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Five Reasons Why You Should Choose Cisco MDS 9000 Family Directors

Solution overview

March 2021

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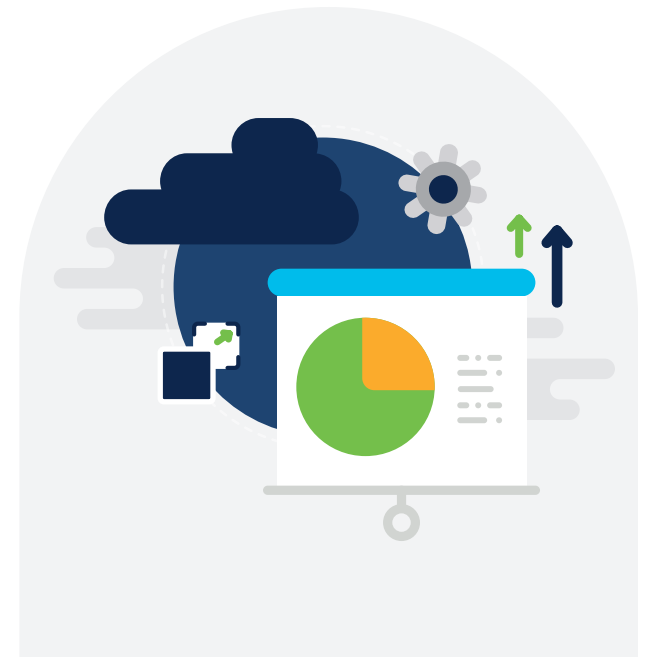
Overview

Data is growing at an astonishing rate. Trends such as cloud computing, the Internet of Things (IoT), flash storage and digitization are imposing higher demands on the technologies used to manage, transport, back up, and restore data. With increased business dependence on IT, downtime has a more significant and tangible impact on business operations. Organizations almost universally are increasing their focus on disaster recovery and business continuance as well as on the ability to scale and manage data efficiently.

Cisco® storage networking solutions help customers respond quickly to new business needs, control IT costs, meet compliance requirements, scale, and continue business during disruptions. The Cisco MDS 9000 Family is built from the foundation with next-generation technologies in mind: a critical advantage as customers add advanced next-generation technologies such as 64G and 32G Fibre Channel, Non-Volatile Memory Express (NVMe) over Fibre Channel and in-line analytics to enable scalable flash-memory deployments.

Here are the top five reasons why you should consider the Cisco MDS 9700 Series Multilayer Directors for your storage infrastructure needs.

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1. Integrated analytics for deep visibility

Cisco MDS 9700 offers industry's first and only switch integrated SCSI and NVMe traffic analytics. With a built-in analytics engine on 32-Gbps modules, organizations gain complete visibility across the SAN in real time in tens of thousands of SCSI or NVMe IO flows. Customers can now analyze Fibre Channel exchanges in real time and report on various metrics, thereby gaining comprehensive and timely monitoring of any potential performance issues in the network. While our competitors are offering reactive solutions using an external appliance, Cisco MDS 9700 switches offer proactive and predictive architecture using on-module Traffic Access Point (TAP) and Network Processing Unit (NPU) to offer a true switch-integrated solution.

- With hardware-based analytics, there is no performance degradation.
- I/O level metrics are computed at every switch by a dedicated Network Processing Unit (NPU), providing continuous monitoring of application behavior to identify any deviation.
- Always-on visibility into SCSI and NVMe flows with automatic baselining and deviations helps you in making proactive operations and informed decision.
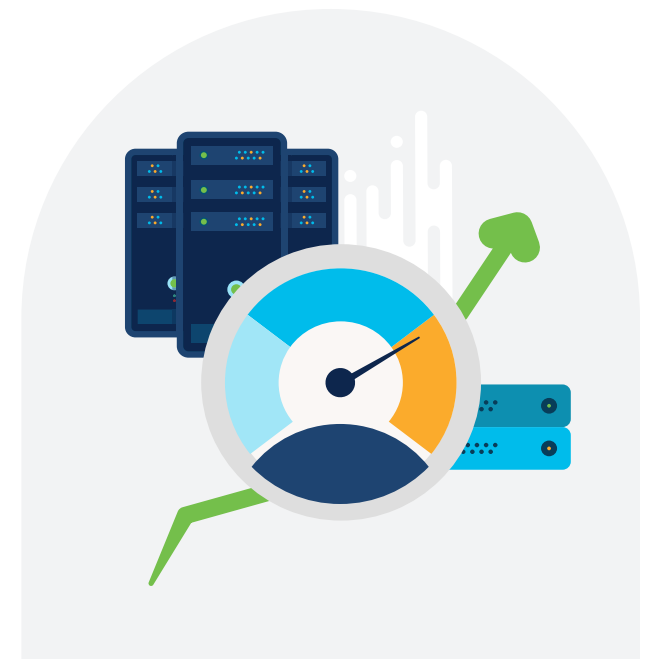
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2. Performance and scalability

The amount of data is growing at a dramatically increasing rate, and this trend is expected to continue for the foreseeable future. To support this massive increase in data, data center storage networks need to be highly scalable.

Cisco MDS 9700 series multilayer directors supports up to 3 Tbps per slot switching capacity. The switches have been designed to adopt future speed upgraded within the same chassis without any forklift upgrade. The directors support line-rate 2/4/8/10/16/32 Gbps Fibre Channel, 1-, 10- and 40-Gbps FCIP ports, 10- and 40-Gbps Fibre Channel over Ethernet (FCoE) ports, allowing the use of Fibre Channel, FCIP or FCoE line cards in any slot without any restrictions. The MDS directors also provide consistent and predictable performance regardless of frame size or throughput. The MDS 9700 Series enables scale-out and scale-up architectures by providing the highest scale numbers in the industry.

Cisco MDS 9718 is the only switch in the industry with scalability of up to 768 line rate ports within a single switch hence leading to heavy saving on CapEx as well as OpEx.

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1. Integrated analytics for deep visibility

2. Performance and scalability

3. **Exceptional reliability, availability, and flexibility**

4. Operational simplicity

5. Investment protection

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3. Exceptional reliability, availability, and flexibility

The Cisco MDS 9000 Family provides exceptional reliability and availability. MDS 9700 Series directors offer redundancy for all major components, with 1+1 redundant supervisors, N:N grid-redundant power supplies, and N+1 redundant backplane fabric modules. The N+1 redundancy on fabric modules is an industry first, providing protection against any loss of bandwidth if one of the fabric modules fails. Our competitors are vulnerable to a loss of half the bandwidth in a similar situation.

The MDS 9700 Series also offers industry-leading link resiliency with the capability to aggregate up to 16 links across different line cards, port-groups and port ASICS into a port channel (16 x 32 = 512 Gbps FC or 16 x 40 = 640 Gbps FCoE), protecting the logical port-channel link against the failure of member ports, links, and line cards.

The MDS 9700 Series uses Cyclic Redundancy Check (CRC) to check for frame integrity, dropping corrupt frames in the line card at ingress and thereby preventing corrupt frames from flooding the network.

MDS 9700 series directors have advanced hardware based capabilities to detect, troubleshoot and automatically recover from slow drain situations. Slow-drain detection occurs at a granularity of 2.5 microseconds and automatic recovery happens as early as 1 millisecond. Depending upon the slow drain severity, MDS switches can either confine the impact to a switch port by invoking no-credit-drop timeout or can isolate a slow drain device to its own virtual link, hence keeping rest of the fabric unaffected by the situation. MDS switches together with Cisco DCNM provides a single pane of glass visibility

across whole fabric to quickly detect slow drain devices hence, reducing troubleshooting time from weeks or days to minutes.

The Cisco MDS 9000 Family provides state-of-the-art multiprotocol convergence and distributed fabric services, along with many advanced capabilities. It also enables SAN consolidation and convergence with integrated multiprotocol support for Fibre Channel, FCoE, Internet Small Computer System Interface (iSCSI) gateway, and IBM Fibre Connection (FICON), along with intelligent fabric services such as Cisco I/O Accelerator (IOA) and Data Mobility Manager (DMM). The Cisco MDS 9250i multiservice fabric switch and the 24/10 SAN Extension Module for MDS 9700 provides remote SAN extension with high-performance Fibre Channel over IP (FCIP) for remote-replication and disaster-recovery services.

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4. Operational simplicity

The Cisco MDS 9000 Family promotes operational simplicity by bringing programmability, analytics, manageability, and visibility to the SAN. The Power-On Auto Provisioning (POAP) feature automates switch setup and helps ensure configuration consistency. The Representational State Transfer (REST) API framework used by the MDS 9000 family along with the native Python and TCL support and support for tools like Ansible on the switches provides simple, faster, and more effective programmability on the switches. Cisco Data Center Network Manager (DCNM) provides end-to-end visibility into the SAN through a single-pane view, enabling effective health monitoring, diagnostics, and troubleshooting through GUI-based utilities.

5. Investment protection

Cisco MDS 9500 family was introduced in 2002 and still deployed in many data centers throughout the world, having seen multiple speed upgrades from 2 to 4 to 8 to 10 Gbps Fibre Channels without any downtime. Our MDS 9700 Series directors, introduced in 2013, support up to 32-Gbps Fibre Channel and 40-Gbps FCoE, and they are ready for next speed upgrades (64G FC) without any forklift upgrade of the chassis. Cisco has protected customers' investment in the MDS 9000 Family for more than a decade, whereas with every speed change our competitors have implemented several major equipment overhauls for their flagship products. The MDS 9000 Family provides multiprotocol support through its product portfolio. Customers can choose among 2-, 4-, 8-, 10-, 16- and 32-Gbps Fibre Channel; 1- 10- 40- Gbps FCIP, 10 and 40 Gbps FCoE; and FICON; and they can mix Fibre Channel and FCoE on the same platform without any restrictions on number of slots and placements. Cisco MDS 9000 switches support NVMe over Fibre Channel and FCoE without any hardware changes. These are the only SAN switches in the industry with this kind of speed and protocol fexibility.

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Cisco promised investment protection when we launched the MDS 9700 Series in 2013 and now those same customers can upgrade their existing MDS 9700 Series directors to be ready for 64G Fibre Channel while still operating front-end connectivity at 32-Gbps Fibre Channel seamlessly, compared to competing solutions, which instead require major equipment upgrades: a high-risk, high-cost, and time-consuming exercise. The new 32-Gbps directors now provide better visibility with the built-in analytics engine. And customers can now deploy the next-generation monitoring and analytics solutions without a major equipment upgrade. Because the MDS 9700 Series is built from the foundation up with next-generation technologies in mind, the newly introduced solution also supports emerging technologies such as NVMe over Fibre Channel, hence paving the way for a seamless transition to NVMe-based solutions when customers are ready—all using the same MDS 9700 Series directors.