

## Cisco SAN Fabric Switches Deliver Compelling Value for Small and Medium-Sized Business SAN Solutions

For any business to be competitive in the current economic climate, its IT department must adapt to conserve capital expenditures (CapEx), while optimizing operating expenses (OpEx).

As small organizations strive to meet strategic business and application needs, they are often challenged by economic realities to find an innovative solution that is flexible, agile, highly available, secure, and simple while also being affordable. These organizations are looking for the following in their SAN infrastructure:

- Lower total cost of ownership (TCO)
- Flexibility and agility in infrastructure consolidation
- Enterprise-class richness in high-availability, security, and management features

Cisco recognized these requirements when building the Cisco® MDS 9100 Series Multilayer Fabric Switches. The Cisco MDS 9100 Series Fibre Channel SAN switches are purpose-built to provide an affordable and highly capable solution for the small and medium-sized business (SMB) market, offering:

- Affordability, for low TCO
- Virtualization, for flexibility
- High-availability and ease-of-use management capabilities

The Cisco MDS 9100 Series Fibre Channel SAN switches offer SMBs compelling enterprise-class value at a low cost. This innovative solution is designed to be highly capable and easy to configure and manage. At a time when organizations are optimizing their budgets for the lowest TCO for infrastructure, value can be found in the Cisco MDS 9000 family fabric switch solutions.

### Affordability

#### **Challenge: Deploy a Cost-Effective, Highly Capable SAN Solution**

SMBs require rich features and functions to be competitive and grow their businesses. However, these organizations do not have the capital and operating budgets to afford features such as high availability and simple management tools available for large enterprises. SMBs also prefer to pay for only the capabilities they need today and to pay for additional infrastructure as it is needed.

#### **Solution: Cisco MDS 9100 Series Offers a Highly Capable SAN Solution at a Low Price**

Cisco MDS 9100 Series switches are available at the lowest cost for a switch in the entry-level SAN switch market. The entry-level Cisco MDS 9124 Multilayer Fabric Switch is the most cost-effective switch in the industry today. According to pricing comparison from leading original equipment manufacturer (OEM) SAN vendors, the base Fibre Channel SAN switch of competing vendors costs 30 percent more than the base Cisco MDS 9124 platform.

In addition, competing vendors charge licensing fees to enable capabilities on their switches that can more than double the price of the base switch. These same capabilities are available for no additional cost on the Cisco MDS 9124 (Table 1). The Cisco MDS 9124 is the only SAN switch in the industry that provides highly capable features and functions for no additional cost, in feature comparison to comparable competitive switches.<sup>1</sup>

**Table 1.** Comparison of Features in Cisco MDS 9100 Series and Competing Products

Feature	Cisco MDS 9100	Comparable Switch by Other Vendors	Cisco's Business Benefit
<b>Virtual Fabric Support</b>	No additional cost	No	<ul style="list-style-type: none"> <li>• Cost savings; fewer SAN switches needed</li> </ul>
<b>Switch-to-Switch Connections and Extending the SAN</b>	No additional cost	\$ Optional license	<ul style="list-style-type: none"> <li>• Scalability and business continuity without cost.</li> <li>• Cisco has no additional charge to connect two switches together or to extend the SAN.</li> </ul>
<b>High Availability of the Link</b>	No additional cost	\$ Optional license	<ul style="list-style-type: none"> <li>• Reduces disruptions and is included without additional cost on Cisco switches</li> </ul>
<b>Redundant Power Supplies</b>	No additional cost	No	<ul style="list-style-type: none"> <li>• Cisco is the only vendor not to sacrifice high availability</li> </ul>
<b>Fabric Management and Monitoring</b>	No additional cost	\$ Optional license	<ul style="list-style-type: none"> <li>• Provide fabric view access to manage and monitor the network</li> </ul>

## Consolidation and Virtualization

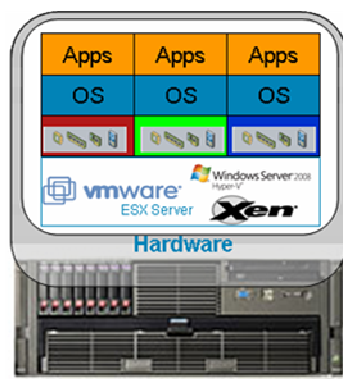
### Challenge: Deploy a SAN Solution That Is Agile and Flexible

Organizations are always looking for ways to optimize physical resources to reduce operating costs such as energy use and lower capital expenditure to achieve a low TCO. Lack of flexibility and agility in SAN solutions hinders optimal utilization of IT resources.

### Solution: Cisco MDS 9100 Series Provides End-to-End Consolidation and Virtualization of SANs

Virtualization consolidates servers for increased server utilization. Industry-leading virtualization software for servers such as VMware ESX Server, Microsoft Windows Server 2008 Hyper-V, and Xen creates virtual machines running on the same physical server so that server resources are optimized for performance (Figure 1).

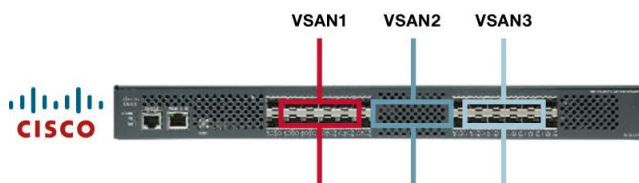
**Figure 1.** Virtualized Server



<sup>1</sup> Found in a comparison done on two major competing vendors

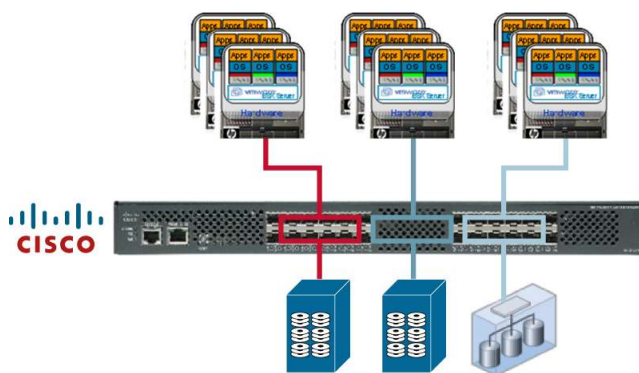
Similarly, fabric virtualization is needed on the SAN infrastructure to provide end-to-end virtualization, from server hosts to storage targets. Cisco's virtual SAN (VSAN) technology virtualizes the SAN switch when bridging servers with storage. VSANs create logical SANs that emulate the physical infrastructure to provide flexibility in deployment and consolidation (Figure 2).

**Figure 2.** Virtualized SAN Switch



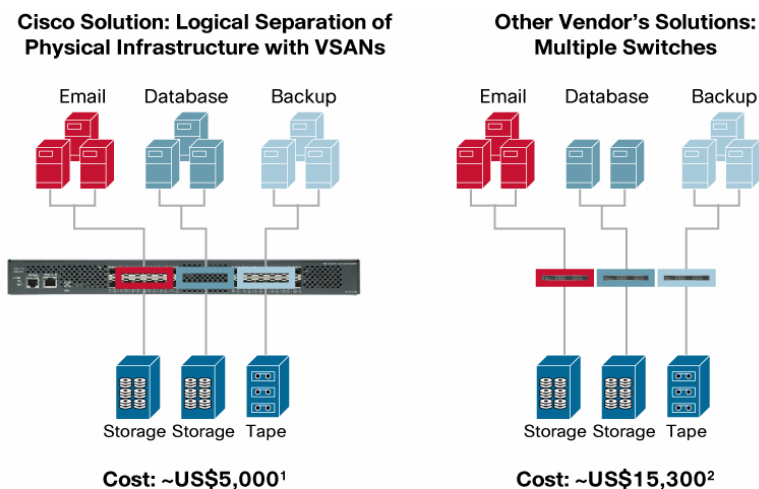
The Cisco MDS 9100 Series has features to extend the virtual machines to storage as well as to virtualize the SAN itself (Figure 3). These features are provided on the entry-level SAN switch at no additional cost.

**Figure 3.** Server to Storage Virtualization



Cisco's VSAN technology also provides infrastructure consolidation by combining multiple physical SAN switches as logical entities in a one physical switch. This consolidation results in major cost savings for organizations by reducing capital expenditures for additional switches and inefficient utilization of storage (Figure 4).

**Figure 4.** Cisco VSAN Consolidation to Reduce Capital Expenditure<sup>1,2</sup>



<sup>1,2</sup> Based on list prices by a major OEM vendor for a Cisco MDS 9124 and comparable competitor switch with 8 ports enabled

## Application Performance

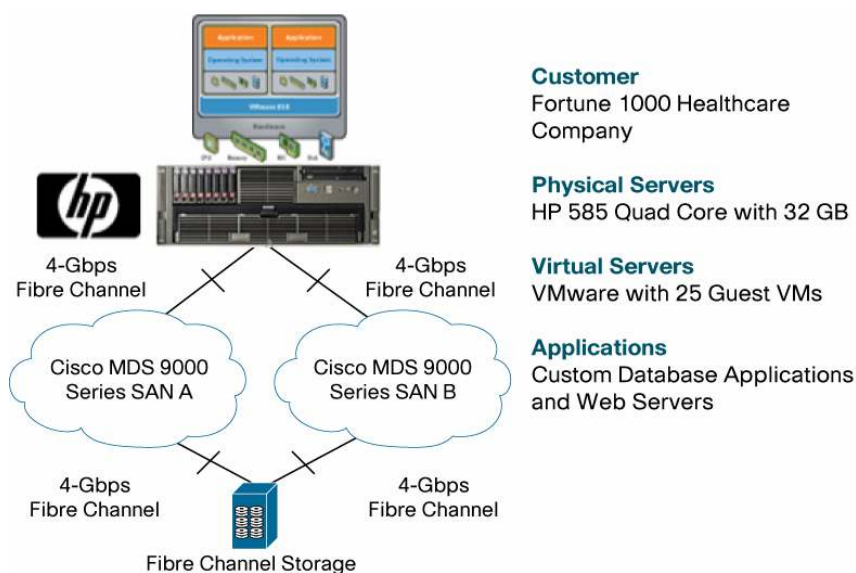
### Challenge: Optimize Infrastructure for Best Price: Performance Ratio

A common question in the market is whether higher performance demands on servers will require higher network speeds in the SAN. Does an organization need to spend a premium, which may amount to more than twice the cost of the current 4-Gbps Fibre Channel technology, to acquire higher-speed equipment, especially given that no storage devices currently available support speeds higher than 4 Gbps?

### Solution: Cisco MDS 9100 Series Provides Outstanding Price: Performance Ratio to Support Application Needs

In a cost-conscious, budget-constrained economy, organizations must look at application needs and deploy solutions that provide the best price: performance ratio, not simply adopt the latest technology regardless of whether the solution makes economic sense. Cisco MDS 9100 Series bandwidth is optimized for the needed application performance. Figure 5 shows the results of a customer case study. The argument that server virtualization will require speeds higher than 4 Gbps was muted by the fact that even 25 virtual machines require far less bandwidth, than 4 Gbps, in the SAN.

**Figure 5.** Case Study: SAN Throughput Requirements for Virtual Servers



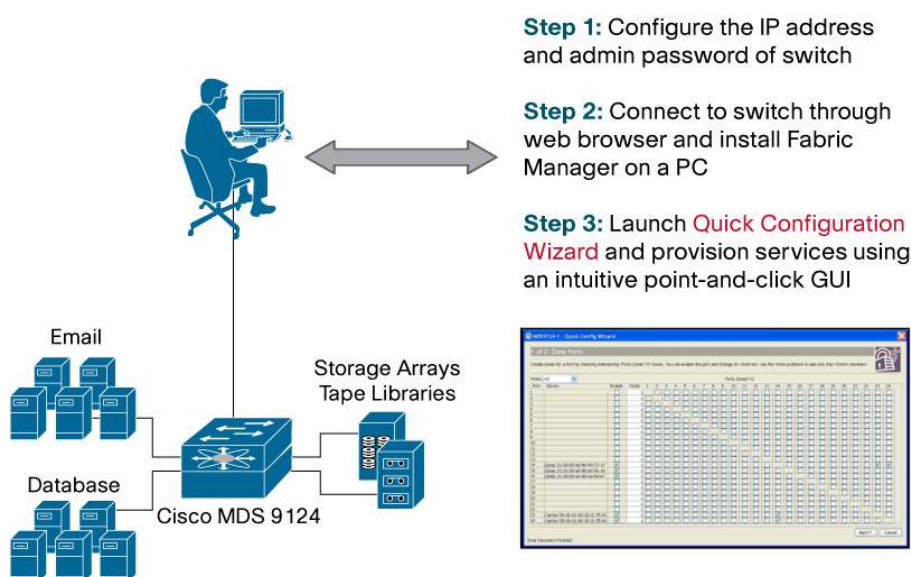
## Ease of Use

### Challenge: Reduce Management Complexity of Fibre Channel SAN Solution

SMBs have limited resources and time to handle complexities that arise from managing storage and SAN switches. IT departments want SAN solutions that can be managed simply and easily.

### Solution: Cisco Quick Configuration Wizard Enables Easy Management

Cisco's management software, with an intuitive GUI, makes configuration of the Cisco MDS 9100 Series platform an easy task for any IT administrator. Switch provisioning is made simple and secure through integration of the Device Manager with the Quick Configuration Wizard, which can be accessed through a simple three-step process shown in Figure 6.

**Figure 6.** Cisco Quick Configuration Wizard for Simplified Ease of Use

## Conclusion

Cisco MDS 9100 Series SAN switches, backed by years of innovation, bring a feature-rich solution to SMB customers at a cost point they can afford. This entry-level SAN switch comes with critical features built in to make any organization highly capable:

- High availability, flexibility, and security
- SAN virtualization to extend server virtualization to storage and consolidate the SAN
- Cost-effective fulfillment of application performance needs
- Ease-of-use through management simplicity, which is a crucial requirement for resource- and time-constrained IT departments

Cisco offers best-in-class SAN solutions for the SMB market with the customer always in mind.

## For More Information

To learn more about this offering and the business benefits of Cisco MDS 9100 Series, please visit <http://www.cisco.com/go/storage> or contact your local account representative.



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