

Cisco Storage Networking Statement of Direction



Storage Challenges and Trends

Storage and storage networking are at the center of attention of IT professionals around the world. With the exponential growth in connected devices, mobile devices, apps (consumer or enterprise) and cloud services, and trends such as virtualization and analytics, data center architects are looking for continuous SAN innovation. The SAN solutions require flexibility, agility, reliability, and versatility. Just as important, if not more so, are automation, rapid deployment, and security of the SAN.

Cisco MDS 9000 Family Portfolio

- Scalability
- Operational Efficiency
- Intelligent Fabric Services
- Ultimate Reliability
- Investment Protection
- Multiprotocol Storage Networking FC + FCoE



Cisco Storage Networking Vision and Strategy

Multiprotocol storage networking is central to Cisco® Unified Fabric. Multiprotocol storage networks start with the enterprise-class features, reliable performance, and comprehensive, mature functions of Fibre Channel SANs and extend them transparently to Ethernet environments, resulting in a single network with the flexibility to deploy a variety of storage protocols, including Fibre Channel (FC), FC over Ethernet (FCoE), FC over IP (FCIP), SCSI over IP

(iSCSI), network-attached storage (NAS), and IBM Fiber Connection (FICON).

The next generation of the Cisco® MDS 9000 family, an important component of the Cisco Unified Data Center, provides such flexibility coupled with a single, proven operating system and a central management platform to enable evolutionary adoption and consistent SAN and LAN networking operations. Cisco services-oriented SAN applications enable centralized, storage-vendor-neutral solutions to meet customer needs, including data encryption, data migration, and acceleration of backup and replication performance between distant data centers.

Market Leadership

The Cisco MDS 9700 Series Multilayer Directors have established new benchmarks for performance, reliability, availability, and multiprotocol support. These directors deliver more than three times the bandwidth of any director in the industry, providing storage connectivity into the future for mission-critical applications, massive amounts of data, solid-state drives (SSDs), and cloud-based environments. Cisco extends the Cisco MDS 9000 family with the MDS 9718, 9710 and 9706, providing the industry's most reliable storage directors with N+1 fabric redundancy, fully redundant components, and fault-tolerant architectural design. The MDS 9700 Series Directors are the industry's only 16-Gbps Fibre Channel SAN directors that support FCoE in the same chassis and are designed to scale in a multiprotocol environment.

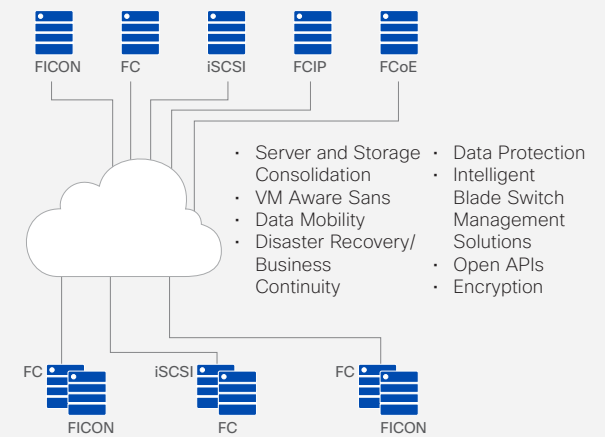
The Cisco MDS 9200 Series Multiservice Switches deliver state-of-the-art multiprotocol and distributed multiservice convergence, offering high-performance SAN extension and disaster-recovery solutions,

intelligent fabric services, and cost-effective multiprotocol connectivity.

The Cisco MDS 9100 Series Multilayer Fabric Switches are cost-effective, scalable, easy to install, and highly configurable Fibre Channel switches that are excellent for small to medium-sized businesses. The Cisco MDS 9148S and 9396S 16G Multilayer Fabric Switches offer the most line-rate 16-Gbps ports in a one-rack-unit (1RU) or two-rack-unit (2RU) form factor, respectively, and include a full set of enterprise features.

A complete portfolio of optics is supported. The Cisco MDS 9000 family supports a variety of transport-layer technologies and distances, including integrated coarse and dense wavelength-division multiplexing (CWDM and DWDM) optics that eliminate the need for optical transponder equipment.

Cisco MDS 9000 Family Architecture



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Cisco MDS 9000 Family Innovation

- Comprehensive end-to-end virtualization:** Expanded virtualization solutions at the network, server, and storage levels improve utilization and performance with unique features such as VSANs, built-in inter-VSAN routing (IVR), N-port ID virtualization (NPIV), and F-port trunking that support end-to-end virtualized environments. The VMpath feature of Cisco Prime™ Data Center Network Manager provides path visualization, troubleshooting, and performance monitoring from the virtual machine all the way to the storage port.
- Cisco Unified Computing System™ (Cisco UCS®) and Cisco Nexus® integration:** The Cisco MDS 9000 family offers superior integration with the Cisco Nexus family and Cisco Unified Computing System. F-port port channels increase availability and provide load balancing across physical uplinks, and F-port trunking allows traffic from multiple VSANs to coexist on a single uplink or port channel.
- Investment protection:** The 9710 and 9706 directors are designed with the future in mind. They currently support 16-Gbps Fibre Channel and 10-Gbps FCoE. These platforms are built to support 32-Gbps Fibre Channel and 40-Gbps FCoE at full line rate with the current chassis and fabric cards.
- Operational efficiency:** By implementing robust instrumentation, building advanced management applications, and exposing the network through standards-based interfaces, Cisco offers the most manageable storage networking platforms in the industry today. Cisco Prime Data Center Network Manager provides a comprehensive feature set, along with a customizable dashboard that provides enhanced visibility and automated fabric provisioning of dynamic data centers.
- Hardware-based slow drain mitigation:** The MDS 16G product line offers instantaneous hardware-based slow drain detection and recovery for continuous detection and recovery of network blockages, providing seamless network traffic control.
- Power-on auto provisioning:** IT administrators across the world using Cisco MDS fabric switches can now provision multiple switches together, thus avoiding having to manually configure each switch separately.

Cisco MDS 9000 Family: Looking Forward

Cisco is committed to delivering innovative new capabilities to the Cisco MDS 9000 family. Primary areas of focus for ongoing development include:

- Automation and OpenStack:** The Cisco MDS 9000 family will open up a new world of network infrastructure management and automation through the NX-API family of APIs, empowering IT administrators to build their network functions according to their own needs. The MDS 9000 family's OpenStack compliance is already helping IT administrators with automatic zone management through Cinder. Further OpenStack integration is in the works.
- 32-Gbps Fibre Channel:** 32-Gbps technology for the Cisco MDS 9000 family is already under development.

For More Information

www.cisco.com/go/mds