Brocade 4Gb SAN Switch for HP p-Class BladeSystem

Data sheet

The Brocade 4Gb SAN Switch for HP p-Class BladeSystem combines plug-and-play simplicity with industry-leading switching technology from the leading SAN fabric provider. Fully compatible with HP B-series and Brocade switches, the Brocade 4Gb SAN Switch helps IT organizations lower costs, minimize deployment time, and save valuable rack space through the integration of Fibre Channel switching into the HP BladeSystem.

Key features and benefits

- Integrated design saves cost and space and simplifies SAN environment
- In-chassis Fibre Channel connections eliminate cables and small form-factor pluggables (SFPs)
- Fully compatible with HP StorageWorks B-series and Brocade switches
- 4Gb SAN-facing ports with high-bandwidth capability
- Faster time to deployment
- Broad range of management tools
- Redundant switches for highly available solutions
- Three models, enabling choice of features and management options

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The Brocade 4Gb SAN Switch leverages the BladeSystem design, providing new levels of simplicity, flexibility, and value in server-to-storage connectivity.

The new Brocade switch delivers 4Gb Fibre Channel performance—at a 2Gb price range—in a convenient modular form factor. Because it plugs into the back of the HP BladeSystem chassis, it provides a "zero footprint" Fibre Channel connection solution and eliminates cabling and SFP interconnects. With reduced expense for cabling and transceivers, the Brocade 4Gb SAN Switch helps customers lower fabric infrastructure costs and unlock the value of Fibre Channel SAN solutions.

The Brocade 4Gb SAN Switch fully leverages the improved efficiency and greater flexibility of the HP BladeSystem design, delivering a new level of simplicity, flexibility, and value in server-to-storage network connectivity.

Performance

The Brocade 4Gb SAN Switch employs new high-speed technology for storage networking based on Brocade's latest ASIC design, with connections for up to 16 BL3xp, 8 BL2xp, or 4 BL45p blades in a single enclosure. It has four 4Gb auto-negotiating dedicated SAN-facing ports that automatically sense lower-bandwidth (1Gb or 2Gb) components for ultimate compatibility. The Brocade 4Gb SAN Switch also supports trunking of the SAN-facing ports with external Brocade or HP B-series switches, which results in up to 16Gb of direct SAN connectivity at 4Gb.

Innovative integrated design

The Brocade 4Gb SAN Switch plugs into the back of the BladeSystem chassis, freeing precious rack space and permitting maximum blade density within the enclosure. The switch deploys into the rear of the second generation Gigabit Ethernet (GbE2) Ethernet Switch or the Cisco Gigabit Ethernet Switch Module.

Interconnects between the servers and switch are internal to the BladeSystem, eliminating external cabling and interconnection costs. Despite its compact form factor, the Brocade 4Gb SAN Switch has all the technology, features, and management capabilities of Brocade and HP B-series standalone switches.

Time to deployment is dramatically reduced because server interconnects are established as soon as the switch is plugged into the HP BladeSystem chassis. The embedded switch also leverages the power and cooling of the p-Class infrastructure, making it a more cost-effective solution.

High availability

The HP p-Class BladeSystem enclosure accepts up to two switches per chassis. Dual switches coupled with redundant server connections provide a highly available solution. Typically, applications that require high availability leverage a dual, redundant SAN design to guarantee access to storage at all times; this scenario is fully supported with the new Brocade switch. Two switches can easily be added to the HP p-Class BladeSystem enclosure, with each switch powered separately. If one power source fails, the servers automatically fail over to the other switch.

Intelligent SAN management

The Brocade 4Gb SAN Switch leverages standard Brocade and B-series management and monitoring tools. It provides interfaces for other SAN management applications and is SMI compliant. The Brocade switch is also recognized by and integrated into the BladeSystem software management suite. Applications such as HP OpenView Storage Area Manager can discover, display, and provide a management interface into the new switch. HP also supports the HP B-Series Fabric Manager Software, which is optimized to simplify day-to-day SAN management operations. In terms of management, there is no difference between the embedded Brocade 4Gb SAN Switch and a standalone switch.

Available configurations

The Brocade 4Gb SAN Switch can be configured in the following ways:

- The base configuration provides basic switch functionality and configuration support for a fabric of up to two switches maximum.

- The full-fabric configuration provides for maximum SAN connectivity, as defined by HP supported SAN configurations rules.

- The Power Pack includes the full-fabric configuration, with additional software components for optimized switch management.

Standard software components

Two software components are included with the Brocade 4Gb SAN Switch:

- **Advanced Zoning:** World Wide Name (WWN) zoning and access control are enforced by hardware that provides the same simple administration previously enforced only with software. Administrators can organize a physical fabric into logical groups and prevent unauthorized access by devices outside the zone.

- **WebTools:** Enables organizations to monitor and manage single Fibre Channel switches and small SAN fabrics. Tasks can be performed through a Java™ capable Web browser from a standard laptop, desktop PC, or workstation from any location within the enterprise.

Power Pack software components

Advanced Performance Monitoring

The Advanced Performance Monitoring component allows for end-to-end performance monitoring of traffic between a server and a storage device, assessing resource utilization on a fabric-wide basis. This enabling technology provides the ability to monitor and watch specific fabric metrics from a Source ID (SID) to a Destination ID (DID), creating a method for fine-tuning and scaling the fabric more efficiently.

Performance Monitoring also enables early warning and detection of hot spots within the fabric, providing a powerful tool for maintaining overall balanced performance. This results in improved performance tuning that maximizes fabric resource optimization and simplifies SAN capacity planning.

Extended Fabrics

The Extended Fabrics component delivers all the scalability, reliability, and performance benefits of Fibre Channel SANs beyond the native 10 km (6.2 miles) distance specified by the Fibre Channel standard.

With Extended Fabrics, SAN fabric coverage can be increased more than 100 km (62 miles) at full bandwidth to campuses, metropolitan area networks (MANs), and backup sites. It also increases high availability by providing long-distance backup support to provide business continuance and disaster recovery. This component is required with the use of Very Long Distance SFPs and/or wavelength division multiplexing (WDM) or dense wavelength division multiplexing (DWDM).

Fabric Watch

The Fabric Watch component provides a real-time health monitoring service that proactively monitors the health of switches, fabric, and performance settings. Fabric Watch enables each switch to monitor the SAN for potential faults and automatically alert network managers to problems before they become failures. Fabric Watch tracks a variety of SAN fabric elements, events, and counters.

Monitoring fabric-wide events, ports, SFPs, and environmental parameters permits early fault detection and isolation as well as performance measurement. Benefits include improved high availability from proactive notification, detailed information that can be used to conduct root-cause analysis, and reduced troubleshooting time.

ISL Trunking

The ISL Trunking component delivers high-performance enhanced trunking capabilities by aggregating up to four inter-switch links (ISLs) into a single logical 16Gb Fibre Channel link at 4Gb. This license logically groups up to four e-ports to provide a high-bandwidth trunk between two switches.

The switch operating system views the trunk as a single, high-bandwidth resource when routing connections between switches. Connections are load balanced across the individual links, which comprise the logical trunk group. The result is improved performance, increased high availability, and simplified network design and management.

A flexible yet simple solution

The Brocade 4Gb SAN Switch is a unique solution that can be deployed into any number of usage scenarios—from a remote office to a large data center environment. The switch runs the same version of Fabric Operating System utilized by all other Brocade and B-series SAN switches, and it leverages exactly the same management tools for seamless integration.

With the introduction of the Brocade 4Gb SAN Switch, IT managers can now consolidate multiple HP servers, Fibre Channel switches, and Ethernet switches into a single platform for optimal connectivity to the networked infrastructure. As the first-ever embedded 4Gb SAN switch for the blade environment, the Brocade 4Gb SAN Switch drives simplicity, flexibility, and value for the IT infrastructure.

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Technical specifications

Fibre Channel ports	8 internal 1–2Gb server ports, 4 external 4Gb auto-sensing ports (ships with two 4Gb SFPs)
Performance	4GB/s line speed, full-duplex
Interoperability	SAN Switch 8, SAN Switch 16, SAN Switch 8-EL, SAN Switch 2/8V, SAN Switch 2/16V, SAN Switch 16-EL, SAN Switch 2/16N FF, SAN Switch 2/32, SAN Switch 4/32, Core Switch 2/64, and SAN Director 2/128
Switch core	Nonblocking
Fabric latency	<2 μ sec. with no contention, cut-through routing
Maximum frame size	2112-byte payload
Class of service	Class 2, Class 3, and 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	SFP
Laser	Short-wave and long-wave transceivers (SFPs)
Fabric services	Simple Name Server, Registered State Change Notification (RSN), Alias Server (multicast), Zoning, and WebTools
	Optional: Brocade Fabric Watch, Brocade Extended Fabrics, and Remote Switch
Options	SFP media
Software supported	Telnet, SNMP, WebTools, Brocade Zoning, SES (optional), Brocade Fabric Watch, Brocade Extended Fabrics, and Remote Switch
Diagnostics	POST and embedded online/offline diagnostics

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Environmental specifications

Altitude	Up to 9,800 ft (3,000 m)
Temperature	Operating: 50° to 95° F (10° to 35° C)
	Nonoperating: −13° to 158° F (−25° to 70° C)
Humidity	Operating: 20% to 80%
	Nonoperating: 5% to 95%
Wet bulb temperature	Operating: 82.4° F (28° C)
	Nonoperating: 101.7° F (38.7° C)
Vibration	Operating: 5 G, 5-500-5 Hz
	Nonoperating: 2 G, 5-5 kHz
Dimensions (height x width)	1.525 x 3.410 in (3.87 x 8.66 cm)
Weight	0.80 lb (.36 kg)
Shock	80 G, 2.5 ms, half sine
EMI	FCC Class A
	ICES-003 Class A
	AS/NZS 3548 Class A
	VCCI Class A
Safety	UL/CUL Listed Accessory
	CE
Fibre Channel Standards and Revisions	FC-FG Rev 3.5
	FC-AL Rev. 4.5
	FC-FLA Rev 2.7
	FC-PLDA Rev 2.1
	FC-PH-2 Rev 7.4
	FC-GS-2 Rev 5.3
	FC-PH-3 Rev 9.4
	FC-SW Rev 3.3
	FC-AL-2 Rev. 7.0
	FC-PH Rev 4.3

Note: Operating temperature has an altitude derating of 34° F (1° C) per 1,000 ft (304.8 m). No direct sunlight. Upper operating limit is 10,000 ft (3,048 m) or 70 kPa/10.1 psia. Upper nonoperating limit is 30,000 ft (9,144 m) or 30.3 kPa/4.4 psia. Storage maximum humidity of 95% is based on a maximum temperature of 113° F (45° C). Altitude maximum for storage is 70 kPa.

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Ordering information

Part number	Product name	Description
A7533A	Brocade 4Gb SAN Switch Base	(1) 4Gb SAN Switch; (2) 4Gb SFPs; (1) re-timer card; (1) serial cable; (1) mini USB to serial adapter; WebTools license; Zoning license; documentation; supports connectivity to a maximum of 2 Brocade switches
A7534A	Brocade 4Gb SAN Switch, Full Fabric	(1) 4Gb SAN Switch; (2) 4Gb SFPs; (1) re-timer card; (1) serial cable; (1) mini USB to serial adapter; WebTools license; Zoning license; documentation; supports full-fabric connectivity
A7535A	Brocade 4Gb SAN Switch, Power Pack	(1) 4Gb SAN Switch; (2) 4Gb SFPs; (1) re-timer card; (1) serial cable; (1) mini USB to serial adapter; WebTools license; Zoning license; documentation; supports full-fabric connectivity and includes Power Pack features and management tools (see software components, optional)

Hardware options		
A7446A	4Gb Optical Transceivers (SFPs)	Short wave 4GB—150 M 2Gb—300 M 1Gb—500 M

Fibre Channel cables		
221692-B21	LC-LC for between 2GB or 4GB Fibre Channel devices	2 m LC-LC multimode Fibre Channel cable
221692-B22	LC-LC for between 2GB or 4GB Fibre Channel devices	5 m LC-LC multimode Fibre Channel cable
221692-B23	LC-LC for between 2GB or 4GB Fibre Channel devices	15 m LC-LC multimode Fibre Channel cable
221691-B26	LC-LC for between 2GB or 4GB Fibre Channel devices	30 m LC-LC multimode Fibre Channel cable
221691-B27	LC-LC for between 2GB or 4GB Fibre Channel devices	50 m LC-LC multimode Fibre Channel cable
221691-B21	LC-SC for between 1Gb and 2Gb Fibre Channel devices	2 m LC-SC multimode Fibre Channel cable
221691-B22	LC-SC for between 1Gb and 2Gb Fibre Channel devices	5 m LC-SC multimode Fibre Channel cable
221691-B23	LC-SC for between 1Gb and 2Gb Fibre Channel devices	15 m LC-SC multimode Fibre Channel cable
221691-B26	LC-SC for between 1Gb and 2Gb Fibre Channel devices	30 m LC-SC multimode Fibre Channel cable
221691-B27	LC-SC for between 1Gb and 2Gb Fibre Channel devices	50 m LC-SC multimode Fibre Channel cable

Software options		
AA976A	Full Fabric Upgrade license	For upgrading Base switches to Full Fabric
T3574A	Power Pack Upgrade license	For upgrading Base or Full Fabric switches to Power Pack
324504-B21	Fabric Watch	
324506-B21	ISL Trunking Kit	
324507-B21	Advanced Performance Monitor	
324505-B21	Extended Fabric	
A7389A	Fabric Manager Enterprise Edition	
A7390A	Fabric Manager Base (10 domains edition)	
332924-B21	Secure Fabric operating system	

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For more information

For more information about the Brocade 4Gb SAN Switch for HP p-Class BladeSystem, visit **http://h18006.www1.hp.com/products/storageworks/ b4gbsanswitchblade/index.html**.

For information on SAN Design Rules and configuration details, visit **www.hp.com/go/SANDesignGuide**.

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