Cisco N9500 R-Series Line Cards and Fabric Modules

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Product overview

The Cisco N9500 R-Series switching platform (Figure 1) offers two modular chassis:

- Cisco N9500 4-slot switch
- Cisco N9500 8-slot switch

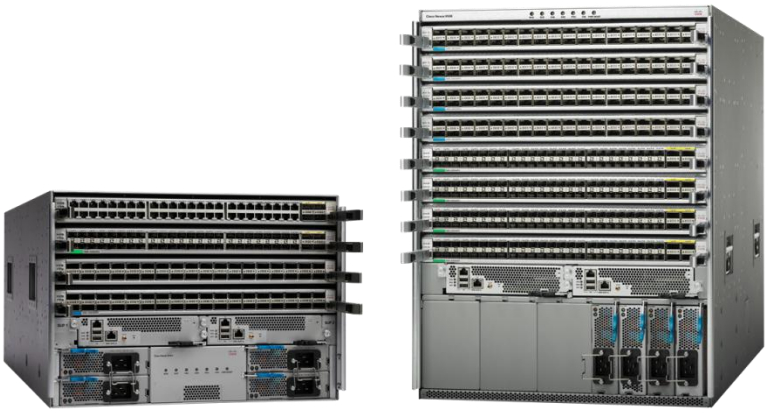


Figure 1.
Cisco N9500 Series Switch Chassis

These chassis support the Cisco N9500 R-Series line cards and fabric modules, delivering up to 9.6 Terabits per second (Tbps) per slot, for a total of 76.8-Tbps in the 8-slot chassis. Both chassis support line cards that offer 100-, 40-, 25-, 10-, or 1-Gigabit Ethernet ports. In addition to that, the 8-slot chassis also supports a line card that offers 400-Gigabit Ethernet ports.

Note

This data sheet specifies hardware capabilities only. Please refer to Cisco NX-OS software release notes and appropriate feature documentation for more details.

Cisco N9500 Platform R-Series line cards

The Cisco N9500 platform is designed as a Clos fabric that interconnects each line card directly with each rear-mounted fabric module. All traffic between the line cards is load balanced across all fabric modules providing optimal bandwidth distribution within the chassis. This load-balancing capability provides enhanced system reliability and redundancy. The switch continues to operate even in the event of a loss of a fabric module, albeit at a lower capacity, as the remaining fabric modules continue to provide switching capacity to the line cards. Some of these line cards can connect to 1 or 2 additional fabric modules to also provide N+1 or N+2 redundancy. All Cisco N9500 platform R-Series line cards support deep buffers and some line cards support large tables enabling various use cases.

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Table 1. Cisco N9500 R-Series line cards

Line-card type	Description
400-Gbps line card	
N9K-X9624D-R2	• 24-port 400/100 Gigabit Ethernet Quad Small Form-Factor Pluggable Double Density (QSFP-DD) line card
100-Gbps line cards	
N9K-X9636C-RX	• 36-port 40/100 Gigabit Ethernet QSFP28 line card with additional TCAM
N9K-X9636C-R	• 36-port 40/100 Gigabit Ethernet QSFP28 line card
40-Gbps line cards	
N9K-X9636Q-R	• 36-port 40 Gigabit Ethernet QSFP line card
10/25-Gbps line cards	
N9K-X96136YC-R	• 32-port 1/10/25, 16-port 1/10, and 4-port 40/100 Gigabit Ethernet SFP/QSFP line card with MACsec

Cisco N9500 R-Series line cards and fabric modules performance

Table 2. Cisco N9500 R-Series line cards: Product and hardware scale specifications

Feature/line card	X9624D-R2	X9636C-RX	X9636C-R	X9636Q-R	X96136YC-R
Performance	9.6 Tbps	3.6 Tbps	3.6 Tbps	1.4 Tbps	1.2 Tbps
Fabric modules required for maximum bandwidth – R2 Series Fabric Module	6	6	6	6	6
Fabric modules required for maximum bandwidth – **R Series Fabric Module**	6	6	5	4	6
Fabric modules required for N+1 redundancy – R Sereis Fabric Module	N/A	N/A	6 (N+1)	5 (N+1) or 6 (N+2)	N/A
Supervisor Module	N9K-SUP-B+	N9K-SUP-B, N9K-SUP-B+	N9K-SUP-B, N9K-SUP-B+	N9K-SUP-B, N9K-SUP-B+	N9K-SUP-B, N9K-SUP-B+
Processor and DRAM	6-core 1.9 GHz x64 16 GB DDR4	4-core 2.4 GHz x64 32 GB DDR4	8-core 2.4 GHz x64 16 GB DDR3	8-core 2.4 GHz x64 16 GB DDR3	4-core 2.4-GHz x64 8 GB DDR4
Packet buffer	16 GB	16 GB	24 GB	12 GB	4 GB
Maximum number of IPv4 routes	750,000	2,000,000	750,000	750,000	750,000

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Feature/line card	X9624D-R2	X9636C-RX	X9636C-R	X9636Q-R	X96136YC-R
Maximum number of MAC address entries	750,000	750,000	750,000	750,000	750,000
Number of multicast routes	250,000	250,000	250,000	250,000	250,000
Maximum number of VLANs	4096	4096	4096	4096	4096
Maximum number of links in a port channel	32	32	32	32	32
Maximum number of equal-cost multipathing (ECMP) routes	256	256	256	256	256
Maximum number of port channels	1000	1000	1000	1000	1000
Number of active Cisco® Switched Port Analyzer (SPAN) sessions	32	32	32	32	32

Table 3. Cisco N9500 R-Series line cards and fabric module support matrix

	N9K-C9508-FM-R2	N9K-C9508-FM-R	N9K-C9504-FM-R
X9624D-R2	Supported	NA	NA
X9636C-RX	Supported	Supported	Supported
X9636C-R	Supported	Supported	Supported
X9636Q-R	Supported	Supported	Supported
X96136YC-R	Supported	Supported	Supported

Note

This data sheet specifies hardware capabilities only. Please refer to Cisco NX-OS software release notes and appropriate feature documentation for more details.

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Mechanical specifications

Table 4. Cisco N9500 R-Series line cards: Product specifications – mechanical

	X9624D-R2	X9636C-RX	X9636C-R	X9636Q-R	X96136YC-R
Weight	18.17 lb (8.2 kg)	15.9 lb (7.2 kg)	12.30 lb (5.58 kg)	11.48 lb (5.2 kg)	12.78lb (5.8kg)
Typical power	900 W	800 W	650 W	329 W	213 W
Maximum power	1180 W	1100 W	902 W	456 W	300 W
Mean Time Between Failure (MTBF) hours	171,5000	262,680	239,340	273,370	545,740

Table 5. Cisco N9500 R-Series fabric modules: Product specifications – mechanical

	N9K-C9508-FM-R2[#]	N9K-C9504-FM-R	N9K-C9508-FM-R
Weight	12.53 lb (5.6 kg)	62 lb (2.8 kg)	9.59 lb (4.4 kg)
Typical power	280 W	115 W	240 W
Maximum power	320 W	130 W	250 W
MTBF hours	465,670	908,500	840,300

[#] N9K-C9508-FM-R2 requires N9K-C9508-FAN2.

Supported optics modules

Each Cisco N9500 R-Series line card supports an extensive set of optic modules. The Cisco Optics Compatibility Matrix (https://tmgmatrix.cisco.com/home) provides the list of optics supported on each line card.

Note

This data sheet specifies hardware capabilities only. Please refer to Cisco NX-OS software release notes and appropriate feature documentation for more details.

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Regulatory standards compliance

Table 5 summarizes regulatory standards compliance for the Cisco N9500 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 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 7. Ordering information

Part number	Product description
N9K-X9624D-R2	24-port 400/100 Gigabit Ethernet QSFP-DD line card
N9K-X9624D-R2=	24-port 400/100 Gigabit Ethernet QSFP-DD line card (Spare)
N9K-X9636C-RX	36-port 100 Gigabit Ethernet QSFP28 line card with TCAM

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Part number	Product description
N9K-X9636C-RX=	36-port 100 Gigabit Ethernet QSFP28 line card with TCAM (Spare)
N9K-X9636C-R	36-port 100 Gigabit Ethernet QSFP28 line card
N9K-X9636C-R=	36-port 100 Gigabit Ethernet QSFP28 line card (Spare)
N9K-X9636Q-R	36-port 40 Gigabit Ethernet QSFP line card
N9K-X9636Q-R=	36-port 40 Gigabit Ethernet QSFP line card (Spare)
N9K-X96136YC-R	32-port 1/10/25, 16-port 1/10, and 4-port 40/100 Gigabit Ethernet SFP/QSFP line card with MACsec
N9K-X96136YC-R=	32-port 1/10/25, 16-port 1/10, and 4-port 40/100 Gigabit Ethernet SFP/QSFP line card with MACsec (Spare)
N9K-C9508-FM-R2	Fabric Module for Cisco N9508 R2-Series line cards – Cisco NX-OS only
N9K-C9508-FM-R2=	Fabric Module for Cisco N9508 R2-Series line cards – Cisco NX-OS only (Spare)
N9K-C9504-FM-R	Fabric Module for Cisco N9504 R-Series line cards – Cisco NX-OS only
N9K-C9504-FM-R=	Fabric Module for Cisco N9504 R-Series line cards – Cisco NX-OS only (Spare)
N9K-C9508-FM-R	Fabric Module for Cisco N9508 R-Series line cards – Cisco NX-OS only
N9K-C9508-FM-R=	Fabric Module for Cisco N9508 R-Series line cards – Cisco NX-OS only (Spare)

Warranty

The Cisco N9500 R-Series line cards have 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 N9500 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 N9500 R-Series line card and fabric module.

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

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For more information

For more information about the Cisco N9000 Series, please visit https://www.cisco.com/go/n9000

Document history

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