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

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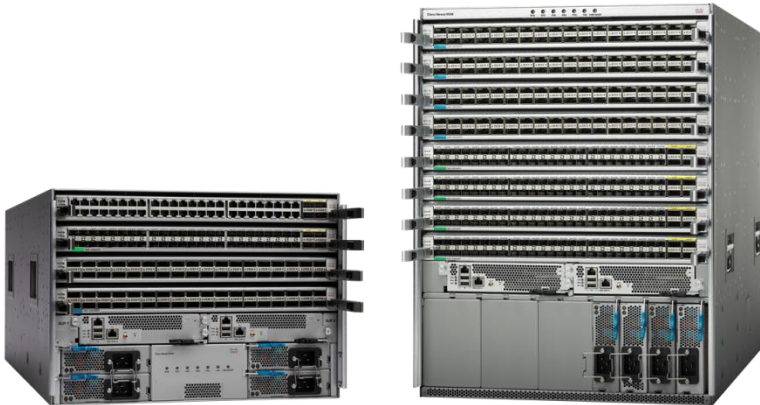
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## Product overview

The Cisco Nexus® 9500 R-Series switching platform (Figure 1) offers two modular chassis:

- Cisco Nexus 9500 4-slot switch
- Cisco Nexus 9500 8-slot switch



**Figure 1.**  
Cisco Nexus 9500 Series Switch Chassis

These chassis support the Cisco Nexus 9500 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 Nexus 9500 Platform R-Series line cards

The Cisco Nexus 9500 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 Nexus 9500 platform R-Series line cards support deep buffers and some line cards support large tables enabling various use cases.

**Table 1.** Cisco Nexus 9500 R-Series line cards

Line-card type	Description
<b>400-Gbps line card</b>	
<b>N9K-X9624D-R2</b>	• 24-port 400/100 Gigabit Ethernet Quad Small Form-Factor Pluggable Double Density (QSFP-DD) line card

Line-card type	Description
<b>100-Gbps line cards</b>	
<b>N9K-X9636C-RX</b>	• 36-port 40/100 Gigabit Ethernet QSFP28 line card with additional TCAM
<b>N9K-X9636C-R</b>	• 36-port 40/100 Gigabit Ethernet QSFP28 line card
<b>40-Gbps line cards</b>	
<b>N9K-X9636Q-R</b>	• 36-port 40 Gigabit Ethernet QSFP line card
<b>10/25-Gbps line cards</b>	
<b>N9K-X96136YC-R</b>	• 32-port 1/10/25, 16-port 1/10, and 4-port 40/100 Gigabit Ethernet SFP/QSFP line card with MACsec

## Cisco Nexus 9500 R-Series line cards and fabric modules performance

**Table 2.** Cisco Nexus 9500 R-Series line cards: Product and hardware scale specifications

Feature/line card	X9624D-R2	X9636C-RX	X9636C-R	X9636Q-R	X96136YC-R
<b>Performance</b>	9.6 Tbps	3.6 Tbps	3.6 Tbps	1.4 Tbps	1.2 Tbps
<b>Fabric modules required for maximum bandwidth - R2 Series Fabric Module</b>	6	6	6	6	6
<b>Fabric modules required for maximum bandwidth - R Series Fabric Module</b>	6	6	5	4	6
<b>Fabric modules required for N+1 redundancy - R Series Fabric Module</b>	N/A	N/A	6 (N+1)	5 (N+1) or 6 (N+2)	N/A
<b>Supervisor Module</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, N9K-SUP-B+
<b>Processor and DRAM</b>	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
<b>Packet buffer</b>	16 GB	16 GB	24 GB	12 GB	4 GB
<b>Maximum number of IPv4 routes</b>	750,000	2,000,000	750,000	750,000	750,000
<b>Maximum number of MAC address entries</b>	750,000	750,000	750,000	750,000	750,000
<b>Number of multicast routes</b>	250,000	250,000	250,000	250,000	250,000
<b>Maximum number of VLANs</b>	4096	4096	4096	4096	4096

Feature/line card	X9624D-R2	X9636C-RX	X9636C-R	X9636Q-R	X96136YC-R
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 Nexus 9500 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.

## Mechanical specifications

**Table 4.** Cisco Nexus 9500 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 Nexus 9500 R-Series fabric modules: Product specifications – mechanical

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

<sup>#</sup> N9K-C9508-FM-R2 requires N9K-C9508-FAN2.

## Supported optics modules

Each Cisco Nexus 9500 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.

## Regulatory standards compliance

Table 5 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
<b>Regulatory compliance</b>	Products should comply with CE Markings according to directives 2004/108/EC and 2006/95/EC
<b>Safety</b>	<ul style="list-style-type: none"><li>• UL 60950-1 Second Edition</li><li>• CAN/CSA-C22.2 No. 60950-1 Second Edition</li><li>• EN 60950-1 Second Edition</li><li>• IEC 60950-1 Second Edition</li><li>• AS/NZS 60950-1</li><li>• GB4943</li></ul>

Specification	Description
<b>EMC: Emissions</b>	<ul style="list-style-type: none"> <li>• 47CFR Part 15 (CFR 47) Class A</li> <li>• AS/NZS CISPR22 Class A</li> <li>• CISPR22 Class A</li> <li>• EN55022 Class A</li> <li>• ICES003 Class A</li> <li>• VCCI Class A</li> <li>• EN61000-3-2</li> <li>• EN61000-3-3</li> <li>• KN22 Class A</li> <li>• CNS13438 Class A</li> </ul>
<b>EMC: Immunity</b>	<ul style="list-style-type: none"> <li>• EN55024</li> <li>• CISPR24</li> <li>• EN300386</li> <li>• KN 61000-4 series</li> </ul>
<b>RoHS</b>	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
<b>N9K-X9624D-R2</b>	24-port 400/100 Gigabit Ethernet QSFP-DD line card
<b>N9K-X9624D-R2=</b>	24-port 400/100 Gigabit Ethernet QSFP-DD line card (Spare)
<b>N9K-X9636C-RX</b>	36-port 100 Gigabit Ethernet QSFP28 line card with TCAM
<b>N9K-X9636C-RX=</b>	36-port 100 Gigabit Ethernet QSFP28 line card with TCAM (Spare)
<b>N9K-X9636C-R</b>	36-port 100 Gigabit Ethernet QSFP28 line card
<b>N9K-X9636C-R=</b>	36-port 100 Gigabit Ethernet QSFP28 line card (Spare)
<b>N9K-X9636Q-R</b>	36-port 40 Gigabit Ethernet QSFP line card
<b>N9K-X9636Q-R=</b>	36-port 40 Gigabit Ethernet QSFP line card (Spare)
<b>N9K-X96136YC-R</b>	32-port 1/10/25, 16-port 1/10, and 4-port 40/100 Gigabit Ethernet SFP/QSFP line card with MACsec
<b>N9K-X96136YC-R=</b>	32-port 1/10/25, 16-port 1/10, and 4-port 40/100 Gigabit Ethernet SFP/QSFP line card with MACsec (Spare)
<b>N9K-C9508-FM-R2</b>	Fabric Module for Cisco Nexus 9508 R2-Series line cards - Cisco NX-OS only
<b>N9K-C9508-FM-R2=</b>	Fabric Module for Cisco Nexus 9508 R2-Series line cards - Cisco NX-OS only (Spare)
<b>N9K-C9504-FM-R</b>	Fabric Module for Cisco Nexus 9504 R-Series line cards - Cisco NX-OS only

Part number	Product description
<b>N9K-C9504-FM-R=</b>	Fabric Module for Cisco Nexus 9504 R-Series line cards – Cisco NX-OS only (Spare)
<b>N9K-C9508-FM-R</b>	Fabric Module for Cisco Nexus 9508 R-Series line cards – Cisco NX-OS only
<b>N9K-C9508-FM-R=</b>	Fabric Module for Cisco Nexus 9508 R-Series line cards – Cisco NX-OS only (Spare)

## Warranty

The Cisco Nexus 9500 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 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 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.

## 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.](#)



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## For more information

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

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