



IBM Systems Storage SAN b-type switches feature 8 Gbps Fibre Channel connectivity

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2498-B24

At a glance

The IBM System Storage SAN80B-4, IBM System Storage SAN40B-4, and IBM System Storage SAN24B-4 Express switches offer:

- 8 Gbps industry-standard Fibre Channel (FC) switch capability for systems that support 8 Gbps throughput
- Auto sensing FC ports supporting 1, 2, 4, and 8 Gbps
- Scalable Ports on Demand configuration from 16 to 80 ports in 8- or 16-ports increments to accommodate small, to larger midrange, and to enterprise SAN fabric environments
- High availability design with integrated power supply and fan modules and hot-pluggable components

For ordering, contact:

Your IBM representative or the Americas Call Centers at

800-IBM-CALL Reference: YE001

Overview

The new 8 Gbps SAN switches are designed to provide high-performance switching platforms used to interconnect storage devices, hosts, and servers in storage area networks (SANs).

- The new switches deliver breakthrough performance with 8 Gbps Fibre Channel interfaces.
- The SAN80B-4 is a high-performance 8 Gbps FC switch designed for enterprise environments that require a high-port-count footprint for port aggregation and a simplified management environment that comes from reducing the total number of domains.
- The SAN40B-4 is an enterprise-class 8 Gbps FC switch designed to handle the large-scale SAN requirements of an enterprise and can also be used to address the SAN requirements of a small to medium-sized workgroup.
- The SAN24B-4 Express is a low-cost, high-performance 8 Gbps FC switch designed specifically for the needs of smaller environments, particularly businesses implementing a SAN for the first time. With key ease-of-installation and ease-of-use features, it provides excellent overall value as the foundation of a small SAN and with the ability to grow with the organization's needs.
- The Fibre Channel Routing (FCR) service provides improved scalability and fault isolation with the SAN80B-4 and SAN40B-4 switches.
- The new switches leverage proven reliability and new technology to deliver improved reliability, availability, and serviceability (RAS).

The SAN80B-4, SAN40B-4, and SAN24B-4 Express switches are designed to address key customer requirements while helping to protect investments already made by the deployment of existing SANs, servers, storage hardware, and advanced functions. The switches offer:

- Forward and backward compatibility with System Storage™ SAN switch models, 1, 2, 4, and 8 Gbps auto-sensing capability, as well as Advanced Fabric Services and management tools
- Interoperability between IBM System Storage b-type and m-type SAN switches and directors
- Full Fabric operation and Universal Port operation on all ports (F_Port, E_Port, FL_Port, M-Port, and EX_Port) of selected switches
- Inter Switch Link (ISL) Trunking
- Advanced Zoning
- Intelligent management and monitoring with Web tools, Fabric Watch, and Performance Monitor
- Adaptive Networking Services, which uses network intelligence to anticipate congestion and to dynamically make adjustments in the fabric so that application traffic continues to flow

Key prerequisites

The IBM Systems Storage SAN b-type switch family supports FC connectivity for servers and storage.

The 8 Gbps SAN switches support all features and functions as indicated in this announcement and require Fabric OS v6.1.0, or later.

For a list of supported servers and storage systems, refer to the Hardware requirements section.

Planned availability date

May 23, 2008

Description



2498-B80



2498-B40

The **System Storage SAN80B-4** switch is an 80-port auto-sensing 1, 2, 4, or 8 Gbps FC switch delivering sixth-generation Application-Specific Integrated Circuit (ASIC) technology and architecture for FC SANs. With its high port count and Ports on Demand flexibility scaling from 48 to 64 or 80 ports, it establishes a footprint and grows port capacity as needed. The SAN80B-4 is an ideal solution for fan-out from a director core or as the core switch in a fabric. The SAN80B-4 is the latest enterprise offering of the IBM b-type entry-to-enterprise products, and offers 8 Gbps technology in a single domain with full 1:1 subscription on all 80 ports at 8 Gbps. This switch is designed to support FICON™, FICON Cascading, and FICON Control Unit Port.

The **System Storage SAN40B-4** switch is a 40-port auto-sensing 1, 2, 4, or 8 Gbps FC switch delivering the next-generation b-type single-chip architecture for FC SANs. With high port density and a slim 1U height, the SAN40B-4 enables the creation of very dense fabrics in a relatively small space. With its flexible Ports on Demand capability scaling from 24 to 32 or 40 ports, the SAN40B-4 provides excellent overall value as the foundation of a SAN with the ability to grow with an organization's SAN needs. This switch is designed to support FICON, FICON Cascading, and FICON Control Unit Port.

The **System Storage SAN24B-4 Express** is a 24-port auto-sensing 1, 2, 4, or 8 Gbps FC switch, delivering the next-generation single-chip architecture for FC SANs. The SAN24B-4 combines up to 24 ports of high-performance 8 Gbps technology and Ports on Demand scaling from 8 to 16 or 24. With key ease-of-installation and ease-of-use features, it provides excellent overall value as the foundation of a small SAN with the ability to grow with the organization's SAN needs. It is the latest entry-level offering in the Brocade family of entry-to-enterprise

products. The SAN24B-4 Express FC switch offers dual functionality; it also can be a gateway device that provides a single platform for all SAN connectivity.

Note: Access Gateway mode is only supported in 24-port configurations. Access Gateway mode enables seamless connectivity into heterogeneous SAN environments, enhances scalability, and simplifies manageability.

The SAN80B-4, SAN40B-4, and SAN24B-4 Express switches include the following features:

- 8 Gbps FC interfaces 1, 2, 4, and 8 Gbps auto-sensing FC ports.
- Universal ports self-configure as E, F, M, or FL ports, and EX_Ports. EX_Ports are activated on a per-port basis with the optional Integrated Routing license on the SAN80B-4 and the SAN40B-4 switches.
- Unicast, multicast (255 groups), and broadcast data traffic types are supported.
- ISL Trunking allows up to eight ports (at 1, 2, 4, or 8 Gbps speeds) between a pair of switches to be combined to form a single, logical ISL with a speed of up to 64 Gbps (128 Gbps full duplex) for optimal bandwidth utilization and load balancing.
- Dynamic Path Selection optimizes fabric-wide performance and load balancing by automatically routing data to the most efficient available path in the fabric.
- Extended distance support enables full performance for native FC extension with support of up to 3000 km for native FC.
- Small Form-Factor Pluggable (SFP) optical transceivers support any combination of Shortwave (SW), Longwave (LW), and Extended Longwave (ELW) optical media on a single switch.
- Fabric OS delivers distributed intelligence throughout the network and enables a wide range of value-added applications.
- Optional value-added software offerings.
- Utilization of the EZSwitchSetup wizard, which makes SAN configuration a three-step point-and-click task.
- Extensive diagnostics and system-monitoring capabilities enhance RAS.

Fabric OS v6.1.0 offers the following advanced functions, either with the base or as an optional feature:

- **Advanced Web Tools** enables administration, configuration, and maintenance of fabric switches and SANs.
- **Zoning** segments a fabric into virtual private SANs.
- **Adaptive Networking Services** uses network intelligence to anticipate congestion and to dynamically make adjustments in the fabric so that application traffic continues to flow.
- **Advanced Performance Monitoring** helps identify end-to-end bandwidth usage by host/target pairs and is designed to provide information for capacity planning.
- **Enhanced Group Management (EGM)**. When added to the element management, the EGM license enables additional device-level management functionality for IBM b-type products and also allows large consolidated operations to groups of devices (for example: firmware download, configuration upload, and download).
- **Extended Fabrics** extends SAN fabrics beyond the FC standard 10 km by optimizing the internal switch buffers to maintain performance on ISLs at distances up to 500 km.
- **Fabric Watch** monitors mission-critical switch operations.
- **Full Fabric** is required to enable E_Ports. The switch cannot be connected to another switch until Full Fabric is installed.
- **Integrated Routing** allows any port in a SAN768B, SAN80B-4, and SAN40B-4 to be configured as an EX_Port supporting FCR. This eliminates the need to add a routing blade or use the SAN18B-R for FCR purposes, and also provides double the bandwidth for each FC Router (FCR) connection when connected to another 8 Gbps-capable port.
- **Trunking** enables FC packets to be efficiently distributed across multiple ISLs connections (links) between two SAN b-type fabric switches and directors, while preserving in-order delivery. Both SAN b-type fabric switches must have ISL Trunking activated.

Optional features

The 8 Gbps SAN switches are designed to be easily upgradeable. They provide the flexibility to scale on a "pay-as-you-grow" basis, at a low incremental cost with its Ports on Demand capability of 8 to 16 to 24 ports, or 24 to 32 to 40 ports, or 48 to 64 to 80 ports.

16-Port Activation (#7800): The SAN80B-4 switch ships with the first 48 ports activated in the base product, with two additional increments of 16 ports that can be enabled on demand. Additional port activation is available with this optional feature. This feature enables additional port activation for ports 48 to 63 (first 16-port increment) or ports 64 to 79 (second 16-port activation). Note the first port is designated as port 0 and the last port is designated as 79. Port activation features do not include fiber optic transceivers; however, all activated ports must be populated with SFPs.

8-Port Activation (#7400): The SAN40B-4 switch ships with the first 24 ports activated in the base product, with two additional increments of 8 ports that can be enabled on demand. Additional port activation is available with this optional feature to enable additional ports from 24 to 31 (first 8-port increment) or ports 32 to 39 (second 8-port activation). Note the first port is designated as port 0 and the last port is designated as 39. Port activation features do not include fiber optic transceivers; however, all activated ports must be populated with SFPs.

8-Port Activation (#7200): The SAN24B-4 Express switch ships with the first 8 ports activated in the base product, with two additional increments of 8 ports that can be enabled on demand. Additional port activation is available with this optional feature to enable additional ports from 8 to 15 (first 8-port increment) or ports 16 to 23 (second 8-port activation). Note the first port is designated as port 0 and the last port is designated as 23. Port activation features do not include fiber optic transceivers; however, all activated ports must be populated with SFPs.

B80 Enterprise Package (#7801): The B80 Enterprise Package offers a convenient method to order a set of optional features bundled into one orderable feature number. Feature 7801 consists of one of each Trunking Activation (#7805), Advanced Performance Monitor (#7804), Adaptive Networking (#7806), and quantity of two 16-Port Activations (#7800).

B40 Enterprise Package (#7401): The B40 Enterprise Package offers a convenient method to order a set of optional features bundled into one orderable feature number. Feature 7401 consists of one of each Trunking Activation (#7405), Advanced Performance Monitor (#7404), Adaptive Networking (#7406), and quantity of two 8-Port Activations (#7400).

B24 Enterprise Package (#7201): The B24 Enterprise Package offers a convenient method to order a set of optional features bundled into one orderable feature number. Feature 7201 consists of one of each Fabric Watch (#7202), Trunking Activation (#7205), Advanced Performance Monitor (#7204), Adaptive Networking (#7206), and quantity of two 8-Port Activations (#7200).

Fabric Watch (#7202): Fabric Watch enables real-time proactive awareness of the health, performance, and security of each switch. It automatically alerts network managers to problems and helps avoid costly failures by providing:

- Real-time tracking of numerous fabric and switch elements
- Automatic event notifications when switch and fabric elements exceed thresholds
- Security, availability, and congestion monitoring thresholds and alerts

Extended Fabric (#7803, #7403, and #7203): Extended Fabric Activation extends SAN fabrics beyond the FC standard 10 km by optimizing the internal switch buffers to help maintain performance on ISLs at distances up to 500 km.

Advanced Performance Monitor (#7804, #7404, and #7204): Performance Monitoring Activation provides performance monitoring capability to help identify end-to-end bandwidth usage by host/target pairs and is designed to provide information for capacity planning.

Trunking Activation (#7805, #7405, and #7205): ISL Trunking Activation is designed to enable FC packets to be efficiently distributed across multiple Inter-Switch connections (links) between two SAN b-type fabric switches, while preserving in-order delivery. ISL Trunking is supported between any of the supported 2, 4, or 8 Gbps b-type models. Both SAN b-type fabric switches must have ISL Trunking activated.

All the new 8 Gbps platforms support a trunk group with up to 8 ports, up to 64 Gbps ISL trunks. The trunking groups are based on the user port number, with contiguous 8 ports as one group.

When connecting the 8 Gbps-capable models to legacy 2 or 4 Gbps-capable b-type fabric switch models, ISL Trunking is supported with link speeds operational at lowest speed and FC packets

distributed across ISLs for a combined bandwidth of up to 8 or 64 Gbps.

Adaptive Networking (#7806, #7406, and #7206): Adaptive Networking provides a set of capabilities allowing high-priority connections to obtain the bandwidth necessary for optimum performance, even in congested environments. The Quality of Service (QoS) SID/DID Prioritization and Ingress Rate Limiting features are the first components of this license option and are available on all 8 Gbps platforms.

Integrated Routing (#7807 and #7407): Integrated Routing allows any port in a SAN768B, SAN80B-4, and SAN40B-4 to be configured as an EX_Port supporting FCR. Integrated routing is FCR support on the 8 Gbps ports as a native capability, hence they are referred to as native EX_Ports. This eliminates the need to add a routing blade or use the SAN18B-R for FCR purposes, and also provides double the bandwidth for each FC Router connection when connected to another 8 Gbps-capable port.

FCR capability on native EX_Ports requires the new Integrated Routing license (#7807 or #7407). Previously, FCR capability was tied to the existence of supported hardware and did not require a separate license. The Integrated Routing license only affects native EX_Ports. The SAN18B-R EX_Ports and Routing functionality on FCIP ports (VEX_Ports) behave the same as before, regardless of the presence of the Integrated Routing license. Using both the native EX_Ports and EX_Ports on a routing blade is not supported within a chassis. Only VEX_Ports may be used in the same chassis along with Integrated Routing EX_Ports. (Note that this only applies to the SAN768B since the SAN256B does not support Integrated Routing, even with 8 Gbps blades.)

FICON with CUP Activation (#7809 and #7409): FICON with CUP Activation is designed to provide in-band management of the supported SAN b-type switch, router, and director products by System Automation for z/OS® from IBM System z10, z9 EC, z9 BC, and zSeries® 990, 900, 890, and 800 servers. To enable in-band management on multiple switches and directors, each switch, router, or director must be configured with the appropriate FICON CUP feature. This support is designed to provide a single point of control for managing connectivity in active FICON I/O configurations. System Automation for OS/390® or z/OS can now concurrently manage IBM 9032 ESCON® Directors, as well as supported SAN b-type switch and director products with FICON.

Transceivers: The 8 Gbps SAN switches offer the following SFP optical transceivers:

- 4 Gbps SW (#2401), 4 Km LW (#2441), 10 Km LW (#2411), and 30 Km LW (#2480)
- 8 Gbps SW (#2801)

Selected SFP transceivers are also available in 8-Pack convenience packages:

- 4 Gbps SW (#2408), 4 Km LW (#2448), and 10 Km LW (#2418)
- 8 Gbps SW (#2808)

The 8 Gbps SAN switches will require fiber optic cables for connection to the host systems and storage systems or devices. These cables can be supplied by the customer or ordered with the switch.

Accessibility by people with disabilities

A U.S. Section 508 Voluntary Product Accessibility Template (VPAT) containing details on accessibility compliance can be requested at

http://www.ibm.com/able/product_accessibility/index.html

For hardware offerings:

The following features support use by people with disabilities: Ports and connectors support connection of industry-standard devices.

Business Partner information

If you are a Direct Reseller - System Reseller acquiring products from IBM, you may link directly to Business Partner information for this announcement. A PartnerWorld ID and password are required (use IBM ID).

BP Attachment for Announcement Letter 108-322

Trademarks

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

Publications

The following publications are shipped with the product.

Additional copies of individual publications are available at

<http://www.ibm.com/systems/storage/san>

Title	Order number	Availability date
IBM System Storage(TM) SAN24B-4 Installation, Service, and User's Guide	GA32-0580	05/13/08
IBM System Storage SAN40B-4 Installation, Service, and User's Guide	GA32-0581	05/13/08
IBM System Storage SAN80B-4 Installation, Service, and User's Guide	GA32-0582	05/13/08
IBM System Storage SAN24B-4 Quick Start Guide	GA32-0585	05/13/08
IBM System Storage SAN40B-4 Quick Start Guide	GA32-0586	05/13/08
IBM System Storage SAN80B-4 Quick Start Guide	GA32-0587	05/13/08
IBM System Storage SAN24B-4 Access Gateway Quick Start Guide	GA32-0588	05/13/08
IBM TotalStorage(R) SAN 2498 Statement of Limited Warranty	GA32-0584	05/13/08

Services

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IBM services include business consulting, outsourcing, hosting services, applications, and other technology management.

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For details on available services, contact your IBM representative or visit

<http://www.ibm.com/services/>

For details on available IBM Business Continuity and Recovery Services, contact your IBM representative or visit

<http://www.ibm.com/services/continuity>

For details on education offerings related to specific products, visit

<http://www.ibm.com/services/learning/index.html>

Select your country, and then select the product as the category.

Technical information

Specified operating environment

Physical specifications

2498-B80

Width:	42.88 cm (16.88 in)
Height:	8.6 cm (3.4 in)
Depth:	61.0 cm (24.0 in)
Weight:	15.6 kg (34.4 lb.)

2498-B40

Width:	42.88 cm (16.88 in)
Height:	4.29 cm (1.69 in)
Depth:	61.0 cm (24.0 in)
Weight:	9.34 kg (20.6 lb.)

2498-B24

Width:	42.88 cm (16.88 in)
Height:	4.29 cm (1.69 in)
Depth:	30.6 cm (12.07 in)
Weight:	4.35 kg (9.3 lb.)

For information on technical specifications of IBM SAN b-type products, including operating environment, physical specifications, and recommended installation procedures, refer to

<http://www.ibm.com/systems/storage/san/b-type>

Operating environment:

2498-B24:

Temperature:

Operating: 0° to 40°C (32° to 104°F)

Nonoperating: -25° to 70°C (-13° to 158°F)

Humidity:

Operating: 10% to 85% noncondensing at 40°C (104°F)

Nonoperating: 10% to 90% noncondensing at 70°C (158°F)

Altitude:

Operating: Up to 3,000 m (9,842 ft)

Nonoperating: Up to 12 km (39,370 ft)

Shock:

Operating: 20 g, 6 ms half-sine

Nonoperating: Half sine, 33G nnms, 3/eg Axis

Vibration:

Operating: 0.5 g sine, 0.4 grms random, 5 to 500 Hz

Nonoperating: 2.0 g sine, 1.1 grms random, 5 to 500 Hz

Airflow:

High speed: 9,500 rpm

Nominal: 5,800 rpm

Power:

Maximum output: 75 W

System power consumption: 57 W max, 48 W typical

Nominal input voltage: 85-264 V ac, Universal

Input line frequency: 47-63 Hz

Minimum input voltage: 85 V ac

Maximum input voltage: 264 V ac

Btu rating: 277 Btu/hr

Inrush current: Maximum of 21.5 amps

Battery:

Internal, Lithium Coin Battery

Type: Lithium Carbon Monofluoride

2498-B40

Temperature:

Operating: 0 to 40°C (32 to° 104°F)

Nonoperating: -25° to 70°C (-13° to 158°F)

Humidity:

Operating: 10% to 85% noncondensing at 40°C (104°F)

Nonoperating: 10% to 90% noncondensing at 70°C (158°F)

Altitude:

Operating: Up to 3,000 m (9,842 ft)

Nonoperating: Up to 12 km (39,370 ft)

Shock:

Operating: 20 g, 6 ms half-sine

Nonoperating: Half sine, 33G nnms, 3/eg Axis

Vibration:

Operating: 0.5 g sine, 0.4 grms random, 5 to 500 Hz

Nonoperating: 2.0 g sine, 1.1 grms random, 5 to 500 Hz

Airflow:

High speed: 13,000 rpm: 29 CFM

Low speed: 7,000 rpm: 22 CFM

Power:

Maximum output: 125 W

System power consumption: 91 W max, 84 W typical

Nominal input voltage: 90-264 V ac, Universal

Input line frequency: 47-63 Hz

Minimum input voltage: 85 V ac

Maximum input voltage: 264 V ac

Btu rating: 406 Btu/hr

Inrush current: Maximum of 355 amps

Battery:

Internal, Lithium Coin Battery

Type: Lithium Carbon Monofluoride

2498-B80:

Temperature:

Operating: 0 to 40°C (32 to 104°F)

Nonoperating: -25° to 70°C (-13° to 158°F)

Humidity:

Operating: 10% to 85% noncondensing at 40°C (104°F)

Nonoperating: 10% to 90% noncondensing at 70°C (158°F)

Altitude:

Operating: Up to 3,000 m (9,842 ft)

Nonoperating: Up to 12 km (39,370 ft)

Shock:

Operating: 20 g, 6 ms half-sine

Nonoperating: Half sine, 33G nnms, 3/eg Axis

Vibration:

Operating: 0.5 g sine, 0.4 grms random, 5 to 500 Hz

Nonoperating: 2.0 g sine, 1.1 grms random, 5 to 500 Hz

Airflow:

High speed: 9,000 rpm: 60 CFM

Low speed: 6,000 rpm: 44 CFM

Power:

System power consumption: 91 W max, 84 W typical

Nominal input voltage: 90-264 V ac, Universal

Input line frequency: 47-63 Hz

Minimum input voltage: 85 V ac

Maximum input voltage: 264 V ac

Btu rating: 1313 Btu/hr

Inrush current: Maximum of 15 amps for 10-150 ms

Battery:

Internal, Lithium Coin Battery

Type: Lithium Carbon Monofluoride

EMC Conformance:

ACMA C-Tick (Australia and New Zealand)

Product Safety/Country Testing/Certification:

CSA NRTL Certification to UL 60950-1: 2003, First Edition

CSA Certification to CSA 60950-1-03 (Canadian Standards Association)

CB Certification to IEC 60950-1(2001) (including all national deviations)

Nemko Certification to EN60950-1:2001
German TUV GS Certificate to EN60950-1+ A11
GOST Certification (Russia)
TUV Argentina Certification to IEC60950-1(2001)
Low Voltage Directive (2006/95/EC) for CE Marking in European Union

Hardware requirements

Supported servers and storage systems: The System Storage SAN80B-4, SAN40B-4, and SAN24B-4 are designed to support FC connectivity for the following:

Servers

- System z10, z9 EC, z9 BC, and zSeries® 990, 900, 890, and 800
- Power Systems
- System p™ and selected RS/6000® servers
- System i™ and selected AS/400® servers
- System x™ and selected Netfinity® servers
- Other Intel®-based servers with Linux™, Microsoft® Windows® 2000, and Windows 2003
- Selected Sun and HP servers

Storage software

- TotalStorage SAN Volume Controller (SVC)

Storage systems

- System Storage DS8000™
- System Storage DS6000™
- System Storage DS4000™
- TotalStorage Enterprise Storage Server™
- TotalStorage FASiT Family of Storage Servers
- System Storage n Series NAS Filers and Gateways
- IBM TotalStorage 3580, 3588, 3590, and 3592 Tape Drives
- TotalStorage 3494, 3582, 3583, and 3584 Tape Libraries
- TotalStorage 3581 Tape Autoloader
- TotalStorage 3584 High Availability Frame Model HA1
- Other selected storage systems

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

<http://www.ibm.com/systems/storage/san/b-type>

Software requirements: Specific details on supported operating system releases are available at

<http://www.ibm.com/systems/storage/san/b-type>

Planning information

Customer responsibilities: Planning information, including customer responsibilities, physical

planning, and installability is available in the specific product planning manuals at

<http://www.ibm.com/systems/storage/san/b-type>

You are responsible for downloading or obtaining from IBM, and installing designated machine code (microcode, basic input/output system code (called "BIOS"), utility programs, device drivers, and diagnostics delivered with an IBM machine) and other software updates in a timely manner from an IBM Internet Web site or from other electronic media, and following the instructions that IBM provides. You may request IBM to install machine code changes; however, you may be charged for that service.

Cable orders:

Fiber optic cable: A fiber optic cable is required for attaching each active port to a host system adapter, or other storage area FC component. The cable can be customer supplied or ordered with the 2498-B80, 2498-B40, or 2498-B24 in the lengths available. The attaching fiber cable must be 50.0/125 micrometers for distances up to 300 meters at 2 Gbps speed, 150 meters at 4 Gbps, or 50 meters at 8 Gbps. The attaching fiber cable must be 62.5/125 micrometers for distances up to 175 meters at 2 Gbps speed, or 70 meters at 4 Gbps, or 21 meters at 8 Gbps. Longwave SFPs require 9-Micron singlemode fiber optic cables.

The connection is an LC connector type.

In many situations, the required lengths and installation of fiber optic cables will be unique to each customer's configuration and facility specifications. IBM Network Integration and Deployment Services, offered by IBM Global Services, can provide assistance for these unique cabling and installation requirements.

Installability: Hardware installation time for the SAN80B-4, SAN40B-4, and SAN24B-4 switches is estimated at less than one hour.

Security, auditability, and control

The customer is responsible for evaluation, selection, and implementation of security features, administrative procedures, and appropriate controls in application systems and communications facilities.

Terms and conditions

Volume orders: Contact your IBM representative.

IBM credit corporation financing: Yes

Warranty period: One year

Warranty service: If required, IBM provides repair or exchange service depending on the types of warranty service specified for the machine. IBM will attempt to resolve your problem over the telephone, or electronically via an IBM Web site. You must follow the problem determination and resolution procedures that IBM specifies. Scheduling of service will depend upon the time of your call and is subject to parts availability. If applicable to your product, parts considered customer replaceable units (CRUs) will be provided as part of the machine's standard warranty service.

Service levels are response-time objectives and are not guaranteed. The specified level of warranty service may not be available in all worldwide locations. Additional charges may apply outside IBM's normal service area. Contact your local IBM representative or your reseller for country- and location-specific information.

CRU service: IBM provides replacement CRUs to you for you to install. CRU information and replacement instructions are shipped with your machine and are available from IBM upon your request. CRUs are designated as being either a Tier 1 or a Tier 2 CRU.

Tier 1 CRU: Installation of Tier 1 CRUs is your responsibility. If IBM installs a Tier 1 CRU at your request, you will be charged for the installation.

Tier 2 CRU: You may install a Tier 2 CRU yourself or request IBM to install it, at no additional charge.

Based upon availability, CRUs will be shipped for next business day (NBD) delivery. IBM

specifies, in the materials shipped with a replacement CRU, whether a defective CRU must be returned to IBM. When return is required, return instructions and a container are shipped with the replacement CRU, you may be charged for the replacement CRU if IBM does not receive the defective CRU within 15 days of your receipt of the replacement.

The following parts have been designated as Tier 1 CRUs:

- Fiber optic cables
- SFPs
- Service kit
- Slide mounting kit
- PDU cord, jumper, 2.8 m
- Power supply/fan assembly (B40)
- Power supply (B80)
- Fan (B80)

On-site service: IBM will repair the failing machine at your location and verify its operation. You must provide a suitable working area to allow disassembly and reassembly of the IBM machine. The area must be clean, well-lit, and suitable for the purpose.

Service level is 9 hours per day, Monday through Friday, excluding holidays, NBD response. Calls must be received by 5:00 p.m. local time in order to qualify for next business day response.

Non-IBM parts service

Warranty service: IBM is now shipping machines with selected non-IBM parts that contain an IBM field replaceable unit (FRU) part number label. These parts are to be serviced during the IBM machine warranty period. IBM is covering the service on these selected non-IBM parts as an accommodation to their customers, and normal warranty service procedures for the IBM machine apply.

Warranty service upgrades: During the warranty period, warranty service upgrades provide an enhanced level of on-site service for an additional charge. Service levels are response-time objectives and are not guaranteed. See the Warranty service section for additional details.

IBM will attempt to resolve your problem over the telephone or electronically by access to an IBM Web site. You must follow the problem determination and resolution procedures that IBM specifies. Scheduling of service will depend upon the time of your call and is subject to parts availability.

On-site service: IBM will repair the failing machine at your location and verify its operation. You must provide a suitable working area to allow disassembly and reassembly of the IBM machine. The area must be clean, well-lit, and suitable for the purpose. The following on-site response-time objectives are available as warranty service upgrades for your machine. Available offerings are:

- 24 hours per day, 7 days a week, Same-Day response
- 24 hours per day, 7 days a week, 4-hour average response
- 24 hours per day, 7 days a week, 2-hour average response

CRUs may be provided as part of the machine's standard warranty CRU service except that you may install a CRU yourself or request IBM installation, at no additional charge, under one of the On-site Service levels specified above. For additional information on the CRU Service, see the warranty information.

Maintenance services options

If required, IBM provides repair or exchange service depending on the types of maintenance service specified for the machine. IBM will attempt to resolve your problem over the telephone or electronically, via an IBM Web site. You must follow the problem determination and resolution procedures that IBM specifies. Scheduling of service will depend upon the time of your call and is subject to parts availability. Service levels are response-time objectives and are not

guaranteed. The specified level of maintenance service may not be available in all worldwide locations. Additional charges may apply outside IBM's normal service area. Contact your local IBM representative or your reseller for country- and location-specific information. The following service selections are available as maintenance options for your machine type.

On-site service: IBM will repair the failing machine at your location and verify its operation. You must provide a suitable working area to allow disassembly and reassembly of the IBM machine. The area must be clean, well-lit, and suitable for the purpose.

Service levels are:

- 9 hours per day, Monday through Friday, excluding holidays, NBD response
- 24 hours per day, 7 days a week, Same Day response
- 24 hours per day, 7 days a week, 4 hour average response
- 24 hours per day, 7 days a week, 2 hour average response

Non-IBM parts service

Under certain conditions, IBM provides services for selected non-IBM parts at no additional charge for machines that are covered under warranty service upgrades or maintenance services.

This service includes hardware problem determination (PD) on the non-IBM parts (for example, adapter cards, PCMCIA cards, disk drives, and memory) installed within IBM machines and provides the labor to replace the failing parts at no additional charge.

If IBM has a Technical Service Agreement with the manufacturer of the failing part, or if the failing part is an accommodations part (a part with an IBM FRU label), IBM may also source and replace the failing part at no additional charge. For all other non-IBM parts, customers are responsible for sourcing the parts. Installation labor is provided at no additional charge, if the machine is covered under a warranty service upgrade or a maintenance service.

Usage plan machine: No

IBM hourly service rate classification: Two

When a type of service involves the exchange of a machine part, the replacement may not be new, but will be in good working order.

Field-installable features: Yes

Model conversions: No

Machine installation: Customer setup. Customers are responsible for installation according to the instructions IBM provides with the machine.

Graduated program license charges apply: No

Licensed machine code: The IBM System Storage SAN b-type (Brocade) family of products is licensed for use by a customer on the IBM machine for which it was provided by Brocade under the terms and conditions of the Brocade End User License Agreement, to enable a specific machine to function in accordance with its specifications, and only for the capacity authorized by IBM and acquired by the customer. You can obtain the agreement by contacting your IBM representative.

IBM may release changes to the licensed machine code. IBM plans to make the licensed machine code changes available for download from IBM technical support at

http://www.ibm.com/servers/storage/san/b_type/library.html

If the machine does not function as warranted and your problem can be resolved through your application of downloadable licensed machine code, you are responsible for downloading and installing these designated licensed machine code changes as IBM specifies. If you would prefer, you may request IBM to install the downloadable licensed machine code changes; however, you may be charged for that service.

Educational allowance: A reduced charge is available to qualified education customers. The educational allowance may not be added to any other discount or allowance.

Prices

Description	Machine Type	Feature Model number	Purchase price(1)	Field install only	Plant install only
IBM System Storage 8 Gbps switch:	2498				
SAN80B-4	2498	B80	\$74,790	N	Y
SAN40B-4	2498	B40	25,310	N	Y
SAN24B-4 Express	2498	B24	5,400	N	Y
Balanced Warehouse		0710	N/C	N	Y
SFP 4 Gbps SW		2401	120	N	N
SFP 4 Gbps SW 8-Pack		2408	940	N	N
SFP 4 Gbps 10 km LW		2411	2,170	N	N
SFP 4 Gbps 10 km LW 8-Pack		2418	17,380	N	N
SFP 4 Gbps 4 km LW		2441	1,180	N	N
SFP 4 Gbps 4 km LW 8-Pack		2448	4,720	N	N
SFP 4 Gbps 30 km ELW		2480	4,740	N	N
SFP 8 Gbps SW		2801	460	N	N
SFP 8 Gbps SW 8-Pack		2808	3,670	N	N
LC/LC 5 m 50U		5605	136	N	N
LC/LC 25 m 50U		5625	208	N	N
LC/LC 31 m 9U		5721	100	N	N
8-Port Activation		7200	3,470	N	N
B24 Enterprise Package		7201	11,610	N	N
Fabric Watch		7202	2,400	N	N
Extended Fabric		7203	5,400	N	N
Advanced Performance Monitor		7204	2,250	N	N
Trunking Activation		7205	3,450	N	N
Adaptive Networking		7206	3,120	N	N
8-Port Activation		7400	8,520	N	N
B40 Enterprise Package		7401	10,990	N	N
Extended Fabric		7403	6,400	N	N
Advanced Performance Monitor		7404	2,400	N	N
Trunking Activation		7405	4,800	N	N
Adaptive Networking		7406	4,720	N	N
Integrated Routing		7407	18,880	N	N
FICON(TM) w/CUP Activation		7409	3,040	N	N
16-Port Activation		7800	21,100	N	N
B80 Enterprise Package		7801	17,010	N	N
Extended Fabric		7803	7,480	N	N
Advanced Performance Monitor		7804	4,230	N	N
Trunking Activation		7805	7,480	N	N
Adaptive Networking		7806	6,860	N	N
Integrated Routing		7807	27,630	N	N
FICON w/CUP Activation		7809	6,180	N	N
Desktop Install Power Cord		9205	N/C	N	Y
Linecord, US, CAN,		9800	N/C	N	Y
Linecord, France		9820	N/C	N	Y
Linecord, Denmark		9821	N/C	N	Y
Linecord, UK		9825	N/C	N	Y
Linecord, Israel		9827	N/C	N	Y
Linecord, Switzerland		9828	N/C	N	Y
Linecord, South Africa		9829	N/C	N	Y
Linecord, Italy		9830	N/C	N	Y
Linecord, Australia, NZ		9831	N/C	N	Y
Linecord, Uruguay		9834	N/C	N	Y
Linecord, China		9840	N/C	N	Y
Linecord, US -- Chicago		9986	N/C	N	Y

NC = No charge, plant install only feature

N = No

Y = Yes

* Purchase price reflects the purchase price for a single unit acquired from IBM and is subject to change without notice. This price shall not limit, in any way, IBM resellers' ability to set their own price.

Alternative service

ICA Warranty service upgrades

	IOR
	24 x 7
Model	same day
B80	\$3,618
B40	466
B24	194

Annual minimum maintenance charges

Maintenance charges

	IOR	IOR
	24 x 7	9 x 5
Model	same day	NBD
B80	\$12,665	\$ 9,047
B40	1,630	1,164
B24	679	485

For ServiceElect (ESA) maintenance service charges, contact IBM Global Services at 888-IBM-4343 (426-4343).

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