

Double the ROI of your EVA with iSCSI

Executive Summary

The EVA is designed to be shared and provide high availability storage to servers. This paper discusses how the IT managers can extend the value of the EVA to low cost servers. Traditionally, 1U and blade servers have not been attached to high end Fibre Channel storage do to the cost of adding those servers to the SAN. The new HP StorageWorks EVA iSCSI Connectivity Option solves this problem. .

By lowering per server connection cost to under \$100 the benefits of SANs can be provided to all servers in the enterprise. Since this connectivity option uses iSCSI (running over standard Ethernet) the solution, not only lowers connectivity costs, it overcomes the many of the inherent distance limitations of Fibre Channel. The addition of iSCSI to the EVA and the SAN fabric enables linking of islands of SANs across the campus, helps bridge SAN fabrics from multiple vendors and supports SAN connection over WANs for DR purposes.

Contents:

2. Double ROI on EVA
 2. iSCSI on the EVA, Why Should You Care?
 3. ROI is about Maximizing Utilization
4. Choices, Choices, Choices
 5. Target Applications for the iSCSI-FC
 6. EVA iSCSI Connectivity Option – SAN Connectivity for Low-cost Servers
7. Summary

2 | Double ROI on EVA

Enterprise IT managers spend a great deal of time justifying and managing equipment in the data center. When it comes to measuring ROI on SAN storage systems some of the key components are:

- The number of servers and application supported
- The number of DAS storage solutions that can be consolidated on the SAN
- The management cost reduction and policy adherence for those servers and applications
- Leverage of other infrastructure investments (Backup Storage, Software Licenses)
- Right sizing the storage solution to the application needs
- Lower Server build cost with free iSCSI initiators

The HP StorageWorks EVA iSCSI Connectivity Option is a solution that helps IT managers improve the ROI on the components listed above in their current EVA SAN investments. By adding iSCSI (SCSI over Ethernet) to expand the EVA platform's connectivity every server in the enterprise, with Ethernet, can gain the benefits of SAN based storage. It makes the EVA multi-protocol enabling Fibre Channel and iSCSI connectivity simultaneously. This is particularly beneficial for low cost servers, blade servers, servers in remote sites and any server that still use DAS (Direct Attached Storage). Many of these servers need the centralized storage management, policy and data protection benefits of the SAN, but don't need the cost and maximum performance of Fibre channel. This is where the EVA iSCSI Connectivity Option can fill an important need and at an optimal cost. Additionally, as IT managers know, moving from DAS to SANs provide many obvious benefits

- Better storage performance for low cost servers
- Storage consolidation for better SAN utilization
- Centralized data and policy management
- Support for business continuance and regulatory requirements
- Remote replication of low-cost server data
- Sharing of tape automation and virtual tape libraries (VTL)
- Sharing of backup and data management licenses

The addition of an EVA iSCSI Connectivity Option to can enable greater utilization of the EVA, lower SAN management costs, provide better data protection and application availability for more servers across the enterprise.

iSCSI on the EVA... Why Should You Care?

Adding the EVA iSCSI Connectivity Options to you enterprise allows IT managers to expand the reach of the EVA to expand the ROI on the platform. Additionally, it allows you accomplish this using what is already in place today by:

- Leverage of existing IP networking infrastructure
- Leveraging storage staff and expertise in the data center – across the enterprise

3 Choices... Choices... Choices

Listed below are some of the key reasons for expanding the reach of your EVA across the enterprise:

- **Low Cost SAN Connection** – the EVA iSCSI Connectivity Option provides SAN connectivity for all servers via standard Ethernet. Up to 150 servers can be connected via at a fraction of the cost of installing FC HBAs.
- **Lower Storage Costs** – centralized management reduces the staff required to support storage, provides better utilization of storage assets and reduces the risk of human errors.
- **Replace DAS** - the EVA iSCSI Connectivity Option can provide better performance than DAS, Additionally, DAS creates application and server availability risks. If the locally attached disk fails, the server fails to provide the production application it was deployed to deliver.
- **Improved Data Protection** - centralized SANs provide the right tools and staff to meet business continuance and regulatory requirements.
- **Improved Asset Management and ROI** – Amortizing the cost of highly reliable Fibre Channel storage over more servers expands the ROI of Fibre channel based disk/tape storage.
- **Investment Protection** – the EVA iSCSI Connectivity Option makes existing SAN equipment more valuable for a longer time. Since most of the applications for the iSCSI side of the SAN are less demanding in terms of data rates and IOPs, lower performing SAN storage can be used for router based servers and new more performance capable SAN solutions can be used in the core of the SAN.
- **Leverage SAN Resources** – enterprise SANs have already invested in significant tools for management, data protection, security and policy adherence.
- **Right Size Data Pipe** – Each application has a specific set of data rate and IOP requirements. The iSCSI interface of the EVA iSCSI Connectivity Option is ideal for most low cost server applications and non-transaction systems.
- **iSCSI with QoS and VLANs** – the EVA iSCSI Connectivity Option is designed to take advantage of QoS and VLAN solutions already in place in most enterprises
- **Familiarity** – The EVA iSCSI Connectivity Option is fully integrated and managed by EVA Command View, an application familiar to all EVA users. No need to learn a new management application.
- **The Power of Free** – Microsoft, Red Hat and SuSE all provide free iSCSI drivers for connecting servers to the SAN via iSCSI.

ROI is about Maximizing Utilization

According to ESG (Enterprise Strategy Group) speaking at Storage networking World, spring 2006, most enterprise storage SANs like the EVA, are under 50% utilized. The EVA iSCSI Connectivity Option provides a great way to expand the value of the EVA across the enterprise. Due to the limited performance impact of these smaller low cost servers the EVA can easily support up to 150 servers, increasing SAN utilization, providing the overall benefits of the SAN to more servers, without affecting other servers and applications on the FC SAN.

The EVA iSCSI Connectivity Option also helps lower management cost, duplication of efforts and duplication of IT assets. Now IT managers can use fewer DAS storage systems, stand alone tape drives and software licenses (backup) to support the same

4 Choices... Choices... Choices

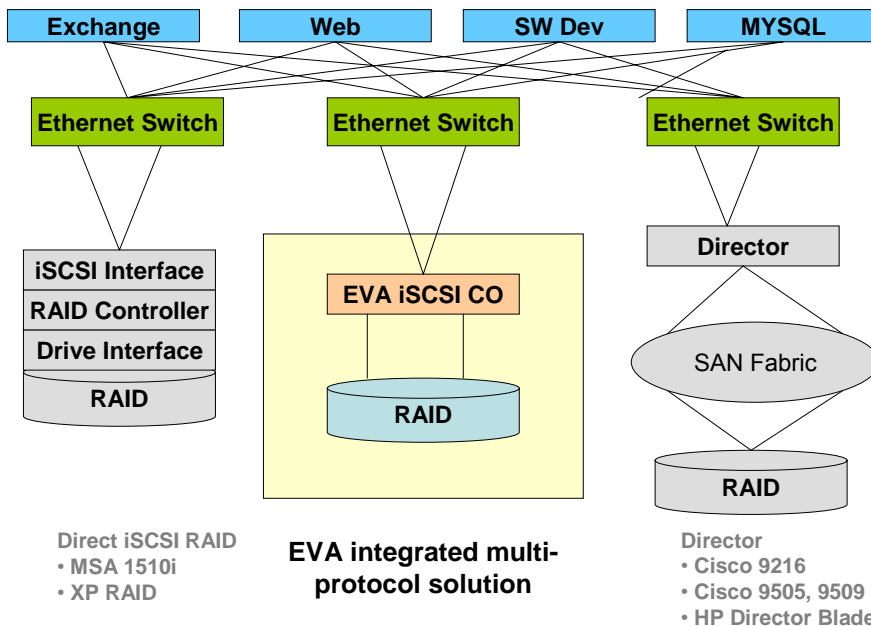
number of servers and production applications. All of these items should help double the current ROI on existing EVA solutions deployed today.

Choices... Choices... Choices

There are three basic methods for connecting FC SANs, via iSCSI—direct iSCSI ports in the RAID systems, stand alone boxes that route protocols and switches/directors that offer routing capabilities.

- **Direct iSCSI RAID** – Available on the MSA 1510i and the Enterprise XP RAID, this option allows RAID systems to attach directly to the IP fabric for server storage. However, this does not leverage the tools available on the enterprise SAN and it creates an IP SAN island. This option does not allow for integration or sharing iSCSI over multiple SAN storage systems.
- **Stand Alone Routers** – HP features EVA iSCSI Connectivity Option as the iSCSI solution of choice for the EVA. It is a cost effective stand alone router solution that plugs into the enterprise IP fabric on the front and the enterprise SAN, via Fibre channel, on the backend. The EVA iSCSI Connectivity Option is optimized to meet the requirements of the mid-range and is fully integrated with EVA Command View management software.
- **Switches/Directors** – HP offers multiple solutions in this space via their partnership with Cisco. The Cisco 9216 is a departmental switch that can also provide iSCSI to FC routing. The Cisco 9506, 9509 and the HP SAN Director are core data center solutions that provide the very highest level of performance and are ideal for XP class solutions.

HP iSCSI Connection Options



5 Choices... Choices... Choices

Product	Price	# of Servers	Price per Server	iSCSI Ports	FC Ports	iSCSI Data Rate MB/sec	iSCSI IOPs
MSA 1510i	\$ 15,000	50	\$ 300	2	N/A	300	30K
EVA iSCSI C.O.	\$ 11,999	150	\$ 80	2	2	320	35K
Cicso 9216	\$ 35,000	101	\$ 347	4	4	720	70K
Cicso 9506. 9509	\$ 100,000	1000	\$ 100	4	4	720	100K
HP Director Blade	\$ 100,000	1000	\$ 100	4	4	720	100K

* prices estimated by QLogic

Target Applications for the iSCSI-FC

The ability to provide iSCSI connectivity to the FC SAN is valuable but, not the only consideration for connecting servers to the SAN. The iSCSI connection needs to provide the right level of performance, so production applications and service are faster and offer a better experience for IT users. Leading candidates for iSCSI-to-SAN applications include:

EVA iSCSI Target	Application	Performance Requirements		Possible HP Solution
		Data Rate	IOP	
Yes	Exchange	Medium	Medium	• EVA iSCSI, 9216
Yes	Web sites	Medium	Medium	• EVA iSCSI, 9216
Yes	SW Dev.	Low	Low	• EVA iSCSI
Yes	Accounting	Low	Medium	• EVA iSCSI
Yes	Reference ILM data	Low	Low	• EVA iSCSI
Yes	MySQL	Medium	Medium	• EVA iSCSI, 9216
Yes	Department File Servers	Low	Medium	• EVA iSCSI
No	Oracle	High	High	• 9505, 9509, HP SAN Director
No	SAP	High	High	• 9505, 9509, HP SAN Director
No	OLTP	High	High	• 9505, 9509, HP SAN Director
No	VTL	High	Medium	• 9505, 9509, HP SAN Director

EVA iSCSI Connectivity Option

The EVA iSCSI Connectivity Option bridges iSCSI to Fibre Channel SANs to provide IT administrators with a cost efficient method of connecting servers to SANs.

EVA iSCSI Connectivity Option Overview

Performance and Fail Over

- 320 MB/sec iSCSI Data Rate
- 800 MB/sec FC Data Rate
- 35,000 IOPs
- HA via dual units in 1U shelf

Connections and Management

- Dual 1 Gb iSCSI ports
- Dual 2 Gb FC SFP slots
- Dual 1 Gb Management Ports
- Serial Management Port



Software and Tools

- Command View
- Microsoft and Linux iSCSI
- SecurePath
- Microsoft MPIO
- CHAP IP Security

Physical Dimensions

- 1U High, ½ Rack width
- Fits 2 units in 19" Rack width
- Single AC Power
- Single Power supply
- Entire Unit is a FRU

7 | Summary

The HP StorageWorks EVA iSCSI Connectivity Option is a solution that helps IT managers improve the ROI on the components listed above in their current EVA SAN investments. By adding iSCSI (SCSI over Ethernet) to expand the EVA platform's connectivity every server in the enterprise, with Ethernet, can gain the benefits of SAN based storage. This is particularly beneficial for low cost servers, blade servers, servers in remote sites and any server that still use DAS (Direct Attached Storage). Many of these servers need the centralized storage management, policy and data protection benefits of the SAN, but don't need the cost and maximum performance of Fibre Channel. This is where the EVA iSCSI Connectivity Option can fill an important need and at an optimal cost. Management is accomplished through EVA Command View which should be familiar to all EVA users. No additional software to learn. The addition of this multi-protocol solution to the EVA can enable greater utilization of the EVA, lower management costs, provide better data protection and application availability for more servers across the enterprise.