



IBM System Storage SAN32B-E4 offers fabric-based encryption for data-at-rest

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At a glance

To meet the demands of compliance with regulatory mandates, industry standards of data confidentiality, and valuable digital assets protection, the SAN32B-E4 switch is designed to deliver:

- A thirty-two port, auto-sensing 8 Gbps Fibre Channel switch with cryptography (encryption/decryption) and data compression capabilities
- Support for Tivoli® Key Lifecycle Manager for both disk and tape encryption applications in a centralized security platform for SAN environments
- A network-based solution that secures data-at-rest for heterogeneous tape drives, disk array Logical Unit Numbers (LUNs), and virtual tape libraries
- Seamless integration, forward and backward compatibility with the IBM® b-type and m-type fabrics, to help organizations protect their technology investments

Overview

IBM System Storage® SAN32B-E4 is designed to deliver fabric-based encryption services, providing up to 96 Gbps of encryption processing for disk and 48 Gbps of compression and encryption processing for tape.

Key advantages of the SAN32B-E4 switch include:

- Ability to encrypt data at wire speed
- Central management of storage and fabric-based security resources
- Multi-vendor storage system and fabric support
- Transparent, online encryption of cleartext LUNs and rekeying of encrypted LUNs without disruption
- Data compression and integrity authentication for tape backup
- Simplified, non-disruptive installation and configuration

The SAN32B-E4 switch is designed for use in the following SAN environments:

- New data center deployments with large-scale encryption
- Plug-in storage security services for existing SAN fabrics
- Heterogeneous disk and tape storage environments with out device-based encryption capability
- Standalone switches with encryption and compression
- Single and dual SAN fabrics

- Secure fabric-based environments that integrate with Tivoli Key Lifecycle Manager management system
- Expanding encryption environments that require protection for current data security and key management investments

The SAN32B-E4 switch is ideal for applications such as:

- Highly sensitive IT applications with secure data-at-rest requirements
- Secure data backups for offsite disk and tape storage, and long-term archiving
- Support for heterogeneous disk and tape storage environments from a centralized point of management
- Decommissioning of disk arrays that require legal validation of the logical destruction and data shredding of devices (the b-type SAN32B-E4 encryption switch helps secure decommissioning of disk-based storage devices by encrypting an entire LUN and destroying the data encryption key)
- Secure replication of virtual tape library (VTL) backups to remote facilities

Key prerequisites

The IBM System Storage SAN b-type switch family supports Fibre Channel connectivity for servers and storage.

The SAN32B-E4 requires:

- Fabric Operating System V6.4.1, or later.
- Tivoli Key Lifecycle Manager v2.0, or later.

For a list of supported servers and storage systems, refer to the [Hardware requirements](#) section.

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

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

Planned availability date

November 19, 2010

Availability of programs with an encryption algorithm in France is subject to French government approval.

Description

Most sensitive corporate data is stored in the data center, and the vast majority of data from critical applications resides in a SAN, enabling organizations to leverage the existing intelligence layer in the storage fabric. This layer provides a centralized framework in which to deploy, manage, and scale fabric-based data security solutions.

IBM System Storage SAN32B-E4 (2498-E32) switch is designed to offer encryption and compression in heterogeneous enterprise data centers. The 2498-E32 encryption switch scales non-disruptively, providing from 48 to 96 Gbps of encryption processing power to meet the needs of the most demanding environments with flexible, on-demand performance. It also provides compression services at speeds up to 48 Gbps for tape storage systems.

Based on industry standards, IBM b-type encryption for data-at-rest provides centralized, scalable encryption and compression services that can easily integrate

into existing Brocade Fabric OS (FOS) and Brocade M-Enterprise OS (M-EOS) environments.

The b-type fabric-based approach to data encryption scales to meet performance requirements, provides a centralized point of management for storage security and key management, and supports heterogeneous storage environments. Deployment is simple and non-disruptive so that organizations can encrypt data from any switch port without reconfiguring the fabric.

In addition, organizations can implement provisioning without shutting down applications or changing the LUN mapping and LUN masking configurations on the target storage arrays. The SAN32B-E4 switch is managed and configured using the IBM System Storage Data Center Fabric Manager (DCFM) and Command Line Interface (CLI) management tools, and is easily integrated into existing network infrastructures.

The System Storage SAN32B-E4 switch is a thirty-two port, 8 Gbps FC switch delivering sixth-generation Application Specific Integrated Circuit (ASIC) technology and architecture for FC SANs. SAN32B-E4 offers:

- Forward and backward compatibility with IBM System Storage SAN switch models with 1 Gbps, 2 Gbps, 4 Gbps, and 8 Gbps auto-sensing capability
- Full Fabric operation and Universal Port operation on all ports (F_Port, E_Port, FL_Port, M-Port, and EX_Port) of selected switches
- Full-fabric architecture of up to 239 switches
- Two redundant 1000Base Ethernet ports for clustering and I/O synchronization during rekeying operation
- Class 2 (unencrypted traffic), Class 3 (encrypted and unencrypted), and Class F (inter-switch frames)
- IEEE 1619 standard-based mode and DataFort-compatible mode (disk and tape)
- Online or offline conversion of data from cleartext to ciphertext; manual or automated rekeying sessions
- Up to 256 target devices, 1024 host ports per encryption engine
- Maximum 96 Gbps hardware processing for disk and 48 Gbps for tape with 2:1 compression
- Inter Switch Link (ISL) Trunking
- Advanced Zoning
- Extended Fabric extending 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
- Intelligent management and monitoring with Web tools, Fabric Watch, and Performance Monitor
- Adaptive Networking Services using network intelligence to anticipate congestion and dynamically make adjustments in the fabric so that application traffic continues to flow
- Unicast, multicast (255 groups), and broadcast data traffic types are supported
- ISL Trunking allowing up to eight ports (at 1 Gbps, 2 Gbps, 4 Gbps, 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 optimizing fabric-wide performance and load balancing by automatically routing data to the most efficient available path in the fabric
- Extended distance support that enables full performance for native FC extension with support of up to 3000 km for native FC
- Small Form-Factor Pluggable (SFP) optical transceivers that support any combination of Shortwave (SW), Longwave (LW), and Extended Longwave (ELW) optical media on a single switch
- Fabric OS (FOS) delivering distributed intelligence throughout the network and enables a wide range of value-added applications
- Interoperability between IBM System Storage b-type and m-type SAN switches and directors

- Optional value-added software offerings
- Utilization of the EZSwitchSetup wizard makes SAN configuration a three-step point-and-click task
- Extensive diagnostics and system-monitoring capabilities to enhance reliability, availability, and serviceability

Transceivers

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

- 8 Gbps SW (#2801)
- 8 Gbps LW 10 Km (#2821)
- 8 Gbps ELW 25 Km (#2881)

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

- 8 Gbps SW (#2808)
- 8 Gbps LW 10 Km (#2828)

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

Optional features

SAN32B-E4 switch is designed to offer selected advanced capabilities as optional features:

2498-E32 Firmware upgrade renewal, one year (#7718): The initial purchase of an IBM System Storage SAN32B-E4 switch includes one year of firmware upgrade entitlement. This feature provides one additional year of renewal for upgrades included in future releases of the FOS firmware. Access new features and functions will not be allowed without the purchase of this feature.

2498-E32 Firmware upgrade renewal, two years (#7719): The initial purchase of an IBM System Storage SAN32B-E4 switch includes one year of firmware upgrade entitlement. This feature provides two additional years of renewal for upgrades included in future releases of the FOS firmware. Access new features and functions will not be allowed without the purchase of this feature.

Advanced Performance Monitor (#7804): 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): 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. Both SAN b-type fabric switches must have ISL Trunking activated. 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 Gbps or 64 Gbps.

Adaptive Networking (#7806): Represents a set of features providing tools and capabilities, such as Quality of Service (QoS) and flow control, incorporating network policies to ensure high-priority connections obtain the bandwidth necessary for optimum performance, even in congested environments.

Integrated Routing (#7807): Integrated Routing allows any port in a SAN32B-E4 to be configured as an EX_port supporting Fibre Channel Routing (FCR), requiring the Integrated Routing license (#7807). 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 use a routing blade or 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.

E32 Enterprise Package (#7811): Offers a convenient method to order a set of optional features bundled into one orderable feature number. Feature #7811 consists of one of each Advanced Performance Monitor (#7804), Trunking Activation (#7805), and Adaptive Networking (#7806).

Encryption 96 Gb Disk Performance Upgrade Activation (#7815): This feature provides one Encryption 96 Gb Disk Performance Upgrade Activation.

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

Product number

Description	Machine type	Model	Feature number
IBM System Storage SAN32B-E4	2498	E32	
SFP 8 Gbps SW			2801
SFP 8 Gbps SW 8-Pack			2808
SFP 8 Gbps 10 Km LW			2821
SFP 8 Gbps 10 Km LW 8-pack			2828
SFP 8 Gbps 25 km ELW			2881
LC/LC 5 m 50U			5605
LC/LC 25 m 50U			5625
LC/LC 31 m 9U			5721
OM3 Cable LC/LC 10 m			5810
2498-E32 Firmware Upgr, 1 yr			7718
2498-E32 Firmware Upgr, 2 yr			7719
E32 Enterprise Package			7811
Advanced Performance Monitor			7804
Trunking Activation			7805
Adaptive Networking			7806
Integrated Routing			7807
Encryption 96 Gb Disk Performance Upgr Activation			7815
Desktop Install Power Cord			9205
Line cord, US, Canada			9800
Line cord, France			9820
Line cord, Denmark			9821
Line cord, UK			9825
Line cord, Israel			9827
Line cord, Switzerland			9828
Line cord, South Africa			9829
Line cord, Italy			9830
Line cord, Australia, NZ			9831
Line cord, Uruguay			9834
Line cord, China			9840

Publications

The following publication is shipped as a hardcopy with the product.

Additional copies will be available on November 9, 2010.

Title	Order number
IBM System Storage SAN32B-E4 Installation, Service, and User Guide	GA32-0798

You can use the following options to order or download additional copies:

- To order additional selected hardcopy publications for a fee or download free PDF format publications, visit the IBM Publications Center Web site
<http://www.ibm.com/shop/publications/order>
- To directly download publications in PDF format, visit the IBM product support Web site
<http://www.ibm.com/storage/support>
- Contact your IBM representative

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Publications are shipped with the product and have been revised to reflect this announcement. To directly download translated publications in PDF format, visit the IBM Publications Center at

<http://www.ibm.com/shop/publications/order>

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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-E32

width:	42.9	cm (16.88	in)	
Height:	8.7	cm (3.4	in)	
Depth:	64.8	cm (25.5	in)	
weight:	22.4	kg (49.4	lb)	with two power supplies and no SFPs installed

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

- Temperature:
 - Operating: 0 to 40° C (32 to 104° F)
 - Nonoperating: -25 to 70° C (-13 to 158° F)
- Humidity:
 - Operating: 10% to 85% RH noncondensing, at 40° C (104° F), with maximum gradient of 10% per hour
 - Nonoperating: 10% to 90% RH noncondensing, at 70° C (158° F)
- Altitude:
 - Operating: Up to 3,000 m (9,842 ft) above sea level
 - Nonoperating: Up to 12 km (39,370 ft) above sea level
- Shock:
 - Operating: 20 G, 6 ms, half-sine wave
 - Nonoperating: 33 G, 11 ms, half-sine, 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:
 - Maximum: 129.1 cubic meters per hour (76 CFM)
 - Nominal: 90.1 cubic meters per hour (53 CFM)
- Heat dissipation:
 - 1183 BTU/hr
- Power:
 - Input voltage: 100-240 V ac, Universal
 - Input line frequency: 47 - 63 Hz
 - System power consumption: 285 Watts nominal

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

IBM System Storage SAN32B-E4 is designed to support FC connectivity for the following.

Servers

- IBM Power Systems™
- IBM System p® servers
- IBM System x® server
- Other Intel-based servers with Linux®, Microsoft® Windows® 2003, and Windows 2008
- Selected Sun and HP servers

Storage software

- Tivoli Key Lifecycle Manager v2.0, or later

Storage systems

- IBM System Storage DS8000™
- IBM XIV® Storage System
- IBM TotalStorage® Enterprise Storage Server®
- IBM TotalStorage 3580, 3588, and 3592 Tape Drives
- IBM TotalStorage 3590 Tape Drives
- IBM TotalStorage 3494, 3582, and 3583 Tape Libraries
- IBM System Storage 3584 Tape Libraries
- IBM TotalStorage 3581 Tape Autoloader
- IBM System Storage 3584 High Availability Frame Model HA1
- IBM System Storage TS2240 and TS2340 tape drives
- IBM System Storage TS2230 tape drives
- 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 the IBM System Storage SAN32B-E4 to the host system adapters or other storage area FC components. The cable can be customer supplied or ordered with the 2498-E32 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 150 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.

Installability

Hardware installation time for the SAN32B-E4 switch 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.

Global Technology Services

Contact your IBM representative for the list of selected services available in your country, either as standard or customized offerings, for the efficient installation, implementation, and integration of this product.

Terms and conditions

Volume orders: Contact your IBM representative.

Warranty period

One year

An IBM part or feature installed during the initial installation of an IBM machine is subject to a full warranty effective on the date of installation of the machine. An IBM part or feature which replaces a previously installed part or feature assumes the remainder of the warranty period for the replaced part or feature. An IBM part or feature added to a machine without replacing a previously installed part or feature is subject to a full warranty effective on its date of installation. Unless specified otherwise, the warranty period, type of warranty service, and service level of a part or feature is the same as the machine it is installed.

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. Certain Machines contain remote support capabilities for direct problem reporting, remote problem determination, and resolution with IBM. You must follow the problem determination and resolution procedures that IBM specifies. Following problem determination, if IBM determines on-site service is required, scheduling of service will depend upon the time of your call, machine technology and redundancy, and availability of parts. 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 and On-site Service

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 (mandatory) or a Tier 2 (optional) CRU.

Tier 1 (mandatory) CRU

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

Tier 2 (optional) 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

CRU and On-site Service

At IBM's discretion, you will receive specified CRU service, or 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 public or national holidays, next business day response. Calls must be received by 15:00 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 services 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

Customer Replaceable Units (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 public or national holidays, next business day response. Calls must be received by 15:00 local time in order to qualify for next business day response.
- 24 hours per day, 7 days a week, 6 hour average, same day response.

Additional reference for Europe

Refer to the following European documents:

- European Announcement Letter ZS03-0150 for IBM Customer Agreement (ICA)
- European Announcement Letter ZS04-0135 for Enterprise Agreement Contract
- European Announcement Letter ZS98-0118 for ServiceSuite™ Contract
- European HW Operations Guide and Service Level Description Table available at <http://www-5.ibm.com/services/europe/maintenance/>

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, 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.

Warranty service upgrades

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.

Maintenance service offerings

This machine is eligible under terms and conditions of IBM ServiceElite, the IBM Enterprise Service Agreement (ESA), or the IBM Maintenance Agreement. Consult your IBM representative for details.

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

IBM Machine Code is licensed for use by a customer on the IBM machine for which it was provided by IBM under the terms and conditions of the IBM License Agreement for Machine Code, to enable the 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 at

http://www.ibm.com/servers/eserver/support/machine_warranties/machine_code.html

IBM may release changes to the Machine Code. IBM plans to make the Machine Code changes available for download from the IBM System Storage technical support Web site

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

You may also obtain updated code by contacting your IBM representative.

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

Europe Business Partner terms and conditions

Category

Receive BP base discount Category A

This product is added to Approval Category G

For more information, Business Partners should refer to the relevant product exhibits on

https://www.developer.ibm.com/partnerworld/mem/pat/pat_sas.html

Pricing

For all local charges, contact your IBM representative.

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Announcement countries

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