the evolution of iSCSI

The data access dilemma
The small computer systems interface (SCSI) is the dominant protocol for moving block level data among servers. Over 100 million SCSI-based devices are directly connecting storage to individual systems. Fibre Channel extends SCSI capabilities by improving performance and enabling multiple systems to be connected to storage over a local Storage Area Network (SAN). Over time, central access and management of storage from both local and remote servers has become a mission critical requirement for IT managers. This has presented challenges to the existing storage networking infrastructure. The industry responded to this need by introducing a standard for accessing block level data over the large base of existing IP networks, this standard is called iSCSI.

iSCSI
Internet SCSI (iSCSI) is an emerging standard that defines the encapsulation of SCSI packets in TCP and then routing it using IP. This development allows block-level storage data to be transported over widely used IP networks, enabling data access from anywhere, effectively eliminating the physical boundaries of the storage network. iSCSI enables block level data to be accessed over a standard Ethernet/IP network. Data on existing storage or high performance Fibre Channel SANs can be networked together using iSCSI and Ethernet to Fibre Channel storage routers. With iSCSI, enterprises and storage service providers (SSP) can build global storage networks and manage them from a central location using existing IP network infrastructures.
How iSCSI works

iSCSI enables standard SCSI commands to be passed between host systems (initiators) and storage devices (targets) over an Ethernet/IP network. To understand how iSCSI works, see the diagram (left) which shows how data is transferred between the initiator and target systems.

iSCSI standards

The iSCSI standard is being developed within the Internet Engineering Task Force (IETF) and is anticipated to be completed this year. Numerous systems, storage, and networking industry leaders, including Emulex, are developing and testing iSCSI solutions to meet the immediate need for this functionality and will introduce interoperable solutions that will support the evolving iSCSI standard.

Emulex’s iSCSI strategy

Emulex Corporation, the world’s leading supplier of storage networking host bus adapters, has announced its iSCSI strategy. The strategy includes the following:

- support for the emerging iSCSI standard
- availability of a iSCSI developer’s kit (IDK) with prototype HBA
- availability of a new high performance iSCSI host bus adapter (GN9000/SI) with Emulex Service Level Interface (SLI) support
- interoperability and integration testing with leading system, storage, and network providers
- A family of high performance iSCSI HBAs that support both target and initiator capabilities

Emulex’s new iSCSI products will implement the emerging iSCSI standard and TCP/IP protocols in firmware on a gigabit ethernet HBA to ensure high performance and ultra-low CPU utilization. The Emulex iSCSI products include support for the Emulex Service Level Interface (SLI) API, that is also
supported by Emulex’s industry leading LightPulse™ Fibre Channel products.

End-to-end IP storage networking solutions are emerging from companies such as Cisco and Brocade that will use the iSCSI protocol to enable remote data access from hosts and storage systems no matter where they reside—on ethernet networks or Fibre Channel SANs. These new “universal storage access” environments will require host and storage system connections to both IP networks and Fibre Channel SANs. Its iSCSI strategy uniquely positions Emulex, as a single source for both high performance IP and Fibre Channel host bus adapters to enable storage access from anywhere in the network.

Combined with Emulex’s VI/IP host bus adapters for accessing network attached file servers, Emulex’s iSCSI HBAs will enable IT managers to create a universal storage access environment over existing IP network infrastructures.