Cisco MDS 9124 for IBM System Storage

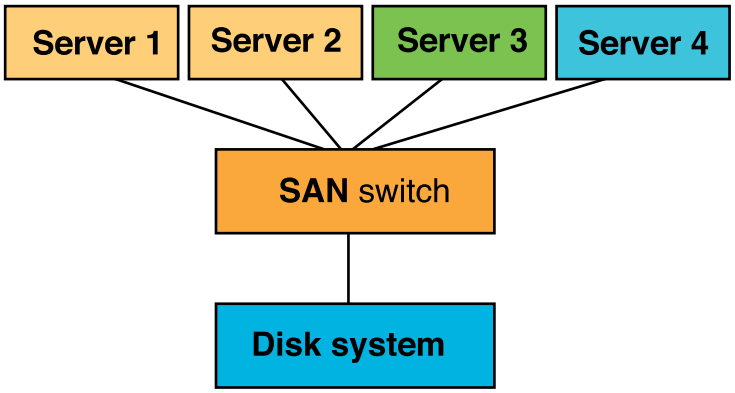
High density design with 24 ports in 1RU height can help save rack space

Highlights

- ***Foundation for new infrastructure simplification and business continuity solutions for servers running Microsoft® Windows®, UNIX®, Linux®, NetWare® and IBM OS/400® operating systems***
- ***High-performance 1, 2 and 4 Gigabit per second links with pay-as-you-grow scalability enable growth from 8 to 16 to 24 ports***
- ***Designed for high availability with hot-swappable, dual power supplies and non-disruptive firmware upgrades***
- ***MDS 9000 family compatibility supports scalability and consistent service as the SAN grows***
- ***Enterprise Package and Fabric Manager Server Package provide added intelligence and value***

Cisco MDS 9124 for small- and medium-sized businesses

The Cisco MDS 9124 for IBM System Storage™ is designed to address the needs of small- and medium-sized businesses with a wide range of SAN capabilities. It can be used as part of SAN solutions from simple single-switch configurations to larger multi-switch configurations in support of fabric connectivity and advanced business continuity capabilities. Fabric connectivity capabilities can be the basis for infrastructure simplification solutions for IBM System i™, System p™ and System x™ servers and storage consolidation and high-availability server clustering with IBM System Storage disk storage arrays. Business continuity capabilities can help businesses protect valuable data with IBM System Storage tape libraries and devices and IBM Tivoli® Storage Manager data protection software.



A single Cisco MDS 9124 switch can serve as an initial building block for a Storage Area Network for those who want to obtain the benefits of storage consolidation and are just beginning to implement Fibre Channel storage systems. An entry-level configuration, for example, could consist of one or two Fibre Channel links to a disk storage array, or to an LTO™ tape drive. An entry-level, eight-port storage consolidation solution could support up to seven servers with a single path to either disk or tape. The **On-Demand Port Activation** feature is designed to enable a base switch to grow from 8 to 24 ports, in 8 port increments, to support more servers and more storage devices without taking the switch offline.

Higher availability solutions can be created using multiple Cisco MDS 9124 switches. Such implementations would be well-suited to server clustering environments. Such a configuration could support from six to 22 servers, each with dual Fibre Channel adapters cross-connected to redundant 9124 switches, which are cross-connected to a dual-controller storage system.

While the focus of the Cisco MDS 9124 is as the foundation of medium-sized SMB SANs, it can also be configured to participate as a component of a tiered enterprise SAN with other members of the Cisco MDS 9000 for IBM System Storage family. Cisco MDS 9000 SAN-OS firmware provides enterprise-class capabilities such as virtual SANs (VSANs), Port Channels, quality of service (QoS) and security for deployment in core-edge enterprise SAN solutions. These capabilities help provide investment protection as SAN requirements evolve and grow over time.

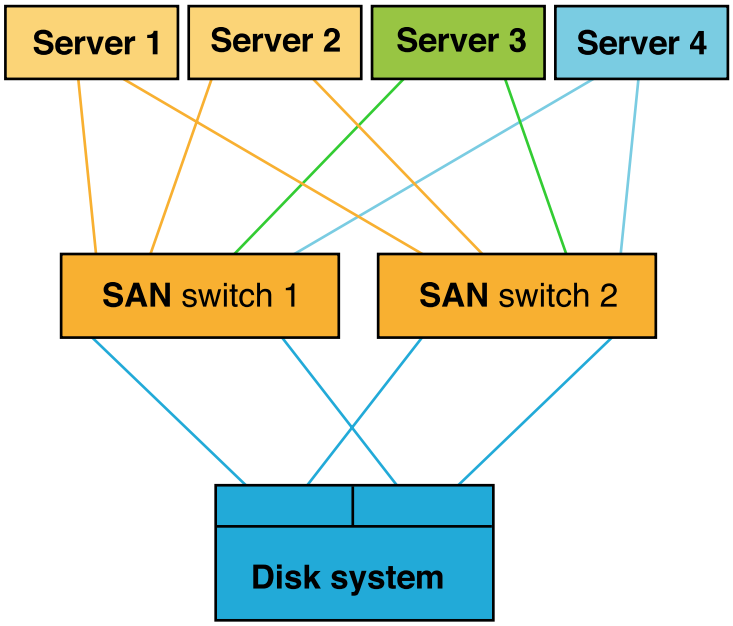
Simple SAN configuration

The introduction of large capacity, high-availability storage systems offers new opportunities for cost reduction through storage consolidation and infrastructure and management simplification. In older environments, each server accessed its own dedicated storage capacity using either internal disks that were contained within the server, or disks that were part of an external system attached directly and exclusively to that server. It has become difficult to sustain that approach as the requirement for both storage capacity and numbers of servers has increased. Storage consolidation is a fundamental objective of infrastructure simplification and is based on the philosophy that it is easiest to share and manage capacity contained in a large-capacity, high-performance

and high-availability external storage system—such as the IBM System Storage DS4000™ Disk Systems. Fibre Channel Storage Area Networks (SANs) were developed to provide efficient, high-performance access to many storage devices from many servers.

While it is possible in very small environments to direct-connect servers to external storage systems using Fibre Channel links, it is more common to configure a SAN switch between the servers and the storage system to enable multiple servers to share the same storage capacity. A simple SAN is depicted in the diagram on the previous page.

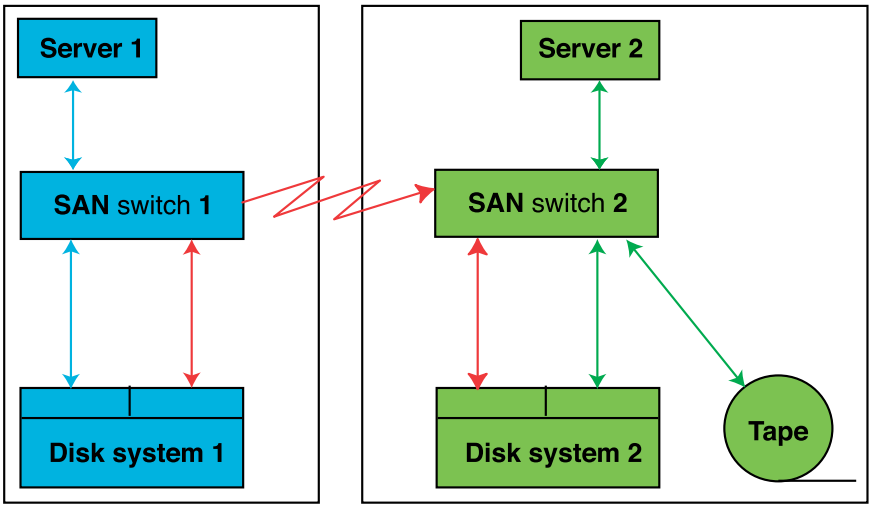
The Cisco MDS 9124 is designed specifically for use as the SAN switch in this type of configuration. It is designed to be easy to install and easy to manage. The tan, green and blue servers represent heterogeneous server types that are members of the same SAN and share capacity of the large disk system. The Cisco MDS 9124 can be upgraded to 24 ports and is future-ready to support servers and storage devices supporting 4 Gbps Fibre Channel as they are introduced. Its flexible design allows participation with other Cisco MDS 9000 family switches in fabrics that evolve as requirements change.



High availability SAN configuration

Many applications are used continuously. A common design approach to support such applications is to run multiple instances of the application across a cluster of servers. When a server fails or must be taken offline for maintenance, a backup server is available to help continue operation with minimal impact. Redundant paths to data are usually configured in a clustered server environment for similar reasons—to help maintain access to data. Each server is configured with redundant Host Bus Adapters and each Host Bus Adapter is connected to a different SAN switch. Each switch is then connected to a different controller in a disk system. Every effort is made to maintain applications with access to data.

The Cisco MDS 9124 is an excellent switch to use in a clustered server environment. Separate SAN switches enable two separate SAN fabrics as a means to help minimize or avoid single points of failure. The yellow cluster shown in the diagram on the previous page illustrates one possible implementation that uses redundant components at every level and helps avoid application outages.



Business continuity solution

Many small- and medium-sized companies want to implement a business continuity or remote backup capability to help address the demands of the business. The Cisco MDS 9124 can help provide the SAN connectivity required for these environments. The diagram on the next page is intended to represent two different sites. The blue side represents the production site, and the green side represents the remote or backup site.

Many disk subsystems, including IBM System Storage DS4000 and DS6000™ Disk Systems, are capable of copying data to a remote location. The data path for the remote copy operation is represented by the red links in the diagram above.

Two Cisco MDS 9124 fabric switches can be connected to other members of the Cisco MDS 9000 Family for connectivity over metro and global distances without merging the local and remote fabrics.

The Cisco MDS 9124 with longwave optical SFP transceivers can also be used to connect two locations to enable remote data backup. An Information Lifecycle Management (ILM) application, such as IBM Tivoli Storage Manager (TSM), which runs on a server in the production site, can write data to a tape system at a remote location.

Easy to install and maintain

The Cisco MDS 9124 includes capabilities designed to make it easy to install and easy to maintain for system administrators who have minimal experience with SAN components. Cisco Fabric Manager, a centralized management tool with task-based wizards, is

designed to provide a responsive, easy-to-use Java™ application that helps simplify management of a standalone switch or multiple switches and fabrics. For more advanced users, Cisco MDS 9124 presents a consistent, logical command line interface, (CLI). The Cisco MDS 9124 CLI, which adheres to widely known Cisco IOS® Software CLI syntax, is easy to learn and delivers broad management capabilities.

High performance

The Cisco MDS 9124 provides 4 Gbps performance on all ports when paired with storage system and server hardware that supports 4 Gbps throughput. Each port auto-negotiates to 4, 2 or 1 Gbps, full duplex, depending on the capabilities of the attached device or switch. Up to 192 Gbps aggregate throughput is possible with 24-port configurations.

High-availability

Small- and medium-sized businesses may require high-availability switch fabric solutions. The Cisco MDS 9124 uses advanced application-specific integrated circuits (ASICs) to help reduce the number of internal components subject to potential failure, to improve reliability. The redundant power supply feature and hot-swappable power supplies help improve switch availability.

The switch is designed to support addition single optical transceiver upgrades without fabric disruption. In addition, the Cisco MDS 9124 is designed to support non-disruptive firmware upgrades to allow firmware to be downloaded and activated while the fabric switch remains operational. Redundant switches can be deployed for high-availability clustering applications.

Advanced security and management

The Cisco MDS 9000 **Fabric Manager Server Package** feature is designed to provide advanced security and management capabilities. The package helps improve management with Quality of Service (QoS) and enhanced network security capabilities including Switch-Switch and Host Authentication, LUN Zoning, Read-only zones and Port lockdown, and VSAN-Based Access Control. This feature helps simplify SAN consolidation for secure infrastructure simplification solutions.

The Cisco MDS 9000 **Fabric Manager Server Package** feature is designed to extend Cisco Fabric Manager by providing historical performance data collection, centralized management services and support for advanced application integration. This feature helps simplify management of large enterprise SAN infrastructures.

Capabilities to help reduce TCO

VSAN capability allows more efficient SAN utilization by creating multiple isolated environments within a single SAN fabric. Each VSAN can be zoned as a typical SAN and maintains its own fabric services for added scalability and resilience. VSANs allow the cost of the SAN infrastructure to be shared among more users, while helping to segregate and secure traffic and retain independent control of configurations on a VSAN-by-VSAN basis.

Another example of the cost-effectiveness of the Cisco MDS 9124 is its compatibility with other Cisco MDS 9000 switches. This compatibility enables customers to initially deploy separate Cisco MDS 9124 SAN islands and then to later consolidate these islands into a large enterprise SAN as their requirements change.

Cisco MDS 9124 for IBM System Storage at a glance

Product number	2053-424
Base fabric switch	Cisco MDS 9124 with 8 ports activated, 8 shortwave SFP transceivers, replaceable power supply and redundant cooling, Cisco Fabric Manager, Cisco Device Manager, Cisco CLI
Fibre Channel interfaces	E-Port, F_Port, FL- Port
Optical transceivers	4 Gbps shortwave SFPs 4 Gbps longwave 4 Km SFPs 4 Gbps longwave 10 Km SFPs
Fans and power	Replaceable power supply and redundant cooling
Hot-swap components	Power supplies, SFP optical transceivers
Rack support	19 inch, 1RU industry-standard rack
Management software	Cisco Fabric Manager
Servers supported*	IBM System x servers and selected Netfinity® servers Other Intel® processor-based servers IBM System p and selected RS/6000® servers IBM System i Selected Sun™ and HP servers
Operating systems supported*	Microsoft Windows NT®, Windows 2000, Windows 2003 Red Hat Linux, Red Hat Linux Advanced Server SUSE Linux, SUSE Linux Enterprise Server (SLES) United Linux Novell® NetWare
Storage products supported*	IBM Storage System DS6000, DS8000™ and Enterprise Storage Server® IBM TotalStorage® Enterprise Storage Server Systems IBM System Storage DS4000 Disk Systems IBM System Storage TS1120 Tape Drive IBM System Storage TS3100, TS3200, TS3310 and TS3500 Tape Libraries IBM TotalStorage 3494 Tape Library IBM System Storage SAN Volume Controller (SVC) & SAN File System (SFS)
Fibre optic cable	Fibre optic cables are required and are available in various lengths in single mode and multi-mode formats

Cisco MDS 9124 for IBM System Storage at a glance

Optional features	Redundant power supply
	On-Demand Port Activation, 8 ports
	Shortwave 1, 2, 4 Gbps optical SFP transceivers
	Longwave 1, 2, 4 Gbps 4 km and10 km optical SFP transceivers
	Cisco MDS 9000 Enterprise Package Activation
	Cisco MDS 9000 Fabric Manager Server Package Activation
	Fibre optical cables
	Country specific power cords
Physical characteristics	
Height	450 mm/1.75 in. (1RU)
Width	445 mm/17.5 in.
Depth	406 mm/16 in.
Weight	8.4 kg/18.5 lb. (dual power supplies)
Operating environment	
Temperature	0° C to 40° C/32° F to 104° F
Electrical requirements	
Power	100-240 VAC, 50-60 Hz, 12A maximum

* Refer to http://www.cisco.com/go/ibm/storage for the most current and complete details

For more information

Contact your IBM representative or IBM Business Partner or visit:

ibm.com/servers/storage/san/c_type/

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