StorageTek®

# BROCADE SILKWORM 3900 ENTERPRISE FABRIC SWITCH

## Key benefits

### Seamless integration

Auto-sensing Fibre Channel ports with 1- or 2-gigabit-per-second interfaces allow the SilkWorm 3900 fabric switch to integrate seamlessly with existing fabrics. You get all the advantages, but none of the typical roadblocks.

### Enterprise-class performance

This switch can handle up to 128 gigabits per second of aggregated throughput, and ISL Trunking with up to eight gigabits per second of throughput per logical ISL trunk. The Extended Fabrics feature for remote operations provides built-in horsepower for demanding SAN environments.

### Mission-critical availability

Third-generation intelligent architecture enables network resiliency, automatic data path rerouting, non-disruptive code load and redundant hot-pluggable components. Data is available when and where it's needed across the enterprise.

### Open SAN management

Intelligent fabric services architecture and a proven operating system deliver performance, security and manageability along with high-end capabilities, such as advanced hardware-enforced zoning, advanced fabric services and performance monitoring.

### Bottom-line storage

The SilkWorm 3900 fabric switch cuts costs and unleashes trapped profits by supporting a SAN infrastructure that's built for productivity. You optimize your use of IT assets, reduce capital expenditures and save money.

## Brocade SilkWorm 3900 enterprise fabric switch

Midsize to large storage networks have complex and critical storage challenges. Reducing management complexity, increasing flexibility and keeping costs down are key drivers in today's IT environments. That's where the Brocade SilkWorm 3900 enterprise fabric switch from StorageTek® comes in. Now you can manage your enterprise SAN with a 32-port, auto-sensing Fibre Channel switching solution that is designed specifically for rapidly evolving IT environments. The SilkWorm 3900 fabric switch combines the performance capabilities of an enterprise switch with the cost-effectiveness of a modular switch solution. It's the perfect combination of affordability, flexibility and scalability — ideal as part of a departmental SAN fabric, a small core or a core-to-edge SAN built around the Brocade SilkWorm 12000 director from StorageTek.

### Proven technology, secure storage

The SilkWorm family features intelligent third-generation technology that provides an available, secure foundation for SAN applications, such as high-speed backup, server and storage consolidation, remote mirroring and long-distance data replication. You get a SAN fabric capable of greater than 99.999 percent overall system availability. The 3900 fabric switch, combined with other storage products and services from StorageTek, forms the foundation of a cost-effective, end-to-end storage solution for enterprises that need reliable access to data.

### Continuous availability

A core-to-edge SAN model based on the SilkWorm 3900 fabric switch has the advantage of redundant fabrics, hot-pluggable components and multiple data paths to provide high availability across the fabric. Brocade's included FSPF (Fabric Shortest Path First) technology allows the fabric to automatically isolate problems and reroute traffic, sidestepping failed links and keeping data flowing using alternate paths, all while keeping hop counts down. You get a SAN infrastructure that helps to provide business continuity and data access — a must for any 24 x 7 enterprise.

### Built for speed, made to perform

The SilkWorm 3900 fabric switch provides visible advantages to companies that want to increase application performance and day-to-day productivity. It can deliver up to 128 gigabits per second of aggregated throughput, with 32 ports capable of 2-gigabit-per-second full-duplex performance. ISL Trunking further boosts performance by combining up to four ISLs into a single logical ISL with up to 8-gigabit-per-second

throughput per trunk. Fibre Channel speed is also possible at longer distances for remote operation. By leveraging the SilkWorm 3900 fabric switch's Extended Fabrics feature and Dense Wave Division Multiplexing (DWDM) technology, you can empower your storage network to span up to 100 km over metropolitan area networks (MANs) at high speed, significantly enhancing disaster recovery operations.

## Intelligent architecture, proven technology

The SilkWorm 3900 fabric switch combines intelligent fabric services architecture, third-generation ASIC technology and a proven operating system for industry-leading security, manageability and performance. You have access to advanced capabilities, such as frame filtering and fabric services to unlock the intelligence of the SAN fabric for a variety of applications. For example, hardware-enforced zoning based on World Wide Name (WWN) allows secure and robust access to the SAN, while advanced performance monitoring provides fabric-wide performance analysis to support load balancing, application charge-back and more.

## Simple, open SAN management

SAN management just got simpler. The SilkWorm fabric 3900 switch networks core and edge switches under a common management platform built around the SilkWorm fabric 3900 switch's embedded, real-time fabric OS. This operating system includes standard measurement interfaces, a full range of management tools and seamless links to world-class storage management solutions from StorageTek. You get heterogeneous device connectivity, automatic data routing and a seamless upgrade path to other SilkWorm products. The SilkWorm 3900 fabric switch OS supports:

- SNMP-based interfaces to access switch information
- Switch management through a command line interface, WEB TOOLS or Fabric Manager
- End-to-end fabric visibility through advanced performance monitoring
- Real-time health monitoring through Fabric Watch
- Third-party SAN management application development through the API

# BROCADE SILKWORM 3900 ENTERPRISE FABRIC SWITCH

## One family, ready to grow

The SilkWorm 3900 fabric switch is forward and backward compatible across the SilkWorm family of switches, so you have easy access to other systems at multiple price points. Plus, translative mode capabilities allow private loop devices to join the Fibre Channel SAN fabric at any time. The SilkWorm 3900 fabric switch supports multi-vendor SAN environments, such as those built on Microsoft Windows NT, UNIX and Linux, so you have freedom to define a low-cost, easy-to-manage SAN fabric that best meets your needs.

## Security made simple

Advanced Zoning capabilities group a SAN fabric into secure zones so that SAN-attached devices can access only their authorized storage resources. Additional control is provided through hardware-enforced zoning by WWN. With the SilkWorm 3900 fabric switch, you simplify IT administration while better controlling data access.

## An adaptable investment

The SilkWorm 3900 fabric switch allows you to create a flexible SAN infrastructure. It's backed by training and education from Brocade and Professional Services from StorageTek, so you get all of its benefits in the least amount of time. Combined with StorageTek's world-class storage systems and solutions, you get a complete, adaptable solution to meet the needs of your SAN environment today and tomorrow. To learn more, visit StorageTek at www.storagetek.com.

# SilkWorm 3900 enterprise fabric switch specifications

## Performance

| | |
|---|---|
| Port speed | Auto-sensing of 1 Gb/sec and 2 Gb/sec port speeds |
| Aggregate bandwidth | 128 Gb/sec end-to-end |
| Latency | <2.1u* sec with no contention, cut-through routing |
| Maximum frame size | 2112-byte payload |
| ISL trunking | Up to four 2.125 Gb/sec ports per trunk; up to 8.5 Gb/sec per ISL trunk |

## Capacity

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|---|---|
| Ports per chassis | 32 universal ports (E,F and FL) |
| Scalability | Maximum 239 physical switches per fabric (Fibre Channel standard) |
| Certified maximum | 34 total Fibre Channel switches/1,280 fabric ports |

## Availability

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| Chasis power | Hot-swap redundant modules<br>Redundant power supply (optional) |

## Compatibility

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|---|---|
| Interoperability | SilkWorm 2xxx, 3xxx, 6400, 12000 or later series |
| Class of service | Class 2, Class 3, Class F (inter-switch frames) |
| Port types | FL_Port, F_Port, and E_Port; self-discovery based on switch type (U_Port) |
| Data traffic types | Fabric switches support unicast, multicast (256 groups) and broadcast |
| Media types | Hot-pluggable, industry-standard small form-factor pluggable (SFP), LC connector, short wavelength laser (SWL), long wavelength laser (LWL) and extended long wavelength laser (ELWL) |
| Laser | Short-wave laser (SWL) up to 1,640 ft (500 m); long-wave laser (LWL) up to 6.2 mi (10 km); extended long-wave laser up to 24.9 mi (40 km) Distance depends on fiber optic cable and port speed |

## Management

| | |
|---|---|
| Fabric services | Simple Name Server, Registered State Change Notification (RSCN), Alias Server (multicast), Translative Mode, Brocade Advanced Zoning, Extended Fabrics, Fabric Watch, ISL Trunking, Advanced Performance Monitoring and Remote Switch (some services are optional) |
| Management | Telnet, SNMP, Fabric Access Layer API, WEB TOOLS, Fabric Watch, and Fabric Manager (optional) |
| Management access | 10/100 Ethernet (RJ-45), serial port |
| Diagnostics | POST and embedded online/offline diagnostics |

## Mechanical

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|---|---|
| Height | 2.58 in (6.55 cm) |
| Depth | 23.06 in (58.56 cm) |
| Width | 16.87 in (42.86 cm) |
| Weight | Single power supply weight: 31.60 lb (14.33 kg)<br>Double power supply weight: 35.80 lb (16.24 kg) |
| Enclosure | Back-to-front airflow, power from rear 1.5u*, 19 in, EIA-compliant |

## Environmental

| | |
|---|---|
| Temperature | |
| Temperature (operating) | +50° to +104° F (+10° to +40° C) |
| Temperature (non-operating) | -13° to +158° F (-25° to +70° C) at 90% relative humidity |
| Relative humidity | 20%–85% non-condensing at +104° F (+40° C) |
| Altitude | |
| Altitude (operating) | Up to 9,800 ft (3,000 m) |
| Altitude (non-operating) | Up to 40,000 ft (12 km) |
| Vibration | |
| Vibration (operating) | 0.5 Gs, 5–500 Hz |
| Vibration (non-operating) | 2.0 Gs, 5–500 Hz |
| Shock | |
| Shock (operating) | 80 Gs, 2.4 ms, half-sine |
| Shock (non-operating) | 20 Gs, 11 ms, half-sine wave |

## Power

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|---|---|
| Supported power range | |
| Input voltage | 100–240 VAC auto-ranging; 5.0 A |
| Frequency | 47–63 Hz |

## Regulatory compliance

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|---|---|
| Canada | Safety: CSA 60950 EMC: ICES-003 Class A |
| United States | Safety: UL 60950 EMC: FCC Part 15 Class A |
| Japan | Safety: IEC 60950 A4 EMC: VCCI Class A |
| European Community | Safety: EN60950 TUV, NEMKO EMC: EN55022 Level A EN55024 |
| Australia/New Zealand | EMC: AS/NZ 3548 |
| International | Safety: IEC 60950 EMC: CISPR 22 |
| Fibre Channel standards and revisions | FC-FG Rev 3.5, FC-FLA Rev 2.7, FC-PLDA Rev 2.1, FCVI Rev 1.6, FC-PH-2 Rev 7.4, FC-GS-3 Rev 7.01, FC-PH-3 Rev 9.4, FC-SW-2 Rev 5.4, IPFC RFC 2625, FC-AL-2 Rev 7.0, and FC-PH Rev 4.3 |

*Rack space is measured in height and expressed as a u. One u is 1.75 in (4.45 cm) in height.

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## ABOUT STORAGETEK®

Storage Technology Corporation (NYSE: STK), a $2 billion worldwide company with headquarters in Louisville, CO, has been delivering a broad range of storage management solutions designed for IT professionals for over 30 years. StorageTek offers solutions that are easy to manage, integrate well with existing infrastructures and allow universal access to data across servers, media types and storage networks. StorageTek's practical and safe storage solutions for tape automation, disk storage systems and storage integration, coupled with a global services network, provide IT professionals with confidence and know-how to manage their entire storage management ecosystem today and in the future.

StorageTek products are available through a worldwide network. For more information, visit www.storagetek.com, or call 1.800.275.4785 or 01.303.673.2800.

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