

# BROCADE 4900 SWITCH



## STORAGE AREA NETWORK

## Large SAN Capabilities in a Small Space

### HIGHLIGHTS

- Provides up to 64 ports in a single domain and a 2U enclosure for higher density and more easily managed SAN fabrics with fewer domains
- Protects existing investments in Brocade Fabric OS and Brocade M-EOS\*-based environments through native E\_Port switch interoperability
- Utilizes Ports on Demand capabilities for fast, easy, and cost-effective scalability from 32 to 64 ports in 16-port increments
- Enables switch consolidation through its high port count—increasing utilization, lowering management expenses, and reducing fabric complexity
- Protects existing device investments with auto-configuring 1, 2, and 4 Gbit/sec capabilities
- Supports full 4 Gbit/sec operations at distances up to 100 kilometers (or 500 kilometers at 1 Gbit/sec) for cost-effective business continuance
- Increases network performance with enhanced Brocade ISL Trunking, which enables a high-speed data path up to 32 Gbit/sec
- Meets high-availability requirements with redundant, hot-pluggable components, non-disruptive software upgrades, and hot code activation

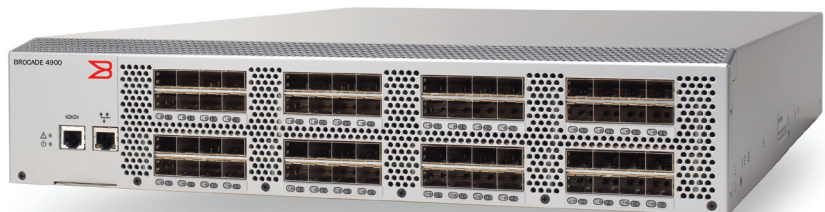
The Brocade® 4900 is a high-performance, high-availability Fibre Channel switch that provides high port density for addressing mission-critical storage requirements. With a flexible architecture that supports 1, 2, and 4 Gbit/sec technology with 32, 48, or 64 ports, the Brocade 4900 provides an affordable high-port-count, single-domain solution. As a result, organizations with large Storage Area Network (SAN) requirements can reduce the size of their SAN footprint and simplify management by lowering the total number of domains.

The Brocade 4900 also provides “pay-as-you-grow” scalability through flexible Ports on Demand capabilities. Because it is fully compatible with previous 1 and 2 Gbit/sec devices, the Brocade 4900 protects existing technology investments while providing a strategic solution for the future.

These capabilities help make the Brocade 4900 ideal for departments in large enterprises and mid-sized organizations. It can be used as a port-dense core switch or a high-connectivity edge switch in SANs ranging from small deployments to larger core-to-edge SAN infrastructures that support enterprise-class applications such as ERP, MRP, data warehousing, and e-mail.

### INDUSTRY-LEADING PERFORMANCE

To support the most demanding business applications, the Brocade 4900 provides best-in-class performance for midrange SAN switches. It features a non-blocking architecture with as many as 64 ports concurrently active at 4 Gbit/sec full duplex to provide an aggregate bandwidth of 512 Gbit/sec.



\* Brocade M-EOS fabrics are McDATA switches and directors running McDATA Enterprise OS

The Brocade 4900 utilizes Brocade fifth-generation ASIC technology featuring eight 8-port groups. As a result, an Inter-Switch Link (ISL) trunk can have up to eight ports supplying as much as 32 Gbit/sec of data throughput. In addition to reducing congestion between switches and providing greater total bandwidth, enhanced ISL Trunking utilizes ISLs more efficiently to free up the number of usable switch ports (see Figure 1).

Flexible SAN deployment advantages include the following:

- A high-port-count, high-availability switch is an ideal SAN core solution when requirements include limiting the cost and complexity of the SAN.
- Enterprise-class SANs built with a core-to-edge topology feature highly redundant configurations requiring the use of many ports for ISLs to provide a failover capability. The Brocade 4900 provides more usable ports in a large core-to-edge design by requiring fewer switches overall, and thus fewer ports dedicated to ISLs.

### **ENTERPRISE-CLASS AVAILABILITY FOR BUSINESS CONTINUANCE**

With enterprise-class availability features such as hot-swappable redundant fans and power supplies, the Brocade 4900 provides a reliable foundation for disaster recovery and business continuance. Moreover, hot code activation helps maximize application uptime with faster system upgrades and maintenance that reduce the dependency on scheduled outages. Combined with a wide range of Brocade diagnostic and monitoring functions, these capabilities help provide a high-availability SAN environment.

To support disaster recovery and business continuance operations, the Brocade 4900 enables connectivity distances up to 500 kilometers at 1 Gbit/sec and 100 kilometers at 4 Gbit/sec. This capability facilitates the deployment of high-performance, long-distance SAN solutions such as data center consolidation and disaster recovery.

### **HIGH SCALABILITY WITH PORTS ON DEMAND**

Delivering up to 64 ports in a single domain, the Brocade 4900 combines the cost-effectiveness of a switch designed for high-port-count requirements with highly scalable Ports on Demand capabilities. It comes with a minimum of 32 ports enabled, and organizations can easily expand the number of ports to 48 or 64 by activating a license as their requirements change. Because the Brocade 4900 is easily upgradable, it extends the Brocade modular “pay-as-you-grow” approach to support cost-effective business growth.

### **SUPERIOR ROI AND INVESTMENT PROTECTION**

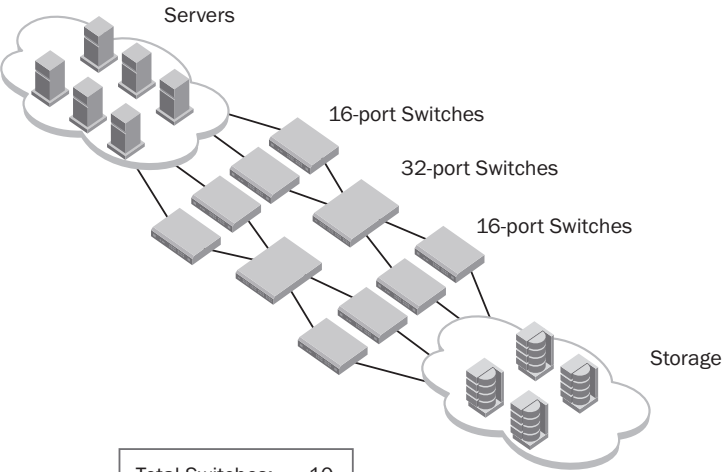
The Brocade 4900 combines strategic performance, availability, and scalability advantages with investment protection for existing SAN environments. For instance, auto-sensing capabilities for 1, 2, and 4 Gbit/sec ports enable rapid implementation in existing SAN environments—reducing both deployment cost and complexity.

The Brocade 4900 utilizes the same Brocade Fabric OS® code stream that supports the Brocade product line—from the base 8-port Brocade 200E to the 768-port Brocade DCX Backbone. This helps ensure full forward and backward compatibility among Brocade switches while simplifying software maintenance and field upgrades. As a result, the Brocade 4900 enables organizations to better leverage their current training, tools, devices, and processes.

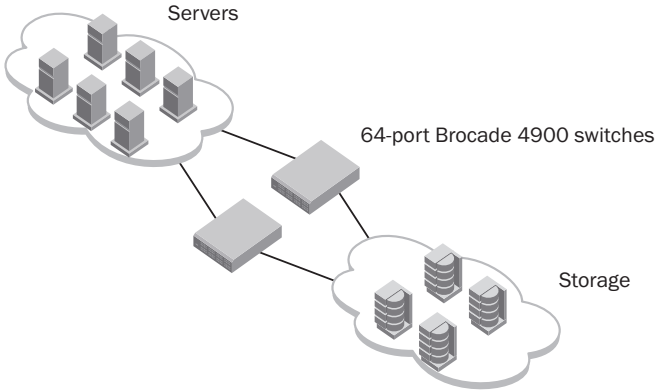
### **OPEN SAN MANAGEMENT**

By networking Fibre Channel switches such as the Brocade 4900 under a common platform, Fabric OS greatly simplifies SAN management. An embedded real-time operating system, Fabric OS includes standard management interfaces, a full range of management tools, and support for third-party SAN management applications.

**Figure 1.**  
Simplified SAN deployments supporting greater device attachment.



Total Switches:	10
Total Ports:	192
Ports for Hosts:	80
Ports for ISLs:	72
Ports Available:	16



Total Switches:	2
Total Ports:	128
Ports for Hosts:	48
Ports for ISLs:	0
Ports Available:	44

To simplify SAN administration and reduce costs, the Brocade 4900 supports switch management through a command line interface, Brocade Web Tools, and Brocade Fabric Manager. It also leverages Brocade Advanced Fabric Services to improve the utilization of existing storage and server assets, increase administrator efficiency, and lower the cost of storage management.

To facilitate deployment, the Brocade 4900 integrates easily into heterogeneous environments such as AIX, Linux, Solaris, UNIX, and Windows NT.

**HIGHER FABRIC SECURITY FOR CRITICAL INFORMATION**

To help organizations safeguard their critical information, the Brocade 4900 is designed for the highest levels of SAN fabric security. It utilizes Brocade Advanced Zoning and security functions to help organizations simplify administration and significantly increase their control over data access.

To simplify management access security, the Brocade 4900 supports Active Directory with LDAP.

**MAXIMIZING SAN INVESTMENTS**

Brocade and its partners offer complete SAN solutions to meet a wide range of technology and business requirements. These solutions include education and training, support, and services to help optimize SAN investments. For more information, contact an authorized Brocade sales partner or visit [www.brocade.com](http://www.brocade.com).

**BROCADE 4900 SPECIFICATIONS**

Systems Architecture		Management	
Fibre Channel ports	64 ports, universal (E, F, and FL)	Management software supported	SSH, Telnet, HTTPS/SSL, RADIUS; SNMP v3 (FE MIB, FC Management MIB); Brocade Advanced Web Tools; Brocade EFCM Standard/Enterprise 9.x (optional); Brocade Fabric Manager (optional: FOS environments only); third-party applications utilizing the Brocade SMI Agent
Scalability	Full fabric architecture with 239 switches maximum	Management access	10/100 Ethernet port (RJ-45); serial port (RS-232); In-band through Management Server
Certified maximum	Single Brocade FOS fabric: 56 domains, 19 hops Single Brocade M-EOS fabric: 31 domains, 3 hops Larger fabrics certified as required; consult Brocade or OEM SAN design documents for configuration details	Diagnostics	POST and embedded online/offline diagnostics
Performance	1.063 Gbit/sec line speed, full duplex; 2.125 Gbit/sec line speed, full duplex; 4.25 Gbit/sec line speed, full duplex and auto-sensing of 1, 2, and 4 Gbit/sec port speeds; optionally programmable to fixed port speed; speed matching between 1, 2, and 4 Gbit/sec ports	Environmentals	
ISL Trunking	Up to eight 4 Gbit/sec ports per ISL trunk; up to 32 Gbit/sec per ISL trunk	Temperature	Operating: 0 °C to 40 °C (32 °F to 104 °F) Non-operating: -25 °C to 70 °C (-13 °F to 158 °F)
Aggregate bandwidth	512 Gbit/sec end to end	Humidity	Operating: 20% to 85% non-condensing at 40 °C (104 °F); Non-operating: 10% to 85%, non-condensing at 70 °C (158 °F)
Fabric latency	~700 nanoseconds within a locally switched group and <2.4 µsec with no contention, cut-through routing at 4 Gbit/sec between locally switched groups	Altitude	Operating: up to 3000 meters (9800 feet) Storage: up to 12 km (32,200 feet)
Maximum frame size	2112-byte payload	Shock	Operating: 20G, 6 ms half-sine Non-operating: 15G, 12 to 18 ms trapezoid
Classes of service	Class 2, Class 3, Class F (inter-switch frames)	Vibration	Operating: 0.5 g sine, 0.4 grms random, 5 to 500 Hz Non-operating: 2.0 g sine, 1.1 grms random, 5 to 500 Hz
Port types	FL_Port, F_Port, and E_Port; self-discovery based on switch type (U_Port)	Heat dissipation	175 W, 597 BTU/hr
Data traffic types	Fabric switches supporting unicast and broadcast	CO <sub>2</sub> emissions	644 kg per year (with 64 ports at 0.42 kg/kWh) 2.52 kg per Gbit/sec per year
Media types	Hot-pluggable, industry-standard Small Form-factor Pluggable (SFP), LC connector; Short-Wavelength Laser (SWL) up to 500 meters (1640 feet); Long-Wavelength Laser (LWL) up to 10 km (6.2 mi); Extended Long-Wavelength Laser (ELWL) up to 80 km (49.6 mi); distance depends on fiber-optic cable and port speed, CWDM SFPs (8 lambdas)	Airflow	Maximum airflow 74 CFM; Nominal airflow 54 CFM
Fabric services	Simple Name Server, Registered State Change Notification (RSCN), Brocade Advanced Zoning, and Brocade Web Tools.  Optional fabric services include Brocade Fabric Watch, Brocade Extended Fabrics, Brocade ISL Trunking (available between devices running FOS), Brocade Advanced Performance Monitoring, and FICON CUP (Advanced Performance Monitoring and FICON CUP are not available in M-EOS environments).	Power	
Options	SFP media	Maximum output	300 Watts
Mechanicals		System power consumption	Nominal system draw 175 Watts
Enclosure	Non-port side to port side (port side exhaust); back-to-front airflow; power from rear; 2.OU, 19-in. EIA-compliant	Nominal input voltage	90 to 264 VAC, 47 to 63 Hz
Size	Width: 42.87 cm (16.88 in) Height: 8.60 cm (3.39 in) Depth: 61.0 cm (24.02 in)	Input line frequency	47 to 63 Hz
System weight	13.7 kg (30.2 lb) – with dual power supply, no SFP	Input voltage	90 VAC minimum, 264 VAC maximum
		Inrush current	Maximum of 15 Amps for period between 10 to 150 ms at 50 °C (122 °F), hot or cold start
		Safety	
		The Brocade 4900 complies with the following safety certifications:	
		<ul style="list-style-type: none"> <li>UL 60950-1: 2003, First Edition (Underwriters Laboratories)</li> <li>CSA 60950-1-03 (Canadian Standards Association)</li> <li>Nemko EN60950:2000</li> <li>TUV EN60950:2000 / IEC60950:1999 (TUV "GS" for Germany, TUV "S" for Argentina)</li> <li>GOST (Russia)</li> <li>Low Voltage Directive (73/23/EEC) for CE Marking in European Union</li> </ul>	
		* Brocade M-EOS fabrics are McDATA switches and directors running McDATA Enterprise OS	
		For information about supported SAN standards, visit <a href="http://www.brocade.com/sanstandards">www.brocade.com/sanstandards</a> For information about switch and device interoperability, visit <a href="http://www.brocade.com/interoperability">www.brocade.com/interoperability</a>	

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