Cisco Nexus 9500 Switches

Product Overview

Organizations everywhere recognize that changing application environments are creating new demands for the IT infrastructure that supports them. Application workloads are deployed across a mix of virtualized and nonvirtualized server and storage infrastructure, requiring a network infrastructure that provides consistent connectivity, security, and visibility across a range of bare-metal, virtualized, and cloud computing environments:

- Application instances are created dynamically. As a result, the provisioning, modification, and removal of application network connectivity needs to be dynamic as well.
- Business units demand accelerated application deployments. IT departments have to provide shared IT infrastructure to address time-to-market needs and to increase their return on investment (ROI).
- With organizations deploying a mix of custom, open source, and off-the-shelf commercial applications, IT departments must manage both security and quality of service (QoS) for environments that support multitenancy.
- Applications have been transitioning over time to a less monolithic, scale-out, multinode model. IT infrastructure that supports this model must scale with the speed of business and support both 10 and 40 Gigabit Ethernet connectivity.

Figure 1.   Cisco Nexus 9508 Switch

The Cisco Nexus® 9000 Series Switches include both modular and fixed-port switches that are designed to overcome these challenges with a flexible, agile, low-cost, application centric infrastructure.

The Cisco Nexus 9508 Switch (Figure 1) is the first modular chassis-based switch in the Cisco Nexus 9500 platform. The Cisco Nexus 9508 is a modular, 8-slot, 13-rack-unit (13RU), Layer 2 and 3 nonblocking Ethernet and Fibre Channel over Ethernet (FCoE)-capable switch. With more than 30 terabits per second (Tbps) of backplane bandwidth, the switch supports 1, 10, 40, and future 100 Gigabit Ethernet interfaces through a comprehensive selection of modular line cards. Configurable with up to 1152 10 Gigabit Ethernet or 288 40 Gigabit Ethernet ports, the switch provides sufficient capacity for both access- and aggregation-layer deployments.

Cisco provides two modes of operation for the Cisco Nexus 9000 Series. Organizations can use Cisco® NX-OS Software to deploy the Cisco Nexus 9000 Series in standard Cisco Nexus switch environments. Organizations also can use the application centric infrastructure (ACI)-ready hardware infrastructure to take full advantage of an automated, policy-based, systems management approach.

Cisco Nexus 9508 Switch Features and Benefits

The Cisco Nexus 9508 is a modular chassis that supports up to eight line cards, two supervisor modules, two chassis controllers, three fan trays, six fabric modules, and eight power supplies. The switch supports comprehensive Layer 2 and 3 functions on nonblocking 1, 10, and 40 Gigabit Ethernet ports. The Cisco Nexus 9500 platform is FCoE capable and ready for 100 Gigabit Ethernet interfaces as they become available (Table 1).

Table 1. Cisco Nexus 9508 Switch Features and Benefits

Capability	Benefit
Predictable high performance	The switch delivers 30 Tbps of nonblocking performance with latency of less than 5 microseconds, enabling data center customers to build a robust network fabric that can scale from as few as 200 10 Gigabit Ethernet server ports to more than 200,000 10 Gigabit Ethernet server ports.
Nonblocking, high- density 1 and 10 Gigabit Ethernet configuration	The Cisco Nexus 9500 platform helps organizations transition from existing 1 Gigabit Ethernet Cisco Catalyst® 6500 Series Switches server access designs to 10 Gigabit Ethernet server access designs with the same port density.
Nonblocking, high-density 10 and 40 Gigabit Ethernet configuration	The Cisco Nexus 9000 Series helps organizations transition from 1 and 10 Gigabit Ethernet infrastructure to 10 and 40 Gigabit Ethernet infrastructure to support the increased bandwidth demands of scale-out, multinode application environments.
Advanced optics	Cisco offers a pluggable 40 Gigabit Ethernet QSFP+ bidirectional transceiver that enables customers to use existing 10 Gigabit Ethernet data center cabling to support 40 Gigabit Ethernet connectivity. This technology facilitates adoption of 40 Gigabit Ethernet with no cable infrastructure upgrade costs.
Highly available, scalable, and robust solution	All major components are redundant, including supervisors, system controllers, power supplies, and fan trays. The switch line cards use a mix of merchant and Cisco application-specific integrated circuits (ASICs) to produce a low-complexity, low-cost design. All buffer memory is integrated into the forwarding ASICs, avoiding the need for a large number of external memory modules. All transceivers are pluggable to support the highest possible mean time between failure (MTBF) for the switch.
Chassis designed for 2 to 3 future generations of line cards	The flexible and efficient chassis design has 100% headroom for future expansion with the capability to support more bandwidth and cooling and twice the number of power supplies needed to support today's maximum configuration.
Power efficiency	The Cisco Nexus 9500 platform is the first switch chassis designed without a midplane. Line cards and fabric modules connect directly. This design approach provides optimal front-to-back airflow and helps the switch operate using less power. In addition, all Cisco Nexus 9000 Series power supplies are 80 Plus Platinum rated. The typical power consumption per 10 Gigabit Ethernet port is less than 3.5 watts (W). The typical power consumption of each 40 Gigabit Ethernet port is less than 14W.

Cisco Nexus 9508 Switch Components

The Cisco Nexus 9508 is built using the components illustrated in Figure 2 and described in the following sections.

Figure 2. Cisco 9500 Platform Components
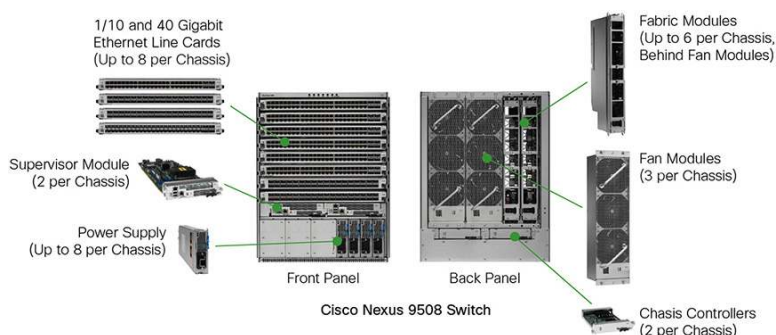
Cisco Nexus 9500 Platform Line Cards

The Cisco Nexus 9508 supports a variety of line cards, all of which can be configured in any combination (Table 2).

Table 2. The Three Line Cards Can Be Configured in Any Combination

40 Gigabit Ethernet line card	• 36-port 40 Gigabit Ethernet QSFP+ line card
	• Nonblocking
	• Designed for use in an aggregation switch role
	• Cannot be upgraded to ACI mode
1 and 10 Gigabit Ethernet access layer and 10 and 40 Gigabit Ethernet aggregation layer line card	• 48-port 1 and 10 Gigabit Ethernet SFP+ with 4-port 40 Gigabit Ethernet QSFP+ line card
	• Designed for use with Cisco Nexus 2000 Series Fabric Extenders and for mixed 10 and 40 Gigabit Ethernet aggregation
	• Supports both direct-attach 10 Gigabit Ethernet copper cabling and optical transceivers
	• Offers 4 QFSP+ ports that provide 40 Gigabit Ethernet server access, uplink, and downlink capacity
	• Can be used in ACI leaf configurations
1 and 10 Gigabit Ethernet access layer and 10 and 40 Gigabit Ethernet aggregation layer line card	• 48-port 1 and 10GBASE-T plus 4-port 40 Gigabit Ethernet QSFP+ line card
	• Designed for end-of row (EoR) and middle-of-row (MoR) environments
	• Supports 100 Megabit Ethernet, 1 Gigabit Ethernet, and 10GBASE-T copper cabling connectivity for server access
	• Offers 4 QFSP+ ports that provide 40 Gigabit Ethernet server access, uplink, and downlink capacity
	• Can be used in ACI leaf configurations

Cisco Nexus 9500 Platform Fabric Modules

The Cisco Nexus 9500 platform internally uses a clos fabric design that interconnects the line cards with rear-mounted fabric modules. The Cisco Nexus 9508 supports up to six fabric modules, each of which provides 5.12-Tbps line-rate packet forwarding capacity. All fabric cards are directly connected to all line cards. With load balancing across fabric cards, the architecture achieves optimal bandwidth distribution within the chassis. Customers need only three fabric modules when using the ACI-ready line cards. When customers use the 36-port 40 Gigabit Ethernet nonblocking line card, six fabric cards are required.

Cisco Nexus 9500 Platform Supervisor Module

A pair of redundant supervisor modules manages all switch operations using a state-synchronized active-standby model. Each supervisor module includes a quad-core CPU, 16 GB of RAM, and a 64-GB solid-state drive (SSD) for bootup and analytics information. The supervisor accepts an external clock and supports management through various ports including two USB ports, a serial console, and a 10/100/1000-Mbps network port.

Cisco Nexus 9500 Platform System Controller

A pair of redundant system controllers offloads chassis management functions from the supervisor modules. It is responsible for managing power supplies and fan trays and is a central point for the Gigabit Ethernet out-of-band channel (EOBC) between the supervisors, fabric modules, and line cards.

Cisco Nexus 9500 Platform Power Supply

The Cisco Nexus 9508 supports up to eight hot-swappable, front-panel-accessible power supplies. A fully loaded chassis can operate with two 3000W AC power supplies. N+1 and N+N redundancy modes are supported. The 3000W AC power supply is 80 Plus Platinum rated, providing more than 90 percent efficiency across typical workloads.

The additional four power supply slots are not needed with existing line cards but offer headroom to support higher-bandwidth line cards in the future.

Cisco Nexus 9500 Platform Fan Trays

Three hot-swappable fan trays support front-to-back cooling. Each fan tray covers two fabric modules and can be removed to access them.

Deployment Scenarios

The Cisco Nexus 9508 is a versatile data center switching platform that can operate as an EoR access-layer switch deployed with or without Cisco fabric extender technology, as an aggregation-layer switch in a traditional hierarchical network architecture, and as a leaf or a spine switch in a horizontally scaled leaf-and-spine architecture.
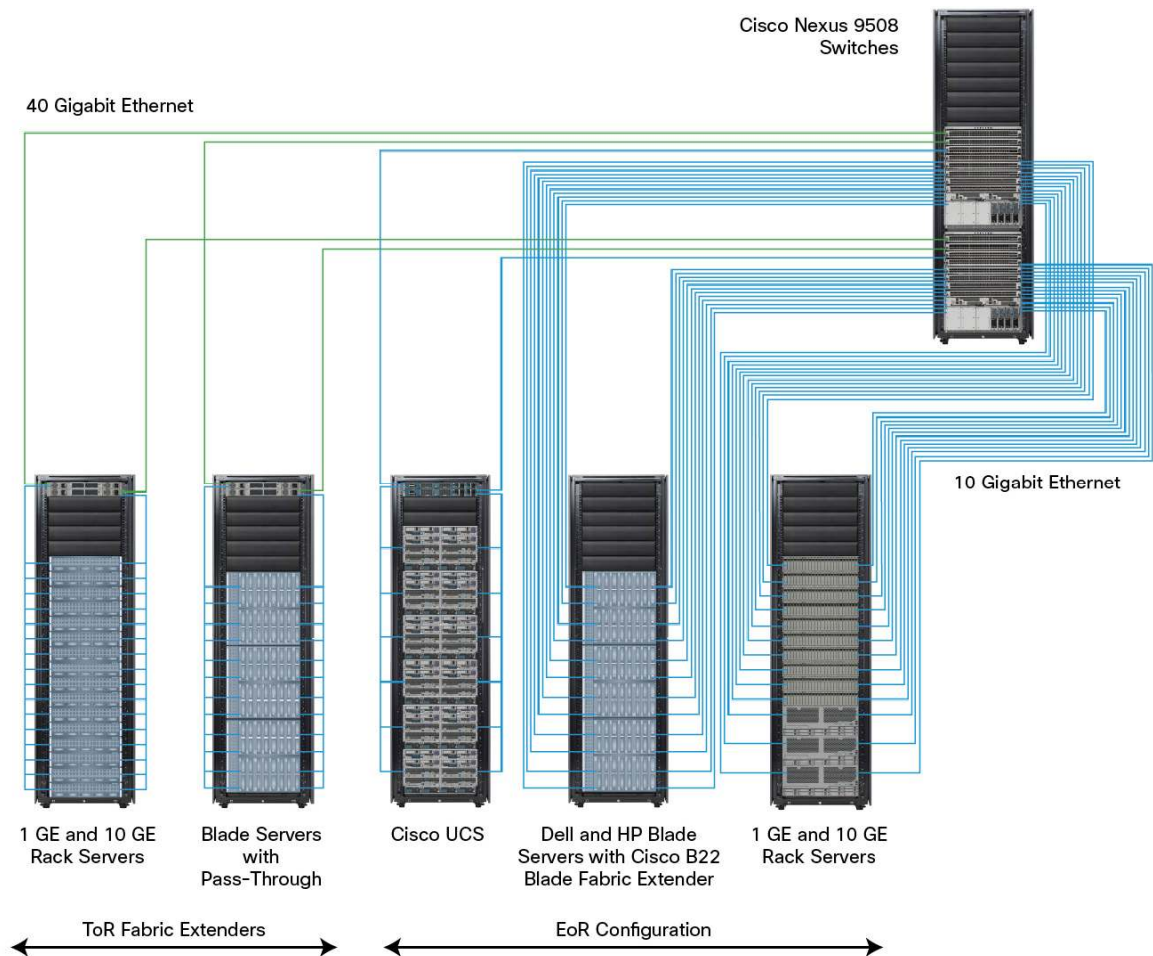
End-of-Row Access-Layer Switch

The Cisco Nexus 9508 can be configured as an EoR access-layer switch (Figure 2). It can connect to almost any blade or rack server through 100 Megabit Ethernet, 1 Gigabit Ethernet, and 10 Gigabit Ethernet connections including the following:

- Third-party and standalone Cisco Unified Computing System™ (Cisco UCS®) rack servers
- Third-party blade server chassis with chassis-resident switches or pass-through devices
- Cisco UCS

The switch provides an easy upgrade path from the Cisco Catalyst 6500 Series, bringing the features, reliability, scalability, and availability of Cisco NX-OS Software platforms to existing EoR configurations. With its capability to support 100 Megabit Ethernet, 1 Gigabit Ethernet, and 10 Gigabit Ethernet copper connectivity, the switch supports the transition from 1 to 10 Gigabit Ethernet one server or rack at a time.

Equipped with eight 48-port 1 and 10GBASE-T line cards, each Cisco Nexus 9508 can service up to 384 servers, with thirty-two 40 Gigabit Ethernet uplinks available for server access or uplinks to the aggregation tier.

Figure 3.   Cisco Nexus 9508 As an EoR Access-Layer Switch with and without Cisco Fabric Extender Technology

Collapsed Access and Aggregation Layers

Figure 4 shows how the Cisco Nexus 9500 platform can combine with Cisco Nexus 2000 Series Fabric Extenders to establish a centrally managed yet physically distributed access-layer switch serving both access and aggregation functions. Although each fabric extender resides physically at the top of each rack or within each blade server chassis, each device is treated as a remote line card of the Cisco Nexus 9500 platform chassis, yielding massive scalability through flexible bandwidth oversubscription but with only a single point of management.

Figure 4.   Collapsed Access and Aggregation Layers with Cisco Fabric Extenders
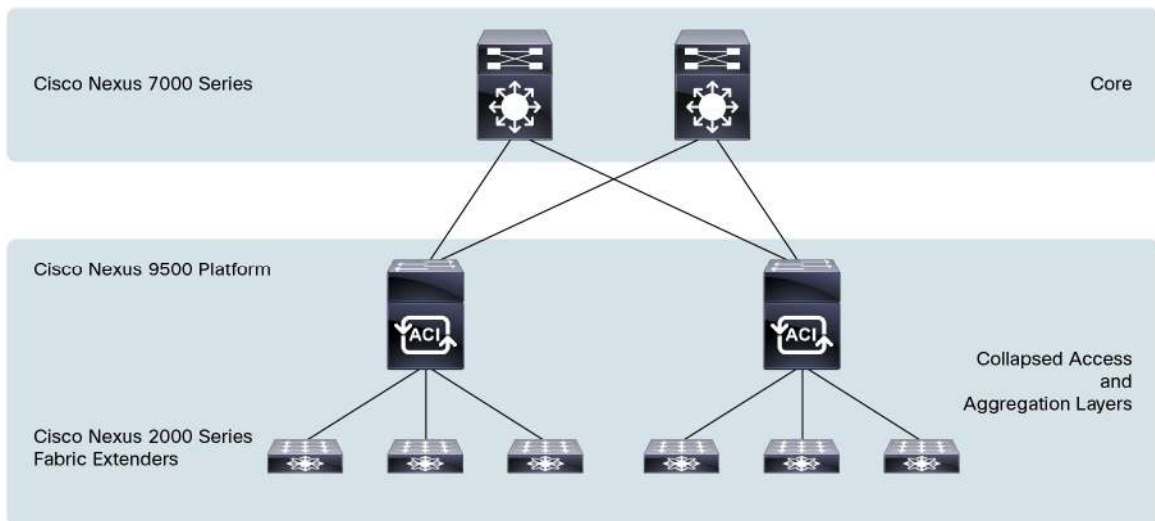

Aggregation-Layer Switch

The Cisco Nexus 9508 can act as an aggregation layer switch in traditional hierarchical architectures (Figure 5). Because the Cisco Nexus 9500 platforms can host 10, 40, and future 100 Gigabit Ethernet interfaces, organizations have immense flexibility to build new infrastructure based on the switch, as well as the capability to use the switch as a slide-in replacement with increased bandwidth and functions - all using the existing copper and optical cable:

- Uplinks: 40 and future 100 Gigabit Ethernet-to-core switching layer connectivity is essential, and the migration path offered by the Cisco Nexus 9500 platform prepares data center networks for future capacity growth.
- Downlinks: 10 Gigabit Ethernet connectivity to existing Cisco and third-party switches allows the switch to use existing infrastructure and integrate with top-of-row (ToR), EoR, or MoR access-layer switches. 40 Gigabit Ethernet capability pairs the Cisco Nexus 9500 platform in the aggregation layer with 40 Gigabit Ethernet uplink ports on the Cisco Nexus 9300 platform switches with fixed access ports. The capability to use 40-Gbps of connectivity on existing fiber pairs dramatically simplifies the move to greater per-rack bandwidth without the cost and complexity of upgrading the data center cable plant.

Figure 5. Cisco Nexus 9508 As an Aggregation-Layer Switch
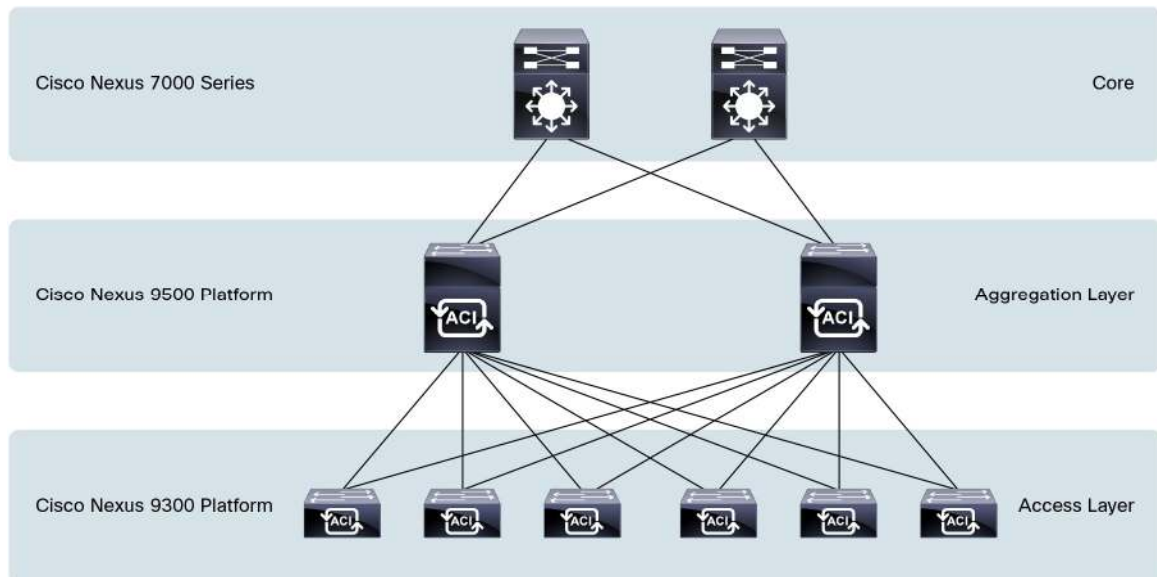
Leaf-and-Spine Architecture

The Cisco Nexus 9508 can serve equally as a leaf or a spine in these architectures (Figure 6). The Layer 3 capabilities established by both the Cisco Nexus 9500 and 9300 platforms enable the two to be used with Equal-Cost Multipath (ECMP) routing to accelerate the flow of traffic and reduce reconvergence time in the event of a failure.The degree of redundancy in leaf-and-spine architecture delivers increased availability with a high level of flexibility in workload placement.

Figure 6. Cisco Nexus 9508 in a Leaf-and-Spine Architecture
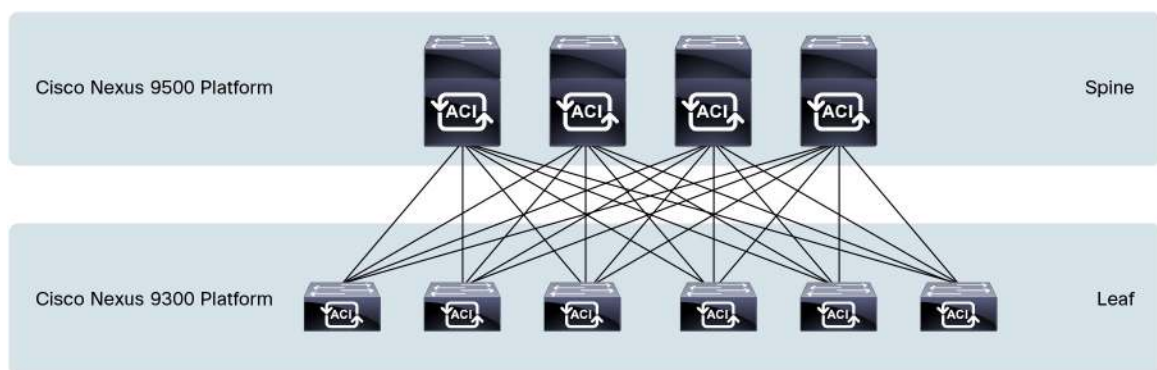
Cisco NX-OS Software Overview

Cisco NX-OS is a data center purpose-built operating system designed for performance, resiliency, scalability, manageability, and programmability at its foundation. Cisco NX-OS provides a robust and comprehensive feature set that meets the demanding requirements of virtualization and automation in present and future data centers.

The Cisco Nexus 9000 Series uses an enhanced version of Cisco NX-OS Software with a single binary image that supports every switch in the series, simplifying image management. The operating system is modular, with a dedicated process for each routing protocol, a design that isolates faults while increasing availability. In the event of a process failure, the process can be restarted without losing state. The operating system supports In-Service Software Upgrade (ISSU), hot and cold patching, and online diagnostics. In the event of a supervisor module failure, the software supports stateful switchover with continuous availability.

Main switch features include the following:

- Power-On Auto Provisioning (POAP) automates the process of upgrading software images and installing configuration files on Cisco Nexus switches that are being deployed in the network for the first time.
- Intelligent Application Programming Interface (NX-API) provides operators with a way to manage the switch through remote procedure calls (RPCs; JavaScript Object Notation [JSON] or XML) over HTTP/HTTPS infrastructure.
- Linux shell access enables the switch to be configured through Linux shell scripts, helping automate the configuration of multiple switches and helping ensure consistency among multiple switches.
- Full ISSU and patching allows Cisco NX-OS to be upgraded and patched without any interruption in switch operations.
- Line-rate overlay support provides Virtual Extensible LAN (VXLAN) bridging and routing at full line rate, facilitating and accelerating communication between virtual and physical servers as well as between multiple data centers in a campus environment.

Cisco NX-OS Features and Benefits

The software packaging for the Cisco Nexus 9000 Series offers flexibility and a comprehensive feature set while being consistent with Cisco Nexus access switches. The default system software has a comprehensive Layer 2 security and management feature set and base level Layer 3 feature set. To enable advanced Layer 3 IP Unicast and IP Multicast routing functions, you must install additional licenses. Table 3 lists the software packaging and licensing available to enable advanced features.

Table 3.   Software Packaging and Licensing

Packaging	Chassis Based	Part Number	Supported Features
Cisco Nexus 9500 Enhanced Layer 3 license	Chassis	N95-LAN1K9	Enhanced Layer 3 features, including full OSPF, Enhanced Interior Gateway Routing Protocol (EIGRP), Border Gateway Protocol (BGP)
Cisco Data Center Network Management (DCNM) license	Chassis	DCNM-LAN-N95-K9	Cisco DCNM license for Cisco Nexus 9500 platform

Software Requirements

The Cisco Nexus 9508 supports Cisco NX-OS Software Release 6.1 and later. Cisco NX-OS interoperates with any networking operating system, including Cisco IOS® Software, that conforms to the networking standards described in this data sheet.

The Cisco Nexus 9000 Series runs Cisco NX-OS on a 64-bit Linux kernel (Release 3.4.10) with a single binary image that supports both modular (Cisco Nexus 9500 platform) and fixed-port (Cisco Nexus 9300 platform) switches. The software image is based on Cisco NX-OS Software Release 6.1(2). The single image incorporates both the Linux kernel and Cisco NX-OS so that the switch can be booted through a standard Linux kickstart process.

Specifications

Table 4 lists the specifications for the Cisco Nexus 9508. (Please check software release notes for feature support information.)

Table 4.   Product Specifications: Performance and Scalability

Item	Cisco Nexus 9500 Platform
Maximum number of longest prefix match (LPM) routes	128,000
Maximum number of IP host entries	88,000
Maximum number of MAC address entries	160,000
Number of multicast routes	• 8000 to 32,000 (without virtual Port Channel [vPC]) • 4000 to 32,000 (with vPC)
Number of Interior Gateway Management Protocol (IGMP) snooping groups	• 8000 to 32,000 (without virtual Port Channel [vPC]) • 4000 to 32,000 (with vPC)
Maximum number of Cisco Nexus 2000 Series Fabric Extenders per switch	32
Number of access control list (ACL) entries	• 5,000 to 60,000 egress • 1,500 to 18,000 ingress
Maximum number of VLANs	4096
Maximum number of Virtual Routing and Forwarding (VRF) instances	1000
Maximum number of links in a PortChannel	32
Maximum number of ECMP paths	64
Maximum number of PortChannels	528
Number of active Switched Port Analyzer (SPAN) sessions	4 to 32
Maximum number of Rapid per-VLAN Spanning Tree (RPVST) instances	507
Maximum number of Hot Standby Router Protocol (HSRP) groups	490
Maximum number of Multiple Spanning Tree (MST) instances	64
Maximum number of tunnel endpoints (VTEP) and VXLAN physical servers (per VLAN)	10,000

Features

This section summarizes the Cisco Nexus 9500 platform features.

Layer 2 Features
VLANs • 4096 • Reserved range remapping Private VLANs (PVLANs)[*] • Isolated ports and promiscuous ports • PVLAN on PortChannels and vPCs PVLANs: Fabric extenders[*] • Isolated ports vPC Spanning Tree Protocol • IEEE 802.1w Rapid Spanning Tree (Rapid PVST+) • IEEE 802.1s Multiple Spanning Tree (MST) • Edge port and edge port trunk • Extensions: Bridge Protocol Data Unit (BPDU) guard, BPDU filtering, bridge assurance, loop guard, and root guard VLAN Trunk Protocol (VTP) Versions 1 and 2 (v1 and v2): Transparent mode MAC addresses: Static • Unicast and multicast IEEE 802.3x Flow Control

IEEE 802.1AB Link Layer Discovery Protocol (LLDP)

User-configurable interface maximum transmission unit (MTU) and jumbo frames

Automatic medium-dependent-interface crossover (auto-MDIX)

Unidirectional Link Detection (UDLD)

Layer 3 Features

IPv4
- Static routes
- BGP, EIGRP, OSPFv2, and Intermediate System to Intermediate System (ISIS)
- VRF-Lite and VRF route leaking
- HSRPv1 and v2
- Virtual Router Redundancy Protocol (VRRP)
- Bidirectional Forwarding Detection (BFD)
- Dynamic Host Configuration Protocol (DHCP) relay

IPv6
- Static routes
- BGP and OSPFv3
- VRF-Lite and VRF route leaking
- HSRPv6
- VRRPv3
- DHCP relay

BGP enhancements
- **disable-peer-as-check**: Routes learned from one node in one autonomous system (**as**) will be advertised to another node in the same autonomous system.
- **allow-as in**: Allow routes having their own autonomous systems in the autonomous system path (**as-path**) to be installed in the BGP routing information base (BRIB).
- **best-as-path-relax**: Allow paths received from different autonomous systems to be handled as multipath if their **as-path** lengths are the same and other multipath conditions are met.
- **best-as-path-relax**: Allow paths received from different autonomous systems to be handled as multipath if their **as-path** lengths are the same and other multipath conditions are met.
- **transport connection-mode passive**: Allow a passive connection setup only.
- **remove private-as enhancements [no | default]: remove-private-as [all] [replace-as]**
- MD5 authentication for prefix-based neighbors: Allow authentication for prefix-based neighbors.
- E-BGP next-hop is unchanged.
- IPv6 route updates over IPv4 peering.
- E-BGP scales to 1000 peers with BFD.

64-way ECMP

User-configurable MAC addresses (16) on routed interfaces

Multicast Features

IGMPv1, v2, and v3

IGMP snooping

Protocol-Independent Multicast (PIM) sparse mode (PIM-SM) and Any Source Multicast (ASM)

Anycast Routing Protocol (Anycast RP)

Multicast Source Discovery Protocol (MSDP)

Availability Features

Single binary image across Nexus 9300 and Nexus 9500 switches

Fault isolation per process

ISSU

Process patching

Stateless process restart

Stateful supervisor switchover

Online insertion and removal (OIR) of modules without disruption of traffic

Comprehensive Monitoring Features

Cisco Generic Online Diagnostics (GOLD)
- Minimum, complete, bypass, on-demand, and health checks

Onboard fault logging (OBFL)

Cisco Embedded Event Manager (EEM): Scheduler, monitor, and event manager

Integrated packet capture and analysis with Wireshark

Default SSD (chassis supervisor and ToR) for logging and data capture

SPAN
- Source and destination on switch

ERSPAN
- Source on switch and fabric extender
- Ingress ACL filtering

Virtualization Support Features

VXLAN gateway[*]

VXLAN bridging[*]

VXLAN routing[*]

Security Features

Ingress and egress ACLs using Layer 2, 3, and 4 fields
- Extended ACLs, MAC addresses, port ACL (PACL), VLAN ACL (VACL), and routed ACL (RACL)
- Flexible ACL carving

ACL counters

Storm control
- Broadcast, multicast, and unknown unicast

User-configurable Control-Plane Policing (CoPP)

Authentication, authorization, and accounting (AAA)
- Challenge Handshake Authentication Protocol (CHAP), Password Authentication Protocol (PAP), Microsoft MS-CHAP, and MS-CHAPv2
- Capability to disable role-based access control (RBAC) and use AAA server authentication
- RBAC integration to replace privilege levels
- Logging
- Test parameters
- VRF context support
- LDAP support

RADIUS

RBAC

TACACS+

Interface Types

Layer 2 switch port
- Access and trunk (VLAN list and native VLAN tagged and untagged)

Layer 3 routed

Loopback interface

Switched virtual interface (SVI)

PortChannel
- Static mode
- IEEE 802.3ad LACP
- Load balancing
- Member link ping
- Minimum number of links

Fabric extender port

QoS Features
Up to 4 queues per port
Modular QoS command-line interface (CLI; MQC)
ACL-based classification
Queuing
• Strict priority and strict priority fabric extender
• Weighted Round-Robin (WRR) and WRR fabric extender
Marking and classification
• Differentiated services code point (DSCP) on switch
• Class of service (CoS)
• CoS preservation for Remote Direct Memory Access (RDMA) over Converged Enhanced Ethernet (RoCEE)
Policing
• Ingress
Explicit congestion notification (ECN)
Weighted Random Early Detection (WRED)
Priority flow control (PFC) support for up to 3 PFC classes

Device Management Features
POAP
Configuration rollback
Configuration session manager
FTP, SFTP, and TFTP client
Network Time Protocol (NTP)
• Client, peer, server, ACL, and authentication
Remote copy (RCP) and secure copy (SCP) client
Remote monitor (RMON)
Cisco Smart Call Home
Simple Network Management Protocol (SNMP) v1, v2, and v3
Syslog
Virtual terminal (vty)
XML (Netconf)
Secure Shell (SSH) v2 (client and server)
Telnet (client and server)
USB port
100/1000-Gbps management port
RS-232 serial console port
Support for copy <file> start
Locator LED (beacon) for line cards (chassis) and uplink modules (ToR)
Supported in Cisco DCNM LAN and Cisco Prime™ Infrastructure
Supported in Cisco networking plug-in for OpenStack

Extensibility and Programmability Features
Linux tools
• Bash shell access
• Broadcom shell access
Python shell
NX-API
Extensible Messaging and Presence Protocol (XMPP) client[*]

Standards Compliance
IEEE 802.1D Bridging and Spanning Tree
IEEE 802.1p QoS/CoS
IEEE 802.1Q VLAN Tagging
IEEE 802.1w Rapid Spanning Tree
IEEE 802.1s Multiple Spanning Tree Protocol
IEEE 802.1AB Link Layer Discovery Protocol
IEEE 802.3ad Link Aggregation with LACP

IEEE 802.3x Flow Control	
IEEE 802.3ab 1000BASE-T	
IEEE 802.3z Gigabit Ethernet	
IEEE 802.3ae 10 Gigabit Ethernet	
IEEE 802.3ba 40 Gigabit Ethernet	
RFC 2460 IPv6	
RFC 2461 Neighbor Discovery for IPv6	
RFC 2462 IPv6 Stateless Address Autoconfiguration	
RFC 2463 ICMPv6	
SNMP MIBs	
Cisco NX-OS Software Release 6.2 equivalent	

Power Supply

Table 5 lists the power supply properties of the Cisco Nexus 9508.

Table 5. Power Supply Properties

AC Power Supply Properties	Cisco Nexus 9508
Power	3000W AC
Input voltage	200 to 240 VAC
Frequency	50 to 60 Hz
Efficiency	90% or greater (20 to 100% load)
RoHS compliance	Yes
Hot swappable	Yes
Front-to-back airflow power supply	Yes

Environment

Table 6 lists the environmental properties of the Cisco Nexus 9508.

Table 6. Environmental Properties

Property	Cisco Nexus 9508
Physical (H x W x D)	22.7 x 17.5 x 30.0 in. (57.78 x 44.5 x 76.2 cm)
Operating temperature	32 to 104℉ (0 to 40℃)
Nonoperating (storage) temperature	-40 to 158℉ (-40 to 70℃)
Humidity	5 to 95% (noncondensing)
Altitude	0 to 13,123 ft (0 to 4000m)

Weight and Typical Power

Table 7 lists the weight and typical power consumption of the Cisco Nexus 9508.

Table 7. Weight and Power Consumption

Component	Weight	Typical Power	Maximum Power
Cisco Nexus 9508 chassis without power supplies, fan trays, fabric modules, supervisor, system controllers, or line cards	150 lb (68.2 kg)	NA	NA
Cisco Nexus 3000W AC power supply (8 maximum)	6.16 lb (2.8 kg)	NA	NA
Fan trays (3 maximum)	8.25 lb (3.7 kg)	176W	250W
Fabric modules (6 maximum)	9.59 lb (4.4 kg)	176W	250W
Supervisor (2 maximum)	4.84 lb (2.2 kg)	69W	80W

Component	Weight	Typical Power	Maximum Power
System controller (2 maximum)	1.91 lb (0.9 kg)	13W	25W
Cisco Nexus X9636PQ: 36-port 40 Gigabit Ethernet QSFP+ line card	11.48 lb (5.2 kg)	260W	400W
Cisco Nexus X9564TX: 48-port 1/10GBASE-T and 4-port 40 Gigabit Ethernet QSFP+ line card	12.58 lb (5.7 kg)	450W	550W
Cisco Nexus X9564PX: 48-port 10 Gigabit Ethernet SFP+ and 4-port 40 Gigabit Ethernet QSFP+ line card	11.48 lb (5.2 kg)	300W	430W

Regulatory Standards Compliance

Table 8 summarizes regulatory standards compliance for the Cisco Nexus 9500 platform.

Table 8.   Regulatory Standards Compliance: Safety and EMC

Specification	Description
Regulatory compliance	Products should comply with CE Markings according to directives 2004/108/EC and 2006/95/EC
Safety	- UL 60950-1 Second Edition - CAN/CSA-C22.2 No. 60950-1 Second Edition - EN 60950-1 Second Edition - IEC 60950-1 Second Edition - AS/NZS 60950-1 - GB4943
EMC: Emissions	47CFR Part 15 (CFR 47) Class A - AS/NZS CISPR22 Class A - CISPR22 Class A - EN55022 Class A - ICES003 Class A - VCCI Class A - EN61000-3-2 - EN61000-3-3 - KN22 Class A - CNS13438 Class A
EMC: Immunity	- EN55024 - CISPR24 - EN300386 - KN 61000-4 series
RoHS	The product is RoHS-6 compliant with exceptions for leaded-ball grid-array (BGA) balls and lead press-fit connectors.

Ordering Information

Table 9 presents ordering information for the Cisco Nexus 9500 platform. Note that you can order the Cisco Nexus 2200 platform fabric extenders either separately or along with the Cisco Nexus 9500 platform.

Table 9.   Ordering Information

Part Number	Product Description
Hardware	
N9K-C9508-B1	Nexus 9508 Chassis Bundle with 1 Sup, 3 PS, 2 SC, 3 Fan Trays, 3 Fabric Modules
N9K-C9508-B2	Nexus 9508 Chassis Bundle with 1 Sup, 3 PS, 2 SC, 3 Fan Trays, 6 Fabric Modules
N9K-C9508	Nexus 9508 Chassis with 8 linecard slots
N9K-X9564TX	Nexus 9500 ACI leaf linecard, 48p 1/10G-T plus 4p QSFP linecard (non-blocking)
N9K-X9564PX	Nexus 9500 ACI leaf linecard, 48p 1/10G SFP+ plus 4p QSFP linecard (non-blocking)

Part Number	Product Description
N9K-X9636PQ	Nexus 9500 linecard, 36p 40G QSFP aggregation linecard (non-blocking)
N9K-SUP-A	Nexus 9500 Supervisor
N9K-SC-A	Nexus 9500 System Controller
N9K-C9508-FM	Fabric Module for Nexus 9508 chassis
N9K-PAC-3000W-B	Nexus 9500 3000W AC PS, Cold Air In
N9K-C9508-FAN	Fan Tray for Nexus 9508 chassis
Software	
N95-LAN1K9	Enhanced L3 including full OSPF, EIGRP, BGP, VXLAN
DCNM-LAN-N95-K9	DCNM license for Nexus 9500 Series
Optics and Cables	
QSFP-40G-SR-BD	40GBASE-SR-BD QSFP module, LC connector (multi-mode fiber, MMF at 100m OM3)
QSFP-40G-SR4	40GBASE-SR4 QSFP module, MPO connector (multi-mode fiber, MMF at 100m OM3)
QSFP-40G-CSR4	40GBASE Extended CSR4 QSFP module, MPO connector (multi-mode fiber, MMF at 300m OM3)
QSFP-4x10G-AC7M	Cisco 40GBASE-CR4 QSFP+ to 4 10GBASE-CU SFP+ direct-attach breakout cable, 7-meter, active
QSFP-4x10G-AC10M	Cisco 40GBASE-CR4 QSFP+ to 4 10GBASE-CU SFP+ direct-attach breakout cable, 10-meter, active
QSFP-H40G-CU1M	Cisco 40GBASE-CR4 QSFP+ direct-attach copper cable, 1-meter, passive
QSFP-H40G-CU3M	Cisco 40GBASE-CR4 QSFP+ direct-attach copper cable, 3-meter, passive
QSFP-H40G-CU5M	Cisco 40GBASE-CR4 QSFP+ direct-attach copper cable, 5-meter, passive
QSFP-H40G-ACU7M	Cisco 40GBASE-CR4 QSFP+ direct-attach copper cable, 7-meter, active
QSFP-H40G-ACU10M	Cisco 40GBASE-CR4 QSFP+ direct-attach copper cable, 10-meter, active
SFP-10G-SR	10GBASE-SR SFP+ Module
SFP-10G-LR	10GBASE-LR SFP+ Module
SFP-H10GB-CU1M	10GBASE-CU SFP+ Cable 1 Meter
SFP-H10GB-CU3M	10GBASE-CU SFP+ Cable 3 Meter
SFP-H10GB-CU5M	10GBASE-CU SFP+ Cable 5 Meter
SFP-H10GB-ACU7M	Active Twinax cable assembly, 7m
SFP-H10GB-ACU10M	Active Twinax cable assembly, 10m
GLC-T	1000BASE-T SFP
GLC-SX-MM	GE SFP, LC connector SX transceiver
GLC-LH-SM	GE SFP, LC connector LX/LH transceiver
Power Cords	
CAB-AC-16A-AUS	Power Cord, 250V AC, 16A, Australia C19
CAB-AC-2500W-EU	Power Cord, 250Vac 16A, Europe
CAB-AC-2500W-INT	Power Cord, 250Vac 16A, INTL
CAB-AC-2500W-ISRL	Power Cord,250VAC,16A, Israel
CAB-AC-2500W-US1	Power Cord, 250Vac 16A, straight blade NEMA 6-20 plug, US
CAB-AC-C6K-TWLK	Power Cord, 250Vac 16A, twist lock NEMA L6-20 plug, US
CAB-AC16A-CH	16A AC Power Cord For China
CAB-ACS-16	AC Power Cord (Swiss) 16A
CAB-C19-CBN	Cabinet Jumper Power Cord, 250 VAC 16A, C20-C19 Connectors
CAB-L520P-C19-US	NEMA L5-20 to IEC-C19 6ft US
Accessories	
N9K-C9500-RMK=	Nexus 9500 Rack Mount Kit
N9K-C9500-ACK=	Nexus 9500 Accessory Kit

Warranty

The Cisco Nexus 9500 platform has a 1-year limited hardware warranty. The warranty includes hardware replacement with a 10-day turnaround from receipt of a return materials authorization (RMA).

Service and Support

Cisco offers a wide range of services to help accelerate your success in deploying and optimizing the Cisco Nexus 9500 platform in your data center. The innovative Cisco Services offerings are delivered through a unique combination of people, processes, tools, and partners and are focused on helping you increase operation efficiency and improve your data center network. Cisco Advanced Services uses an architecture-led approach to help you align your data center infrastructure with your business goals and achieve long-term value. Cisco SMARTnet® Service helps you resolve mission-critical problems with direct access at any time to Cisco network experts and award-winning resources. With this service, you can take advantage of the Cisco Smart Call Home service capability, which offers proactive diagnostics and real-time alerts on your Cisco Nexus 9500 platform. Spanning the entire network lifecycle, Cisco Services offerings help increase investment protection, optimize network operations, support migration operations, and strengthen your IT expertise.

For More Information

For more information about the Cisco Nexus 9000 Series, please visit http://www.cisco.com/go/nexus9000.

Printed in USA

C78-729404-00   11/13