

Cisco MDS 9000 Family: Leadership and Innovation

In 2002 Cisco introduced the Cisco® MDS 9000 Family of Multilayer Switches, with many industry-first features and advanced capabilities that redefined the storage networking industry (Figure 1). Over the years, the Cisco MDS 9000 Family has maintained technology leadership by continuing to deliver exceptional innovation. Despite industry consolidation accelerated by Cisco's rapid pace of innovation, competitors are still followers, delivering some features 2 to 7 years later than Cisco. In most cases, even if a competing product claims feature parity, in reality it delivers only limited functions.

Figure 1. Cisco MDS 9000 Family of Multilayer Switches



Table 1 outlines industry-first features and capabilities from Cisco MDS 9000 Family products and when, if ever, competitors delivered these same features, even with limitations.

Table 1. Delivery of Features in Cisco MDS 9000 Family and Competing Products

Feature	Cisco	Competition
Director supporting more than 200 ports	2002	2005
Virtual SANs (VSANs) and ANSI virtual fabrics	2002	2009
Secure management through Simple Network Management Protocol Version 3 (SNMPv3)	2002	2004
Quality of Service (QoS)	2002	2007
Fibre Channel Congestion Control (FCC)	2002	No
Network diagnostics: Ping and Traceroute	2002	2006
Switched Port Analyzer (SPAN)	2002	2007
Fabric Analyzer	2002	No
Tiered connectivity for network design optimization	2002	No
VSAN trunking	2002	2009
Centralized Authentication, Authorization, and Accounting (AAA) services (RADIUS and TACACS)	2002	2004
Role-Based Access Control (RBAC)	2002	2006
Virtual Router Redundancy Protocol (VRRP) for management port redundancy	2003	No
Port rate limiting	2003	2008
Integrated SAN Routing on every port	2003	No
IBM Fiber Connection (FICON) and Open System intermix through VSAN	2003	2009
Fibre Channel ID (FCID) persistence	2003	No
Integrated SAN Extension: Fibre Channel over IP (FCIP)	2003	2006
Integrated iSCSI	2003	2007
Fibre Channel LUN zoning and read-only zones	2003	No
Integrated virtualization	2003	2007

Feature	Cisco	Competition
Native switch interoperability modes	2003	2007
Fibre Channel Security Protocol (FC-SP) for host-switch and switch-switch authentication	2003	2006
Cisco Fabric Services	2004	No
Fibre Channel Write Acceleration	2004	2007
Hardware-based IP Security (IPsec) encryption for FCIP and iSCSI	2004	2007
FCIP hardware compression	2004	2006
FCIP Write Acceleration	2004	2006
FCIP Tape Acceleration	2004	2007
Large pool of extended credits (more than 5800 per port)	2004	No
SAN Extension Tuner	2004	No
Dynamic Port VSAN Membership (DPVM)	2004	No
Embedded Storage Management Initiative Specification (SMI-S) agent	2004	2005
Distributed device aliases	2004	No
Integrated Fibre Channel routing with FCID Network Address Translation (NAT)	2005	No
Heterogeneous data protection via SANTap	2005	2007
IPv6 support	2006	2007
Remote SPAN (RSPAN)	2006	No
Intelligent port bandwidth management	2006	No
10-Gbps Fibre Channel	2006	2007
Director supporting more than 500 ports	2006	No
Large-scale support for highly scalable iSCSI service	2006	No
4-Gbps Fibre Channel	2006	2006
Enhanced inter-data-center routing through Autonomous Fabric ID	2006	No
SAN Device Virtualization	2007	No
Integrated Storage Media Encryption (SME): encryption of data at rest	2007	2009
Integrated Data Mobility Manager (DMM)	2007	No
Federal Information Processing Standards (FIPS)	2007	No
N-Port Virtualization (NPV)	2007	2007
Secure Erase: Permanent data erase	2008	No
Offline data restore tool	2008	No
FlexAttach: simplified server mobility and replacement	2008	No
F-port trunking: trunking of multiple VSANs to servers	2009	No
Fibre Channel Link Encryption: encryption of data in motion	2009	No
8-Gbps Fibre Channel	2008	2008



Americas Headquarters
Cisco Systems, Inc.
San Jose, CA

Asia Pacific Headquarters
Cisco Systems (USA) Pte. Ltd.
Singapore

Europe Headquarters
Cisco Systems International BV
Amsterdam, The Netherlands

Cisco has more than 200 offices worldwide. Addresses, phone numbers, and fax numbers are listed on the Cisco Website at www.cisco.com/go/offices.

CCDE, CCSI, CCENT, Cisco Eos, Cisco HealthPresence, the Cisco logo, Cisco Lumin, Cisco Nexus, Cisco Nurse Connect, Cisco Stackpower, Cisco StadiumVision, Cisco TelePresence, Cisco WebEx, DCE, and Welcome to the Human Network are trademarks; Changing the Way We Work, Live, Play, and Learn and Cisco Store are service marks; and Access Registrar, Aironet, AsyncOS, Bringing the Meeting To You, Catalyst, CCDA, CCDP, CCIE, CCIP, CCNA, CCNP, CCSP, CCVP, Cisco, the Cisco Certified Internetwork Expert logo, Cisco IOS, Cisco Press, Cisco Systems, Cisco Systems Capital, the Cisco Systems logo, Cisco Unity, Collaboration Without Limitation, EtherFast, EtherSwitch, Event Center, Fast Step, Follow Me Browsing, FormShare, GigaDrive, HomeLink, Internet Quotient, IOS, iPhone, iQuick Study, IronPort, the IronPort logo, LightStream, Linksys, MediaTone, MeetingPlace, MeetingPlace Chime Sound, MGX, Networkers, Networking Academy, Network Registrar, PCNow, PIX, PowerPanels, ProConnect, ScriptShare, SenderBase, SMARTnet, Spectrum Expert, StackWise, The Fastest Way to Increase Your Internet Quotient, TransPath, WebEx, and the WebEx logo are registered trademarks of Cisco Systems, Inc. and/or its affiliates in the United States and certain other countries.

All other trademarks mentioned in this document or website are the property of their respective owners. The use of the word partner does not imply a partnership relationship between Cisco and any other company. (0903R)