

Cisco Nexus 7000 Series Switches

Product Overview

Cisco Nexus[®] 7000 Series Switches combine high levels of scalability with operational flexibility.

Cisco Nexus 7000 Series Switches provide the foundation for Cisco[®] Unified Fabric. They are a modular data center-class product line designed for highly scalable 1/10/40/100 Gigabit Ethernet networks with a fabric architecture that scales beyond 17 terabits per second (Tbps). Designed to meet the requirements of the most mission-critical data centers, the switches deliver continuous system operation and virtualized, pervasive services. The Cisco Nexus 7000 Series is based on the proven Cisco NX-OS Software operating system, with enhanced features to deliver real-time system upgrades with exceptional manageability and serviceability.

The first in the next generation of switch platforms, the Cisco Nexus 7000 Series (Figure 1) provides integrated resilience combined with features optimized specifically for the data center for availability, reliability, scalability, and ease of management.

Figure 1. Cisco Nexus 7000 Series



Features and Benefits

Coupled with Cisco NX-OS, the Cisco Nexus 7000 Series delivers a comprehensive set of features with nonstop operation in four chassis form factors:

- 18-slot chassis with 18 front-accessible module slots and side-to-side airflow in a compact horizontal form factor with purpose-built integrated cable management.
- 10-slot chassis with 10 front-accessible vertical module slots and front-to-back airflow and an integrated cable management system.
- 9-slot with 9 front-accessible module slots and side-to-side airflow in a compact horizontal form factor with purpose-built integrated cable management.
- 4-slot chassis with all front-accessible module slots and side-to-back airflow in a small form factor with purpose-built integrated cable management.

All Cisco Nexus 7000 Series chassis use a passive mid-plane architecture, providing physical connectors and copper traces for interconnecting the fabric modules and the I/O modules for direct data transfer. All intermodule switching is performed via the crossbar fabric ASICs on the individual I/O modules and fabric modules. In the case of Cisco Nexus 7004 chassis, since there are no fabric modules, the mid-plane provides the connectors and traces to interconnect the fabric ASICs on the I/O modules directly.

A scalable, fully distributed fabric architecture composed of up to five fabric modules combined with the chassis midplane delivers up to 550 Gbps per slot for 8.8 Tbps, 9.9 Tbps, and 18.7 Tbps of forwarding capacity in the 9-slot, 10-slot, and 18-slot switches, respectively. The 4-slot chassis delivers up to 1.92 Tbps of forwarding capacity in combination with the built-in fabric system.

The midplane design on the 9-slot, 10-slot, and 18-slot chassis and the backplane design on the 4-slot chassis support flexible technology upgrades as your needs change, providing ongoing investment protection.

Cisco Nexus 7000 4-Slot Switch Chassis

The Cisco Nexus 7000 4-Slot chassis with two I/O module slots supports up to 96 x 1 and 10 Gigabit Ethernet ports, 12 x 40 Gigabit Ethernet ports and 4 x 100 Gigabit Ethernet ports, meeting the needs of small to medium-size data centers, co-locations, access- and aggregation-layer deployments, high-speed core deployments, and smaller operation zones. The Cisco Nexus 7000 4-Slot chassis also has two dedicated supervisor slots to provide full redundancy and high availability. The 4-slot chassis does not require fabric modules. The local I/O module fabrics are connected back to back to form a two-stage crossbar that interconnects the I/O modules and the supervisor engines. The backplane capacity is determined by the installed I/O modules.

- Side-to-rear airflow increases the system density in a seven-rack-unit (7RU) footprint, optimizing the use of rack space. The optimized density provides the capability to stack up to six 4-slot chassis in a 42RU rack.
- The fan tray with built-in fan and controller redundancy helps ensure reliability of the system and support for hot swapping of fan trays. The fan tray is on the top side of the chassis and draws the air from the right side of the chassis through the line card and supervisor slots and propagates it through the empty space on the left side of the chassis. The air then flows up to the fan tray on the top side and finally flows out from the vent holes on the back side of the chassis.
- Even though Nexus 7004 does not have fabric modules, fabric redundancy is still provided. If the local fabric on one of the I/O modules fails, the entire I/O module is taken offline.
- All modules, including power supplies and the fan tray, are accessible from the front.

Cisco Nexus 7000 9-Slot Switch Chassis

- The Cisco Nexus 7000 9-Slot chassis with up to seven I/O module slots supports up to 336 x 1 and 10 Gigabit Ethernet ports, 42 x 40 Gigabit Ethernet ports, and 14 x 100 Gigabit Ethernet ports, meeting the demands of mission-critical campus core and data center deployments. It has two dedicated supervisor slots to provide full redundancy.
- Side-to-side airflow increases the system density in a 14RU footprint, optimizing the use of rack space. The optimized density provides the capability to stack up to three 9-slot chassis in a 42RU rack.
- Independent variable-speed system and fabric fans provide efficient cooling capacity to the entire system. Fan-tray redundancy features help ensure reliability of the system and support for hot swapping of fan trays.
- I/O modules, supervisor modules, and fabric modules are accessible from the front. Power supplies and fan trays are accessible from the back.

Cisco Nexus 7000 10-Slot Switch Chassis

- The Cisco Nexus 7000 10-Slot chassis with up to eight I/O module slots supports up to 384 x 1 and 10 Gigabit Ethernet ports, 48 x 40 Gigabit Ethernet ports, and 16 x 100 Gigabit Ethernet ports, meeting the demands of large data center deployments. It has two dedicated supervisor slots to provide full redundancy.
- Front-to-back airflow helps ensure that use of the Cisco Nexus 7000 10-Slot chassis addresses the requirement for hot-aisle and cold-aisle deployments without additional complexity.
- The system uses dual system and fabric fan trays for cooling. Each fan tray is redundant and composed of independent variable-speed fans that automatically adjust to the ambient temperature, helping reduce power consumption in well-managed facilities while helping enable optimum operation of the switch. The system design increases cooling efficiency and provides redundancy capabilities, allowing hot swapping without affecting the system; if either a single fan or a complete fan tray fails, the system continues to operate without a significant degradation in cooling capacity.
- The system supports an optional air filter to help ensure clean air flow through the system. The addition of the air filter satisfies Network Equipment Building Standards (NEBS) requirements.
- I/O modules and supervisor modules are accessible from the front, and fabric modules, power supplies, and fan trays are accessible from the back.

Cisco Nexus 7000 18-Slot Switch Chassis

- The Cisco Nexus 7000 18-Slot chassis with up to 16 I/O module slots supports up to 768 x 1 and 10 Gigabit Ethernet ports, 96 x 40 Gigabit Ethernet ports, and 32 x 100 Gigabit Ethernet ports, meeting the demands of the largest data center deployments. It has two dedicated supervisor slots to provide full redundancy.
- Side-to-side airflow increases the system density in a 25RU footprint, optimizing the use of rack space. The optimized density provides more than 16RU of free space in a standard 42RU rack for cable management and patching systems.
- Independent variable-speed system and fabric fans provide efficient cooling capacity to the entire system. Fan-tray redundancy features help ensure reliability of the system and support for hot swapping of fan trays.
- I/O modules and supervisor modules are accessible from the front, and fabric modules, power supplies, and fan trays are accessible from the back.

Cisco Nexus 7000 Series Chassis Common Components

All Cisco Nexus 7000 Series chassis have the following components:

- Integrated cable management system designed to support the cabling requirements of a fully configured system at either or both sides of the switch, allowing outstanding flexibility. All system components can easily be removed with the cabling in place, providing ease of maintenance tasks with little disruption.
- A series of LEDs at the top of the chassis provide a clear summary of the status of the major system components, alerting operators to the need to conduct further investigation. These LEDs report the power supply, fan, fabric, supervisor, and I/O module status.
- A purpose-built optional front-module door provides protection from accidental interference with both the cabling and modules installed in the system. The transparent front door allows easy observation of cabling and module indicators and status lights without any need to open the doors, reducing the likelihood of faults caused by human interference. The door supports a dual-opening capability for flexible operation and cable installation while fitted. The door can easily be completely removed for both initial cabling and day-to-day management of the system.

Energy-Efficient Design

The Cisco Nexus 7000 Series uses power supplies that are up to 90 percent efficient, so less power is wasted as heat, and more power is available for the system to use than with typical power supplies.

The fan modules in the chassis adjust to compensate for changing thermal characteristics. At lower speeds, they use less power. In the 9-slot chassis, the fan tray is designed to completely turn off the power for a row of fans when the corresponding slots are unused.

Consolidation of multiple switches in the Cisco Nexus 7000 Series is enabled by the powerful combination of high density and performance, support for device virtualization, and comprehensive reliability and availability features. This consolidation increases the power efficiency by reducing wasted power from multiple partially loaded and inflexible systems.

Product Specifications

Table 1 lists the product specifications for the Cisco Nexus 7000 Series chassis.

Table 1. Product Specifications

Item	Specification			
	Cisco Nexus 7000 4-Slot Switch	Cisco Nexus 7000 9-Slot Switch	Cisco Nexus 7000 10-Slot Switch	Cisco Nexus 7000 18-Slot Switch
Product compatibility	Supports all Cisco Nexus 7000 Series Supervisor and I/O modules except the following: N7K-SUP1 N7K-M132XP-12 N7K-M148GS-11 N7K-M148GT-11 N7K-F132XP-15 Does not use fabric modules	Supports all Cisco Nexus 7000 Series Supervisor and I/O modules Supports Fabric2 modules Does not support Fabric1 modules	Supports all Cisco Nexus 7000 Series Supervisor and I/O modules Supports Fabric1 and Fabric2 modules	Supports all Cisco Nexus 7000 Series Supervisor and I/O modules Supports Fabric1 and Fabric2 modules

Item	Specification			
Max local switching capacity	600 Gbps	600 Gbps	600 Gbps	600 Gbps
Max inter-slot switching capacity	440 Gbps	550 Gbps	550 Gbps	550 Gbps
Software compatibility	Cisco NX-OS Software Release 6.1(2) or later	Cisco NX-OS Software Release 5.2 or later	Cisco NX-OS Software Release 4.0 or later	Cisco NX-OS Software Release 4.1 or later
Options	Lockable front module door	Lockable front module door	<ul style="list-style-type: none"> Air filter Lockable front module doors 	Lockable front module door
Performance	1.44 billion packets per second (bps) (IPv4 unicast) in combination with supervisor module and built-in fabric	5.04 bpps (IPv4 unicast) in combination with supervisor and fabric modules	5.76 bpps (IPv4 unicast) in combination with supervisor and fabric modules	11.5 bpps (IPv4 unicast) in combination with supervisor and fabric modules
Reliability and availability	Online insertion and removal (OIR) of all redundant components: supervisor modules, power supplies, and fan trays	OIR of all redundant components: supervisor and fabric modules, power supplies, and fan trays	OIR of all redundant components: Supervisor and fabric modules, power supplies, and fan trays	OIR of all redundant components: supervisor and fabric modules, power supplies, and fan trays
MIBs	Supports Simple Network Management Protocol (SNMP) Versions 3, 2c, and 1 (see Cisco NX-OS Software release notes for details about specific MIB support)	Supports SNMPv3, v2c, and v1 (see Cisco NX-OS Software release notes for details about specific MIB support)	Supports SNMPv3, v2c, and v1 (see Cisco NX-OS Software release notes for details about specific MIB support)	Supports SNMPv3, v2c, and v1 (see Cisco NX-OS Software release notes for details about specific MIB support)
Network management	Cisco Data Center Network Manager (DCNM) 6.1.(2) or later	Cisco DCNM 5.2 or later	Cisco DCNM 4.0 or later	Cisco DCNM 4.1 or later
Programming interfaces	<ul style="list-style-type: none"> XML Scriptable command-line interface (CLI) Cisco DCNM 6.1(2) web services 	<ul style="list-style-type: none"> XML Scriptable CLI Cisco DCNM 5.2 web services 	<ul style="list-style-type: none"> XML Scriptable CLI Cisco DCNM 4.0 web services 	<ul style="list-style-type: none"> XML Scriptable CLI Cisco DCNM 4.1 web services
Physical specifications	<ul style="list-style-type: none"> Usable rack space: 7RU 4-slot chassis: 2 dedicated supervisor modules and 2 I/O modules 4 power supply slots Dimensions (H x W x D): 12.2 x 17.3 x 24 in. (30.9 x 43.9 x 61 cm) Chassis depth including cable management and chassis doors is 29.6 in. (75.2 cm) Unit is rack mountable in a standard 19-inch (482.6-mm) Electronic Industries Alliance (EIA) rack Weight <ul style="list-style-type: none"> Chassis only: 45 lb. (20 kg) Fan Tray: 25 lb (11.3 kg) Supports 3-kW AC and DC and 3.5-kW HV AC/DC power supplies Supports up to 6 chassis stacked in a 42RU rack 	<ul style="list-style-type: none"> Usable rack space: 14RU 9-slot chassis: 2 dedicated supervisor modules and 7 I/O modules 5 fabric module slots 2 power supply slots Dimensions (H x W x D): 24.5 x 17.3 x 24 in. (62.2 x 43.9 x 61 cm) Chassis depth including cable management and chassis doors is 29 in. (73.7 cm) Unit is rack mountable in a standard 19-inch (482.6-mm) EIA rack Weight <ul style="list-style-type: none"> Chassis only: 100 lb. (45 kg) Fabric Module: 5 lb (2.3 kg) Fan Tray: 25 lb (11.3 kg) Supports 6-kW and 7.5-kW AC and DC power supplies Supports up to 3 chassis stacked in a 42RU rack 	<ul style="list-style-type: none"> Usable rack space: 21RU 10-slot chassis: 2 dedicated supervisor modules and 8 I/O modules 5 fabric module slots 3 power supply slots Dimensions (H x W x D): 36.5 x 17.3 x 33.1 in. (92.7 x 43.9 x 84.1 cm) Chassis depth including cable management and chassis doors is 38 in. (96.5 cm) Unit is rack mountable in a standard 19-inch (482.6-mm) EIA rack Weight <ul style="list-style-type: none"> Chassis only: 200 lb. (90 kg) Fabric Module: 4 lb (1.8 kg) System Fan Tray: 20 lb (9.1 kg) Fabric Fan Tray: 5 lb (2.3 kg) Supports 6-kW and 7.5-kW AC and DC power supplies 	<ul style="list-style-type: none"> Usable rack space: 25RU 18-slot chassis: 2 dedicated supervisor modules and 16 I/O modules 5 fabric module slots 4 power supply slots Dimensions (H x W x D): 43.5 x 17.3 x 33.1 in. (110.5 x 43.9 x 84.1 cm) Chassis depth including cable management and chassis doors is 38 in. (96.5 cm) Unit is rack mountable in a standard 19-inch (482.6-mm) EIA rack Weight <ul style="list-style-type: none"> Chassis only: 187 lb. (85 kg) Fabric Module: 7.5 lb (3.4 kg) Fan Tray: 25.8 lb (11.7 kg) Supports 6-kW and 7.5-kW AC and DC power supplies

Item	Specification
Environmental specifications	<ul style="list-style-type: none"> • Airflow direction: Side to rear • Operating temperature: 32 to 104°F (0 to 40°C) • Operational relative humidity: 5 to 90%, noncondensing • Operating altitude: -500 to 13,123 ft. (agency certified 0 to 6500 ft.) • Seismic: Zone 4 per GR63 • Floor loading: 42 lb. per sq. ft. • Operational vibration • GR63, Section 5.4.2 • ETS 300 019-1-3, Class 3.1, Section 5.5 • Storage altitude: -1000 to 30,000 ft. • Storage temperature: -40 to 158°F (-40 to 70°C) • Storage relative humidity: 5 to 95%, noncondensing • Heat dissipation: Maximum 3500W per chassis (actual dissipation will be lower, depending on the chassis configuration)
Regulatory compliance	<ul style="list-style-type: none"> • EMC compliance • FCC Part 15 (CFR 47) (USA) Class A • ICES-003 (Canada) Class A • EN55022 (Europe) Class A • CISPR22 (International) Class A • AS/NZS CISPR22 (Australia and New Zealand) Class A • VCCI (Japan) Class A • KN22 (Korea) Class A • CNS13438 (Taiwan) Class A • CISPR24 • EN55024 • EN50082-1 • EN61000-3-2 • EN61000-3-3 • EN61000-6-1 • EN300 386
Environmental standards	<ul style="list-style-type: none"> • NEBS criteria levels • SR-3580 NEBS Level 3 (GR-63-CORE and GR-1089-CORE) • Verizon NEBS compliance VZ.TPR.9203 – Data Center • CenturyLink NEBS requirements • ATT NEBS requirements • ATT TP76200 Carrier Grade Level 1 • ETSI • ETSI 300 019-1-1, Class 1.2 Storage • ETSI 300 019-1-2, Class 2.3 Transportation • ETSI 300 019-1-3, Class 3.2 Stationary Use • Reduction of Hazardous Substances (ROHS) 5
Safety	<ul style="list-style-type: none"> • UL/CSA/IEC/EN 60950-1 • AS/NZS 60950
Warranty	Cisco Nexus 7000 Series Switches come with the standard Cisco 1-year limited hardware warranty

Software Requirements

All Cisco Nexus 7000 Series chassis are supported by Cisco NX-OS Software.

- The 4-slot chassis requires Cisco NX-OS Software Release 6.1(2) or later.
- The 9-slot chassis requires Cisco NX-OS Software Release 5.2 or later.
- The 10-slot chassis requires Cisco NX-OS Software Release 4.0 or later.
- The 18-slot chassis requires Cisco NX-OS Software Release 4.1 or later.

For the latest information about recommended releases, see

http://www.cisco.com/en/US/docs/switches/datacenter/sw/nx-os/recommended_releases/recommended_nx-os_releases.html.

Ordering Information

To place an order, visit the Cisco Ordering homepage. To download software, visit the Cisco Software Center. Table 2 provides ordering information.

Table 2. Ordering Information

Product Name	Part Number
System	
Cisco Nexus 7000 Series 9-Slot chassis including Fan Trays, No Power Supply	N7K-C7009
Cisco Nexus 7000 Series 9-Slot chassis No Fan Trays, No Power Supply	N7K-C7009=
Cisco Nexus 7000 Series-9-Slot Fan Tray Spare	N7K-C7009-FAN=
Cisco Nexus 7000 Series 4-Slot Chassis including Fan Tray, Cable Management Kit, No Power Supply	N7K-C7004
Cisco Nexus 7000 Series 4-Slot Chassis including Fan Tray, Cable Management Kit, No Power Supply	N7K-C7004=
Cisco Nexus 7000 Series 4-Slot Fan Tray Spare	N7K-C7004-FAN=
Cisco Nexus 7000 Series 10-Slot chassis including Fan Trays, No Power Supply	N7K-C7010
Cisco Nexus 7000 Series 10-Slot chassis including Fan Trays, No Power Supply	N7K-C7010=
Cisco Nexus 7000 Series-10-Slot System Fan Tray Spare	N7K-C7010-FAN-S=
Cisco Nexus 7000 Series-10-Slot Fabric Fan Tray Spare	N7K-C7010-FAN-F=
Cisco Nexus 7000 Series 18-Slot chassis including Fan Trays, No Power Supply	N7K-C7018
Cisco Nexus 7000 Series 18-Slot chassis No Fan Trays, No Power Supply	N7K-C7018=
Cisco Nexus 7000 Series-18-Slot Fan Tray Spare	N7K-C7018-FAN=
Cisco Nexus 7000 Series 4-Slot Accessories	
Cisco Nexus 7004 Rack Mount Kit	N7K-C7004-RMK=
Cisco Nexus 7004 Front Door Kit	N7K-C7004-FD-MB
Cisco Nexus 7004 Air Filter	N7K-C7004-AFLT=
Cisco Nexus 7000 Series 9-Slot Accessories	
Cisco Nexus 7009 Rack Mount Kit	N7K-C7009-RMK=
Cisco Nexus 7009 Front Top Section and Cable Mgmt Kit	N7K-C7009-CAB-TOP=
Cisco Nexus 7009 Front Door Kit	N7K-C7009-FD-MB
Cisco Nexus 7009 Bottom Support Kit	N7K-C7009-BSK
Cisco Nexus 7009 Fabric Module Blank	N7K-C7009-F-BLANK=
Cisco Nexus 7009 Center Mount Kit	N7K-C7009-CMK

Product Name	Part Number
Cisco Nexus 7000 Series 10-Slot Accessories	
Cisco Nexus 7010-Air Filter	N7K-C7010-AFLT=
Cisco Nexus 7000-Rack Mount Kit	N7K-RMK=
Cisco Nexus 7010-EMI Inlet Screen Kit	N7K-C7010-EMI-SC=
Cisco Nexus 7010 Front Door Top Section-including Cable Management Kit	N7K-C7010-FD-TOP=
Cisco Nexus 7010 Front Door-Kit	N7K-C7010-FD-MB=
Cisco Nexus 7000 Bottom Support Kit	N7K-BSK=
Cisco Nexus 7010 Fabric Module Blank	N7K-FAB-BLANK=
Cisco Nexus 7000 Series 18-Slot Accessories	
Cisco Nexus 7018 Rack Mount Kit	N7K-C7018-RMK=
Cisco Nexus 7018 Front Top Section and Cable Mgmt Kit	N7K-C7018-CAB-TOP=
Cisco Nexus 7018 Front Door Kit	N7K-C7018-FD-MB
Cisco Nexus 7018 Bottom Support Kit	N7K-C7018-BSK
Cisco Nexus 7018 Fabric Module Blank	N7K-C7018-F-BLANK=
Blank Panel Covers	
Cisco Nexus 7000 Series Supervisor Blank Slot Cover	N7K-SUP-BLANK=
Cisco Nexus 7000 Series Module Blank Slot Cover	N7K-MODULE-BLANK=
Cisco Nexus 7000 Series Network Clock Card Blank	N7K-CLK-BLANK=
Cisco Nexus 7000 Series 3 KW Power Supply Blank Slot Cover with Handle	N7K-3KPS-BLANK-H=
Cisco Nexus 7009 Chassis Power Supply Blank Slot Cover with Handle	N7K-PS-BLANK-H=
Cisco Nexus 7010 Chassis Power Supply Blank Slot Cover	N7K-PS-BLANK=
Cisco Nexus 7018 Chassis Power Supply Blank Slot Cover with Handle	N7K-PS-BLANK-H=

Service and Support

Cisco offers a wide range of services to help accelerate your success deploying and optimizing Cisco Nexus 7000 Series Switches in your data center. Our innovative services 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 provide 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 diagnostic information and real-time alerts for your Cisco Nexus 7000 Series Switches. Spanning the entire network lifecycle, Cisco Services helps increase investment protection, optimize network operations, provide migration support, and strengthen your IT expertise. For more information about Cisco Data Center Services, visit <http://www.cisco.com/go/dcservices>.

Cisco Capital Financing to Help You Achieve Your Objectives

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

For More Information

For more information about the Cisco Nexus 7000 Series, visit the product homepage at <http://www.cisco.com/go/nexus> or contact your local account representative.




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