

Cisco Catalyst 9400 Supervisor Engine-1

Built for Security, IoT, Mobility and Cloud

Advanced persistent security threats, the exponential growth of the 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 (DNA) with Software Defined Access (SD-Access) is the most advanced network fabric to power customer 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 that 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 is Cisco's lead modular enterprise switching access platform built for security, IoT and cloud. This switch series forms the foundational building blocks for SD-Access — Cisco's leading 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 for high density IEEE 802.3BT (60W PoE). Redundancy is now table stakes across the portfolio. The Catalyst 9400 delivers state-of-the-art High Availability capabilities including uplink resiliency, N+1/N+N redundancy for power supplies and resilient fan design. 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 1G copper 10G SFP+, UPOE and PoE+ options. 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-campuses.

Product overview: features

Product highlights

- The Unified Access Dataplane (UADP) 2.0 ASIC is future-proofed for next generation technologies with its programmable pipeline, microengine capabilities and template-based configurable allocation of Layer 2, Layer 3, forwarding, ACL and QoS entries
- Intel 2.4Ghz x86 with up to 960G 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 non blocking 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 RJ45 Ports
- 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 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
- SD-Access: The Catalyst 9400 switches 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 the Cisco Application Policy Infrastructure Controller - Enterprise Module (APIC-EM)
 - 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
- Plug and Play 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
- AES-256 support with the powerful MACSEC-256 encryption algorithm is available on hardware
- Trustworthy Systems: Secure Unique Device Identification (SUDI) support for Plug and Play (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 on your network

Supervisor Engine-1 details

Figure 1. Supervisor Engine details



Supervisor Engine-1 chassis and line card support

Table 2 shows the supervisor engine and line card slot assignment options in the Cisco Catalyst 9400 Series chassis.

Table 1. Cisco Catalyst 9400 chassis slot: assignment options

Chassis	Single Supervisor Engine-1 Slot Assignments	Redundant Supervisor Engine-1 Slot Assignments	Line Card Slot Options	Supervisor Engine-1 Minimum Software
Cisco Catalyst C9407R	Slot 3 or 4	Slots 3 or 4	Slots 1, 2, and 5 to 7	Open IOS-XE 16.6.1
Cisco Catalyst C9410R	Slots 5 or 6	Slots 5 or 6	Slots 1 to 4, and 7 to 10	Open IOS-XE 16.6.1

Table 2 summarizes the performance capacities of the Supervisor Engine-1 on a per-chassis basis.

Table 2. Cisco Catalyst 9400 Supervisor Engine-1 bandwidth per slot for different chassis

	Cisco Catalyst C9407R Chassis	Cisco Catalyst 9407R Chassis
Supervisor Engine-1	80 Gbps per slot	80 Gbps per slot

Table 3 summarizes the line card modules supported on Supervisor Engine-1.

Table 3. Cisco Catalyst 9400 Supervisor Engine-1 line card and module support

Line Card	Description	Minimum Software
C9400-LC-48U	Cisco Catalyst 9400 Series 48-Port UPOE 10/100/1000 (RJ-45)	Open IOS-XE 16.6.1
C9400-LC-48T	Cisco Catalyst 9400 Series 48-Port 10/100/1000 (RJ-45)	Open IOS-XE 16.6.1

Predictable performance and scalability

Table 4 highlights the performance and scalability enhancements of the Cisco Catalyst 9400 Supervisor Engine-1.

Table 4. Cisco Catalyst 9400 Supervisor Engine-1 performance and scalability features

Features	Performance and Scalability
Centralized wired capacity	Up to 1.44 Tbps
Per-slot switching Capacity	80 Gbps
Total number of MAC addresses	Up to 64K
Total number of IPv4 routes (ARP plus learned routes)	Up to 112K ¹
FNF entries (v4/v6)	Up to 384K/192K
DRAM	16 GB
Flash	10 GB
VLAN IDs	4096
SSD Capacity	960 GB
Total Switched Virtual Interfaces (SVIs)	4,000
Jumbo frame	9216 bytes
Forwarding Rate	<ul style="list-style-type: none"> • 900 Mpps for IPv4 • 450 Mpps for IPv6
IPv4 Routing Entries	Up to 112K ¹
IPv6 Routing Entries	Up to 56K ²
Multicast Routes	Up to 16K
QoS Hardware Entries	Up to 18K
Security ACL Hardware Entries	Up to 18K
Packet Buffer	96 MB

¹ 48K Direct + 64K Indirect

² 24K Direct + 32K Indirect

SD-Access architecture

Enterprises are embarking on a transformation to digital capabilities for such processes as service delivery and asset management. Cisco SD-Access provides a transformational approach to building and managing networks. It supports faster, easier and improved business efficiency with investment protection. Implementing Cisco SD-Access helps produce real business outcomes. By decoupling network functions from hardware, SD-Access helps you ensure policy compliance, launch new business services faster and improve issue resolution times significantly. It is open, extensible and can significantly reduce your operational expenses.

SD-Access enables policy-based automation from edge to cloud with foundational capabilities including: simplified device deployment, unified management of wired and wireless networks, network virtualization and segmentation, group-based policies and context-based analytics. Having these fundamental features in place, key use cases can now be orchestrated, including:

- User mobility
- Secure segmentation
- User onboarding and policies
- IoT integration
- Guest access
- Context-based troubleshooting
- Data center integration
- Cloud integration

Platform benefits

Cisco Open 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. Various mechanisms employed to bring about the ease of network automation are outlined below based.

- **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 like Plug and Play along with off-the-shelf tools like Zero Touch Provisioning and Pre-boot Execution Environment (PXE) that enable an effortless and automated deployment.
- **API-Driven Configuration:** A modern network switch like the Catalyst 9400 supports a wide range of automation features and provides robust open APIs over Network Configuration Protocol (Netconf) and RESTconf using YANG data models for external tools, both off-the-shelf and custom-built, so you can 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 of a data set in a YANG model. The subscribed data set is streamed to the destination at a configured interval. Additionally, open IOS XE also enables the push model, which provides near real-time monitoring of the network leading to quick detection and rectification of failure situations.

Security

- **Encrypted Traffic Analytics (ETA):** ETA is a unique capability for identifying malware in encrypted traffic 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 networks secure at different layers. Additionally, ETA is able to detect vulnerable implementations in encrypted traffic.
- **Advanced Encryption Standard (AES)-256 MACSEC encryption:** AES is the IEEE 802.1AE standard for authenticating and encrypting packets between switches and endpoints. Catalyst 9400 switches are hardware capable of 256-bit and 128-bit AES on all ports at all speeds providing the most secure link encryption.
- **Trustworthy Systems:** Cisco Trust Anchor Technologies provide a highly secure foundation for Cisco products. With the Catalyst 9400 series, Trust Anchor Technologies enable hardware and software authenticity assurance for supply chain trust and strong mitigation against man-in-the-middle compromise of 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:** Secure Boot 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:** This 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, providing assurance that the product is genuine.

Resiliency and high availability

The Cisco Catalyst 9400 Series is designed for excellent nonstop communications with noninterrupted hardware switching. With Cisco Open IOS-XE Software, you can continue to reap the benefit of this best-in-class resiliency in various ways.

- Cross-Stack EtherChannel provides the ability to configure Cisco EtherChannel technology across different members of the stack for high resiliency.
- 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 Plus (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 autorecovery ("err-disable" recovery) automatically attempts to reactivate a link that is disabled because of a network error.

Flexible Netflow

- **Flexible NetFlow:** Cisco IOS Software FNF is the next generation in flow visibility technology, allowing optimization of the network infrastructure, reducing operational costs, and improving capacity planning and security incident detection with increased flexibility and scalability. The supervisor is capable of up to 384,000 flow entries.

Application visibility and control

- **Advanced Analytics:** Superior Flexible Netflow (FNF) FNF to report application performance and activities within the network to any supported NetFlow collector such as Prime Stealthwatch or any compliant third-party tool.

QoS

- **Superior QoS:** The Cisco Catalyst 9400 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. This includes granular wireless bandwidth management and fair sharing, 802.1p 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

- **Constrained Application Protocol (CoAP)** is an Internet application protocol that enables constrained devices (such as IoT devices with limited processing and storage like smart lights and IP phones) to communicate efficiently with each other and also with the Internet through translation to HTTP. The simple and lean protocol also has multicast support, an important aspect in IoT management.
- **Multicast DNS (mDNS) Gateway.** This service discovery gateway capability facilitates the 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 facilitates a Bring Your Own Device (BYOD) rollout.

Smart operation

- **Bluetooth enabled:** The Catalyst 9400 has the hardware support to connect a Bluetooth dongle to your switch to use this wireless interface as a Management port. This port functions as an IP management interface and can be used to configure and troubleshoot using the WebUI, CLI, and transfer images and configurations.
- **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. WebUI comes with the default image. There is no need to enable anything or install any license on the device. WebUI can be used by customers to build a configuration, monitor and troubleshoot the device without having to know how to use the CLI.
- **Efficient Switch Operation:** Cisco Catalyst 9400 Series switches provide optimum power savings with Energy Efficient Ethernet (EEE) on the RJ45 ports and low power operations for industry best-in-class power management and power consumption capabilities. The ports are capable of reduced power modes so that ports not in use can move into a lower power utilization state. Other efficient switch operation features are:
 - The per-port power consumption command allows you to specify maximum power setting on an individual port.
 - Per-port PoE power sensing measures the actual power being drawn, enabling more intelligent control of powered devices. The PoE MIB provides proactive visibility into power usage and lets you set different power level thresholds.
- **RFID tags:** Catalyst 9400 switches have an embedded RFID tag which facilitates easy asset and inventory management using commercial RFID readers.
- **Blue Beacon:** Catalyst 9400 switches support a blue beacon LED which allows easy identification of the switch being accessed.

High performance IP routing

The Cisco Express Forwarding hardware routing architecture delivers extremely high-performance IP routing in the Cisco Catalyst 9400 Series switches, based on these features:

- IP unicast routing protocols (static, Routing Information Protocol Version 1 [RIPv1], RIPv2, RIPv6, 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 (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 constructing scalable LANs. IPv6 routing using OSPFv3 and EIGRPv6 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.

Power over Ethernet leadership

UPoE: PoE removes the need for wall power to each PoE-enabled device and eliminates the cost for 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. These devices include virtual desktop terminals, IP turrets, compact switches, building management gateways, LED lights, wireless access points and IP phones. Catalyst 9400 supports UPOE, POE+ and POE, thereby addressing the largest range of network power needs.

Packaging

The Catalyst 9400 Series introduces new packaging which includes vastly simplified base Network Packages (Network Essentials, and Network Advantage) and term-based software packages (DNA Essentials, DNA Advantage) as mandatory add on. The DNA packages, in addition to on-box capabilities, also unlock additional functionality in Cisco DNA Center (in APIC-EM) enabling controller-based software-defined automation in your network.

License consumption is further simplified to the following two package combinations

Essentials: This consists of a Perpetual Network Essentials (Embedded in hardware) and a term-based (3, 5, 7 years) DNA Essentials package.

Advantage: This consists of a Perpetual Network Advantage (Embedded in hardware) and a term-based (3, 5, 7 years) DNA Advantage package.

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

Table 5 shows functionalities included in the above-mentioned packages.

Table 5. Catalyst 9400 Series package details

Features	Network Essentials	Network Advantage
Switch Fundamentals STP, Trunking, Private VLAN (PVLAN), Q-in-Q, IPv6, OSPF Routed Access, RIP, Policy-Based Routing (PBR), Virtual Router Redundancy Protocol (VRRP), Internet Group Management Protocol (IGMP), PIM Stub, Weighted Random Early Detection (WRED), Cisco UPOE, First Hop Security (FHS), 802.1X, Control Plane Policing (CoPP)	✓	✓
Advanced Switch Capabilities and Scale BGP, EIGRP, Hot Standby Router Protocol (HSRP), IS-IS, Bootstrap Router (BSR), Multicast Source Discovery Protocol (MSDP), Class-Based Weighted Fair Queuing (CBWFQ)		✓
Management Automation Netconf/Yang, PnP, ZTP/Open PnP	✓	✓
Capacity Planning, Performance Monitoring, and Troubleshooting Streaming Telemetry, Sampled Netflow, SPAN, RSPAN	✓	✓
High Availability & Resiliency GIR		✓
Enhanced Security controls CoPP		✓
IOT Integration COAP		✓

Features	DNA Essentials	DNA Advantage
Add-on for Network Essentials	✓	
Add-on for Network Advantage		✓
Subscription-based (3, 5, 7 yrs) with ongoing Updates	✓	✓
On-box Features		
Flexible Automation Containers, Python, Embedded Event Manager (EEM), Autonomic Networking Infrastructure (ANI)	✓	✓
Advanced Telemetry & Visibility Flexible NetFlow, multicast, CoPP, shared NetFlow policers, NetFlow with EEM, Wireshark	✓	✓
Advanced Telemetry & Visibility Encapsulated Remote SPAN (ERSPAN)		✓
Optimized Network Deployments LISP with Virtual Extensible LAN (VXLAN), Cisco TrustSec® Security Group Tag (SGT) caching, Security Group Access Control List (SGACL), FEW, Dynamic Host Configuration Protocol (DHCP), DNS, mDNS gateway		✓
Comprehensive Security Encrypted Threat Analytics		✓
DNA Center Features		
Day 0 Network Bring-up Automation Cisco Network Plug-n-Play Application, Network Settings, Device Credentials	✓	✓
Element Management Discovery, Inventory, Topology, Software Image, Patch, Licensing, and Configuration Management	✓	✓
Network Monitoring PSIRT Compliance, EoL/EoS Reporting, Telemetry quotient, Client 360, Device 360, Top Talkers/Application Reporting; Syslog/SNMP/Netflow/Streaming Telemetry Collection & Correlation	✓	✓
QoS Configuration and Monitoring EasyQoS Application	✓	✓
Policy-Based Automation SD-Access, Group-Based Policy for Access, App Prioritization, Monitoring, and Path Selection; SD-Access with Integrated Wireless, IoT, Bonjour, Stealthwatch, Firewalls ITSM Integration, 3 rd Party IPAM Integration		✓
Network Assurance and Analytics Regulatory and Config Compliance Application Visibility & Performance Monitoring Network Issue and Trends Visualization and Correlation with Contextual Graphs, Time Machine, and Topology and Site-based Views API and Firehose based data integration with Splunk & ServiceNow Collector for syslog, snmp, netflow, and streaming telemetry		✓

Dimensions, weight, acoustic, mean time between failure

Table 6 shows information on dimensions, weight, acoustic characteristics and Mean Time Between Failure (MTBF).

Table 6. Dimensions, weight, acoustic and MTBF details

Physical specifications	(H x W x D): 1.6 x 14.92 x 14.57 in. (4.06 x 37.90 x 37.00 cm) Weight: 10 lbs (4.5 kg)
Operating temperature	Normal Operating* Temperature and Altitudes: <ul style="list-style-type: none"> • 27° to 109°F (-5 to +45°C), up to 6,000 feet (1800 m) • 27° 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: <ul style="list-style-type: none"> • 27° to 119°F (-5 to +55°C), up to 6,000 feet (1800 m) • 27° to 114°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 operating and nonoperating noncondensing	10 to 95 percent, noncondensing
Altitude	-60 to 3000m
MTBF	302,000 hours

Supported pluggables

For details about the different optical modules and the minimum Cisco IOS Software release required for each of the supported optical modules, visit: <http://www.cisco.com/c/en/us/support/interfaces-modules/transceiver-modules/products-device-support-tables-list.html>.

Management and standards support

Table 7 shows management and standards support for the Cisco Catalyst 9400 Series.

Table 7. Management and standards support for the Cisco Catalyst 9400 Series

Description	Specification	
Management	BRIDGE-MIB	CISCO-SNMP-TARGET-EXT-MIB
	CISCO-AUTH-FRAMEWORK-MIB	CISCO-MEMORY-POOL-MIB
	CISCO-BULK-FILE-MIB	CISCO-STP-EXTENSIONS-MIB
	CISCO-CABLE-DIAG-MIB	CISCO-SYSLOG-MIB
	CISCO-CALLHOME-MIB	CISCO-TCP-MIB
	CISCO-CEF-MIB	CISCO-UDLD-MIB
	CISCO-CIRCUIT-INTERFACE-MIB	CISCO-VLAN-IFTABLE-RELATIONSHIP-MIB
	CISCO-ENTITY-VENDORTYPE-OID-MIB	CISCO-VLAN-MEMBERSHIP-MIB
	CISCO-CONTEXT-MAPPING-MIB	CISCO-VTP-MIB
	CISCO-DEVICE-LOCATION-MIB	EtherLike-MIB
	CISCO-DHCP-SNOOPING-MIB	HC-RMON-MIB
	CISCO-EIGRP-MIB	IEEE8021-PAE-MIB
	CISCO-EMBEDDED-EVENT-MGR-MIB	IEEE8023-LAG-MIB
	CISCO-ENTITY-FRU-CONTROL-MIB	IF-MIB
	CISCO-ENTITY-SENSOR-MIB	IGMP-MIB
	ENTITY-MIB	IP-FORWARD-MIB
	CISCO-ERR-DISABLE-MIB	IP-MIB
	CISCO-CONFIG-COPY-MIB	IPMROUTE-STD-MIB
	CISCO-FTP-CLIENT-MIB	LLDP-EXT-MED-MIB
	CISCO-HSRP-EXT-MIB	LLDP-MIB
	CISCO-HSRP-MIB	NOTIFICATION-LOG-MIB
	CISCO-IETF-ISIS-MIB	OLD-CISCO-MEMORY-MIB

Description	Specification
	CISCO-IF-EXTENSION-MIB CISCO-IGMP-FILTER-MIB CISCO-CONFIG-MAN-MIB CISCO-IP-CBR-METRICS-MIB CISCO-IPMROUTE-MIB CISCO-IP-STAT-MIB CISCO-IP-URPF-MIB CISCO-L2L3-INTERFACE-CONFIG-MIB CISCO-LAG-MIB CISCO-LICENSE-MGMT-MIB CISCO-MAC-AUTH-BYPASS-MIB CISCO-MAC-NOTIFICATION-MIB CISCO-MDI-METRICS-MIB CISCO-FLASH-MIB CISCO-OSPF-MIB CISCO-OSPF-TRAP-MIB CISCO-PAE-MIB CISCO-PAGP-MIB CISCO-PIM-MIB CISCO-PING-MIB CISCO-PORT-QOS-MIB CISCO-PORT-SECURITY-MIB CISCO-PORT-STORM-CONTROL-MIB CISCO-POWER-ETHERNET-EXT-MIB CISCO-PRIVATE-VLAN-MIB CISCO-PROCESS-MIB CISCO-PRODUCTS-MIB CISCO-RF-MIB CISCO-RTP-METRICS-MIB CISCO-RTTMON-MIB CISCO-SMART-INSTALL-MIB CISCO-CDP-MIB POWER-ETHERNET-MIB RMON2-MIB RMON-MIB SNMP-COMMUNITY-MIB SNMP-FRAMEWORK-MIB SNMP-MPD-MIB SNMP-NOTIFICATION-MIB SNMP-PROXY-MIB SNMP-TARGET-MIB SNMP-USM-MIB SNMPv2-MIB SNMP-VIEW-BASED-ACM-MIB TCP-MIB UDP-MIB CISCO-IMAGE-MIB
Standards	Ethernet: IEEE 802.3 10 Gigabit Ethernet: IEEE 802.3ae IEEE 802.1D Spanning Tree Protocol IEEE 802.1w Rapid Reconfiguration of Spanning Tree IEEE 802.1s Multiple VLAN Instances of Spanning Tree IEEE 802.3ad LACP IEEE 802.1p CoS Prioritization IEEE 802.1Q VLAN IEEE 802.1X User Authentication RMON I and II standards SNMPv1, SNMPv2c, and SNMPv3

Power consumption of supervisor Engine-1

Active supervisor power: Max Power (700W)

Standby supervisor power: Max Power (700W)

This result is not indicative of the actual power draw during operation. It is the absolute maximum value recommended for facility power, system configuration and cooling capacity planning. Typical power draw is about 40%-75% maximum rated power value shown.

Safety and compliance

Table 8. Safety and compliance information for Cisco Catalyst 9400 Series

Description	Specification
Safety certifications	<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
Electromagnetic emissions certifications	<ul style="list-style-type: none"> • 47 CFR Part 15 • CISPR22 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 • CISPR24 • EN 300 386 • EN55024 • TCVN 7317
Environmental	Reduction of Hazardous Substances (ROHS) 5

Cisco enhanced limited lifetime hardware 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 <http://www.cisco.com/go/warranty>. Table 9 provides information about the E-LLW.

Table 9. 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).

	Cisco E-LLW
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.

Cisco services for next-generation Cisco Catalyst Switches

Achieve infrastructure excellence faster and with less risk. Cisco Catalyst gK Services provide expert guidance to help you successfully deploy, manage and support the new Catalyst gK 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 DNA-ready infrastructure. Learn more about [Cisco Services for Enterprise Networks](#).

Software policy for Cisco Catalyst 9400 Series Switches

Software policy for Network Stack components

Customers with Network Essential Stack and Network Advantage Stack software feature sets will be 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 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 DNA Essentials and 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.

Ordering information

Table 10 contains ordering information for the Cisco Catalyst 9400 Series.

Table 10. Cisco Catalyst 9400 Series ordering information

Product Number	Description
C9400-SUP-1(=)	Cisco Catalyst 9400 Series Supervisor 1 Module
C9400-SUP-1/2	Cisco Catalyst 9400 Series Redundant Supervisor 1 Module
C9400-SSD-240GB	Cisco Catalyst 9400 Series 240GB M2 SATA memory (Supervisor)
C9400-SSD-480GB	Cisco Catalyst 9400 Series 480GB M2 SATA memory (Supervisor)
C9400-SSD-960GB	Cisco Catalyst 9400 Series 960GB M2 SATA memory (Supervisor)
C9400-DNA-E	Catalyst 9400 DNA Essentials Term license
C9400-DNA-E-3Y	Catalyst 9400 DNA Essentials 3 Year Term license
C9400-DNA-E-5Y	Catalyst 9400 DNA Essentials 5 Year Term license
C9400-DNA-E-7Y	Catalyst 9400 DNA Essentials 7 Year Term license
C9400-DNA-A	Catalyst 9400 DNA Advantage Term license

Product Number	Description
C9400-DNA-A-3Y	Catalyst 9400 DNA Advantage 3 Year Term license
C9400-DNA-A-5Y	Catalyst 9400 DNA Advantage 5 Year Term license
C9400-DNA-A-7Y	Catalyst 9400 DNA Advantage 7 Year Term license
C9400-NW-E	Cisco Catalyst 9400 Network Essential License
C9400-NW-A	Cisco Catalyst 9400 Network Advantage License

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