QLOGIC®

SANbox® 9000

Designed to the Core™ for Open Systems

Finally, there's a new class of core switch that represents a sane alternative to quarter million dollar Director switches. The SANbox 9000 Series is *Designed to the Core* for cost sensitive, business-critical, open system environments that require ultra-high density, blazing performance, support for solutions with availability of 99.999% in an intelligent switch platform for their data center core. The SANbox 9000 series represents a number of industry firsts: a stackable chassis for simple, cost-effective scalability, a 4U chassis for smaller footprint, the simplicity and economies of Customer Replaceable Units (CRUs) and a comprehensive set of core switch software management tools included as standard. Best of all, pricing starts at under $100K.

The highly scalable SANbox 9000 is a stackable chassis switch with a dedicated 800Gb/s HyperStack™ [1] connection between as many as two chassis modules. The high port count SANbox 9000 supports up to 256 ports in a dual chassis configuration. The intelligent SANbox 9000 offers in one chassis module: 8 slots for any mix of 4Gb or 10Gb Fibre Channel I/O Blades, iSCSI Intelligent Storage Router I/O Blades[2], FCIP Intelligent Storage Router I/O Blades[2], or Storage Services Platform (SSP) Blades[4]. For high availability, the SANbox 9000 features redundant / hot-swap I/O, CPU[3], power supply and fan blades. And for comprehensive fabric management, the SANbox 9000 includes a powerful and easy-to-use suite of software tools for setting-up, monitoring, tuning, troubleshooting and servicing an unlimited number of large fabrics.

Key Features and Benefits

ULTRA-HIGH DENSITY AND STACKABLE SCALABILITY

- At twice the port density of typical 14U Director switches, the SANbox 9000 stackable chassis switch scales to 128 ports in a 4U single chassis module or up to 256 ports in an 8U dual chassis module HyperStack configuration[1] (via backplane interconnects) – 32 ports per 1U of rack space!
- Unlike legacy Director switches, the SANbox 9000 switch provides a low cost entry point with a 16 4Gb FC port configuration. Seamlessly grow your SANbox 9000 switch in 16 port increments up to 256 ports.
- Eight I/O Blade slots per chassis module supporting multi-protocol and multi-function technologies including:
  - 4Gb FC I/O Blade: for maximum server and storage connectivity.
  - 10Gb FC I/O Blade: high-speed Inter-Switch Links (ISLs) including trunking between other Core, Distribution and Edge Class switches.
  - Intelligent Storage Router Blade[2]: iSCSI for connecting low cost servers and FCIP for replicating data across a WAN.
  - Storage Services Platform "SSP" Blade[4]: pool heterogeneous storage.
- Broadly deployable in local, campus, distributed and remote Core/Distribution/Edge configuration topologies.
- ENTRY Model SB9100 fully upgradable in the field to single or dual HyperStack BASE Model SB9200.

BLAZING PERFORMANCE

- Non-blocking, full-duplex bandwidth at 800Gbps in a single chassis module or a massive 1.6Tbps for a dual module HyperStack configuration[1] (64 10Gb or 256 4Gb FC ports) to enable High Performance Computing, Video and Satellite Capture data streaming applications.
- Industry's lowest latency and "No-Wait" routing for maximum transaction performance via powerful embedded CPU and I/O Blade ASICs.

CUSTOMER REPLACEABLE UNITS (CRUs)

- The industry's first stackable chassis switch designed for the convenience, simplicity and economies of Customer Replaceable Units (CRUs) for key components.
- Redundant, hot-pluggable CPU[3], Power Supply, Fan and I/O Blades, non-disruptive code load and activation (NDCLA) and non-disruptive CPU failover[3] in support of 24x7 mission-critical operations that require 99.999% availability.

LOW TOTAL COST OF OWNERSHIP

- All the benefits of a Director Class switch with revolutionary pricing that starts under $100K.
- Architected for long-term investment flexibility and protection to deliver a previously unachievable reduction in Total Cost of Ownership (TCO).
- For SAN administrators that have invested in multi-vendor fabrics, the SANbox 9000 is interoperable with all FC-SW-2 compliant Fibre Channel Director, Distribution and Edge Class switches as well as with popular servers, storage and networking products from major manufacturers.
- Minimize management costs with easy-to-use and comprehensive Command Line Interface (CLI), QuickTools embedded web interface, and Enterprise Fabric Suite 2007 software tools included with every SANbox 9000 switch.

Designed to the Core™ for Open Systems

Datacenter managers in mainframe environments are responsible for connecting large numbers of servers and storage systems. They pay a premium for servers, storage and Director switches that support proprietary mainframe protocols.

Datacenter managers in open systems environments want high availability, high performance and scalability too. However, they expect products built on open standards to be substantially more cost effective: less complex, more flexible, easier to use.

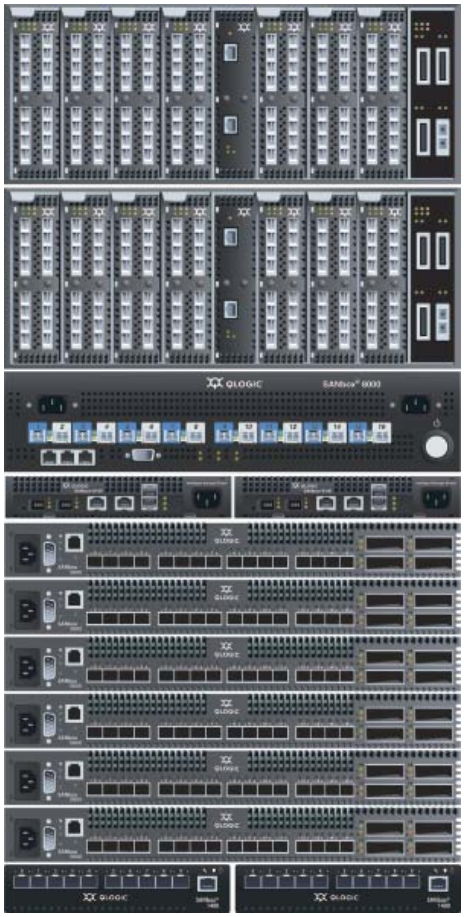
Reliable, fast, modular, and incredibly cost effective, the QLogic SANbox line of fabric switches, routers, and storage services platforms are *Designed to the Core* for the open enterprise.

Open Systems Enterprise

With hundreds of ports, support for solutions that require 99.999% availability, 1.6Tb of bandwidth, intelligent storage routing and storage virtualization, the QLogic SANbox 9000 is *Designed to the Core* for the open systems enterprise.

SANbox® Product Family
The new look for powerful, easy to manage fabrics

The SANbox 9000 is the flagship in the SANbox line of fabric switches, intelligent storage routers, and storage services platforms. As individual components, every QLogic SANbox delivers the advantages of a best-in-class product. Working together as an intelligent network solution, they are easy to deploy and administrator and they make your SAN perform better, too. That's why the entire QLogic SANbox line won the Windows IT Pro "Readers Choice" award. For your switched fabric, you can count on QLogic for exactly the right switch…from the core, to the distribution layer, to the edge. For low-cost local and remote server connectivity, QLogic Intelligent Storage Routers boost utilization while driving down cost and complexity. And for storage virtualization, the QLogic Storage Services Platform offers network-based command and control of your heterogeneous storage. By virtualizing storage from within the fabric, you greatly simplify management. More importantly, you ensure an open environment that can accommodate multiple vendors, new solutions and future flexibility.



READERS CHOICE 2006

EMC² elab Tested™

PRODUCTS OF THE YEAR SILVER

SANbox®

The new look for powerful, easy to manage fabrics

- SANbox 9000 Stackable Chassis Switch
- SANbox 8000 Storage Services Platform
- SANbox 6000 Intelligent Storage Router
- SANbox 5000 Stackable Switch
- SANbox 1000 Fixed Port Switch

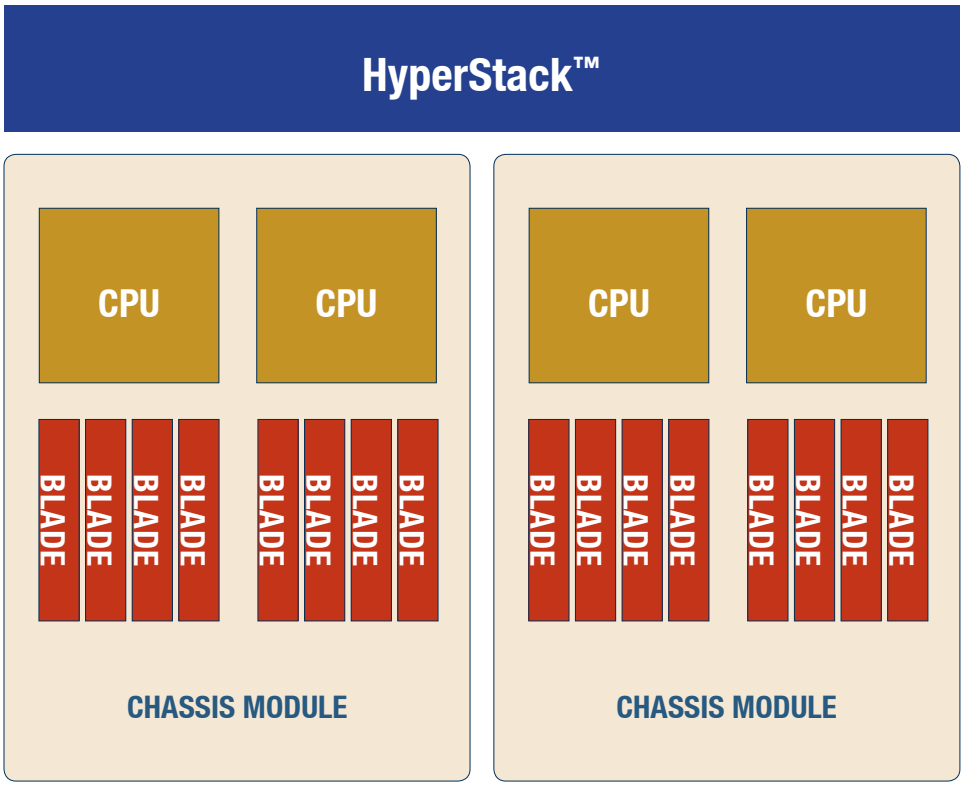
SANbox® 9000 Product Overview

HyperStack™ Architecture

The SANbox 9000 Series stackable chassis switch is a new class of core switch that enables solutions with 99.999% availability, blazing performance and multi-function/multi-protocol intelligence of a Director – but without the large footprint and high Total Cost of Ownership (TCO).

What makes it all possible is the SANbox 9000 architecture that features:

HyperStack –	Four 200Gb dedicated backplane interconnects between chassis modules[1]
High Bandwidth Chassis –	1.6Tb of bandwidth for a dual chassis configuration
Redundancy –	Redundant CPU, power supply and fan blades
Compact –	Up to 128 ports in only 4U of rack space, 256 ports in 8U



The SANbox 9000 architecture is redundant for high availability, delivers 1.6Tb of bandwidth and allows chassis modules to scale via innovative HyperStack™ technology.

Stackable Chassis Switch

For unprecedented scalability, the 8-slot SANbox 9000 chassis is uniquely modular in two dimensions. Like a Director switch, I/O and SSP blades can be added as needed. Unlike a Director, the SANbox 9000 chassis is itself a module. Using HyperStack™ technology pioneered by QLogic, a second chassis can be inter-connected when needed and managed as a single switch[1].

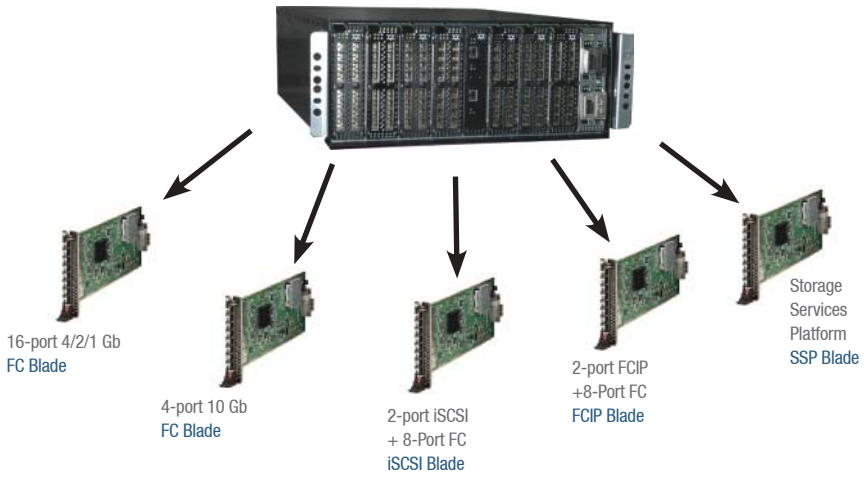
For high availability, the SANbox 9000 features redundant, hot swap, Customer Replaceable Units (CRUs), including CPU, power supply and fan blades.

From the front of the SANbox 9000 chassis module, up to 8 customer serviceable I/O and SSP blades can be added or replaced non-disruptively without tools.

From the rear of the SANbox 9000 chassis module, customer replaceable CPU[1], power supply and fan blades are accessible.

I/O and Storage Services Platform (SSP) Blades

Each modular SANbox 9000 chassis features 8 slots for any mix of 4Gb or 10Gb Fibre Channel I/O Blades, iSCSI Intelligent Storage Router I/O Blades[2], FCIP Intelligent Storage Router I/O Blades[2], or Storage Services Platform Blades[4].



The SANbox 9000 stackable chassis switch features multi-function and multi-protocol intermix flexibility of a Director.

I/O and Storage Services Platform (SSP) Blades

4Gb FC I/O Blade - 16 Ports x 4Gb Fibre Channel

The 4Gb FC blade includes sixteen 4Gb/2Gb/1Gb auto-sensing Fibre Channel ports. Configure all eight SANbox 9000 slots with 4Gb FC blades for a maximum port density of 128 ports per chassis module.

10Gb FC I/O Blade - 4 Ports x 10Gb Fibre Channel

The 10Gb FC blade includes four 10Gb Fibre Channel ports. Configure SANbox 9000 slots with 10Gb FC blades for high-speed ISL connectivity from the core to the distribution or edge tiers with SANbox 5000 stackable switches.

iSCSI I/O Blade[2] - 2 Ports x 1Gb iSCSI + 8 ports x 4Gb Fibre Channel

The iSCSI blade includes two 1Gb iSCSI GE ports plus eight 4Gb/2Gb/1Gb auto-sensing Fibre Channel ports. Configure SANbox 9000 slots with iSCSI blades for connectivity from the core to low cost servers with iSCSI HBAs.

FCIP I/O Blade[2] - 2 Ports x 1Gb FCIP + 8 ports x 4Gb Fibre Channel

The FCIP blade includes two 1Gb FCIP GE ports plus eight 4Gb/2Gb/1Gb auto-sensing Fibre Channel ports. Configure SANbox 9000 slots with FCIP blades for connectivity from the core to remote sites over a WAN for long distance data replication.

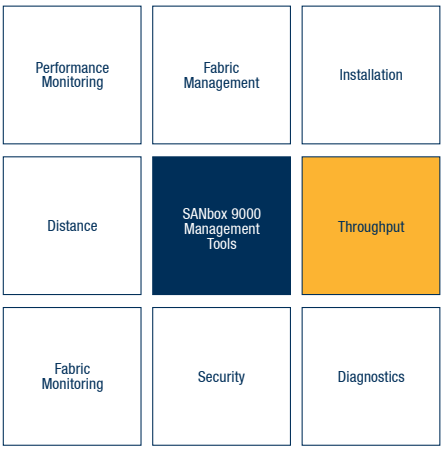
Fabric Management Software

With wizard-based installation and configuration tools, the SANbox 9000 stackable chassis switch is the easiest-to-install and easiest-to-manage core switch on the planet. But for large fabrics where management becomes complicated, the SANbox 9000 series includes a comprehensive and powerful suite of management tools.

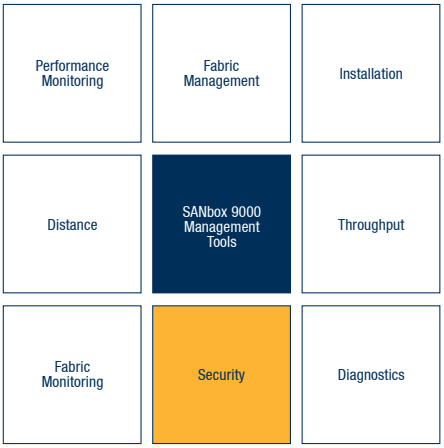
For point-and-click management, the tools are accessible from a user-friendly graphical user interface. And for the SAN experts, a comprehensive Command Line Interface (CLI) is available. Plus, integration with your favorite 3rd party applications is made easy with the QLogic SANbox APIs, or the industry compliant SMI-S 1.1 agent.

QuickTools™ is an embedded Java web applet for device discovery, device management, zoning, and fabric management. A configuration wizard walks users through switch setup and configuration. A zoning wizard provides simple drag-and-drop zoning with fast activation to get the switch ready for immediate use.

Enterprise Fabric Suite 2007™ is a suite of tools for setup, configuration, zoning, fabric management, fabric monitoring, performance monitoring and configuring extended distance capability. Enterprise Fabric Suite 2007 can manage an unlimited number of switches and fabrics from a single console.



Adaptive Trunking guarantees extremely high performance while eliminating the need to manually configure and maintain ISL aggregation groups. Effective ISL routing and utilization is essential to achieving ROI in mid- to large-scale SANs. QLogic's Adaptive Trunking comes standard with all SANbox 9000 series switches.



Fabric Security offers the right mix of protection features for user security, connection security and device security. RADIUS authentication is supported so that separate usernames and passwords don't have to be managed. The data path for switch management communication is encrypted using Secure SHell (SSH) for the CLI and Secure Socket Layer (SSL) for Enterprise Fabric Suite 2007, QuickTools, and SMI-S. Users can setup device connection security to control what devices have access to the switch. ISL and port authentication is achieved using Fibre Channel Security Protocol (FC-SP) and DH-CHAP. Additional device authentication is performed using FC-GS-4 CT.

SANdoctor™ provides a comprehensive set of diagnostic tools for troubleshooting fabric problems. Fibre Channel (FC) Ping verifies that a functional path exists between two ports. FC Trace Route displays path information between a source and a destination. Digital Diagnostics Monitoring displays SFP, X2 and XPAK transceiver data in order to determine if variables are within operational limits.

FABRIC SPECIFICATIONS

Fibre Channel Protocols
- Physical Interface (FC-PI-3)
- Line Services (FC-LS)
- Framing & Signaling (FC-FS-2)
- Generic Services (FC-GS/FC-GS-2/FC-GS-3/FC-GS-4/FC-GS-5)
- Switch Fabric (FC-SW-2/FC-SW-3/FC-SW-4), except for enhanced zoning
- Arbitrated Loop Rev. 4.6 (FC-AL)
- Arbitrated Loop-2 Rev. 7.0 (FC-AL-2)
- Fibre Loop Attachment (FC-FLA)
- Tape Technical Report (FC-Tape)
- Virtual Interface Architecture Mapping (FC-VI)
- Fabric Element MIB Specification (RFC 2837)
- Fibre Alliance MIB Specification (Version 4.0)
- Methodologies for Interconnects (FC-MI-2)
- Device Attach (FC-DA)
- Security Protocols (FC-SP)

Fibre Channel Classes of Service
- Class 2, Class 3, and Class F (inter-switch frames) connectionless Fibre Channel protocol support

Modes of Operation
- Fabric
- Public loop
- Broadcast

PERFORMANCE FEATURES

Fabric Port Speed
- FC4G16 I/O Blades @ 1.0625, 2.2125, & 4.250 Gbps
  - Auto sensing of 1, 2, & 4 Gbps port speeds
  - Optionally programmable to fixed port speed
- FC10G4 I/O Blades @ 12.75 Gbps
- IP/iSCSI I/O Blades @ 1.0 Gbps Fixed Rate [2]

FC Fabric Latency (Best Case)
- <0.6µsec @ 1-Gbps
- <0.4µsec @ 2-Gbps
- <0.3µsec @ 4-Gbps
- <0.2µsec @ 10-Gbps
- Cut-through routing

FC Fabric Point-to-Point Bandwidth
- 212MB/s Full-Duplex on 1Gb ports
- 424MB/s Full-Duplex on 2Gb ports
- 850MB/s Full-Duplex on 4Gb ports
- 2550 MB/s Full-Duplex on 10Gb ports

FC Fabric Aggregate Bandwidth
- SANbox 9100 Model – 408 Gbps, full duplex
- SANbox 9200 Model – 816 Gbps, full duplex
- Non-blocking HyperStack™ architecture

Maximum Frame Sizes
- 2148 bytes (2112 byte payload)
- In-order delivery assured within OX-ID

Per-port Buffering
- ASIC-embedded memory (non-shared)
- Each port has a guaranteed 16-credit zero wait state buffer for full performance up to 13km @ 2Gb and 2Km @ 10Gb
- Buffer credit donor support via software GUI wizard to extend distance with full performance as shown in the *Extended Distance Donor Buffer Credit Allocation* table on page 11

Inter-Switch Link (ISL) Trunking
- Supports aggregation of up to 128 ISLs in one or more trunks between multiple switches in any port speed combination and across multiple I/O Blades
  - 10Gb recommended to maximize number of usable 4/2/1Gb Server/Storage ports on both SANbox 5000 Series and 9000 Series switches
- Switch-On-Exchange (SOE) mode for dynamic ISL trunk load balancing to maximize throughput
  - Assured in-order delivery of frames in all multi-switch and multi-ISL trunked configurations
  - Adaptive Trunking to improve efficiency via optimal routing across multiple trunk groups
  - Intelligent Path Selection (IPS) on all 10Gbps and 4/2/1Gbps ISL trunk ports
- Automatic configuration of ISL trunks including multi-hop paths between multiple switches
  - Supports all multi-switch fabric topologies including stack, cascade, cascaded loop, and mesh
  - Adaptive Trunking to improve efficiency via optimal routing across multiple trunk groups
  - Up to 239 switches depending on configuration
- Non-disruptive dynamic addition of ISLs to an existing trunk
- High availability with automatic path failover
- Interop mode support: McDATA Open Mode, Brocade interopMode 1, Cisco Open Mode

System Processor
- 800 MHz PowerPC processor

I/O Blade Processor
- 400 MHz PowerPC processor

MODULAR SCALABILITY

Ports Per Chassis Module
- 16 to 128 FC 4/2/1 Gbps ports
- 4 to 32 FC 10 Gbps ports
- 2 to 16 IP 1Gbps iSCSI or FCIP ports [2]
- Full Blade intermix support, maximum 8 Blades, all Blades hot-pluggable
- >475,000 user ports depending on configuration

Ports Per Rack
- Up to 1,280 ports per 42U rack

Chassis Module HyperStack
- Two BASE Model SB9200 chassis modules via 4 proprietary HyperStack cables[1]
  - Two domains

Multi-switch Fabrics
- Supports all topologies, including: stack, cascade, cascaded loop, and mesh
- Maximum 239 switches depending on configuration

Fabric Port Types
- All ports are universal, auto-discovering, selfconfiguring and can assume the following states:
  - F_Port: Fabric (N_Port Id Virtualization [NPIV] support automatically enabled)
  - FL_Port: Fabric loop (public loop)
  - E_Port: Switch-to-switch

Administrative Port Types
  - G_Port: Generic
  - GL_Port: Generic loop

Port Security
- Port binding via list of WWNs (up to 32) allowed access to a port
- ISL and port authentication via Fibre Channel Security Protocol (FC-SP) and DH-CHAP

Port Statistics
- Configuration and operational data
- Transmitted and received frame counts
- Transmitted and received error counts

Media Type (Ordered Separately)
- Hot-pluggable, industry-standard 3.3 volt SFPs (Small Form Pluggable) for 4/2/1Gb ports
- Hot-pluggable, industry-standard X2 optical transceivers or X2 copper ISL cables for 10Gb ports

Supported SFP Transceiver Types
- Short Wave (optical)
- Long Wave (optical)
- Active/Passive Copper (4/2Gb)

Supported X2 Transceiver Types
- Short Wave (optical)
- Long Wave (optical)

Media Transmission Ranges (@ 10Gbps speeds)
- Optical Media
  - Short Wave: 300 m (984 ft.)
  - Long Wave: 10 km (6.2 miles)

Optical Cable Types (4Gb & 10Gb)
- 50/62.5 micron multimode fiber optic
- 9 micron single-mode fiber optic

INTEROPERABILITY/CERTIFICATIONS

- Fully interoperable with all QLogic SANbox switch products
- Compatible with FC-SW-2 compliant switches, including Brocade, Cisco & McDATA
- Management interoperability with leading SAN management applications

- FCIA SANmark and SNIA SMI-S certified
- Certified with leading SAN hardware and software vendors. Visit http://www.qlogic.com/interopguide for a comprehensive listing

FABRIC SERVICES

Software Releases
- QuickTools version 6.03.04 or later
- Enterprise Fabric Suite 2007 version 6.03.04 or later
- Switch Firmware version 6.2.1.01 or later

Ethernet Connections
- CPU Blade: RJ-45 Ethernet Connector on each CPU Blade on back of chassis module
- Maintenance Panel: Two alternate RJ-45 Ethernet Connectors on Maintenance Panel on front of chassis module

Management Methods
- Enterprise Fabric Suite 2007 Graphical User Interface (GUI)
- QuickTools Web Applet
- Application Programming Interface (API)
- Command Line Interface (CLI)
- GS-4 Management Server (including FDMI)
- Simple Network Management Protocol (SNMP)
- RADIUS
- File Transfer Protocol (FTP)
- Trivial File Transfer Protocol (TFTP)
- Storage Management Initiative (SMI-S)

Fabric Security
- Fabric binding via list of allowed Domain IDs and Switch WWNs
- Inter-switch management communication data path encryption
  - Secure Shell (SSH) for CL
  - Secure Socket Layer (SSL) for QuickTools, EFS 2007, and SMI-S
- Device, Host, and Switch Authentication
  - Local security database configuration, or
  - Remote authentication via a RADIUS Server
  - Additional MS request authentication via FC-GS4 CT authentication
  - Enable/Disable in-band management of switch

Registered State Change Notification (RSCN)
- RSCNs are generated per standard (FC-GS, FC-FS, FC-SW, etc.)
- Delayed to allow consolidation into single RSCN
- QLogic IO StreamGuard™ suppresses RSCNs between initiators

Fabric Diagnostics
- Optional SANdoctor software package

MAINTAINABILITY

Maintenance Strategy
- Hot-pluggable Customer Replaceable Units (CRUs)
  - SFP & X2 transceivers
  - Storage Services Blades[4] (8 maximum)
  - I/O Blades (8 maximum, 4 types w/Intermix)
  - CPU Blades (2 w/Model SB9200, 1 w/Model SB9100)
  - Power Supply Blades (2)
  - Fan Blades (2)
- Enhanced data integrity on all data paths
- Fabric Shortest Path First (FSPF) rerouting around failed links
- Integration with Simple Network Management Protocol (SNMP) managers
- Non-disruptive "hot" firmware code load and activation (NDCLA)
- Easy configuration, save, and restore

Maintenance Access Methods
- Single point in-band management with auto-discovery across multiple switches via software GUI
- One out-of-band Ethernet 10/100Mb BaseT RJ-45 management port per CPU Blade, each replicated on Maintenance Panel
- One RJ-45 serial port per CPU Blade (RJ-45 to DB-9 conversion dongle included)
- FC-GS4 Management Server

Diagnostics
- Power-On Self-Test (POST) tests all functional components except SFP and X2 transceivers
- Optional SANdoctor fabric diagnostics software
  - FC Ping: verifies functional path existence between two ports
  - FC Trace route: displays path information between a source and destination
  - Digital Diagnostics Monitoring: displays real-time SFP, X2, and XPAK transceiver data

Visual User Interface
- LED indicators on the Maintenance Panel, I/O Blades, CPU Blade(s), SSP Blades, Power Supply Blades, and Fan Blades

Maintenance Panel (MP)
- Dual redundant Maintenance Panel EPROMs maintain chassis-specific information (such as WWN, SNMP System Object ID, Serial Number, Part Number, etc.), alternate Ethernet management interface ports, and LED summary status information for the switch

Global Services
- Standard 1 year hardware/firmware warranty
- SAN Pro Service and Support Programs
  - SAN Pro Preferred standard on BASE Model SB9200 & ENTRY Model SB9100: Next Business Day (NBD) Advanced Delivery spares, 24x7 technical phone support
  - Optional: upgrades to SAN Pro Choice (NBD Onsite Replacement) and SAN Pro Prime (4-hour Onsite Replacement) available for a fee

PHYSICAL CHARACTERISTICS

Enclosure Chassis Module/Blade Packaging
- Standard Rack Mountable Chassis Module
  - Includes adjustable forward/reverse Mounting Rail/Racking kit & dual power cords
- I/O Blades
  - Standard and Optional I/O Blades Do NOT Include SFPs, X2 Transceivers, or Copper/Optical Cables (orderable separately)
- Hardware and Software License Field Upgradeability:
  - SB9100 ENTRY Model to SB9200 BASE Model
  - SB9200 Model to SB9200 Fault Tolerant Model
  - One SB9200 BASE Model to Future HyperStack Model
  - Two SB9200 BASE Models to Future HyperStack Model

Dimensions (chassis module)
- Width: 431 mm (17.0") 19" rack mountable
- Height: 179 mm (7.0") (4U)
- Depth: 673 mm (26.5")

Weight (SB9200 maximum)
- 40.82 kg (90 lbs)

Power Supply/Cooling (both SB9100 & SB9200)
- Hot-Pluggable/Dual-Redundant Power Supply Blades with Integrated Cooling Fans
  - Dual 7'6" long 3-wire 16AWG power cables with IEC320 input connector
- Hot-Pluggable/Dual-Redundant Fan Blades
- Back-to-Front and Front-to-Back Airflow Pattern Models available

Heat Output (SB9200 maximum)
- 1000 Watts with fully populated I/O and SSP Blades
- 150 cfm airflow

ELECTRICAL REQUIREMENTS

Operating Voltage/Frequency
- 100 to 240 VAC auto-sensing, single phase
- 47 to 63Hz

Power Source Loading (SB9200 maximum)
- 10 Amps at 100 VAC
- 4.2 Amps at 240 VAC

Operating Load (SB9200)
- 620 Watts at 128-ports 4Gb FC (including SFPs and "local switching")

Circuit Protection
- Internally Fused

ENVIRONMENTAL FACTORS

Operating
- Temperature: 0°C to 40°C (32° to 104°F)
- Humidity: 15% to 80% non-condensing
- Altitude: 0 to 3048m (0 to10,000 feet)
- Vibration: IEC 68-2, Magnitude During/After Along Any Axis 5-500 Hz, random, 0.2 G rms, 10 minutes
- Shock: IEC 68-2, Magnitude During/After Along Any Axis 4g, 11ms, 20 repetitions

Non-Operating
- Temperature: -40°C to 70°C (-40° to 158 °F)
- Humidity: 5% to 90% non-condensing
- Altitude: 0 to 15,240m (0 to 50,000 feet)
- Vibration: IEC 68-2, Magnitude During/After Along Any Axis 5 to 500 Hz, random, 2.1 G rms,10 minutes
- Shock: IEC 68-2, Magnitude During/ After Along Any Axis 30g, 292 ips, 13 msec, 3 trapezoidal pulse

REGULATORY CERTIFICATIONS

Safety Standards:
- ANSI/UL 60950 (USA)
- CSA 22.2 No.60950-1 (Canada)
- EN60950-1 (EC)
- CB Scheme-IEC 60950-1 (International)
- GOST R MEK 60950 (Russia)

Emissions Standards
- FCC Part 15B Class A (USA)
- VCCI V-3/2005.04 Class A ITE (Japan)
- ICES-003 Issue 4 Class A ITE (Canada)
- EN 55022 Level A (EC)
- BSMI CNS 13438 Class A (Taiwan)
- CISPR 22, Class A (International)
- AS/NZS CISPR 22:2002 Class A (AUS/NZ)
- GOST R (Russia)
- 12/KNxx (Korea)

Environmental Standards
- RoHS-5/WEEE (EU & Japan)

Voltage Fluctuations
- EN 61000-3-2 & 3

Harmonics
- EN 61000-3-2

Immunity
- EN 55024:1998

Marking
- FCC Part 15, UL (United States)
- cUL, CUE, TUV (Canada)
- TUV , CUE, CE (EC)
- VCCI-A (Japan)
- C-Tick (AUX/NZ)
- GOST R (Russia)
- MIC (Korea)
- Exempt (Taiwan)

Extended Distance Donor Buffer Credit Allocation

Donor Ports	Buffer Credit Allocation Per I/O Blade		Distance @ 1 Gbps	Distance @ 2 Gbps	Distance @ 4 Gbps	Distance @ 10Gb
	1/2/4 Gb/sec	10 Gb/sec				
0	16	16	26km	13km	6km	2km
1	30	30	50km	25km	12.5km	4.17km
2	45	45	75km	37.5km	18.75km	6.25km
3	60	60	100km	50km	25km	8.34km
4	75	-	125km	62.5km	31.25km	-
5	90	-	150km	75km	37.5km	-
6	105	-	175km	87.5	43.75km	-
7	120	-	200km	100km	50km	-
8	135	-	225km	112.5km	56.35km	-
9	150	-	250km	125km	62.5km	-
10	165	-	275km	137.5km	68.75km	-
11	180	-	300km	150km	75km	-
12	195	-	325km	162.5km	81.25km	-
13	210	-	350km	175km	87.5km	-
14	225	-	375km	187.5km	93.75km	-
15	240	-	400km	200km	100km	-

- Each 1/2/4Gb and 10Gb port is supported by a data buffer with a 16 credit base capacity (that is, 16 maximum sized frames)
- Longer distances can be spanned at full bandwidth on 1/2/4Gb or 10Gb ports by extending buffer credits to G_Ports, F_Ports and E_Ports (per table above).
- Each 1/2/4Gb or 10Gb port on an I/O blade can donate up to 15 of their 16 base buffer credits which a recipient port on the same I/O blade can borrow
- The recipient port also loses a single base buffer credit in the process.

SB9000 SERIES MINIMUM CONFIGURATION							
	CPU BLADES	16-PORT 4/2/1GB FC I/O BLADES	4-PORT 10GB FC I/O BLADES	FUTURE 2/8-PORT ISCI/FCIP I/O BLADES	POWER SUPPLY BLADES	FAN BLADES	HYPERSTACK CABLES
SB9100 ENTRY Model	1	1	0	0	2	2	0
SB9200 BASE Model	2	2	0	0	2	2	0
HyperStack Model	4	4	0	0	4	4	4

Footnotes:

1 – Dual BASE Model SB9200 chassis module HyperStacking feature available at a future date via non-disruptive firmware upgrade and optional software license key purchase . . . hardware ready at initial GA . . . backplane-to-backplane HyperStacking cables provided with feature availability

2 – iSCSI and FCIP Intelligent Storage Router I/O Blades based upon the current SANbox 6000 Series products available at a future date

3 – BASE Model SB9200 dual-redundant CPU "non-disruptive failover" feature support available at a future date via non-disruptive firmware upgrade and optional software license key purchase . . . hardware ready at initial GA

4 – Storage Services Platform (SSP) Blade available at a future date based upon the current SANbox 8000 Series products