

Entry workgroup fabric connectivity, scalable with core/edge fabrics to large enterprise SANs



IBM TotalStorage SAN Switch F08



Entry fabric switch with high performance and advanced fabric services

Highlights

- Provides Entry-fabric Switch with zoning for Microsoft® Windows NT®, Windows® 2000 and UNIX server clustering
- Offers Full-fabric Switch feature attachment to eight switches in large core/edge fabric
- Offers 8-port Fibre Channel switch with Small Form-Factor Pluggable (SFP) transceivers
- Offers advanced fabric service features such as end-to-end performance monitoring
- Provides up to 2 Gigabit/sec. (Gbps) throughput and Inter-Switch Link (ISL) Trunking with aggregate speed up to 8 Gbps
- Offers Advanced Security with comprehensive, policy-based security capabilities
- Uses WEBTOOLS, Fabric Manager and openfabric interfaces to manage workgroup and core-to-edge SAN fabrics

IBM TotalStorage SAN Switch F08

The IBM® TotalStorage® SAN Switch F08 provides 2 Gbps Fibre Channel capability and performance and advanced functions to address demands for improved security, performance and manageability as the SAN fabric grows from entry workgroups to core-to-edge fabrics with thousands of devices. It is based on next-generation switch technology that is designed to be fully interoperable with the IBM TotalStorage SAN Managed Hub and SAN Switch S08, S16 and F16. You can configure scalable solutions that help address your needs for high performance and reliability for environments ranging from small workgroups to very large, integrated enterprise SANs.

Industry-standard Fibre Channel

The IBM SAN Switch F08 is designed to provide Fibre Channel connectivity to:

- IBM @server xSeries® and selected Netfinity® servers
- IBM @server pSeries® and selected RS6000® servers
- IBM @server iSeries™

- *Other Intel®-based servers with Microsoft™ Windows NT® and Windows 2000®, Netware and Linux*
- *Selected Sun and HP servers*
- *IBM TotalStorage® Enterprise Storage Server™ (ESS)*
- *IBM TotalStorage EAStT Storage Servers*
- *IBM TotalStorage Network Attached Storage 300G*
- *IBM TotalStorage Enterprise Tape System 3590 and IBM TotalStorage Enterprise Tape Library 3494*
- *IBM 3583 Ultrium Tape Library and IBM 3584 Ultra Scalable Tape Libraries*
- *IBM SAN Switches M12, F16, F08, S16, S08 and SAN Managed Hub¹*

IBM TotalStorage SAN Switches

IBM F08, F16, F32 and M12 Switches are built upon a next-generation switch technology that support link speeds of 1Gbps and 2Gbps. Each port supports either 100MB/sec or 200MB/sec full-duplex data transfers. Auto-sensing ports are capable of automatically negotiating to the highest speed supported by the attached server, storage device or switch.

F08 Switches can provide up to twice the performance of S08 Switches and SAN Managed Hubs. This

performance capability can be used to either reduce the number of ISL connections or to improve the performance with the same number of connections. Customers can now deploy F08 Switches that are ready to exploit the performance potential of newer servers and storage devices with 2 Gbps capabilities.

F08 Switches, with Full-fabric Switch Activation, can be used as edge switches to expand an existing core-to-edge SAN fabric infrastructure. As F16 Switches and larger, high availability core switches are added to the core, installed F08 Switches can be migrated to the edge. This approach helps support scalable network growth in a modular, cost-effective and nondisruptive manner while continuing to benefit from installed switches.

Common SAN Switch capabilities

IBM TotalStorage SAN Switches include universal ports that can automatically determine the port type when connected to a fabric port (F_port), fabric loop port (FL_port) or expansion port (E_port). Fabric services include automatic self-discovery of new devices and dynamic path selection based upon Fabric Shortest Path First (FSPF), which is designed to select the most efficient routing in

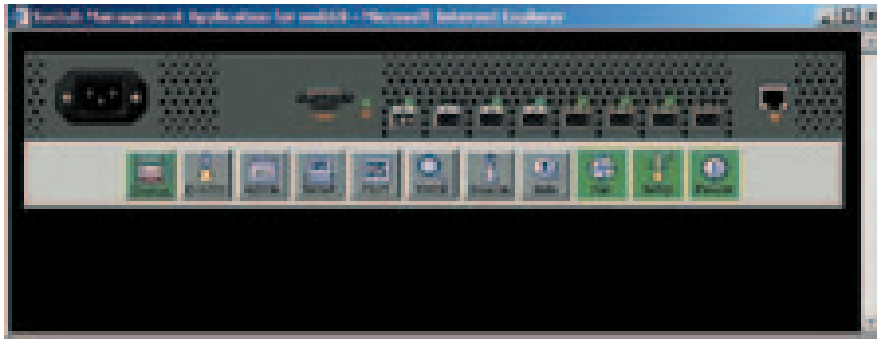
a SAN fabric. A mixture of shortwave and longwave ports can be configured. Rack-mounted installation is standard and desktop installation is available.

SAN Switch F08 configuration options

The Entry-fabric Switch includes four standard shortwave (500 M at 1 Gbps, 300 M at 2 Gbps) universal ports. High availability is supported by redundant cooling fans and hot pluggable optics. In addition, a mixture of shortwave and longwave (10 km) ports can be configured by adding up to four SFP optical transceivers. F08 Switches (shipped on or after October 31, 2003 with SN 1316730 or higher) include Advanced hardware (port) and software (WWN) Zoning and attachment to one other switch.

Full-fabric Switch Activation feature enables connectivity of up to eight switches (8 E_Ports), provides Advanced Zoning (Switches shipped prior to October 31, 2003) and Fabric Watch.

Device-level zoning of the SAN fabric is designed to enable an administrator to create separate segments or zones within the SAN fabric to separate different application servers and devices in heterogeneous SAN environments. Zones may be dynamically



WEBTOOLS switch view

created and changed from any switch in the fabric. Basic security functions such as hardware-enforced zoning are provided.

Common firmware capabilities and features

The common IBM SAN Switch firmware helps simplify SAN fabric expansion. Standards-based Management Server and Simple Name Server support in-band discovery of SAN fabric changes. Management access of SNMP information is provided via an external Ethernet interface or in-band over a Fibre Channel link through a single fabric connection.

Extended Fabrics Activation

extends SAN fabrics beyond the Fibre Channel standard 10 km. This enables high-performance applications over extended distances for storage consolidation, data protection, disaster tolerance and data sharing. ISLs using extended long-

wave transceivers, Fibre Channel repeaters and Dense Wave Division Multiplexing (DWDM) devices can provide Metropolitan Area Network (MAN) connectivity distances.

Extended Fabrics Activation helps optimize switch buffering to help provide high performance by configuring gateway switch ISLs with additional buffer credits.

Remote Switch Activation extends the distance of SAN fabrics by enabling two Fibre Channel switches to interconnect over an ATM Wide Area Network (WAN). With this feature, one can stage and manage data transfers across a pair of Fibre Channel switches connected to a pair of CNT Open System Gateways.

QuickLoop enables servers with Fibre Channel Arbitrated Loop (FC-AL) private loop Host Bus Adapters (HBAs) to communicate with FC-AL storage devices through IBM TotalStorage SAN Switches. Individual switch ports may be

designated as FL_Ports, allowing a private host initiator to communicate with FC-AL storage devices as though they were all contained in one logical loop.

With *Inter-Switch Link (ISL) Trunking*

as many as four Fibre Channel links between F08 and other IBM SAN Switches may be combined to form a single logical ISL with an aggregate speed of up to 8 Gbps. These high-speed trunks help optimize bandwidth utilization and enhance availability.

Load balancing can help balance the load across all of the ISLs through trunking. This enables administrators to focus on overall network performance rather than individual link congestion from multiple higher performance devices sharing a single link. Administrators need only to monitor the trunk performance rather than specific devices being routed across it. Increased network reliability and performance is supported because failed links do not require rerouting of traffic.

Advanced security

As entry level and departmental SAN islands evolve into large enterprise SANs, which may be interconnected over Wide Area Networks (WANs),

advanced security is required to control and manage fabric access. External threats and internal operational events can compromise valuable enterprise data assets and create data integrity exposures. Advanced Security Activation feature can help create a secure storage networking infrastructure required for multiple protocol operation and SAN island consolidation. Advanced Security extends basic fabric security provided by Advanced Zoning hardware-enforced WWN zoning. It provides a comprehensive, policy based security system for IBM SAN Switch fabrics with Fabric OS versions 3.1 and 4.1. Prior generation switch investment protection is provided with support for Fabric OS version 2.6.1. All switches in an Advanced Security fabric must be upgraded before Advanced Security can be deployed.

Open fabric management

IBM SAN Switch management framework is designed to support the widest range of solutions—from the very small workgroup SANs up to very large enterprise SAN fabrics with thousands of devices. Small SANs require rapid deployment and plug-and-play simplicity. Very large SAN fabrics require centralized management and automated administration. IBM SAN Switch management

options include browser-based WEBTOOLS, Fabric Manager and open standards-based interfaces to enterprise SAN managers. With an industry-standard SNMP interface, customers know that IBM TotalStorage SAN Switches can gain the benefits of being centrally managed with Tivoli® SAN management software.

WEBTOOLS is designed to provide a comprehensive set of management tools that support a Web browser interface for flexible, easy-to-use integration into existing enterprise storage management structures. WEBTOOLS supports security and data integrity by limiting (zoning) host system attachment to specific storage systems and devices.

Fabric Watch is included in Full-fabric Switch Activation. Fabric Watch threshold monitoring tracks the health of switches and SAN fabric. Fabric Watch monitors fabric resources, port traffic, switch environmental values and operational values for GigaBit Interface Converters (GBIC) and optical transceivers. This information is accessible from WEBTOOLS and Fabric Manager. When used with IBM SAN Switches, WEBTOOLS provides

an easy-to-use interface to intelligent fabric features such as end-to-end performance monitoring and ISL Trunking.

Fabric Manager

Fabric Manager 4.1 can help simplify management, reduce cost of administration and accelerate deployment and provisioning. It builds upon Fabric Manager 3 by offering new capabilities:

- *Configuration change management with fabric snapshot and compare*
- *Secure Fabric OS management including security policy control, audit and reporting*
- *SAN topology visualization and at-a-glance views*
- *Call home facility sends email notification to support personnel as events occur*

Fabric Manager provides a Java-based application that can help simplify management of complex, multiple switch fabric. SAN Switch Web Tools and Fabric Manager work together on the same management server which can be attached to any switch in the core/edge fabric. It can also manage up to eight separate fabrics. Fabric Manager requires a Windows NT/2000 or Sun Solaris 7 server with Netscape or Internet Explorer web browser.

IBM TotalStorage SAN Switch F08 at a glance

Physical characteristics

Height (rack-mount)	4.2 cm/1.7 in (1U)
Height (table-top)	4.72 cm/1.86 in (1U)
Width	42.8 cm/16.9 in
Depth	26.4 cm/10.4 in
Weight	3.9 kg/8.5 lb

Operating environment

Temperature	0° to 40° C/32° to 104° F
Relative humidity	20% to 85% at 40° C/104° F

Power requirements

Power range	90 to 264 VAC, 47 to 63 Hz
-------------	----------------------------

Product numbers

3534 F08 (PN 3534F08)—IBM TotalStorage SAN Switch F08 with attachment to one other Switch and four shortwave transceivers; one to four additional shortwave or longwave transceivers are optional. F08 Switches (shipped on or after October 31, 2003 with SN 1316730 or higher) include Advanced Zoning.

FC 2210 (PN 19K1271)—Shortwaver Transceiver

FC 2220 (PN 19K1272)—Longwave Transceiver

FC 5601 (PN 19K1247)—Fibre Channel cable, LC/LC, multimode optical, 50.0u, 1 meter

FC 5605 (PN 19K1248)—Fibre Channel cable, LC/LC, multimode optical, 50.0u, 5 meters

FC 5625 (PN 19K1249)—Fibre Channel cable, LC/LC, multimode optical, 50.0u, 25 meters

FC 5701 (PN 19KP1250)—Fibre Channel SC male/LC female Coupling Cable, multimode optical, 50.0u, 1 meter

FC 5702—Fibre Channel LC male/SC female Coupling Cable, multimode optical, 50.0u, 2 meters

FC 7202 (PN 17P7847)—Fabric Manager 3

FC 7203—Fabric Manager 4.1

FC 7204 (PN 17P7848)—Fabric Manager 3 to 4.1 Upgrade

FC 7302 (PN 18P3579)—Remote Switch Activation

FC 7303 (PN 18P3580)—Extended Fabric Activation

FC 7320 (PN 18P5060)—Full-fabric Switch Activation

FC 7321 (PN 8P4405)—Performance Bundle

FC 7323 (PN 18P4411)—F08 Advanced Security Activation

FC 9205—Non-rack-mount Install

For more information

For more information, contact your
IBM representative or IBM Business
Partner. Or visit

ibm.com/storage/fcswitch



© International Business Machines Corporation 2003

IBM Corporation
Storage Systems Group
5600 Cottle Road
San Jose, CA 95193

Produced in the United States of America

December 2003

All Rights Reserved

IBM and the IBM logo, Enterprise Storage Server, iSeries, Magstar, Netfinity, pSeries, RS/6000, S/390, Tivoli, TotalStorage, xSeries and zSeries are trademarks or registered trademarks of International Business Machines Corporation. The IBM **@server** brand consists of the established IBM e-business logo with the descriptive term "server" following it.

Windows and Windows NT are trademarks of Microsoft Corporation in the United States, other countries or both. UNIX is a registered trademark of The Open Group in the United States and other countries.

Other company, product, and service names may be trademarks or service marks of others.

References in this publication to IBM products or services do not imply that IBM intends to make them available in all countries in which IBM operates. IBM hardware products are manufactured from new parts, or new and used parts. In some cases, the hardware product may not be new and may have been previously installed. Regardless, IBM warranty terms apply.

Printed on an IBM Infoprint® Color System Full-Color System Full-Color Digital Printer.