Cisco MDS 9000 SAN Extension over IP Package

Product Overview

The Cisco® MDS 9000 SAN Extension over IP Package provides an integrated, cost-effective, and reliable business-continuance solution that uses existing IP infrastructure when used with Cisco MDS 9500 Series Multilayer Directors and Cisco MDS 9200 Series Multilayer Switches. Cisco MDS 9000 SAN Extension over IP Package services are supported natively on the Cisco MDS 9222i Multiservice Modular Switch and are available on the Cisco MDS 9000 18/4-Port Multiprotocol Services Module (MSM) and the Cisco MDS 9000 16-Port Storage Services Node (SSN).

Features

The Cisco MDS 9000 SAN Extension over IP Package includes the following features:

- **Integrated support for Fibre Channel over IP (FCIP):** FCIP can be used to connect Fibre Channel SANs across long distances using IP networks. Each Cisco MDS 9000 Family Gigabit Ethernet port can manage up to three FCIP tunnels. The Cisco MDS 9000 18/4-Port Multiservice Module and 16-Port Storage Services Node support up to three FCIP tunnels per port. Without the Cisco MDS 9000 SAN Extension over IP Package, these capabilities would require multiple systems from different vendors.
- **Complete integration of the Cisco FCIP implementation with value-added features on the Cisco MDS 9000 Family switches:** The Cisco virtual SAN (VSAN) function is supported across FCIP links between SANs. FCIP can be used in conjunction with the Cisco MDS 9000 Family Enterprise Package features such as quality of service (QoS) over a WAN. Use of Virtual Routing Redundancy Protocol (VRRP) increases IP network availability for FCIP connections by allowing failover of connections from one Gigabit Ethernet port to another. Load balancing using PortChannels can also be performed over FCIP links.
- **Optimization of the Cisco MDS 9000 NX-OS Software implementation of FCIP:** The Cisco NX-OS Software implementation of FCIP on the Cisco MDS 9000 Family products is optimized for wire performance through enhancements that address out-of-order delivery problems, support jumbo frames, provide traffic shaping, and perform TCP optimization.
- **FCIP compression:** FCIP compression in Cisco MDS 9000 NX-OS increases the effective WAN bandwidth without costly infrastructure upgrades. By integrating data compression in the Cisco MDS 9222i and Cisco MDS 9000 18/4-Port Multiservice Module and 16-Port Storage Services Node modules, more efficient FCIP-based business-continuity and disaster-recovery solutions can be implemented without the need to add and manage a separate device. Gigabit Ethernet ports on the Cisco MDS 9000 Family products can achieve up to a 43:1 compression ratio, with typical ratios of 4:1 over a wide variety of data sources.
- **Inter-VSAN Routing (IVR) for FCIP:** IVR allows selective transfer of data traffic between specific initiators and targets on different VSANs without the need to merge VSANs into a single logical fabric. IVR can be used in conjunction with FCIP to increase the resiliency of SAN extension over IP networks and create more efficient business-continuity and disaster-recovery solutions. IVR for FCIP is included in the Cisco MDS 9000 SAN Extension over IP Package. To use IVR for Fibre Channel, the Cisco MDS 9000 Family Enterprise Package is required.
- **FCIP write acceleration:** FCIP write acceleration significantly improves application performance when storage traffic is routed over WANs using FCIP. When FCIP write acceleration is enabled, WAN throughput is increased, and writes I/O latency is decreased by reducing the effects of WAN latency.

- **FCIP tape acceleration:** Centralizing tape backup and archive operations provides significant cost saving by allowing expensive robotic tape libraries and high-speed drives to be shared. This sharing poses a challenge for remote backup media servers that need to transfer data across a WAN. High-performance streaming tape drives require a continuous flow of data to avoid write data underruns, which dramatically reduce write throughput. Without FCIP tape acceleration, the effective WAN throughput for remote tape backup decreases exponentially as the WAN latency increases. Cisco MDS 9000 NX-OS FCIP tape acceleration helps achieve near-full throughput over WAN links for remote tape backup operations.
- **Seamless integeration of Unified I/O with FCIP:** NX-OS release 5.2(1) or later will support FCIP for FC traffic originating from FCoE access switches. This will provide seamless integration of FCoE traffic with existing FCIP install base.
- **SAN extension tuner:** To help optimize FCIP performance, the SAN extension tuner generates Small Computer System Interface (SCSI) I/O commands that are directed to a specific virtual target. It reports the number of I/O operations per second and I/O latency results, which helps determine the number of concurrent I/O operations needed to increase FCIP throughput.

Software Release

To use the latest Cisco MDS 9000 SAN Extension over IP Package on the Cisco MDS 9000 18/4-Port Multiservice Module or the Cisco MDS 9222i, Cisco MDS 9000 SAN-OS 3.2(1) or later must be installed on a Cisco MDS 9000 Family switch. For the Cisco MDS 9000 16-Port Storage Services Node module, Cisco MDS 9000 NX-OS 4.2(1) or later must be installed on a Cisco MDS 9000 Family switch.

Note: Hardware-based compression and IP Security (IPsec) for FCIP are available only for the Cisco MDS 9000 18/4-Port Multiservice Module, Cisco MDS 9000 16-Port Storage Services Node, and Cisco MDS 9222i.

License Information

This package is licensed on a per-engine, per-module basis. The number of licenses that a customer needs to purchase is equal to the number of engines to be enabled for the feature on the Cisco MDS 9000 16-Port Storage Services Node, or one license per Cisco MDS 9000 18/4-Port Multiservice Module in a switch. The Cisco MDS 9000 SAN Extension license features are enabled by default on the embedded ports on the Cisco MDS 9222i chassis. No additional license is required to use FCIP and FCIP compression on these ports.

Ordering Information

The product numbers associated with this package are:

For MDS 9500 Chassis	Configure-To-Order PIDs	Spare PIDs
MSM-18/4 module	M9500EXT1AK9	M9500EXT1AK9=
SSN-16 module (one engine)	M95EXTSSNK9	M95EXTSSNK9=
MPS-14/2 module (End of Life module)	M9500EXT12K9	M9500EXT12K9=

For MDS 9200 Chassis	Configure-To-Order PIDs	Spare PIDs
MSM-18/4 module	M9200EXT1AK9	M9200EXT1AK9=
SSN-16 module (one engine)	M92EXTSSNK9	M92EXTSSNK9=
MPS-14/2 module (End of Life module)	M9200EXT12K9	M9200EXT12K9=

For More Information

For more information, see the Cisco MDS 9000 NX-OS data sheet at http://www.cisco.com/en/US/prod/collateral/modules/ps5991/ps9880/data_sheet_c78-490861.html.

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