Cisco Nexus 7000 Switches Fabric Modules

Product Overview

The Cisco® Nexus™ 7000 Switches comprise a modular data center-class product line designed for highly scalable 10 Gigabit Ethernet networks with a fabric architecture that scales beyond 15 terabits per second (Tbps). Designed to meet the requirements of the most mission- critical data centers, it delivers continuous system operation and virtualized, pervasive services. The Cisco Nexus 7000 is based on a proven operating system, with enhanced features to deliver real-time system upgrades with no service disruption together with exceptional manageability and serviceability. Its innovative design is purpose built to support end-to-end data center connectivity, consolidating IP, storage, and interprocess communication (IPC) networks onto a single Ethernet fabric.

The Cisco Nexus 7000 Fabric Modules (Figures 1 and 2) for the Cisco Nexus 7000 Chassis are separate fabric modules that provide parallel fabric channels to each I/O and supervisor module slot. Up to five simultaneously active fabric modules work together delivering up to 230 Gbps per slot. Through the parallel forwarding architecture, a system capacity of more than 8 Tbps is achieved with the five fabric modules. The fabric module provides the central switching element for fully distributed forwarding on the I/O modules.

Figure 1.   Cisco Nexus 7000 10-Slot Fabric Module

Figure 2.   Cisco Nexus 7000 18-Slot Fabric Module

Features and Benefits

Switch fabric scalability is made possible through the support of from one to five concurrently active fabric modules for increased performance as your needs grow. All fabric modules are connected to all module slots. The addition of each fabric module increases the bandwidth to all module slots up to the system limit of five modules. The architecture supports lossless fabric failover, with the remaining fabric modules load balancing the bandwidth to all the I/O module slots, helping ensure graceful degradation.

The combination of the Cisco Nexus 7000 Fabric Module and the supervisor and I/O modules supports virtual output queuing (VoQ) and credit-based arbitration to the crossbar switch to increase performance of the distributed forwarding system. VoQ and credit-based arbitration facilitate fair sharing of resources when a speed mismatch or contention for an uplink interface exists. The fabric architecture also enables future support for lossless Ethernet and unified I/O capabilities. Table 1 summarizes the features and benefits of the Cisco Nexus 7000 Fabric Module.

Table 1.   Features and Benefits

Feature	Benefit
High availability and redundancy	The fabrics support multilevel redundancy, where all available fabrics are active, and provide redundancy for all other fabric modules. All I/O module slots receive a fair share of the total fabric bandwidth, helping ensure lossless forwarding in the event of failover.
Scalable fabric	The combined fabric modules deliver 10 channels per I/O module and 5 channels per supervisor module, for a scalable capacity of more than 8 Tbps for forwarding performance, which can be increased as your needs grow.
Nondisruptive addition and removal of fabric modules	The switch capacity can scale with the addition of modules, with transparent upgrades for continuous operations.
Arbitrated crossbar for unicast	Class-of-service-aware forwarding is delivered in a fully distributed forwarding system that allows future enhancements to Ethernet to support unified I/O.
VoQ	In conjunction with the supervisor module, VoQ provides a quality-of-service (QoS) aware lossless fabric, avoiding the problems associated with head-of-line blocking.
Multistage crossbar fabric	System forwarding performance is enhanced by a combination of local fabric switching between ports on the same module and centralized forwarding through the fabric for ports on different modules.
Superframing and frame segmentation	Crossbar efficiency is optimized by the use of superframing and frame segmentation to provide deterministic latency and throughput.
ID LED	Using the beacon feature, the administrator can clearly identify the chassis and fabric module.

Product Specifications

Table 2 lists the product specifications for the Cisco Nexus 7000 Fabric Modules.

Table 2.   Product Specifications

Item	Specification	
	Cisco Nexus 7000 10-Slot Fabric Module	**Cisco Nexus 7000 18-Slot Fabric Module**
Product compatibility	Supported in the Cisco Nexus 7000 Series 10- Slot Chassis	Supported in the Cisco Nexus 7000 Series 18- Slot Chassis
Software compatibility	Cisco® NX-OS Software Release 4.0 (minimum requirement)	Cisco NX-OS Software Release 4.1(2) (minimum requirement)
Performance	46 Gbps per slot per fabric	46 Gbps per slot per fabric
Reliability and availability	• Online insertion and removal (OIR) hot swap	• OIR hot swap
MIBs	Supports Simple Network Management Protocol (SNMP) Versions 3, 2c, and 1 (see the Cisco NX-OS Software release notes for details about specific MIB support)	Supports SNMPv3, v2c, and v1 (see the Cisco NX-OS Software release notes for details about specific MIB support)
Network management	Cisco Data Center Network Manager (DCNM) 4.0	Cisco DCNM 4.1

Item	Specification	
Programming interfaces	• XML • Scriptable command-line interface (CLI) • Cisco DCNM 4.0 Web Services	• XML • Scriptable CLI • Cisco DCNM 4.1 Web Services
Physical specifications	• Occupies one fabric module slot in a Cisco Nexus 7000 Series 10-Slot Chassis • Dimensions (H x W x D): 1.733 x 14.93 x 7.33 in. (4.4 x 37.92 x 18.62 cm) • Weight: 4 lb (1.8 kg)	• Occupies one fabric module slot in a Cisco Nexus 7000 Series 18-Slot Chassis • Dimensions (H x W x D): 14.93 x 1.733 x 7.33 in. (37.6 x 4.4 x 18.62 cm) • Weight: 7.5 lb (3.4 kg)
Environmental conditions	• Operating temperature: 32 to 104°F (0 to 40°C) • Operational relative humidity: 5 to 90%, noncondensing • Storage temperature: -40F to 158°F (-40 to 70°C) • Storage relative humidity: 5 to 95%, noncondensing	
Regulatory compliance	• 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	• NEBS criteria levels • SR-3580 NEBS Level 3 (GR-63-CORE, issue 3, and GR-1089-CORE, issue 4) • Verizon NEBS compliance • Telecommunications Carrier Group (TCG) Checklist • Qwest NEBS requirements • Telecommunications Carrier Group (TCG) Checklist • ATT NEBS requirements • ATT TP76200 level 3 and TCG Checklist • 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	
Safety	• UL/CSA/IEC/EN 60950-1 • AS/NZS 60950	

Software Requirements

The Cisco Nexus 7000 10-Slot Fabric Module is supported in Cisco NX-OS Software. The software version required is Cisco NX-OS Software Release 4.0 or later.

The Cisco Nexus 7000 18-Slot Fabric Module is supported in Cisco NX-OS Software. The software version required is Cisco NX-OS Software Release 4.1(2) or later.

Ordering Information

To place an order, visit the Cisco Ordering homepage. To download software, visit the Cisco Software Center. Table 3 provides ordering information.

Table 3.   Ordering Information

Product Name	Part Number
Cisco Nexus 7000 10-Slot Chassis 46Gbps/Slot Fabric Module (and spare)	N7K-C7010-FAB-1 N7K-C7010-FAB-1=
Cisco Nexus 7000 18-Slot Chassis 46Gbps/Slot Fabric Module (and spare)	N7K-C7018-FAB-1 N7K-C7018-FAB-1=

Service and Support

Cisco offers a wide range of services to help accelerate your success in deploying and optimizing Cisco Nexus 7000 Switches in your data center. Cisco's innovative services are delivered through a unique combination of people, processes, tools, and partners and are focused on helping you increase operational efficiency and improve your data center network. Cisco Advanced Services use an architecture-led approach to help you align your data center infrastructure to your business goals and achieve long-term value. Cisco SMARTnet[®] Service helps you resolve mission-critical problems with direct access any time to Cisco network experts and award-winning resources. With this service, you can take advantage of the Smart Call Home service capability that offers proactive diagnostics, and real-time alerts on your Cisco Nexus 7000 Switches.

Spanning the entire network lifecycle, Cisco services help 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.

For More Information

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

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