



Product Highlights

The Cisco Nexus™ 7000 Series is a modular data-center-class line of switches designed for highly scalable end-to-end 10 Gigabit Ethernet and Cisco DCE™ networks. The fabric architecture scales beyond 15 terabits per second (Tbps) with future support for 40-Gbps and 100-Gbps Ethernet. This new platform is designed for exceptional scalability, continuous systems operation, and transport flexibility. The Cisco Nexus 7000 Series is powered by Cisco® NX-OS, a state-of-the-art operating system. Figure 1 shows the Cisco Nexus 7000 Series 10-slot and 18-slot chassis.

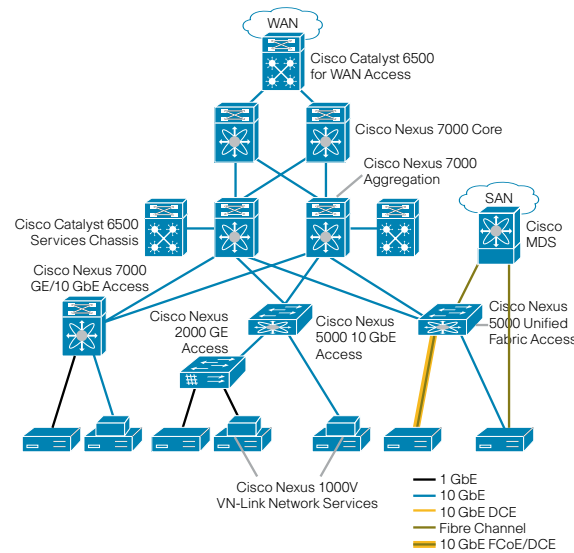
Figure 1. Cisco Nexus 7000 Series 10-Slot and 18-Slot Chassis



Cisco NX-OS: Self-Healing OS for the Data Center

- Robust and rich feature set with a variety of Cisco innovations: Based on the industry-proven Cisco IOS® Software, Cisco MDS 9000 SAN-OS Software, and acquisitions to unify data center operations
- Flexible and scalable: Built with modularity, virtualization, and resiliency at its core to deliver operational benefits in mission-critical environments
- IP routing and multicast: Supports state-of-the-art implementations of IPv4 and IPv6 services, routing protocols, and IP Multicast features to optimize and enhance data center scalability and performance, reducing capital expenditures (CapEx) and operating expenses (OpEx)
- Comprehensive set of security, high-availability, serviceability, and manageability features: Meets the needs of the most demanding environments

Figure 2. Places in the Network



Performance

Up to 8 Tbps total system bandwidth at initial release. Future releases will be scalable to more than 15 Tbps of bandwidth.

Cisco Nexus 7000 Series Advantages

Infrastructure Scalability

- System is designed for scalability to more than 15 Tbps for ongoing investment protection
- Support for consolidated networks with virtual port channel innovations to scale beyond 1500 ports
- Multicore, multi-threaded OS to optimize CPU resources and offload tasks to processors distributed across the modules
- Cisco Trusted Security (TrustSec) for scalable security with link-layer encryption, security group access control lists, and role-based access control

- Flexible NetFlow to optimize the network infrastructure, reducing operating costs and improving capacity planning capabilities

Operational Continuity

- Lossless non-disruptive upgrades for zero-service downtime through no single point of failure in the system hardware and a modular operating system
- Connectivity management processor (CMP) for integrated out-of-band management access
- Innovative stateful process restart to ensure nondisruptive operations in event of process termination
- Comprehensive Extensible Markup Language (XML) API for total platform control

Transport Flexibility

- Foundation for unified fabrics with Cisco DCE unified I/O, and FCoE
- Virtualized control plane and data plane forwarding for optimized performance
- Virtual device contexts (VDCs) to maximize software and hardware resource utilization while providing strong security and software fault isolation
- Built to support high-density 1 Gigabit and 10 Gigabit Ethernet today, and the emerging 40 Gbps and 100 Gbps Ethernet standards

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

Cisco Nexus 7000 Series Modules

- **The Cisco Nexus 7000 Supervisor Module** is designed to deliver scalable control plane and management functions for the Cisco Nexus 7000 Series chassis. It is based on a dual-core processor that scales the control plane by harnessing the flexibility and power of the dual cores.
- **The Cisco Nexus 7000 Fabric Module** is a separate fabric module that provides 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.

- **The Cisco Nexus 7000 48-Port 10/100/1000 and 1G SFP Ethernet Modules** are high-performance, highly scalable modules designed for mission-critical Ethernet networks. They provide support for up to 768 ports in a single chassis, with Cisco TrustSec on every port.
- **The Cisco Nexus 7000 32-Port 10 Gigabit Ethernet Module** is a high-performance, high-density 10 Gigabit Ethernet module designed for mission-critical Ethernet networks. It provides support for up to 512 ports in a single chassis, with Cisco TrustSec on every port.

Security and Cisco TrustSec

Through Cisco TrustSec, Cisco NX-OS delivers the next phase of the Self-Defending Network with a comprehensive set of Layer 2 through 4 security features for the data center and support for IEEE 802.1AE:

- **Admission control:** 802.1x-based topology-independent authentication and authorization for endpoints and network devices.
- **Confidentiality and integrity:** Link-layer 802.1AE authenticated cryptography provides data privacy and guarantees its reliability while allowing the insertion of network services such as firewalls or load balancers
- **Access control:** Identity-based and topology-independent access policies are enabled by application-specific integrated circuit (ASIC) accelerated ingress tagging and egress filtering

Manageability

- XML-based programmatic interface: Self-describing and extensible, this mediation technique keeps OpEx related to upgrade and migration to a minimum.
- Simple Network Management Protocol (SNMP): Compliant with SNMP Versions 1, 2, and 3.

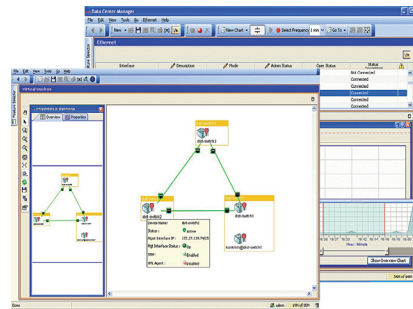
- Configuration verification and rollback: Allows device preconfiguration verification. Configuration can be check-pointed to allow rollback.
- CMP support: Supports the use of a CMP for remote management of the platform
- Powerful integrated toolset:
 - Control plane analyzer
 - Embedded Event Manager
 - Smart Call Home feature
 - Cisco Generic Online Diagnostics (GOLD)
 - Switched Port Analyzer (SPAN)
 - Flexible NetFlow

Cisco Data Center Network Manager (DCNM)

Cisco DCNM is a comprehensive and centralized administration solution dedicated to data center network operations (Figure 3). Advantages include:

- SAN and LAN multiprotocol awareness
- FCAPS coverage for Cisco NX-OS devices
- Industry-standard SOAP/XML open API

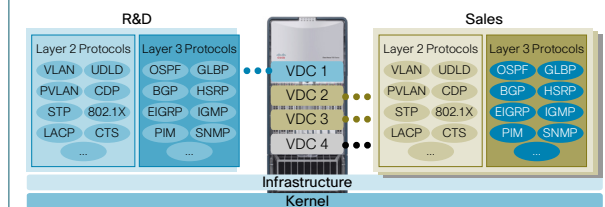
Figure 3. DCNM Graphical User Interface



Virtual Device Context

Cisco Nexus 7000 Series switches can be segmented into virtual devices based on business need (Figure 4). VDCs deliver true segmentation of network traffic, context-level fault isolation, and management through the creation of independent hardware and software partitions.

Figure 4. Virtual Device Contexts

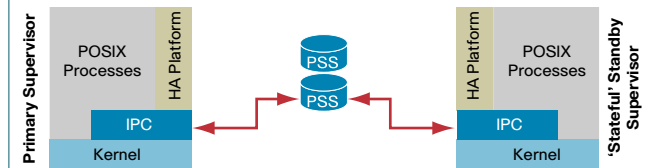


A consolidated infrastructure increases flexibility and simplifies operations. VDCs improve CapEx and OpEx by optimizing power consumption, space requirements, device utilization, maintenance operations, and, ultimately, service velocity.

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 In-Service Software Upgrade (ISSU) capability, nonstop-forwarding (NSF) automatic graceful restart, and stateful process restart (Figure 5) minimizes the effects of software upgrades on other operations.

Figure 5. Stateful Process Restart



The system also supports the following hardware high-availability features: reliable interprocess communication (IPC), hot-swappable modules, environment monitoring, and redundant switched Ethernet out-of-band channel (EOBC).