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**Cisco Delivers SAN Extension, SAN Security Innovations with Cisco MDS 9000
SAN-OS 2.0**

New software features make storage networking safer, faster, and simpler

CHICAGO (StorageDecisions 2004) – Sept. 20, 2004 – Cisco Systems, Inc.® today introduced a number of software features for the Cisco MDS 9000 Family of Multilayer Intelligent directors and fabric switches that will help make storage area networks (SANs) more secure, easier to configure and manage, and able to send data over longer distances faster and more efficiently.

These new features will be available in the latest version of the operating system for the Cisco MDS 9000, the SAN-OS 2.0. These innovations add to a comprehensive set of intelligent storage networking features already available in the Cisco MDS 9000 including Virtual SANs (VSANs), the industry’s first SAN partitioning tool, and Quality of Service (QoS)-based traffic management.

“As IT managers focus on enhancing business continuity across all enterprise applications, they are looking for solutions that help them effectively move and replicate data between all networked storage systems, not just individual arrays,” said Richard Villars, Vice President of Storage Systems at IDC. “SAN extension and management functions like those that Cisco is adding to MDS 9000 products through SAN-OS 2.0 reflect enterprise requirements for more integrated storage networking solutions.”

SAN Extension Enhancements

Several features in SAN-OS 2.0 make transporting storage traffic over metro and wide area networks (or SAN extension) faster, more secure, and more efficient -- ideal for applications such as disaster recovery and remote tape backup. These include:

- **Tape acceleration for Fibre Channel over IP (FCIP)**, which enables Cisco MDS 9000 switches to speed up the input/output (I/O) “transactions” occurring during remote backups. This reduces the latency commonly associated with backup over a

wide area network (WAN), thereby considerably reducing the time required for long-distance backups. Storage administrators can use this feature to backup from a number of remote data centers (e.g., a branch office data center) and consolidate backup traffic from both local and remotely based SANs at a central location. This feature complements an existing feature called FCIP write acceleration, which speeds up I/O transactions between servers and disk-based storage devices such as a disk array.

- **Hardware-assisted data compression over FCIP** helps storage administrators achieve very high data compression rates even over high-speed WAN links. Through data compression, storage administrators can more efficiently use the available bandwidth and send more storage traffic between data centers. Hardware-enabled FCIP compression is currently available on the Cisco MDS 9000 Multiprotocol Services Module and the Cisco MDS 9216i fabric switch (see today's related announcement). Software-based FCIP compression was already available on the Cisco MDS 9000 IP Storage Services Module with the SAN-OS 1.3 software update, which shipped in January 2004. With both methods, storage administrators now have the flexibility of extending their SANs more efficiently across very-low to very high-speed WAN links.
- **Hardware-based IPsec (IP Security) encryption** helps ensure secure SAN extension transactions, an important consideration when transporting storage traffic outside the confines of data centers. IPsec encryption works with the two IP storage protocols Cisco supports on the Cisco MDS 9000, FCIP and the Internet Small Computer Systems Interface (iSCSI). IPsec is available on the new Cisco MDS 9000 Multiprotocol Services Module and the Cisco MDS 9216i fabric switch.
- **Extended Fibre Channel buffer-to-buffer (b-to-b) credits**, from 255 per port up to a maximum of 3,500 per port, allow storage administrators to extend Fibre Channel traffic natively over very long distances. This feature is designed for use when transporting Fibre Channel traffic from Cisco MDS 9000 switches over external storage transport devices such as those supporting coarse, dense wavelength division multiplexing (CWDM, DWDM, e.g. Cisco ONS 15500

Series) and synchronous optical networks/synchronous digital hierarchy (SONET/SDH, e.g. Cisco ONS 15454). This feature is available on the Cisco MDS 9000 Multiprotocol Services Module and the MDS 9216i fabric switch.

Additional SAN Security Enhancements

SAN security enhancements in SAN-OS 2.0 include features that address integrity and encryption for “data in motion” such as IPSec-based encryption and support for Advanced Encryption Standard (AES), the most secure method of encryption available today. These features complement an already rich set of security features available on the Cisco MDS 9000 that address other critical security needs such as device authorization and authentication, traffic isolation and access control, and SAN management security.

SAN Management Simplification

In the area of SAN management simplification, automated functions include Cisco Fabric Services (CFS) which makes SAN provisioning easier by automatically distributing configuration information to all switches in a fabric and PortChannel Protocol, which can detect configuration errors and automatically set up a Port Channel, which is a very high performance Inter-Switch Link (ISL) . Other SAN simplification features include a Web Dashboard which provides an operational view of the SAN fabric and Distributed Device Alias Services, which provide fabric-wide alias names for host bus adapters (HBA), storage devices, and switch ports and eliminate re-entering names when devices are moved.

Pricing and Availability

Cisco MDS 9000 SAN-OS 2.0 is currently undergoing qualification testing with Cisco’s storage reseller partners. Pricing and availability will be announced by the individual companies beginning in Q4 of calendar year 2004.

About the Cisco MDS 9000 Family

The award-winning Cisco MDS 9000 Family is a comprehensive line of SAN switches and directors for storage networks of all sizes and architectures. Comprised of the Cisco MDS 9500 series directors, the Cisco MDS 9216 series flexible-configuration fabric switches, and the Cisco MDS 9100 series fabric switches, the MDS 9000 Family is designed to offer high performance and scalability, intelligent network services such as multiprotocol/multitransport integration, Virtual SANs (VSANs), security, advanced

traffic management, sophisticated diagnostics and unified SAN management. For more information, go to www.cisco.com/go/mds.

The Cisco MDS 9000 delivers the storage networking foundation for the Cisco Business Ready Data Center, which provides an intelligent information network architecture to optimize alignment of data center resources with business priorities. For more information, go to www.cisco.com/go/datacenter.

About Cisco Systems

Cisco Systems, Inc. (NASDAQ: CSCO), the worldwide leader in networking for the Internet, this year celebrates 20 years of commitment to technology innovation, industry leadership and corporate social responsibility. News and information are available at www.cisco.com.

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