Data Mobility Group
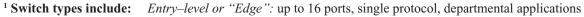
Switch Selection Criteria

SAN switch vendors commonly sell through OEMs (systems and storage vendors) or channel partners (systems integrators and VARs) that are marketing SAN solutions as well as stand-alone switch gear. This worksheet is designed so that data can be gathered from either the switch vendor or the selling and supporting vendor, or both, and used to support both switch and SAN acquisition decisions.

An electronic (MS Word) version of this worksheet will be made available to Storage Decisions 2003 attendees upon email request to Joseph Martins at jmartins@datamobilitygroup.com

Sizing and Scaling

	Product 1	Product 2	Product 3	Notes
Switch model				
Switch class or category [1]				
Types of ports that can be connected to the switch (i.e. E, F, iSCSI, etc.)				
Port addition increments				
Recommended per-port fan-in/fan-out ratios				
Additional components/features required as prerequisites for port addition				
Scaling limitations and configuration rules				
Does the use of ISL trunking limit the total number of ports supported on a single switch? If so, how?				

[1] **Switch types include:** *Entry–level or "Edge":* up to 16 ports, single protocol, departmental applications
Fabric: 16-64 ports, ISL capable, multi-protocol
Core or "Director" Class: 64-128 ports or more, ISL-capable, multi-protocol

Protocol Support

	Product 1	Product 2	Product 3	Notes
Protocols supported now[2]				
Protocols that will be supported in the future (with dates)				
Can the switch be upgraded by adding protocol support in place (i.e. iSCSI) and without disruption?				
Can support for different protocols be intermixed on the same switch?				

[2] **Responses could include:** Fibre Channel Protocol (FCP), iSCSI (SCSI over IP), iFCP (FCP over IP), FCIP (FCP over IP), or FICON (IBM zSeries mainframe channel protocol)

Zoning

	Product 1	Product 2	Product 3	Notes
Physical port				
World Wide Name (WWN)				
Hard zoning				
Soft zoning				
Both hard and soft zoning				
LUN-level				
VSAN				

Classes of Service Supported

	Product 1	Product 2	Product 3	Notes
Class 3				
Class 2				
Classes 1 and F				

Interoperability

	Product 1	Product 2	Product 3	Notes
HBAs and drivers supported				
Host operating system dependencies (if any)				
Can the vendor certify interoperability with all components connected to the switch?				
Does the vendor submit its products for FCIA SANmark compliance testing?[3]				
SANmark compliance levels achieved				
Does the bidding vendor publish interoperability tables or matrices? If so, how often are they updated?				
Does the vendor publish a summary of SAN configurations known to be problematic?				
Is the proposed switch/SAN configuration supported by the SNIA's Supported Solutions Forum (SSF)?				

[3] The Fibre Channel Industry Association (FCIA) established the SANmark Qualified Program "to provide objective indicators of how Fibre Channel products perform against reasonable quality and interoperability standards and to permit the use of the trademarked term "SANmark", and any associated logo(s), in the identification and promotion of products meeting the published test indices."

The FCIA publishes and makes public SANmark Conformance Documents (SCDs) that describe in detail the various Fibre Channel standards tested under the SANmark program and the requirements for SANmark certification. For example SCD 3001 describes the testing procedure for E-Port connectivity in a two-switch fabric.

continued on next page...

Inter-switch Connection Options

	Product 1	Product 2	Product 3	Notes
Switch-to-switch ISL trunking				
IP link via FCIP, iFCP, iSCSI?				
Dark fibre				
Dense Wave Division Multiplexed (DWDM)				
Distance limitation for each option above				
Maximum useable bandwidth for each option above				

Configuration

	Product 1	Product 2	Product 3	Notes
Automatic discovery of SAN-attached devices				
Switch-based services can be used to construct and update a SAN profile or configuration log				
Can configuration data be stored and recalled?				
Can configuration data be backed up?				
SAN configuration tools offered				

continued on next page...

Performance

	Product 1	Product 2	Product 3	Notes
Switch port data rates (i.e.1, 2, 4, 10Gb)				
Is auto negotiation supported? (i.e. can a 2Gb switch port support connection to a SAN component running 1Gb?)				
Non-blocking internal port connection				
Is automatic load balancing supported? If so, how?				
Can vendor supply performance data?				

Reliability and Availability

	Product 1	Product 2	Product 3	Notes
Component redundancy				
Single points of failure				
How is path redundancy implemented?				
Other redundancy features included				
Path failover support				
Host environments supported				
Estimate failover times?				
Reliability data (MTBF for example)				
Troubleshooting facilities included				
What is the effect of a pause in I/O operations?				
Length of time switch has been available (General Availability date for example)				

Switch Management

	Product 1	Product 2	Product 3	Notes
In-band				
Out-of-band				
Both in-band and out-of-band				
SNMP support				
SNIA SMI-S support[4]				
Other management applications that can be integrated with the switch management application				
Command Line Interface (CLI) plus graphical interface (GUI)				
Scripting of repetitive tasks via the CLI				

[4] The Storage Networking Industry Association (SNIA) has developed a management API standard based on the Distributed Management Task Force (DMTF) CIM/WBEM model. The API standard is now called the Storage Management Interface Standard or SMI-S. Conformance testing will be done by the Interoperability and Conformance Testing (ICTP) group within the SNIA. As part of this program, the SNIA plans to issue a compliance logo for products that meet SMI-S certification requirements. SMI-S product testing for ICTP certification will begin in the fourth quarter of 2003.

Security

	Product 1	Product 2	Product 3	Notes
Protection from unauthorized access to the management interface				
Protection from unauthorized server access				
How will security issues be addressed in the future?				
Will future security measures impact interoperability with other SAN components?				

    76 Northeastern Blvd. Suite 29A Nashua, NH 03062 Phone: 603.881.9031 Fax: 603.881.9035

Testing

	Product 1	Product 2	Product 3	Notes
Will the vendor provide pre-configured switch models for evaluation and testing?				
If so, under what conditions?				
Does the vendor offer lab facilities such that a close approximation of the actual production SAN implementation could be evaluated and tested?				
If not, what on-site equipment must be made available for testing?				
Does the vendor publish interoperability tables?				
If so, how detailed and/or how useful are they?				
If so, how often are these tables updated?				
Does the vendor publish a listing or summary of known issues or problem areas?				
Can the vendor demonstrate proven customer installations/ configurations for business applications similar to the one being considered?				

Support and Maintenance

	Product 1	Product 2	Product 3	Notes
Describe the vendor's problem resolution process[5]				
Warranty period				
Circumstances under which the warranty can be voided				
Levels of maintenance offered with charge for each level				
One-time charges for maintenance and support services				
What is the vendors "end of life" policy?				
Time period the vendor will continue to honor the maintenance agreement?				
Can the SAN configuration be covered under the SNIA's Supported Solutions Program?				
Is training offered?				

[5] Switch vendors commonly sell through OEMs (systems and storage vendors) or channel partners (systems integrators and VARs). Usually the selling vendor will handle initial support and problem resolution calls. Only when the problem cannot be solved at the selling vendor level is the issue escalated up to the switch vendor for resolution

Change Management

	Product 1	Product 2	Product 3	Notes
Under what circumstances will the switch need to be taken off-line?				
One-time charges associated with switch upgrades and changes				
Is non-disruptive microcode load supported for both progressive and regressive microcode loads?				
Vendor's estimate of the useful life of the switch				