telemetry provides a mechanism to stream data from a switch to a destination. The data to be streamed is driven through subscription to a data set in a YANG model. The subscribed data set is streamed out to the destination at configured intervals. Additionally, Cisco IOS XE enables the push model, which provides near- real-time monitoring of the network, leading to quick detection and rectification of failures.
- **Seamless software upgrades and patching:** To enhance OS resilience, Cisco IOS XE supports patching, which provides fixes for critical bugs and security vulnerabilities between regular maintenance releases. This support allows customers to add patches without having to wait for the next maintenance release.
- **WebUI:** Embedded GUI-based device-management tool that provides the ability to provision the device, to simplify device deployment and manageability and to enhance the user experience. WebUI comes with the default image. There is no need to enable anything or install any license on the device. You can use WebUI to build a day-1 configuration and from then on monitor and troubleshoot the device without having to know how to use the CLI.

## Platform benefits

Model	Catalyst 9500	Catalyst 9500X
<b>Resiliency and High Availability</b>		
Software Maintenance Upgrade (SMU)	Yes	Yes
Cisco StackWise Virtual	Yes	No <sup>2</sup>
Stateful Switchover (SSO)	Yes (SVL)	No <sup>2</sup>
In-Service Software Upgrade (ISSU)	Yes (SVL)	No <sup>2</sup>
Graceful Insertion and Removal (GIR)	Yes	Yes
MKA High Availability	Yes	No <sup>2</sup>
<b>Enterprise Security</b>		
Trustworthy Solutions	Yes	Yes
Image Signing	Yes	Yes
Secure Boot	Yes	Yes
Cisco Trust Anchor Module	Yes	Yes
MACsec Encryption (256-bit AES-GCM)	Yes	Yes
Cisco WAN MACsec (256-bit AES-GCM)	No	Yes <sup>1</sup>
Object-Group ACLs (IPv4/IPv6)	Yes	Yes
<b>Enterprise QoS</b>		
Modular QoS CLI (MQC)	Yes	Yes
Strict Priority Queuing	Yes	Yes
Class/Color-aware Queuing	Yes (WFQ)	Yes (VoQ)
Policing/Metering	Yes	Yes
Shaping/Bandwidth	Yes	Yes
Hierarchical QoS	Yes (2-level)	Yes (2-level)

Model	Catalyst 9500	Catalyst 9500X
<b>IP Routing</b>		
Routing Information Protocol version 2 (RIPv2), and next generation [RIPng]	Yes	Yes
Open Shortest Path First version 2 (OSPFv2), and OSPFv3	Yes	Yes
Enhanced Interior Gateway Routing Protocol (EIGRP), and EIGRPv6	Yes	Yes
Intermediate System-to-Intermediate System Version 4 (IS-ISv4)	Yes	Yes
Border Gateway Protocol Version 4 (BGPv4), and BGPv6	Yes	Yes
Protocol-Independent Multicast (PIM) Sparse-Mode (PIM-SM)	Yes	Yes
Protocol-Independent Multicast (PIM) Source-Specific Mode (PIM-SSM)	Yes	Yes
Bidirectional PIM BIDIR-PIM	Yes	No <sup>2</sup>
IPv6 routing	Yes	Yes
L3 Routed Sub-Interfaces	Yes	Yes
<b>Multi-Protocol Label Switching (MPLS)</b>		
MPLS L3 VPN	Yes	Yes
Ethernet over MPLS (EoMPLS)	Yes	Yes
Virtual Private LAN Service (VPLS)	Yes	No <sup>2</sup>
MPLS over GRE	Yes	No <sup>2</sup>
MPLS Traffic-Engineering (MPLS-TE)	Yes	No <sup>2</sup>
<b>Ethernet VPN (EVPN)</b>		
Virtual eXtensible LAN (VXLAN)	Yes	No <sup>2</sup>
L2 Virtual Network Interface (VNI)	Yes	No <sup>2</sup>
L3 Virtual Network Interface (VNI)	Yes	No <sup>2</sup>
Distributed Anycast Gateway	Yes	No <sup>2</sup>
EVPN Spine	Yes	No <sup>2</sup>
EVPN Border	Yes	No



Model	Catalyst 9500	Catalyst 9500X
EVPN Leaf	Yes	No <sup>2</sup>
<b>Software-Defined Access (SD-Access)</b>		
Virtual eXtensible LAN (VXLAN)	Yes	Yes
L2 Virtual Network Interface (VNI)	Yes	Yes
L3 Virtual Network Interface (VNI)	Yes	Yes
Distributed Anycast Gateway	Yes	Yes
SDA Control-Plane	Yes	Yes
SDA Border	Yes	Yes
SDA Edge	Yes	No
<b>Flexible NetFlow (FNF)</b>		
FNF IPv4 flow records	Yes	Yes <sup>1</sup> (software)
FNF IPv6 flow records	Yes	Yes <sup>1</sup> (software)
FNF sampler	Yes	Yes <sup>1</sup>
FNF data export	Yes	Yes <sup>1</sup>
NetFlow version 9 (NFv9) export	Yes	Yes <sup>1</sup>
IPFIX export	Yes	Yes <sup>1</sup>
<b>Programmability</b>		
NETCONF	Yes	Yes
RESTCONF	Yes	Yes
gNMI/gNOI	Yes	Yes
YANG Config models	Yes	Yes
YANG Oper models	Yes	Yes
ZTP/PTP	Yes	Yes
<b>Smart Operations</b>		
Bluetooth Ready	Yes	Yes <sup>2</sup>
RFID Tags	Yes	Yes
Blue Beacon	Yes	Yes

Model	Catalyst 9500	Catalyst 9500X
Out of Band Device Mgmt	Yes (RJ45 and USB-mini type B)	Yes (RJ-45 and USB-C)
Meraki Cloud Monitoring	Yes	No

<sup>1</sup> C9500X models: minimum IOS XE software release 17.8.1

<sup>2</sup> C9500X models: feature is not available at FCS, but will be available in future software releases

## Platform details

### Switch models and configurations

All switches ship with the 650W/950W/1500W/1600W AC power supply as default

Figures 1 through 9 show the Cisco Catalyst 9500 Series Switches



**Figure 1.**  
C9500X-28C8D: Cisco Catalyst 9500X switch with 28x40/100G QSFP28 ports + 8x40/100/2001/400G Gigabit Ethernet



**Figure 2.**  
C9500-32C: Cisco Catalyst 9500 Series high-performance switch with 32x 100 Gigabit Ethernet



**Figure 3.**  
C9500-32QC: Cisco Catalyst 9500 Series high-performance switch with 32x 40 or 16x100 Gigabit Ethernet



**Figure 4.**  
C9500-48Y4C: Cisco Catalyst 9500 Series high-performance switch with 48x 1/10/25G Gigabit Ethernet + 4x 40/100G Uplink



**Figure 5.**  
C9500-24Y4C: Cisco Catalyst 9500 Series high-performance switch with 24x 1/10/25G Gigabit Ethernet + 4x 40/100G Uplink



**Figure 6.**  
C9500-24Q: Cisco Catalyst 9500 Series switch with 24x 40G Gigabit Ethernet



**Figure 7.**  
C9500-12Q: Cisco Catalyst 9500 Series switch with 12x 40G Gigabit Ethernet



**Figure 8.**  
C9500-40X: Cisco Catalyst 9500 Series switch with 40x 1/10G Gigabit Ethernet



**Figure 9.**  
C9500-16X: Cisco Catalyst 9500 Series switch with 16x 1/10G Gigabit Ethernet

### Switch configurations and port density

Table 1 shows the Cisco Catalyst 9500X switch configurations

**Table 1.** Cisco Catalyst 9500X switch configuration and port density

Model	Description	40G port density	100G port density	400G port density	10G port density with breakout cable	25G port density with breakout cable	50G port density with breakout cable	40G port density with breakout cable	100G port density with breakout cable
<b>C9500X-28C8D</b>	Cisco Catalyst 9500X with 28x100G + 8x400G Gigabit Ethernet	28	28	8	120 <sup>1</sup>	120 <sup>1</sup>	120 <sup>1</sup>	60	60

<sup>1</sup> Roadmap. All numbers in the above table are for a single standalone switch.

Table 2 shows the Cisco Catalyst 9500 Series configurations

**Table 2.** Cisco Catalyst 9500 Series configurations and port density

Model	Description	1G port density	10G port density	25G port density	40G port density	100G Port density	10G port density with breakout cable	25G port density with breakout cable
<b>C9500-32C</b>	Cisco Catalyst 9500 Series high-performance 32-port 100 Gigabit Ethernet switch with QSFP28	48	-	-	32	32	96	96
<b>C9500-32QC</b>	Cisco Catalyst 9500 Series high-performance 32-port 40 Gigabit Ethernet switch with QSFP+	-	-	-	32	16	-	-
<b>C9500-48Y4C</b>	Cisco Catalyst 9500 Series high-performance 48-port 1/10/25G Gigabit Ethernet switch with SFP28	48	48	48	4	4	-	-
<b>C9500-24Y4C</b>	Cisco Catalyst 9500 Series high-performance 24-port 1/10/25G Gigabit Ethernet switch with SFP28	24	24	24	4	4	-	-
<b>C9500-24Q</b>	Cisco Catalyst 9500 Series 24-port 40 Gigabit Ethernet switch with QSFP+	-	-	-	24	-	96	-
<b>C9500-12Q</b>	Cisco Catalyst 9500 Series 12-port 40 Gigabit Ethernet switch with QSFP+	-	-	-	12	-	48	-
<b>C9500-40X</b>	Cisco Catalyst 9500 Series 40-port 1/10 Gigabit Ethernet Switch with SFP/SFP+	40+8 <sup>1</sup>	40+8 <sup>1</sup>	-	2	-	8 <sup>1</sup>	-
<b>C9500-16X</b>	Cisco Catalyst 9500 Series 16-port 1/10 Gigabit Ethernet switch with SFP/SFP+	16+8 <sup>1</sup>	16+8 <sup>1</sup>	-	2	-	8 <sup>1</sup>	-

All numbers in the above table are for the standalone switch.

<sup>1</sup>with uplink module.

## Network modules

The Cisco Catalyst 9500 Series Switches support optional network modules for uplink ports on some of the configurations.

The default switch configuration does not include the network module. When you purchase the switch, you can choose from the network modules described in Tables 3 and 4.

**Table 3.** Network module numbers and descriptions

Network module	Description
C9500-NM-8X	Cisco Catalyst 9500 Series Network Module 8-port 1/10 Gigabit Ethernet with SFP/SFP+
C9500-NM-2Q	Cisco Catalyst 9500 Series Network Module 2-port 40 Gigabit Ethernet with QSFP+

**Table 4.** Network module matrix

Model	C9500-NM-8X	C9500-NM-2Q
C9500X-28C8D	No	No
C9500-32C	No	No
C9500-32QC	No	No
C9500-48Y4C	No	No
C9500-24Y4C	No	No
C9500-24Q	No	No
C9500-12Q	No	No
C9500-40X	Yes	Yes
C9500-16X	Yes	Yes

Figures 9 and 10 show the available network modules



**Figure 10.** Cisco Catalyst 9500 Series network module 8-port 1/10 Gigabit Ethernet with SFP/SFP+



**Figure 11.**  
Cisco Catalyst 9500 Series network module 2-port 40 Gigabit Ethernet with QSFP+

## Accessories

The Cisco Catalyst 9500 Series Switches support optional accessories.

The default switch configuration ships with default 19" brackets. The accessories mentioned below need to be selected during configuration and ordered separately.

**Table 5.** Accessories and descriptions

Product number	Description
<b>C9500X-ACCKIT-19I=</b>	Accessory Kit for Cisco Catalyst 9500X Switch - 19" rack mount <sup>1</sup>
<b>C9500X-ACCKIT-23I=</b>	Accessory Kit for Cisco Catalyst 9500X Switch - 23" rack mount <sup>1</sup>
<b>C9500X-4PTH-KIT=</b>	Extension rails and brackets for four-point mounting for Cisco Catalyst 9500X Switch <sup>1</sup>
<b>C9500-ACCKITH-19I=</b>	Accessory Kit for Cisco Catalyst 9500 Series - High-End - 19" rack mount
<b>C9500-ACCKITH-23I=</b>	Accessory Kit for Cisco Catalyst 9500 Series - High-End - 23" rack mount
<b>C9500-4PTH-KIT=</b>	Extension rails and brackets for four-point mounting for Cisco Catalyst 9500 Series - High-End
<b>C9500-ACC-KIT-19I=</b>	Accessory Kit for Cisco Catalyst 9500 Series - 19" rack mount
<b>C9500-ACC-KIT-23I=</b>	Accessory Kit for Cisco Catalyst 9500 Series - 23" rack mount
<b>C9500-4PT-KIT=</b>	Extension rails and brackets for four-point mounting for Cisco Catalyst 9500 Series
<b>SSD-120G</b>	Cisco pluggable USB3.0 SSD storage - 120 GB
<b>C9K-F3-SSD-240GB</b>	Cisco pluggable SSD storage - 240 GB (Catalyst 9500X) <sup>1</sup>
<b>C9K-F3-SSD-480GB</b>	Cisco pluggable SSD storage - 480 GB (Catalyst 9500X) <sup>1</sup>
<b>C9K-F3-SSD-960GB</b>	Cisco pluggable SSD storage - 960 GB (Catalyst 9500X) <sup>1</sup>
<b>C9K-F1-SSD-240G</b>	Cisco pluggable SSD storage - 240 GB
<b>C9K-F1-SSD-480G</b>	Cisco pluggable SSD storage - 480 GB
<b>C9K-F1-SSD-960G</b>	Cisco pluggable SSD storage - 960 GB

<sup>1</sup> Only supported on Catalyst C9500X models

**Table 6.** Accessory matrix

Model	C9500-ACCKITH-19I=	C9500-ACCKITH-23I=	C9500-4PTH-KIT=	C9500-ACC-KIT-19I=	C9500-ACC-KIT-23I=	C9500-4PT-KIT=	C9K-F1-SSD-240G	C9K-F1-SSD-480G	C9K-F1-SSD-960G
<b>C9500-32C</b>	Yes	Yes	Yes	No	No	No	Yes	Yes	Yes
<b>C9500-32QC</b>	Yes	Yes	Yes	No	No	No	Yes	Yes	Yes
<b>C9500-48Y4C</b>	Yes	Yes	Yes	No	No	No	Yes	Yes	Yes
<b>C9500-24Y4C</b>	Yes	Yes	Yes	No	No	No	Yes	Yes	Yes
<b>C9500-24Q</b>	No	No	No	Yes	Yes	Yes	No	No	No
<b>C9500-12Q</b>	No	No	No	Yes	Yes	Yes	No	No	No
<b>C9500-40X</b>	No	No	No	Yes	Yes	Yes	No	No	No
<b>C9500-16X</b>	No	No	No	Yes	Yes	Yes	No	No	No

Catalyst 9500X models have their own Accessory kits and SSD storage.

Figure 12 shows the 240-GB SSD storage.



**Figure 12.**  
240-GB SSD storage

## Power supplies and fan tray

The Cisco Catalyst 9500 Series Switches support dual 1+1 redundant power supplies (AC or DC). The switches ship with one power supply by default. The second power supply can be purchased at the time the switch is ordered or at a later time. If only one power supply is installed, it should always be in power supply bay #1.

The Catalyst 9500 Series ship with up to five field-replaceable variable-speed fans. These have front-to-back airflow and can operate with up to one individual fan failure. The fan trays support fan-tray Online Insertion and Removal (OIR) and can support a maximum fan speed of up to 24,000 rpm.

Catalyst 9500X models ship with six field-replaceable variable-speed fan units. By default these have front-to-back (port-side intake) airflow fan units. The switch also has the option to select six back-to-front (port-side exhaust) airflow fans (for reversible airflow: either front-to-back or back-to-front). This unique innovation enables the Catalyst 9500X to adjust the fan directions on the power supplies, based on preferred air flow.

**Note:** All Catalyst 9500X fan units must be the same type (either front-to-back or back-to-front).

**Table 7.** C9500X-28C8D Fan Options

Product number	Description
<b>C9500X-FAN-1U-R</b>	Catalyst 9500X front to back cooling fan
<b>C9500X-FAN-1U-F</b>	Catalyst 9500X back to front cooling fan

Table 8 shows the maximum fans and fan trays for each configuration.

**Table 8.** C9500 Fan and fan tray matrix

Model	FAN-T4-R (Max # of fans)	C9K-T1-FANTRAY (Max # of fans)
<b>C9500-32C</b>	Yes (5)	No
<b>C9500-32QC</b>	No	Yes (4)
<b>C9500-48Y4C</b>	No	Yes (4)
<b>C9500-24Y4C</b>	No	Yes (4)
<b>C9500-24Q</b>	Yes (5)	No
<b>C9500-12Q</b>	Yes (5)	No
<b>C9500-40X</b>	Yes (5)	No
<b>C9500-16X</b>	Yes (5)	No



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Figures 13 to 16 show the power supplies available for the Cisco Catalyst 9500 Series



**Figure 13.**  
950W AC power supply



**Figure 14.**  
650W AC power supply (C9K-PWR-650WAC-R)



**Figure 15.**  
1600W AC power supply



**Figure 16.**  
650W AC power supply (C9K-PWR-650WACL-R)

Tables 9 and 10 provides more details on the Cisco Catalyst 9500X models power supplies

**Table 9.** C9500X Power supply specifications

Power supply feature	C9K-PWR-1500WAC	C9K-PWR-1500WDC
Power max rating	1500	1500
Input-voltage range and frequency	90-264Vac 47-63Hz	-40Vdc to -72Vdc
Power supply efficiency	92% (115Vac 50% load) 94% (230Vac 50% load)	94% (-48Vdc to -60Vdc, 50% load)
Input current	17A (max) at Vac 100V 7A (max) at Vac 240V	45A (max) at -40Vdc
Output ratings	Main Output: 12V 125A Standby Output: 3.3V 5A	Main Output: 12V 125A Standby Output: 3.3V 5A
Output holdup time	12ms	2ms
Power-supply input receptacles	C22 <sup>1</sup>	C10-638977-00 Amphenol Connector
Power cord rating	16A	N/A

<sup>1</sup> The Catalyst 9500X uses a different AC connector (C21) than the rest of the C9500 Product Family

**Table 10.** BTU Details for C9500X-28C8D with AC/ DC PSU

Total output BTU (Note: 1000 BTU/hr = 293W) - Model	C9K-PWR-1500WAC	C9K-PWR-1500WDC
C9500X-28C8D	4,034	4,034

Tables 11 and 12 provides more details on the Cisco Catalyst 9500 Series power supplies

**Table 11.** C9500 Power supply specifications

Power supply feature	PWR-C4-950WAC-R	PWR-C4-950WDC-R	C9K-PWR-650WAC-R	C9K-PWR-650WACL-R	C9K-PWR-930WDC-R	C9K-PWR-1600WAC-R	C9K-PWR-1600WDC-R
Power max rating	950W	950W	650W	650W	930W	1600W	1600W
Input-voltage range and frequency	AC 90 to 264 VAC, 47 to 63 Hz	-36Vdc~ - 72Vdc	AC 90VAC to 264VAC, 47 to 63 Hz	AC 90VAC to 264VAC, 47 to 63 Hz	DC -40VDC to -72VDC	AC 90VAC to 140VAC and 180VAC to 264VAC 47 to 63 Hz	DC -40VDC to -72VDC
Power supply efficiency	94%	91% at 48Vin, 50% load	94% (Typ)	94% (Typ)	92% (Typ)	94% (Typ)	92% (Typ)
Input current	AC 10A at 115VAC, 5 A	22.6A @ 48Vin, 950W	AC 6.8A Max at 115VAC,	AC 6.8A Max at 115VAC,	DC 23A max at -48VDC	AC 10.5A Max at	DC 40A max at -48VDC

Power supply feature	PWR-C4-950WAC-R	PWR-C4-950WDC-R	C9K-PWR-650WAC-R	C9K-PWR-650WACL-R	C9K-PWR-930WDC-R	C9K-PWR-1600WAC-R	C9K-PWR-1600WDC-R
	at 230VAC		3.4 A Max at 230VAC (when full loading)	3.4 A Max at 230VAC (when full loading)	(when full loading)	115VAC (1050W), 7.8 A Max at 230VAC (1600W)	(when full loading)
<b>Output ratings</b>	12V at 79A, 12V at 3A	950W	12Vmain at 54A, 12Vsb at 3A	12Vmain at 54A, 12Vsb at 3A	12Vmain at 54A, 12Vsb at 3A	12Vmain at 133A, 12Vsb at 3A	12Vmain at 133A, 12Vsb at 3A
<b>Output holdup time</b>	AC = 10 ms at maximum load	1ms	AC = 20 ms minimum for system	AC = 12 ms minimum at maximum load	AC = 8 ms minimum for system	AC = 20 ms minimum for system	AC = 5 ms minimum for system
<b>Power-supply input receptacles</b>	AC IEC 60320 C16		AC IEC 60320 C14	AC IEC 60320 C14	Molex Minifit 44540-1001	AC IEC 60320 C16	Amphenol C10-638976-000
<b>Power cord rating</b>	AC 15A	DC 40A	AC 10A	AC 10A	DC 40A	AC 15A	DC 70A

**Table 12.** BTU Details for 9500 Power Supplies (BTU/hr)

Total output BTU (Note: 1000 BTU/hr = 293W) - Model	C9K-PWR-1600WAC-R	C9K-PWR-1600WDC-R	C9K-PWR-650WAC-R	C9K-PWR-650WACL-R	C9K-PWR-930WDC-R	PWR-C4-950WAC-R	PWR-C4-950WDC-R
<b>C9500-32C</b>	3,631	3,709	N/A	N/A	N/A	N/A	N/A
<b>C9500-32QC</b>	N/A	N/A	1,815	1,815	1,856	N/A	N/A
<b>C9500-48Y4C</b>	N/A	N/A	1,856	1,856	1,856	N/A	N/A
<b>C9500-24Y4C</b>	N/A	N/A	1,454	1,454	1,484	N/A	N/A
<b>C9500-24Q</b>	N/A	N/A	N/A	N/A	N/A	2,900	2,976
<b>C9500-12Q</b>	N/A	N/A	N/A	N/A	N/A	1,536	1,562
<b>C9500-40X with 10G NM</b>	N/A	N/A	N/A	N/A	N/A	1,467	1,451
<b>C9500-40X with 40G NM</b>	N/A	N/A	N/A	N/A	N/A	1,365	1,376
<b>C9500-16X with 10G NM</b>	N/A	N/A		N/A	N/A	941	967
<b>C9500-16X with 40G NM</b>	N/A	N/A		N/A	N/A	904	930

Table 13 shows the power supplies supported in the Cisco Catalyst 9500 Series Switches

**Table 13.** C9500 Power supply matrix

Model	C9K-PWR-1600WAC-R	C9K-PWR-1600WDC-R	C9K-PWR-650WAC-R	C9K-PWR-650WACL-R	C9K-PWR-930WDC-R	PWR-C4-950WAC-R	PWR-C4-950WDC-R
C9500-32C	Yes	Yes	No	No	No	No	No
C9500-32QC	No	No	Yes	Yes	Yes	No	No
C9500-48Y4C	No	No	Yes	Yes	Yes	No	No
C9500-24Y4C	No	No	Yes	Yes	Yes	No	No
C9500-24Q	No	No	No	No	No	Yes	Yes
C9500-12Q	No	No	No	No	No	Yes	Yes
C9500-40X	No	No	No	No	No	Yes	Yes
C9500-16X	No	No	No	No	No	Yes	Yes

Table 14 shows key differences between C9K-PWR-650WAC-R and C9K-PWR-650WACL-R

**Table 14.** Key differences between C9K-PWR-650WAC-R and C9K-PWR-650WACL-R

Criteria	C9K-PWR-650WAC-R	C9K-PWR-650WACL-R
IEC-61000-4-5 Surge	4KV CM, 2KV DM	2.5KV CM, 1KV DM
AC line Hold-up Time	>=20ms@90% load	>=12ms@100% load
OPP (Over Power Protection)	130% x rated load	140% x rated load

## Switch performance

Table 15 shows performance specifications for the Cisco Catalyst 9500 Series Switches

**Table 15.** Performance specifications

Performance numbers for all switch models	C9500-24Q	C9500-12Q	C9500-40X	C9500-16X	C9500-32C	C9500-32QC	C9500-48Y4C	C9500-24Y4C	C9500X-28C8D
ASIC	UADP 2.0				UADP 3.0				Q200
<b>Switching capacity</b>	Up to 1920 Gbps	Up to 960 Gbps	Up to 960 Gbps	Up to 480 Gbps	Up to 6.4 Tbps <sup>2</sup>	Up to 3.2 Tbps <sup>2</sup>	Up to 3.2 Tbps <sup>2</sup>	Up to 2.0Tbps <sup>2</sup>	Up to 12 Tbps
<b>Forwarding rate</b>	Up to 1440 Mpps	Up to 720 Mpps	Up to 720 Mpps	Up to 360 Mpps	Up to 2 Bpps	Up to 1 Bpps	Up to 1 Bpps	Up to 1 Bpps	8 Bpps
<b>Total number of MAC addresses</b>	Up to 64,000 <sup>1</sup>				Up to 82,000 <sup>1</sup>				Up to 256,000 <sup>1</sup>
<b>Total number of IPv4 routes (indirect routes)</b>	Up to 64,000 indirect <sup>1,6</sup>				Up to 256,000 indirect + direct <sup>1,6</sup>				Up to 2,000,000 <sup>6</sup>
<b>Total number of IPv4 host routes (direct routes and ARP)</b>	Up to 80,000 host <sup>1,6</sup>				Up to 90,000 host/ARP <sup>2,6</sup>				Up to 256,000 <sup>1,6</sup>
<b>Total number of IPv6 routes (indirect routes)</b>	Up to 32,000 indirect <sup>1,6</sup>				Up to 256,000 indirect + direct <sup>1,6</sup>				Up to 1,000,000 <sup>6</sup>
<b>Total number of IPv6 host routes (direct routes and NDP)</b>	Up to 40,000 host <sup>1,6</sup>				Up to 90,000 host <sup>1,6</sup>				Up to 128,000 <sup>1,6</sup>
<b>Total number of IPv4 Multicast routes</b>	Up to 32,000 <sup>1,6</sup>				Up to 32,000 <sup>1,6</sup>				Up to 32,000 <sup>1,6</sup>
<b>Total number of IPv6 Multicast routes</b>	Up to 16,000 <sup>1,6</sup>				Up to 32,000 <sup>1,6</sup>				Up to 16,000 <sup>1,6</sup>
<b>QoS ACL scale</b>	Up to 18,000 <sup>1</sup>				Up to 16,000 <sup>1</sup>				Up to 8,000 <sup>1</sup>
<b>Security ACL scale</b>	Up to 18,000 <sup>1</sup>				Up to 27,000 <sup>1</sup>				Up to 8,000 <sup>1</sup>
<b>FNF entries</b>	Up to 512,000 <sup>1</sup>				Up to 256,000 <sup>1</sup>				Up to 2,000,000 <sup>5</sup>
<b>DRAM</b>	16 GB				16 GB				32 GB
<b>Flash</b>	16 GB				16 GB				16 GB

Performance numbers for all switch models	C9500-24Q	C9500-12Q	C9500-40X	C9500-16X	C9500-32C	C9500-32QC	C9500-48Y4C	C9500-24Y4C	C9500X-28C8D
ASIC	UADP 2.0				UADP 3.0				Q200
VLAN IDs	4094				4094				4094
PVST Instances	300 <sup>3</sup>				4,000 <sup>1</sup>				4094
STP Virtual Ports (Port* VLANs) for PVST	13,000				16,000				32,000
STP Virtual Ports (Port* VLANs) for MST	13,000				52,000 <sup>1</sup>				32,000
Total Switched Virtual Interfaces (SVIs)	1,000				4,000 <sup>1</sup>				4096
Jumbo frame	9,198 bytes				9,216 bytes				9,216 bytes

<sup>1</sup> Varies based on selected flexible ASIC template.

<sup>2</sup> Line rate for 187byte packet size and above.

<sup>3</sup> 300 with IOS XE release 17.1.1 or later. 256 with IOS XE 16.12.x and 16.11.x 128 with IOS XE 16.10.x or earlier.

<sup>4</sup> 32,000 with C9500-32C and C9500-32QC; 52,000 with C9500-48Y4C; 28,000 with C9500-24Y4C.

<sup>5</sup> Roadmap

<sup>6</sup> Table Maximum. The exact % of allocation will depend on specific IP/mask combinations.

## Important notes

Directly-connected (or host) IP routes mean any /32 or /128 routes, including those are learned indirectly (clients attached to switch's own VLAN/SVI and those /32 prefixes learned over any routing protocols, such as over OSPF.

Indirectly-connected (or advertised) IP route are any routes with a prefix other than /32 or 128 (for example: /8, /16, /24, etc.).

UADP 2.0 based C9500-12Q, C9500-24Q, C9500-40X, and C9500-16X support 32,000 adjacency in hardware. So essentially, they can support up to ~32,000 directly attached clients (including all adjacency) in their own VLAN/SVI.

UADP 3.0 based C9500-32C, 32QC, 24Y4C, and 48Y4C support 80,000 adjacency for SVI, with SDM template of distribution and 90,000 direct routes for all supported templates when a Layer 3 routed port is used.

## Flexible ASIC templates

Cisco Catalyst 9000 series switches use flexible Software Database Manager (SDM) ASIC templates to enable universal deployments by leveraging the UADP's ability to create resources to optimize table sizes for different places in the network. Based on how the switch is used in the network, an appropriate SDM ASIC template may be selected to configure the switch for specific features.

### Catalyst 9500X models

Cisco Catalyst 9500X models support the following SDM ASIC templates

- Default (Core)
- Custom

Table 16 describes the default SDM ASIC template for C9500X models.

**Table 16.** SDM template descriptions for C9500X models

Features	Default Template
MAC Addresses	128,000
IP Host Routes <sup>1</sup>	128,000
IP LPM Routes <sup>1</sup>	2,000,000
IP Multicast Routes <sup>1</sup>	32,000
IGMP/MLD Snooping <sup>1</sup>	16,000
MPLS Labels <sup>2</sup>	256,000
Security/Object Groups	32,000
Security ACLs <sup>1</sup>	8,000
QoS ACLs <sup>1</sup>	8,000
PBR/NAT <sup>3</sup>	16,000
GRE Tunnels	1024
Sampled NetFlow entries <sup>1</sup>	2,000,000

<sup>1</sup> IPv4 and IPv6 entries coexist in the same tables, but IPv6 entries require two entries.

<sup>2</sup> Per-prefix labels are divided into internal (iBGP) and external (eBGP)

<sup>3</sup> Feature is not available at FCS, but will be available in future software releases

## Catalyst 9500 models

The following SDM ASIC templates are supported on the Cisco Catalyst 9500 Series.

- **Distribution:** Maximizes system resources for MAC and security
- **Core:** Maximizes system resources for unicast and multicast routing
- **SDA:** Maximizes system resources to support fabric deployment
- **NAT:** Maximizes system resources for Layer 3 and NAT for support collapsed core WAN deployments

Table 17 describes the standard SDM ASIC templates for C9500 models.

**Table 17.** SDM template descriptions for C9500 models

Template numbers for models C9500-32C, C9500-32QC, C9500-24Y4C, C9500-48Y4C	Distribution template	Core template (Default)	NAT template	SDA template**
IPv4/IPv6(LPM/Host)	114,000	212,000	212,000	212,000
Multicast route(IPv4/IPv6)	16,000	32,000	32,000	32,000
IGMP/MLD snooping	2,000	2,000	2,000	2,000
MAC addresses	82,000	32,000	32,000	32,000
MPLS/SGT label	<b>32,000</b>	<b>32,000</b>	<b>32,000</b>	<b>32,000</b>
NetFlow/ASIC	<b>98,000</b>	<b>64,000</b>	<b>64,000</b>	<b>64,000</b>
Security ACL	27,000 <sup>1</sup>	27,000 <sup>1</sup>	20,000 <sup>1</sup>	27,000 <sup>1</sup>
QoS ACL	16,000 <sup>1</sup>	16,000 <sup>1</sup>	8,000 <sup>1</sup>	16,000 <sup>1</sup>
PBR/NAT	3,000	3,000	15,500	2000
Tunnel/MACsec	3000	3000	2000	3000
LISP	1000	1000	1000	2000
SPAN	1000	1000	1000	1000
STP Instances	1000	1000	1000	1000
Control Plane Policing (CoPP)	1000	1000	1000	1000
NetFlow ACL	1000 ingress, 1000 egress	1000 ingress, 1000 egress	1000 ingress, 1000 egress	1000 ingress, 1000 egress



Template numbers for models C9500-12Q, C9500-24Q, C9500-40X, C9500-16X	Distribution template (Default)	Core template	NAT template	SDA template <sup>1</sup>
IPv4/IPv6 LPM	64,000 / 32,000	64,000 / 32,000	64,000 / 32,000	64,000 / 32,000
IPv4/IPv6 host	48,000 / 24,000	32,000 / 16,000	48,000 / 24,000	80,000 / 40,000
IPv4/ IPv6 Multicast route	16,000 / 8,000	32,000 / 16,000	32,000 / 16,000	16,000 / 8,000
IGMP/MLD snooping	16,000	16,000	16,000	16,000
MAC address	64,000	16,000	16,000	16,000
SGT label	8000	8000	8000	8000
NetFlow/ASIC	128,000	128,000	128,000	128,000
Security ACL	18,000	18,000	18,000	18,000
QoS ACL	18,000	18,000	3000	18,000
PBR/NAT	2000	2000	16,000	2000
Tunnel/MACsec	1000	1000	1000	1000
LISP	1000	1000	1000	1000
SPAN	1000	1000	1000	1000
STP instances	300 <sup>3</sup>	300 <sup>3</sup>	300 <sup>3</sup>	300 <sup>3</sup>
CoPP	1000	1000	1000	1000
NetFlow ACL	1000 ingress, 2000 egress	1000 ingress, 2000 egress	1000 ingress, 2000 egress	1000 ingress, 2000 egress

<sup>1</sup> ACL allocation is configurable between ingress, egress, IPv4 and non IPv4 (layer 2 and IPv6)

<sup>2</sup> SD-Access template has been removed from IOS XE 17.3.1 onwards (in lieu of Custom ASIC templates)

<sup>3</sup> 300 with IOS XE release 17.1.1 or later. 256 with IOS XE 16.12.x and 16.11.x 128 with IOS XE 16.10.x or earlier

## Custom ASIC templates

### C9500X-28C8D

Beginning with the Cisco IOS XE 17.7.1 release, a custom SDM template allows you to configure several features of the template based on your requirements and not the location of the device in the network.

**Table 18.** Custom template FIB configurable values

Features	Default Value	Scale Values (Min - Max)	Step Units
MAC Addresses	128,000	32,000 <sup>1</sup> - 256,000	1,000
IPv4 Host Routes	32,000	32,000 <sup>1</sup> - 256,000	1,000
IPv6 Host Routes	16,000	16,000 <sup>1</sup> - 128,000	1,000
MPLS Labels <sup>3</sup>	256,000	0 <sup>2</sup> - 512,000	1,000
Security/Object Groups	32,000	0 <sup>2</sup> - 64,000	1,000
<b>Total Resources</b>	608,000		

<sup>1</sup> Critical features require a minimum allocation to insure operation. If a custom value is not defined, this value is used.

<sup>2</sup> Some (non-critical) features are allowed to have a 0 entry allocation, to allow increased allocation of other features.

<sup>3</sup> Per-prefix labels are divided into internal (iBGP) and external (eBGP)

### C9500-32C, C9500-32QC, C9500-24Y4C, C9500-48Y4C

Standard SDM templates can be used to configure system resources and optimize support for specific features. However SDM templates are defined based on how the device is deployed in the network.

Beginning with the Cisco IOS XE 17.3.1 release, a custom SDM template will allow you to configure the features of the template based on your requirements and not the location of the device in the network.

**Table 19.** Custom template configurable FIB values

Features	Scale Values (Min - Max)	Step Units	Default Value
MAC addresses	32,000 - 128,000	16,000	32,000
IPv4/IPv6 routes	64,000 - 256,000	16,000	64,000
Multicast routes <sup>1</sup>	0 - 32,000	16,000	16,000
IGMP/MLD Snooping <sup>1</sup>	0 - 32,000	16,000	16,000
SGT/MPLS labels <sup>2</sup>	0 - 64,000	32,000	32,000
Netflow entries - Input <sup>3</sup>	0 - 64,000	32,000	32,000

Features	Scale Values (Min - Max)	Step Units	Default Value
Netflow entries - Output <sup>3</sup>	0 - 64,000	32,000	0
<b>Total Resources</b>	416,000		

<sup>1</sup> Total Layer 2 and Layer 3 Multicast entries may not exceed 48,000

<sup>2</sup> Each resource holds two SGT + MPLS entries

<sup>3</sup> NetFlow entries require double entries

**Table 20.** Custom template configurable ACL values

Features	Scale Values (Min - Max)	Step Units	Default Value
Security ACL - Input	4K-26K, 27K	2K	4K
Security ACL - Output	4K-26K, 27K	2K	4K
QoS ACL - Input	1K, 2K-16K	2K	1K
QoS ACL - Output	1K, 2K-16K	2K	1K
PBR/NAT	1K, 2K-16K	2K	2K
Netflow ACL	1K-2K	1K	1K
LISP	1K-2K	1K	1K
TUNNELS	1K-2K	1K	1K
<b>Total Resources</b>	<b>54k</b>		

## Software requirements

The Cisco Catalyst 9500 Series Switches run on Cisco IOS XE Software version 16.5.1a or later. This software release includes all the features listed earlier in the Platform Benefits section. Table 20 lists the minimum software requirements for the switch models.

**Table 21.** Minimum software requirements

Model	Description	Minimum software requirement
<b>C9500-28C8D</b>	Cisco Catalyst 9500X Switch with 28x100G + 8x400G Gigabit Ethernet	Cisco IOS XE Software Release 17.7.1
<b>C9500-32C</b>	Cisco Catalyst 9500 Series 32-port 40/100 Gigabit Ethernet with QSFP+/QSFP28	Cisco IOS XE Software Release 16.8.1a
<b>C9500-32QC</b>	Cisco Catalyst 9500 Series 32-port 40 Gigabit Ethernet with QSFP+ / 16- port 100 Gigabit Ethernet with QSFP28	Cisco IOS XE Software Release 16.8.1a
<b>C9500-48Y4C</b>	Cisco Catalyst 9500 Series high-performance 48-port 1/10/25G Gigabit Ethernet switch with SFP/SFP+/SFP28	Cisco IOS XE Software Release 16.8.1a

Model	Description	Minimum software requirement
<b>C9500-24Y4C</b>	Cisco Catalyst 9500 Series high-performance 24-port 1/10/25G Gigabit Ethernet switch with SFP/SFP+/SFP28	Cisco IOS XE Software Release 16.8.1a
<b>C9500-24Q</b>	Cisco Catalyst 9500 Series 24-port 40 Gigabit Ethernet with QSFP+	Open Cisco IOS XE Software Release 16.5.1a
<b>C9500-12Q</b>	Cisco Catalyst 9500 Series 12-port 40 Gigabit Ethernet with QSFP+	Open Cisco IOS XE Software Release 16.6.1
<b>C9500-40X</b>	Cisco Catalyst 9500 Series 40-port 1/10 Gigabit Ethernet with SFP/SFP+	Open Cisco IOS XE Software Release 16.6.1
<b>C9500-16X</b>	Cisco Catalyst 9500 Series 16-port 1/10 Gigabit Ethernet with SFP/SFP+	Open Cisco IOS XE Software Release 16.8.1

## Licensing

### Introduction to Smart Licensing

Cisco Smart Licensing is a flexible licensing model that provides you with an easier, faster, and more consistent way to purchase and manage software across the Cisco portfolio and across your organization. And it's secure – you control what users can access. With Smart Licensing you get:

- **Easy Activation:** Smart Licensing establishes a pool of software licenses that can be used across the entire organization—no more PAKs (Product Activation Keys).
- **Unified Management:** My Cisco Entitlements (MCE) provides a complete view into all of your Cisco products and services in an easy-to-use portal, so you always know what you have and what you are using.
- **License Flexibility:** Your software is not node-locked to your hardware, so you can easily use and transfer licenses as needed.
- **Smart Licensing Using Policy (SLUP):** Enhanced version of Smart Licensing, with the overarching objective of providing a licensing solution that does not interrupt the operations of your network, rather, one that enables a compliance relationship to account for the hardware and software licenses you purchase and use.

To use Smart Licensing, you must first set up a Smart Account on Cisco Software Central (software.cisco.com).

For a more detailed overview on Cisco Licensing, go to [cisco.com/go/licensingguide](https://cisco.com/go/licensingguide)

## Packaging

The Cisco Catalyst 9000 family introduced new packaging that includes vastly simplified base network packages (Network Essentials and Network Advantage) and term-based software packages (Cisco DNA Advantage and Cisco DNA Essentials). The Cisco DNA packages, in addition to on-box capabilities, also unlock additional functionality in Cisco DNA Center, enabling controller-based software-defined automation in your network.

For information about feature support on specific models, please refer to the Cisco Feature Navigator (<https://cfn.cloudapps.cisco.com/ITDIT/CFN/jsp/index.jsp>) and the Cisco Catalyst 9500 Series Release Notes.

**License consumption** is easily determined by the package itself. While perpetual licenses are always permanent and without an expiration date, subscription licenses have to be purchased for a 3-, 5-, or 7-year term (and hence are also known as term-based licenses). Table 15 shows the combinations of perpetual and subscription licenses that must be purchased.

**Table 22.** Licensing combinations

	Cisco DNA Essentials	Cisco DNA Advantage
<b>Network Essentials</b>	Yes	No
<b>Network Advantage</b>	No*	Yes

\*At the time of Cisco DNA license renewal, the Cisco DNA Essentials license can be purchased to be used with Network Advantage

**Managing licenses with Smart Accounts:** Creating Smart Accounts by using the Cisco Smart Software Manager (SSM) enables you to manage your software licenses from a centralized website. You can set up Cisco SSM to receive daily email alerts and to be notified of expiring subscription licenses that you want to renew.

You must order a Cisco DNA subscription term license in order to purchase a Catalyst 9500 Series switch. When the license term expires, you can either renew the add-on license to continue using it or deactivate the add-on license and then reload the switch to continue operating with the base license capabilities.

Both the base and add-on licenses are also available for a 90-day evaluation period. An evaluation license is activated temporarily, without purchase. An expired evaluation license cannot be reactivated after reload.

Tables 23 shows the features included in the Network Essentials and Advantage packages. Table 24 shows the Cisco DNA Essentials, Advantage and Premier<sup>1</sup> packages.

**Table 23.** Network Essentials and Advantage package features

Features	Network Essentials	Network Advantage
<b>Switch fundamentals</b> Layer 2, Routed Access (RIP, EIGRP Stub, OSPF - Up to 1000 routes), PBR, PIM Stub Multicast (up to 1000 routes), PVLAN <sup>2</sup> , VRRP, PBR <sup>2</sup> , CDP, QoS, FHS, 802.1x <sup>2</sup> , Macsec-128, CoPP, SXP, IP SLA Responder, SSO <sup>2</sup>	✓	✓
<b>Advanced switch capabilities and scale</b> BGP, EIGRP, HSRP, IS-IS, BSR, MSDP, PIM SM, PIM SSM, PIM-BIDIR <sup>2</sup> , IP SLA, OSPF	X	✓

Features	Network Essentials	Network Advantage
<b>Network segmentation</b> VRF, VXLAN, LISP, BGP-EVPN <sup>2</sup> , TrustSec <sup>2</sup> , SGT <sup>2</sup> , MPLS, mVPN <sup>2</sup>	X	✓
<b>Automation</b> NETCONF, RESTCONF, gRPC, gNMI/gNOI, YANG, PnP Agent, ZTP/Open PnP, GuestShell (On-Box Python)	✓	✓
<b>Telemetry and visibility</b> Model-driven telemetry, sampled NetFlow <sup>2</sup> , SPAN, RSPAN	✓	✓
<b>High availability and resiliency</b> GIR, NSF, ISSU <sup>2</sup> , StackWise Virtual <sup>2</sup> , SMU	X	✓
<b>IoT integration</b> PTP <sup>2</sup> (IEEE1588v2)	X	✓
<b>Security</b> MACsec-256 <sup>2</sup> , WAN MACsec <sup>1</sup>	X	✓
<b>Cisco trustworthy solutions</b> Trust Anchor module, Secure Boot, Image Signing, Modern Crypto, Runtime Defenses	✓	✓

**Table 24.** Cisco DNA Essentials and Advantage package features

Features	Cisco DNA Essentials	Cisco DNA Advantage
<b>Switch features</b>		
<b>Optimized network deployments</b> Cisco DNA Service for Bonjour	X	✓
<b>Advanced telemetry and visibility</b> Flexible NetFlow <sup>2</sup> , EEM	✓	✓
<b>Optimized telemetry a visibility</b> ERSPAN <sup>2</sup> , App Hosting (in Containers/VMs), Wireshark, ThousandEyes	X	✓
<b>Cisco DNA Center features</b>		
<b>Day 0 network bring-up automation</b> Cisco Network Plug-n-Play application, network settings, device credentials, LAN Automation, Host onboarding	✓	✓
<b>Element management</b> Discovery, inventory, topology, software image, licensing, and configuration management	✓	✓

Features	Cisco DNA Essentials	Cisco DNA Advantage
<b>Element management</b> Patch Management	X	✓
<b>Basic Assurance</b> Health Dashboards – Network, Client, Application; Switch and Wired Client Health Monitoring	✓	✓
<b>SD-Access</b> Policy-based Automation and Assurance for Wired and Wireless <sup>1</sup>	X	✓
<b>Embedded Wireless (with or without SD-Access)<sup>2</sup></b> Cisco Catalyst 9800 wireless software package to enable wireless controller functionality**	X	✓
<b>Network assurance and analytics</b> Global Insights, Trends, Compliance, Custom Reports; Switch 360, Wired Client 360; Fabric and Non-Fabric Insights; App Health	X	✓
<b>Meraki Cloud Monitoring<sup>2</sup></b>	✓* limited device visibility	✓

\* Feature will be available in future software releases

\*\*Note: A purchase of Cisco DNA Advantage per access point is required in order to enable the wireless controller functionality on Cisco Catalyst switches.

<sup>1</sup> Not supported on C9500 UADP based models

<sup>2</sup> Not supported on C9500X models

## Specifications

### Dimensions, physical specifications and weight

#### Catalyst 9500X models

Table 25 lists the dimensions, specifications, weight and operating temperature for the Cisco Catalyst 9500X models.

**Table 25.** Dimensions, physical specifications, weight and operating temperature

Description	Specifications
<b>SKU</b>	C9500X-28C8D
<b>Dimensions (H x W x D)</b>	H = 1.73" (4.39 cm) W = 17.5" (44.45 cm) D = 21.8" (55.37 cm) (including Fan Tray Handles)
<b>Rack Units (RU)</b>	1 RU

Description	Specifications	
<b>Chassis with 2 power supplies and built-in fan</b>	29.27 lbs (13.28kg) Weights separated: Chassis = 22.13 lbs (10.04kg) Each Fan Tray = 0.26 lbs (0.12kg) AC PSU = 2.77 lbs (1.26kg) DC PSU = 2.71 lbs (1.23kg)	
<b>Input voltage</b>	See Table 3	
<b>SKU</b>	C9500X-FAN-1U-R	C9500X-FAN-1U-F
<b>Operating temperature</b>	-5° C to +45° C (23° to 133° F) sea level	-5° C to +35° C (23° to 95° F) sea level
<b>Altitude</b>	-5° C to +40° C (23° to 104 F) up to 5,000 feet (1500 m) -5° C to +35° C (23° to 95° F) up to 10,000 feet (3000 m)	-5° C to +30° C (23° to 86° F) up to 5,000 feet (1500 m) -5° C to +25° C (23° to 77° F) up to 10,000 feet (3000 m)
<b>Storage temperature</b>	-40° C to 70° C (-40° to 158° F)	
<b>Relative humidity operating and nonoperating (noncondensing)</b>	Relative humidity operating: 10 to 85% (noncondensing) Relative humidity nonoperating: 0 to 95% (noncondensing)	

## Catalyst 9500 models

Table 26 lists the dimensions, specifications, weight and operating temperature for the Cisco Catalyst 9500 models.

**Table 26.** Dimensions, physical specifications, weight and operating temperature

Description	Specifications							
<b>SKU</b>	C9500-32C	C9500-32QC	C9500-48YC	C9500-24YC	C9500-12Q	C9500-24Q	C9500-40X	C9500-16X
<b>Dimensions (H x W x D)</b>	1.73 x 17.5 x 21.2 in	1.73 x 17.5 x 18.0 in			1.73 x 17.5 x 21.52 in			
<b>Rack Units (RU)</b>	1 RU							
<b>Chassis with 2 power supplies and built-in fan</b>	25.64 lb (11.63 kg)	21.85lb (9.91 kg)	21.96 lb (9.96 kg)	20.99 lb (9.52 kg)	25.75 lb (11.68 kg)			23.6 lb (10.7 kg)
<b>Input voltage</b>	90 to 264 VAC*							
<b>Operating temperature</b>	32° to 104° F (0° to 40° C) up to altitude of 10,000 feet							
<b>Altitude</b>	Operation up to 10,000 feet at 40° C; up to 6,000 feet at 45° C							
<b>Storage temperature</b>	-4° to 149° F (-20° to 65° C)							



Description	Specifications
Relative humidity operating and nonoperating (noncondensing)	Ambient (noncondensing) operating: 5% to 90% Ambient (noncondensing) nonoperating and storage: 5% to 95%
NEBS criteria levels	NEBS: <ul style="list-style-type: none"> <li>ETSI 300-019 Requirements are covered under GR-63-CORE with some deviations.</li> <li>SR-3580 NEBS level 3 (GR-63-CORE, to current issue, GR-1089-CORE, to current issue)</li> </ul>

\*Minimum input voltage is 90VAC, and maximum input voltage is 264VAC.

## Mean-time between failures (MTBF)

### Catalyst 9500X models

Table 27 lists Mean-Time Between Failures (MTBF) for the Cisco Catalyst 9500X Switch and components.

**Table 27.** MTBF information

Model	MTBF (hours)
C9500X-28C8D	123,950
C9K-PWR-1500WAC	1,303,300
C9K-PWR-1500WDC	1,737,740
C9500X-FAN-1U-R	4,429,340
C9500X-FAN-1U-F	4,429,340

### Catalyst 9500 models

Table 28 lists mean-time between failures (MTBF) for the Cisco Catalyst 9500 Series and components.

**Table 28.** MTBF information

Model	MTBF (hours)
C9500-32C	212,820
C9500-32QC	307,200
C9500-48Y4C	316,960
C9500-24Y4C	336,780
C9500-12Q	276,430
C9500-24Q	230,770
C9500-40X	277,310
C9500-16X	315,790
PWR-C4-950WAC-R	2,268,760

Model	MTBF (hours)
PWR-C4-950WDC-R	2,559,000
C9K-PWR-650WAC-R	2,268,760
C9K-PWR-650WACL-R	1,229,043
C9K-PWR-930WDC-R	3,008,280
C9K-PWR-1600WAC-R	1,718,780
C9K-PWR-1600WDC-R	2,559,000
FAN-T4-R	5,710,990
C9K-T1-FANTRAY	3,035,430

## Optics/transceivers modules

The link below has the matrix of supported optics/transceivers for the Cisco Catalyst 9500 Series.

For the latest Cisco Optics/transceivers modules compatibility information, refer to <https://tmgmatrix.cisco.com/>

## Management and standards support

Table 29 shows management and standards support for the Cisco Catalyst 9500 Series.

**Table 29.** Management and standards support

Description	Cisco Catalyst 9500	Cisco Catalyst 9500 High Performance/9500X
<b>Management</b>	BRIDGE-MIB	BGP4-MIB
	CISCO-BRIDGE-EXT-MIB	BRIDGE-MIB
	CISCO-BULK-FILE-MIB	CISCO-ACCESS-ENVMON-MIB
	CISCO-CABLE-DIAG-MIB	CISCO-AUTH-FRAMEWORK-MIB
	CISCO-CALLHOME-MIB	CISCO-BGP4-MIB
	CISCO-CEF-MIB	CISCO-BRIDGE-EXT-MIB
	CISCO-CIRCUIT-INTERFACE-MIB	CISCO-BULK-FILE-MIB
	CISCO-DEVICE-LOCATION-MIB	CISCO-CABLE-DIAG-MIB
	CISCO-DHCP-SNOOPING-MIB	CISCO-CALLHOME-MIB
	ENTITY-VENDORTYPE-OID-MIB	CISCO-CDP-MIB
	CISCO-EIGRP-MIB	CISCO-CEF-MIB
	CISCO-EMBEDDED-EVENT-MGR-MIB	CISCO-CLASS-BASED-QOS-MIB
	CISCO-ENTITY-FRU-CONTROL-MIB	CISCO-CONFIG-COPY-MIB
	CISCO-ENTITY-SENSOR-MIB	CISCO-CONFIG-MAN-MIB
	CISCO-RTTMON-ICMP-MIB	CISCO-CONTEXT-MAPPING-MIB
	CISCO-802-TAP-MIB	CISCO-DATA-COLLECTION-MIB

Description	Cisco Catalyst 9500	Cisco Catalyst 9500 High Performance/9500X
	CISCO-ACCESS-ENVMON-MIB	CISCO-DHCP-SNOOPING-MIB
	CISCO-DATA-COLLECTION-MIB	CISCO-EIGRP-MIB
	CISCO-DYNAMIC-ARP-INSPECTION-MIB	CISCO-EMBEDDED-EVENT-MGR-MIB
	CISCO-ENERGYWISE-MIB	CISCO-ENHANCED-IMAGE-MIB
	CISCO-ENHANCED-IMAGE-MIB	CISCO-ENHANCED-MEMPOOL-MIB
	CISCO-ENHANCED-MEMPOOL-MIB	CISCO-ENTITY-ASSET-MIB
	CISCO-ENTITY-ASSET-MIB	CISCO-ENTITY-EXT-MIB
	CISCO-ENTITY-DIAG-MIB	CISCO-ENTITY-FRU-CONTROL-MIB
	CISCO-ENTITY-EXT-MIB	CISCO-ENTITY-SENSOR-MIB
	CISCO-ENTITY-PERFORMANCE-MIB	CISCO-ENTITY-VENDORTYPE-OID-MIB
	CISCO-ENTITY-QFP-MIB	CISCO-ENVMON-MIB
	CISCO-ENVMON-MIB	CISCO-ERR-DISABLE-MIB
	CISCO-ETHER-CFM-MIB	CISCO-FLASH-MIB
	ENTITY-MIB	CISCO-FTP-CLIENT-MIB
	CISCO-ERR-DISABLE-MIB	CISCO-HSRP-EXT-MIB
	CISCO-CONFIG-COPY-MIB	CISCO-HSRP-MIB
	CISCO-FLOW-MONITOR-MIB	CISCO-IETF-BFD-MIB
	CISCO-FTP-CLIENT-MIB	CISCO-IETF-DHCP-SERVER-EXT-MIB
	CISCO-HSRP-EXT-MIB	CISCO-IETF-DHCP-SERVER-MIB
	CISCO-HSRP-MIB	CISCO-IETF-ISIS-MIB
	CISCO-IETF-BFD-MIB	CISCO-IETF-PPVPN-MPLS-VPN-MIB
	CISCO-IETF-PPVPN-MPLS-VPN-MIB	CISCO-IF-EXTENSION-MIB
	CISCO-IETF-PW-MPLS-MIB	CISCO-IGMP-FILTER-MIB
	CISCO-IF-EXTENSION-MIB	CISCO-IMAGE-LICENSE-MGMT-MIB
	CISCO-IGMP-FILTER-MIB	CISCO-IMAGE-MIB
	CISCO-IMAGE-LICENSE-MGMT-MIB	CISCO-IP-CBR-METRICS-MIB
	CISCO-IP-TAP-MIB	CISCO-IP-STAT-MIB
	CISCO-CONFIG-MAN-MIB	CISCO-IP-URPF-MIB
	CISCO-IP-CBR-METRICS-MIB	CISCO-IPMROUTE-MIB
	CISCO-IP-STAT-MIB	CISCO-IPSLA-AUTOMEASURE-MIB
	CISCO-IP-URPF-MIB	CISCO-IPSLA-ECHO-MIB
	CISCO-L2L3-INTERFACE-CONFIG-MIB	CISCO-IPSLA-JITTER-MIB
	CISCO-LAG-MIB	CISCO-L2-CONTROL-MIB
	CISCO-LICENSE-MGMT-MIB	CISCO-L2L3-INTERFACE-CONFIG-MIB
	CISCO-LOCAL-AUTH-USER-MIB	CISCO-LAG-MIB
	CISCO-MEDIA-METRICS-MIB	CISCO-LICENSE-MGMT-MIB
	CISCO-MAC-AUTH-BYPASS-MIB	CISCO-LISP-EXT-MIB
	CISCO-MAC-NOTIFICATION-MIB	CISCO-LOCAL-AUTH-USER-MIB

Description	Cisco Catalyst 9500	Cisco Catalyst 9500 High Performance/9500X
	CISCO-MDI-METRICS-MIB	CISCO-MAC-AUTH-BYPASS-MIB
	CISCO-FLASH-MIB	CISCO-MAC-NOTIFICATION-MIB
	CISCO-OSPF-MIB	CISCO-MEMORY-POOL-MIB
	CISCO-MEMORY-POOL-MIB	CISCO-MPLS-LSR-EXT-STD-MIB
	CISCO-MPLS-LSR-EXT-STD-MIB	CISCO-NHRP-EXT-MIB
	CISCO-NHRP-EXT-MIB	CISCO-NTP-MIB
	CISCO-NTP-MIB	CISCO-OSPF-MIB
	CISCO-PAGP-MIB	CISCO-OSPF-TRAP-MIB
	CISCO-PORT-SECURITY-MIB	CISCO-PAE-MIB
	CISCO-PORT-STORM-CONTROL-MIB	CISCO-PAGP-MIB
	CISCO-POWER-ETHERNET-EXT-MIB	CISCO-PIM-MIB
	CISCO-PRIVATE-VLAN-MIB	CISCO-PING-MIB
	CISCO-PROCESS-MIB	CISCO-PKI-MIB
	CISCO-PRODUCTS-MIB	CISCO-PORT-SECURITY-MIB
	CISCO-RF-MIB	CISCO-PORT-STORM-CONTROL-MIB
	CISCO-RTP-METRICS-MIB	CISCO-PRIVATE-VLAN-MIB
	CISCO-STP-EXTENSIONS-MIB	CISCO-PROCESS-MIB
	CISCO-SYSLOG-MIB	CISCO-PRODUCTS-MIB
	CISCO-TCP-MIB	CISCO-RESILIENT-ETHERNET-PROTOCOL-MIB
	CISCO-UDLDP-MIB	CISCO-RTTMON-ICMP-MIB
	CISCO-VLAN-IFTABLE-RELATIONSHIP-MIB	CISCO-RTTMON-IP-EXT-MIB
	HC-RMON-MIB	CISCO-RTTMON-MIB
	IF-MIB	CISCO-RTTMON-RTP-MIB
	CISCO-HC-RMON-MIB	CISCO-SNMP-TARGET-EXT-MIB
	IEEE8021-LAG-MIB	CISCO-STP-EXTENSIONS-MIB
	LLDP-EXT-MED-MIB	CISCO-SYSLOG-MIB
	IP-FORWARD-MIB	CISCO-TCP-METRICS-MIB
	IP-MIB	CISCO-TCP-MIB
	HC-ALARM-MIB	CISCO-TRUSTSEC-INTERFACE-MIB
	RFC1213-MIB	CISCO-TRUSTSEC-MIB
	LLDP-MIB	CISCO-TRUSTSEC-POLICY-MIB
	MAU-MIB	CISCO-TRUSTSEC-SERVER-MIB
	MPLS-L3VPN-STD-MIB	CISCO-TRUSTSEC-SXP-MIB
	MPLS-LSR-STD-MIB	CISCO-UDLDP-MIB
	MPLS-VPN-MIB	CISCO-VLAN-IFTABLE-RELATIONSHIP-MIB
	OLD-CISCO-CHASSIS-MIB	CISCO-VLAN-MEMBERSHIP-MIB
	OLD-CISCO-CPU-MIB	CISCO-VRF-MIB

Description	Cisco Catalyst 9500	Cisco Catalyst 9500 High Performance/9500X
	OLD-CISCO-INTERFACES-MIB OLD-CISCO-IP-MIB OLD-CISCO-SYS-MIB OLD-CISCO-TCP-MIB OLD-CISCO-TS-MIB OLD-CISCO-MEMORY-MIB CISCO-POWER-ETHERNET-MIB CISCO-RMON2-MIB CISCO-RMON-MIB SNMPv2-MIB UDP-MIB CISCO-IMAGE-MIB CISCO-STACKWISE-MIB SMON-MIB SONET-MIB TCP-MIB CISCO-IPSEC-FLOW-MONITOR-MIB CISCO-IPSEC-MIB CISCO-IPSEC-PROVISIONING-MIB CISCO-IPSLA-AUTOMEASURE-MIB CISCO-IPSLA-ECHO-MIB CISCO-IPSLA-JITTER-MIB CISCO-L2-CONTROL-MIB	CISCO-VTP-MIB ENTITY-MIB ENTITY-STATE-MIB EtherLike-MIB HC-ALARM-MIB HC-RMON-MIB IEEE8021-PAE-MIB IEEE8023-LAG-MIB IF-MIB IGMP-STD-MIB IP-FORWARD-MIB IP-MIB IPMROUTE-STD-MIB LISP-MIB LLDP-EXT-MED-MIB LLDP-MIB MAU-MIB MPLS-L3VPN-STD-MIB MPLS-LDP-GENERIC-STD-MIB MPLS-LDP-MIB MPLS-LSR-STD-MIB MPLS-VPN-MIB MSDP-MIB NHRP-MIB NOTIFICATION-LOG-MIB NTPv4-MIB OLD-CISCO-CHASSIS-MIB OLD-CISCO-CPU-MIB OLD-CISCO-INTERFACES-MIB OLD-CISCO-IP-MIB OLD-CISCO-MEMORY-MIB OLD-CISCO-SYS-MIB OLD-CISCO-SYSTEM-MIB OLD-CISCO-TCP-MIB OLD-CISCO-TS-MIB OSPF-MIB OSPF-TRAP-MIB OSPFV3-MIB

Description	Cisco Catalyst 9500	Cisco Catalyst 9500 High Performance/9500X
		PIM-MIB RFC1213-MIB RMON-MIB RMON2-MIB SNMP-COMMUNITY-MIB SNMP-FRAMEWORK-MIB SNMP-MPD-MIB SNMP-NOTIFICATION-MIB SNMP-PROXY-MIB SNMP-TARGET-MIB SNMP-USM-MIB SNMP-VIEW-BASED-ACM-MIB SNMPv2-MIB TCP-MIB UDP-MIB CISCO-802-TAP-MIB CISCO-TAP2-MIB CISCO-IP-TAP-MIB
<b>Standards</b>	IEEE 802.1s IEEE 802.1w IEEE 802.1x IEEE 802.3ae for 10G SKU IEEE 802.3ae, IEEE 802.3ba on the 40G SKU IEEE 802.1x-Rev IEEE 802.3ad IEEE 802.3x full duplex on 10BASE-T, 100BASE-TX, and 1000BASE-T ports IEEE 802.1D Spanning Tree Protocol IEEE 802.1p Class-of-Service (CoS) prioritization IEEE 802.1Q VLAN IEEE 802.3 10BASE-T specification IEEE 802.3u 100BASE-TX specification IEEE 802.3ab 1000BASE-T specification IEEE 802.3z 1000BASE-X specification RMON I and II standards SNMPv1, SNMPv2c, and SNMPv3	

## Safety and compliance

Table 30 lists the safety and compliance information for the Cisco Catalyst 9500 Series.

**Table 30.** Safety and compliance information

Description	Specification
<b>Safety certifications</b>	<p>C9500-12Q, C9500-24Q, C9500-40X, C9500-16X</p> <ul style="list-style-type: none"> <li>• UL 60950-1</li> <li>• CAN/CSA-C22.2 No. 60950-1</li> <li>• EN 60950-1</li> <li>• IEC 60950-1</li> <li>• AS/NZS 60950-1</li> <li>• GB4943</li> </ul> <p>C9500-32C, C9500-32QC, C9500-24Y4C, C9500-48Y4C</p> <ul style="list-style-type: none"> <li>• IEC 60950-1 plus Am1, Am2 Am9, Am10, Am11, Am12 and all deviations and differences</li> <li>• AS/NZS 60950.1.2011</li> <li>• CAN/CSA-C22.2 No. 60950-1-07</li> <li>• GB 4943-95</li> <li>• EN 60950-1; 2006 plus Am1, Am 2, Am9, Am10, Am11, Am12 and all deviations and differences</li> <li>• NOM-019-SCFI-1998</li> <li>• UL 60950-1, Second Edition</li> </ul> <p>C9500X-28C8D</p> <ul style="list-style-type: none"> <li>• UL 60950-1</li> <li>• CAN/CSA-C22.2 No. 60950-1</li> <li>• IEC 60950-1</li> <li>• AS/NZS 60950-1</li> <li>• EN 62368-1</li> <li>• UL 62368-1</li> <li>• CAN/CSA-C22.2 No. 62368-1</li> <li>• IEC 62368-1</li> <li>• AS/NZS 62368-1</li> </ul>

Description	Specification
EMI and EMC compliance	<p>C9500 Models</p> <ul style="list-style-type: none"> <li>• 47 CFR Part 15 Class A</li> <li>• CNS13438: 2006 Class A</li> <li>• EN 300 386 V1.6.1</li> <li>• EN61000-3-2: 2014</li> <li>• EN61000-3-3: 2013</li> <li>• ICES-003 Issue 6: 2016 Class A</li> <li>• KN 32: 2015 Class A</li> <li>• TCVN 7189: 2009 Class A</li> <li>• EN 55032:2012/ AC:2013 Class A</li> <li>• EN 55032:2015 Class A</li> <li>• CISPR 32 Edition 2 Class A</li> <li>• V-2/2015.04 Class A</li> <li>• V-3/2015.04 Class A</li> <li>• CISPR24: 2010 + A1: 2015</li> <li>• EN 300 386 V1.6.1</li> <li>• EN55024: 2010 + A1: 2015</li> <li>• KN35: 2015</li> <li>• TCVN 7317: 2003</li> </ul> <p>C9500X Models</p> <ul style="list-style-type: none"> <li>• CNS13438: 2006 Class A</li> <li>• EN 300 386 V1.6.1</li> <li>• EN61000-3-2: 2014</li> <li>• EN61000-3-3: 2013</li> <li>• ICES-003 Issue 6: 2016 Class A</li> <li>• KS C 9832:2019</li> <li>• CISPR32:2015:Ed:2</li> <li>• EN 55032:2012/ AC:2013 Class A</li> <li>• EN 55032:2015 Class A</li> <li>• CISPR 32 Edition 2 Class A</li> <li>• VCCI/CISPR 32 2016</li> <li>• CISPR24: 2010 + A1: 2015</li> <li>• EN 300 386 V1.6.1</li> <li>• EN55024: 2010 + A1: 2015</li> <li>• KS C 9835:2019</li> <li>• EN 55035:2017+A11:2020</li> <li>• 47 CFR Part 15:2016</li> </ul>



## Warranty

### Cisco Enhanced Limited Lifetime Hardware Warranty

The Cisco Catalyst 9500 Series Switches come with an Enhanced Limited Lifetime Warranty (E-LLW) that includes Next-Business-Day (NBD) delivery of replacement hardware where available and 90 days of 8x5 Cisco Technical Assistance Center (TAC) support. Your formal warranty statement, including the warranty applicable to Cisco software, appears in the information packet that accompanies your Cisco product. We encourage you to carefully review the warranty statement shipped with your specific product before use. Cisco reserves the right to refund the purchase price as its exclusive warranty remedy. For further information about warranty terms, visit <https://www.cisco.com/go/warranty>.

Table 30 provides information about the E-LLW.

**Table 31.** E-LLW details

	Cisco E-LLW
<b>Devices covered</b>	Applies to Cisco Catalyst 9500 Series Switches.
<b>Warranty duration</b>	As long as the original customer owns the product.
<b>End-of-life policy</b>	In the event of discontinuance of product manufacture, Cisco warranty support is limited to 5 years from the announcement of discontinuance.
<b>Hardware replacement</b>	Cisco or its service center will use commercially reasonable efforts to ship a replacement for NBD delivery, where available. Otherwise, a replacement will be shipped within 10 working days after receipt of the Return Materials Authorization (RMA) request. Actual delivery times might vary depending on customer location.
<b>Effective date</b>	Hardware warranty commences from the date of shipment to customer (and in case of resale by a Cisco reseller, not more than 90 days after original shipment by Cisco).
<b>TAC support</b>	Cisco will provide during business hours, 8 hours per day, 5 days per week, basic configuration, diagnosis, and troubleshooting of device-level problems for up to a 90-day period from the date of shipment of the originally purchased Cisco Catalyst 9500 Series product. This support does not include solution or network-level support beyond the specific device under consideration.
<b>Cisco.com access</b>	Warranty allows guest access only to Cisco.com.

## 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 the following table:

Sustainability topic	Reference
Information on product material content laws and regulations	<a href="#">Materials</a>
Information on electronic waste laws and regulations, including products, batteries, and packaging	<a href="#">WEEE compliance</a>

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.

## Cisco and Partner Services

Cisco and Partner Services offer various personalized services to enable IoT, cloud and secure networks. You can purchase advanced services designed to meet your business needs and help you maintain high-quality network performance while controlling operational costs. Please refer to Table 32 for more information on Cisco’s Technical Services available for the Cisco Catalyst 9500 Series Switches.

**Table 32.** Technical Services

Cisco Technical Services
<b>Cisco Smart Net Total Care Service</b> <ul style="list-style-type: none"><li>• Around-the-clock, global access to the Cisco TAC</li><li>• Unrestricted access to the extensive Cisco.com knowledge base and tools</li><li>• NBD, 8x5x4, 24x7x4, and 24x7x2 advance hardware replacement and onsite parts replacement and installation available</li><li>• Ongoing operating system software updates within the licensed feature set<sup>1</sup></li><li>• Proactive diagnostics and real-time alerts on Smart Call Home-enabled devices</li></ul>
<b>Cisco Smart Foundation Service</b> <ul style="list-style-type: none"><li>• NBD advance hardware replacement as available</li><li>• Access during business hours to Small and Medium-sized Business (SMB) TAC (access levels vary by region)</li><li>• Access to Cisco.com SMB knowledge base</li><li>• Online technical resources through Smart Foundation portal</li><li>• Operating system software bug fixes and patches</li></ul>
<b>Cisco SP Base Service</b> <ul style="list-style-type: none"><li>• Around-the-clock, global access to the Cisco TAC</li><li>• Registered access to Cisco.com</li><li>• NBD, 8x5x4, 24x7x4, and 24x7x2 advance hardware replacement; return to factory option available<sup>2</sup></li><li>• Ongoing operating system software updates<sup>1</sup></li></ul>

## Cisco Technical Services

### Cisco Focused Technical Support Services

- Three levels of premium, high-touch services are available:
  - Cisco High-Touch Operations Management Service
  - Cisco High-Touch Technical Support Service
  - Cisco High-Touch Engineering Service
- Valid Cisco Smart Net Total Care or SP Base contracts are required on all network equipment

<sup>1</sup> Cisco operating system updates include the following: maintenance releases, minor updates, and major updates within the licensed feature set.

<sup>2</sup> Advance hardware replacement is available in various service-level combinations. For example, 8x5xNBD indicates that shipment will be initiated during the standard 8-hour business day, 5 days a week (the generally accepted business days within the relevant region), with NBD delivery. Where NBD is not available, same-day shipping is provided. Restrictions apply. For details, review the appropriate service descriptions.

[Learn more about available services.](#)

## Software policy for Cisco Catalyst 9500 Series Switches

**[Cisco DNA Software for Access Switching](#) is available for the Cisco Catalyst 9500.**

Cisco DNA Software for Access Switching offers comprehensive solutions for the enterprise campus and branch offices. Cisco DNA for Access Switching introduces a simpler and more economical way to deploy access, aggregation, and core switches across enterprise campus and branch locations.

The Cisco DNA Subscription for Switching offer delivers an unbound network on an open and extensible architecture to help you navigate the digital journey. This subscription offer simplifies the buying process and includes lower initiation costs and flexible terms.

For ordering information for Cisco DNA Software for the Cisco Catalyst 9500 Series, go to <https://www.cisco.com/c/en/us/products/software/one-access/switching-part-numbers.html>

### Software policy for network stack components

Customers with the Network Essential Stack and Network Advantage Stack software feature sets will be provided with maintenance updates and bug fixes. These are designed to maintain compliance of the software with published specifications, release notes, and industry standards as long as the original end user continues to own or use the product or for up to one year from the end-of-sale date for the product, whichever occurs earlier.

### Cisco Embedded Support for Cisco DNA term components

Cisco Embedded Support delivers the right support for Cisco software products and suites. It will keep your business applications performing as expected and protect your investment. Cisco Embedded Support for the Cisco DNA Essentials and Cisco DNA Advantage term components is included as part of the switch value. Embedded Support provides access to TAC support, major software updates, maintenance and minor software releases, and the Cisco Software Support site, for increased productivity with anytime access.

**Table 33.** Cisco DNA Term Support on the 9500 Series

Model	C9500X-DNA-A-3Y/5Y/7Y or C9500X-DNA-E-3Y/5Y/7Y	C9500-DNA-A-3Y/5Y/7Y or C9500-DNA-E-3Y/5Y/7Y	C9500-DNA-L-A-3Y/5Y/7Y or C9500-DNA-L-E-3Y/5Y/7Y
C9500X-28C8D	Yes	N/A	N/A
C9500-32C	N/A	Yes	No
C9500-32QC	N/A	Yes	No
C9500-48Y4C	N/A	Yes	No
C9500-24Y4C	N/A	No	Yes
C9500-24Q	N/A	Yes	No
C9500-12Q	N/A	No	Yes
C9500-40X	N/A	Yes	No
C9500-16X	N/A	No	Yes

## Ordering information

To place an order, visit the Cisco Ordering home page at:

[https://www.cisco.com/en/US/ordering/or13/or8/order\\_customer\\_help\\_how\\_to\\_order\\_listing.html](https://www.cisco.com/en/US/ordering/or13/or8/order_customer_help_how_to_order_listing.html).

Table 34 lists ordering information for the Cisco Catalyst 9500 Series.

**Table 34.** Ordering information

Product number	Product description
C9500X-28C8D-A	Catalyst 9500 28x100G + 8x400G switch, NW Advantage License
C9500X-28C8D-E	Catalyst 9500 28x100G + 8x400G switch, NW Essentials License
C9500-32C-E	Cisco Catalyst 9500 Series high performance 32-port 100G switch, NW Ess. License
C9500-32C-A	Cisco Catalyst 9500 Series high performance 32-port 100G switch, NW Adv. License
C9500-32QC-E	Cisco Catalyst 9500 Series high performance 32-port 40G switch, NW Ess. License
C9500-32QC-A	Cisco Catalyst 9500 Series high performance 32-port 40G switch, NW Adv. License
C9500-48Y4C-E	Cisco Catalyst 9500 Series high performance 48-port 25G switch, NW Ess. License
C9500-48Y4C-A	Cisco Catalyst 9500 Series high performance 48-port 25G switch, NW Adv. License
C9500-24Y4C-E	Cisco Catalyst 9500 Series high performance 24-port 1/10/25G switch, NW Ess. License
C9500-24Y4C-A	Cisco Catalyst 9500 Series high performance 24-port 1/10/25G switch, NW Adv. License
C9500-24Q-E	Cisco Catalyst 9500 24-port 40G switch, NW Ess. License

Product number	Product description
C9500-24Q-A	Cisco Catalyst 9500 24-port 40G switch, NW Adv. License
C9500-12Q-E	Cisco Catalyst 9500 12-port 40G switch, NW Ess. License
C9500-12Q-A	Cisco Catalyst 9500 12-port 40G switch, NW Adv. License
C9500-40X-E	Cisco Catalyst 9500 40-port 10G switch, NW Ess. License
C9500-40X-A	Cisco Catalyst 9500 40-port 10G switch, NW Adv. License
C9500-16X-E	Cisco Catalyst 9500 16-port 10G switch, NW Ess. License
C9500-16X-A	Cisco Catalyst 9500 16-port 10G switch, NW Adv. License
C9500-NM-2Q	Cisco Catalyst 9500 2 x 40GE Network Module
C9500-NM-8X	Cisco Catalyst 9500 8 x 10GE Network Module
C9500-NM-2Q=	Cisco Catalyst 9500 2 x 40GE Network Module Spare
C9500-NM-8X=	Cisco Catalyst 9500 8 x 10GE Network Module Spare
C9500-48X-A	Cisco Catalyst 9500 40-port 10G switch, 8 x 10GE Network Module, NW Adv. License
C9500-48X-E	Cisco Catalyst 9500 40-port 10G switch, 8 x 10GE Network Module, NW Ess. License
C9500-24X-A	Cisco Catalyst 9500 16-port 10G switch, 8 x 10GE Network Module, NW Adv. License
C9500-24X-E	Cisco Catalyst 9500 16-port 10G switch, 8 x 10GE Network Module, NW Ess. License
C9500-16X-2Q-A	Cisco Catalyst 9500 16-port 10G switch, 2 x 40GE Network Module, NW Adv. License
C9500-16X-2Q-E	Cisco Catalyst 9500 16-port 10G switch, 2 x 40GE Network Module, NW Ess. License
C9500-40X-2Q-A	Cisco Catalyst 9500 40-port 10G switch, 2 x 40GE Network Module, NW Adv. License
C9500-40X-2Q-E	Cisco Catalyst 9500 40-port 10G switch, 2 x 40GE Network Module, NW Ess. License
<b>Cisco DNA License Upgrade</b>	Upgrade from Essentials to Advantage
C9500-LIC=	Electronic SW License for C9500 Switches
<b>Cisco DNA Term Licenses</b>	
C9500X-DNA-E-3Y	Catalyst 9500X Cisco DNA Essential license (3Y) for 28C8D SKU
C9500X-DNA-E-5Y	Catalyst 9500X Cisco DNA Essential license (5Y) for 28C8D SKU
C9500X-DNA-E-7Y	Catalyst 9500X Cisco DNA Essential license (7Y) for 28C8D SKU
C9500X-DNA-A-3Y	Catalyst 9500X Cisco DNA Advantage license (3Y) for 28C8D SKU
C9500X-DNA-A-5Y	Catalyst 9500X Cisco DNA Advantage license (5Y) for 28C8D SKU

Product number	Product description
<b>C9500X-DNA-A-7Y</b>	Catalyst 9500X Cisco DNA Advantage license (7Y) for 28C8D SKU
<b>C9500-DNA-E-3Y</b>	Catalyst 9500 NW and Cisco DNA Essentials. license (3Y) for 24Q, 40X, 32C, 32QC, 48Y4C SKU
<b>C9500-DNA-E-5Y</b>	Catalyst 9500 NW and Cisco DNA Essentials. license (5Y) for 24Q, 40X, 32C, 32QC, 48Y4C SKU
<b>C9500-DNA-E-7Y</b>	Catalyst 9500 NW and Cisco DNA Essentials. license (7Y) for 24Q, 40X, 32C, 32QC, 48Y4C SKU
<b>C9500-DNA-A-3Y</b>	Catalyst 9500 NW and Cisco DNA Advantage license (3Y) for 24Q, 40X, 32C, 32QC, 48Y4C SKU
<b>C9500-DNA-A-5Y</b>	Catalyst 9500 NW and Cisco DNA Advantage license (5Y) for 24Q, 40X, 32C, 32QC, 48Y4C SKU
<b>C9500-DNA-A-7Y</b>	Catalyst 9500 NW and Cisco DNA Advantage license (7Y)
<b>C9500-DNA-L-E-3Y</b>	Catalyst 9500 NW and Cisco DNA Essentials. low port density license (3Y) for 12Q, 16X, 24Y4C SKU
<b>C9500-DNA-L-E-5Y</b>	Catalyst 9500 NW and Cisco DNA Essentials. low port density license (5Y) for 12Q, 16X, 24Y4C SKU
<b>C9500-DNA-L-E-7Y</b>	Catalyst 9500 NW and Cisco DNA Essentials. low port density license (7Y) for 12Q, 16X, 24Y4C SKU
<b>C9500-DNA-L-A-3Y</b>	Catalyst 9500 NW and Cisco DNA Advantage low port density license (3Y) for 12Q, 16X, 24Y4C SKU
<b>C9500-DNA-L-A-5Y</b>	Catalyst 9500 NW and Cisco DNA Advantage low port density license (5Y) for 12Q, 16X, 24Y4C SKU
<b>C9500-DNA-L-A-7Y</b>	Catalyst 9500 NW and Cisco DNA Advantage low port density license (7Y) for 12Q, 16X, 24Y4C SKU
<b>Power supplies, cables, and fan for the Cisco Catalyst 9500 Series</b>	
<b>C9K-PWR-1600WAC-R</b>	1600W AC Power Supply
<b>C9K-PWR-650WAC-R</b>	650W AC Power Supply
<b>C9K-PWR-650WACL-R</b>	650W AC Power Supply
<b>C9K-PWR-1600WDC-R</b>	1600W DC Power Supply
<b>C9K-PWR-930WDC-R</b>	930W DC Power Supply
<b>C9K-PWR-1600WACR/2</b>	1600W AC Power Supply, Redundant
<b>C9K-PWR-650WAC-R/2</b>	650W AC Power Supply, Redundant
<b>C9K-PWR-650WACL/2</b>	650W AC Power Supply, Redundant
<b>C9K-PWR-1600WDCR/2</b>	1600W DC Power Supply, Redundant

Product number	Product description
<b>C9K-PWR-930WDC-R/2</b>	930W DC Power Supply, Redundant
<b>C9K-PWR-C4-BLANK</b>	Catalyst 9500 power supply blank cover
<b>C9K-PWR-C5-BLANK</b>	Catalyst 9500 power supply blank cover
<b>C9K-T1-FANTRAY</b>	Catalyst 9500 fan tray
<b>FAN-T4-R</b>	Catalyst 9500 Type 4 front to back cooling Fan
<b>PWR-C4-950WAC-R</b>	950W AC Config 4 Power Supply front to back cooling
<b>PWR-C4-950WAC-R/2</b>	950W AC Config 4 Power Supply front to back cooling, Redundant
<b>PWR-C4-BLANK</b>	Catalyst 9500 power supply blank cover
<b>CAB-C15-CBN-JP</b>	Japan Cabinet Jumper Power Cord, 250 VAC 12A, C14-C15
<b>CAB-TA-250V-JP</b>	Japan 250V AC Type A Power Cable
<b>CAB-TA-AP</b>	Australia AC Type A Power Cable
<b>CAB-TA-AR</b>	Argentina AC Type A Power Cable
<b>CAB-TA-DN</b>	Denmark AC Type A Power Cable
<b>CAB-TA-EU</b>	Europe AC Type A Power Cable
<b>CAB-TA-IN</b>	India AC Type A Power Cable
<b>CAB-TA-IS</b>	Israel AC Type A Power Cable
<b>CAB-TA-IT</b>	Italy AC Type A Power Cable
<b>CAB-TA-SW</b>	Switzerland AC Type A Power Cable
<b>CAB-TA-UK</b>	United Kingdom AC Type A Power Cable
<b>CAB-TA-NA</b>	North America AC Type A Power Cable
<b>CAB-C15-CBN</b>	Cabinet Jumper Power Cord, 250 VAC 13A, C14-C15 Connectors
<b>CAB-TA-JP</b>	Japan AC Type A Power Cable
<b>Spare accessory and rack mount kits for the Cisco Catalyst 9500 Series</b>	
<b>C9500-ACCKITH-19I=</b>	Accessory Kit for Cisco Catalyst 9500 Series - High-End - 19" rack mount
<b>C9500-ACCKITH-23I=</b>	Accessory Kit for Cisco Catalyst 9500 Series - High-End - 23" rack mount
<b>C9500-4PTH-KIT=</b>	Extension rails and brackets for four-point mounting for Cisco Catalyst 9500 Series - High-End
<b>C9500-ACC-KIT-19I=</b>	Accessory Kit for Cisco Catalyst 9500 Series - 19" rack mount

Product number	Product description
<b>C9500-ACC-KIT-23I=</b>	Accessory Kit for Cisco Catalyst 9500 Series - 23" rack mount
<b>C9500-4PT-KIT=</b>	Extension rails and brackets for four-point mounting for Cisco Catalyst 9500 Series
<b>Power supplies, cables, and fan for the Cisco Catalyst 9500X Switch</b>	
<b>C9K-PWR-1500WAC</b>	Catalyst 9500X 1500W AC Power Supply
<b>C9K-PWR-1500WDC</b>	Catalyst 9500X 1500W DC Power Supply
<b>C9K-PWR-1500WAC/2</b>	Catalyst 9500X 1500W AC Power Supply, Redundant
<b>C9K-PWR-1500WDC/2</b>	Catalyst 9500X 1500W DC Power Supply, Redundant
<b>PWR-C6-BLANK</b>	Catalyst 9500X power supply blank cover
<b>C9500X-FAN-1U-R</b>	Catalyst 9500X front to back cooling fan
<b>C9500X-FAN-1U-F</b>	Catalyst 9500X back to front cooling fan
<b>NO-POWER-CORD</b>	ECO friendly green option, no power cable will be shipped
<b>PWR-CAB-AC-USA520</b>	US AC Power Cord for Cisco ASR 900, NEMA 5-20
<b>PWR-CAB-AC-USA</b>	Power Cord for AC V2 Power Module (USA), NEMA L6-20P
<b>PWR-CAB-AC-AUS</b>	Power Cord for AC V2 Power Module (Australia), AS 3112
<b>PWR-CAB-AC-EU</b>	Power Cord for AC V2 Power Module (Europe), CEE 7/7
<b>PWR-CAB-AC-ITA</b>	Power Cord for AC V2 Power Module (Italy), CEI-23-50
<b>PWR-CAB-AC-SA</b>	Power Cord for AC V2 Power Module (South Africa), SABS 164
<b>PWR-CAB-AC-UK</b>	Power Cord for AC V2 Power Module (UK), EN 60309-2
<b>PWR-CAB-AC-ISRL</b>	Power Cord for AC V2 Power Module (Israel), SI 32
<b>PWR-CAB-AC-CHN</b>	Power Cord for AC V2 Power Module (China), GB2099.1/GB1002
<b>PWR-CAB-AC-BRA</b>	Power Cord for AC V2 Power Module (Brazil), NBR 14136
<b>PWR-CAB-AC-SUI</b>	Power Cord for AC V2 Power Module (Swiss), SEV 1011
<b>PWR-CAB-AC-JPN</b>	Power Cord for AC V2 Power Module (Japan), JIS C8303
<b>PWR-CAB-AC-IND</b>	India AC Power Cord for Cisco ASR 900, IS:1293
<b>PWR-CAB-AC-ARG</b>	AC POWER CORD, WIRE HARNESS, Argentina, IRAM 2073, IEC60320 C21, ST, 4M, 30 AWG, STRANDED, 250.0 V, 16.0 A
<b>PWR-2KW-DC-CBL</b>	Power Cord - 2KW DC



Product number	Product description
<b>Spare accessory and rack mount kits for the Cisco Catalyst 9500X Switch</b>	
<b>C9500X-ACCKIT-19I=</b>	Accessory Kit for Cisco Catalyst 9500X Switch - 19" rack mount
<b>C9500X-ACCKIT-23I=</b>	Accessory Kit for Cisco Catalyst 9500X Switch - 23" rack mount
<b>C9500X-4PTH-KIT=</b>	Extension rails and brackets for four-point mounting for Cisco Catalyst 9500X Switch
<b>Spare storage options for the Cisco Catalyst 9500X Switch</b>	
<b>C9K-F3-SSD-240GB=</b>	Cisco pluggable SSD storage - 240 GB
<b>C9K-F3-SSD-480GB=</b>	Cisco pluggable SSD storage - 480 GB
<b>C9K-F3-SSD-960GB=</b>	Cisco pluggable SSD storage - 960 GB

For ordering information for Cisco DNA Software for the Cisco Catalyst 9500 Series Switches, go to <https://www.cisco.com/c/en/us/products/software/one-access/switching-part-numbers.html>.

## Cisco Capital

### Flexible payment solutions to help you achieve your objectives

Cisco Capital makes it easier to get the right technology to achieve your objectives, enable business transformation and help you stay competitive. We can help you reduce the total cost of ownership, conserve capital, and accelerate growth. In more than 100 countries, our flexible payment solutions can help you acquire hardware, software, services and complementary third-party equipment in easy, predictable payments. [Learn more](#).

## Document history

New or revised topic	Described In	Date
Added new 650W AC power supply	<a href="#">Page 18</a> , <a href="#">19</a> , <a href="#">33</a> , <a href="#">47</a>	September 21 <sup>st</sup> , 2022
Added Meraki Cloud monitoring	Removed Cisco DNA Premier licenses	September 21 <sup>st</sup> , 2022
Added Custom ASIC template, eWLC without SD-Access, EVPN, MPLS, Programmability, removed ETA and AVC, updated Operating temperature	<a href="#">Product Overview</a> , <a href="#">Platform Details</a> , <a href="#">Specifications</a>	September 28 <sup>th</sup> , 2020
Added NEBS Certification details, 16.11.1 features, VLAN ID correction, SDM template corrections, SVL	<a href="#">Page 13</a> , <a href="#">14</a> , <a href="#">15</a> , <a href="#">22</a> , <a href="#">23</a> , <a href="#">24</a>	April 16 <sup>th</sup> , 2019
Cisco Catalyst 9500 Series spec change	Updated <a href="#">Page 3</a>	January 11 <sup>th</sup> 2019
Product highlights changes (switching capacity and ports spec changes)	Updated <a href="#">Page 4</a>	January 11 <sup>th</sup> 2019
Cisco Catalyst 9500 Series configurations and port density spec changes	Updated <a href="#">Page 12</a>	January 11 <sup>th</sup> 2019
Performance spec changes	Updated <a href="#">Page 13</a>	January 11 <sup>th</sup> 2019
Text changes to “Important Note”	Updated <a href="#">Page 21</a>	January 11 <sup>th</sup> 2019
Text changes to “Cisco StackWise Virtual”	Updated <a href="#">Page 16</a>	January 11 <sup>th</sup> 2019
Text changes to “Trustworthy systems” and “Cisco StackWise Virtual”	Updated <a href="#">Page 18</a>	January 11 <sup>th</sup> 2019
Added text for Layer 3 Subinterface and BGP EVPN with VXLAN	Updated <a href="#">Page 20</a>	January 11 <sup>th</sup> 2019
Deleted text for “High-performance IP routing” and spec edits to “Minimum software requirements”	Updated <a href="#">Page 22</a>	January 11 <sup>th</sup> 2019
Text changes to “Licensing” and spec edits to “Network Essentials and Advantage Package Features”	Updated <a href="#">Page 23</a>	January 11 <sup>th</sup> 2019
Text changes to “Cisco DNA Essentials and Advantage Package Features”	Updated <a href="#">Page 24</a>	January 11 <sup>th</sup> 2019
Added product numbers for “Cisco Catalyst 9500 Series”	Updated <a href="#">Page 33</a>	January 11 <sup>th</sup> 2019
Deleted product numbers for “Cisco Catalyst 9500 Series”	Updated <a href="#">Page 34</a>	January 11 <sup>th</sup> 2019
Product highlights changes (switching capacity and ports spec changes)	Updated <a href="#">Page 4</a>	January 11 <sup>th</sup> 2019
Updates to Table 1	Updated <a href="#">Table 1</a>	August 15 <sup>th</sup> 2018
Added clearer description of SKUs, Updated date for Tables 1, 10, 11	Updated SKU descriptions, <a href="#">Table 11 data</a> , <a href="#">Table 10 data</a> , <a href="#">Table 1 Footnotes</a>	July 3 <sup>rd</sup> 2018

New or revised topic	Described In	Date
Added clearer descriptions of host routes and scale adjacency in hardware	Updated <a href="#">Table 10 Footnotes</a>	June 1 <sup>st</sup> 2018
Added Catalyst 9500 high density platforms and updated associated speeds and densities, e.g. Up to 6.4-Tbps switching capacity with up to 2 Bpps of forwarding performance from “3.2 Tbps/1 Bpps” a. 32 port 100G, b. 32 port 40G, c. 48 port 25G. Added Catalyst 9500 mid density platform a. 24 port 25G, b. 16 port 1/10G. Added new optical interfaces - QSFP28, SFP28. Added new power supply options - 650W, 1600W. Added RESCONF support. StackWise Virtual extended to all Catalyst 9500 platforms.	Updated <a href="#">Product Overview</a>	Mar 31 <sup>st</sup> 2018
AVB support noted for certain platforms. Corrected references to Catalyst 9000 switches, rather than Catalyst 9000 Series switches. Corrected references to Cisco IOS XE, rather than IOS-XE.	Updated <a href="#">Audio Video Bridging</a>	Dec 15 <sup>th</sup> 2017

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# Cisco Catalyst 9115 Series Wi-Fi 6 Access Points

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The Cisco Catalyst 9115 Series with Wi-Fi 6 is the next generation of enterprise access points. They are resilient, secure, and intelligent.



Hyperconnectivity with steady performance in demanding environments. Exponential growth of Internet of Things (IoT) devices and next-generation applications. Advanced persistent security threats. All of these require a wireless network that provides resiliency and superior connectivity, integrated security with advanced classification and containment, and hardware and software innovations to automate, secure, and simplify networks. Updating your wireless infrastructure to one that will meet these needs is paramount for today's digital business. The new generation of Cisco Catalyst 9100 Access Points, with high-performance Wi-Fi 6 (802.11ax) capabilities and innovations in RF performance, security, and analytics, enables end-to-end digitization and helps accelerate the rollout of business services by delivering beyond Wi-Fi.

Extending Cisco's intent-based network and perfect for networks of all sizes, the Catalyst 9115 Series scales to meet the growing demands of IoT while fully supporting the latest innovations and new technologies. The Catalyst 9115 Series is also a leader in performance, security, and analytics.

The Catalyst 9115 Series Access Points, paired with the Cisco Digital Network Architecture (Cisco DNA), are enterprise-class products that will address both your current and future needs. They are the first step in updating your network to take better advantage of all of the features and benefits that Wi-Fi 6 provides.

With the Catalyst 9115 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.

**Table 1.** Features and benefits

Feature	Benefits
<b>802.11ax (Wi-Fi 6)</b>	The IEEE 802.11ax emerging standard, also known as High-Efficiency-Wireless (HEW) or Wi-Fi 6, builds on 802.11ac. It will deliver a better experience in typical environments and more predictable performance for advanced applications such as 4K or 8K video, high-density, high-definition collaboration apps, all-wireless offices, and IoT. 802.11ax is designed to use both the 2.4-GHz and 5-GHz bands, unlike the 802.11ac standard.
<b>Uplink/downlink OFDMA</b>	OFDMA-based scheduling splits the bandwidth into smaller chunks called Resource Units (RUs), which can be allocated to individual clients in both the downlink and uplink directions to reduce overhead and latency.
<b>MU-MIMO technology</b>	Supporting four spatial streams, MU-MIMO enables access points to split spatial streams between client devices, to maximize throughput.
<b>BSS coloring</b>	Spatial reuse (also known as Basic Service Set [BSS] coloring) allows the Access Points (APs) and their clients to differentiate between BSSs, thus permitting more simultaneous transmissions.
<b>Target wake time</b>	A new power savings mode called Target Wake Time (TWT) allows the client to stay asleep and to wake up only at prescheduled (target) times to exchange data with the AP. This offers significant energy savings for battery-operated devices, up to 3x to 4x compared to 802.11n and 802.11ac.
<b>Cisco Embedded Wireless Controller</b>	The 9115 Wi-Fi 6 access points are available with a built-in controller. The Cisco Embedded Wireless Controller on Catalyst 9100 Access Points provides an easy-to-deploy and manage option that does not require a physical appliance. The control resides on the access point, so there is no added footprint or complexity. And because it uses Cisco Catalyst 9800 Series code, it's easy to migrate your network as your needs grow. For more details refer to <a href="#">EWC</a>
<b>User Defined Network</b>	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.) <a href="#">For more details refer to UDN.</a>
<b>Application Hosting on Catalyst 9100 Access</b>	Application Hosting on Catalyst 9100 Access Points helps future-proof and simplify IoT deployments by eliminating the need to install and manage overlay networks. Utilizing the USB interface, containerized applications and hardware modules can be deployed to reduce cost and complexity. Adding Cisco DNA Center provides workflows and deployment-wide application lifecycle management.
<b>Multigigabit Ethernet support</b>	Provides uplink speeds of 2.5 Gbps, in addition to 100 Mbps and 1 Gbps. All speeds are supported on Category 5e cabling for an industry first, as well as 10GBASE-T (IEEE 802.3bz) cabling.
<b>Bluetooth 5.0</b>	Integrated Bluetooth Low Energy (BLE) 5.0 radio to enable IoT use cases such as location tracking and wayfinding.

Feature	Benefits
<b>Apple features</b>	<p>Apple and Cisco have partnered to create an optimal mobile experience for iOS devices on corporate networks based on Cisco technologies. Using new features in iOS 10, in combination with the latest software and hardware from Cisco, businesses can now more effectively use their network infrastructure to deliver an enhanced user experience across all business applications.</p> <p>At the center of the collaboration is a unique handshake between the Cisco WLAN and Apple devices. This handshake enables the Cisco WLAN to provide an optimal Wi-Fi roaming experience to Apple devices. Additionally, the Cisco WLAN trusts Apple devices and gives priority treatment for business-critical applications specified by the Apple device. This feature is also known as Fast Lane.</p>

For more details about Wi-Fi 6, see [Cisco's technical white paper](#) on Wi-Fi 6.

For more details about C9115 feature support, see [Cisco's Feature Matrix](#).

## Secure infrastructure

**Trustworthy systems built with Cisco Trust Anchor Technologies** provide a highly secure foundation for Cisco products. With the Cisco Catalyst 9100 Access Points, these technologies enable hardware and software authenticity assurance for supply chain trust and strong mitigation against man-in-the-middle attacks that compromise software and firmware. Trust Anchor capabilities include:

- **Image signing**
- **Secure Boot**
- **Cisco Trust Anchor module**

## Cisco DNA Software support

Pairing the Cisco Catalyst 9115 Series Access Points with Cisco DNA Software allows for a total network transformation. Cisco DNA Software allows you to truly understand your network with real-time analytics, quickly detect and contain security threats, and easily provide networkwide consistency through automation and virtualization. The Catalyst 9115 Series Access Points support SD-Access, Cisco's leading enterprise architecture.

Working together, the Cisco Catalyst 9115 Series and Cisco DNA Software offer such features as:

- Cisco DNA Spaces
- Cisco Identity Services Engine
- Cisco DNA Analytics and Assurance

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

**Note:** For information about Cisco DNA Software, refer to [Cisco DNA Software](#) for Wireless



## Product specifications

**Table 2.** Specifications

Item	Specification
<b>Part numbers</b>	<p><b>Cisco Catalyst 9115AXI Access Point: Indoor environments, with internal antennas</b></p> <ul style="list-style-type: none"> <li>• C9115AXI-x: Cisco Catalyst 9115 Series</li> </ul> <p><b>Cisco Catalyst 9115AXE Access Point: Indoor, challenging environments, with external antennas</b></p> <ul style="list-style-type: none"> <li>• C9115AXE-x: Cisco Catalyst 9115 Series</li> </ul> <p><b>Cisco Catalyst 9115AXI Access Point: Indoor environments, with internal antennas, with embedded wireless controller</b></p> <ul style="list-style-type: none"> <li>• C9115AXI-EWC-x: Cisco Catalyst 9115 Series</li> </ul> <p><b>Cisco Catalyst 9115AXE Access Point: Indoor, challenging environments, with external antennas, with embedded wireless controller</b></p> <ul style="list-style-type: none"> <li>• C9115AXE-EWC-x: Cisco Catalyst 9115 Series</li> </ul> <p><b>Regulatory domains: (x = regulatory domain)</b></p> <p>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 <a href="https://www.cisco.com/go/aironet/compliance">https://www.cisco.com/go/aironet/compliance</a>.</p> <p>Not all regulatory domains have been approved. As they are approved, the part numbers will be available on the Global Price List.</p> <p><b>Cisco Wireless LAN Services</b></p> <ul style="list-style-type: none"> <li>• AS-WLAN-CNSLT: <a href="#">Cisco Wireless LAN Network Planning and Design Service</a></li> <li>• AS-WLAN-CNSLT: <a href="#">Cisco Wireless LAN 802.11n Migration Service</a></li> <li>• AS-WLAN-CNSLT: <a href="#">Cisco Wireless LAN Performance and Security Assessment Service</a></li> </ul>
<b>Software</b>	<ul style="list-style-type: none"> <li>• Cisco Unified Wireless Network Software Release 8.9 or later</li> <li>• Cisco IOS XE Software Release 16.11 or later</li> </ul>
<b>Supported wireless LAN controllers</b>	<ul style="list-style-type: none"> <li>• Cisco Catalyst 9800 Series Wireless Controllers</li> <li>• Cisco 3500, 5520, and 8540 Series Wireless Controllers and Cisco Virtual Wireless Controller</li> </ul>
<b>802.11n version 2.0 (and related) capabilities</b>	<ul style="list-style-type: none"> <li>• 4x4 MIMO with four spatial streams</li> <li>• Maximal Ratio Combining (MRC)</li> <li>• 802.11n and 802.11a/g beamforming</li> <li>• 20- and 40-MHz channels</li> <li>• PHY data rates up to 890 Mbps (40 MHz with 5 GHz and 20 MHz with 2.4 GHz)</li> <li>• Packet aggregation: A-MPDU (transmit and receive), A-MSDU (transmit and receive)</li> <li>• 802.11 Dynamic Frequency Selection (DFS)</li> <li>• Cyclic Shift Diversity (CSD) support</li> </ul>

Item	Specification
<b>802.11ac</b>	<ul style="list-style-type: none"> <li>• 4x4 downlink MU-MIMO with four spatial streams</li> <li>• MRC</li> <li>• 802.11ac beamforming</li> <li>• 20-, 40-, 80-, and 160-MHz channels</li> <li>• PHY data rates up to 3.47 Gbps (160 MHz with 5 GHz)</li> <li>• Packet aggregation: A-MPDU (transmit and receive), A-MSDU (transmit and receive)</li> <li>• 802.11 DFS</li> <li>• CSD support</li> </ul>
<b>802.11ax</b>	<ul style="list-style-type: none"> <li>• 4x4 downlink MU-MIMO with four spatial streams</li> <li>• Uplink/downlink OFDMA</li> <li>• TWT</li> <li>• BSS coloring</li> <li>• MRC</li> <li>• 802.11ax beamforming</li> <li>• 20-, 40-, 80-, and 160-MHz channels</li> <li>• PHY data rates up to 5.38 Gbps (160 MHz with 5 GHz and 20 MHz with 2.4 GHz)</li> <li>• Packet aggregation: A-MPDU (transmit and receive), A-MSDU (transmit and receive)</li> <li>• 802.11 DFS</li> <li>• CSD support</li> </ul>
<b>Integrated antenna</b>	<ul style="list-style-type: none"> <li>• 2.4 GHz, peak gain 3 dBi, internal antenna, omnidirectional in azimuth</li> <li>• 5 GHz, peak gain 4 dBi, internal antenna, omnidirectional in azimuth</li> </ul>
<b>External antenna (sold separately)</b>	<ul style="list-style-type: none"> <li>• Cisco Catalyst 9115E Access Points are certified for use with antenna gains up to 6 dBi (2.4 GHz and 5 GHz)</li> <li>• Cisco offers the industry's broadest selection of <a href="#">antennas</a>, delivering optimal coverage for a variety of deployment scenarios</li> <li>• For more details, <a href="#">C9115 Guide</a></li> </ul>
<b>Interfaces</b>	<ul style="list-style-type: none"> <li>• 1x 100, 1000, 2500 Multigigabit Ethernet (RJ-45) – IEEE 802.3bz</li> <li>• Management console port (RJ-45)</li> <li>• USB 2.0</li> </ul>
<b>Indicators</b>	<ul style="list-style-type: none"> <li>• Status LED indicates boot loader status, association status, operating status, boot loader warnings, and boot loader errors</li> </ul>
<b>Dimensions (W x L x H)</b>	<ul style="list-style-type: none"> <li>• Access point (without mounting brackets): C9115I: 8.0 x 8.0 x 1.5 in. (20.3 x 20.3 x 3.8 cm), C9115E: 8.0 x 8.0 x 1.7 in. (20.3 x 20.3 x 4.3 cm)</li> </ul>
<b>Weight</b>	<p><b>Cisco Catalyst 9115AXI</b></p> <ul style="list-style-type: none"> <li>• 1.98 lb (0.9 kg)</li> </ul> <p><b>Cisco Catalyst 9115AXE</b></p> <ul style="list-style-type: none"> <li>• 2.43 lb (1.1 kg)</li> </ul>
<b>Input power requirements</b>	<ul style="list-style-type: none"> <li>• 802.3at Power over Ethernet Plus (PoE+), 802.3bt Cisco Universal PoE (Cisco UPOE+, Cisco UPOE)</li> <li>• Cisco power injector, AIR-PWRINJ6=</li> <li>• 802.3af PoE</li> <li>• Cisco power injector, AIR-PWRINJ5= (Note: This injector supports only 802.3af)</li> </ul> <p><b>Note:</b> When 802.3af PoE is the source of power, both 2.4-GHz and 5-GHz radios will be reduced to 2x2 and Ethernet downgraded to 1 Gigabit Ethernet. In addition, the USB port will be off.</p>

Item	Specification														
Power draw	<b>802.3at full feature - Catalyst 9115I</b>														
	<table border="1"> <thead> <tr> <th>Power source</th> <th>Power type</th> <th>2.4-GHz radio</th> <th>5-GHz radio</th> <th>Link speed</th> <th>USB</th> <th>LLDP</th> </tr> </thead> <tbody> <tr> <td>802.3at</td> <td>PoE</td> <td>4x4</td> <td>4x4</td> <td>2.5G</td> <td>Y</td> <td>20.4W</td> </tr> </tbody> </table>	Power source	Power type	2.4-GHz radio	5-GHz radio	Link speed	USB	LLDP	802.3at	PoE	4x4	4x4	2.5G	Y	20.4W
	Power source	Power type	2.4-GHz radio	5-GHz radio	Link speed	USB	LLDP								
	802.3at	PoE	4x4	4x4	2.5G	Y	20.4W								
	<b>802.3at full feature - Catalyst 9115E</b>														
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	Power source	Power type	2.4-GHz radio	5-GHz radio	Link speed	USB	LLDP								
802.3at	PoE	4x4	4x4	2.5G	Y	21.4W									
<b>802.3af reduced feature</b>															
<table border="1"> <thead> <tr> <th>Power source</th> <th>Power type</th> <th>2.4-GHz radio</th> <th>5-GHz radio</th> <th>Link speed</th> <th>USB</th> <th>LLDP</th> </tr> </thead> <tbody> <tr> <td>802.3af</td> <td>PoE</td> <td>2x2</td> <td>2x2</td> <td>1G</td> <td>N</td> <td>13W</td> </tr> </tbody> </table>	Power source	Power type	2.4-GHz radio	5-GHz radio	Link speed	USB	LLDP	802.3af	PoE	2x2	2x2	1G	N	13W	
Power source	Power type	2.4-GHz radio	5-GHz radio	Link speed	USB	LLDP									
802.3af	PoE	2x2	2x2	1G	N	13W									
	<b>Note:</b> Power required at the Power Source Equipment (PSE) will depend on the cable length and other environmental issues.														
Environmental	<p><b>Cisco Catalyst 9115AXI</b></p> <ul style="list-style-type: none"> <li>• Nonoperating (storage) temperature: -22° to 158°F (-30° to 70° C)</li> <li>• Nonoperating (storage) altitude test: 25°C, 15,000 ft.</li> <li>• Operating temperature: 32° to 122°F (0° to 50° C)</li> <li>• Operating humidity: 10% to 90% (noncondensing)</li> <li>• Operating altitude test: 40°C, 9843 ft.</li> </ul> <p><b>Note:</b> When the ambient operating temperature exceeds 40° C, the access point will shift from 4x4 to 2x2 on both the 2.4-GHz and 5-GHz radios, uplink Ethernet will downgrade to 1 Gigabit Ethernet, and the USB interface will be disabled.</p> <p><b>Cisco Catalyst 9115AXE</b></p> <ul style="list-style-type: none"> <li>• Nonoperating (storage) temperature: -22° to 158°F (-30° to 70° C)</li> <li>• Nonoperating (storage) altitude test: 25°C, 15,000 ft.</li> <li>• Operating temperature: -4° to 122°F (-20° to 50° C)</li> <li>• Operating humidity: 10% to 90% (noncondensing)</li> <li>• Operating altitude test: 40°C, 9843 ft.</li> </ul>														
System memory	<ul style="list-style-type: none"> <li>• 2048 MB DRAM</li> <li>• 1024 MB flash</li> </ul>														
Warranty	Limited lifetime hardware warranty														
Available transmit power settings	<table border="1"> <thead> <tr> <th>2.4 GHz</th> <th>5 GHz</th> </tr> </thead> <tbody> <tr> <td> <ul style="list-style-type: none"> <li>• 23 dBm (200 mW)</li> <li>• -4dBm (0.39mW)</li> </ul> </td> <td> <ul style="list-style-type: none"> <li>• 23 dBm (200 mW)</li> <li>• -4dBm (0.39mW)</li> </ul> </td> </tr> </tbody> </table>	2.4 GHz	5 GHz	<ul style="list-style-type: none"> <li>• 23 dBm (200 mW)</li> <li>• -4dBm (0.39mW)</li> </ul>	<ul style="list-style-type: none"> <li>• 23 dBm (200 mW)</li> <li>• -4dBm (0.39mW)</li> </ul>										
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Regulatory domains	Note: <b>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 <a href="https://www.cisco.com/go/aironet/compliance">https://www.cisco.com/go/aironet/compliance</a></b>														

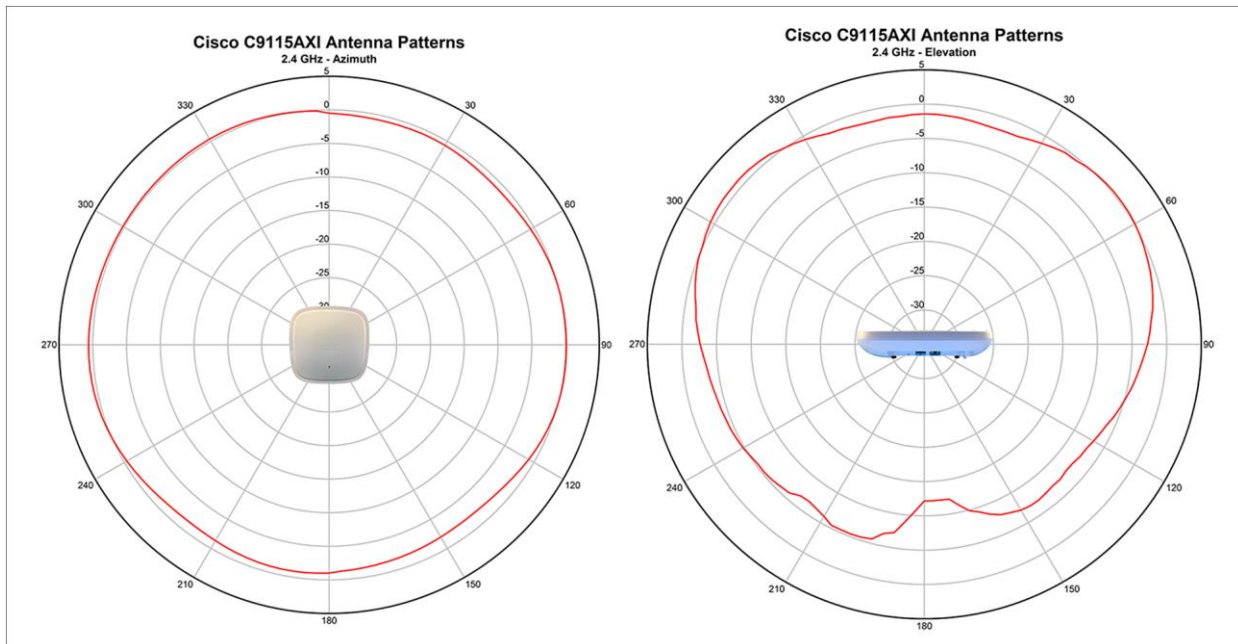
Item	Specification
	For information about Regulatory Domain support, refer to the <a href="#">Cisco Regulatory Domain White Paper</a>
<b>Compliance standards</b>	<ul style="list-style-type: none"> <li>• <b>Safety:</b> <ul style="list-style-type: none"> <li>◦ IEC 60950-1</li> <li>◦ EN 60950-1</li> <li>◦ UL 60950-1</li> <li>◦ CAN/CSA-C22.2 No. 60950-1</li> <li>◦ AS/NZS 60950-1</li> <li>◦ UL 2043</li> <li>◦ Class III equipment</li> </ul> </li> <li>• <b>Emissions:</b> <ul style="list-style-type: none"> <li>◦ CISPR 32 (rev. 2015)</li> <li>◦ EN 55032 (rev. 2012/AC:2013)</li> <li>◦ EN 55032 (rev. 2015)</li> <li>◦ EN61000-3-2 (rev. 2014)</li> <li>◦ EN61000-3-3 (rev. 2013)</li> <li>◦ KN61000-3-2</li> <li>◦ KN61000-3-3</li> <li>◦ AS/NZS CISPR 32 Class B (rev. 2015)</li> <li>◦ 47 CFR FCC Part 15B</li> <li>◦ ICES-003 (rev. 2016 Issue 6, Class B)</li> <li>◦ VCCI (V3)</li> <li>◦ CNS (rev. 13438)</li> <li>◦ KN-32</li> <li>◦ TCVN 7189 (rev. 2009)</li> </ul> </li> <li>• <b>Immunity:</b> <ul style="list-style-type: none"> <li>◦ CISPR 24 (rev. 2010)</li> <li>◦ EN 55024/EN 55035 (rev. 2010)</li> </ul> </li> <li>• <b>Emissions and immunity:</b> <ul style="list-style-type: none"> <li>◦ EN 301 489-1 (v2.1.1 2017-02)</li> <li>◦ EN 301 489-17 (v3.1.1 2017-02)</li> <li>◦ QCVN (18:2014)</li> <li>◦ KN 489-1</li> <li>◦ KN 489-17</li> <li>◦ EN 60601 (1-1:2015)</li> </ul> </li> <li>• <b>Radio:</b> <ul style="list-style-type: none"> <li>◦ EN 300 328 (v2.1.1)</li> </ul> </li> </ul> <ul style="list-style-type: none"> <li>◦ EN 301 893 (v2.1.1)</li> <li>◦ AS/NZS 4268 (rev. 2017)</li> <li>◦ 47 CFR FCC Part 15C, 15.247, 15.407</li> <li>◦ RSP-100</li> <li>◦ RSS-GEN</li> <li>◦ RSS-247</li> <li>◦ China regulations SRRC</li> <li>◦ LP0002 (rev 2018.1.10)</li> <li>◦ Japan Std. 33a, Std. 66, and Std. 71</li> </ul> <ul style="list-style-type: none"> <li>• <b>RF safety:</b> <ul style="list-style-type: none"> <li>◦ EN 50385 (rev. Aug 2002)</li> <li>◦ ARPANSA</li> <li>◦ AS/NZS 2772 (rev. 2016)</li> <li>◦ EN 62209-1 (rev. 2016)</li> <li>◦ EN 62209-2 (rev. 2010)</li> <li>◦ 47 CFR Part 1.1310 and 2.1091</li> <li>◦ RSS-102</li> </ul> </li> <li>• <b>IEEE standards:</b> <ul style="list-style-type: none"> <li>◦ IEEE 802.3</li> <li>◦ IEEE 802.3ab</li> <li>◦ IEEE 802.3af/at</li> <li>◦ IEEE 802.11 a/b/g/n/ac/ax</li> <li>◦ IEEE 802.11h, 802.11d</li> </ul> </li> <li>• <b>Security:</b> <ul style="list-style-type: none"> <li>◦ 802.11i, Wi-Fi Protected Access 3 (WPA3), WPA2, WPA</li> <li>◦ 802.1X</li> <li>◦ Advanced Encryption Standard (AES)</li> </ul> </li> <li>• <b>Extensible Authentication Protocol (EAP) types:</b> <ul style="list-style-type: none"> <li>◦ EAP-Transport Layer Security (TLS)</li> <li>◦ EAP-Tunneled TLS (TTLS) or Microsoft Challenge Handshake Authentication Protocol Version 2 (MSCHAPv2)</li> <li>◦ Protected EAP (PEAP) v0 or EAP-MSCHAPv2</li> <li>◦ EAP-Flexible Authentication via Secure Tunneling (EAP-FAST)</li> <li>◦ PEAP v1 or EAP-Generic Token Card (GTC)</li> <li>◦ EAP-Subscriber Identity Module (SIM)</li> </ul> </li> </ul>
<b>Datarate/Transmit Power/ Receive sensitivity</b>	For more detailed information about Datarate/TX Power/Receive sensitivity, Please refer <a href="#">Cisco RF Details</a>

Item		Specification			
Transmit power and receive sensitivity					
		5-GHz radio		2.4-GHz radio	
	Spatial streams	Total transmit power (dBm)	Receive sensitivity (dBm)	Total transmit power (dBm)	Receive sensitivity (dBm)
<b>802.11/11b</b>					
<b>1 Mbps</b>	1	-	-	23	-98
<b>11 Mbps</b>	1	-	-	23	-90
<b>802.11a/g</b>					
<b>6 Mbps</b>	1	23	-96	23	-95
<b>24 Mbps</b>	1	23	-87	23	-85
<b>54 Mbps</b>	1	23	-76	23	-76
<b>802.11n HT20</b>					
<b>MCS0</b>	1	23	-95	23	-94
<b>MCS31</b>	4	23	-70	23	-70
<b>802.11n HT40</b>					
<b>MCS0</b>	1	23	-93	-	-
<b>MCS31</b>	4	23	-68	-	-
<b>802.11ac VHT20</b>					
<b>MCS0</b>	1	23	-95	-	-
<b>MCS9</b>	1	22	NA	-	-
<b>MCS0</b>	2	23	-92	-	-
<b>MCS9</b>	2	22	NA	-	-
<b>MCS0</b>	3	23	-91	-	-
<b>MCS9</b>	3	22	-67	-	-
<b>MCS0</b>	4	23	-90	-	-
<b>MCS9</b>	4	22	-66	-	-

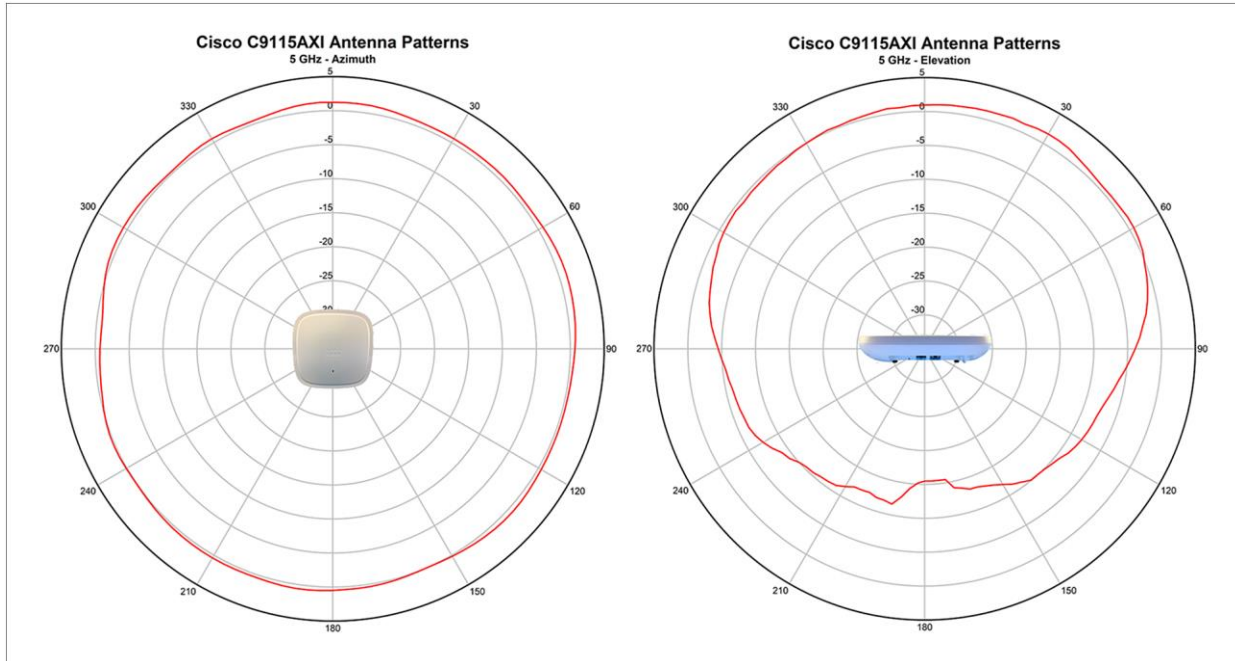
Item		Specification			
<b>802.11ac VHT40</b>					
MCS0	1	23	-89	-	-
MCS9	1	22	-65	-	-
MCS0	2	23	-86	-	-
MCS9	2	22	-62	-	-
MCS0	3	23	-85	-	-
MCS9	3	22	-61	-	-
MCS0	4	23	-84	-	-
MCS9	4	22	-59	-	-
<b>802.11ac VHT80</b>					
MCS0	1	23	-84	-	-
MCS9	1	22	-60	-	-
MCS0	2	23	-81	-	-
MCS9	2	22	-57	-	-
MCS0	3	23	-80	-	-
MCS9	3	22	-55	-	-
MCS0	4	23	-77	-	-
MCS9	4	22	-54	-	-
<b>802.11ac VHT160</b>					
MCS0	1	23	-84	-	-
MCS9	1	21	-59	-	-
MCS0	2	23	-85	-	-
MCS9	2	21	-57	-	-
MCS0	3	23	-85	-	-
MCS9	3	21	-55	-	-
MCS0	4	23	-85	-	-
MCS9	4	21	-53	-	-

Item		Specification			
<b>802.11ax VHT20</b>					
MCS0	1	23	-94	23	-93
MCS11	1	21	-64	20	-62
MCS0	2	23	-91	23	-90
MCS11	2	21	-61	20	-59
MCS0	3	23	-90	23	-88
MCS11	3	21	-60	20	-58
MCS0	4	23	-87	23	-86
MCS11	4	21	-59	20	-57
<b>802.11ax VHT40</b>					
MCS0	1	23	-92	23	-91
MCS11	1	21	-60	20	-60
MCS0	2	23	-89	23	-87
MCS11	2	21	-57	20	-57
MCS0	3	23	-88	23	-85
MCS11	3	21	-56	20	-55
MCS0	4	23	-86	23	-83
MCS11	4	21	-54	20	-54
<b>802.11ax VHT80</b>					
MCS0	1	23	-87	-	-
MCS11	1	21	-58	-	-
MCS0	2	23	-84	-	-
MCS11	2	21	-55	-	-
MCS0	3	23	-83	-	-
MCS11	3	21	-54	-	-
MCS0	4	23	-81	-	-
MCS11	4	21	-52	-	-

Item		Specification			
<b>802.11ax VHT160</b>					
MCS0	1	23	-84	-	-
MCS11	1	20	-55	-	-
MCS0	2	23	-81	-	-
MCS11	2	20	-52	-	-
MCS0	3	23	-80	-	-
MCS11	3	20	-51	-	-
MCS0	4	23	-78	-	-
MCS4	4	23	-67	-	-
MCS7	4	23	-60	-	-
MCS8	4	21	-57	-	-
MCS9	4	21	-55	-	-
MCS10	4	20	-51	-	-
MCS11	4	20	-49	-	-







**Figure 1.**  
Antenna radiation pattern

For information about feature support, please refer to the Cisco Catalyst 9100 Release Notes.

## Licensing

For information about Licensing and packaging, refer to [Cisco DNA Software for Wireless](#).

## Warranty information

The Cisco Catalyst 9115 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 are below.

Information on product material content laws and regulations - [Materials](#).

Information on electronic waste laws and regulations, including products, batteries, and packaging - [WEEE compliance](#).

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## Cisco Services

With Cisco Services, you can achieve infrastructure excellence faster with less risk. From an initial WLAN readiness assessment to implementation, full solution support, and in-depth training, our services for the Cisco Catalyst 9115 Series provide expert guidance to help you successfully plan, deploy, manage, and support your new access points. With unmatched networking expertise, best practices, and innovative tools, Cisco Services can help you reduce overall upgrade, refresh, and migration costs as you introduce new hardware, software, and protocols into the network. With a comprehensive lifecycle of services, Cisco experts will help you minimize disruption and improve operational efficiency to extract maximum value from your Cisco DNA-ready infrastructure.

## Cisco Capital

Cisco Capital makes it easier to get the right technology to achieve your objectives, enable business transformation and help you stay competitive. We can help you reduce the total cost of ownership, conserve capital, and accelerate growth. In more than 100 countries, our flexible payment solutions can help you acquire hardware, software, services and complementary third-party equipment in easy, predictable payments. [Learn more.](#)

## Smart Account

Creating Smart Accounts by using the Cisco Smart Software Manager (SSM) enables you to order devices and licensing packages and also manage your software licenses from a centralized website. For more information on Smart Accounts, refer to <https://www.cisco.com/go/smartaccounts>.

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Cisco Systems (USA) Pte. Ltd.  
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**Europe Headquarters**  
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# Cisco Catalyst 9800-40 Wireless Controller

Built from the ground up for intent-based  
networking

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## Product overview



**Figure 1.**  
Cisco Catalyst 9800-40 Wireless Controller

Built from the ground-up for intent-based networking and Cisco DNA, Cisco Catalyst 9800 Series Wireless Controllers are Cisco IOS XE based and integrate the RF excellence of Cisco Aironet access points, creating a best-in-class wireless experience for your evolving and growing organization. The 9800 Series is built on an open and programmable architecture with built-in security, streaming telemetry, and rich analytics.

The Cisco Catalyst 9800 Series Wireless Controllers are built on the three pillars of network excellence— always on, secure, and deployed anywhere—which strengthen the network by providing the best wireless experience without compromise, while saving time and money.

The Cisco Catalyst 9800-40 is a fixed wireless controller with seamless software updates for midsize and large enterprises. It is feature rich and enterprise ready to power your business-critical operations and transform end-customer experiences:

- High availability and seamless software updates, enabled by hot and cold patching, keep your clients and services **always** on during planned and unplanned events.
- **Secure** air, devices, and users with the Cisco Catalyst 9800-40. Wireless infrastructure becomes the strongest first line of defense with Cisco Encrypted Traffic Analytics (ETA) and Software-Defined Access (SD-Access). The controller comes with built-in security: Secure Boot, runtime defenses, image signing, integrity verification, and hardware authenticity.
- Built on a modular operating system, the 9800-40 features open and programmable APIs that enable **automation** of day-0 to day-N network operations. Model-driven streaming telemetry provides deep insights into the **health of your network and clients**.
- 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.
- 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.

- With Cisco In Service Software Upgrade (ISSU), network downtime during a software update or upgrade is a thing of the past. ISSU is a complete image upgrade and update while the network is still running. The software image—or patch—is pushed onto the wireless controller while traffic forwarding continues uninterrupted. All access point and client sessions are retained during the upgrade process. With just a click, your network automatically upgrades to the newest software.

## Features

**Table 1.** Key features

Metric	Value
Maximum number of access points	Up to 2000
Maximum number of clients	32,000
Maximum throughput	Up to 40 Gbps
Maximum WLANs	4096
Maximum VLANs	4096
Maximum site tags	2000
Maximum Flex APs per site	100
Maximum policy tags	2000
Maximum RF tags	2000
Maximum RF profiles	4000
Maximum policy profiles	1000
Maximum Flex profiles	2000
Interfaces	4x 10G/1x 1G SFP+/SFP
Power supply	AC power with optional redundant AC power
Maximum power consumption	381W
Deployment modes	Centralized, Cisco FlexConnect, and Fabric Wireless (SD-Access)
Form factor	1RU
License	Smart License enabled
Operating system	Cisco IOS XE
Management	Cisco DNA Center, Cisco Prime Infrastructure, integrated WebUI, and third party (open standards APIs)*
Interoperability	AireOS-based controllers*

Metric	Value
Policy engine	Cisco Identity Services Engine (ISE)*
Location platform	Cisco Connected Mobile Experiences (CMX), Cisco Spaces*
Access points	Aironet 802.11ac Wave 1 and Wave 2 access points, Cisco Catalyst 9100 802.11ax access points

\*For information on compatibility: [Compatibility Guide](#)

## Always on

Seamless software updates enable faster resolution of critical issues, introduction of new access points with zero downtime, and flexible software upgrades. Stateful Switchover (SSO) with 1:1 active standby and N+1 redundancy keeps your network, services, and clients always on, even in unplanned events.

## Secure

Secure air, devices, and users with the Cisco Catalyst 9800-40 Wireless Controller. Wireless infrastructure becomes the strongest first line of defense with ETA and SD-Access. The controller comes with built-in security: Secure Boot, runtime defenses, image signing, integrity verification, and hardware authenticity. Cisco Advanced Wireless Intrusion Prevention System (aWIPS) is a complete wireless security solution that uses the Cisco Unified Access infrastructure to detect, locate, mitigate, and contain wired and wireless rogues and threats.

## Open and programmable

The controller is built on the Cisco IOS XE operating system, which offers a rich set of open standards-based programmable APIs and model-driven telemetry that provide an easy way to automate day-0 to day-N network operations.

## Details



## Physical dimensions

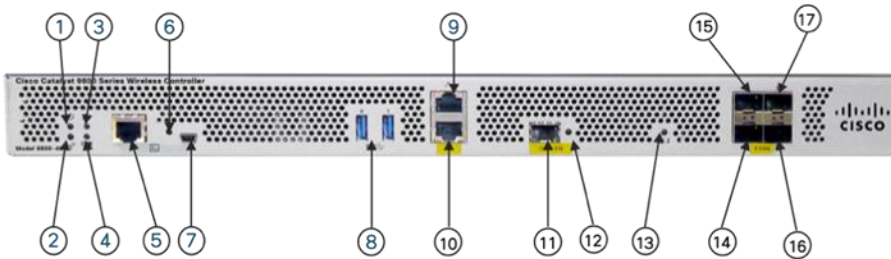
**Table 2.** Physical dimensions

Dimension	Value
Width	17.3 inches (43.94 cm)
Depth	19.5 inches (49.53 cm)
Height	1.72 inches (4.37 cm)
Weight	22.8 lb (10.34 kg)

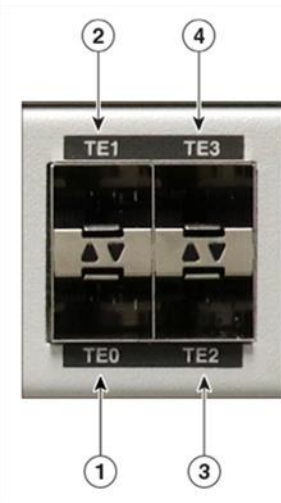
## Front panel



**Figure 2.**  
Front panel



**Figure 3.**  
Front panel components



**Figure 4.**  
10G/1G ports

**Table 3.** Descriptions of front panel components

Label	Component
1	PWR: Power LED
2	SYS: System LED
3	ALM: Alarm LED
4	HA: High-availability LED
5	CON: RJ-45 compatible console port



Label	Component
6	EN: USB console-enabled LED
7	CON: Mini USB console port
8	USB ports 0 and 1
9	SP: RJ-45 10/100/1000 management Ethernet port
10	RP: RJ-45 10/100/1000 redundancy Ethernet port
11	RP: 1 GE SFP port (the only SFPs supported on the RP port are GLC-SX-MMD and GLC-LH-SMD)
12	LINK: RJ-45 connector LED
13	SSD: SSD activity LED
14	TE0: 1 GE SFP/10 GE SFP+ port 0
15	TE1: 1 GE SFP/10 GE SFP+ port 1
16	TE2: 1 GE SFP/10 GE SFP+ port 2
17	TE3: 1 GE SFP/10 GE SFP+ port 3

## Ports

**Table 4.** Ports and their purpose

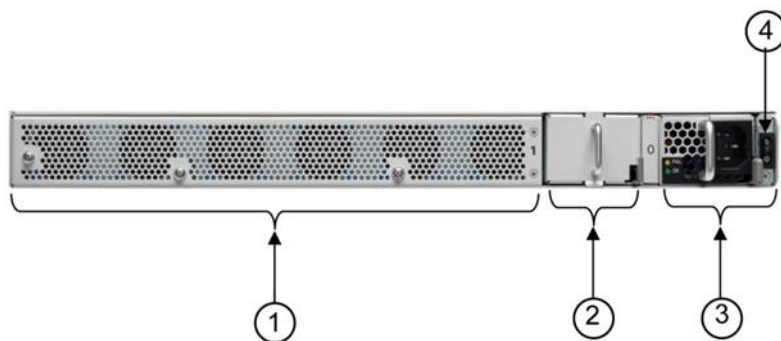
Port	Purpose
<b>1x RJ-45 console port</b>	Console port for out-of-band management
<b>1x USB 3.0 console port</b>	Console port for out-of-band management
<b>2x USB 3.0 ports</b>	USB 3.0 ports for plugging in external memory
<b>1x RJ-45 management port</b>	Management port used for out-of-band management. Also known as service port
<b>1x RJ-45 redundancy port</b>	Redundancy port used for SSO
<b>1x SFP Gigabit Ethernet redundancy port</b>	Redundancy port used for SSO <ul style="list-style-type: none"> <li>Redundancy port used for SSO; works with Cisco supported SFPs (GLC-LH-SMD and GLC-SX-MMD) for RP port</li> </ul>
<b>4x 10G/1G SFP+ or SFP ports</b>	Ports used for sending and receiving traffic between access points and controller, northbound traffic, in-band management traffic, and wireless client traffic. Must be connected to the switch

## Front panel LEDs

**Table 5.** Front panel LEDs

LED	Color	Function
<b>Power</b>	Green	Green if all power rails are within spec
<b>System status</b>	Green	On: IOS has boot complete Blinking: IOS boot in progress
	Amber	On: System crash Blinking: Secure boot failure Off: ROMMON boot
<b>High Availability</b>	Green	On: HA active Blinking: HA standby hot
	Amber	Slow blink: Booted with HA standby cold Fast blink: HA maintenance
<b>Alarm</b>	Green	On: ROMMON boot complete Blinking: System upgrade in progress
	Amber	On: ROMMON boot and SYSTEM bootup Blinking: Temperature err and secure boot failure
<b>USB console</b>	Green	When LED is lit, USB Console is enabled (RJ-45 console is disabled)
<b>SSD activity</b>	Green	Indicates active use of the hard disk SSD memory devices in the unit
<b>Network link</b>	Green	Solid green indicates link Flashing green indicates activity

## Rear panel



**Figure 5.**  
Rear panel

**Table 6.** Descriptions of rear panel components

Label	Component
1	Fans
2	Optional redundant power supply (PEM 1)
3	Power supply (PEM 0)
4	Power/standby switch

## Rear panel LEDs

**Table 7.** Power LEDs

Green LED	Amber LED	Power supply status
Off	Off	No AC power to all power supplies
Off	On	Power supply failure (includes over voltage, over current, over temperature, and fan failure)
Off	1 Hz blinking	Power supply warning events in which the power supply continues to operate (high temperature, high power, and slow fan)
1 Hz blinking	Off	AC present, 12VSB on (power supply off)
On	Off	Power supply on and OK

## Power

The 9800-40 controller supports an optional redundant AC power supply.

The AC input ranges are as follows:

- Worldwide ranging AC input range (90 to 264 VAC)

The power entry modules (PEMs) provide redundant power to the system, and the 9800-40 can operate continuously with only a single PEM installed. The PEMs are hot-swappable, and replacement of a single PEM can be made without power interruption to the system. All external connections to the PEMs are made from the rear panel of the chassis, and they are removed or inserted from the rear. The main power switch for the unit is located directly next to the PEMs on the rear of the chassis.

## SFPs supported

The four data ports can operate in either 10G or 1G mode.

**Note:** 10/100-Mbps operation is not supported.

**Table 8.** SFPs supported

Type	Modules supported
<b>Small Form-Factor Pluggable (SFP)</b>	GLC-BX-D
	GLC-BX-U
	GLC-LH-SMD
	GLC-SX-MMD
	GLC-EX-SMD
	GLC-ZX-SMD
	GLC-TE
<b>Enhanced SFP (SFP+)</b>	SFP-10G-AOC1M
	SFP-10G-AOC2M
	SFP-10G-AOC3M
	SFP-10G-AOC5M
	SFP-10G-AOC7M
	SFP-10G-AOC10M
	SFP-10G-SR
	SFP-10G-SR-S
	SFP-10G-SR-X
	SFP-10G-LR
	SFP-10G-LRM
	SFP-10G-LR-X
	SFP-10G-ER
	SFP-10G-ZR
	SFP-H10GB-CU1M
	SFP-H10GB-CU1.5M
	SFP-H10GB-CU2M

Type	Modules supported
	SFP-H10GB-CU2.5M
	SFP-H10GB-CU3M
	SFP-H10GB-CU5M
	SFP-H10GB-ACU7M
	SFP-H10GB-ACU10M
	DWDM-SFP10G-30.33 - DWDM-SFP10G-61.41

## Benefits

**Cisco IOS XE** opens a completely new paradigm in network configuration, operation, and monitoring through network automation. Cisco's automation solution is open, standards-based, and extensible across the entire lifecycle of a network device. The various mechanisms that bring about network automation are outlined below, based on a device lifecycle.

- **Automated device provisioning:** This is the ability to automate the process of upgrading software images and installing configuration files on Cisco access points when they are being deployed in the network for the first time. Cisco provides turnkey solutions such as Plug and Play (PnP) that enable an effortless and automated deployment.
- **API-driven configuration:** Modern wireless controllers such as the Cisco Catalyst 9800-40 Wireless Controller support a wide range of automation features and provide robust open APIs over Network Configuration Protocol (NETCONF) using YANG data models for external tools, both off-the-shelf and custom built, to automatically provision network resources.
- **Granular visibility:** Model-driven telemetry provides a mechanism to stream data from a wireless controller to a destination. The data to be streamed is driven through subscription to a data set in a YANG model. The subscribed data set is streamed out to the destination at configured intervals. Additionally, Cisco IOS XE enables the push model, which provides near-real-time monitoring of the network, leading to quick detection and rectification of failures.
- **Seamless software upgrades and patching:** To enhance OS resilience, Cisco IOS XE supports patching, which provides fixes for critical bugs and security vulnerabilities between regular maintenance releases. This support allows customers to add patches without having to wait for the next maintenance release.

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## Always on

- **High availability:** Stateful switchover with a 1:1 active standby and N+1 redundancy keeps your network, services, and clients always on, even in unplanned events.
- **Software Maintenance Upgrades (SMUs) with hot and cold patching:** Patching allows for a patch to be installed as a bug fix without bringing down the entire network and eliminates the need to requalify an entire software image. The SMU is a package that can be installed on a system to provide a patch fix or security resolution to a released image. SMUs allow you to address the network issue quickly while reducing the time and scope of the testing required. The Cisco IOS XE platform internally validates the SMU compatibility and does not allow you to install incompatible SMUs. All SMUs are integrated into the subsequent Cisco IOS XE Software maintenance releases.
- **Intelligent rolling access point upgrades and seamless multisite upgrades:** The Cisco Catalyst 9800-40 Wireless Controller comes equipped with intelligent rolling access point upgrades to simplify network operations. Multisite upgrades can now be done in stages, and access points can be upgraded intelligently without restarting the entire network.
- Standby monitoring of Cisco Catalyst 9800 Wireless Controllers in high-availability mode enables monitoring the health of the system on a standby controller in a high-availability pair using programmatic interfaces (NETCONF/YANG, RESTCONF) and CLIs without going through the active controller. For more details refer to the technical documentation.
- In-Service Software Upgrade (ISSU): ISSU is a complete image upgrade/update with zero downtime while the network is still on. The software image or a patch is pushed onto the wireless controller while traffic forwarding continues uninterrupted. All access point and client sessions are retained during the upgrade process.

With just a click, your network automatically upgrades to the newest software. Your backup 9800 controller receives the new software that is pushed via the active 9800 controller. The backup 9800 controller becomes active and takes over your network, while your previously active 9800 turns into a backup 9800 controller and processes the software upgrade. Using an intelligent RF-based rolling access point upgrade, all access points are upgraded in a staggered fashion without impacting any wireless session. This procedure is carried out without any manual intervention natively from the controller and without the need for an external orchestrator or additional licenses.

## Security

- **Encrypted Traffic Analytics (ETA):** ETA is a unique capability for identifying malware in encrypted traffic coming from the access layer. Since more and more traffic is being encrypted, the visibility this feature provides related to threat detection is critical for keeping your network secure at different layers.
- **Trustworthy systems:** Cisco Trust Anchor Technologies provide a highly secure foundation for Cisco products. With the Cisco Catalyst 9800-40, these trustworthy systems help assure hardware and software authenticity for supply chain trust and strong mitigation against man-in-the-middle attacks on software and firmware. Trust Anchor capabilities include:
  - **Image signing:** Cryptographically signed images provide assurance that the firmware, BIOS, and other software are authentic and unmodified. As the system boots, its software signatures are checked for integrity.
  - **Secure Boot:** Cisco Secure Boot technology anchors the boot sequence chain of trust to immutable hardware, mitigating threats against a system's foundational state and the software that is to be

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loaded, regardless of a user's privilege level. It provides layered protection against the persistence of illicitly modified firmware.

- **Cisco Trust Anchor module:** A tamper-resistant, strong cryptographic, single-chip solution uniquely identifies the product so that its origin can be confirmed to Cisco, providing assurance that the product is genuine.
- **Cisco Wireless Intrusion Prevention System (WIPS):** WIPS offers advanced network security to detect, locate, mitigate, and contain any intrusion or threat on your wireless network. It can monitor and detect wireless network anomalies, unauthorized access, and RF attacks. A new, dedicated classification engine for rogues and aWIPS is built on Cisco DNA Center. A fully integrated stack for the WIPS solution includes Cisco DNA Center, a Cisco Catalyst 9800 controller, Wave 2, and Cisco Catalyst 9100 Access Point. This new architecture provides improved detection and security, simplicity, and ease of use, and reduced false positive alarms.

### Flexible NetFlow

- **Flexible NetFlow (FNF):** Cisco IOS FNF is the next generation in flow visibility technology, allowing optimization of the network infrastructure, reducing operating costs, and improving capacity planning and security incident detection with increased flexibility and scalability.

### Application visibility and control

- **Next-Generation Network-Based Application Recognition (NBAR2):** NBAR2 enables advanced application classification techniques, with up to 1400 predefined and well-known application signatures and up to 150 encrypted applications on the Cisco Catalyst 9800-40. Some of the most popular applications included are Skype, Office 365, Microsoft Lync, Cisco Webex, and Facebook. Many others are already predefined and easy to configure. NBAR2 provides the network administrator with an important tool to identify, control, and monitor end-user application usage while helping ensure a quality user experience and securing the network from malicious attacks. It uses FNF to report application performance and activities within the network to any supported NetFlow collector, such as Cisco Prime, Stealthwatch, or any compliant third-party tool.

### Quality of service

- **Superior Quality of Service (QoS):** QoS technologies are tools and techniques for managing network resources and are considered the key enabling technologies for the transparent convergence of voice, video, and data networks. QoS on the Cisco Catalyst 9800-40 consists of classification of traffic based on packet data as well as application recognition and traffic control actions such as drop, marking and policing. A modular QoS command-line framework provides consistent platform-independent and flexible configuration behavior. The 9800-40 also supports policies at two levels of target: BSSID as well as client. Policy assignment can be granular down to the client level.

### Smart operation

- **Bluetooth ready:** The Cisco Catalyst 9800-40 has hardware support to connect a Bluetooth dongle to the controller, enabling you to use this wireless interface as a management port. This port functions as an IP management interface and can be used for configuration and troubleshooting using WebUI or the Command-Line Interface (CLI), and to transfer images and configurations.

- **WebUI:** WebUI is an embedded GUI-based device-management tool that provides the ability to provision the device, simplify device deployment and manageability, and enhance the user experience. WebUI comes with the default image. There is no need to enable anything or install any license on the device. You can use WebUI to build a day-0 and day-1 configuration and from then on monitor and troubleshoot the device without having to know how to use the CLI.

## Specifications

**Table 9.** Specifications

Item	Specification	
<b>Wireless standards</b>	IEEE 802.11a, 802.11b, 802.11g, 802.11d, WMM/802.11e, 802.11h, <a href="#">802.11n</a> , 802.11k, 802.11r, 802.11u, 802.11w, 802.11ac Wave1 and Wave2, 802.11ax	
<b>Wired, switching, and routing standards</b>	IEEE 802.3 10BASE-T, IEEE 802.3u 100BASE-TX, 1000BASE-T. 1000BASE-SX, 1000-BASE-LH, IEEE 802.1Q VLAN tagging, 802.1AX Link Aggregation	
<b>Data standards</b>	<ul style="list-style-type: none"> <li>• RFC 768 User Datagram Protocol (UDP)</li> <li>• RFC 791 IP</li> <li>• RFC 2460 IPv6</li> <li>• RFC 792 Internet Control Message Protocol (ICMP)</li> <li>• RFC 793 TCP</li> <li>• RFC 826 Address Resolution Protocol (ARP)</li> <li>• RFC 1122 Requirements for Internet Hosts</li> <li>• RFC 1519 Classless Interdomain Routing (CIDR)</li> <li>• RFC 1542 Bootstrap Protocol (BOOTP)</li> <li>• RFC 2131 Dynamic Host Configuration Protocol (DHCP)</li> <li>• RFC 5415 Control and Provisioning of Wireless Access Points (CAPWAP) Protocol</li> <li>• RFC 5416 CAPWAP Binding for 802.11</li> </ul>	
<b>Security standards</b>	<ul style="list-style-type: none"> <li>• Wi-Fi Protected Access (WPA)</li> <li>• IEEE 802.11i (WPA2, RSN)</li> <li>• Wi-Fi Protected Access 3 (WPA3)</li> <li>• RFC 1321 MD5 Message-Digest Algorithm</li> <li>• RFC 1851 Encapsulating Security Payload (ESP) Triple DES (3DES) Transform</li> <li>• RFC 2104 HMAC: Keyed-Hashing for Message Authentication</li> <li>• RFC 2246 TLS Protocol Version 1.0</li> <li>• RFC 2401 Security Architecture for the Internet Protocol</li> <li>• RFC 2403 HMAC-MD5-96 within ESP and AH</li> <li>• RFC 2404 HMAC-SHA-1-96 within ESP and AH</li> <li>• RFC 2405 ESP DES-CBC Cipher Algorithm with Explicit IV</li> <li>• RFC 2407 Interpretation for Internet Security Association Key Management Protocol (ISAKMP)</li> <li>• RFC 2408 ISAKMP</li> <li>• RFC 2409 Internet Key Exchange (IKE)</li> <li>• RFC 2451 ESP CBC-Mode Cipher Algorithms</li> <li>• RFC 3280 Internet X.509 Public Key Infrastructure (PKI) Certificate and</li> </ul>	



Item	Specification	
	Certificate Revocation List (CRL) Profile <ul style="list-style-type: none"> <li>• RFC 4347 Datagram Transport Layer Security (DTLS)</li> <li>• RFC 5246 TLS Protocol Version 1.2</li> </ul>	
<b>Encryption standards</b>	<ul style="list-style-type: none"> <li>• Static Wired Equivalent Privacy (WEP) RC4 40, 104 and 128 bits</li> <li>• Advanced Encryption Standard (AES): Cipher Block Chaining (CBC), Counter with CBC-MAC (CCM), Counter with CBC Message Authentication Code Protocol (CCMP)</li> <li>• Data Encryption Standard (DES): DES-CBC, 3DES</li> <li>• Secure Sockets Layer (SSL) and Transport Layer Security (TLS): RC4 128-bit and RSA 1024- and 2048-bit</li> <li>• DTLS: AES-CBC</li> <li>• IPsec: DES-CBC, 3DES, AES-CBC</li> <li>• 802.1AE MACsec encryption</li> </ul>	
<b>Authentication, Authorization, and Accounting (AAA) standards</b>	<ul style="list-style-type: none"> <li>• IEEE 802.1X</li> <li>• RFC 2548 Microsoft Vendor-Specific RADIUS Attributes</li> <li>• RFC 2716 Point-to-Point Protocol (PPP) Extensible Authentication Protocol (EAP)-TLS</li> <li>• RFC 2865 RADIUS Authentication</li> <li>• RFC 2866 RADIUS Accounting</li> <li>• RFC 2867 RADIUS Tunnel Accounting</li> <li>• RFC 2869 RADIUS Extensions</li> <li>• RFC 3576 Dynamic Authorization Extensions to RADIUS</li> <li>• RFC 5176 Dynamic Authorization Extensions to RADIUS</li> <li>• RFC 3579 RADIUS Support for EAP</li> <li>• RFC 3580 IEEE 802.1X RADIUS Guidelines</li> <li>• RFC 3748 Extensible Authentication Protocol (EAP)</li> <li>• Web-based authentication</li> <li>• TACACS support for management users</li> </ul>	
<b>Management standards</b>	<ul style="list-style-type: none"> <li>• Simple Network Management Protocol (SNMP) v1, v2c, v3</li> <li>• RFC 854 Telnet</li> <li>• RFC 1155 Management Information for TCP/IP-based Internets</li> <li>• RFC 1156 MIB</li> <li>• RFC 1157 SNMP</li> <li>• RFC 1213 SNMP MIB II</li> <li>• RFC 1350 Trivial File Transfer Protocol (TFTP)</li> <li>• RFC 1643 Ethernet MIB</li> <li>• RFC 2030 Simple Network Time Protocol (SNTP)</li> <li>• RFC 2616 HTTP</li> <li>• RFC 2665 Ethernet-Like Interface Types MIB</li> <li>• RFC 2674 Definitions of Managed Objects for Bridges with Traffic Classes, Multicast Filtering, and Virtual Extensions</li> <li>• RFC 2819 Remote Monitoring (RMON) MIB</li> <li>• RFC 2863 Interfaces Group MIB</li> <li>• RFC 3164 Syslog</li> <li>• RFC 3414 User-Based Security Model (USM) for SNMPv3</li> <li>• RFC 3418 MIB for SNMP</li> </ul>	

Item	Specification	
	<ul style="list-style-type: none"> <li>• RFC 3636 Definitions of Managed Objects for IEEE 802.3 MAUs</li> <li>• RFC 4741 Base NETCONF protocol</li> <li>• RFC 4742 NETCONF over SSH</li> <li>• RFC 6241 NETCONF</li> <li>• RFC 6242 NETCONF over SSH</li> <li>• RFC 5277 NETCONF event notifications</li> <li>• RFC 5717 Partial Lock Remote Procedure Call</li> <li>• RFC 6243 With-Defaults capability for NETCONF</li> <li>• RFC 6020 YANG</li> <li>• Cisco private MIBs</li> </ul>	
<b>Management interfaces</b>	<ul style="list-style-type: none"> <li>• Web-based: HTTP/HTTPS</li> <li>• Command-line interface: Telnet, Secure Shell (SSH) Protocol, serial port</li> <li>• SNMP</li> <li>• NETCONF</li> </ul>	
<b>Hard disk drives (HDD)</b>	<ul style="list-style-type: none"> <li>• SATA solid-state drive (SSD)</li> <li>• 240 GB of memory</li> </ul>	
<b>Environmental conditions supported</b>	<p>Operating temperature:</p> <ul style="list-style-type: none"> <li>• Normal: 0° to 40° C (32° to 104° F)</li> <li>• Short term: 0° to 50° C (32° to 122° F)</li> </ul> <p>Nonoperating temperature:</p> <ul style="list-style-type: none"> <li>• -40° to 65° C (-104° to 149° F)</li> </ul> <p>Operating humidity:</p> <ul style="list-style-type: none"> <li>• Nominal: 10% to 90% noncondensing</li> <li>• Short term: 5% to 90% noncondensing</li> </ul> <p>Nonoperating temperature humidity:</p> <ul style="list-style-type: none"> <li>• 5% to 93% at 82° F (28° C)</li> </ul> <p>Operating altitude:</p> <ul style="list-style-type: none"> <li>• Appliance operating: 0 to 3000 m (0 to 10,000 ft)</li> <li>• Appliance nonoperating: 0 to 12,192 m (0 to 40,000 ft)</li> </ul> <p>Electrical input:</p> <ul style="list-style-type: none"> <li>• AC input frequency range: 47 to 63 Hz</li> <li>• AC input range: 90 to 264 VAC with AC PEM</li> <li>• 1100W AC with optional redundant power supply (hot-swappable)</li> </ul> <p>Maximum power: 381W</p> <p>Heat dissipation: 1300 BTU/hr</p> <p>Sound power level measure:</p> <ul style="list-style-type: none"> <li>• A-weighted sound power level is 74.1 LpAm (dBA) @ 27C nominal operation</li> </ul>	

Item	Specification	
Regulatory compliance	Safety: <ul style="list-style-type: none"> <li>• UL/CSA 60950-1</li> <li>• IEC/EN 60950-1</li> <li>• AS/NZS 60950.1</li> <li>• CAN/CSA-C22.2 No. 60950-1</li> </ul>	
	EMC – Emissions: <ul style="list-style-type: none"> <li>• FCC 47CFR15</li> <li>• AS/NZS CISPR 22</li> <li>• CISPR 22</li> <li>• EN55022/EN55032 (EMI-1)</li> <li>• ICES-003</li> <li>• VCCI</li> <li>• KN 32 (EMI-2)</li> <li>• CNS-13438</li> </ul>	Class A
	EMC – Emissions: <ul style="list-style-type: none"> <li>• EN61000-3-2 Power Line Harmonics (EMI-3)</li> <li>• EN61000-3-3 Voltage Changes, Fluctuations, and Flicker (EMI-3)</li> </ul>	
	EMC – Immunity: <ul style="list-style-type: none"> <li>• IEC/EN61000-4-2 Electrostatic Discharge Immunity</li> <li>• IEC/EN61000-4-3 Radiated Immunity</li> <li>• IEC/EN61000-4-4 EFT-B Immunity (AC Power Leads)</li> <li>• IEC/EN61000-4-4 EFT-B Immunity (DC Power Leads)</li> <li>• IEC/EN61000-4-4 EFT-B Immunity (Signal Leads)</li> <li>• IEC/EN61000-4-5 Surge AC Port</li> <li>• IEC/EN61000-4-5 Surge DC Port</li> <li>• IEC/EN61000-4-5 Surge Signal Port</li> <li>• IEC/EN61000-4-6 Immunity to Conducted Disturbances</li> <li>• IEC/EN61000-4-8 Power Frequency Magnetic Field Immunity</li> <li>• IEC/EN61000-4-11 Voltage Dips, Short Interruptions, and Voltage Variations</li> <li>• K35 (EMI-2)</li> </ul>	
	EMC (ETSI/EN) <ul style="list-style-type: none"> <li>• EN 300 386 Telecommunications Network Equipment (EMC) (EMC-3)</li> <li>• EN55022 Information Technology Equipment (Emissions)</li> <li>• EN55024/CISPR 24 Information Technology Equipment (Immunity)</li> <li>• EN50082-1/EN61000-6-1 Generic Immunity Standard (EMC-4)</li> </ul>	

## Software requirements

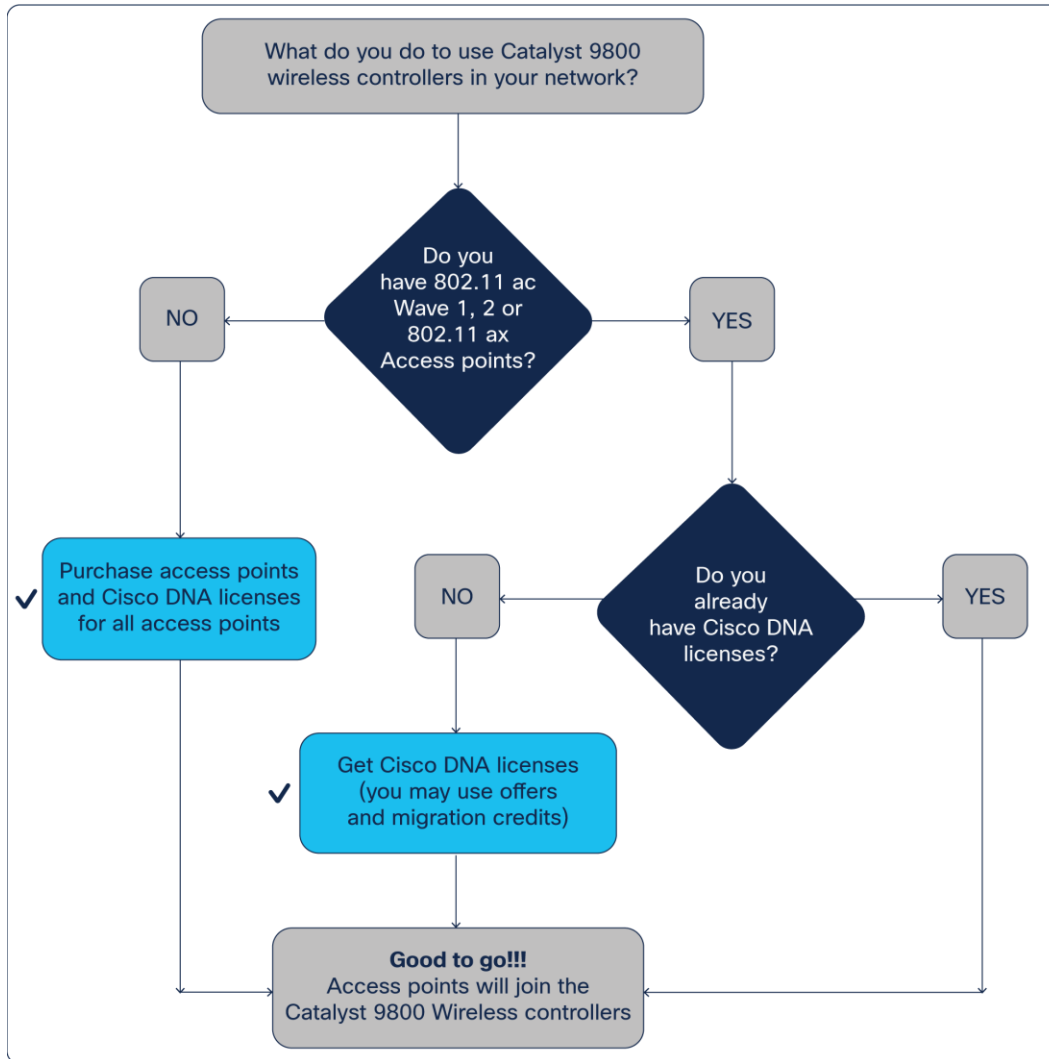
The Cisco Catalyst 9800-40 runs on Cisco IOS XE Software version 16.10.1 or later. This software release includes all the features listed earlier in the Platform Benefits section.

**Table 10.** Minimum software requirements

Model	Description	Minimum software requirement
<b>C9800-40-K9</b>	Cisco Catalyst 9800-40 Wireless Controller	Cisco IOS XE Software Release 16.10.1

## Licensing

No licenses are required to boot up a **Cisco Catalyst 9800 Series Wireless Controller**. However, in order to connect any access points to the **controller**, Cisco DNA software subscriptions are required. To be entitled to connecting to a 9800 Series controller, each access point requires a Cisco DNA subscription license.



**Figure 6.** Determining license requirements for access points connecting to Cisco Catalyst 9800 Series Wireless Controllers

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The access points connecting to the Cisco Catalyst 9800 Series have new and simplified software subscription packages.

They can support both tiers of Cisco DNA software: Cisco DNA Essentials and Cisco DNA Advantage.

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, QoS and PnP; telemetry and visibility; and single sign-on, as well as security controls.

Cisco DNA subscription software has to be purchased for a 3-, 5-, or 7-year subscription term. Upon expiry of the subscription, the Cisco DNA features will expire, whereas the 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](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:

- Cisco Smart Licensing is a flexible licensing model that provides you with an easier, faster, and more convenient way to purchase and manage software across the Cisco portfolio and across your organization. And it's secure- you control what users can access. With Smart Licensing you get:
  - Easy Activation: Smart licensing establishes a pool of software licenses that can be used across the entire organization-no more PAKs (Product Activation Keys).
  - Unified Management: My Cisco Entitlements (MCE) provides a complete view into all of your Cisco Products and services in an easy-to-use portal, so you always know what you have and what you are using.
  - License Flexibility: Your software is not node-locked to your hardware, so you can easily use and transfer licenses as needed.

To use Smart Licensing, you must first set up a Smart Account on Cisco Software Central ([software.cisco.com](https://software.cisco.com)).

For more detailed overview on Cisco Licensing, go to [cisco.com/go/licensingguide](https://cisco.com/go/licensingguide)

- 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. This is available with Cisco DNA Essentials.
- NA: At this level the Network Advantage feature set will be supported. This is available with Cisco DNA Advantage.

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, 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-catalyst 9800 licensing](#).

## Managing licenses with Smart Accounts

Creating Smart Accounts by using the Cisco Smart Software Manager (SSM) enables you to order devices and licensing packages and also manage your software licenses from a centralized website. You can set up the Smart Account to receive daily email alerts and to be notified of expiring add-on licenses that you want to renew. A Smart Account is mandatory for the Cisco Catalyst 9800 Series. For more information on Smart Account refer to <https://www.cisco.com/go/smartaccounts>.

## Warranty

Find warranty information on Cisco.com at the [Product Warranties](#) page.

### Cisco 1-year limited hardware warranty terms

The following are terms applicable to your hardware warranty. Your embedded software is subject to the Cisco EULA (link available below) and/or any SEULA or specific software warranty terms for additional software products loaded on the device.

**Duration of hardware warranty:** One (1) year

**Replacement, repair, or refund procedure for hardware:** Cisco or its service center will use commercially reasonable efforts to ship a replacement part within ten (10) working days after receipt of the Return Materials Authorization (RMA) request. Actual delivery times may vary depending on customer location.

Cisco reserves the right to refund the purchase price as its exclusive warranty remedy.

## 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 the following table:

**Table 11.** Links to sustainability information

Sustainability topic	Reference
Information on product material content laws and regulations	<a href="#">Materials</a>
Information on electronic waste laws and regulations, including products, batteries, and packaging	<a href="#">WEEE compliance</a>
Sustainability inquiries	Contact: <a href="mailto:csr_inquiries@cisco.com">csr_inquiries@cisco.com</a>

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

## Ordering information

**Table 12.** Ordering information

Type	Product ID	Description
Controller	C9800-40-K9	Cisco Catalyst 9800-40 Wireless Controller
	LIC-C9800-DTLS-K9	Cisco Catalyst 9800 Series Wireless Controller DTLS License
Accessories, spares	C9800-AC-750W R=	Cisco Catalyst 9800-40 750W AC Power Supply Reverse Air

## Cisco Capital

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## Document history

New or Revised Topic	Described In	Date
Cisco DNA Spaces name change	Updated product name to Cisco Spaces	10/21/22

**Americas Headquarters**  
Cisco Systems, Inc.  
San Jose, CA

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

**Europe Headquarters**  
Cisco Systems International BV Amsterdam,  
The Netherlands

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

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# Review the Cisco DNA Center Appliance Features

- [Appliance Hardware Specifications, on page 1](#)
- [Front and Rear Panels, on page 4](#)
- [Physical Specifications, on page 17](#)
- [Environmental Specifications, on page 18](#)
- [Power Specifications, on page 19](#)

## Appliance Hardware Specifications

Cisco supplies Cisco Digital Network Architecture (DNA) Center in the form of a rack-mountable, physical appliance. The second-generation Cisco DNA Center appliance consists of either a Cisco Unified Computing System (UCS) C220 M5 small form-factor (SFF) chassis or Cisco UCS C480 M5 chassis, both with the addition of one Intel X710-DA2 network interface card (NIC) and one Intel X710-DA4 NIC. Six versions of the second-generation appliance are available:

- 44-core appliance: Cisco part number DN2-HW-APL
- 44-core promotional appliance: Cisco part number DN2-HW-APL-U
- 56-core appliance: Cisco part number DN2-HW-APL-L
- 56-core promotional appliance: Cisco part number DN2-HW-APL-L-U
- 112-core appliance: Cisco part number DN2-HW-APL-XL
- 112-core promotional appliance: Cisco part number DN2-HW-APL-XL-U

The following tables summarize the appliance's hardware specifications.

**Table 1: 44-Core Cisco DNA Center Appliance Hardware Specifications**

Feature	Description
Chassis	One rack-unit (1RU) chassis.
Processors	Two 22-core Intel 6238 2.1 GHz processors
Memory	Eight 32 GB DDR4 2933 MHz registered DIMMs (RDIMMs)

Feature	Description
Storage	<ul style="list-style-type: none"> <li>• 2 x 480 GB in RAID 1</li> <li>• 2 x 1.9 TB in RAID 1</li> <li>• 6 x 1.9 TB in RAID 10</li> </ul>
Disk Management (RAID)	<ul style="list-style-type: none"> <li>• RAID 1 on slots 1 through 4</li> <li>• RAID 10 on slots 5 through 10</li> </ul>
Network and Management I/O	<p>Supported connectors:</p> <ul style="list-style-type: none"> <li>• Two 10-Gbps Ethernet ports on the Intel X710-DA2 NIC</li> <li>• One 1-Gbps RJ-45 management port (Marvell 88E6176)</li> <li>• Two 10GBase-T LOM ports (Intel X550 controller embedded on the motherboard)</li> </ul> <p>The following connectors are available but not typically used in the day-to-day operation of Cisco DNA Center:</p> <ul style="list-style-type: none"> <li>• One RS-232 serial port (RJ-45 connector)</li> <li>• One VGA (DB-15) connector</li> <li>• Two USB 3.0 connectors</li> <li>• One front-panel KVM connector that is used with the KVM cable, which provides two USB 2.0, one VGA (DB-15), and one serial port (RS-232) RJ-45 connector.</li> </ul> <p>Note that the Intel X710-DA4 NIC, which provides four 10-Gbps Ethernet ports, has been disabled in this release of Cisco DNA Center and will be enabled in a future release of the product.</p>
Power	Two 770 W AC power supplies. Redundant as 1+1.
Cooling	Seven hot-swappable fan modules for front-to-rear cooling.
Video	Video Graphics Array (VGA) video resolution up to 1920 x 1200, 16 bpp at 60 Hz, and up to 512 MB of video memory (8 MB is allocated by default).

Table 2: 56-Core Cisco DNA Center Appliance Hardware Specifications

Feature	Description
Chassis	One rack-unit (1RU) chassis.
Processors	Two 28-core Intel 8280 2.7 GHz processors
Memory	Twelve 32 GB DDR4 2933 MHz RDIMMs

Feature	Description
Storage	<ul style="list-style-type: none"> <li>• 2 x 480 GB in RAID 1</li> <li>• 2 x 1.9 TB in RAID 1</li> <li>• 6 x 1.9 TB in RAID 10</li> </ul>
Disk Management (RAID)	<ul style="list-style-type: none"> <li>• RAID 1 on slots 1 through 4</li> <li>• RAID 10 on slots 5 through 10</li> </ul>
Network and Management I/O	<p>Supported connectors:</p> <ul style="list-style-type: none"> <li>• Two 10-Gbps Ethernet ports on the Intel X710-DA2 NIC</li> <li>• One 1-Gbps RJ-45 management port (Marvell 88E6176)</li> <li>• Two 10GBase-T LOM ports (Intel X550 controller embedded on the motherboard)</li> </ul> <p>The following connectors are available but not typically used in the day-to-day operation of Cisco DNA Center:</p> <ul style="list-style-type: none"> <li>• One RS-232 serial port (RJ-45 connector)</li> <li>• One VGA (DB-15) connector</li> <li>• Two USB 3.0 connectors</li> <li>• One front-panel KVM connector that is used with the KVM cable, which provides two USB 2.0, one VGA (DB-15), and one serial port (RS-232) RJ-45 connector.</li> </ul> <p>Note that the Intel X710-DA4 NIC, which provides four 10-Gbps Ethernet ports, has been disabled in this release of Cisco DNA Center and will be enabled in a future release of the product.</p>
Power	<p>Two 770 W AC power supplies.</p> <p>Redundant as 1+1.</p>
Cooling	Seven hot-swappable fan modules for front-to-rear cooling.
Video	Video Graphics Array (VGA) video resolution up to 1920 x 1200, 16 bpp at 60 Hz, and up to 512 MB of video memory (8 MB is allocated by default).

**Table 3: 112-Core Cisco DNA Center Appliance Hardware Specifications**

Feature	Description
Chassis	Four rack-unit (4RU) chassis.
Processors	Two CPU modules, each with two 28-core Intel 8276 2.2 GHz processors
Memory	Twenty-four 32 GB DDR4 2933 MHz RDIMMs

Feature	Description
Storage	<ul style="list-style-type: none"> <li>• 2 x 480 GB in RAID 1</li> <li>• 2 x 3.8 TB in RAID 1</li> <li>• 16 x 1.9 TB in RAID 10</li> </ul>
Disk Management (RAID)	<ul style="list-style-type: none"> <li>• RAID 1 on drive bays 1 and 2</li> <li>• RAID 10 on slots 3 through 18</li> <li>• RAID 1 on drive bays 19 and 20</li> </ul>
Network and Management I/O	<p>Supported connectors:</p> <ul style="list-style-type: none"> <li>• Two 10 Gbps Ethernet ports on the Intel X710-DA2 NIC</li> <li>• Two 10 Base-T Gbps Ethernet ports</li> <li>• One Gigabit Ethernet management port</li> </ul> <p>The following connectors are available but not typically used in the day-to-day operation of Cisco DNA Center:</p> <ul style="list-style-type: none"> <li>• One RS-232 serial port (RJ-45 connector)</li> <li>• One VGA (DB-15) connector</li> <li>• Three USB 3.0 connectors</li> <li>• One front-panel KVM connector that is used with the KVM cable, which provides two USB 2.0, one VGA (DB-15), and one serial port (RS-232) RJ-45 connector.</li> </ul> <p>Note that the Intel X710-DA4 NIC, which provides four 10-Gbps Ethernet ports, has been disabled in this release of Cisco DNA Center and will be enabled in a future release of the product.</p>
Power	<p>Four 1600 W AC power supplies.</p> <p>Redundant as 3+1 (must be configured via the Cisco Integrated Management Controller).</p>
Cooling	Four hot-swappable fan modules with two fans in each for front-to-rear cooling.
Video	VGA video resolution up to 1600 x 1200, 16 bpp at 60 Hz, and up to 256 MB of video memory.

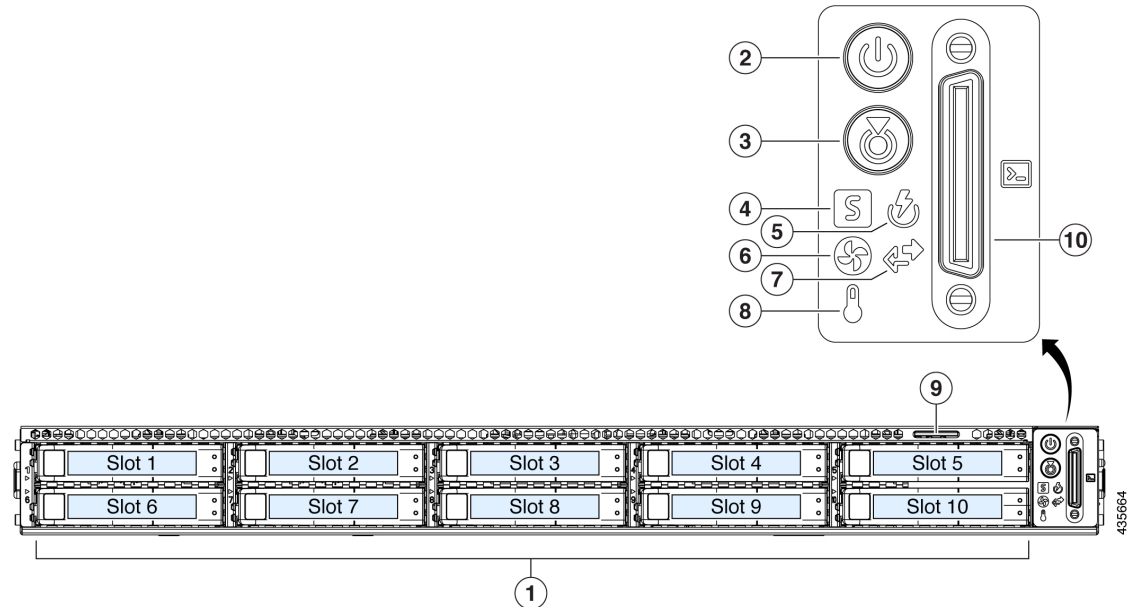
## Front and Rear Panels

The following figures and tables describe the front and rear panels of the Cisco DNA Center appliance.



**Note** If you are viewing this guide on Cisco.com, click any of its figures to view a full-sized version.

**Figure 1: 44 and 56-Core Appliance Front Panel**

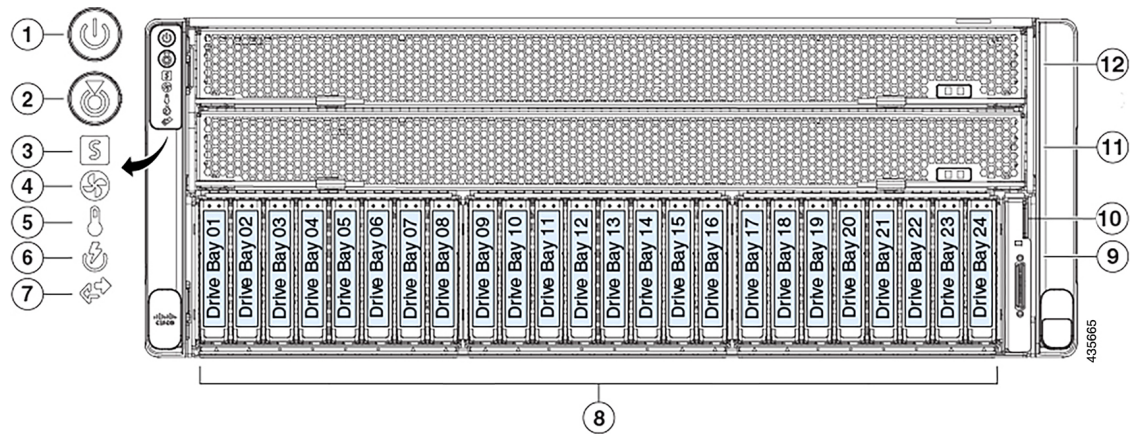


Component	Description
1	<p>A total of 10 drives are available on the appliance:</p> <ul style="list-style-type: none"> <li>• Two 480 GB SAS SSD (in slots 1 and 2).</li> <li>• Eight 1.9 TB SATA SSD (in slots 3 through 10).</li> </ul> <p>Each installed drive has a fault LED and an activity LED.</p> <p>When the drive fault LED is:</p> <ul style="list-style-type: none"> <li>• Off: The drive is operating properly.</li> <li>• Amber: The drive has failed.</li> <li>• Amber, blinking: The drive is rebuilding.</li> </ul> <p>When the drive activity LED is:</p> <ul style="list-style-type: none"> <li>• Off: There is no drive in the sled (no access, no fault).</li> <li>• Green: The drive is ready.</li> <li>• Green, blinking: The drive is reading or writing data.</li> </ul>

Component	Description
2	<p>Power button/power status LED. When the LED is:</p> <ul style="list-style-type: none"> <li>• Off: There is no AC power to the appliance.</li> <li>• Amber: The appliance is in standby power mode. Power is supplied only to the Cisco Integrated Management Controller (Cisco IMC) and some motherboard functions.</li> <li>• Green: The appliance is in main power mode. Power is supplied to all the server components.</li> </ul>
3	<p>Unit identification button and LED. When the LED is:</p> <ul style="list-style-type: none"> <li>• Off: Unit identification is inactive.</li> <li>• Blue: Unit identification is active.</li> </ul>
4	<p>System status LED. When the LED is:</p> <ul style="list-style-type: none"> <li>• Green: The appliance is running in a normal operating condition.</li> <li>• Green, blinking: The appliance is performing system initialization and memory checks.</li> <li>• Amber, steady: The appliance is in a degraded operational state, which may be due to one or more of the following causes: <ul style="list-style-type: none"> <li>• Power supply redundancy is lost.</li> <li>• CPUs are mismatched.</li> <li>• At least one CPU is faulty.</li> <li>• At least one DIMM is faulty.</li> <li>• At least one drive in a RAID configuration failed.</li> </ul> </li> <li>• Amber, 2 blinks: There is a major fault with the system board.</li> <li>• Amber, 3 blinks: There is a major fault with the memory DIMMs.</li> <li>• Amber, 4 blinks: There is a major fault with the CPUs.</li> </ul>
5	<p>Power supply status LED. When the LED is:</p> <ul style="list-style-type: none"> <li>• Green: All power supplies are operating normally.</li> <li>• Amber, steady: One or more power supplies are in a degraded operational state.</li> <li>• Amber, blinking: One or more power supplies are in a critical fault state.</li> </ul>
6	<p>Fan status LED. When the LED is:</p> <ul style="list-style-type: none"> <li>• Green: All fan modules are operating properly.</li> <li>• Amber, steady: One fan module has failed.</li> <li>• Amber, blinking: Critical fault, two or more fan modules have failed.</li> </ul>

Component	Description
7	Network link activity LED. When the LED is: <ul style="list-style-type: none"> <li>• Off: The Ethernet link is idle.</li> <li>• Green, blinking: One or more Ethernet LOM ports are link-active, with activity.</li> <li>• Green: One or more Ethernet LOM ports are link-active, but there is no activity.</li> </ul>
8	Temperature status LED. When the LED is: <ul style="list-style-type: none"> <li>• Green: The appliance is operating at normal temperature.</li> <li>• Amber, steady: One or more temperature sensors have exceeded a warning threshold.</li> <li>• Amber, blinking: One or more temperature sensors have exceeded a critical threshold.</li> </ul>
9	Pull-out asset tag.
10	KVM connector. Used with a KVM cable that provides two USB 2.0, one VGA, and one serial connector.

Figure 2: 112-Core Appliance Front Panel



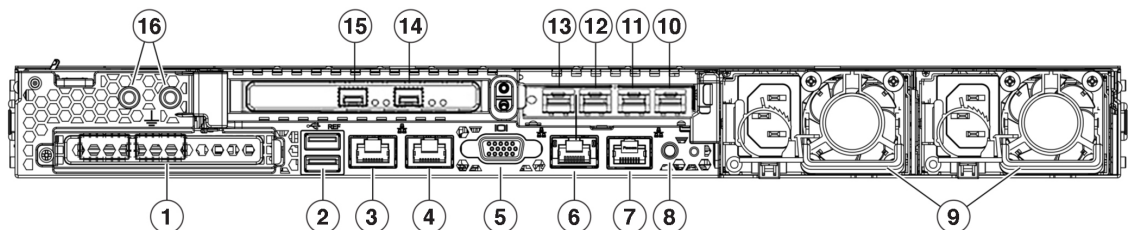
Component	Description
1	Power button/power status LED. When the LED is: <ul style="list-style-type: none"> <li>• Off: There is no AC power to the appliance.</li> <li>• Amber: The appliance is in standby power mode. Power is supplied only to the Cisco IMC and some motherboard functions.</li> <li>• Green: The appliance is in main power mode. Power is supplied to all the server components.</li> </ul>

Component	Description
2	Unit identification button and LED. When the LED is: <ul style="list-style-type: none"> <li>• Off: Unit identification is inactive.</li> <li>• Blue: Unit identification is active.</li> </ul>
3	System status LED. When the LED is: <ul style="list-style-type: none"> <li>• Green: The appliance is running in a normal operating condition.</li> <li>• Amber, steady: The appliance is in a degraded operational state, which may be due to one or more of the following causes:               <ul style="list-style-type: none"> <li>• Power supply redundancy is lost.</li> <li>• CPUs are mismatched.</li> <li>• At least one CPU is faulty.</li> <li>• At least one DIMM is faulty.</li> <li>• At least one drive in a RAID configuration failed.</li> </ul> </li> <li>• Amber, blinking: The appliance is in a critical fault state, which may be due to one or more of the following causes:               <ul style="list-style-type: none"> <li>• Boot failure</li> <li>• Fatal processor and/or bus error detected</li> <li>• Over-temperature condition</li> </ul> </li> </ul>
4	Fan status LED. When the LED is: <ul style="list-style-type: none"> <li>• Green: All fan modules are operating properly.</li> <li>• Amber, steady: Fan modules are in a degraded state. One fan module has a fault.</li> <li>• Amber, blinking: Two or more fan modules have faults.</li> </ul>
5	Temperature status LED. When the LED is: <ul style="list-style-type: none"> <li>• Green: The appliance is operating at normal temperature. No error conditions detected.</li> <li>• Amber, steady: One or more temperature sensors have exceeded a warning threshold.</li> <li>• Amber, blinking: One or more temperature sensors have exceeded a critical non-recoverable threshold.</li> </ul>
6	Power supply status LED. When the LED is: <ul style="list-style-type: none"> <li>• Green: All power supplies are operating normally.</li> <li>• Amber, steady: One or more power supplies are in a degraded operational state.</li> <li>• Amber, blinking: One or more power supplies are in a critical fault state.</li> </ul>



Component	Description
7	<p>Network link activity LED. When the LED is:</p> <ul style="list-style-type: none"> <li>• Off: The Ethernet LOM port link is idle.</li> <li>• Green: One or more Ethernet LOM ports are link-active, but there is no activity.</li> <li>• Green, blinking: One or more Ethernet LOM ports are link-active, with activity.</li> </ul>
8	<p>A total of 20 drives are available on the appliance:</p> <ul style="list-style-type: none"> <li>• Two 480 GB SATA SSD (in drive bays 1 and 2).</li> <li>• Sixteen 1.9 TB SATA SSD (in slots 3 through 18).</li> <li>• Two 3.8 TB SATA SSD (in drive bays 19 and 20).</li> </ul> <p><b>Note</b> Drive bays 21 through 24 are not used by the appliance.</p> <p>Each installed drive has a fault LED and an activity LED.</p> <p>When the drive fault LED is:</p> <ul style="list-style-type: none"> <li>• Off: The drive is operating properly.</li> <li>• Amber: The drive has failed.</li> <li>• Amber, blinking: The drive is rebuilding.</li> </ul> <p>When the drive activity LED is:</p> <ul style="list-style-type: none"> <li>• Off: There is no drive in the sled (no access, no fault).</li> <li>• Green: The drive is ready.</li> <li>• Green, blinking: The drive is reading or writing data.</li> </ul>
9	KVM connector. Used with a KVM cable that provides two USB 2.0, one VGA, and one serial connector.
10	Pull-out asset tag.
11	CPU module bay 1.
12	CPU module bay 2.

**Figure 3: 44 and 56-Core Appliance Rear Panel**





**Note** If NIC bonding has been enabled on your Cisco DNA Center appliance, two instances of the Enterprise, Intracluster, Management, and Internet port are available to configure and use. See [NIC Bonding Overview](#) for more information.

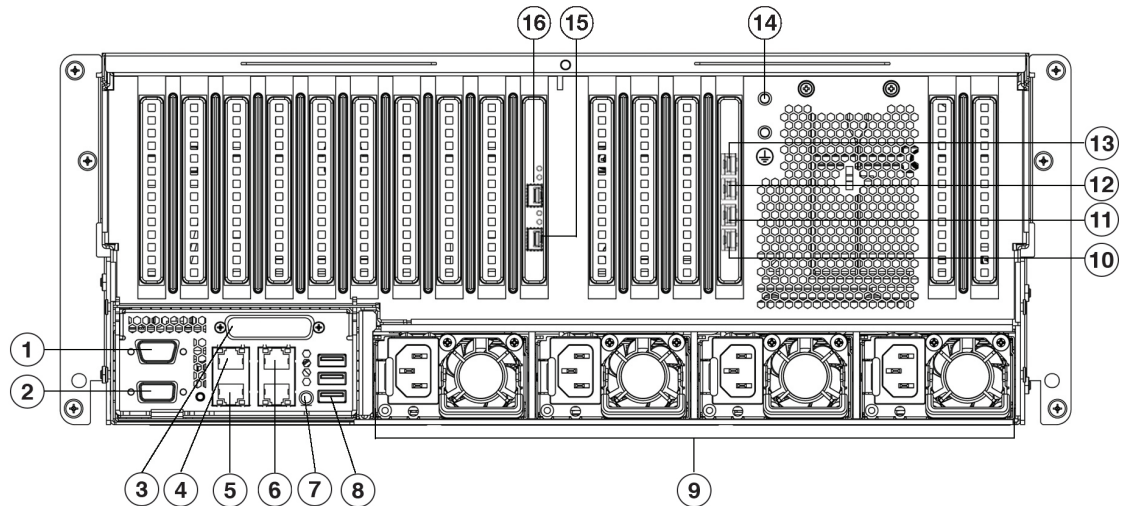
Callout	Description
1	Modular LAN-on-motherboard (mLOM) card bay (x16 PCIe lane)
2	Two USB 3.0 ports
3, 10	<p>1-Gbps/10-Gbps Management Port (Network Adapter 3): This Ethernet port can support 1 Gbps and 10 Gbps, depending on the link partner capability. It is identified as Network Adapter 3 in the Maglev Configuration wizard. Connect this port to a switch that provides access to your enterprise management network.</p> <ul style="list-style-type: none"> <li>• The primary instance (callout 3) is labeled <b>1</b> on the rear panel.</li> <li>• The secondary instance (callout 10) is the fourth port on the Intel X710-DA4 NIC in the appliance's PCIe riser 2/slot 2.</li> </ul> <p>This port has a link status LED and a link speed LED. When the status LED is:</p> <ul style="list-style-type: none"> <li>• Off: No link is present.</li> <li>• Green, blinking: Traffic is present on the active link.</li> <li>• Green: Link is active, but there is no traffic present.</li> </ul> <p>When the speed LED is:</p> <ul style="list-style-type: none"> <li>• Off: Link speed is 10 Mbps or less.</li> <li>• Green: Link speed is 1 Gbps.</li> <li>• Amber: Link speed is 100 Mbps.</li> </ul>

Callout	Description
4, 11	<p>1-Gbps/10-Gbps Internet Port (Network Adapter 4): This Ethernet port can support 1 Gbps and 10 Gbps, depending on the link partner capability. It is identified as Network Adapter 4 in the Maglev Configuration wizard. This port is optional and is used for connecting to the Internet when it is not possible to do so via the 10-Gbps Enterprise port. Connect to the Internet or a proxy server that has connections to the Internet.</p> <ul style="list-style-type: none"> <li>• The primary instance (callout 4) is labeled <b>2</b> on the rear panel.</li> <li>• The secondary instance (callout 11) is the third port on the Intel X710-DA4 NIC in the appliance's PCIe riser 2/slot 2.</li> </ul> <p>This port has a link status LED and a link speed LED. When the link status LED is:</p> <ul style="list-style-type: none"> <li>• Off: No link is present.</li> <li>• Green, blinking: Traffic is present on the active link.</li> <li>• Green: Link is active, but there is no traffic.</li> </ul> <p>When the speed LED is:</p> <ul style="list-style-type: none"> <li>• Off: Link speed is 10 Mbps or less.</li> <li>• Green: Link speed is 1 Gbps.</li> <li>• Amber: Link speed is 100 Mbps.</li> </ul>
5	VGA video port (DB-15).
6	<p>1-Gbps Cisco IMC Port: This is the embedded port to the right of the VGA video port and to the left of the RJ45 serial port. It is assigned an IP address when you enable browser access to the appliance's Cisco IMC GUI (see <a href="#">Enable Browser Access to Cisco Integrated Management Controller</a>). This port is reserved for out-of-band management of the appliance chassis and software. Connect this port to a switch that provides access to your enterprise management network.</p> <p>This port has a link status LED and a link speed LED. When the link status LED is:</p> <ul style="list-style-type: none"> <li>• Off: No link is present.</li> <li>• Green, blinking: Traffic is present on the active link.</li> <li>• Green: Link is active, but there is no traffic present.</li> </ul> <p>When the speed LED is:</p> <ul style="list-style-type: none"> <li>• Off: Link speed is 10 Mbps or less.</li> <li>• Green: Link speed is 1 Gbps.</li> <li>• Amber: Link speed is 100 Mbps.</li> </ul>
7	Serial port (RJ-45 connector)
8	Rear unit identification button and LED

Callout	Description
9	<p>Power supplies (up to two: redundant as 1+1). Each power supply has a power supply fault LED and an AC power LED.</p> <p>When the fault LED is:</p> <ul style="list-style-type: none"> <li>• Off: The power supply is operating normally.</li> <li>• Amber, blinking: An event warning threshold has been reached, but the power supply continues to operate.</li> <li>• Amber, solid: A critical fault threshold has been reached, causing the power supply to shut down (for example, a fan failure or an over-temperature condition).</li> </ul> <p>When the AC Power LED is:</p> <ul style="list-style-type: none"> <li>• Off: There is no AC power to the power supply.</li> <li>• Green, solid: AC power is OK, DC output is OK.</li> <li>• Green, blinking: AC power is OK, DC output is not enabled.</li> </ul> <p>For more details, see <a href="#">Power Specifications</a>.</p>
12, 15	<p>10-Gbps Enterprise Port (Network Adapter 1): This port is identified as Network Adapter 1 in the Maglev Configuration wizard. Connect it to a switch with connections to the Enterprise network.</p> <ul style="list-style-type: none"> <li>• The primary instance (callout 15) is the left-hand port on the Intel X710-DA2 NIC in the appliance's PCIe riser 1/slot 1.</li> <li>• The secondary instance (callout 12) is the second port on the Intel X710-DA4 NIC in the appliance's PCIe riser 2/slot 2.</li> </ul> <p>This port has a link status (ACT) LED and a link speed (LINK) LED.</p> <p>When the link status LED is:</p> <ul style="list-style-type: none"> <li>• Off: No link is present.</li> <li>• Green, blinking: Traffic is present on the active link.</li> <li>• Green: Link is active, but there is no traffic present.</li> </ul> <p>When the speed LED is:</p> <ul style="list-style-type: none"> <li>• Off: Link speed is 100 Mbps or less.</li> <li>• Green: Link speed is 10 Gbps.</li> <li>• Amber: Link speed is 1 Gbps.</li> </ul> <p><b>Note</b> Although capable of operating at lower speeds, this port is intended to operate at 10 Gbps only.</p>

Callout	Description
13, 14	<p>10-Gbps Intracluster Port (Network Adapter 2): This port is identified as Network Adapter 2 in the Maglev Configuration wizard. Connect this port to a switch with connections to the other nodes in the cluster.</p> <ul style="list-style-type: none"> <li>• The primary instance (callout 14) is the right-hand port on the Intel X710-DA2 NIC in the appliance PCIe riser 1/slot 1.</li> <li>• The secondary instance (callout 13) is first port on the Intel X710-DA4 NIC in the appliance's PCIe riser 2/slot 2.</li> </ul> <p>This port is located on the Intel X710-DA4 NIC, which is located in the appliance's PCIe riser 2/slot 2.</p> <p>This port has a link status (ACT) LED and a link speed (LINK) LED.</p> <p>When the link status LED is:</p> <ul style="list-style-type: none"> <li>• Off: No link is present.</li> <li>• Green, blinking: Traffic is present on the active link.</li> <li>• Green: Link is active, but there is no traffic present.</li> </ul> <p>When the link speed LED is:</p> <ul style="list-style-type: none"> <li>• Off: Link speed is 100 Mbps or less.</li> <li>• Green: Link speed is 10 Gbps.</li> <li>• Amber: Link speed is 1 Gbps.</li> </ul> <p><b>Note</b> Although capable of operating at lower speeds, this port is intended to operate at 10 Gbps only.</p>
16	Threaded holes for dual-hole grounding lug.

Figure 4: 112-Core Appliance Rear Panel





Callout	Description
5, 12	<p>1-Gbps/10-Gbps Internet Port (Network Adapter 4): This Ethernet port can support 1 Gbps and 10 Gbps, depending on the link partner capability. It is identified as Network Adapter 4 in the Maglev Configuration wizard. This port is optional and is used for connecting to the Internet when it is not possible to do so via the 10-Gbps Enterprise port. Connect to the Internet or a proxy server that has connections to the Internet.</p> <ul style="list-style-type: none"> <li>• The primary instance (callout 5) is labeled <b>2</b> on the rear panel.</li> <li>• The secondary instance (callout 12) is the second port from the top on the Intel X710-DA4 NIC in the appliance's PCIe riser 2/slot 12.</li> </ul> <p>This port has a link status LED and a link speed LED. When the link status LED is:</p> <ul style="list-style-type: none"> <li>• Off: No link is present.</li> <li>• Green, blinking: Traffic is present on the active link.</li> <li>• Green: Link is active, but there is no traffic.</li> </ul> <p>When the speed LED is:</p> <ul style="list-style-type: none"> <li>• Off: Link speed is 10 Mbps or less.</li> <li>• Green: Link speed is 1 Gbps.</li> <li>• Amber: Link speed is 100 Mbps.</li> </ul>
6	<p>1-Gbps Cisco IMC Port: This is the 10/100/1000 Ethernet dedicated management port (Base-T), which is located to the right of the Management port. It is identified as <b>3</b> on the rear panel. This port is assigned an IP address when you enable browser access to the appliance's Cisco IMC GUI (see <a href="#">Enable Browser Access to Cisco Integrated Management Controller</a>). It is reserved for out-of-band management of the appliance chassis and software. Connect this port to a switch that provides access to your enterprise management network.</p> <p>This port has a link status LED and a link speed LED. When the link status LED is:</p> <ul style="list-style-type: none"> <li>• Off: No link is present.</li> <li>• Green, blinking: Traffic is present on the active link.</li> <li>• Green: Link is active, but there is no traffic present.</li> </ul> <p>When the speed LED is:</p> <ul style="list-style-type: none"> <li>• Off: Link speed is 10 Mbps or less.</li> <li>• Green: Link speed is 1 Gbps.</li> <li>• Amber: Link speed is 100 Mbps.</li> </ul>
7	Rear identification button/LED
8	Three USB 3.0 ports

Callout	Description
9	<p>Power supplies 1 – 4: hot-swappable and redundant as 3+1 (configured in Cisco IMC). See <a href="#">Power Specifications</a> for more information.</p>
10, 15	<p>10-Gbps Intracluster Port (Network Adapter 2): This port is identified as Network Adapter 2 in the Maglev Configuration wizard. Connect this port to a switch with connections to the other nodes in the cluster.</p> <ul style="list-style-type: none"> <li>• The primary instance (callout 15) is the bottom port on the Intel X710-DA2 NIC in the appliance PCIe riser 1/slot 9.</li> <li>• The secondary instance (callout 10) is the bottom port on the Intel X710-DA4 NIC in the appliance's PCIe riser 2/slot 12.</li> </ul> <p>This port has a link status (ACT) LED and a link speed (LINK) LED.</p> <p>When the link status LED is:</p> <ul style="list-style-type: none"> <li>• Off: No link is present.</li> <li>• Green, blinking: Traffic is present on the active link.</li> <li>• Green: Link is active, but there is no traffic present.</li> </ul> <p>When the link speed LED is:</p> <ul style="list-style-type: none"> <li>• Off: Link speed is 100 Mbps or less.</li> <li>• Green: Link speed is 10 Gbps.</li> <li>• Amber: Link speed is 1 Gbps.</li> </ul> <p><b>Note</b> Although capable of operating at lower speeds, this port is intended to operate at 10 Gbps only.</p>



Callout	Description
11, 16	<p>10-Gbps Enterprise Port (Network Adapter 1): This port is identified as Network Adapter 1 in the Maglev Configuration wizard. If NIC bonding is enabled on your appliance, connect this port to a switch with connections to the enterprise network.</p> <ul style="list-style-type: none"> <li>• The primary instance (callout 16) is the top port on the Intel X710-DA2 NIC in the appliance PCIe riser 1/slot 9.</li> <li>• The secondary instance (callout 11) is the third port from the top on the Intel X710-DA4 NIC in the appliance's PCIe riser 2/slot 12.</li> </ul> <p>This port has a link status (ACT) LED and a link speed (LINK) LED.</p> <p>When the link status LED is:</p> <ul style="list-style-type: none"> <li>• Off: No link is present.</li> <li>• Green, blinking: Traffic is present on the active link.</li> <li>• Green: Link is active, but there is no traffic present.</li> </ul> <p>When the speed LED is:</p> <ul style="list-style-type: none"> <li>• Off: Link speed is 100 Mbps or less.</li> <li>• Green: Link speed is 10 Gbps.</li> <li>• Amber: Link speed is 1 Gbps.</li> </ul> <p><b>Note</b> Although capable of operating at lower speeds, this port is intended to operate at 10 Gbps only.</p>
14	Threaded holes for dual-hole grounding lug.

## Physical Specifications

The following table lists the physical specifications for the appliance. Unless indicated, the specifications apply to the 44, 56, and 112-core appliances.

**Table 4: Physical Specifications**

Description	Specification
Height	44 and 56-core appliance: 1.7 in. (4.32 cm) 112-core appliance: 6.9 in. (17.6 cm)
Width	44 and 56-core appliance: <ul style="list-style-type: none"> <li>• Without handles: 16.9 in. (43.0 cm)</li> <li>• Including handles: 19.0 in. (48.3 cm)</li> </ul> 112-core appliance: 19.0 in. (48.3 cm)

Description	Specification
Depth (length)	44 and 56-core appliance: <ul style="list-style-type: none"> <li>• Without handles: 29.8 in. (75.6 cm)</li> <li>• Including handles: 30.98 in. (78.7 cm)</li> </ul> 112-core appliance: 32.7 in. (83.1 cm)
Front Clearance	3 in. (76 mm)
Side Clearance	1 in. (25 mm)
Rear Clearance	6 in. (152 mm)
Maximum weight (fully loaded chassis)	44 and 56-core appliance: 37.5 lb. (17.0 kg) 112-core appliance: 146 lb. (66.2 kg)

## Environmental Specifications

The following table lists the environmental specifications for the Cisco DNA Center appliance. Unless indicated, the specifications apply to the 44, 56, and 112-core appliances.

**Table 5: Environmental Specifications**

Description	Specification
Temperature, operating	41 to 95°F (5 to 35°C) Derate the maximum temperature by 1°C for every 1000 ft. (305 meters) of altitude above sea level.
Temperature, nonoperating (when the appliance is stored or transported)	−40 to 149°F (−40 to 65°C)
Humidity (RH), operating	10 to 90%, noncondensing at 82°F (28°C)
Humidity (RH), nonoperating (when the appliance is stored or transported)	5 to 93% at 82°F (28°C)
Altitude, operating	0 to 10,000 ft. (0 to 3,048 m)
Altitude, nonoperating (when the appliance is stored or transported)	0 to 40,000 ft. (0 to 12,192 m)

Description	Specification
Sound power level, measure A-weighted per ISO7779 LwAd (Bels), operation at 73°F (23°C)	44 and 56-core appliance: 5.5 112-core appliance: <ul style="list-style-type: none"> <li>• Minimum configuration: 7.08</li> <li>• Typical configuration: 7.67</li> <li>• Maximum configuration: 8.24</li> </ul>
Sound pressure level, measure A-weighted per ISO7779 LpAm (dBA), Operation at 73°F (23°C)	44 and 56-core appliance: 40 112-core appliance: <ul style="list-style-type: none"> <li>• Minimum configuration: 57.6</li> <li>• Typical configuration: 63.5</li> <li>• Maximum configuration: 70.5</li> </ul>

## Power Specifications

The specifications for the power supplies provided with the Cisco DNA Center appliance are listed in the table below. The 44 and 56-core appliance ships with two 770 W power supplies (Cisco part number UCSC-PSU1-770W) and the 112-core appliance ships with four 1600 W AC power supplies (Cisco part number UCSC-PSU1-1600W). Unless indicated, the specifications apply to both power supplies.

**Table 6: AC Power Supply Specifications**

Description	Specification
AC input voltage	770 W: <ul style="list-style-type: none"> <li>• Nominal range: 100–120 VAC, 200–240 VAC</li> <li>• Range: 90–132 VAC, 180–264 VAC</li> </ul> 1600 W: <ul style="list-style-type: none"> <li>• Nominal range: 200–240 VAC</li> <li>• Range: 180–264 VAC</li> </ul>
AC input frequency	Nominal range: 50 to 60 Hz (Range: 47–63 Hz)

Description	Specification
Maximum AC input current	770 W: <ul style="list-style-type: none"> <li>• 9.5 A at 100 VAC</li> <li>• 4.5 A at 208 VAC</li> </ul> 1600 W: 9.5 A at 200 VAC
Maximum input volt-amperes	770 W: 950 VA at 100 VAC 1600 W: 1250 VA at 200 VAC
Maximum output power per PSU	770 W: 100–120 VAC 1600 W: 200–240 VAC
Maximum inrush current	770 W: 15 A at 35° C 1600 W: 30 A at 35° C
Maximum hold-up time	770 W: 12 ms 1600 W: 80 ms at
Power supply output voltage	12 VDC
Power supply standby voltage	12 VDC
Efficiency rating	Climate Savers Platinum Efficiency (80Plus Platinum certified)
Form factor	RSP2
Input connector	IEC320 C14



**Note** You can get more specific power information for the exact configuration of your appliance by using the Cisco UCS Power Calculator: <http://ucspowercalc.cisco.com>