Cisco Nexus 7000 F3-Series 6-Port 100 Gigabit Ethernet Module

Product Overview

The Cisco Nexus® 7000 F3-Series 6-Port 100 Gigabit Ethernet Module (referred to as the Cisco Nexus 7000 F3-Series module in this document) offers outstanding feature flexibility and performance on each port. The module enables the deployment of high-density, low-latency, scalable data center architecture.

Powering Cisco's Unified Fabric Architecture

The Cisco Nexus 7000 Series Switches are the foundation of the Cisco® Unified Fabric solution. Designed to meet the requirements of mission-critical data centers, these switches deliver exceptional availability, outstanding scalability, and the proven and comprehensive Cisco NX-OS Software data center switching feature set.

The first in the next generation of data center switching platforms, the Cisco Nexus 7000 Series provides integrated resilience combined with features optimized specifically for availability, reliability, scalability, and ease of management. The Cisco Nexus 7000 Series Switches' fabric architecture scales beyond 17 terabits per second (Tbps) and is designed to support high-density 10, 40, and 100 Gigabit Ethernet deployments. Up to 768 native 10-Gbps ports, 192 40-Gbps ports, and 96 100-Gbps ports can be supported in a single Cisco Nexus 7000 Series chassis.

The Cisco Nexus 7000 F3-Series module (Figure 1) is a low-latency, high-performance, high-density 100 Gigabit Ethernet module. It is operationally consistent with the Cisco Nexus 7700 F3-Series modules and shares a common system architecture and the same application-specific integrated circuit (ASIC) technology. Up to 96 100 Gigabit Ethernet ports are supported in a single Cisco Nexus 7000 18-Slot Switch chassis (Table 1).

Figure 1. Cisco Nexus 7000 F3-Series Module

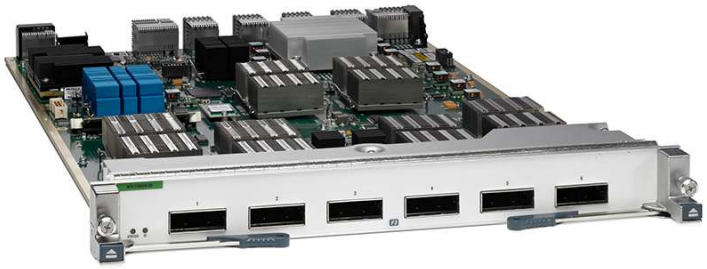

Table 1. Cisco Nexus 7000 Series Switches 100 Gigabit Ethernet Maximum Port Density

Cisco Nexus 7000 Series Chassis	Maximum 100 Gigabit Ethernet Port Density
Cisco Nexus 7000 18-Slot Switch	96
Cisco Nexus 7000 10-Slot Switch	48
Cisco Nexus 7000 9-Slot Switch	42
Cisco Nexus 7000 4-Slot Switch	12

The Cisco Nexus 7000 F3-Series module is based on the Cisco Nexus F3-Series switch-on-chip (SoC) ASIC. This type of design increases performance while lowering the power and cooling requirements of the module. The Cisco Nexus F3-Series SoC is an innovative Cisco ASIC powered by a flexible packet engine, which makes it excellent for building the network infrastructure for public and private cloud environments. The Cisco Nexus F3-Series engine can support all the foundational networking protocols needed to build Layer 2 and Layer 3 networks, and it also supports highly virtualized environments with virtual overlay networking, hardware support for Cisco Virtual Extensible LAN (VXLAN) and Locator/ID Separation Protocol (LISP). Cisco Nexus 7000 F3-Series hardware enables customers to transparently interconnect their data centers with protocols such as Overlay Transport Virtualization (OTV) and Multiprotocol Label Switching (MPLS) and Virtual Private LAN Services (VPLS).

The module delivers 900 million packets per second (mpps) of distributed Layer 2 and Layer 3 forwarding and up to 600 Gbps of data throughput.

Features and Benefits

The Cisco Nexus 7000 F3-Series Module integrates a broad set of data center switching technologies, including industry standards and Cisco's own innovations. It combines the benefits of classical fabric interface line cards with the advanced routing features of edge interface modules. With this integration, the module provides exceptional investment protection for organizations consolidating data center environments while migrating to dense multiservice 100 Gigabit Ethernet networks.

- The Cisco Nexus 7000 F3-Series module is powered by the proven and comprehensive Cisco NX-OS feature set. This extremely comprehensive set of Layer 2 and Layer 3 functions makes this module excellent for data center networks, in which density, performance, and continuous system operation are critical.
- The Cisco Nexus 7000 F3-Series module is a critical enabler of Cisco FabricPath. With Cisco FabricPath, organizations can build resilient, flexible, and if needed, massively scalable Layer 2 networks. Cisco FabricPath protects enterprises' investments by allowing existing spanning-tree-based deployments to be connected to a Cisco FabricPath network.
- The Cisco Nexus 7000 F3-Series module can be used in conjunction with the Cisco Nexus 2000 Series Fabric Extenders (FEX). The Cisco Nexus 2000 Series Fabric Extenders are designed to simplify data center architecture and operations by dramatically reducing the number of points of management.
- The Cisco Nexus 7000 F3-Series module delivers integrated Fibre Channel over Ethernet (FCoE), greatly simplifying the network infrastructure and reducing costs by enabling the deployment of unified data center fabrics to consolidate data center traffic onto a single, general-purpose, high-performance, highly available network. With the Cisco Nexus 7000 F3-Series module, FCoE can be deployed in director-class modular platforms for the access layer and core of converged networks.
- The Cisco Nexus 7000 F3-Series module provides support for VXLAN offering the architectural flexibility needed to expand cloud deployments with repeatable pods in different Layer 2 domains. VXLAN can also enable migration of virtual machines between servers across Layer 3 networks.
- The support of advanced data center interconnect (DCI) protocols such as Cisco OTV and VPLS makes the module excellent for helping customers simplify the extension of applications across geographically dispersed data center sites.

- The Cisco Nexus 7000 F3-Series module supports high-performance MPLS for 100 Gigabit Ethernet data center deployments.
- Support for Cisco LISP allows enterprises and service providers to simplify multi-homed routing, and it facilitates scalable any-to-any WAN connectivity while supporting data center virtual machine mobility.
- The virtual device context (VDC) feature helps enable the virtualization of a single physical device in one or more logical devices. Each provisioned logical device is configured and managed as if it were a separate physical device.
- The Cisco Nexus 7000 F3-Series module offers exceptional security, with integrated hardware support for:
  - Configurable Control-Plane Policing (CoPP), which protects the supervisor CPU from excessive traffic
  - Access control list (ACL) counters and logging capability to provide deeper packet visibility
  - Layer 2 to Layer 4 ACL for both IPv4 and IPv6 traffic
  - Cisco TrustSec® technology and ACL processing for security group tags (SGTs)

Note: This document describes capabilities of the Cisco Nexus 7000 F3-Series module hardware. Please consult your Cisco representative to confirm the appropriate Cisco NX-OS Software release required to enable these features.

Product Specifications

Table 2 lists product specifications for the Cisco Nexus 7000 F3-Series module. Table 3 lists specifications for Cisco transceivers installed in the module's Cisco CPAK ports to enable connectivity over the physical medium. Refer to the release notes for up-to-date software version information to see which optics and copper assemblies are supported. Complete information about supported transceivers can be found at http://www.cisco.com/en/US/products/hw/modules/ps5455/prod_models_home.html.

Table 2. Product Specifications

Item	Specifications
System	
Product compatibility	Supported in all Cisco Nexus 7000 switches chassis
Software compatibility	Contact your local account representative for software release availability
Front-panel LEDs	• Status: Green (operational), red (faulty), or orange (module booting) • Link: Green (port enabled and connected), orange (port disabled), off (port enabled and not connected), or blinking green and orange in conjunction with ID LED blue (port flagged for identification; beacon) • ID: Blue (operator has flagged this card for identification; beacon) or off (module not flagged)
Programming interfaces	• XML • Scriptable command-line interface (CLI) • Cisco Data Center Network Manager (DCNM) web services • Python • Tool Command Language (TCL) interpreter • Cisco Embedded Event Manager (EEM) • Cisco One Platform Kit (OnePK) • OpenFlow
Physical Interfaces	
Connectivity	6 ports of 100 Gigabit Ethernet (Cisco CPAK)
Maximum port density	• 96 ports of 100 Gigabit Ethernet in Cisco Nexus 7000 18-Slot chassis • 48 ports of 100 Gigabit Ethernet in Cisco Nexus 7000 10-Slot chassis • 42 ports of 100 Gigabit Ethernet in Cisco Nexus 7000 9-Slot chassis • 12 ports of 100 Gigabit Ethernet in Cisco Nexus 7000 4-Slot chassis
Queues per port	4 ingress, 4 egress

Item	Specifications
Virtual output queue (VOQ) buffer	72 MB per module
Jumbo frame support for bridged and routed packets	Up to 9216 bytes
SoC	
Performance	900mpps of Layer 2 and Layer 3 forwarding capacity for both IPv4 and IPv6 packets
MAC address entries	64K
VLAN	4096 simultaneous VLANs per VDC
IPv4 entries	64K
IPv6 entries	32K
Adjacency entries	64K
ACLs	16K
CoPP	Supported
Environmental	
Physical dimensions	• Occupies one I/O module slot in a Cisco Nexus 7000 chassis • Dimensions (H x W x D): 1.733 x 15.3 x 21.9 in. (4.4 x 38.9 x 55.6 cm) • Weight: 16lb (7.3kg)
Environmental conditions	• Operating temperature: 32 to 104℉ (0 to 40℃) • Operational relative humidity: 5 to 90%, noncondensing • Storage temperature: -40 to 158℉ (-40 to 70℃) • 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 and GR-1089-CORE) • Verizon NEBS compliance* ◦ Telecommunications Carrier Group (TCG) Checklist • Century Link NEBS requirements* ◦ Telecommunications Carrier Group (TCG) Checklist • ATT NEBS requirements* ◦ ATT TP76200 level 3 • ETSI* ◦ ETSI 300 019-2-1, Class 1.2 Storage ◦ ETSI 300 019-2-2, Class 2.3 Transportation ◦ ETSI 300 019-2-3, Class 3.2 Stationary Use *Validation in Progress

Item	Specifications
Safety	• 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

Table 3. 100 Gigabit Ethernet Interface Distances and Options

100 Gigabit Ethernet Cisco CPAK Module	Wavelength (nm)	Fiber and Cable Type	Core Size (microns)/Modal Bandwidth (MHz*km)***	Connector Type	Cable Distance*
CPAK-100G-SR10	850	MMF (OM3) MMF (OM4)	50.0/2000 50.0/4700	24-fiber MTP/MPO	100m 150m**
CPAK-100G-LR4	1310	SMF	G.652/-	LC duplex	10km

* Minimum cabling distance of 0.5m for -SR10 modules and 2m for -LR4 modules, according to the IEEE 802.3 standard

** Considered an engineered link with a maximum of 1 dB allocated to connectors and splice loss

*** Specified at transmission wavelength

Note: CPAK-100G-SR10 interfaces can be converted to 10 physically independent 10G interfaces or two physically independent 40G interfaces with the use of an MTP/MPO fiber breakout cable.

Ordering Information

To place an order, visit the Cisco Ordering homepage. To download software, visit the Cisco Software Center. Table 4 provides ordering information.

Table 4. Ordering Information

Product Name	Part Number
Nexus 7000 F3-Series 6-Port 100G Ethernet Module (req. CPAK modules)	N7K-F306CK-25 N7K-F306CK-25=

Service and Support

Cisco offers a wide range of services to help accelerate your success in 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 operating efficiency and improve your data center network. Cisco Advanced Services uses 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 diagnostics and real-time alerts on your Cisco Nexus 7000 Series Switch. Spanning the entire network lifecycle, Cisco Services helps increase investment protection, optimize network operations, support migration, 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 Series Switches, visit the product homepage at http://www.cisco.com/go/nexus or contact your local account representative.

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