Next-Generation Cisco Nexus 7000 Series Switches and Modules and Cisco NX-OS Software Release 6.1

PB717347

Cisco continues its leadership in data center switch technology and unified fabric innovation with the introduction of Cisco Nexus® 7000 Series Switches in a compact chassis form factor, next-generation Cisco Nexus 7000 Series supervisors, and 40 and 100 Gigabit Ethernet Cisco Nexus interface modules. With this release, Cisco offers greater architecture flexibility, with interface speeds ranging from 10 Mbps to 100 Gbps and outstanding scalability to meet the requirements of next-generation data centers. IT departments globally can gain operation efficiency and agility and increase business innovation and differentiation.

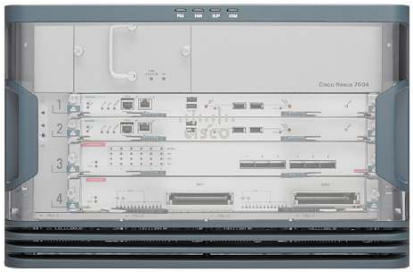
This product bulletin introduces the Cisco Nexus 7000 4-Slot Switch chassis, next-generation Cisco Nexus 7000 Series supervisors, Cisco Nexus 7000 M2-Series modules, Cisco Nexus 7000 F2-Series Enhanced modules, and Cisco® NX-OS Software Release 6.1 for Cisco Nexus 7000 Series Switches (Figure 1).

Figure 1. Cisco Nexus 7000 Series Switches

Cisco Nexus 7000 4-Slot Switch Chassis

The Cisco Nexus 7000 4-Slot Switch chassis adds a compact form factor to the Cisco Nexus 7000 Series. The Cisco Nexus 7000 4-Slot Switch has a height of only seven rack units (7RU) and is designed with the same feature and architectural consistency as the rest of the Cisco Nexus 7000 Series, making it an excellent choice for small to medium-sized data centers, co-locations, access- and aggregation-layer deployments, high-speed core deployments, and smaller operation zones (Figure 2).

Figure 2. Cisco Nexus 7000 4-Slot Switch Chassis



Features include:

- Two supervisor slots to provide full redundancy and high availability
- Two I/O module slots that support up to 96 x 1 and 10 Gigabit Ethernet, 12 x 40 Gigabit Ethernet, and 4 x 100 Gigabit Ethernet ports
- All front-accessible modules, including power supplies and fan trays
- Built-in fabric, with no external fabric modules required
- Side-to-rear airflow, optimizing the use of rack space

Cisco Nexus 7000 Series Second-Generation Supervisors

The next-generation Cisco Nexus 7000 Series supervisor modules improve the scalability of control-plane and data-plane services for the Cisco Nexus 7000 Series chassis and deliver a comprehensive set of features to address the needs of the most demanding data center deployments. The second-generation supervisors are available in two models: the Cisco Nexus 7000 Series Supervisor 2 Enhanced (2E) Module (Figure 3) and the Cisco Nexus 7000 Series Supervisor 2 Module (Figure 4).

Figure 3. Cisco Nexus 7000 Series Supervisor 2E Module

Figure 4. Cisco Nexus 7000 Series Supervisor 2 Module

Features include:

- Administrative virtual device context (VDC) feature on Cisco Nexus 7000 Series Supervisor 2 and 2E Modules, providing a pure administrative context on the Cisco Nexus 7000 Series chassis
- Scalability of up to eight VDCs on the Cisco Nexus 7000 Series Supervisor 2E Module*
- Scalability of up to 48 Cisco Nexus 2000 Series Fabric Extenders (FEX) per chassis with the Cisco Nexus 7000 Series Supervisor 2E Module
- Fibre Channel over Ethernet (FCoE) support on the Cisco Nexus 7000 F2-Series modules
- CPU shares feature, which enables per-VDC CPU access and prioritization and helps guarantee CPU cycles for higher-priority VDCs

Cisco Nexus 7000 F2 Series Enhanced Modules

The Cisco Nexus 7000 F2 Series Enhanced Fiber Module (N7K-F248XP-25E) is a low-latency, high-performance, high-density 10 Gigabit Ethernet module designed for mission-critical data center networks (Figure 5). Up to 768 wire-rate 10 Gigabit Ethernet ports are supported in a single system through the use of the Cisco Nexus 7000 18-Slot Switch chassis, providing the highest density of wire-rate 10 Gigabit Ethernet ports on the market.

Figure 5. Cisco Nexus 7000 F2e-Series Fiber Module

Features include:

- Switch-on-a-chip (SoC) architecture
- 480-Gbps throughput
- 720 million packets per second (mpps) of distributed Layer 2 and Layer 3 forwarding
- Full Layer 2 and Layer 3 capabilities
- Low latency
- Use of Cisco FabricPath for spanning-tree-free deployment
- FCoE support
- Fabric extender support

The Cisco Nexus 7000 F2 Series Enhanced Copper Module (N7K-F248XT-25E) offers a 10GBASE-T solution for the Cisco Nexus 7000 Switches to deliver high-performance, cost-effective, and efficient next-generation RJ-45-based server connectivity (Figure 6). Based on the IEEE 802.3an standard, 10GBASE-T is a crucial technology for designing next-generation data center architectures with reduced deployment costs through integrated 10 Gigabit Ethernet, lower cable costs, and flexible cable lengths.

* SW license is required to enable VDCs.

Figure 6. Cisco Nexus 7000 F2e-Series 10GBASE-T Module

Features include:

- SoC architecture
- 480-Gbps throughput
- 720 mpps of distributed Layer 2 and Layer 3 forwarding
- Full Layer 2 and Layer 3 capabilities
- Low latency
- Use of Cisco FabricPath for spanning-tree-free deployment
- FCoE support
- Use of energy-efficiency Ethernet

Cisco Nexus 7000 M2-Series Modules

The second-generation Cisco Nexus 7000 M-Series modules introduce support for 40 and 100 Gigabit Ethernet technology for the first time on the Cisco Nexus 7000 Series Switches. The Cisco Nexus 7000 M2-Series modules offer comprehensive feature sets, outstanding flexibility and scalability, and nonblocking performance on each port. The Cisco Nexus 7000 M2-Series modules enable the deployment of high-density, high-speed, scalable data center architecture. The Cisco Nexus 7000 M2-Series I/O module is available in three models:

- Cisco Nexus 7000 M2-Series 2-Port 100 Gigabit Ethernet Module with XL Option: N7K-M202CF-22L (Figure 7)
- Cisco Nexus 7000 M2-Series 6-Port 40 Gigabit Ethernet Module with XL Option: N7K-M206FQ-23L (Figure 8)
- Cisco Nexus 7000 M2-Series 24-Port 10 Gigabit Ethernet Module with XL Option: N7K-M224XP-23L (Figure 9)

Figure 7. Cisco Nexus 7000 M2-Series 2-Port 100 Gigabit Ethernet Module with XL Option

Figure 8. Cisco Nexus 7000 M2-Series 6-Port 40 Gigabit Ethernet Module with XL Option

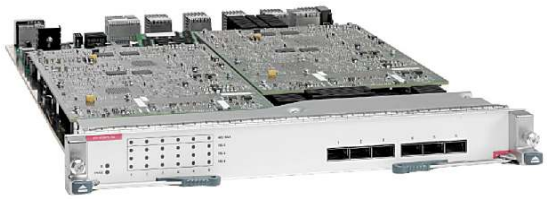


Figure 9. Cisco Nexus 7000 M2-Series 24-Port 10 Gigabit Ethernet Module with XL Option

Features include:

- Up to 32 nonblocking 100 Gigabit Ethernet ports in a single chassis with the Cisco Nexus 7000 M2-Series 100 Gigabit Ethernet Module
- Up to 96 nonblocking 40 Gigabit Ethernet ports in a single chassis with the Cisco Nexus 7000 M2-Series 40 Gigabit Ethernet Module
- Up to 384 nonblocking 10 Gigabit Ethernet ports in a single chassis with the Cisco Nexus 7000 M2-Series 10 Gigabit Ethernet Module
- Forwarding capacity of 120 mpps
- 240-Gbps fabric connectivity (Cisco Nexus 7000 M2-Series 40 and 10 Gigabit Ethernet modules)
- 200-Gbps fabric connectivity (Cisco Nexus 7000 M2-Series 100 Gigabit Ethernet module)
- XL mode to enable a large forwarding table (up to 1 million IPv4 routes or up to 350 IPv6 routes)
- Comprehensive feature sets including support for Multiprotocol Label Switching (MPLS), Cisco Overlay Transport Virtualization (OTV), and IEEE 1588 Precision Time Protocol (PTP)
- Cisco TrustSec® and IEEE 802.1AE, enabling line-rate data confidentiality and data integrity on all ports, including 40 and 100 Gigabit Ethernet modules
- Support for Cisco Nexus 2000 Series Fabric Extenders on the Cisco Nexus 7000 M2-Series 10 Gigabit Ethernet module

Software Support

Cisco NX-OS Software Release 6.1 supports all the software features previously supported on the Cisco Nexus 7000 Series Switches up through Cisco NX-OS Software Release 6.0. Cisco NX-OS 6.1 is compatible using In-Service Software Upgrade (ISSU) with Release 5.2(3a) or later. In addition, Cisco NX-OS 6.0 supports the new software features described in Table 1.

For more detailed information about features and ISSU, refer to the Cisco NX-OS 6.1 release notes (see “For More Information” at the end of this document).

Table 1. New Software Features in Cisco NX-OS Release 6.1

Software Features	Description
Pong	Added support for Cisco FabricPath traceroute pong
FCoE	FCoE support on the N7K-F248XP-25 module with Cisco Nexus 7000 Series Supervisor 2 and 2E
VDC scalability	8 VDCs on Cisco Nexus 7000 Series Supervisor 2E*
Administrative VDC	1 administrative VDC on Cisco Nexus 7000 Series Supervisor 2 and 2E
VDC control groups	Capability to configure CPU shares per VDC with Cisco Nexus 7000 Series Supervisor 2 and 2E
Intermediate System-to-Intermediate System Version 6 (ISISv6)	ISISv6 single-topology support
Encapsulated Remote Switched Port Analyzer (ERSPAN)	ERSPAN support on Cisco Nexus 7000 F2-Series modules
Open Shortest Path First (OSPF)	Support for OSPF flexible distance manipulation
Border Gateway Protocol (BGP) add path	Support for BGP add path
Private VLAN (PVLAN)	PVLAN support on Cisco Nexus 7000 F2-Series modules
Role-based access control (RBAC)	RBAC support on Cisco Nexus 7000 F2-Series modules
VLAN access control list (VACL)	VACL capture support on Cisco Nexus 7000 M2-Series modules
Fabric extender scalability	Support for 48 fabric extender modules on Cisco Nexus 7000 Series Supervisor 2E
Fabric extender	Min-link on fabric extender network interface (NIF) PortChannel
IP service-level agreement (IP-SLA)	IP-SLA support
Quality of service (QoS)	Differentiated services code point (DSCP)-to-queue mapping on Cisco Nexus 7000 F2-Series modules

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. Cisco Nexus 7000 Next Generation Hardware

Description	Part Number
Cisco Nexus 7000 M2-Series 2-Port 100GbE Module with XL Option (req. CFP)	N7K-M202CF-22L
Cisco Nexus 7000 M2-Series 6-Port 40GbE Module with XL Option (req. QSFP)	N7K-M206FQ-23L
Cisco Nexus 7000 M2-Series 24-Port 10GbE Module with XL Option (req. SFP+)	N7K-M224XP-23L
Cisco Nexus 7000 Supervisor 2	N7K-SUP2
Cisco Nexus 7000 Supervisor 2 Enhanced	N7K-SUP2E
Nexus 7000 Enhanced F2-Series 48 Port 1G/10G Ethernet Module, SFP/SFP+	N7K-F248XP-25E
Nexus 7000 Enhanced F2-Series 48 Port 1G/10G Ethernet Module, 10GBASE-T	N7K-F248XT-25E
Cisco Nexus 7000 Series 4-Slot Chassis including Fan Tray, Cable Management Kit, No Power Supply	N7K-C7004

Support for Cisco Nexus 2000 Series Fabric Extenders

Table 3 lists the Cisco Fabric Extenders now supported on the Cisco Nexus 7000 F2-Series 48-Port 1 and 10 Gigabit Ethernet Module, M2-Series 24-Port 10 Gigabit Ethernet Module, and M1-Series 32-Port 10 Gigabit Ethernet Module.

* SW license is required to enable VDCs.

Table 3. New Cisco Fabric Extenders Supported in Cisco NX-OS Release 6.1

Cisco Fabric Extenders	Part Number
Cisco Nexus 2232TM - 32x 1/10GBASE-T + 8x 10GE	N2K-C2232TM
Cisco Nexus 2248TP-E - 48x 100/1000BASE-T + 4x 10GE	N2K-C2248TP-E

Support for Cisco Transceiver Modules

Table 4 lists the new optics supported in Cisco NX-OS Release 6.1.

Table 4. New Optics Supported in Cisco NX-OS Release 6.1

Optics	Part Number
For Cisco Nexus M2-Series 2-Port 100GbE Module with XL Option (N7K-M202CF-22L)	
100GBASE-LR4 (up to 10km)	CFP-100G-LR4
For Cisco Nexus M2-Series 6-Port 40GbE Module with XL Option (N7K-M206FQ-23L)	
40GBASE-SR4 (up to 100m)	QSFP-40G-SR4
For Cisco Nexus M2-Series 24-Port 10GbE Module with XL Option (N7K-M224XP-23L)	
10GBASE-SR (up to 300m)	SFP-10G-SR
10GBASE-LR (up to 10km)	SFP-10G-LR
10GBASE-ER (up to 40km)	SFP-10G-ER
10GBASE-LRM (up to 300m)	SFP-10G-LRM
10GBASE-DWDM	DWDM-SFP10G-xx.xx
FET-10G Fabric Extender Transceiver (up to 100m)	FET-10G
SFP+ Copper Passive Twinax (1m)	SFP-H10GB-CU1M
SFP+ Copper Passive Twinax (3m)	SFP-H10GB-CU3M
SFP+ Copper Passive Twinax (5m)	SFP-H10GB-CU5M
SFP+ Copper Active Twinax (7m)	SFP-H10GB-ACU7M
SFP+ Copper Active Twinax (10m)	SFP-H10GB-ACU10M
For Cisco Nexus M1-Series 32-Port 10GbE Module with XL Option (N7K-M132XP-12L)	
10GBASE-DWDM	DWDM-SFP10G-xx.xx
For Cisco Nexus F2-Series 48-Port 10GbE Module (N7K-F248XP-25)	
10GBASE-DWDM	DWDM-SFP10G-xx.xx
1000BASE-EX SFP (up to 40 km)	GLC-EX-SMD
For Cisco Nexus F1-Series 32-Port 10GbE Module (N7K-F132XP-15)	
10GBASE-DWDM	DWDM-SFP10G-xx.xx
1000BASE-EX SFP (up to 40 km)	GLC-EX-SMD

More information about the transceivers is available at http://www.cisco.com/en/US/docs/interfaces_modules/transceiver_modules/installation/note/78_15160.html.

Cisco NX-OS is available with the following software licenses:

- Base license: A comprehensive feature set is provided with the Base license, which is bundled with the hardware at no additional cost. Cisco TrustSec is included in this license for Cisco NX-OS Release 6.1 and later.
- Enterprise license: The Enterprise license enables incremental functions that are applicable to many enterprise deployments.

- VDC license: The VDC license enables the use of the following functions in Cisco NX-OS:
  - Four VDCs and and one administrative VDC: Four VDC licenses for Cisco Nexus 7000 Series Supervisor 1, 2, and 2E Modules
  - More than four VDCs: Increments VDC licenses by four, allowing your Cisco Nexus 7000 Series Supervisor 2E Module to scale up to eight VDCs
- Scalable Feature license: The Scalable Feature license enables XL capabilities on the line cards. The Scalable Feature license is applied on a per-chass basis.
- Transport Services license: The Transport Services license enables OTV functions. The license to enable the Cisco Locator/ID Separation Protocol (LISP) is included in this license for Cisco NX-OS Release 6.0 and later.
- Enhanced Layer 2 license: The Enhanced Layer 2 license enables the Cisco FabricPath feature. The license to enable pong is included in this license for Cisco NX-OS Release 6.0 and later.
- MPLS license: The MPLS license enables all MPLS features, including MPLS forwarding; QoS; Layer 3 VPN (L3VPN); IPv6 VPN Provider Edge (6PE/VPE); and operations, administration, and maintenance (OAM).
- FCoE license: The FCoE license enables all FCoE features on the Cisco Nexus 7000 Series Switches.
- Storage license: The Storage license enables VSAN routing and access control.

Additional information about the license packages can be found on the Cisco website at http://www.cisco.com/en/US/prod/collateral/iosswrel/ps9494/ps9372/data_sheet_c78-437306.html.

Cisco Services 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. Cisco's innovative services are delivered through a unique combination of people, processes, tools, and partners and are focused on helping you increase your operation 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 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 capability, which offers proactive diagnostics and real-time alerts on your Cisco Nexus 7000 Series Switches. Spanning the entire network lifecycle, Cisco Services helps protect your investment, optimize network operations, support migration, and strengthen yor IT expertise. For more information about Cisco Data Center Services, visit http://www.cisco.com/go/dcservices.

For More Information

For more information about Cisco NX-OS, visit the product homepage at http://www.cisco.com/go/nxos or contact your local account representative.

For more information about the Cisco Nexus 7000 Series, visit the product homepage at http://www.cisco.com/go/nexus7000 or contact your local account representative.

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