

Cisco Nexus 9800 Series Switches

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Cisco Nexus® 9800 Series Switches provide high-density 400G solutions in a chassis designed for future transition to high-density 800G and higher speeds.

Product overview

The Cisco Nexus 9800 Series modular switches expand the Cisco Nexus 9000 Series portfolio with a new chassis that supports very high port density 400-Gigabit Ethernet line cards.

Data centers continue to evolve to support next-generation applications such as machine learning that drive massive bandwidth growth in intra data center traffic. To support this growth, data center operators require compact, high-capacity, high-speed, and highly efficient switches.

The Cisco Nexus 9800 Series chassis architecture can scale from 57 Tbps to 115 Tbps with a combination of various first-generation line cards and fabric modules. Each line card slot in the chassis can support line cards that offer 400GE or 100GE or 10/25/50GE ports.

The design of the Cisco Nexus 9800 Series chassis is a significant improvement on the previous-generation modular chassis design with better power distribution and connectors, fans, and a thermal design that allow the chassis to scale up to higher Ethernet speed line cards and fabric modules in the future. These design principles allow the doubling of total system capacity with next-generation line cards and fabric modules that support higher speed ports such as 800G at the same port density per slot as that of current-generation line cards.

The Cisco Nexus 9800 Series switch line cards and fabric modules are built with a power-efficient, high-performance, and high-capacity ASIC that supports dynamic flow let load balancing, fully shared on-die packet buffer, and line rate performance for small packets. The ASIC provides these capabilities without compromising on features and power efficiency and enables the Cisco Nexus 9800 Series Switches to be optimized for supporting high bandwidth applications across data centers of varying sizes and scale.

Furthermore, the chassis architecture supports control plane redundancy with dual supervisors, data plane redundancy with up to eight fabric modules, fan tray redundancy with four fan trays, and power supply redundancy with up to 12 high efficiency power supplies.

The Cisco Nexus 9800 Series delivers this high capacity with the efficiency and robustness of either Cisco® Application Specific Infrastructure (Cisco ACI®) or Cisco NX-OS operating systems. Moreover, the high capacity and port density of the Cisco Nexus 9800 Series enables data center fabrics to scale up while keeping the required number of spines lower. This results in lower overall infrastructure costs and higher overall power efficiency across the data center.

The fabric capacity in a Cisco Nexus 9800 Series chassis is delivered by up to eight fabric modules. Varying the number of fabric modules allows the chassis to provide fabric module redundancy and sufficient line rate capacity for line cards with different port speeds and port densities.

The Cisco Nexus 9800 8-slot chassis supports eight line card slots and three power supply trays.

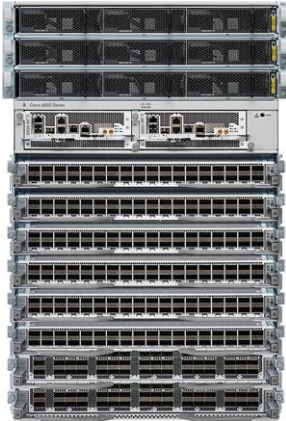


Figure 1.
Cisco Nexus 9800 8-slot chassis

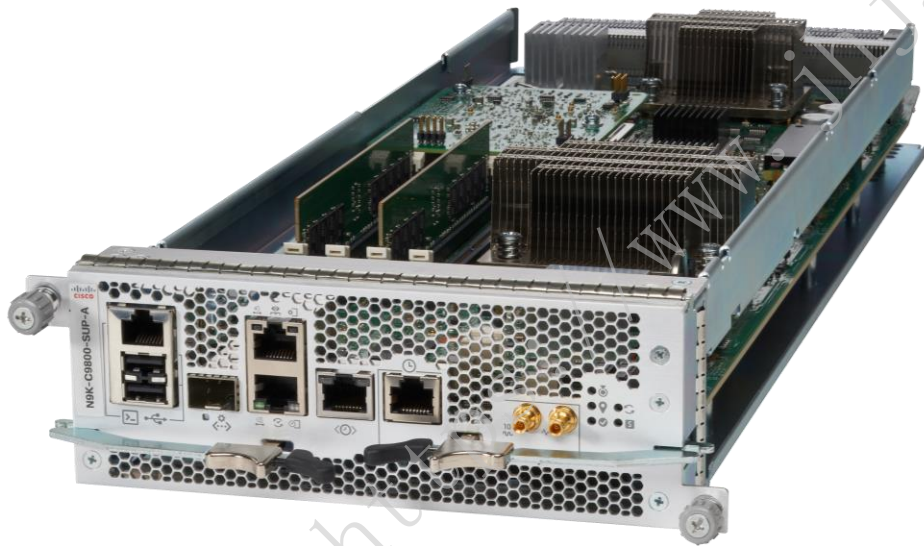


Figure 2.
Cisco Nexus 9800 Supervisor (1st Generation)

The Cisco Nexus 9800 Series supports a 36-port 400G QSFP-DD line card. The QSFP-DD ports are also backward compatible with QSFP28 and QSFP+ modules. This line card provides up to 14.4 Tbps capacity with at least seven fabric modules. If the chassis is configured with eight fabric modules, the chassis would provide 7+1 fabric module redundancy to this line card. This line card also supports line rate MACsec encryption on all ports. Furthermore, each 400G port also supports 2x 100G, 4x 100, 4x 25, and 4x 10G breakout options.

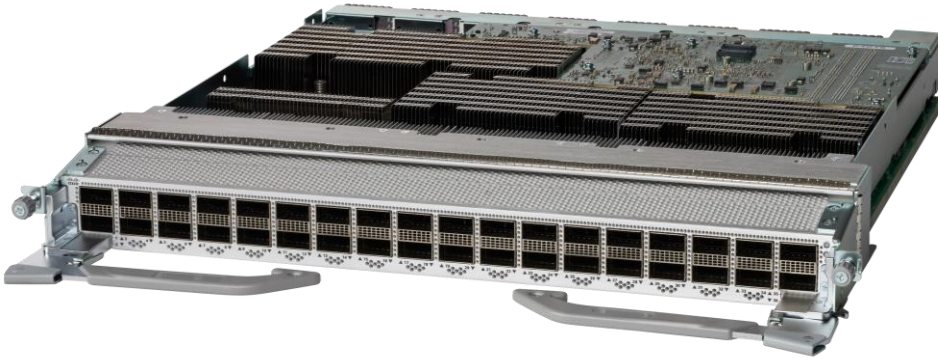


Figure 3.
Cisco Nexus 9800 36-port QSPF-DD 400G line card with MACsec

The Cisco Nexus 9800 series switches supports dual input, high power, and high efficiency power supplies for AC, DC, and high-voltage AC/DC power inputs.

Prominent feature

High Speed/High Density Connectivity

The Cisco Nexus 9800 series switches support line cards and fabric modules that provide 36 400G ports per slot. The advanced chassis design lays the foundation to support higher capacity ASICs and higher power optics in the future. This enables the chassis to support port speeds higher than 400G in the future.

Buffering

The Cisco Nexus 9800 series switches support a fully shared buffer memory architecture that allows the switch to absorb bursts up to the available shared memory size. This shared buffer memory architecture also improves power efficiency by minimizing the number of read/write operations to process packets. In addition to this, the Cisco Nexus 9800 also supports hybrid HBM which dynamically handles even larger flows that could cause temporary congestion. The combination of a hybrid HBM with a fully shared buffer allows Cisco Nexus 9800 Series systems to achieve an effective buffer size much larger than the alternatives.

Power Efficiency

The Cisco Nexus 9800 series switches enhances power efficiency by minimizing the number of power conversions within the chassis. A single system busbar distributes power to all cards and modules within the chassis. The dual input high-capacity hot-swappable power supplies provide enhanced power redundancy and added power efficiency.

Scalability

IPv4 Unicast Routes Up to 1M

IPv6 Unicast Routes Up to 250K

IPv4 Host Routes Up to 256K

IPv6 Host Routes Up to 62K

Licensing

The Cisco Nexus 9800 Series Switches require Cisco Data Center Networking (DCN) Premier, Advantage, or Essentials licenses for appropriate features. Certain features such as MACsec require add-on licenses such as a DCN security license.

Product sustainability

Information about Cisco's environmental, social, and governance (ESG) initiatives and performance is provided in Cisco's CSR and sustainability [reporting](#).

Sustainability Topic		Reference
General	Information on product-material-content laws and regulations	Materials
	Information on electronic waste laws and regulations, including our products, batteries, and packaging	WEEE Compliance
	Information on product takeback and reuse program	Cisco Takeback and Reuse Program
	Sustainability Inquiries	Contact: csr_inquiries@cisco.com
Material	Product packaging weight and materials	Contact: environment@cisco.com

Product specifications

Table 1. Cisco Nexus 9800 Series chassis specifications

Description	Specification
Number of line card slots	8
Number of fabric module slots	8
Number of supervisor slots	2
Number of fan trays	4
Number of power supply trays	3
Number of power supplies	AC and High-voltage power supplies: 9 (3 per tray) DC power supplies: 12 (4 per tray)
Weight	Unloaded: 162 lbs (73 kg) Fully loaded: 658 lbs (299 kg)
Dimensions	(H) 28 x (W) 17.45 x (D) 33.73 in. (71.12 x 44.32 x 85.7 cm)
Height	16 RU

Ordering information

Table 2. Ordering information

Product ID	Description
N9K-C9808	Cisco Nexus 9800 8-slot chassis
N9K-C9800-SUP-A	Cisco Nexus 9800 Supervisor (1 st Generation)
N9K-C9808-FM-A	Cisco Nexus 9800 8-slot chassis fabric module (1 st Generation)
N9K-C9808-FAN-A	Cisco Nexus 9800 8-slot chassis fan tray (1 st Generation)
N9K-X9836DM-A	Cisco Nexus 9800 36-port 400G line card with MACsec
N9800-HV-TRAY	Cisco Nexus 9800 Power Supply Tray for AC and HV Power Supplies
N9800-DC-TRAY	Cisco Nexus 9800 Power Supply Tray for DC Power Supplies
NXK-HV6.3KW20A-A	Cisco Nexus 9800 6,300W 20A AC and HV Power Supply
NXK-HV6.3KW30A-A	Cisco Nexus 9800 6,300W 30A AC and HV Power Supply
NXK-DC4.4KW-A	Cisco Nexus 9800 4,400W DC Power Supply
N9K-C9800-IN-KIT	Cisco Nexus 9800 Installation Kit
N9K-C9800-AR-KIT	Cisco Nexus 9800 Adjustable Rail Kit
N9K-C9800-CM-KIT	Cisco Nexus 9800 Cable Management Kit
N9K-C9800-DF-KIT	Cisco Nexus 9800 Door and Filter Kit
N9K-C9800-RMB	Cisco Nexus 9800 Rear Mounting Brackets

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