



Cisco Nexus 5000 Series Switches

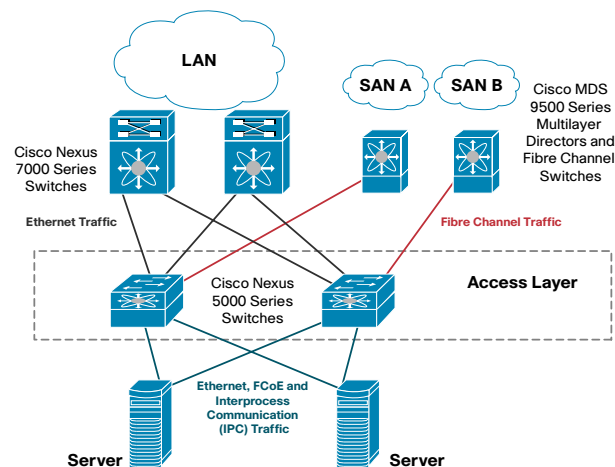
Simplifying Data Center Transformation

At-A-Glance

Cisco Nexus 5000 Series Switches Features

The Cisco Nexus™ 5000 Series, part of the Cisco Nexus family of data center—class switches, delivers an innovative architecture to simplify data center transformation by enabling a high-performance, standards-based, Ethernet unified fabric. The platform consolidates separate LAN, SAN, and server cluster network environments into a single unified fabric. Backed by a broad system of industry-leading technology partners, the Cisco Nexus 5000 Series is designed to meet the challenges of the next-generation data centers, including dense multsocket, multicore, virtual machine—optimized services, where infrastructure sprawl and increasingly demanding workloads are commonplace. Figure 1 shows the position of the Cisco Nexus 5000 Series in one network scenario.

Figure 1 Cisco Nexus 5000 Series in the Data Center Network



Data Center Transformation with Cisco Nexus 5000 Series

- Total cost of ownership (TCO) reduction through data center infrastructure simplification
- Data center consolidation with investment protection for existing server, network, storage, and facilities assets
- Increased business agility through virtual machine—optimized services
- Enhanced business resilience through higher levels of operational continuity
- Ease of deployment and alignment with existing operational models and best practices in the data center

Total Cost Reduction with Unified Fabric

The Cisco Nexus 5000 Series provides a unified fabric over 10 Gigabit Ethernet for LAN, SAN, and cluster traffic. This unification enables consolidation and greater utilization of previously separate infrastructure and cabling, reducing by up to 50 percent the number of adapters and cables required and eliminating redundant switches. This infrastructure displacement also lowers power and cooling costs significantly, especially for rack-optimized servers similar to blade servers.

The Cisco Nexus 5000 Series simplifies cable management, allowing hosts to connect to any network through a unified Ethernet interface and enabling faster rollout of new applications and services.

Innovations in Cisco Nexus 5000 Series

- High-performance, low-latency 10 Gigabit Ethernet, delivered by a cut-through switching architecture, for 10 Gigabit Ethernet server access in next-generation data centers
- Data Center Ethernet, a main component of Cisco Data Center 3.0 architecture, with features, including

Layer 2 multipathing (L2MP), which increases scalability in the data center

- Unified fabric with Fibre Channel over Ethernet (FCoE) for I/O consolidation, reducing power and cabling requirements and simplifying data center networks, especially for SAN consolidation of Fibre Channel
- Virtual machine—optimized services for higher asset utilization, simplified server connections, rapid server provisioning, security, and quality of service (QoS)

Investment Protection and Operational Best Practices

The Cisco Nexus 5000 Series lets customers take advantage of the cost and functional benefits of a unified fabric while protecting their investments in existing network, storage, and server assets.

The Cisco Nexus 5000 Series can be easily inserted into an existing data center network to provide immediate benefits without causing disruption or reworking of existing design and operational best practices.

Cisco Data Center Ethernet

Cisco Data Center Ethernet includes standards-based extensions to existing Ethernet to create a lossless transport for converged storage and data traffic. This feature enables successful deployment of FCoE and other critical data center traffic flows, simplifies Layer 2 topology, and improves stability and manageability of data center networks.



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Fibre Channel over Ethernet (FCoE)

FCoE is an open standards-based protocol that encapsulates Fibre Channel in Ethernet, eliminating the need for separate switches, cabling, adapters, and transceivers for each class of traffic. This feature dramatically reduces power consumption and reduces both capital and operating expenses for businesses.

Virtual Machine–Optimized Services

Cisco Nexus 5000 Series Switches are designed to support virtualization and virtual machine mobility by mapping virtual machines to network profiles, allowing network services allocation at per-virtual machine granularity centrally from the unified fabric. This capability to move virtual machines and network profiles together eases manageability, increases isolation, and enables consistent network and security policies.

Part of the Cisco Nexus Family of Data Center–Class Switches

- Operational manageability
 - Simpler, more resilient Layer 2 network
 - Preservation of management best practices
- Transport flexibility
 - FCoE-based unified fabric
 - Virtual machine–optimized services
 - Lossless 10 Gigabit Ethernet and Cisco Data Center Ethernet
- Infrastructure scalability
 - Reduced power and cooling demands
 - Nonblocking capacity of more than 1 terabit per second (Tbps)

Data Center–Class Operating System

The Cisco Nexus 5000 Series is based on the Cisco NX-OS Software, which provides superior availability, operational efficiency, and security in enterprise data center environments.

Management

The Cisco Nexus 5000 Series supports the standard Cisco command-line interface (CLI), role-based access control, Cisco Fabric Manager, and standard interfaces for Simple Network Management Protocol (SNMP) and XML.

Cisco Nexus 5000 Series Platform

- Cisco Nexus 5020 Switch
 - Two rack-unit (2RU) 10 Gigabit Ethernet and FCoE switch with 1.04 Tbps throughput
 - Up to 56 ports: 40 fixed 10 Gigabit Ethernet ports with Small Form-Factor Pluggable Plus (SFP+) connectors and two expansion slots (Figure 2)
- Cisco Nexus 5010 Switch
 - One RU 10 Gigabit Ethernet and FCoE Switch
 - Up to 28 ports: 20 fixed 10 Gigabit Ethernet ports with SFP+ connectors and one expansion slot
- Expansion modules
 - An Ethernet module with 6 SFP+ ports per module that support 10 Gigabit Ethernet, Cisco Data Center Ethernet, and FCoE
 - A Fibre Channel and Ethernet module with 4 ports of 10 Gigabit Ethernet, Cisco Data Center Ethernet, and FCoE through an SFP+ interface, and 4 ports of 1/2/4-Gbps native Fibre Channel connectivity through an SFP interface

- A Fibre Channel module with 8 ports of 1/2/4-Gbps native Fibre Channel through SFP+ ports

Figure 2 Cisco Nexus 5020 and 5010 Switches and Expansion Modules



Cisco Nexus 2000 Series Fabric Extender

The Cisco Nexus 2000 Series Fabric Extender is a new category of data center products that provides a highly scalable and flexible server networking solution. It works in conjunction with Cisco Nexus 5000 Series Switches to provide high-density, low-cost connectivity for server aggregation. The Cisco Nexus 2148T Fabric Extender is a compact, 1RU form factor device, providing 48 fixed ports of Gigabit Ethernet interfaces for server connectivity and up to four 10 Gigabit Ethernet uplink interfaces. The features are compatible with data center network designs that include front-to-back cooling, switch ports on the rear in proximity to server ports, and user-serviceable components on the front panel.

Figure 3 Cisco Nexus 2148T Fabric Extender



For More Information

- Cisco Nexus 5000 Series:
<http://www.cisco.com/go/nexus5000>
- Cisco Nexus 2000 Series:
<http://www.cisco.com/go/nexus2000>
- Cisco Data Center Ethernet:
<http://www.cisco.com/go/dce>
- Cisco NX-OS:
<http://www.cisco.com/go/nxos>