

Designed for secure infrastructure simplification and global business continuity solutions



## IBM TotalStorage SAN16B-R multiprotocol router



Sixteen dual-mode Fibre Channel and Gigabit Ethernet ports in 2U height

### Highlights

- **Designed to enable SAN islands consolidation for infrastructure simplification without compromising security**
- **Utilizes existing IP WAN infrastructures for metro and global SAN extension for business continuity solutions**
- **Offers iSCSI server SAN connectivity for low cost infrastructure simplification solutions**
- **Designed for high performance with 2 Gigabit per second (Gbps) Fibre Channel and Gigabit Ethernet (GbE) on all ports**
- **Integrated router and IBM TotalStorage® SAN b-type (Brocade) switch management helps simplify installation and administration and provide switch investment protection**
- **Ports on Demand for pay-as-you-grow scalability from 8 to 16 ports**

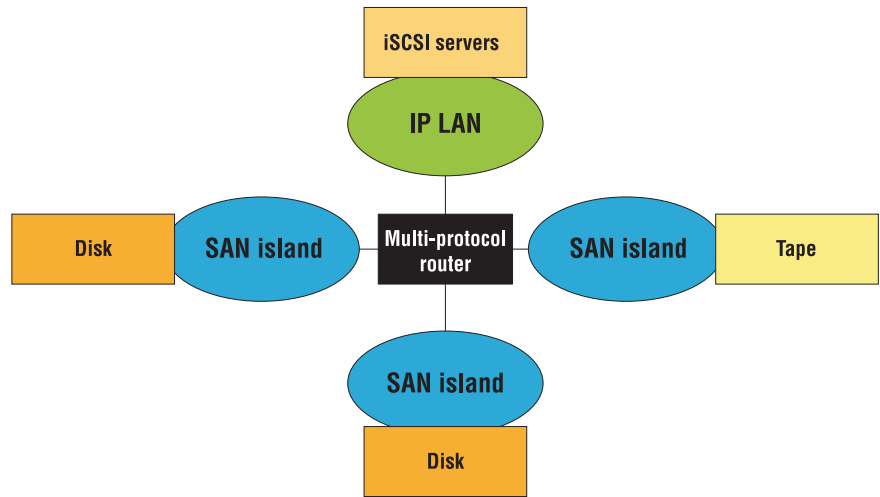
### IBM TotalStorage enterprise solutions

A wide range of IBM TotalStorage enterprise storage area network (SAN) infrastructure simplification and business continuity and information lifecycle management solutions can be created with the IBM TotalStorage SAN16B-R multiprotocol router. Infrastructure simplification solutions for IBM @server® xSeries®, iSeries™ and pSeries® include iSCSI server integration and SAN island consolidation with IBM TotalStorage disk storage arrays. Business continuity solutions include disaster tolerance over metropolitan and global IP networks with IBM TotalStorage tape libraries and IBM Tivoli® Storage Manager data protection software and IBM TotalStorage Resiliency Family. Information lifecycle management solutions include tiered storage with IBM TotalStorage SAN Volume Controller.

### Infrastructure simplification solutions

Customers have deployed multiple SAN islands for different applications with different fabric switch solutions. This limits deployment of integrated enterprise information lifecycle management solutions with IBM TotalStorage SAN Volume Controller, infrastructure simplification solutions with IBM SAN File Systems and business continuity systems with IBM TotalStorage tape libraries and IBM Resiliency Suite disk storage solutions. Growing availability of iSCSI server capabilities has created the opportunity for low cost iSCSI server integration and storage consolidation.

The IBM TotalStorage SAN16B-R multi-protocol SAN router provides iSCSI Gateway Service to integrate low-cost Ethernet-connected servers to existing SAN infrastructures. It also provides Fibre Channel, FC-FC Routing Service to interconnect multiple SAN islands without requiring the fabrics to merge into a single large SAN. This can help create a tiered enterprise SAN infrastructure without having to redesign or reconfigure the entire environment.



*FC-FC Routing and iSCSI Gateway Services help simplify iSCSI server and SAN island consolidation*



*FCIP Tunneling Service for metro and global business continuity solutions*

### Business continuity solutions

Local site infrastructure simplification solutions may extend to multiple remote sites to help enhance data protection and disaster tolerance. The IBM TotalStorage SAN16B-R provides Fibre Channel over IP, FCIP Tunneling Service distance extension for use in cost effective and manageable metro and global business continuity solutions. This connectivity helps create consolidated remote tape library data protection and metro mirror and global mirror disaster tolerant solutions.

### High performance

The IBM TotalStorage SAN16B-R router is designed to deliver 1 and 2 Gigabit per second (Gbps) full-duplex Fibre Channel or 1 Gigabit Ethernet (GbE) performance on all ports. Each router port auto-negotiates to either 1 or 2 Gbps depending upon the device attachment.

### High-availability features

Enterprise SAN users require high-availability switch fabric solutions. The IBM TotalStorage SAN16B-R multiprotocol router uses advanced application-specific integrated circuits (ASICs) to

help minimize the number of components and improve reliability. The SAN16B-R router provides hot-swappable, load-sharing dual redundant power supplies designed to allow the router to remain online if one power supply fails. Dual power cords allow attachment to separate power sources to help improve availability. Hot-swappable power supplies and redundant cooling fans help reduce or 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 optical transceivers are designed to be replaced without taking the router offline.

High availability solutions require clustered servers, dual fabrics and disk array storage with dual adapters. Dual IBM TotalStorage SAN16B-R routers may be attached to the same fabric to create a resilient “meta” SAN infrastructure.

#### **Configuration flexibility**

The router is designed with a minimum of eight ports enabled, or a maximum of sixteen port enabled. **Ports on Demand** features provide an activation key that upgrades the router with-

out disruption. Eight or sixteen short-wave and/or longwave SFP transceiver features are required. The ability to increase router capacity while maintaining service helps allow a customer to implement a pay-as-you-grow strategy.

The router helps provide full Fibre Channel fabric services and many standard features including Brocade **WEBTOOLS, Advanced Zoning, Router-to-router Exchanged Based ISL-Trunking, Extended Fabric** and **iSCSI Gateway Service**.

**FC-FC Routing Service** 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 form one storage network connectivity model, known as a “MetaSAN.”

**FCIP Tunneling Service** feature is designed to allow organizations to extend Fibre Channel SANs over longer distances, using IP-based MAN/WAN infrastructure. This service can be integrated with the FC-FC Routing Service. This helps prevent faults on the WAN link from propagating between sites and enable a more secure distance-connectivity solution for disaster recovery applications.

iSCSI Gateway Service is designed to allow the integration of low-cost Ethernet-connected servers into a Fibre Channel SAN by using iSCSI protocol, enabling IP-based servers to leverage Fibre Channel SAN resources. It enhances asset utilization and can help enable new applications such as centralized backup. This level of integration reduces the expense of connecting low-cost servers directly into centrally managed SAN storage.

#### **Integrated management**

**WEBTOOLS** (standard feature) is integrated with the IBM TotalStorage SAN16B-R router to help 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. **WEBTOOLS** is designed to support security and data integrity by limiting (zoning) host system attachment to specific storage systems and devices. **WEBTOOLS** capabilities and functionality can help simplify management of your SAN solution.

#### **Enterprise SAN fabric management**

**Fabric Manager V4** can help simplify management, reduce cost of administration and accelerate deployment and provisioning.

Fabric Manager provides a Java™ technology-based application that can help simplify management of complex, multiple switch fabric. WEBTOOLS and Fabric Manager work together on the same management server which can be attached to any switch in the core-to-edge fabric.

#### **Open fabric management**

IBM SAN b-type 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 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 TotalStorage SAN b-type switches can gain the benefits of being centrally managed with Tivoli SAN management software.

**Extended Fabric Activation (standard feature)** extends SAN fabrics beyond the Fibre Channel standard 10 km. This is designed to enable business continuity solutions to maintain high performance 2 Gbps operation over extended distances up to 100 km. Extended distance longwave SFP transceivers are available for 35 km distances. Extended Fabric Activation helps optimize switch buffering to provide high performance by configuring switch ISLs with additional buffer credits.

#### **Flexible Fibre Channel connectivity**

The TotalStorage SAN16B-R router is designed to provide Fibre Channel connectivity to:

- *IBM @server xSeries and selected Netfinity® servers*
- *Other Intel® processor-based servers running Microsoft® Windows® NT®, Windows 2000, Windows Server™ 2003, Red Hat Enterprise Linux® 3, SUSE LINUX or Novell NetWare*

- *IBM @server pSeries and selected RS/6000® servers*
- *IBM @server iSeries servers and selected AS/400® servers*
- *Selected Sun and HP servers*
- *IBM TotalStorage Enterprise Storage Server systems*
- *IBM TotalStorage DS6000 and DS8000 series*
- *IBM TotalStorage DS4000 series (formerly FAStT Storage Servers)*
- *IBM TotalStorage 3590\* and 3592 Tape Drives and IBM TotalStorage 3494 Tape Library*
- *IBM TotalStorage 3582\*, 3583\* and 3584\* Tape Libraries*
- *IBM TotalStorage NAS Gateway 500*
- *IBM TotalStorage SAN Volume Controller*
- *IBM TotalStorage SAN File System*
- *IBM TotalStorage SAN b-type (Brocade) switches and directors*

For the most current and complete information, refer to [ibm.com/SAN/totalstorage/b-type](http://ibm.com/SAN/totalstorage/b-type).

---

## IBM TotalStorage SAN16B-R multiprotocol router at a glance

---

### Physical characteristics

Height (rack mount)	88 mm/3.5 in (2U)
Width	427 mm/16.8 in
Depth	635 mm/25 in
Weight	18.1 kg/40.0 lbs

### Operating environment

Temperature	10° C to 40° C/50° F to 104° F
Relative humidity	20% to 85%

### Electrical requirements

Power	100–240 VAC, 47–63Hz
-------	----------------------

### Product numbers

2109 Model A16—IBM TotalStorage SAN16B-R multiprotocol router with 16 ports, 8-ports enabled (0 to 7), no transceivers (minimum of eight required), embedded WEBTOOLS management, Advanced Zoning, Extended Fabric capability, iSCSI Gateway Services, dual replaceable power supplies and power cords; rack mount kit. All ports configurable as Gigabit Ethernet or 1 and 2 Gbps Fibre Channel fabric ports.

FC 2110—Tri-rate shortwave SFP transceiver

FC 2120—Tri-rate 10 Km longwave SFP transceiver

FC 2335—Extended distance longwave 35 km SFP transceiver

FC 7901—Ports on Demand, 8-ports, plant activation, 8 to 15

FC 7902—Ports on Demand, 8-ports, field activation, 8 to 15

FC 7903—Fibre Channel Routing Service Activation

FC 7904—FCIP Service Activation

FC 7905— FCIP and FC Routing Services Bundle

### Fiber optic cables:

Multimode and singlemode cables and couplers are available in various lengths

---

**For more information**

Contact your IBM representative or  
IBM Business Partner or visit

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



© Copyright IBM Corporation 2005

IBM Systems and Technology Group  
Route 100  
Somers, NY 10589

Produced in the United States  
March 2005  
All Rights Reserved

IBM, the IBM logo, AS/400, Enterprise Storage Server, @server, iSeries, Netfinity, pSeries, RS/6000, Tivoli, TotalStorage and xSeries are trademarks or registered trademarks of International Business Machines Corporation in the United States, other countries or both.

Java and all Java-based trademarks are trademarks of Sun Microsystems, Inc. in the United States and other countries.

Intel is a trademark of Intel Corporation in the United States, other countries or both.

Linux is a trademark of Linus Torvalds in the United States, other countries, or both.

Microsoft, Windows, Windows NT and Windows Server are trademarks or registered trademarks of Microsoft Corporation in the United States, other countries or both.

No part of this document may be reproduced or transmitted in any form without written permission from IBM Corporation.

Product data has been reviewed for accuracy as of the date of initial publication. Product data is subject to change without notice. This information could include technical inaccuracies or typographical errors. IBM may make improvements and/or changes in the product(s) and/or program(s) at any time without notice. Any statements regarding IBM's future direction and intent are subject to change or withdrawal without notice, and represent goals and objectives only.

References in this document to IBM products, programs, or services does not imply that IBM intends to make such products, programs or services available in all countries in which IBM operates or does business.. Any reference to an IBM Program Product in this document is not intended to state or imply that only that program product may be used. Any functionally equivalent program, that does not infringe IBM's intellectual property rights, may be used instead. It is the user's responsibility to evaluate and verify the operation of any non-IBM product, program or service.

THE INFORMATION PROVIDED IN THIS DOCUMENT IS DISTRIBUTED "AS IS" WITHOUT ANY WARRANTY, EITHER EXPRESS OR IMPLIED. IBM EXPRESSLY DISCLAIMS ANY WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR NON-INFRINGEMENT. IBM shall have no responsibility to update this information. IBM products are warranted according to the terms and conditions of the agreements (e.g.: IBM Customer Agreement, Statement of Limited Warranty, International program License Agreement, etc.) under which they are provided. IBM is not responsible for the performance or interoperability of any non-IBM products discussed herein.

Information concerning non-IBM products was obtained from the suppliers of those products, their published announcements or other publicly available sources. IBM has not tested those products in connection with this publication and cannot confirm the accuracy of performance, compatibility or any other claims related to non-IBM products. Questions on the capabilities of non-IBM products should be addressed to the suppliers of those products.

The provision of the information contained herein is not intended to, and does not, grant any right or license under any IBM patents or copyrights. Inquiries regarding patent or copyright licenses should be made, in writing, to:

IBM Director Licensing  
IBM Corporation  
North Castle Drive  
Armonk, NY 10504-1785  
U.S.A.