



# SANbox2™

2Gb, 8 or 16 port Fibre Channel Switches

## switch

SERIES

QLogic SANbox2 switches make it easy for small- and medium-sized businesses to connect many new or legacy servers to shared storage devices, fully leveraging the power of Storage Area Networks (SANs).



- Supports 1Gb and 2Gb per second speed on every port
- Industry's lowest switch latency for extreme performance
- Faster, cooler, more reliable and scalable ASIC-embedded memory
- Full FC-SW-2 E\_Port switch support for heterogeneous SANs
- Space saving full- (SANbox2-16) or half- (SANbox2-8) rack 1U design
- Dual redundant power supplies and fans for high availability (SANbox2-16 only)
- Includes free SANSurfer Management Suite™ for simplified fabric management
- Includes SANGuard™ Zoning to safeguard critical data via world-wide name, broadcast and hard zoning
- Auto-sensing and self-configuring ports for easy installation
- Includes I/O Stream Guard, non-blocking full-bandwidth architecture and no-wait routing for maximum performance
- Supports SANbox2 FLS™ (full loop support) for full fabric, public/private loop and switch-to-switch connectivity at every port
- Supports Cascade, Mesh and MultiStage™ architecture for scalable SAN fabrics
- FCIA SANmark™ certified for interoperability with servers, storage, switches and software

Applications | Data Warehousing | High Availability Environments | LAN-free Backup | Server and Storage Consolidation | Remote Backup

QLogic SANbox2 switches enable the highest-performance switched storage networking at affordable prices while protecting investments in 1Gb equipment. With SANbox2 switches, businesses can easily build powerful storage networks that are fully interoperable with any servers, networking equipment and storage subsystems. Certified to work with every major storage management application, SANbox2 switches are fabric-ready out of the box.

Based on the fifth-generation SANbox switch architecture, SANbox2 switches are the industry's fastest Fibre Channel switches that support 1Gb and 2Gb network performance. SANbox2 switches are ideal for new networks or entry-level, hub-based SANs seeking to substantially boost performance. With 8 or 16 ports for scalability, all SANbox2 switches are interoperable with any FC-SW-2 compliant switch. The SANbox2-16 adds dual redundant, hot-swap power supplies and fans for high availability requirements.

**INVESTMENT PROTECTION.** Compatible with legacy 1Gb hubs and switches, SANbox2 switches can accommodate both 1Gb and 2Gb performance, helping businesses smoothly transition to higher network speeds without abandoning previous investments.

**LEADING SINGLE CHIP INTEGRATION.** SANbox2 switches have uniquely integrated 16 Fibre Channel ports into a single, efficient chip. Single chip integration results in fewer components, lower power consumption, reduced heat dissipation, a smaller form factor, increased reliability resulting in higher data availability, and higher performance.

**SIMPLIFIED MANAGEMENT.** Manage all aspects of a SAN fabric using the free QLogic SANSurfer Management Suite, a powerful management application, or integrate SANbox2 with QLogic SNMP-based MIBs or Telnet.

**CUSTOMIZED SERVICE AND SUPPORT.** The QLogic SANtrack™ service and support program offers flexible service packages designed to meet each customer's unique business requirements ranging from preinstall analysis, installation and on-site service to spare upgrades.



# SANbox2

## Switch

### TECHNICAL SPECIFICATIONS

2 Gb

#### SANbox2 Fibre Channel Switch

##### Standards

###### Fibre Channel Protocols

- FC-PH Rev 4.3
- FC-PH-2
- FC-PH-3
- FC-AL Rev 4.6
- FC-AL-2 Rev.7.0
- FC-FLA
- FC-GS-2
- FC-GS-3
- FC-FG
- FC-PLDA
- FC-Tape
- FC-VI
- FC-SW-2
- FC-MI
- Fibre Alliance MIB
- Fabric Element MIB

###### Fibre Channel Classes of Service

- Classes 2, 3 connections

###### Modes of Operation

- Fabric
- SANbox FLS™
  - Public loop
  - Private loop
  - Public (fabric)-to-private bridging

##### Performance Features

###### Fabric Port Speed

- 2Gb/s, full-duplex, auto-negotiating for compatibility with existing 1Gb/s devices

###### Fabric Latency

- Less than 0.4µs (best case, no contention)
- Cut-through routing

###### Fabric Point-to-Point Bandwidth

- 412MB/s full duplex

###### Fabric Aggregate Bandwidth

- Single chassis: Up to 64Gb/s (full duplex) end-to-end (up to 32Gb/s 8 Port)
- Non-blocking architecture

###### Maximum Frame Sizes

- 2148 bytes (2112 byte payload)

###### Per-Port Buffering

- ASIC-embedded memory (non-shared)
- Each port has a guaranteed 12-credit zero wait state buffer for full performance up to 10km
- Longer distance solutions achievable

##### Scalability

###### Ports Per Chassis

- 8 or 16 universal ports, populated in single-port increments

###### Multi-Switch Fabrics

- Supports all topologies, including: Cascade, Cascaded loop, Mesh, and Multistage with E\_port
- Supports multiple links between switches
- In-order delivery of frames in all multi-switch and multi-link configurations

###### Fabric Port Types

- All ports can assume the following states:
  - F\_port: Fabric
  - FL\_port: Fabric Loop (public loop)
  - E\_port: Switch-to-switch
  - TL\_port: Translative mode – private-to-public/ public-to-private bridging
- Ports are auto-discovering, self-configuring for F, FL and E

###### Media Type

- Hot-pluggable, industry-standard SFPs (Small Form Pluggable)

###### Supported SFP Types

- Shortwave
- Longwave
- Any SFP type can be used in any fabric port

###### Media Transmission Ranges

- Optical
  - Shortwave: 500m (1,640ft)
  - Longwave: 10km (6.2mi.)

###### Cable Types

- 50/62.5 micron multi-mode fiber optic
- 9 micron single-mode fiber optic

##### Interoperability

- Fully interoperable with all SANbox products with SW/FW Rev.4.01 and greater
- Compatible with FC-SW-2-switches
- Management interoperability with VERITAS, Computer Associates and Tivoli

##### Fabric Management

###### Management Methods

- SANbox Manager management application tools (standard and private brand versions)
- SNMP, Telnet, GS3, SANbox API

###### Access Methods

- In-band
- Ethernet 10/100 BaseT with RJ45
- RS-232

###### Diagnostics

- Power-up self-test of all functionality except media modules
- Field-selectable full self-test including media modules

###### Fabric Services

- Simple Name Server
- Scalable SANguard Zoning
  - Hardware-based access control list zoning(port zoning)
  - Name Server (WWN)
  - Orphan Zoning
- I/O Stream Guard (RSCN suppression)
- Multi-chassis in-order delivery
- Automatic Path Selection (APS) in Multistage configurations
- I/O Path Guard
- FDMI
- FC-SP Security
- Equal-cost multipath ISL trunking

###### User Interface

- LED indicators, command console, telnet, SNMP and SANbox Manager application

##### Mechanical

###### Enclosure Types and Options

- Secure stacking with optional feet
- Optional front or rear rack mounting/tray

###### Dimensions

- |                        |                        |
|------------------------|------------------------|
| 16 Port                | 8 Port                 |
| • W: 432mm/17"         | • W: 216mm/8.5"        |
| (19" rack mountable)   | • H: 43.2mm/1.70" (1U) |
| • H: 44.4mm/1.75" (1U) | • D: 508 mm/20"        |
| • D: 457mm/18"         |                        |

###### Weight

- 16 Port • 8.17 kg/18lbs. 8 Port • 5.2 kg/11.5lbs.

###### Power Supply/Cooling

- |   |                             |
|---|-----------------------------|
| 16 Port   | 8 Port                      |
| • Redundant power supplies/fans   | • Single fixed power supply |
| • Orderable front to back or back to front airflow for both 8 and 16 port |                             |

##### Environmental

###### Operating

- Temperature: +5°C to +40°C (16 port), +5°C to +50°C (8 port)
- Humidity: 15% to 80% non-condensing
- Altitude: 0 to +10,000ft
- Vibration: IEC 68-2 5-500Hz, random 0.21 G rms, 20 repetitions

###### Non-Operating

- Temperature: -40°C to +70°C
- Humidity: 5% to 90% non-condensing
- Altitude: 0 to +50,000ft
- Vibration: IEC 68-2 5 to 500Hz, random, 2.09 G rms, 10 minutes
- Shock: IEC 68-2 30g(16 port), 50g (8 port), 292ips, 3 repetitions, 3 axis

##### Electrical

###### Operating Voltage

- 90-265 Vac, 47-63 Hz

###### Power Source Loading

- |                                    |                                    |
|------------------------------------|------------------------------------|
| 16 Port                            | 8 Port                             |
| • 1.9 Amps maximum at 90-137 Vac   | • 1.0 Amps maximum at 90-137 Vac   |
| • 0.95 Amps maximum at 180-265 Vac | • 0.50 Amps maximum at 180-265 Vac |

###### Heat Output

- |                             |                            |
|-----------------------------|----------------------------|
| 16 Port                     | 8 Port                     |
| • 170 watts fully populated | • 70 watts fully populated |

##### Regulatory

Country	Safety	EMC
Canada	ULC 1950	ICES-003 Issue 3
United States	UL 1950n	FCC Part 15 Class A
Japan		VCCI Class A
European Community	EN60950 A4 CB-Scheme	EN55022 Level A EN55024:1998

For a list of authorized resellers, visit [www.qlogic.com/buyqlogic/home\\_buy.asp](http://www.qlogic.com/buyqlogic/home_buy.asp)



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