

## 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 networks. The fabric architecture that 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. Cisco Nexus 7000 is powered by Cisco NX-OS, a state-of-the-art operating system. Figure 1 shows the Cisco Nexus 7000 Series 10-Slot Chassis.

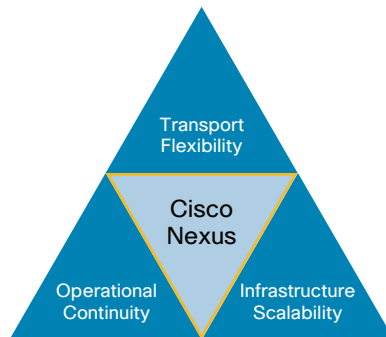
Figure 1. Cisco Nexus 7000 Series 10-Slot Chassis



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

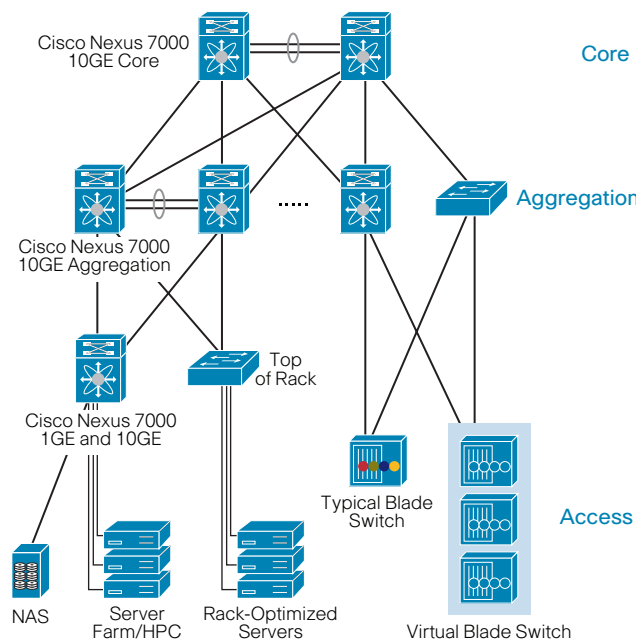
- **Robust and rich feature set with a variety of Cisco innovations:** Based on the industry-proven Cisco IOS® Software, Cisco MDS 9000 SAN-OS Software, and acquisitions to unify data center operations
- **Flexible and scalable:** Built with modularity, virtualization, and resiliency at its core to deliver 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, service-ability and manageability features:** Meets the needs of the most demanding environments

Figure 2. Nexus Provides the Framework for the Data Center 3.0 Network



Nexus defines the operational characteristics of next generation infrastructure

Figure 3. 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 designed for future scalability to more than 15 Tbps for investment protection
- Multicore, multi-threaded OS to optimize CPU resources and offload tasks to processors distributed across the modules
- Cisco Trusted Security for scalable security with link-layer encryption and security group access control lists and role-based access control
- Flexible NetFlow to optimize the network infrastructure, reducing operating costs and improving capacity planning

### Operational Continuity

- Lossless non disruptive upgrades for zero service down time
- Connectivity management processor (CMP) for integrated out-of-band management access
- Graceful system operations to minimize the effect of upgrades and other software operations
- Comprehensive Extensible Markup Language (XML) API for total platform control

### Transport Flexibility

- Flexible foundation for unified fabrics and unified I/O
- 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 the emerging 40 Gbps and 100 Gbps Ethernet standards

For more information about the Cisco Nexus 7000 Series, visit [www.cisco.com/go/nexus](http://www.cisco.com/go/nexus).

## 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 10-Slot 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 can work together delivering up to 230 Gbps per slot.
- The *Cisco Nexus 7000 48-Port 10/100/1000 Ethernet Module* is a high-performance, highly scalable module designed for mission-critical Ethernet networks. It supports up to 384 ports in a single chassis, with support for 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 supports up to 256 ports in a single chassis, with support for 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 end-points 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

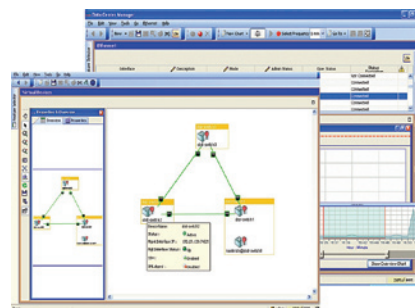
- **XML based Programmatic Interface:** Self describing and extensible, this mediation technique keeps Operational Expenditure related to upgrade and migration to a minimum.
- **Simple Network Management Protocol (SNMP):** Compliant with SNMP Versions 1, 2, and 3
- Configuration verification and rollback: Allows device preconfiguration verification. Configuration can be check-pointed to allow rollbacks
- **Connectivity Management Processor (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
  - 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 4). Cisco DCNM key advantages are:

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

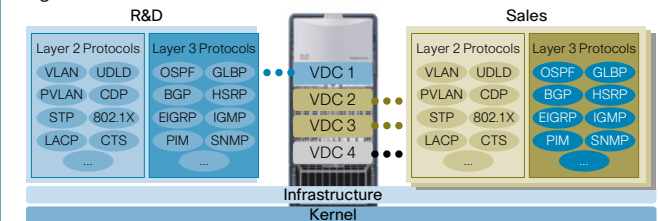
Figure 4. DCNM Graphical User Interface



## Virtual Device Context

The Cisco Nexus 7000 Series switches can be segmented into virtual devices based on business need (Figure 5). Virtual Device Contexts (VDC) deliver true segmentation of network traffic, context level fault isolation and management through the creation of independent hardware and software partitions.

Figure 5. Virtual Device Context

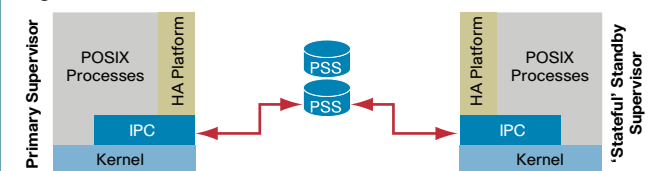


Consolidated infrastructure increases flexibility and simplifies operations. VDCs improve CapEx and OpEx by optimizing power consumption, space requirements, device utilization, maintenance operations and ultimately service velocity.

## 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, and nonstop-forwarding (NSF) automatic graceful restart and stateful process restart (Figure 6) minimizes the effects of software upgrades on other operations

Figure 6. 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).