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Cisco Catalyst 9400 Series Switch

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Advanced persistent security threats, exponential growth of Internet of Things (IoT) devices, mobility everywhere and cloud adoption 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 business service rollout.

The Cisco Digital Network Architecture (Cisco DNA) with Software-Defined Access (SD-Access) is the network fabric that powers business. Cisco DNA 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

The Cisco Catalyst® 9400 Series switches are Cisco's leading modular enterprise switching access, distribution and core platform built for security, IoT and cloud. These switches form the foundational building block for SD-Access – Cisco's lead enterprise architecture. The platform provides unparalleled investment protection with a chassis architecture that is capable of supporting up to 9 Tbps of system bandwidth and unmatched power delivery with high density IEEE 802.3bt PoE (60W and 90W). Redundancy is now table stakes across the portfolio. The Catalyst 9400 delivers state-of-the-art High Availability (HA) with capabilities like Cisco StackWise® Virtual technology with In-service-software-upgrade (ISSU), SSO/NSF, uplink resiliency, N+1/N+N redundancy for power supplies. The platform is enterprise optimized with an innovative dual-serviceable fan tray design, side to side airflow and is closet-friendly with ~16" depth. A single system can scale up to 384 access ports with your choice of 5G multigigabit copper, 1G copper, 1G fiber, Cisco UPOE®+, Cisco UPOE and PoE+ options and up to 192 ports of 10G Fiber and 10G multigigabit options. The availability of 1/10 G fiber ports facilitate aggregation of existing small form factor fixed access switches. The addition of the new SUP-1XL-Y supervisor allows unique investment protection through 25 G uplink connectivity option which is becoming a popular alternative to 10 G in the core. The platform also supports advanced routing and infrastructure services, SD-Access capabilities and network system virtualization. These features enable optional placement of the platform in the core and aggregation layers of small to medium-sized campus environments.

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
- Cisco Catalyst 9400 Series switches support hosting Cisco DNA Spaces natively on the CPU complex (included with Cisco DNA Advantage and Premier licenses). Cisco DNA Spaces IoT Services on both Catalyst 9000 switches and access points bridges wired and wireless smart building technology using the power of data to help speed return to a trusted workplace and the inevitable return-to-office. Cisco DNA Spaces is included as part of Catalyst 9400 Cisco DNA Advantage or Premier subscriptions.
- Access to end-to-end service assurance through Cisco ThousandEyes® Network and Application Synthetics (included with Cisco DNA Advantage and Premier licenses)

Cisco DNA for Access 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.

*The Cisco ThousandEyes credits per customer included as part of Catalyst 9400 Cisco DNA Advantage or Premier subscriptions will be limited to 110,000,000 units of test capacity. Cisco ThousandEyes Cloud Agent access is not included in the Cisco DNA license entitlement. Test capacity can be increased and Cloud Agents accessed with purchase of additional Cisco ThousandEyes Network and Application Synthetics.

Features

Product Highlights

- The Cisco Unified Access Data Plane (UADP) 2.0 ASIC is ready for next-generation technologies with its programmable pipeline, microengine capabilities, and template-based configurable allocation of Layer 2, Layer 3, forwarding, Access Control List (ACL), and Quality of Service (QoS) entries
- Intel 2.4-GHz x86 with up to 960 GB of SATA SSD local storage for container-based application hosting
- Up to 1.44 Tbps wired switching capacity (IPv4) with 900 Mpps of throughput
- Up to two nonblocking 25 Gigabit Ethernet uplinks on Supervisor-1XL-Y
- Up to two nonblocking 40 Gigabit Ethernet uplinks (Quad Small Form-Factor Pluggable [QSFP]) and up to eight nonblocking 10 Gigabit Ethernet uplinks (SFP+)
- SFP support on uplinks to offer flexibility for up to eight Gigabit Ethernet ports
- 384 ports of nonblocking 10/100/1000 RJ-45 ports
- 392 ports of nonblocking 1 Gigabit Ethernet Fiber (SFP) ports
- 200 ports of 10 Gigabit Ethernet SFP+ ports (eight uplinks plus 192 10G line card ports)

- 384 ports of nonblocking 5G mGig RJ-45 ports
- Cisco UPOE[®]+ (90 W) capabilities on 384 ports simultaneously
- Cisco UPOE (60W)/PoE+ (30W) capabilities on 384 ports simultaneously
- Line rate hardware-based Flexible NetFlow (FNF) delivering flow collection up to 384,000 flows
- IPv6 support in hardware, providing wire rate forwarding for IPv6 networks
- Dual-stack support for IPv4 and IPv6 and dynamic hardware forwarding table allocations for ease of IPv4-to-IPv6 migration
- Scalable routing (IPv4, IPv6, and multicast) tables and Layer 2 tables
- Open 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. 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 and Premier licenses)
- **SD-Access:** The Cisco Catalyst 9400 Series form the foundation building block for SD-Access – Cisco’s leading enterprise architecture, which includes:
 - Policy-based automation from edge to cloud
 - Segmentation and micro-segmentation made easy, with having predictable performance and scalability
 - Automation through Cisco DNA Center™
 - Policy through the Cisco Identity Services Engine (ISE)
 - Network assurance through Network Data Platform
 - The ability to launch new business services faster and improve issue resolution time significantly
- SD-Access Embedded Wireless: The Cisco Catalyst 9800 embedded Wireless Controller Software package can be installed on Cisco Catalyst 9400 Series switches to enable wireless controller functionality for distributed branches and small campuses. Once installed, the Catalyst 9800 embedded Wireless Controller running on a Catalyst 9400 Series switch can support up to 200 APs and 4000 Clients. A maximum two wireless controllers can be enabled per site on two different Catalyst 9400 Series switches which will increase to scale up to 200 APs and 4000 Wireless Clients. The Catalyst 9800 embedded Wireless Controller Software package will enable wireless functionality only for SD-Access deployments with two supported topologies:
 - The Catalyst 9800 embedded Wireless Controller Software package can be enabled on Catalyst 9400 Series switches functioning as Co-Located Border and Control Plane
 - C9800 Wireless Software Package can be enabled on Catalyst 9400 Series switches functioning as Fabric in a Box
- Plug and Play (PnP) enabled: A simple, secure, unified, and integrated offering eases new branch or campus device rollouts and can also be used for providing updates to an existing network

- **Advanced security**

- Cisco 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
- AES-2561 support with the powerful MACsec-256 encryption algorithm is available in hardware
- Trustworthy systems: Secure Unique Device Identification (SUDI) support for PnP tamper-proof device identity capability secures zero-touch provisioning by allowing your device to show a certificate to the server to be able to get onto your network

¹ MAC Sec is not supported in hardware in C9400-SUP-1XL-Y



Figure 1.
Cisco Catalyst 9400 Series

Cisco Catalyst 9400 Series chassis

The Cisco Catalyst 9400 Series offers three chassis options and a wide range of line card options (Table 1). It provides a common architecture that can scale up to 400 ports. Cisco StackWise Virtual technology doubles this port density by virtually stacking two Catalyst 9400 modular switches in a single logical switch.

The Catalyst 9400 Series chassis is enterprise optimized with efficient side-to-side airflow and full front accessibility for all removable components, including supervisors, line cards, power supplies and fan tray. The chassis also supports optional rear accessibility for fan trays to enable efficient cable management. Catalyst 9400 Series chassis, supervisor, line cards, powersupply and fan trays have embedded RFID tags which facilitate easy asset and inventory management using commercial RFID readers.

Table 1. Cisco Catalyst 9400 Series chassis features

Feature	Cisco Catalyst C9404R Chassis	Cisco Catalyst C9407R Chassis	Cisco Catalyst C9410R Chassis
Total number of slots	4	7	10
Line-card slots	2	5	8
Supervisor engine slots	2 ¹	2 ²	2 ³
Dedicated supervisor engine slot numbers	2 and 3 ⁴	3 and 4 ⁴	5 and 6 ⁴

Feature	Cisco Catalyst C9404R Chassis	Cisco Catalyst C9407R Chassis	Cisco Catalyst C9410R Chassis
Supervisor engine redundancy	Yes	Yes	Yes
Supervisor engines supported	C9400-SUP-1, C9400-SUP-1XL, C9400-SUP-1XL-Y	C9400-SUP-1, C9400-SUP-1XL, C9400-SUP-1XL-Y	C9400-SUP-1, C9400-SUP-1XL, C9400-SUP-1XL-Y
Maximum PoE per slot	4320W ⁵	4320W ⁵	2960W ⁵
Maximum Bandwidth scalability per line-card slot	Up to 480 Gbps on all slots ⁶	Up to 480 Gbps on all slots ⁷	Up to 480 Gbps on all slots ⁸
Number of power supply bays	4	8	8
AC input power	Yes	Yes	Yes
Integrated PoE	Yes	Yes	Yes
Power supplies supported	3200W AC, 2100W AC, 3200W DC	3200W AC, 2100W AC, 3200W DC	3200W AC, 2100W AC, 3200W DC
Number of fan-tray bays	1	1	1
Location of 19-inch rack-mount	Front	Front	Front

¹ Slots 2 and 3 are reserved for supervisor engines only in Cisco Catalyst C9404R; slots 1 and 4 are reserved for line cards.

² Slots 3 and 4 are reserved for supervisor engines only in Cisco Catalyst C9407R; slots 1-2 and 5-7 are reserved for line cards.

³ Slots 5 and 6 are reserved for supervisor engines only in Cisco Catalyst C9410R; slots 1-4 and 7-10 are reserved for line cards.

⁴ Linecards are not supported in the Supervisor slots.

⁵ Max PoE mentioned is as per the current shipping linecard, however chassis is capable ~4800W PoE per slot.

⁶ 80Gbps per line-card slot when used with C9400-SUP-1 and 240Gbps per line-card slot when used with C9400-SUP-1XL, C9400-SUP-1XL-Y.

⁷ 80Gbps per line-card slot when used with C9400-SUP-1 and 120Gbps per line-card slot when used with C9400-SUP-1XL, C9400-SUP-1XL-Y.

⁸ 80Gbps per line-card slot when used with C9400-SUP-1 and 80Gbps per line-card slot when used with C9400-SUP-1XL, C9400-SUP-1XL-Y.

Supervisor configuration

The Catalyst 9400 Series offers an industry-leading supervisor engine built for secure networks, IoT applications, next generation mobility and cloud adoption. Supervisor Engine-1 options (Sup-1, Sup-1XL, Sup-1XL-Y) are built with the latest Unified Access Dataplane 2.0 (UADP2.0) ASIC future-proofed for next generation technologies with its programmable pipeline, microengine capabilities and template-based configurable allocation of Layer 2, Layer 3, forwarding, Access Control Lists (ACLs) and QoS entries.

Table 2. Cisco Catalyst 9400 Series Supervisor Engine maximum bandwidth per slot

Feature	Cisco Catalyst 9400 Series Supervisor Engine C9400-SUP-1	Cisco Catalyst 9400 Series Supervisor Engine C9400-SUP-1XL	Cisco Catalyst 9400 Series Supervisor Engine C9400-SUP-1XL-Y
Cisco Catalyst C9404R chassis	80 Gbps/slot	240 Gbps/slot	240 Gbps/slot
Cisco Catalyst C9407R chassis	80 Gbps/slot	120 Gbps/slot	120 Gbps/slot
Cisco Catalyst C9410R chassis	80 Gbps/slot	80 Gbps/slot	80 Gbps/slot

Table 3 lists the minimum software requirements for the Cisco Catalyst 9400 supervisor engine.

Table 3. Cisco Catalyst Supervisor Engine Software Minimum Requirements

Chassis	Supervisor Engine	Minimum Software Requirement
Cisco C9407R	Supervisor Engine C9400-SUP-1	Cisco IOS XE Software Release 16.6.1
Cisco C9410R	Supervisor Engine C9400-SUP-1	Cisco IOS XE Software Release 16.6.1
Cisco C9407R	Supervisor Engine C9400-SUP-1XL	Cisco IOS XE Software Release 16.6.2
Cisco C9410R	Supervisor Engine C9400-SUP-1XL	Cisco IOS XE Software Release 16.6.2
Cisco C9404R	Supervisor Engine C9400-SUP-1	Cisco IOS XE Software Release 16.9.1
Cisco C9404R	Supervisor Engine C9400-SUP-1XL	Cisco IOS XE Software Release 16.9.1
Cisco C9404R	Supervisor Engine C9400-SUP-1XL-Y	Cisco IOS XE Software Release 16.9.1
Cisco C9407R	Supervisor Engine C9400-SUP-1XL-Y	Cisco IOS XE Software Release 16.9.1
Cisco C9410R	Supervisor Engine C9400-SUP-1XL-Y	Cisco IOS XE Software Release 16.9.1

Line card configuration options

The Catalyst 9400 offers the ability to mix and match a range of line cards to support numerous LAN access, server connectivity, Small and Medium-sized Business (SMB) or branch-office deployments. The Cisco Catalyst 9400 Series supports the line cards listed in Table 4 by part number.

Table 4. Cisco Catalyst 9400 Series line cards

Product Number	Description	Minimum Software Requirement
Cisco Catalyst 9400 Series Line Cards		
C9400-LC-48U	Cisco Catalyst 9400 Series 48-Port UPOE 10/100/1000 (RJ-45)	Cisco IOS XE Software Release 16.6.1
C9400-LC-48T	Cisco Catalyst 9400 Series 48-Port 10/100/1000 (RJ-45)	Cisco IOS XE Software Release 16.6.1
C9400-LC-48UX	Cisco Catalyst 9400 Series 48Port UPOE w/ 24p mGig 24p RJ-45	Cisco IOS XE Software Release 16.6.2
C9400-LC-24XS	Cisco Catalyst 9400 Series 24-Port 10 Gigabit Ethernet (SFP+)	Cisco IOS XE Software Release 16.6.2
C9400-LC-48P	Cisco Catalyst 9400 Series 48-Port POE+ 10/100/1000 (RJ-45)	Cisco IOS XE Software Release 16.8.1
C9400-LC-24S	Cisco Catalyst 9400 Series 24-Port Gigabit Ethernet(SFP)	Cisco IOS XE Software Release 16.8.1
C9400-LC-48S	Cisco Catalyst 9400 Series 48-Port Gigabit Ethernet(SFP)	Cisco IOS XE Software Release 16.8.1
C9400-LC-48H	Cisco Catalyst 9400 Series 48-Port UPOE+ 10/100/1000 (RJ-45)	Cisco IOS XE Software Release 16.12.1
C9400-LC-48HN	Cisco Catalyst 9400 Series 48-Port 5 Gigabit w/ full 90W UPOE+	Cisco IOS XE Software Release 17.5

The Cisco Catalyst 9400 Series has flexible interface types and port densities that allow you to mix and match network configurations to meet the specific needs of campus networks (Table 5).

Table 5. Cisco Catalyst 9400 Series Maximum port densities

Cisco Catalyst 9400 Series Switching Modules	Cisco Catalyst C9404R	Cisco Catalyst C9407R	Cisco Catalyst C9410R
10/100/1000BASE-T Gigabit (RJ-45) ports	96	240	384
10/100/1000BASE-T Gigabit Ethernet with POE+ ports	96	240	384
Switched 10/100/1000BASE-T Gigabit Ethernet with UPOE ports	96	240	384
Switched 10 Gigabit Ethernet ports	48	120	192

Cisco Catalyst 9400 Series Switching Modules	Cisco Catalyst C9404R	Cisco Catalyst C9407R	Cisco Catalyst C9410R
Cisco 10G Multigigabit Ethernet ports (with UPOE)	48	120	192
Cisco 5G Multigigabit Ethernet ports (with UPOE+)	96	240	384
Switched 1 Gigabit Ethernet ports	96	240	384
802.3 BT Type 4 (90W) Ports	96	240	384 ¹

¹ With max power 260 ports can supply full 90W on all ports concurrently

Specifications

Table 6 lists physical specifications of the Cisco Catalyst 9400 Series chassis.

Table 6. Physical specifications of Cisco Catalyst 9400 Series chassis

Specification	C9404R	C9407R	C9410R
Dimensions (H x W x D)	10.47 x 17.30 x 16.30 in. (26.53 x 43.94 x 41.40 cm)	17.41 x 17.30 x 16.30 in. (44.22 x 43.94 x 41.40 cm)	22.61 x 17.30 x 16.30 in. (57.43 x 43.94 x 41.40 cm)
Rack Units (RU)	6 RU	10 RU	13 RU
Chassis weight (with fan tray)	39.0 lb (17.2 kg)	63.0 lb (28.58 kg)	65.0 lb (29.48 kg)
Mounting	19-in rack compatible (19-in. rack and cable guide hardware included)	19-in rack compatible (19-in. rack and cable guide hardware included)	19-in. rack compatible (19-in. rack and cable guide hardware included)

Power supply

There are three modes of operation supported by Cisco Catalyst 9400 power supplies. In all the modes the power supplies can be of different wattage and type whether AC or DC.

Redundant N + N mode

The Cisco Catalyst 9400 Chassis also supports N + N redundancy with N independent input circuits and safeguards against failure of N (+N) of the circuits as opposed to power supply unit failure.

Redundant N + 1 mode

The Cisco Catalyst 9400 Chassis also supports N + 1 redundancy with N independent input circuits and safeguards against failure of one (+1) of the circuits as opposed to power supply unit failure.

Combined mode

In this mode the power available for the entire chassis is equal to the sum of the output power of both of the power supplies multiplied by the share ratio.

P = Power output of one power-supply unit.

Total combined mode power = $P + (N-1) * P * (\text{share ratio})$.

Tables 7 describe power supply specification for the Catalyst 9400 Series.

Table 7. Cisco Catalyst 9400 Series Power supply specifications

Power Supply	3200W AC	2100W AC	3200W DC
Integrated PoE	Yes	Yes	Yes
Input current (rated)	<ul style="list-style-type: none"> • 16A at 100 VAC • 16A at 200 VAC 	<ul style="list-style-type: none"> • 10.4A at 100 VAC • 10.4A at 200 VAC 	<ul style="list-style-type: none"> • 36A per input (72A total)
Input voltage	100 to 240 VAC ($\pm 10\%$ for full range)	100 to 240 VAC ($\pm 10\%$ for full range)	-48 to -60 VDC (+20/-16.6% for full range)
Output current (data)	<ul style="list-style-type: none"> • 55V at 58.0A/28.36A (230/115VAC ranges) • 3.3V at 3.0A 	<ul style="list-style-type: none"> • 55V at 38.21/17.09A (230/115VAC ranges) • 3.3V at 3.0A 	<ul style="list-style-type: none"> • 55V at 58.0A • 3.3V at 3.0A
Output power (N+N) redundant mode (PoE + data)	<p>(3190W x N)/2 + 10W (3.3V standby) for 230VAC range</p> <p>(1560W x N)/2 + 10W (3.3V standby) for 115VAC range</p> <p>N = number of power supplies (N>1)</p>	<p>(2102W x N)/2 + 10W (3.3V standby) for 230VAC range</p> <p>(940W x N)/2 + 10W (3.3V standby) for 115VAC range</p> <p>N = number of power supplies (N>1)</p>	<p>(3190W x N)/2 + 10W (3.3V standby)</p> <p>N = number of power supplies (N>1)</p>
Output power (N+1) redundant mode (PoE + data)	<p>(3190W x (N-1)) + 10W (3.3V standby) for 230VAC range</p> <p>(1560W x (N-1)) + 10W (3.3V standby) for 115VAC range</p> <p>N = number of power supplies (N>1)</p>	<p>(2102W x (N-1)) + 10W (3.3V standby) for 230VAC range</p> <p>(940W x (N-1)) + 10W (3.3V standby) for 115VAC range</p> <p>N = number of power supplies (N>1)</p>	<p>(3190W x (N-1)) + 10W (3.3V standby)</p> <p>N = number of power supplies (N>1)</p>
Output Power Combined mode (PoE + data)	<p>(3190W x N) + 10W (3.3V standby) for 230VAC range</p> <p>(1560W x N) + 10W (3.3V standby) for 115VAC range</p> <p>N = number of power supplies (N>1)</p>	<p>(2102W x N) + 10W (3.3V standby) for 230VAC range</p> <p>(940W x N) + 10W (3.3V standby) for 115VAC range</p> <p>N = number of power supplies (N>1)</p>	<p>(3190W x N) + 10W (3.3V standby)</p> <p>N = number of power supplies (N>1)</p>
Heat dissipation	<p>950 BTU/hr x N</p> <p>N = number of power supplies</p>	<p>460 BTU/hr x N</p> <p>N = number of power supplies</p>	<p>950 BTU/hr x N</p> <p>N = number of power supplies</p>
Holdup time	20 ms	20 ms	8 ms

Power Supply	3200W AC	2100W AC	3200W DC
Hot swappable	Yes	Yes	Yes
MTBF	300,000 hours	300,000 hours	300,000 hours
Minimum Software Requirement	Cisco IOS XE Software Release 16.6.1	Cisco IOS XE Software Release 16.8.1	Cisco IOS XE Software Release 16.9.1

Note:

- Output power is per power supply unless otherwise stated.
- Heat-dissipation numbers represent the power conversion losses of the power supply in operation.
- The number of power devices supported depends upon the customer configuration.

Power supply indicators

- Output Fail LED (per unit): RED.
- Input Okay LED (per unit): Green.
- ID LED (per unit): Blue.

Table 8. Cisco Catalyst 9400 Series power-cord options

Power Supply	3200W AC	2100W AC
Europe	CAB-CEE77-C19-EU CAB-I309-C19-INTL	CAB-CEE77-C19-EU CAB-I309-C19-INTL
International	CAB-I309-C19-INTL	CAB-I309-C19-INTL
United States	CAB-US520-C19-US CAB-L620P-C19-US CAB-US620P-C19-US	CAB-US515P-C19-US CAB-US520-C19-US CAB-L620P-C19-US CAB-US620P-C19-US
Australia	CAB-AC-16A-AUS	CAB-AC-16A-AUS
Italy	CAB-C2316-C19-IT	CAB-C2316-C19-IT
United Kingdom	CAB-I309-C19-INTL	CAB-I309-C19-INTL CAB-BS1363-C19-UK
Argentina	CAB-I309-C19-INTL	CAB-I309-C19-INTL
South Africa	CAB-I309-C19-INTL	CAB-I309-C19-INTL
Israel	CAB-S132-C19-ISRL	CAB-S132-C19-ISRL
India	CAB-SABS-C19-IND	CAB-SABS-C19-IND
UPS 220V	CAB-C19-CBN	CAB-C19-CBN

Power Supply	3200W AC	2100W AC
China	CAB-9K16A-CH	CAB-9K16A-CH
Japan	CAB-US620P-C19-US CAB-L620P-C19-US	CAB-US620P-C19-US CAB-L620P-C19-US

Fan trays

Each Cisco Catalyst 9400 Series uses dual serviceable fan trays for cooling. Cisco Catalyst 9400 switches can optionally be accessed from the rear for flexible cable management. The chassis is enterprise closet-optimized with side-to-side airflow. All fan trays are composed of multiple independently controlled fans with N+1 redundancy. If any single fan fails, the system will continue to operate without a degradation in cooling. Speeds of fans change dynamically to compensate for fan failure. Catalyst 9400 Series fans have a barometric sensor, which allows slower fan speed curves at lower altitudes. Catalyst 9400 Series fans also have individual fan Pulse-Width Modulation (PWM) fine-tuning to reduce variability in fan Revolutions Per Minute (RPM) under throttled conditions. This allows for optimal acoustic performance at 60dB when the system is operating at 50% load.



Figure 2.
Dual serviceable fan tray

Environmental conditions

The Cisco Catalyst 9400 Series require the following conditions:

- Operating temperature
- Normal operating* temperature and altitudes:
 - 23° to 113°F (-5 to +45° C), up to 6,000 feet (1800 m)
 - 23° to 104°F (-5 to +40° C), up to 10,000 feet (3000 m)
 - *Minimum ambient temperature for cold startup is 0° C

- Short-term** exceptional conditions:
 - 23° to 131°F (-5 to +55°C), up to 6,000 feet (1800 m)
 - 23° to 122°F (-5 to +50°C), up to 10,000 feet (3000 m)
 - **Not more than following in one-year period: 96 consecutive hours, or 360 hours total, or 15 occurrences
- Storage temperature: -40° to 158°F (-40° to 70°C)
- Relative humidity: 10 to 95 percent, noncondensing
- Operating altitude: -60 to 3000m

Regulatory standards compliance

Table 9 lists the regulatory standards compliance supported by the Cisco Catalyst 9400 Series.

Table 9. Regulatory standards compliance

Specification	Standard
Regulatory compliance	CE Marking
Safety	<ul style="list-style-type: none"> • UL 60950-1 • CAN/CSA-C222.2 No. 60950-1 • EN 60950-1 • IEC 60950-1 • AS/NZS 60950.1 • IEEE 802.3
EMC	<ul style="list-style-type: none"> • 47 CFR Part 15 • CISPR22 Class A • KN 32 Class A • EN 300 386 V1.6.1 • EN 55022 Class A • EN 55032 Class A • CISPR 32 Class A • EN61000-3-2 • EN61000-3-3 • ICES-003 Class A • TCVN 7189 Class A • V-3 Class A • CNS13438 Class A • CISPR24 • EN 300 386 • EN55024 • TCVN 7317 • KN35

Specification	Standard
Industry EMC, safety, and environmental standards	<ul style="list-style-type: none"> • NEBS: Operating temperature: -5 to 55C • Relative Humidity: 10-93% • Operating Altitude: up to 1829 m (6000 ft) at 55C • ETSI 300-019 Requirements are covered under GR-63-CORE with some deviations. • SR-3580 NEBS level 3 (GR-63-CORE, to current issue, GR-1089-CORE, to current issue) • ETS 300 019-2-1, Class 1.2 Storage • ETS 300 019-2-2, Class 2.3 Transportation • ETS 300 019-2-3, Class 3.2 Stationary • EN50121-4 • EN 300 386
ROHS compliance	ROHS5

MTBF information

Table 10 gives Mean-Time-Between-Failures (MTBF) information for different chassis.

Table 10. MTBF information

Part Number	Rated MTBF (Hours)
C9404R	2,077,070
C9407R	1,571,010
C9410R	1,404,840

Ordering information

Table 11 lists the ordering information for chassis, power supplies, supervisor engines and memory that are commonly used with the Cisco Catalyst 9400 Series.

Table 11. Ordering information

Product Number	Description
C9404R (=)	Cisco Catalyst 9400 Series 4 slot chassis
C9407R (=)	Cisco Catalyst 9400 Series 7 slot chassis
C9410R (=)	Cisco Catalyst 9400 Series 10 slot chassis
C9400-SUP-1 (=)	Cisco Catalyst 9400 Series Supervisor 1 Module
C9400-SUP-1/2	Cisco Catalyst 9400 Series Redundant Supervisor 1 Module
C9400-SUP-1XL (=)	Cisco Catalyst 9400 Series Supervisor 1XL Module
C9400-SUP-1XL/2	Cisco Catalyst 9400 Series Redundant Supervisor 1XL Module
C9400-SUP-1XL-Y (=)	Cisco Catalyst 9400 Series Supervisor 1XL-Y with 25G Module

Product Number	Description
C9400-SUP-1XL-Y/2	Cisco Catalyst 9400 Series Redundant Supervisor 1XL-Y with 25G Module
C9400-LC-48U (=)	Cisco Catalyst 9400 Series 48-Port UPOE 10/100/1000 (RJ-45)
C9400-LC-48P (=)	Cisco Catalyst 9400 Series 48-Port POE+ 10/100/1000 (RJ-45)
C9400-LC-48T (=)	Cisco Catalyst 9400 Series 48-Port 10/100/1000 (RJ-45)
C9400-LC-48UX (=)	Cisco Catalyst 9400 Series 48-Port UPOE w/ 24-port 10G mGig, 24-port 1G RJ-45
C9400-LC-24XS (=)	Cisco Catalyst 9400 Series 24-Port 10 Gigabit Ethernet (SFP+)
C9400-LC-24S (=)	Cisco Catalyst 9400 Series 24-Port 1 Gigabit Ethernet (SFP)
C9400-LC-48S (=)	Cisco Catalyst 9400 Series 48-Port 1 Gigabit Ethernet (SFP)
C9400-LC-48H (=)	Cisco Catalyst 9400 Series 48-Port UPOE+ 10/100/1000 (RJ-45)
C9400-LC-48HN (=)	Cisco Catalyst 9400 Series 48-Port UPOE+ 5G mGig (RJ-45)
C9400-PWR-3200AC (=)	Cisco Catalyst 9400 Series 3200W AC Power Supply
C9400-PWR-2100AC (=)	Cisco Catalyst 9400 Series 2100W AC Power Supply
C9400-PWR-3200DC (=)	Cisco Catalyst 9400 Series 3200W DC Power Supply
C9400-S-BLANK (=)	Cisco Catalyst 9400 Series Slot Blank Cover
C9400-PWR-BLANK (=)	Cisco Catalyst 9400 Series Power Supply Blank Cover
C9410-FAN=	Cisco Catalyst 9400 Series 10 slot chassis Fan Tray
C9407-FAN=	Cisco Catalyst 9400 Series 7 slot chassis Fan Tray
C9404-FAN=	Cisco Catalyst 9400 Series 4 slot chassis Fan Tray
C9410-ACC-KIT=	Cisco Catalyst 9400 Series 10 slot chassis Accessory Kit
C9407-ACC-KIT=	Cisco Catalyst 9400 Series 7 slot chassis Accessory Kit
C9404-ACC-KIT=	Cisco Catalyst 9400 Series 4 slot chassis Accessory Kit
C9404-RACK-19-KIT=	Cisco Catalyst 9400 Series 4 slot chassis Rack Mount
C9407-RACK-19-KIT=	Cisco Catalyst 9400 Series 7 slot chassis Rack Mount
C9410-RACK-19-KIT=	Cisco Catalyst 9400 Series 10 slot chassis Rack Mount
C9410-SHELF-KIT=	Cisco Catalyst 9400 Series 10 slot chassis Shelf Install Kit

Product Number	Description
C9407-SHELF-KIT=	Cisco Catalyst 9400 Series 7 slot chassis Shelf Install Kit
C9400-DNA-P	C9400 Cisco DNA Premier Term: Includes Term Licenses for Cisco DNA Advantage, 100 ISE Base and 100 ISE Plus Endpoints, 100 Stealthwatch Flows (including Virtual Flow Collector and Management Console). Requires separate purchase of ISE appliance/ISE VM and Cisco DNA Center appliance.
C9400-DNA-P-3Y	C9400 Cisco DNA Premier 3Y Term - Cisco DNA, 100 ISE PLS and ISE BASE, 100 SWATCH
C9400-DNA-P-5Y	C9400 Cisco DNA Premier 5Y Term - Cisco DNA, 100 ISE PLS and ISE BASE, 100 SWATCH
C9400-DNA-P-7Y	C9400 Cisco DNA Premier 7Y Term - Cisco DNA, 100 ISE PLS and ISE BASE, 100 SWATCH
C9400-DNA-P-AA	C9400 Cisco DNA Premier Add-On Term: Includes Term Licenses for 50 ISE Base and 50 ISE Plus Endpoints, 50 Stealthwatch Flows (including Virtual Flow Collector and Management Console). Requires separate purchase of ISE appliance/ISE VM and Cisco DNA Center appliance.
C9400-DNA-P-AA-3Y	C9400 Cisco DNA Premier Add-On 3Y Term - 50 ISE PLS, 50 SWATCH
C9400-DNA-P-AA-5Y	C9400 Cisco DNA Premier Add-On 5Y Term - 50 ISE PLS, 50 SWATCH
C9400-DNA-P-AA-7Y	C9400 Cisco DNA Premier Add-On 7Y Term - 50 ISE PLS, 50 SWATCH
C9400-DNA-E	Cisco Catalyst 9400 Cisco DNA Essential Term License
C9400-DNA-E-3Y	Cisco Catalyst 9400 Cisco DNA Essential 3 Year License
C9400-DNA-E-5Y	Cisco Catalyst 9400 Cisco DNA Essential 5 Year License
C9400-DNA-E-7Y	Cisco Catalyst 9400 Cisco DNA Essential 7 Year License
C9400-DNA-A	Cisco Catalyst 9400 Cisco DNA Advantage Term License
C9400-DNA-A-3Y	Cisco Catalyst 9400 Cisco DNA Advantage 3 Year License
C9400-DNA-A-5Y	Cisco Catalyst 9400 Cisco DNA Advantage 5 Year License
C9400-DNA-A-7Y	Cisco Catalyst 9400 Cisco DNA Advantage 7 Year License
C9400-LIC=	Electronic SW License for C9400 Switches
C9400-DNA-E-A	C9400 NW and Cisco DNA Essentials to NW and Cisco DNA Advantage Upgrade
C9400-DNA-E-A-3	C9400 NW and Cisco DNA Essentials and Cisco DNA Advantage Upgrade License (3Y)
C9400-DNA-E-A-5	C9400 NW and Cisco DNA Essentials and Cisco DNA Advantage Upgrade License (5Y)
C9400-DNA-E-A-7	C9400 NW and Cisco DNA Essentials and Cisco DNA Advantage Upgrade License (7Y)
DNAS-SEE	Cisco DNA Spaces See: 3 - 5-, 7-year term
DNAS-EXT	Cisco DNA Spaces Extend: 3-, 5-, 7-year term

Product Number	Description
DNAS-ACT	Cisco DNA Spaces Act: 3-, 5-, 7-year term
SVS-DNAS-SUP	Cisco DNA Spaces Subscription Support (included with Cisco DNA Spaces See, Extend, or Act subscription)

Warranty

The Cisco Catalyst 9400 Series Switches come with a Cisco 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 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 12 provides information about the E-LLW.

Table 12. E-LLW details

	Cisco E-LLW
Devices covered	Applies to Cisco Catalyst 9400 Series Switches.
Warranty duration	As long as the original customer owns the product.
End-of-life policy	In the event of discontinuance of product manufacture, Cisco warranty support is limited to 5 years from the announcement of discontinuance.
Hardware replacement	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.
Effective date	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).
TAC support	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 9400 Series product. This support does not include solution or network-level support beyond the specific device under consideration.
Cisco.com access	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
General	Information on product-material-content laws and regulations	Materials
	Information on electronic waste laws and regulations, including our products, batteries and packaging	WEEE Compliance
	Sustainability Inquiries	Contact: csr_inquiries@cisco.com
	Information on product takeback and resuse program	Cisco Takeback and Reuse Program
	Operating Environmental conditions	Environmental conditions
	Regulatory and compliance	Table 9: Regulatory and compliance information
	Mean Time Between Failures - MTBF (hours)	Table 10: MTBF Information
	Product Warranty	Warranty
Power	Power Supply	Power Supplies
	Power cord options	Table 8. Cisco Catalyst 9400 Series power-cord options
	Fan	Fan Trays
Material	Product packaging weight and materials	Contact: environment@cisco.com
	Physical Specifications	Table 6: Physical specifications of Cisco Catalyst 9400 Series chassis

Cisco Services

Achieve infrastructure excellence faster and with less risk. Cisco Catalyst 9K Services provide expert guidance to help you successfully deploy, manage and support the new Catalyst 9K Series Switches. 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 minimize 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 9400 Series Switches

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 Premier with full Cisco Digital Network Architecture (Cisco DNA) capabilities and Cisco Software-Defined Access (SD-Access).

For ordering information for Cisco DNA for the Cisco Catalyst 9400, 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 Network Essential Stack and Network Advantage Stack software feature sets are provided with maintenance updates and bug fixes designed to maintain the compliance of the software with published specifications, release notes, and industry standards compliance 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 this 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 protects your investment. Cisco Embedded Support for Cisco DNA Essentials and Cisco DNA Advantage term components is included as part of the switch value. Cisco Embedded Support provides access to TAC support, major software updates, maintenance and minor software releases, and to the Cisco Embedded Support site for increased productivity with anytime access.

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 Cisco DNA Spaces support		
Added New UPOE+ 5G mGig Linecard (C9400-LC-48HN)	Ordering information	03/3/21
Added New UPOE+ Linecard (C9400-LC-48H)	Ordering information	08/20/19
Added New DC Power Supply (C9400-PWR-3200DC)	Power Supply	08/20/19
Added 4-slot Chassis and new Supervisor C9400-SUP-1XL-Y	C9404R, SUP-1XL-Y	08/15/18
Added new linecards: a. Access- 48 port PoE+. B. Core - 24/48 port 1G SFP. Added new power supply options - 2100W AC, 3200W DC. Added RESTCONF support.	Ordering Information	03/31/18
Added Sup-1XL, 120 G/slot, core optimized. Corrected references to Catalyst 9000 switches, rather than Catalyst 9000 series switches. Corrected references to Cisco IOS XE, rather than IOS-XE.	Sup-1XL, 120 G/slot	12/18/17
Page 13: C9400 Part Number changed	Table 11	12/18/17
Page 13: C9400 C1 Advantage name changed to C9400 Cisco DNA Premier	Table 11	12/18/17
Page 14: C9400 NW and Cisco DNA Ess to NW and Cisco DNA Adv name changed to Cisco DNA Essentials and Cisco DNA Advantage	Table 11	12/18/17
Page 14: Add “Cisco” to Cisco Catalyst 9400 product name: Cisco Catalyst 9400 Cisco DNA Advantage 7 Year License	Table 11	12/18/17
Page 15: Cisco DNA Software name change to: Cisco DNA for Access Switching and Cisco DNA Premier	Software Policy for Cisco Catalyst 9400 Series Switches	12/18/17

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