

Cisco Nexus 9500 R-Series

Product Overview

The Cisco Nexus[®] 9500 platform is part of the Cisco Nexus 9000 Series Switches (Figure 1).

The Cisco Nexus 9500 R-Series is a high-speed, high-density 1, 10, 25, 40, 50, and 100 Gigabit Ethernet modular switch designed for use as a data center aggregation or spine switch. It is capable of providing up to 9.6 Terabits per second (Tbps) capacity per slot for a total of 76.8Tbps capacity in the 8-slot chassis at 1, 10, 25, 40, 50, and 100 Gigabit Ethernet speeds. The Cisco Nexus 9500 R-Series line cards are high density 100 Gigabit and 40 Gigabit Ethernet cards with deep buffers and large table sizes. These line cards can also support 10 Gigabit Ethernet speeds using the breakout capability. The combination of these features – high port density, deep buffers, and large tables – make this switch an ideal choice for DMZ, big data, or edge routing applications.

Figure 1. Cisco Nexus 9000 Series Switches



This data sheet covers standard Cisco Nexus 9500 platform deployment scenarios using NX-OS mode.

Cisco Nexus 9500 R-Series Line Cards for NX-OS Deployments

The Cisco Nexus 9500 platform supports a variety of Cisco Nexus 9500 R-Series line cards (Table 1), which can be configured in any combination. The Cisco Nexus 9500 R-Series line cards require the Nexus 9500 6-Core Supervisor (N9K-SUP-B) and the Nexus 9500 FM-R fabric modules.

Table 1. Cisco Nexus 9500 R-Series Line Cards and Fabric Modules

Item	N9K-X9636C-RX	N9K-X9636C-R	N9K-X9636Q-R
Port Density	36 40/100G QSFP28 Ports	36 40/100G QSFP28 Ports	36 40G QSFP Ports
Buffer Capacity	16GB	24GB	24GB
Fabric Redundancy	No	5+1	5+1
Processor	8-core 2.4-GHz x64 CPU	8-core 2.4-GHz x64 CPU	8-core 2.4-GHz x64 CPU
DRAM	32GB DDR3	16GB DDR3	16GB DDR3

Cisco Nexus 9500 R-Series Line Cards and Fabric Modules Performance

The Cisco Nexus 9500 platform has a crossbar fabric design which interconnects the line cards with fabric modules. Load balancing is enabled across all fabric modules. The cell-based architecture helps achieve optimal bandwidth distribution within the chassis. Table 2 provides line-card and fabric-module compatibility information.

Table 2. Cisco Nexus 9500 R-Series Line Cards and Fabric Modules: Performance and Compatibility Information

Part Number	Product Description	Performance	Compatible Fabric Module	Required Fabric Modules for Maximum Bandwidth
100-Gbps Line Cards				
N9K-X9636C-RX	36-port 100 Gigabit Ethernet QSFP28 line card with external TCAM	3.6 Tbps	N9K-C9508-FM-R	6
N9K-X9636C-R	36-port 100 Gigabit Ethernet QSFP28 line card	3.6 Tbps	N9K-C9508-FM-R	5
40-Gbps Line Cards				
N9K-X9636Q-R	36-port 40 Gigabit Ethernet QSFP line card	1.4 Tbps	N9K-C9508-FM-R	4

Specifications

Table 3 lists the specifications for the Cisco Nexus 9500 R-Series Line Cards. Please check the software release notes and verified scalability guide for feature-support information and configuration limits.

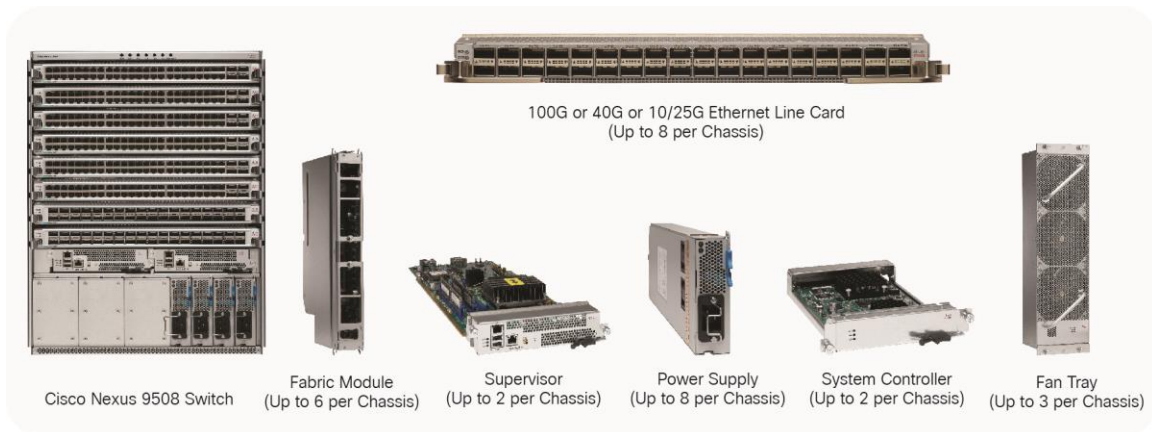
Table 3. Cisco Nexus 9500 R-Series Line Cards: Performance and Hardware Scalability

Item	N9K-X9636C-RX	N9K-X9636C-R	N9K-X9636Q-R
Maximum number of IPv4 routes	2 M	750,000	750,000
Maximum number of MAC address entries	750,000	750,000	750,000
Number of multicast routes	250,000	250,000	250,000
Maximum number of VLANs	4,096	4,096	4,096
Maximum number of links in a port channel	32	32	32
Maximum number of Equal-Cost Multipath (ECMP) routes	256	256	256
Maximum number of port channels	1,000	1,000	1,000
Number of active Cisco Switched Port Analyzer (SPAN) sessions	32	32	32

Cisco Nexus 9500 Platform Components

The Cisco Nexus 9500 platform is built using the components illustrated in Figure 2.

Figure 2. Cisco Nexus 9500 Platform Components



Supervisor Module

A pair of redundant supervisor modules manages all switch operations using a state-synchronized active-standby model. The supervisor accepts an external clock and supports management through multiple ports, including two USB ports, a serial console, and a 10/100/1000-Mbps network port.

- Supervisor B: 6-core, 12 thread, 2.2-GHz x86 CPU, with 24 GB of RAM and 256-GB solid-state disk drive

System Controller

A pair of redundant system controllers offloads chassis management functions from the supervisor modules. The controllers are responsible for managing power supplies and fan trays and are a central point for the Gigabit Ethernet Out-of-Band Channel (EOBC) between the supervisors, fabric modules, and line cards.

Power Supply

The Cisco Nexus 9500 platform supports hot-swappable, front-panel-accessible AC, DC, and universal AC/DC power supplies. N+1 and N+N redundancy modes are supported depending on the chassis configuration. The 3000W power supplies are 80 Plus Platinum rated, providing more than 90 percent efficiency across typical workloads.

Three power supply options are available:

- N9K-PAC-3000W-B: Cisco Nexus 9500 platform 3000W standard 200 to 240 VAC power supply with port-side intake
- N9K-PDC-3000W-B: Cisco Nexus 9500 platform 3000W standard –48 to –60 VDC power supply with port-side intake
- N9K-PUV-3000W-B: Cisco Nexus 9500 platform 3000W universal high-voltage 200 to 277 VAC or 240 to 380 VDC power supply with port-side intake

Fan Trays

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

Supported Optics Modules

For details about the available optics modules and the minimum software release required for each supported optical module, visit

https://www.cisco.com/en/US/products/hw/modules/ps5455/products_device_support_tables_list.html.

Weight and Typical Power

Table 4 lists the weight and typical power consumption of the Cisco Nexus 9500 R-Series Line Cards and Fabric Modules.

Table 4. Weight and Power Consumption

Component	Weight	Typical Power	Maximum Power
Chassis			
N9K-C9508	150 lb (68.2 kg)		
Supervisor			
N9K-SUP-B	6.00 lb (2.72 kg)	75W	90W
System Controller			
N9K-SC-A	1.91 lb (0.9 kg)	13W	25W
Fan Tray			
N9K-C9508-FAN	8.25 lb (3.7 kg)	176W	250W
Power Supply			
N9K-PAC-3000W-B	6.16 lb (2.8 kg)		
N9K-PDC-3000W-B	6.4 lb (2.9 kg)		
N9K-PUV-3000W-B	5.9 lb (2.7 kg)		
Fabric Module			
N9K-C9508-FM-R	9.59 lb (4.4 kg)	240W	250W
100-Gbps Line Cards			
N9K-X9636C-RX	15.9 lb (7.2 kg)	800W	1100W
N9K-X9636C-R	12.30 lb (5.58 kg)	650W	902W
40-Gbps Line Cards			
N9K-C9636Q-R	11.48 lb (5.2 kg)	329W	456W

Mean Time Between Failure

Table 5 lists the Mean Time Between Failure (MTBF) information for the Cisco Nexus 9500 R-Series Line Cards and Fabric Modules.

Table 5. MTBF Information

Component	MTBF (Hours)
Fabric Module	
N9K-C9508-FM-R	524,820
100-Gbps Line Cards	
N9K-X9636C-RX	224,060
N9K-X9636C-R	117,870
40-Gbps Line Cards	
N9K-X9636Q-R	220,550

Regulatory Standards Compliance

Table 6 summarizes regulatory standards compliance for the Cisco Nexus 9500 R-Series Line Cards and Fabric Modules.

Table 6. 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 style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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 7 provides ordering information for the Cisco Nexus 9500 R-Series Components.

Table 7. Ordering Information

Part Number	Product Description
Hardware	
100-Gbps Line Cards	
N9K-X9636C-RX	36-port 100 Gigabit Ethernet QSFP28 line card with TCAM
N9K-X9636C-R	36-port 100 Gigabit Ethernet QSFP28 line card
40-Gbps Line Cards	
N9K-X9636Q-R	36-port 40 Gigabit Ethernet QSFP line card
Chassis, Fabric Modules, Supervisor, and Other Components	
N9K-C9508	Nexus 9508 Chassis with 8 line card slots
N9K-C9508-FM-R	Fabric Module for Nexus 9508 R-Series LC, NX-OS only
N9K-C9508-B2-R	Nexus 9508 Chassis Bundle 1 Sup-B, 3 PS, 2 SC, 6 FM-R, 3 FT
N9K-C9508-FAN	Fan Tray for Nexus 9508 Chassis
N9K-SUP-B	Nexus 9500 6-Core Supervisor
N9K-SC-A	Nexus 9500 System Controller
N9K-PAC-3000W-B	Nexus 9500 3000W AC Power Supply, Port Side Intake

Part Number	Product Description
N9K-PDC-3000W-B	Nexus 9500 3000W DC Power Supply, Port Side Intake
N9K-PUV-3000W-B	Nexus 9500 3000W Universal High Voltage AC/DC Power Supply, Port Side Intake
Software	
N95-LAN-XL1K9	Enhanced L3 including full OSPF, BGP, VXLAN, Segment Routing
DCNM-LAN-N95-K9	DCNM license for Nexus 9500 Series

Warranty

The Cisco Nexus 9500 R-Series 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 R-Series in your data center. These 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 use 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, which offers proactive diagnostics and real-time alerts on your Cisco Nexus 9500 R-Series switch.

Spanning the entire network lifecycle, Cisco Services offerings help increase investment protection, optimize network operations, support migration operations, and strengthen your IT expertise.

Cisco Capital Financing to Help You Achieve Your Objectives

Cisco Capital® financing can help you acquire the technology you need to achieve your objectives and stay competitive. We can help you reduce Capital Expenditures (CapEx), accelerate your growth, and optimize your investment dollars and ROI. Cisco Capital financing gives you flexibility in acquiring hardware, software, services, and complementary third-party equipment. And you have just one predictable payment. Cisco Capital financing is available in more than 100 countries. [Learn more.](#)

For More Information

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



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