



10 Reasons Why You Should Choose a Cisco Director-Class SAN Switch

Transformation and Investment Protection	Scaling Your SAN	Total Cost of Ownership	Managing Complexity	Reliability and Availability
What changes do you anticipate in the next 5 years that could influence your decision for a SAN vendor today? Do you want a SAN that continues to meet your needs in the future?	What growth for your SAN did you anticipate 5 years ago? Did your actual growth exceed your expectations? How important is scalability?	How important is total cost of ownership (TCO)? How important is investment protection?	Do you expect complexity within your SAN to increase?	How important is ensuring availability of your applications?
<p>In 5 years most customers will be deploying data, voice, video, and SAN traffic on converged IP networks. There will also be further consolidation of network vendors in the market. Cisco is the trusted provider of IP networks and SANs, with a reputation for industry-leading customer service and support. Cisco is financially strong and the best choice today and tomorrow for your SAN and future converged IP network. The Cisco® MDS 9000 family continues Cisco's tradition of delivering platforms with outstanding longevity due to forward-looking state-of-the-art architectures, thus reducing operating and capital expenditures. Cisco MDS 9000 family products shipped in 2002 support the 16-Gbps and FCoE products of the future, providing true investment protection. Competitors have had to scrap their flagship products.</p> <p>Industry acquisitions validate Cisco Data Center 3.0 strategy.</p>	<p>Cisco MDS 9500 Series Multilayer Directors deliver the industry's highest port density and best-performing director-class switches, supporting up to 528 ports in a single chassis, with optional 1/2/4/8-Gbps and 10-Gbps Fibre Channel modules.</p> <p>All true director switches use dual redundant crossbar switch fabrics to provide low-latency, high-throughput, nonblocking, and non-oversubscribed switching capacity between line card modules. The Cisco MDS 9000 family allows logical separation of fabrics with virtual SANs (VSANs) and physical separation using high-density directors.</p> <p>Competitive products do not support ANSI-T11 virtual fabrics, forcing users to deploy multiple directors for logical and physical separation of fabrics.</p>	<p>Advanced features such as VSANs and inter-VSAN routing (IVR) allow administrators to logically group and functionally partition a single physical SAN fabric or switch into multiple VSANs, each with its own security policies and fabric services, thus enabling improved utilization, which reduces capital expenditures.</p> <p>The Cisco MDS 9000 family offers interchangeable, backward- and forward-compatible switching modules across the entire family to protect existing SAN investments and provide a smooth upgrade path to support future growth.</p> <p>Competitors' two-tier switch-on-a-chip (SOC) can result in blocking and oversubscription, requiring a major equipment upgrade. Many features are charged separately (element manager, Inter-Switch Link [ISL] trunking, etc.).</p>	<p>With integrated GUI-based SAN management and network diagnostics included in every switch, the Cisco MDS 9000 family delivers improved storage administrator productivity, faster problem resolution, and reduced service costs.</p> <p>Supervisors, fabric cards, and line cards can be hot-swapped with no disruption to the switch or frame processing. In the case of physical removal of supervisor or crossbar switch fabric modules, the system helps ensure that no traffic is flowing through the crossbar well before the card loses physical contact with the backplane connector.</p> <p>Competitors charge for advanced management features and hence increase costs.</p>	<p>Dual redundant crossbar switch fabrics are used on all director switches to provide low-latency, high-throughput, nonblocking, and non-oversubscribed switching capacity between line card modules. All Cisco MDS 9500 Series director switches are fully redundant, with no single point of failure.</p> <p>PortChannels are an ISL aggregation feature that can be used to construct a single logical ISL between switches from up to 16 physical ISLs. This feature is useful for both providing a high-throughput connection between switches and providing a highly resilient connection.</p> <p>The Cisco MDS 9000 family is extremely reliable for mission-critical environments, with predictable latency and performance.</p> <p>Competitors charge extra for ISL trunking. Competitive products exhibit latency problems and performance degradation. View the Miercomm report: http://www.miercom.com/dl.html?fid=20081215&type=report</p>



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Business Continuity and Disaster Recovery	Data Security	Predictable Performance	Power and Cooling	Storage and SAN Application
How important is having a cost-effective BCDR solution?	How important is data loss or theft prevention to your business? Is it a regulatory requirement or business liability issue?	How important is predictable performance and latency?	How important is reducing power and cooling requirements?	How important are storage and SAN applications such as data replication, mirroring, disk virtualization, and remote tape backup?
<p>Cisco offers the broadest range of business continuity solutions, delivering Fibre Channel, FCIP, iSCSI, and FCoE protocols in one integrated system, enabling cost-effective, high-performance storage transport over IP, WANs, and MANs. Cisco offers a multi-protocol line-card module that is plug-compatible with any Cisco MDS 9000 family director. The 18/4 multiprotocol line card supports FCIP, iSCSI, Fibre Channel, and FICON. FCIP provides a SAN extension for IP infrastructure, enabling storage applications such as asynchronous data replication, remote tape vaulting, and host-initiator-to-remote-pooled storage. The Cisco MDS 9222i Multiservice Modular Switch offers the same flexibility and scales to 66 ports using modular expansion slots. Integrated CWDM and DWDM optics can eliminate the need for transponders in a MAN.</p> <p>Competitive solutions require a SAN router for remote replication, which adds cost and complexity.</p>	<p>The Cisco MDS 9000 family offers the most comprehensive end-to-end security, including secure, role-based management with centralized authentication, authorization, and logging of changes, IPsec, Storage Media Encryption, and Secure Erase. Centralized authentication of devices connected to the network helps ensure that only authorized devices can be connected to the network. Traffic isolation and access controls help ensure that a device connected to the network can securely send and receive its data and is protected from activities of other devices in the network. IPsec and Cisco Trusted Security provide an efficient means of extending the SAN across the data center.</p> <p>Competitive products forward corrupted frames throughout the SAN, potentially resulting in corrupted data in storage and endlessly circulating frames on the SAN.</p>	<p>Cisco MDS 9000 family frame switching uses virtual output queuing (VOQ) and centralized arbitration to help ensure that when multiple input ports on multiple line cards are contending for a congested output port, there is complete fairness among ports regardless of port location within the switch. It also helps ensure that congestion on one port does not result in blocking of traffic to other ports. In addition, quality of service (QoS) and class of service (CoS) can be used to give priority to those traffic flows</p> <p>Competitive products can experience buffer shortages, causing sporadic, nondeterministic performance as buffer availability varies with traffic loads. Under heavy loads, buffer starvation occurs, causing a slowdown in throughput and congestion on the internal ISLs between switching ASICs.</p>	<p>The Cisco MDS 9000 family offers features such as VSAN, IVR, SAN routing, security, SAN extension, compression, and encryption to decrease the carbon footprint. Increasing utilization with VSANs and IVR consolidates SAN ports into fewer high-density directors, reducing space and power needs. Integrating SAN services such as SAN routing, security, SAN extension, hardware compression, and fabric encryption reduces the number of devices. Server and storage virtualization improves utilization and enables consolidation. Features such as NPIV, F-port trunking, and virtual machine mobility and transparency reduce the number of servers and storage devices. The Cisco MDS 9000 family can provide all these services concurrently without degrading performance and throughput.</p> <p>If the port density, actual throughput, and fabric services of similar configurations are compared, other vendors' products consume more power per slot than Cisco MDS 9000 family products. The Cisco MDS 9000 family provides more value per watt.</p>	<p>The Cisco MDS 9000 family delivers services-oriented SANs with intelligent fabric services such as Storage Media Encryption (SME), Data Mobility Manager (DMM), and hardware compression. Cisco MDS 9000 family directors support industry-standard N-port ID virtualization (NPIV), which enables a single Fibre Channel host bus adapter (HBA) to appear as multiple virtual HBAs. This feature provides improved channel utilization, reduces hardware requirements, and simplifies the infrastructure.</p> <p>Competitors may announce fabric services but have a history of delayed delivery to the market. Examples include VSANs, FCoE, FCIP, iSCSI, and encryption, which were all preannounced.</p>