

# Cisco Nexus 7000 Series Switches



## Build a Next-Generation Network

Create the network foundation for your next-generation data center. The modular Cisco Nexus® 7000 Series Switches deliver the highest-density 10 Gigabit Ethernet ports in the market, with up to 768 10-Gbps ports and more than 17 terabits per second (Tbps) of switching capacity, support for 40 and 100 Gigabit Ethernet interfaces, and a comprehensive Cisco® NX-OS Software feature set. The Cisco Nexus 7000 Series Switches are designed to meet the requirements of next-generation data centers, Cisco Data Center Interconnect (DCI) solutions, data center aggregation, spine and leaf architecture, and data center end-of-row (EoR) access designs.

The Cisco Nexus 7000 Series runs on Cisco NX-OS Software, which is designed to help transform your data center into a highly scalable asset while protecting your investment in your existing framework.

## Cisco Nexus 7000 Series Chassis

Figure 1 shows the Cisco Nexus 7000 Series chassis.

**Figure 1.** Cisco Nexus 7000 Series 4-, 9-, 10-, and 18-Slot Switches



## Cisco Nexus 7000 Series Supervisor Modules

The Cisco Nexus 7000 Series supervisor modules are designed to deliver scalable control-plane and management functions for the Cisco Nexus 7000 Series. The supervisor controls the Layer 2 and 3 services, redundancy capabilities, configuration management, status monitoring, power and environmental management, and more. The fully distributed forwarding architecture allows the supervisor to support transparent upgrades to I/O and fabric modules with greater forwarding capacity. The Cisco Nexus 7000 Series Supervisor 2E delivers increased scalability for features such as virtual device contexts (VDCs), fabric extenders, and Virtual Routing and Forwarding (VRF).

## Cisco Nexus 7000 Series Fabric Modules

The Cisco Nexus 7000 Series fabric modules provide the central switching element for fully distributed forwarding on the I/O modules. The addition of each fabric module increases the bandwidth to all module slots up to the system limit of five modules. Cisco Nexus 7000 Series Fabric 2 Modules deliver up to 550 Gbps per slot.

## Cisco Nexus M-Series I/O Modules

The Cisco Nexus 7000 M-Series modules are next-generation, full-featured, high-performance modules with support for high-density 40 and 100 Gigabit Ethernet. Larger forwarding tables can be enabled to support a full IPv4 and IPv6 Internet route table. The Cisco Nexus M-Series supports a comprehensive feature set including Cisco Overlay Transport Virtualization (OTV), Cisco Locator/ID Separation Protocol (LISP), Cisco fabric extenders, Multiprotocol Label Switching (MPLS), full Cisco NetFlow, and Virtual Private LAN Services (VPLS). These modules maintain architectural consistency with the Cisco Catalyst® 6500 Series Switches.

## Cisco Nexus F-Series I/O Modules

The Cisco Nexus 7000 F-Series modules are built with switch-on-a-chip (SoC) architecture, which increases performance while reducing the power use (to less than 9 watts [W] per port) and latency as well as cooling requirements of the module. Each port can be used at 1 or 10 Gigabit Ethernet speed. Up to 768 wire-rate 10 Gigabit Ethernet ports are supported. The Cisco Nexus 7000 F-Series modules support Layer 3 functions and unified fabric capabilities such as Cisco FabricPath, Fibre Channel over Ethernet (FCoE), and integration with Cisco Nexus 2000 Series Fabric Extenders.



## Cisco NX-OS Software

Cisco NX-OS is a highly-evolved operating system that delivers the performance, reliability, and lifecycle expected in the data center. Cisco NX-OS is designed to scale with current and future multiprocessor hardware platforms and offers easy portability across a variety of platforms with feature consistency. It facilitates the integration of new innovations and evolving standards to deliver long-term feature extensibility. Cisco NX-OS delivers highly secure, continuous operations with failure detection, fault isolation, self-healing features, and hitless In-Service Software Upgrade (ISSU) that helps reduce maintenance disruptions.

## Cisco Nexus 7000 Series Features

- **Availability and Reliability:** The Cisco Nexus 7000 Series provides continuous system operations, permitting maintenance, upgrades, and software certification without service interruption. The combination of process modularity, modular patching, Cisco ISSU capability, nonstop-forwarding (NSF), automatic graceful restart, and stateful process restart reduces the effects of software upgrades on data plane forwarding.
- **Convergence:** The combination of the Cisco Nexus 7000 F-Series I/O module and FCoE enables network consolidation and greater utilization of previously separate LAN and SAN infrastructure and cabling, reducing by up to 50 percent the number of adapters and cables required and eliminating redundant switches. In addition, the Cisco Nexus 7000 Series supports standards-based multihop FCoE topologies that help enable end-to-end access to core converged fabric.
- **Scalability**
  - **10-Gbps Density:** The Cisco Nexus 7000 Series enables the highest-density 10 Gigabit Ethernet system in the industry, with up to 768 wire-rate 10 Gigabit Ethernet ports.
  - **Cisco FabricPath:** Cisco FabricPath provides industry-leading fabric scalability without Spanning Tree Protocol. Customers can build fabrics that scale up to 12,000 10 Gigabit Ethernet servers.
  - **Cisco Nexus 2000 Series Fabric Extenders:** Customers can achieve up to 2048 10 Gigabit Ethernet ports by combining a Cisco Nexus 7000 Series Switch with Cisco Nexus 2000 Series Fabric Extenders.
- **Network Consolidation:** VDCs enhance virtualization by enabling customers to partition physical switch resources by creating multiple logical switch contexts. VDCs deliver true segmentation of network traffic, context-level fault isolation, and management through the creation of independent hardware and software partitions. With Cisco Nexus 7000 SUP2E, up to eight VDCs are supported.
- **Workload Mobility**
  - **OTV:** Cisco OTV is an industry-first technology that extends Layer 2 networks over Layer 3 networks across multiple sites or any transport. Cisco OTV allows customers to deploy Cisco DCI between sites without the need to change or reconfigure their existing network designs.
  - **LISP:** The revolutionary new Cisco LISP routing architecture adds scalability and agility to virtualized and cloud-computing environments by splitting the device identity and its location into two different numbering spaces. Take advantage of LISP for load balancing across data centers based on resource availability and cost. The combination of OTV and LISP technologies gives you true active-active data center and disaster recovery.
- **L4-L7 Services:** The Network Analysis Module (NAM-NX1) is an integrated service module for Cisco Nexus 7000 Series Switches. It empowers network administrators with actionable visibility to improve application performance, optimize network resources, and enhance operation efficiency. The capability to see applications through Layer 7 permits detailed visibility for effective management of business applications such as Citrix products, Oracle Business Intelligence, and Microsoft SQL Server. This module also extends network visibility to virtualization and overlay technologies such as OTV, LISP, and Virtual Extensible LAN (VXLAN).
- **Ready for Software-Defined Networking (SDN):** Cisco Nexus 7000 Series Switches are SDN ready, with a flexible architecture and API framework that allows developers to create and support SDN agents such as Netconf and OpenFlow. The same software development kit (SDK) can be used to provide agents that support OpenStack, CloudStack, or open source frameworks including Puppet and Chef. The Cisco Nexus 7000 Series provides programmatic APIs such as Cisco One Platform Kit (onePK), Python, and Quantum to work in conjunction with applications that make the networks responsive and agile.

## For More Information

For more information about the Cisco Nexus 7000 Series, visit <http://www.cisco.com/go/nexus7000>.