



### KEY FEATURES

#### Inter-Fabric-Routing Gateway

##### Interoperability Within a Heterogeneous SAN

The S-8100A appears as an E\_port within a local FC fabric. The S-8100A's E\_port is fully compliant with FC standards, and provides basic services for native modes of FC switches of major vendors. All FC services (Zoning, Name and Configuration servers, PSS, FSPF, etc.) are terminated on the WAN-to-local-fabric boundary, allowing seamless interconnection between FC switches that would not normally be interoperable.

##### SAN Isolation

The ever-expanding SAN environment requires corresponding growth in management and system testing capabilities. Extending the SAN over distance not only increases the demands on joint fabric support, but also creates configuration conflicts among systems that are managed independently. The S-8100A provides the safety of SAN isolation through a combination of address translation and termination of services on the WAN-to-local-fabric boundary. As a result, storage can be shared without merging fabrics and any disruptions are fully contained in the local FC fabric.

##### Additional Security for SAN Fabrics

SAN isolation provides security by limiting visibility. The S-8100A provides additional SAN security by pairing LightSand's unique export/import firewall-like mechanism with conventional zoning. Access must be granted explicitly by the owner before a device is reachable from a remote site.

##### Engineered for Long Distance

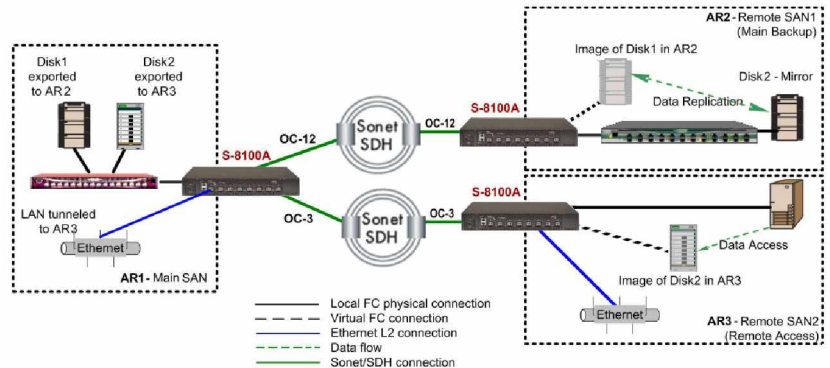
The S-8100A is connected to the WAN over industry standard SONET/SDH interfaces with software-configurable speed ranging from 155Mb/s to 622Mb/s. On the FC side, the S-8100A terminates buffer-to-buffer protocol providing 16 credits (up to 32km attachment without rate degradation).

On the SONET/SDH side, the S-8100A implements a connection-oriented, frame-based protocol that moves FC and L2 Ethernet over PoS for distances of thousands of kilometers without performance degradation, and with data delivery guaranteed.

### OVERVIEW

With the ever-increasing need to safeguard data, many companies are looking for methods of connecting their disparate and geographically distributed SANs (storage area networks) across the WAN. LightSand's S-8100A, a SAN extension gateway for SONET/SDH network, is targeted for applications that are well suited to the use of SONET/SDH connections. This sophisticated 8-port gateway, which can connect directly to FC end devices, provides local switching, SAN-to-SAN isolation (routing between FC fabrics) and up to four SONET/SDH tunnels for connecting between remote sites. The S-8100A brings superior scalability, isolation, security and wide area connectivity to FC storage networks.

When remote SANs are merged using a traditional connection over the WAN, the separate FC fabrics form a single large fabric operating over the distance. This approach, which may be adequate in small local environments, can lead to scalability and management problems when multiple sites and a greater number of FC switches participate in the fabric. LightSand's S-8100A adds a level of virtualization to the SAN, allowing multiple SAN islands to be interconnected without merging fabrics. Storage devices can be shared between sites, while the FC fabrics operate independently. Most importantly, the S-8100A enables this storage sharing for switches of different vendors, making them interoperable when they normally could not be part of the same fabric. The S-8100A's ability to interconnect multiple disparate SANs makes this gateway indispensable for creating powerful data center solutions.



#### Data Protection

- Synchronous and asynchronous mirroring
- Remote tape vaulting and backup

#### Heterogeneous SAN Integration:

- Interconnection or consolidation
- Integration of multi-vendor remote fabrics

### APPLICATIONS

S-8100A SAN extension over MAN and WAN is designed for a wide variety of applications, with emphasis on storage consolidation, business continuity and disaster recovery.

#### \* WHAT IS AR / DAT?

AR/DAT stands for Autonomous Region / Domain Address Translation. Autonomous Regions were originally described in the ANSI T11 standards FC-BB and FC-SW-2. With AR, individual SAN fabrics can be connected to each other, yet remain autonomous. Domain Address Translation segments the flat address space of entire FC SANs, allowing overlapped FC addresses in attached ARs. This feature facilitates handling of all configuration conflicts, allowing identical Domain IDs inside different ARs, and enabling zoning to be configured independently for each SAN Island. Using DAT, a storage device from one SAN can be represented as logically present in another, even though the fabrics have not been merged.

## SPECIFICATIONS

### SYSTEM ARCHITECTURE

|                           |   |
|---------------------------|---|
| Gateway Architecture..... | 8 ports, wire-speed, unblocked, aggregate bandwidth - 16 Gbit/sec   |
| SAN Ports.....            | 4 to 7 ports  |
| SAN Port Media.....       | Fibre Channel, 1.0625 Gb/s, SFP, multi-mode (850 nm), as a standard   |
| FC Standards.....         | FC-PH-2, FC-SW-2, FC-GS-3, FC-MI, FC-PH, FC-GS2, FC-FS, FC, PH-2  |
| FC Port Types.....        | E_port, F_port  |
| FC CoS.....               | Class 2, Class 3, Class F   |
| B2B Credits.....          | Up to 16  |
| L2 Tunneling Ports.....   | 1 to 3 ports (pre-configured)   |
| L2 Port Media.....        | Gigabit Ethernet, 1.25 Gb/s, SFP, multi-mode (850nm), as a standard   |
| WAN Ports.....            | 1 of 4 ports (pre-configured)   |
| WAN Port Media.....       | STS-3/12c, STM-1/4c (configurable), SFP, IR-2, as a standard  |
| SONET/SDH Standards.....  | Bellcore GR-253; ITU-T G.707, ANSI T1.105 –1995, RFC 1619,1661,2615   |
| Encapsulation.....        | FC over PoS   |
| Extension Distance.....   | STS-12/STM-4: 10,000km (Up to 20,000km with additional memory card)<br>STS-3 / STM-1: 40,000km (Up to 80,000km with additional memory card)<br>Dark-fiber: 80km |

### SPECIAL FEATURES SET

|                               |  |
|-------------------------------|--|
| Redundancy.....               | Box level redundancy                           |
| Compression.....              | Over SONET/SDH, maximum ratio 1:21             |
| FC Inter-Fabric Services..... | AR/DAT, FC Firewall, static address assignment |
| Load Balancing.....           | Optimized balance on per-device basis          |

### MANAGEMENT

|                         |   |
|-------------------------|---|
| Supported Software..... | SANman™ (GUI); Telnet, SNMP; MIB-II, Fiber Alliance MIB, RMON MIB, RFC 2837, configurable traps |
| Management Access.....  | 10/100BaseT Ethernet (RJ-45); Serial port; In-band (DCC)  |
| Diagnostics.....        | BIST (built-in self test); Local Spin Test; Remote Spin Test                                    |

### MECHANICAL SPECIFICATIONS

|                    |   |
|--------------------|---|
| Dimensions.....    | Width: 17.4" x Depth: 17.9" x Height: 2.6" - 1.5u |
| Weight.....        | 22.9 pounds (10.4 kg)                             |
| Rack Mounting..... | 19" rack  |
| Cooling.....       | Front to back (fans FRU, hot swap)                |

### POWER SPECIFICATIONS

|                                   |  |
|-----------------------------------|--|
| Dual Power Supply (optional)..... | FRU (hot swap)   |
| Supported Power.....              | Nominal: 320mA at 220-240V; Nominal: 640mA at 110-115V (auto-select) |
| Frequency.....                    | 50/60 Hz   |
| Power Consumption.....            | 75 Watts (maximum)   |

### ENVIRONMENT AND REGULATIONS

|                  |   |
|------------------|---|
| Temperature..... | 0°C to 40°C (32°F to 104°F)                                     |
| Humidity.....    | 5% to 85% non-condensing  |
| Regulatory.....  | UL Listed, FCC Class A product, complies with Canadian ICES-003 |



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