Enabling Secure Storage Area Network and Enterprise LAN Convergence

Enterasys Matrix™ N-Series switches provide enterprises with secure iSCSI-based SAN connectivity

The Value of iSCSI SAN Solutions

The Ethernet protocol is the world's most popular LAN protocol with several 100 million ports of switched Ethernet installed worldwide, enabling vast amounts of corporate commerce and driving powerful technology segments. The Ethernet standard has seen phenomenal increases in data rates, evolving from the original shared 10Mbps technology, to its current incarnation providing dedicated 10-Gigabit connections. The universal appeal of Ethernet and its "cousin" TCP/IP is such that no matter what the networking challenge, it seems that they can always deliver a cost-effective, reliable, high-performance, manageable solution. This has become the case in the arena of Storage Area Networks (SANs).

A SAN is a network dedicated to storage systems and is independent from the enterprise data network. There are many benefits to SANs, the most significant being that data, which resides on a storage device, can be shared between multiple servers. SANs have historically utilized fibre channel technology for the movement of data between servers and storage devices. Fibre channel is a high-performance, very low latency, guaranteed delivery "master-slave" network, which encapsulates the block storage protocol known as Small Computer Systems Interconnect (SCSI) in a fibre channel frame or packet. SCSI is the block storage protocol specially designed, at the beginning of the PC era, for use between disk drives and computers.

As organizations constantly search for ways to best utilize their resources in an attempt to reduce spending and increase the bottom line, it has become apparent that one way to achieve this is via the consolidation of enterprise network, storage and IT resources—combining the Local Area Network (LAN) and the Storage Area Network (SAN) into one high-speed Ethernet network.

In order to connect disk arrays and servers to the enterprise Ethernet network, a new protocol was developed: iSCSI (Small Computer Systems Interface over IP). Rather than using fibre channel to encapsulate SCSI messages that are sent between disks, server, and tape libraries, iSCSI uses TCP/IP and Ethernet—encapsulating SCSI commands within an IP packet for transmission over the existing enterprise networking infrastructure, effectively eliminating the need for a fibre channel network.

Enterasys Secure iSCSI solutions

Replacing the fibre channel SAN infrastructure with Ethernet and iSCSI enables the concept of SANs to reach its full potential. Ethernet SANs provide all the benefits of the traditional fibre channel SAN without any of the issues, such as cost, maintenance and WAN implementation.

Enterasys Networks Matrix N-Series flow-based switching solutions have been designed to provide optimized SAN connectivity solutions in conjunction with iSCSI storage devices from Dell/EMC.

At-A-Glance

Matrix N-Series switches have the industry's richest feature set enabling secure iSCSI-based SAN connectivity

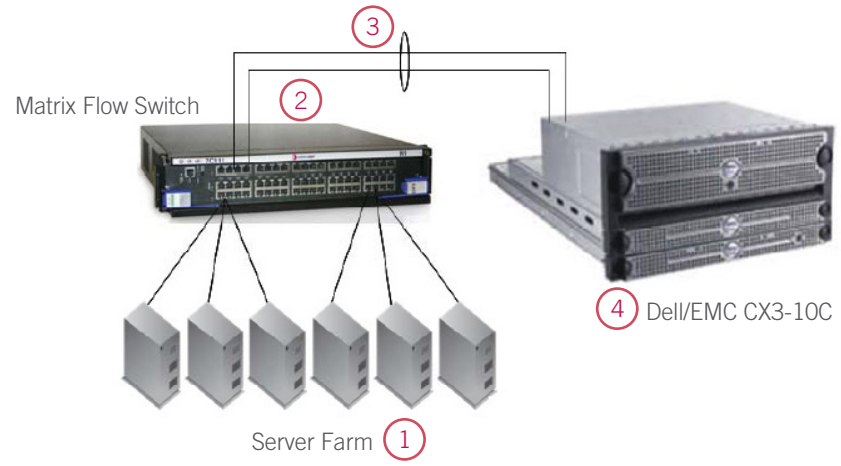
Features

- Distributed, Flow-Based Architecture
- Advanced Quality of Service (QoS)
- SAN Policy-Based Networking
- Rapid Spanning Tree Support
- 802.3ad Link Aggregation
- Jumbo Frame Support
- 802.3x Flow Control
- 802.1Q VLANs

Advantages

- A specific communications flow, such as iSCSI traffic, is identified, applicable rules are applied, and all subsequent frames are automatically handled without any further processing.
- Policy-based frame classification and bandwidth management, featuring rate limiting and QoS priority queuing
- Data loops on the network are eliminated, allowing for instantaneous fail-over in the event of link failure

Secure SAN



These solutions provide significant business and technical advantages for any organization considering the convergence of their storage and enterprise networks.

1. Server - Gigabit Ethernet connections to Matrix flow switch provide access to iSCSI device.
2. Matrix flow switches provide secure policy-based switching for SAN traffic.
3. Gigabit Ethernet connections form Link Aggregation groups to provide resilient iSCSI communication.
4. SAN storage array communicates across TCP/IP network via iSCSI.

From a business perspective, the cost of Ethernet networks is significantly less than that of fibre channel. For example, Ethernet switching connectivity for a multi-terabyte storage solution from Dell/EMC is provided by the Enterasys Matrix N-Series system bundle (part number 2G4082-25-SYS) providing 24 ports of high-performance Gigabit Ethernet in an enterprise-class data center switch. The per-port cost of the Enterasys Matrix solution is 50% less than the equivalent fibre channel connection; this differential is increased significantly when the operational costs of running fibre channel versus Ethernet are added into the equation.

Securing the SAN

Storage security has become one of the hottest issues in IT, as high-profile database breaches and lost data tapes have catapulted the issue off the pages of trade journals and onto the nightly news. Companies report that just a single storage security incident can bring unwanted scrutiny and cost millions of dollars. The types of security threats that lie in wait for storage systems and networks aren't dramatically different from those that plague enterprise networks, such as spoofing, sniffing, Denial of Service (DoS) attacks, man-in-the-middle attacks, and so on. Therefore, it is important to utilize the same tools, firewalls, IDS/IPS and policy-based networking approaches to protect the infrastructure from such attacks.

At-A-Glance (continued)

- Interfaces are logically grouped together to create a greater bandwidth uplink
- Support for frame sizes of up to 10,239 bytes allows more data to be transferred
- Management of the transmission of data between two end devices on the SAN ensures that receiving ports are not overwhelmed by frames from transmitting devices
- Virtual LANs allow the network administrator to partition network traffic into logical groups and control the flow of that traffic through the network

Benefits

- Granular level of user and application control is applied to each flow allowing large volumes of traffic to be secured without sacrificing performance
- iSCSI traffic reaches its destination even in the busiest of network implementations to ensure the timely transport of business-critical applications
- Optimized use of available bandwidth and optimal load balancing across redundant links
- Improved performance and optimized latency across the iSCSI SAN infrastructure
- Users can be allowed or denied access to any of the network's resources, providing performance benefits for SAN traffic
- iSCSI networks are able to handle peak traffic loads with enhanced reliability and performance

Enterasys Networks is renowned as the industry leader in providing Secure Networks solutions. The use of Matrix flow switches with their policy-based architecture provides enterprises with massive advantages when it comes to securing iSCSI-based SAN infrastructures. These solutions enable the dynamic implementation of security and Quality of Service policies for specific applications and services—such as iSCSI—used on the network. Policy configuration can provision a security and quality level to the iSCSI application based on the MAC address of the device attaching to the network, enabling enterprise customers to maintain a network architecture that allows only the required business resources to be used while ensuring security by eliminating undesirable traffic and usage of the network.

Ordering Information

Part Number	Description
2G4082-25-SYS/ A1115810	2G4082-25, 7C111 BUNDLE – includes Distributed Forwarding Engine (Platinum) with 24 10/100/1000Base-TX ports & Network Expansion Slot, plus 1-Slot N-Series Chassis
7C111/ A0513495	1-Slot Matrix N-Series Chassis
7GR4202-30/ A1181174	Distributed Forwarding Engine (Diamond) with 30 10/100/1000Base-TX ports via RJ45

Contact Us

Customer calls, sku's, product/pricing questions
Brett Jackson, Product Specialist
Office: 615.795.6196
Brett_M_Jackson@dell.com

Account mapping, field engagement, training
Susan Cirami, Account Manager
Office: 512.728.2261
Susan_Cirami@dell.com

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