

Designed for secure high-performance SAN routing over Fibre Channel or Internet Protocol networks to interconnect multiple SANs



IBM System Storage SAN18B-R multiprotocol router



Efficient package with sixteen 1, 2 and 4 Gigabits per second Fibre Channel ports and two 1 Gigabit Ethernet Internet Protocol ports

Highlights

- **Enables consolidation of Storage Area Network (SAN) islands for infrastructure simplification without compromising security**
- **Hardware-based compression, large window sizes and selective acknowledgement of IP packets designed to optimize performance of SAN extension over IP networks**
- **Designed for high performance with 4 Gigabit per second (Gbps) Fibre Channel (FC) ports and hardware-assisted traffic processing for line-rate performance across Gigabit Ethernet (GbE) Internet Protocol (IP) ports**
- **Eight virtual FCIP tunnels per IP port help maximize scalability and utilization of MAN/WAN resources**
- **Utilizes existing IP Metropolitan Area Network (MAN) or Wide Area Network (WAN) infrastructures for metro and global SAN extension for business continuity solutions**
- **Integrated router and IBM System Storage™ SAN b-type (Brocade) switch management helps simplify installation and administration and helps provide fabric investment protection**

A wide range of IBM System Storage mid-range and enterprise Storage Area Network (SAN) infrastructure simplification and business continuity solutions can be created with the IBM System Storage SAN18B-R multiprotocol router. Infrastructure simplification solutions for the IBM System i™, System p™, System x™ and System z™ family include SAN island consolidation, while business continuity solutions include disaster tolerance over metropolitan and global IP networks with IBM System Storage disk arrays, tape libraries and IBM Tivoli® Storage Manager data protection software.

Since the introduction of Storage Area Networks, customers have built multiple SAN networks (or islands) for different applications, often with fabric switch components from different manufacturers. Some islands were built by different departments within a company, while other islands resulted from mergers,

acquisitions or reorganizations. Dissimilar SAN equipment with different capabilities or a desire to isolate important applications has constrained opportunities for enhanced infrastructure simplification and vital business continuity solutions.

The IBM System Storage SAN18B-R multiprotocol router provides Fibre Channel FC-FC Routing Service, which allows the interconnection of multiple SAN islands without requiring that the separate fabrics be merged into a single large SAN. As shown in Diagram #1, this capability can help create a tiered or extended enterprise SAN infrastructure without having to redesign or reconfigure the entire environment.

Local site infrastructure simplification solutions may be extended to one or many remote sites for enhanced data protection and disaster tolerance. The IBM System Storage SAN18B-R multiprotocol router provides Fibre Channel over IP and FCIP Tunneling Service for distance extension which can enable cost effective and manageable metro and global business continuity solutions. This extended distance connectivity can help create consolidated remote tape vaulting data protection plus metro mirror and global mirror disk-based disaster tolerant solutions as shown in Diagram #2.

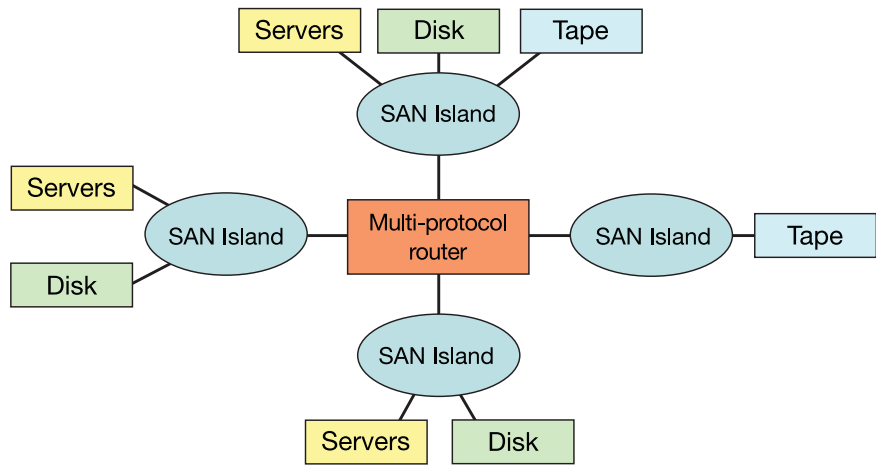


Diagram #1: FC-FC routing help simplify SAN island consolidation

High performance

The IBM System Storage SAN18B-R multiprotocol router is designed to deliver 1, 2 and 4 Gigabit per second (Gbps) full-duplex Fibre Channel or 1 Gigabit Ethernet (GbE) line-rate performance on all ports. Each router FC port auto-negotiates to 1 or 2 or 4 Gbps depending on the speed of the device at the other end of the link. The GbE ports enable reliable SAN extension across suboptimal Wide Area Networks (WANs) through the use of Fast Write, hardware-based compression and storage-optimized protocol enhancements.

High-availability features

Mid-size and enterprise SAN users require high-availability fabric solutions. The IBM System Storage SAN18B-R multiprotocol router uses second-generation advanced application-specific integrated circuits (ASIC) electronic components to help minimize the number of components and

improve reliability. The SAN18B-R router is designed to provide hot-swappable, load-sharing dual redundant power supplies that allow the router to remain online if one power supply fails. Dual power cords allow attachment to separate power sources to for improved availability. Hot-swappable power supplies and redundant cooling fans help eliminate downtime for service when replacing a failed component and help reduce or eliminate the risk of erroneously cabling a replacement router because of a simple component failure. Hot-pluggable SFP optical transceivers are designed to be replaced without taking the router offline.

High availability solutions require redundant components, including clustered servers with dual Host Bus Adapters, dual independent fabrics and disk storage arrays with dual controllers each

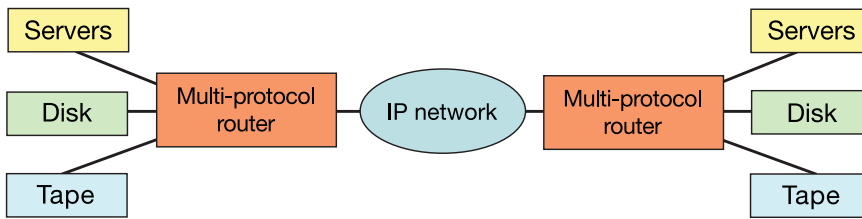


Diagram #2: FCIP Tunneling Service for metro and global business continuity solutions

with dual adapters. Dual IBM System Storage SAN18B-R routers may be configured in a high availability solution to create a resilient “meta” SAN infrastructure.

Configuration flexibility

All eighteen ports are active in the SAN18B-R router, however only enough SFP optical transceivers need to be installed to support the number of links desired. Additional SFPs can be added non-disruptively when additional links are needed. A variety of SFP optical transceivers are available to meet diverse requirements. Standard short wave Fibre Channel SFPs are available to connect at distances up to 1500 meters. Long Wave Fibre Channel SFPs are available to connect at distances of up to 4 km, 10 km or 35 km. “Quad-rate” short wave and long wave SFPs are available which support both Fibre Channel and Internet Protocol in the same SFP. The maximum distance of a quad-rate long wave SFP is 10 km.

The router helps provide full Fibre Channel fabric services with many standard features including WEBTOOLS with Advanced Zoning, FC-FC Routing Service, FCIP Tunneling Service and Extended Fabric.

Integrated management

WEBTOOLS (standard feature) is integrated with the IBM System Storage SAN18B-R router to simplify monitoring and configuration management. 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. Although multiple SANs are physically connected, WEBTOOLS supports security and data integrity by limiting (zoning) host system attachment to specific storage systems and devices to ensure the appropriate level of SAN fabric isolation.

FC-FC Routing Service (standard feature) is designed to allow devices located on separate SAN fabrics to communicate without merging the fabrics into a single large SAN environment. This routed network consists of multiple individual SAN fabrics that for one large storage network, known as a “MetaSAN.”

Extended Fabric (standard feature) extends SAN fabrics beyond the Fibre Channel standard of 10 km distance.

This can help enable business continuity solutions to maintain high performance 4 Gbps operation over extended distances of up to 100 km. Extended distance long wave SFP optical transceivers are available for up to 35 km distances. Extended Fabric Activation helps optimize switch buffering to provide high performance by configuring switch ISLs with additional buffer credits.

Advanced Security Activation

(optional feature) is designed to help secure storage networking infrastructure required for multiple-protocol operation and SAN island consolidation. Advanced Security Activation extends basic fabric security features provided by Advanced Zoning hardware-enforced worldwide name (WWN) zoning. It is designed to provide a comprehensive, policy-based security system for IBM SAN b-type switch fabrics with FAB OS V3, V4 and V5. Support for Fabric OS V2.6 helps protect prior generation switch investment. All switches in an advanced security fabric must be upgraded before Advanced Security Activation can be deployed.

Performance Monitoring—Field

(optional feature) provides support for frame filtering-based performance monitoring tools for enhanced end-to-end performance monitoring. It is designed to help identify end-to-end bandwidth usage between host/target pairs and to provide information for capacity planning.

Enhanced ISL Trunking—Field

(optional feature) enables Fibre Channel packets to be efficiently distributed across multiple Inter-Switch connections (links) between two SAN b-type switches, directors or routers while preserving in-order delivery. Both SAN b-type devices must have Enhanced ISL Trunking activated.

As many as eight 4 Gbps links between SAN18B-R routers and 4 Gbps IBM b-type SAN switches and directors can be combined to form a single logical ISL with an aggregate speed of up to 32 Gbps per trunk. As many as four 2 Gbps links between SAN18B-R routers existing 2 Gbps IBM SAN b-type switches and directors can be combined to form a single logical ISL with an aggregate speed of up to 8 Gbps per trunk.

Performance Bundle—Plant (optional feature) provides Performance Monitoring and Enhanced ISL Trunking in a convenient package at the time a router is manufactured.

FCIP Activation (optional feature) enables organizations to extend their Fibre Channel SANs over longer distances that would be impractical or too expensive with native Fibre Channel or in situations where “dark fibre” resources are unavailable but in which IP connectivity already exists. Eight virtual FCIP tunnels per IP port help maximize scalability and utilization of MAN/WAN resources.

FCIP Tunneling Service is designed to allow organizations to extend Fibre Channel SANs over longer distances using an IP-based Metropolitan Area Network (MAN) or Wide Area Network (WAN) infrastructure. This service can be integrated with the FC-FC Routing Service. Such integration helps prevent faults on MAN/WAN links from propagating between sites and can help enable a more secure distance-connectivity infrastructure for disaster recovery applications.

Open fabric management

IBM SAN b-type switch and router management framework is designed to support the widest range of solutions—from 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 b-type switch management options include browser-based WEBTOOLS and open standards-based interfaces to enterprise SAN managers. With an industry-standard SNMP interface, customers know that IBM System Storage SAN b-type switches can gain the benefits of centralized management with Tivoli SAN management software.

Flexible Fibre Channel connectivity

The IBM System Storage SAN18B-R multiprotocol router is designed to provide Fibre Channel connectivity to:

- *IBM System z and selected S/390 servers*
- *IBM System p and selected RS/6000® servers*
- *IBM System i and selected AS/400 servers*
- *IBM System x and selected Netfinity® servers*
- *Other Intel® processor-based servers with Linux, Microsoft® Windows 2000 and Windows Server™ 2003*
- *Selected Sun and HP servers*
- *IBM TotalStorage DS8000*
- *IBM TotalStorage DS6000*
- *IBM TotalStorage DS4000*
- *IBM TotalStorage Enterprise Storage Server*
- *IBM TotalStorage EAStT Family of Storage Servers*
- *IBM TotalStorage 357x, 358x and 359x Tape Drives and Libraries*
- *IBM TotalStorage 3494 Tape Library*
- *Other selected storage systems*

For specific support dates, configuration options, server models, operating system levels, attachment capabilities and throughput connectivity speeds, visit

ibm.com/totalstorage/san/b-type

IBM System Storage SAN18B-R multiprotocol router at a glance

Physical characteristics:

Height (rack mount)	42.44 mm / 1.67 in (1U)
Width	429 mm / 16.89 in
Depth	635 mm / 25.00 in
Weight	12.43 kg / 27.4 lb (without SFPs)
Enclosure	1 RU, 19-inch EIA-compliant with non-port (front) to port (back) airflow

Operating environment:

Temperature	0 to 40 degrees C (32 to 104 degrees F)
Relative humidity	20% to 85%, non-condensing at 40 C (104 F)

Electrical requirements:

Input voltage	85 to 264 VAC, universal
Frequency	47 to 63 Hz
Power consumption	240W Maximum, 215W typical

Product Numbers

2005 Model R18—IBM System Storage SAN18B-R multiprotocol router with eighteen ports activated (sixteen Fibre Channel and two Internet Protocol), no transceivers, embedded WEBTOOLS management, FC-FC Routing Service, Advanced Zoning, dual replaceable power supplies, line cords and cooling fans, rack mount kit

FC 2130—Quad Rate Short Wave SFP Transceiver

FC 2140—Quad Rate 10 km Long Wave SFP Transceiver

FC 2150—Quad Rate 4 km Long Wave SFP Transceiver

FC 2235—4 Gbps 35 km Extended Distance Long Wave SFP Transceiver

FC 2410—4 Gbps Short Wave SFP Transceiver

FC 2414—4 Gbps Short Wave SFP Transceiver—4-pack

FC 2420—4 Gbps 10 km Long Wave SFP Transceiver

FC 2424—4 Gbps 10 km Long Wave SFP Transceiver—4-pack

FC 2430—4 Gbps 4 km Long Wave SFP Transceiver

FC 2434—4 Gbps 4 km Long Wave SFP Transceiver—4-pack

FC 7574—R18 Advanced Security Activation

FC 7575—R18 Performance Bundle—Plant

FC 7576—R18 Performance Monitoring—Field

FC 7577—R18 Enhanced Trunking—Field

FC 7579—R18 FCIP Activation

Fibre-optic cables

Multimode and single-mode fibre optic cables and couplers are available in various lengths

Power cords

Country-specific power cords are available for desktop installation

For more information

Contact your IBM representative or
IBM Business Partner or visit:

ibm.com/totalstorage/san/b-type/



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