



Product Bulletin: PB-Cisco-MDS-9506-9509-9513

Revision History

26 May 2010 - Initial version

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This product bulletin informs NetApp sales and NetApp partners about new or changed NetApp® products or services.

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1. Summary

This product bulletin describes the Cisco MDS 9506, 9509, and 9513 director products. The MDS 9500 Series consists of modular, multiprotocol, fully redundant director-class switches from Cisco.

There are three main chassis described in this product bulletin:

- The Cisco MDS 9506 is a modular 7RU chassis with 6 available slots and capacity for up to 192 2/4/8G FC ports in a single chassis.
- The Cisco MDS 9509 is a modular 14RU chassis with 9 available slots and capacity for up to 336 2/4/8G FC ports in a single chassis.
- The Cisco MDS 9513 is a modular 14RU chassis with 13 available slots and capacity for up to 528 2/4/8G FC ports in a single chassis.

The Cisco MDS 9500 series accommodates a variety of switching modules, each compatible with all MDS 9500 series chassis as well as the Cisco MDS 9200 Series of Multilayer Fabric switches. The modules described in this bulletin are:

- Integrated Supervisor-2 Module
- 4-Gbps Fibre Channel Switching Module
- 8-Gbps Fibre Channel Switching Module
- 10-Gbps Fibre Channel Switching Module
- Multiservice Module
- Storage Services Module

NetApp continues to resell Cisco SMARTnet service for all Cisco switch products.

2. What's New?

The Cisco MDS 9500 Series combines nondisruptive software upgrades, stateful process restart and failover, and full redundancy of all major components for director-class availability. The MDS 9500 Series is available in 6-, 9-, and 13-slot configurations up to 568 1/2/4/8-Gbps Fibre Channel ports in a single chassis and up to 1,584 Fibre Channel ports per rack. All Cisco MDS 9000 Family switching modules are compatible with each Cisco MDS 9500 Series chassis.

Each Cisco MDS 9500 Series chassis bundle includes redundant Supervisor-2 modules, a primary module and a redundant module. These modules occupy two slots in the Cisco MDS 9500 Series chassis, with the remaining slots available for switching modules.

All Cisco MDS 9500 Series chassis will continue to be offered in conjunction with Cisco SMARTnet service contracts, ranging from one to five years in duration with a default value of three years.

3. Sales Tools (Sales Guides, Training Presentations, SE Presentations)

- [NetApp Sales](#)
- [NetApp Partners](#)

4. Customer-Ready Tools (Customer Presentations, Datasheets)

- [NetApp Sales](#)
- [NetApp Partners](#)

5. System Requirements

The latest Cisco support statements can be found at the NetApp Fibre Channel Switch Support Matrix:

- [NetApp Support Matrix](#)

6. Product Information

Cisco MDS 9500 Series System Summary

	Cisco MDS 9506	Cisco MDS 9509	Cisco MDS 9513
Available slots	6	9	13
Redundant supervisor	Yes	Yes	Yes
Max 2/4/8-Gbps FC ports per chassis	192	336	528
Max 10-Gbps FC ports per chassis	16	28	44
Max iSCSI & FCIP ports per chassis	24	48	60
Rack units	7	14	14
Chassis per rack	6	3	3
Fibre Channel ports per rack	1,152	1,008	1,584



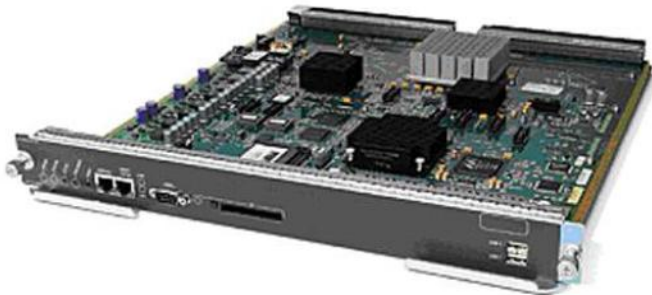
Cisco MDS 9500 Multilayer Directors – 9506/9513/9509

Cisco MDS 9500 Series Modules

Integrated Supervisor-2 Module

The Cisco MDS 9500 Supervisor-2 Module incorporates an integrated crossbar switching fabric. The Cisco MDS 9500 Series directors include two supervisor modules: a primary module and a redundant module. The modules occupy two slots in the Cisco MDS 9500 Series chassis, with the remaining slots available for switching modules. The active/standby configuration of the supervisor modules allows support of nondisruptive software upgrades.

Figure: Cisco MDS Supervisor-2 Module



4-Gbps Fibre Channel Switching Modules

Cisco MDS 9500 Series supports 4-Gbps Fibre Channel switching modules available in 12-, 24-, and 48-port configurations. The Cisco 12-Port 4-Gbps Fibre Channel Switching Module delivers the highest performance for the most demanding storage networking applications. The Cisco 24-Port 4-Gbps Fibre Channel Switching Module delivers the optimal combination of performance and port density for connecting today's high-performance servers and storage arrays. The Cisco 48-Port 4-Gbps Fibre Channel Switching Module is the ideal solution for consolidating large numbers of server connections into the smallest number of SAN switches, in many cases eliminating the need for core-edge topologies.

Figure: Cisco MDS 9000 Family 12-port, 24-port, and 48-port 4-Gbps Fibre Channel Switching Modules



8-Gbps Fibre Channel Switching Modules

Cisco MDS 9000 Family 8-Gbps Fibre Channel switching modules are available in three configurations:

- The 24-Port 8-Gbps Fibre Channel Switching Module
- The 48-Port 8-Gbps Fibre Channel Switching Module
- The 4/44-Port 8-Gbps Host-Optimized Fibre Channel Switching Module

The 8-Gbps Fibre Channel switching modules are compatible with all MDS 9500 Series Multilayer Directors. The modules are autosensing from 1/2/4/8-Gbps with accompanying short-reach and long-reach SFP+ optical modules.

Figure: Cisco MDS 9000 Family 24-port, 48-port, and 4/44-port 4-Gbps Fibre Channel Switching Modules



10-Gbps Fibre Channel Switching Module

Cisco MDS 9500 Series supports a 4-port 10-Gbps Fibre Channel Module that is primarily used for Inter-Switch Link (ISL) connectivity purposes, both within data centers and between data centers across metro optical networks. The Cisco 4-Port 10-Gbps Fibre Channel Switching Module is hot-swappable and includes hot-swappable X2 form-factor pluggable SC type interfaces. Individual ports can be configured with short-wave or long-wave X2 optical transceivers for connectivity up to 10 kilometers. Up to 250 buffer credits per port are supported for maximum extensibility without requiring additional licensing. With the optional Cisco Enterprise Package, up to 4,095 buffer credits can be allocated to an individual port, enabling full link bandwidth over thousands of kilometers with no degradation in link utilization.

The Cisco 4-port 10-Gbps Fibre Channel Switching Module supports the following features:

- High-performance ISLs—Support up to 16 links in a single PortChannel; links can span any speed-matched ports on any module within a chassis for added scalability and resilience. Up to 4,095 buffer-to-buffer credits can be assigned to a single Fibre Channel port, providing industry-leading extension of storage networks up to 800 kilometers at 10 Gbps while maintaining full link bandwidth.
- Intelligent network services—Provide integrated support for VSAN technology, access control lists (ACLs) for hardware-based intelligent frame processing, and advanced traffic-management features such as Fibre Channel Congestion Control (FCC) and fabric-wide quality of service (QoS) to enable migration from SAN islands to enterprise-wide storage networks.
- Integrated hardware-based VSANs and Inter-VSAN Routing (IVR)—Enable deployment of large-scale multisite and heterogeneous SAN topologies. Integration into port-level hardware allows any port within a system or fabric to be partitioned into any VSAN. Integrated hardware-base inter-VSAN routing provides line-rate routing between any ports within a system or fabric without the need for external routing appliances.
- Advanced FICON features—In cascaded FICON fabrics, the Cisco 10-Gbps Fibre Channel Switching Module supports 10-Gbps ISL connections on individual ports or up to 160-Gbps logical ISLs using the Cisco PortChannel feature. VSAN-enabled trunking allows reliable transmission of intermixed mainframe and open systems traffic across ISL links. Integrated CUP support enables in-band management of Cisco MDS 9000 Family switches from the mainframe management console.

- Comprehensive security framework—Supports RADIUS and TACACS+, Fibre Channel Security Protocol (FC-SP), Secure File Transfer Protocol (SFTP), Secure Shell (SSH) Protocol, and Simple Network Management Protocol Version 3 (SNMPv3) implementing Advanced Encryption Standard (AES), VSANs, hardware-enforced zoning, ACLs, and per-VSAN role-based access control.

Figure: Cisco MDS 9000 Family 4-port 10-Gbps Fibre Channel Switching Module



Multiservice Module (18/4)

The Cisco MDS 9000 18/4-Port Multiservice Module (MSM) is optimized for deployment of high-performance SAN extension solutions, distributed intelligent fabric services, and cost-effective IP storage and mainframe connectivity in enterprise storage networks.

The Cisco MDS 9000 18/4-Port Multiservice Module is supported in the Cisco MDS 9200 Series Multilayer Switches and MDS 9500 Series Multilayer Directors. It offers 18 1-, 2-, and 4-Gbps Fibre Channel ports and 4 1-Gigabit Ethernet IP storage services ports. It provides multiprotocol capabilities, integrating, in a single form factor, Fibre Channel, Fibre Channel over IP (FCIP), Cisco Storage Media Encryption (SME), Cisco MDS 9000 I/O Accelerator (IOA), Cisco Storage Services Enabler (SSE), Small Computer System Interface over IP (iSCSI), IBM Fiber Connection (FICON), FICON Control Unit Port (CUP) management, Cisco MDS 9000 Extended Remote Copy (XRC) Acceleration, and switch cascading.

The Cisco MDS 9000 18/4-Port Multiservice Module is designed for mission-critical enterprise storage networks that require secure, robust, cost-effective business-continuation services. Using Fibre Channel and IP in a single module, the Cisco MDS 9000 18/4-Port Multiservice Module offers the following main features:

- **Integrated Fibre Channel and IP storage services in an optimized form factor:** The module supports 18 4-Gbps Fibre Channel interfaces for high-performance SAN and mainframe connectivity, and 4 Gigabit Ethernet ports for FCIP and iSCSI storage services. Individual ports can be configured with hot-swappable short-wave, long-wave, extended-reach, coarse wavelength-division multiplexing (CWDM), or dense wavelength-division multiplexing (DWDM) Small Form-Factor Pluggables (SFPs) for connectivity of up to 125 miles (200 kilometers).

- **Integrated hardware-based virtual SANs (VSANs) and Inter-VSAN Routing (IVR):** The module enables deployment of large-scale multisite and heterogeneous SAN topologies. Integration into port-level hardware allows any port within a system or fabric to be partitioned into any VSAN. Integrated hardware-based IVR provides line-rate routing between any ports within a system or fabric without the need for external routing appliances.

- **FCIP for remote SAN extension:**

- Simplifies data protection and business-continuation strategies by enabling backup, remote replication, and other disaster-recovery services over WAN distances using open-standards FCIP tunneling

- Optimizes utilization of WAN resources for backup and replication by enabling hardware-based compression and encryption, FCIP write acceleration, and FCIP tape read and write acceleration; up to 16 virtual Inter-Switch Link connections are provided on the 4 Gigabit Ethernet ports through tunneling

- Preserves Cisco MDS 9000 Family enhanced capabilities, including VSANs, advanced traffic management, and security, across remote connections

- **I/O acceleration:**

- Provides SCSI acceleration to dramatically increase the number of SCSI I/O operations per second over long distances in a Fibre Channel or FCIP SAN by reducing the effect of transport latency on the processing of each operation

- Through transport- and speed-independent implementation, provides a unified solution for 1-, 2-, 4-, 8-, and 10-Gbps links over metropolitan area networks (MANs) and WANs

- Optimizes the utilization of MAN resources for backup and replication by enabling hardware-based compression
- With transparent insertion of the Cisco IOA service, requires no fabric reconfiguration or rewiring
- Provides a high-availability, resilient, and scalable environment with PortChannels, service clustering, and Lightweight Resilient Transport Protocol (LRTP)

• **iSCSI for extension of the SAN to Ethernet attached servers:**

- Extends the benefits of Fibre Channel SAN-based storage to Ethernet attached servers at a lower cost than is possible using Fibre Channel interconnect alone
- Increases storage utilization and availability through consolidation of IP and Fibre Channel block storage
- Through transparent operation, preserves the capability of existing management storage applications

• **Advanced FICON services:** The module supports FICON environments, including cascaded FICON fabrics, VSAN-enabled intermix of mainframe and open systems environments, N-port ID virtualization for mainframe Linux® partitions, FICON tape write and read acceleration over IP, and the Cisco XRC Acceleration feature for improved performance and bandwidth utilization over WAN links for IBM z/OS Global Mirror dynamic updates.

• **Integrated Cisco SME:** The module protects data at rest on heterogeneous tape drives and VTLs in a SAN environment using secure IEEE-standard Advanced Encryption Standard algorithms. Supported natively on the Cisco MDS 9000 18/4-Port Multiservice Module, Cisco SME capabilities are provided as a fabric service so that traffic between any host and storage device on the fabric can use the Cisco SME services. Furthermore, these encryption and compression capabilities are transparent to the hosts and storage devices and are available for devices in all VSANs in the fabric without the need for reconfiguration or rewiring, eliminating downtime for deployment. Cisco SME provisioning and key management are both integrated into Cisco Fabric Manager; no additional software is required.

• **Integrated Cisco DMM:** The Cisco DMM is a SAN fabric-based software application that enables movement of blocks of data from a source device to a destination device. This data center-class solution helps address the challenges of data migration, such as downtime, the need to add data migration software to servers, and the potential for data loss and corruption. By simply enabling the Cisco DMM feature on the Cisco MDS 9000 18/4-Port Multiservice Module located anywhere in the SAN, IT administrators can configure data migration without host agents, without rewiring, with little effect on performance, and without downtime.

• **Integrated Cisco MDS 9000 Secure Erase:** The Cisco MDS 9000 Secure Erase capability is a SAN fabric-based service that uses an array of industry-standard algorithms to erase existing data on a Logical Unit Number (LUN) on a storage array. Upon completion of the secure erase operation, the LUN can be repurposed for another application or infrastructure tenant, or the disks containing the LUN can be disposed of with confidence. A completion log can be generated for compliance purposes. The Cisco MDS 9000 Secure Erase feature can be enabled on the Cisco MDS 9000 18/4-Port Multiservice Module for storage arrays located anywhere in the SAN.

• **Intelligent network services:** The module uses VSAN technology for hardware-enforced, isolated environments within a single physical fabric, access control lists for hardware-based intelligent frame processing, and advanced traffic management features such as Fibre Channel congestion control and fabric-wide quality of service to facilitate migration from SAN islands to enterprise-wide storage networks.

• **Network-hosted storage applications:** The Cisco MDS 9222i Multiservice Modular Switch, MDS 9000 18/4-Port Multiservice Module, and MDS 9000 Storage Service Module (SSM) enable network-hosted storage applications on Cisco MDS 9500 Series Multilayer Directors and Cisco MDS 9200 Series Multilayer Switches. The Cisco MDS 9000 SSE Package enables these devices to host network-hosted storage applications by enabling the Intelligent Storage API (ISAPI).

• **Network-assisted storage applications (SANTap):** The Cisco MDS 9000 SSE Package enables the Cisco MDS 9000 18/4-Port Multiservice Module to run storage applications through the SANTap interface. The Cisco MDS 9000 SANTap service enables customers to deploy EMC RecoverPoint using SANTap services to replicate heterogeneous storage without compromising the integrity, availability, and performance of the I/O operations between the host and primary storage target. Cisco SANTap provides a reliable copy of storage write operations, which enables continuous data protection (CDP) and continuous remote replication (CRR) for mission-critical applications without the drawbacks associated with deployment of in-band data-path-based or out-of-band host-based devices. SANTap integrates with EMC RecoverPoint, requiring the corresponding Cisco MDS 9000 SSE Package to be installed on the Cisco MDS 9000 18/4-Port Multiservice Module.

• **High-performance ISLs:** The module supports up to 16 Fibre Channel links in a single PortChannel. Links can span any port on any module in the chassis for added scalability and resilience. Up to 4,095 buffer-to-buffer credits can be assigned to a single Fibre Channel port to extend storage networks over large distances.

• **Sophisticated diagnostics:** The module provides intelligent diagnostics, protocol decoding, and network analysis tools as well as integrated Call Home capability for added reliability, faster problem resolution, and reduced service costs.

• **Comprehensive network security framework:** The module supports RADIUS and TACACS+, Fibre Channel Security Protocol (FC-SP), Secure File Transfer Protocol (SFTP), Secure Shell (SSH) Protocol, and Simple Network Management Protocol Version 3 (SNMPv3) implementing AES, VSANs, hardware-enforced zoning, ACLs, and per-VSAN role-based access control (RBAC). RBAC provides separate control over management functions and access on a per-VSAN basis, enabling separation of duties among administrators on the same physical switch. Gigabit Ethernet ports support IPsec authentication, data integrity, and hardware-assisted data

encryption.

- **IP Version 6 (IPv6) support:** The module supports IPv6 as mandated by the U.S. Department of Defense (DoD), Japan, and China. IPv6 support is provided for FCIP, iSCSI, and management traffic routed in band and out of band.

Figure: Cisco MDS 9000 18/4 Family Multiservice Module



Storage Service Network Module (SSN-16)

The Cisco MDS 9000 16-Port Storage Services Node hosts four independent service engines, which can each be individually and incrementally enabled to scale as business requirements change, or be configured to run separate applications. Based on the single service engine in the Cisco MDS 9000 18/4-Port Multiservice Module, this four-to-one consolidation delivers dramatic hardware savings and frees valuable slots in the Cisco MDS 9500 Series Multilayer Directors chassis.

The Cisco MDS 9000 16-Port Storage Services Node integrates transparently into the Cisco MDS 9500 Series Multilayer Directors and the Cisco MDS 9222i Multiservice Modular Switch. Each of the four service engines supports 4 Gigabit Ethernet IP storage services ports, for a total of 16 ports of Fibre Channel over IP (FCIP) connectivity. Traffic can be switched between an IP port and any Fibre Channel port on a Cisco MDS 9000 Family switch. The Cisco MDS 9000 16-Port Storage Services Node supports the full range of services available on other Cisco MDS 9000 Family Fibre Channel switching modules, including virtual SANs, security, and traffic management.

The Cisco MDS 9000 16-Port Storage Services Node is designed for mission-critical enterprise storage networks that require secure, robust, cost-effective business-continuation services. The Cisco MDS 9000 16-Port Storage Services Node offers the following main features:

- **FCIP for remote SAN extension:**

- Simplifies data-protection and business-continuation strategies by enabling backup, remote replication, and other disaster-recovery services over WAN distances using open standards FCIP tunneling
- Optimizes utilization of WAN resources for backup and replication by enabling hardware-based compression, hardware-based encryption, FCIP write acceleration, and FCIP tape read and write acceleration; up to 48 virtual Inter-Switch Link connections are provided on the 16-Gigabit Ethernet ports through tunneling
- Preserves Cisco MDS 9000 Family enhanced capabilities, including VSANs, advanced traffic management, and security, across remote connections

- **Cisco IOA feature:**

- Optimizes utilization of metropolitan area network (MAN) resources for backup and replication by enabling hardware-based compression, Fibre Channel write acceleration, and Fibre Channel tape read and write acceleration
- Through transport- and speed-independent implementation, provides a unified solution for 1-, 2-, 4-, 8-, and 10-Gbps links over MANs and WANs
- With transparent insertion of the Cisco IOA service, requires no fabric reconfiguration or rewiring
- Enables port channels for FCIP tape acceleration to provide high availability and resiliency
- Provides a high-availability, resilient, and scalable environment with PortChannels, service clustering, and Lightweight Reliable Transport Protocol

- **Cisco SME:**

- Secures data stored on heterogeneous tape drives and VTLs in a SAN environment using secure Advanced Encryption Standard 256-bit algorithms
- Enables scaling of Cisco SME performance, throughput, and availability by enabling and clustering additional service engines on Cisco MDS 9000 16-Port Storage Services Nodes, MDS 9000 18/4-Port Multiservice

Modules, and MDS 9222i Multiservice Modular Switches

- **Integrated IP storage services in a high-density form factor:** The module supports 16 Gigabit Ethernet ports for FCIP. Individual ports can be configured with hot-swappable short-wave and long-wave Small Form-Factor Pluggables for connectivity up to 200 kilometers.

- **Integrated hardware-based VSANs and Inter-VSAN Routing:** The module enables deployment of large-scale multisite and heterogeneous SAN topologies. Integration into port-level hardware allows any port in a system or fabric to be partitioned into any VSAN. Integrated hardware-based IVR provides line-rate routing between any ports in a system or fabric without the need for external routing appliances.

- **Intelligent network services:** The module uses VSAN technology for hardware-enforced, isolated environments in a single physical fabric, access control lists for hardware-based intelligent frame processing, and advanced traffic management features such as Fibre Channel congestion control and fabric-wide quality of service to facilitate migration from SAN islands to enterprise-wide storage networks.

- **Sophisticated diagnostics:** The module provides intelligent diagnostics, protocol decoding, and network analysis tools as well as integrated Call Home capability for added reliability, faster problem resolution, and reduced service costs.

- **Comprehensive network security framework:** The module supports RADIUS and TACACS+, Fibre Channel Security Protocol (FC-SP), Secure File Transfer Protocol (SFTP), Secure Shell (SSH) Protocol, and Simple Network Management Protocol Version 3 (SNMPv3) implementing the AES, VSANs, hardware-enforced zoning, ACLs, and per-VSAN role-based access control (RBAC). RBAC provides separate control over management functions and access on a per-VSAN basis, enabling separation of duties among administrators on the same physical switch. Gigabit Ethernet ports support IPsec authentication, data integrity, and hardware-assisted data encryption.

- **IP Version 6 (IPv6) support:** The module supports IPv6 as mandated by the U.S. Department of Defense (DoD), Japan, and China. IPv6 support is provided for FCIP and for management traffic routed in band and out of band.

Figure: Cisco MDS 9500 SSN-16 Module



Cisco MDS 9500 Software Features

Fabric Manager

The standard Cisco Fabric Manager software that is included at no charge with the Cisco MDS 9000 Family and Cisco Nexus 5000 Series Switches provides basic switch configuration and troubleshooting capabilities. The Cisco Fabric Manager Server (FMS) Package extends standard Cisco Fabric Manager by providing server federation, historical performance monitoring for network traffic hotspot analysis, centralized management services, and advanced application integration. All standard Cisco Fabric Manager features and functions are fully integrated with the Cisco FMS capabilities.

Features and Functions

Fabric Services:

- Name server
- Registered State Change Notification (RSCN)
- Login services
- Fabric Configuration Server (FCS)
- Public loop
- Broadcast
- In-order delivery

Advanced Functionality:

- VSAN

- IVR
- PortChannel with Multipath Load Balancing
- QoS-flow-based, zone-based
- FCC
- N_Port ID Virtualization

Diagnostic and Troubleshooting Tools:

- POST diagnostics
- Online diagnostics
- Internal port loopbacks
- SPAN and RSPAN
- Fibre Channel Traceroute
- Fibre Channel Ping
- Fibre Channel Debug
- Cisco Fabric Analyzer
- Syslog
- Online system health
- Port-level statistics
- Real-Time Protocol Debug

Network Security:

- VSANs
- ACLs
- Per-VSAN role-based access control
- Fibre Channel Zoning
- FC-SP· D
- Port Security and Fabric Binding
- Management access

FICON:

- • FC-SB-3 compliant
- • Cascaded FICON fabrics
- • Intermix of FICON and Fibre Channel FCP traffic
- • CUP management interface

Serviceability:

- Configuration file management
- Call Home
- Power-management LEDs
- Port beaconing
- System LED
- SNMP traps for alerts
- Network boot

Quoting

For detailed instructions on how to quote this product or service using the Quote Tool, see [QTB-PRODUCT](#).

Downloading

For downloading software go to [NOW Download Software](#).

Product Availability

The Cisco MDS 9500 director and associated blades are available from NetApp today.

7. Regulatory Compliance

Products need to be validated against the NetApp Safety/EMI Regulatory Compliance List prior to order submission. The list is available at PartnerCenter Compliance Information. This is required to ensure that products are being sold only in the countries in which NetApp has received regulatory compliance certification.

8. Warranty and Service

All Cisco MDS 9500 directors and blades are covered under the resale of Cisco SMARTnet service contracts with a duration of one to five years; the default duration is three years.

Each switch is sold with **Cisco SMARTnet Service**. Cisco TAC (Technical Assistance Center) provides support for these switches, including technical support, FRU, and RMA. All software license activation is done by Cisco. Cisco switches are NOT covered under SupportEdge Services (exceptions are Cisco 5010 and 2960 switches sold for use as cluster switches in Data ONTAP[®] 8.0 Cluster-Mode).

NetApp Global Support can take first calls on any NetApp sold configuration. In SAN or FCoE environments, we will isolate the problem to FAS or switch. If it is a switch issue the customer should contact Cisco TAC for support on the switch (IE fan or PSU or failed switch).

Cisco requires that everyone opening a case has a Cisco.com login ID, aka a CCO ID. If they do not have one, they should go to www.Cisco.com and click on Register on the upper right.

To open a case a customer needs the serial number of the switch. However, the SMARTnet contract number is useful in case the customer is not sure of the entitled serial number. A Cisco SMARTnet welcome kit should have arrived with the switch. It contains instructions for creating a CCO ID, how to open a case, as well as the SMARTnet contract number, service level (2hr, 4hr, or NBD, parts delivery or on-site tech), the start and end date of service, and the serial numbers of the products covered.

If customers have lost their Cisco SMARTnet contract number, please have them contact the sales representative or a CSR, who will forward the request to a NetApp resource who can get the contract number. Customers will need to provide the NetApp sales order number for the switches.

All tested and approved Cisco switch firmware is posted on the NOW[™] (NetApp on the Web) site.

- Go to NOW-->Software Download-->Fibre Channel Switch-->Cisco

How Customers Can Contact Cisco TAC (including global toll-free numbers)

<http://www.cisco.com/cisco/web/support/index.html>

Cisco License Activation

For add-on POD (Ports on Demand) or feature licenses, Cisco sends PAKs (product activation keys) kits with the switches. These contain transaction keys that can be redeemed at Cisco.com. The customer needs to contact Cisco licensing to activate.

NetApp scans the Cisco POD or feature PAK and records it on the NetApp sales order. The POD or feature license serial number listed on the sales order is the PAK. Customers should have a Cisco login ID (CCO ID) prior to activating the keys. If they do not have one, they should go to www.Cisco.com and click on Register on the upper right.

For license activation go to www.cisco.com/go/license and follow the steps.

If you need assistance obtaining a new license or have questions about one that you already received, please contact the Global Licensing Operations team at licensing@cisco.com. However, response times may vary depending on business hours and peak volume times when using this method. Using one of the automated options listed above will provide real-time services.

For Cisco SMARTnet Service Renewals refer to the product bulletin on the NetApp Field Portal:

Click [here](#) or enter "Cisco Renewals" in the Field Portal Search-for option, and look under bulletins.

9. Additional Information

[See product page.](#)

Contact Information: Please contact your NetApp sales or channel partner representative with questions concerning this bulletin.

