

# IBM Storwize V7000 Disk System Delivers Innovative Storage Efficiency Enhancements

## Table of contents

<a href="#">2 Overview</a>	<a href="#">11 Publications</a>
<a href="#">2 Key prerequisites</a>	<a href="#">13 Technical information</a>
<a href="#">3 Planned availability date</a>	<a href="#">18 Terms and conditions</a>
<a href="#">3 Description</a>	<a href="#">21 Pricing</a>
<a href="#">9 Product number</a>	<a href="#">27 Order now</a>
	<a href="#">28 Corrections</a>

## At a glance



The IBM® Storwize V7000 disk system, IBM's newest midrange disk storage offering, utilizes IBM System Storage® SAN Volume Controller technology to deliver high performance, advanced function, high availability, and modular and scalable storage capacity.

- Supports RAID 0, 1, 5, 6, and 10
- Provides SAN-attached 8 Gbps Fibre Channel (FC) host connectivity and 1 GbE iSCSI host connectivity
- Accommodates up to twenty-four 2.5-inch disk drives or twelve 3.5-inch disk drives installed within the IBM Storwize V7000 Control Enclosure with attachment support for up to nine IBM Storwize V7000 Expansion Enclosures (configurations will initially be restricted to four expansion enclosures; this restriction planned to be removed on or before March 31, 2011), providing modular and highly scalable storage solutions that range up to 240 TB physical storage capacity (restricted initially to 120 TB; this restriction is planned to be removed on or before March 31, 2011)
- Supports intermix of SAS drives, Nearline SAS drives, and Solid-state drives within the IBM Storwize V7000 Control Enclosures and the IBM Storwize V7000 Expansion Enclosures
- Includes IBM Easy Tier technology for automatically moving heavily used data extents onto high-performance storage
- Supports attachment of other storage devices via the Fibre Channel interface, just as the SAN Volume Controller
- Supports a complete set of SAN Volume Controller functions including FlashCopy®, RemoteCopy, VDisk Mirroring, thin provisioning, and a revised web-based user interface for both products new with this release

For ordering, contact your IBM representative, an IBM Business Partner, or IBM Americas Call Centers at 800-IBM-CALL (Reference: YE001).

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## Overview

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The IBM Storwize V7000 disk system is IBM's newest midrange disk offering; built on IBM System Storage SAN Volume Controller technology, specifically designed to help address midrange or departmental storage requirements.

IBM Storwize V7000 supports RAID levels 0, 1, 5, 6, and 10, with scalable internal capacity of up to 240 TB physical storage (configurations will initially be restricted to four expansion enclosures, which limits the maximum capacity to 120TB; this restriction planned to be removed on or before March 31, 2011). With its ability to virtualize external disk systems, IBM Storwize V7000 supports much larger consolidated storage configurations. It has SAN-attached 8 Gbps FC host connectivity, as well as 1 GbE iSCSI host connections for flexibility in host connectivity and disk drives for applications that require additional data security.

The IBM Storwize V7000 disk system represents a new generation architecture within the midrange disk family, leveraging SAN Volume Controller software and delivering up to a two-fold IOP performance increase over competitive offerings.

IBM Storwize V7000 Disk System features:

- IBM Storwize V7000 Control Enclosure (2076-112 for 3.5-inch drives, or 2076-124 for 2.5-inch drives)
- IBM Storwize V7000 Expansion Enclosure (2076-212 for 3.5-inch drives, or 2076-224 for 2.5-inch drives)

The IBM Storwize V7000 Control Enclosure comes packaged in a 2U rack-mountable enclosure with dual-active RAID controllers, accommodates up to twenty-four 2.5-inch disk drives or twelve 3.5-inch disk drives installed within the base 2U enclosure, and provides 8 Gbps FC ports for host or external storage connectivity, and 1 GbE for iSCSI host connectivity.

The IBM Storwize V7000 Expansion Enclosure is a high-capacity 24-drive bay (2.5-inch disk drives) or 12-drive bay (3.5-inch disk drives) unit packaged in a 2U rack-mountable enclosure. The IBM Storwize V7000 disk control enclosure can attach up to nine IBM Storwize V7000 disk expansion enclosures (configurations will initially be restricted to four expansion enclosures; this restriction planned to be removed on or before March 31, 2011), providing modular and highly scalable storage solutions that range up to 240 TB physical storage capacity (restricted initially to 120TB; this restriction planned to be removed on or before March 31, 2011). With its ability to virtualize external disk systems, IBM Storwize V7000 supports consolidated storage configurations of 2 PB or more.

Both the IBM Storwize V7000 Control Enclosure and IBM Storwize V7000 Expansion Enclosures can be mixed in any combination of the 24-bay or 12-bay models, and accommodate SAS, Nearline SAS, and SSD disk drives. The intermix of these disk drives is supported and provides added versatility.

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## Key prerequisites

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- Specific options for IBM Storwize V7000 must be ordered during the initial plant order for the IBM Storwize V7000 system. Refer to the [Description](#) section for details.
- Fibre channel switch for FC host connectivity (not necessary for iSCSI host connectivity).
- IBM Power Systems™, IBM BladeCenter®, or IBM System x® servers.
- Selected Sun and HP UNIX® servers and Intel-based servers running Windows® 2008, Windows Server 2003, or Linux®.

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## Planned availability date

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- November 12, 2010: IBM Storwize V7000 new order shipment begins
- December 17, 2010: Argentina, Russia, Taiwan availability
- March 31, 2011: Maximum configuration support of one control enclosure and nine expansion enclosures

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## Description

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### **IBM Storwize V7000 midrange disk system**

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#### ***IBM Storwize V7000 Control Enclosure***

IBM Storwize V7000 (2076-112/124) Control Enclosure is packaged in a 2U rack-mountable enclosure that houses twenty-four 2.5-inch drive bays (model 124) or twelve 3.5-inch drive bays (model 112), redundant dual-active intelligent RAID controllers, and dual power supplies with cooling components. IBM Storwize V7000 has an internal storage capacity of up to 240 TB physical storage using 2 TB Nearline SAS Disk Drive Modules (DDMs) on the 2076-112 model, or up to 14 TB physical storage using 600 GB SAS DDMs on the 2076-124 model.

IBM Storwize V7000 is designed to provide high performance and high availability, and comes with 16 GB cache memory (8 GB per internal RAID controller) as a base feature. There are no cache memory upgrades available at this time for the IBM Storwize V7000

IBM Storwize V7000 Control Enclosure gives you eight 8 Gbps FC host ports and four 1 Gbps iSCSI host ports for connectivity to the SAN-fabric or host servers. Customers can have both FC and iSCSI host connectivity to an IBM Storwize V7000.

The eight 8 Gbps FC host ports (four 8 Gbps FC ports per RAID controller) populated with shortwave 8 Gbps SFP transceivers are included in the base. An option to get longwave 8 Gbps small form-factor pluggable (SFP) transceivers to put in place of the shortwave SFP transceivers included is available by ordering up to eight of the IBM 8 Gbps longwave (LW) SFP feature (feature number 5608) during an initial plant order or as a field (MES) feature order for the IBM Storwize V7000.

IBM Storwize V7000 comes equipped with four 1 Gbps iSCSI host ports (two 1 Gbps iSCSI host ports per RAID controller) with an RJ-45 connector for each port.

IBM Storwize V7000 can accommodate SAS disk drives, Nearline SAS disk drives, and Solid-state drives (SSDs). Intermix of these drive types within the IBM Storwize V7000 control and expansion enclosures is also supported, adding versatility to these models.

The IBM Storwize V7000 Control Enclosure can attach up to nine IBM Storwize V7000 Expansion Enclosures (configurations will initially be restricted to four expansion enclosures; this restriction planned to be removed on or before March 31, 2011), supporting configurations up to 240 TB physical storage capacity (restricted initially to 120 TB; this restriction is planned to be removed on or before March 31, 2011). The IBM Storwize V7000 Control and Expansion Enclosures are available with twelve 3.5-inch disk drive bays or twenty-four 2.5-inch disk drive bays. Any intermix of IBM Storwize V7000 12-bay or 24-bay enclosures is supported.

Each IBM Storwize V7000 Control Enclosure and Expansion Enclosure must be enabled by ordering the appropriate IBM Storwize V7000 enclosure software license. Some advanced features also require a software license. See the [Reference information](#) section for more information about IBM Storwize V7000 software.

### **IBM Storwize V7000 expansion enclosure**

IBM Storwize V7000 Expansion Enclosure (2076-212, -224) is packaged in a 2U rack-mountable enclosure that houses twenty-four 2.5-inch drive bays (model 224) or twelve 3.5-inch drive bays (model 212), dual-switched 6 Gbps ESMS, and dual power supplies with cooling components. IBM Storwize V7000 Expansion Enclosure has a physical storage capacity of up to 24 TB per enclosure using 2 TB Nearline SAS DDMs, and up to 14 TB per enclosure using 600 GB SAS DDMs.

IBM Storwize V7000 Expansion Enclosures connect to the IBM Storwize V7000 Control Enclosure through SAS 6 Gbps expansion ports. The IBM Storwize V7000 Expansion Enclosure has four SAS expansion ports, and depending upon storage configuration, either two or all four expansion ports will be used.

A quantity of two 6 Gbps SAS cables are needed to attach each IBM Storwize V7000 Expansion Enclosure. These are available in lengths of 1 meter, 3 meters, and 6 meters by ordering the desired length of the 6 Gbps external mini SAS feature (feature numbers 5401, 5403, or 5406) during an initial plant order. If another cable length or replacement is needed, these SAS cables are also available as a field (MES) feature order for the IBM Storwize V7000. A quantity of two is required with each order.

There is no additional hardware necessary to make use of the SAS expansion ports.

Up to nine expansion enclosures (configurations will initially be restricted to four expansion enclosures; this restriction planned to be removed on or before March 31, 2011) can be attached to a disk control enclosure.

### **IBM Storwize V7000 disk drives**

The IBM Storwize V7000 supports a specified set of disk drives for each of the 3.5-inch 12-drive bay or 2.5-inch 24-drive bay models. The 12 3.5-inch drives bay IBM Storwize V7000 enclosures (2076-112 and 2076-212) are available with the following disk drives:

- 2 TB 3.5-inch 7.2k Nearline SAS disk (#3302)

The 24 2.5-inch drives bay IBM Storwize V7000 enclosures (2076-124 and 2076-224) are available with the following disk drives:

- 300 GB 2.5-inch 10k SAS disk (#3203)
- 450 GB 2.5-inch 10k SAS disk (#3204)
- 600 GB 2.5-inch 10k SAS disk (#3206)
- 300 GB 2.5-inch E-MLC (enterprise-grade multi-level cell) SSD (#3504)

Customers may order any quantity of any drive but are responsible for providing sufficient drives in the configuration necessary for setting up the RAID configurations and spare disk drives to protect data. Bulk orders of disk drives other than SSDs are available for the IBM Storwize V7000 by using the Bulk Ordering Feature Indicator feature (#5555) as a field (MES) feature order for the IBM Storwize V7000.

See the [Reference information](#) section for more information about IBM Storwize V7000 software.

### **IBM Storwize V7000 advanced copy service functions**

Advanced copy service options and optional advanced disaster recovery functions are available for IBM Storwize V7000 disk system. These advanced functions are available as part of IBM Storwize V7000 software offerings. See the [Reference information](#) section for more information about IBM Storwize V7000 software.

### **IBM Storwize V7000 external storage virtualization functions**

IBM Storwize V7000 is equipped to manage a large number of external storage controllers from IBM and other vendors with the SAN Volume Controller technology it was built upon. External storage virtualization is available as part of IBM Storwize V7000 software offerings. See the [Reference information](#) section for more information about IBM Storwize V7000 software.

### **IBM Storwize V7000 Control Enclosure packaging**

*Requirements for initial plant order options:*

IBM Storwize V7000 Control Enclosure base model includes a 2U rack-mount enclosure containing:

- 24 drive bays (model 124) or 12 drive bays (model 112)
- Dual RAID controllers
- RAID 0, 1, 5, 6, and 10 support
- Dual power supplies
- Redundant cooling
- Rack mounting rails
- IBM Storwize V7000 Software version 6.1 or later (preloaded on controller)
- Hardcopy documentation

Any rack PDU power cords or country-specific wall outlet power cord are obtained via feature number 97xx.

*Requirements for initial plant order options:* IBM Storwize V7000 Control Enclosure initial plant orders must include the minimum number of controller enclosure plant order options or may include up to the maximum supported number of plant order options, shown in the table below.

IBM Storwize v7000 control enclosure required initial plant order options	Minimum number of plant order options	Maximum supported plant order options
Storage Preload	1	1
IBM Storwize V7000 (#0010)		
Cache 8 GB (#6008)	2	2
Battery (#8001)	2	2
AC Power Supply (#9801)	2	2
Power Line Cords (#9716 thru #9737)	1	1

### **IBM Storwize V7000 Expansion Enclosure packaging**

*Requirements for initial plant order options:*

IBM Storwize V7000 Expansion Enclosure includes a 2U rack-mount enclosure, including:

- 24 drive bays (model 224) or 12 drive bays (model 212)
- Dual power supplies and cooling components
- Rack mounting rails
- Hardcopy documentation

Any rack PDU power cords or country-specific wall outlet power cord are obtained via feature number 97xx.

*Requirements for initial plant order options:* IBM Storwize V7000 Expansion Enclosure initial plant orders must include the minimum number of expansion enclosure plant order options or may include up to the maximum supported number of plant order options, shown in the table below.

IBM Storwize V7000 control enclosure required initial plant order options	Minimum number of plant order options	Maximum supported plant order options
AC Power Supply (#9802)	2	2
6 Gb/s external mini SAS cables (#5401, #5403, or #5406)	2	2
Power Line Cords (#9716 thru #9737)	1	1

### **IBM Storwize V7000 V6.1 software capabilities with IBM Storwize V7000 midrange disk system**

For IBM Storwize V7000 V6.1 Software capabilities with IBM Storwize V7000 Midrange Disk systems, refer to Software Announcement [210-356](#), dated October 07, 2010. You may also refer to the support Web page and IBM Storwize V7000 documentation for details

<http://www.ibm.com/storage/support/storwize/v7000>

### **System Storage Productivity Center**

IBM System Storage Productivity Center may be optionally ordered for IBM Storwize V7000 systems and is available via AAS.

### **Code preload**

#### **Storage Preload IBM Storwize V7000 Software (feature number 0010)**

This feature provides the required IBM Storwize V7000 Software that must be preloaded by IBM on IBM Storwize V7000 system. It must be included with each IBM Storwize V7000 enclosure ordered. This feature is plant-installed only.

### **Miscellaneous features**

- **JEMT Indicator (feature number 0021):** This feature is used to indicate an IBM internal order for machine under the Joint Engineering Manufacturing Test (JEMT) program. It is for administrative purposes only.
- **STG Lab Services (feature number 1888):** This feature provides one day of systems and technology custom services and consulting. Based on the sizing, this feature must be ordered in a quantity to the number of days estimated in the sizing. The STG Lab Services team must be contacted by the IBM account team, prior to placing the order for this feature, to allow the work to be completed by these services to be sized. STG Lab Services can be contacted at [http://www-03.ibm.com/systems/services/labservices/platforms/labservices\\_storage.html](http://www-03.ibm.com/systems/services/labservices/platforms/labservices_storage.html)
- **RFID tag - discretionary (feature number 0203):** This optional feature provides one RFID tag which will be stuck to the outside of the product for potential use with the customer-designated tracking systems. While discretion has been used in the placement of the tag on the product, this tag is not necessarily designed to be aesthetically pleasing and should not wantonly be added to the order. The maximum order quantity for this feature is one, and this feature is for initial plant order only.

### **Enclosures**

- **Cache 8 GB (feature number 6008):** Each IBM Storwize V7000 Control Enclosure (2076-112 or 2076-124) contains two sets of cache, each at 8 GB, one inside each canister. A quantity of two of the cache feature is required for each control enclosure. The cache feature must be specified during an initial plant order for every control enclosure in the order.
- **Battery (feature number 8001):** Each IBM Storwize V7000 Control Enclosure (2076-112 or 2076-124) contains two batteries (#8001), one inside each canister. In the event of a power failure, the battery can provide temporary power while the contents of the IBM Storwize V7000 cache and cluster information is written to the internal drive of the IBM Storwize V7000 canister. A quantity of two battery features is required for each IBM Storwize V7000 Control Enclosure. The battery feature must be specified during an initial plant order for every control enclosure in the order.
- **IBM Storwize V7000 Enclosure removal (feature number 3905):** Feature number 3905 indicates that a IBM Storwize V7000 enclosure is being removed completely and that this IBM Storwize V7000 enclosure should inherit the software license of the replaced enclosure. This feature should be specified only for a IBM Storwize V7000 enclosure that is intended to replace a currently installed enclosure, using the Mechanical Replacement or Policy Replacement process to replace a failing unit. The feature must be specified during an initial plant order or field (MES) order for every replacement enclosure in the order.

### **Disk drives**

- **300 GB 2.5-inch 10k RPM SAS HDD (feature number 3203):** This is an optional feature for a single SAS 300 GB 2.5-inch disk drive with 10k RPM speed to be installed inside either a 24-bay IBM Storwize V7000 Control Enclosure (2076-124) or a 24-bay IBM Storwize V7000 Expansion Enclosure (2076-224). This feature may be ordered during an initial plant order or as a field (MES) order in any quantity from 1 up to the 24 total intermixed drives allowed within the enclosure.
- **450 GB 2.5-inch 10k RPM SAS HDD (feature number 3204):** This is an optional feature for a single SAS 450 GB 2.5-inch disk drive with 10k RPM speed to be installed inside either a 24-bay IBM Storwize V7000 Control Enclosure (2076-124), or a 24-bay IBM Storwize V7000 Expansion Enclosure (2076-224). This feature may be ordered during an initial plant order or as a field (MES) order in any quantity from 1 up to the 24 total intermixed drives allowed within the enclosure.
- **600 GB 2.5-inch 10k RPM SAS HDD (feature number 3206):** This is an optional feature for a single SAS 600 GB 2.5-inch disk drive with 10k RPM speed to be installed inside either a 24-bay IBM Storwize V7000 Control Enclosure (2076-124), or a 24-bay IBM Storwize V7000 Expansion Enclosure (2076-224). This feature may be ordered during an initial plant order or as a field (MES) order in any quantity from 1 up to the 24 total intermixed drives allowed within the enclosure.
- **2 TB 3.5-inch 7.2k RPM Nearline SAS HDD (feature number 3302):** This is an optional feature for a single Nearline SAS 2 TB 3.5-inch disk drive with 7.2k RPM speed to be installed inside either a 12-bay IBM Storwize V7000 Control Enclosure (2076-112) or a 12-bay IBM Storwize V7000 Expansion Enclosure (2076-212). This feature may be ordered during an initial plant order or as a field (MES) order in any quantity from 1 up to the 12 total intermixed drives allowed within the enclosure.
- **300 GB 2.5-inch E-MLC SSD (feature number 3504):** This is an optional feature for a single Enterprise-grade multi-level cell 300 GB 2.5-inch Solid State Device (SSD) to be installed inside either a 24-bay IBM Storwize V7000 Control Enclosure (2076-124) or a 24-bay IBM Storwize V7000 Expansion Enclosure (2076-224). This feature number may be ordered during an initial plant order or as a field (MES) order in any quantity from 1 up to the 24 total intermixed drives allowed within the enclosure.
- **Bulk Ordering Feature Ind. (feature number 5555):** This feature designates bulk MES ordering capability for selected features of the IBM Storwize V7000. SSDs are not included with those features available using the Bulk Ordering Feature Indicator feature. Specifying this feature on MES orders will

allow ordering of up to a maximum of 99 features. This bulk ordering feature is available for the following features:

- 300 GB 2.5-inch 10k SAS disk (#3203)
- 450 GB 2.5-inch 10k SAS disk (#3204)
- 600 GB 2.5-inch 10k SAS disk (#3206)
- 2 TB 3.5-inch 7.2k Nearline SAS disk (#3302)
- 1 m Fiber Optic Cable LC-LC (#5301)
- 5 m Fiber Optic Cable LC-LC (#5305)
- 25 m Fiber Opt Cable LC-LC (#5325)
- 1 m 6 Gbps external mini SAS cable (#5401)
- 3 m 6 Gbps external mini SAS cable (#5403)
- 6 m 6 Gbps external mini SAS cable (#5406)
- 8 Gbps LW SFP (#5608)

### ***Cables, interfaces, and power***

- **1 m Fiber Optic Cable LC-LC (feature 5301)** This feature provides one 1-meter fiber optic cable with LC connectors on each end. Unless you are connecting host systems through an Ethernet connection (using iSCSI), a minimum of two Fibre Optic Cables will be necessary to redundantly connect the host systems. Eight of this feature may be ordered with each IBM Storwize V7000 Control Enclosure (2076-112 or 2076-124). This feature is both plant and field ordered but customer-installed.
- **5 m Fiber Optic Cable LC-LC (feature number 5305)** This feature provides one 5-meter fiber optic cable with LC connectors on each end. Unless you are connecting host systems through an Ethernet connection (using iSCSI), a minimum of two Fibre Optic Cables will be necessary to redundantly connect the host systems. Eight of this feature may be ordered with each IBM Storwize V7000 Control Enclosure (2076-112 or 2076-124). This feature is both plant and field ordered but customer-installed.
- **25 m Fiber Opt Cable LC-LC (feature number 5325)** This feature provides one 25-meter fiber optic cable with LC connectors on each end. Unless you are connecting host systems through an Ethernet connection (using iSCSI), a minimum of two Fibre Optic Cables will be necessary to redundantly connect the host systems. Eight of this feature may be ordered with each IBM Storwize V7000 Control Enclosure (2076-112 or 2076-124). This feature is both plant and field ordered but customer-installed.
- **8 Gbps LW SFP (feature number 5608)** The 8 Gbps LW SFP is available to connect across long distances. This feature is both plant and field ordered, but customer installed. SAN must also meet documented requirements before implementing such a configuration. Refer to the support Web page and Storwize V70000 documentation for details  
<http://www.ibm.com/storage/support/storwize/v7000>
- **1 m 6 Gbps external mini SAS cable (feature number 5401)** This feature provides one 1-meter 6 Gbps mini SAS cable. A quantity of two 6-Gbps SAS cables are needed to attach each IBM Storwize V7000 Expansion Enclosure (2076-212 or 2076-224). Two of this feature may be ordered with each expansion enclosure. This feature is both plant and field ordered but customer installed.
- **3 m 6 Gbps external mini SAS cable (feature number 5403)** This feature provides one 3-meter 6 Gbps mini SAS cable. A quantity of two 6-Gbps SAS cables are needed to attach each IBM Storwize V7000 Expansion Enclosure (2076-212 or 2076-224). Two of this feature may be ordered with each expansion enclosure. This feature is both plant and field ordered but customer-installed.
- **6 m 6 Gbps external mini SAS cable (feature number 5406)** This feature provides one 6-meter 6 Gbps mini SAS cable. A quantity of two 6-Gbps SAS cables are needed to attach each IBM Storwize V7000 Expansion Enclosure (2076-212 or 2076-224). Two of this feature may be ordered with each



expansion enclosure. This feature is both plant and field ordered but customer-installed.

- **AC Power Supply (feature number 9801)** Each IBM Storwize V7000 Control Enclosure (2076-112 or 2076-124) contains two AC Power supplies. The preferred configuration is to provide a power source to each from unique power circuits to minimize the impact from power failures. Each of the two power sources are required to be 100 - 240 V, minimum 5 amp, 50/60 Hz, single phase, and to have IEC320-C19 type outlets. The power cable, between the power source and AC Power Supply, is rated at 10 amps. A quantity of two AC Power Supply features is required for each IBM Storwize V7000 Control Enclosure. The AC Power Supply feature must be specified during an initial plant order for every control enclosure in the order.
- **AC Power Supply (feature number 9802)** Each IBM Storwize V7000 Expansion Enclosure (2076-212 or 2076-224) contains two AC Power supplies. The preferred configuration is to provide a power source to each from unique power circuits to minimize the impact from power failures. Each of the two power sources are required to be 100 - 240 V, minimum 5 amp, 50/60 Hz, single phase, and to have IEC320-C19 type outlets. The power cable, between the power source and AC Power Supply, is rated at 10 amps. A quantity of two AC Power Supply features is required for each IBM Storwize V7000 control enclosure. The AC Power Supply feature must be specified during an initial plant order for every IBM Storwize V7000 control enclosure in the order.

### 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](http://www.ibm.com/able/product_accessibility/index.html)

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### Reference information

Refer to Software Announcements [210-356](#), dated October 07, 2010, and [210-350](#), dated October 07, 2010, for more information.

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### Product number

Description	Machine type	Model	Feature
Required (default) features:			
IBM Storwize V7000 Controller LFF 12-drive enclosure	2076	112	
IBM Storwize V7000 Controller SFF 24-drive enclosure (SSDs)	2076	124	
Storage Preload IBM Storwize V7000 SW	2076	112,124	0010
Cache 8 GB	2076	112,124	6008
Battery	2076	112,124	8001
AC Power Supply	2076	112,124	9801
Other (optional) features:			
JEMT Indicator	2076	112,124	0021
STG Lab Services	2076	112,124	1888
300GB 2.5-inch 10k HDD	2076	124	3203
450GB 2.5-inch 10k HDD	2076	124	3204
600GB 2.5-inch 10k HDD	2076	124	3206
2TB 3.5-inch 7.2k HDD	2076	112	3302
300GB 2.5-inch SSD (E-MLC)	2076	124	3504
Bulk Ordering Feature Ind.	2076	112,124	5555
RFID tag - discretionary	2076	112,124	0203
RFID tag - discretionary	2076	212,224	0203
IBM Storwize V7000 engine removal	2076	112,124	3905
1 m Fiber optic Cable LC-LC	2076	112,124	5301

5 m Fiber Optic Cable LC-LC	2076	112,124	5305
25 m Fiber Optic Cable LC-LC	2076	112,124	5325
IBM 8 Gbps LW SFP	2076	112,124	5608
Power (line) cords (one selection required):			
Power Cord - EMEA	2076	112,124	9716
Power Cord - Austr/NZ	2076	112,124	9717
Power Cord - Eur.,Africa	2076	112,124	9718
Power Cord - Eur.,Denmark	2076	112,124	9719
Power Cord - Pakist SAfrica	2076	112,124	9720
Power Cord - Switz, Liecht	2076	112,124	9721
Power Cord - Chile,It,Eth	2076	112,124	9722
Power Cord - Israel	2076	112,124	9723
Power Cord - Argentina	2076	112,124	9725
Power Cord - China	2076	112,124	9726
Power Cord - PDU connection	2076	112,124	9730
Power Cord - Group 1 (incl. USA)	2076	112,124	9731
Power Cord - Taiwan	2076	112,124	9732
Power Cord - Brazil	2076	112,124	9733
Power Cord - India	2076	112,124	9734
Power Cord - Japan	2076	112,124	9735
Power Cord - Korea	2076	112,124	9736
Power Cord - US, Chicago	2076	112,124	9737
Required (default) features:			
IBM Storwize V7000 Expansion LFF 12-drive enclosure	2076	212	
IBM Storwize V7000 Expansion SFF 24-drive enclosure (SSDs)	2076	224	
AC Power Supply	2076	212,224	9802
Other (optional) features:			
JEMT Indicator	2076	212,224	0021
STG Lab Services	2076	212,224	1888
300GB 2.5-inch 10k HDD	2076	224	3203
450GB 2.5-inch 10k HDD	2076	224	3204
600GB 2.5-inch 10k HDD	2076	224	3206
2TB 3.5-inch 7.2k HDD	2076	212	3302
300GB 2.5-inch SSD (E-MLC)	2076	224	3504
Bulk Ordering Feature Ind.	2076	212,224	5555
IBM Storwize v7000 engine removal	2076	212,224	3905
1 m 6 Gb/s external mini SAS	2076	212,224	5401
3 m 6 Gb/s external mini SAS	2076	212,224	5403
6 m 6 Gb/s external mini SAS	2076	212,224	5406
Power (line) cords (one selection required):			
Power Cord - EMEA	2076	212,224	9716
Power Cord - Austr/NZ	2076	212,224	9717
Power Cord - Eur.,Africa	2076	212,224	9718
Power Cord - Eur.,Denmark	2076	212,224	9719
Power Cord - Pakist SAfrica	2076	212,224	9720
Power Cord - Switz, Liecht	2076	212,224	9721
Power Cord - Chile,It,Eth	2076	212,224	9722
Power Cord - Israel	2076	212,224	9723
Power Cord - Argentina	2076	212,224	9725
Power Cord - China	2076	212,224	9726
Power Cord - PDU connection	2076	212,224	9730
Power Cord - Group 1 (incl. USA)	2076	212,224	9731
Power Cord - Taiwan	2076	212,224	9732
Power Cord - Brazil	2076	212,224	9733
Power Cord - India	2076	212,224	9734
Power Cord - Japan	2076	212,224	9735
Power Cord - Korea	2076	212,224	9736
Power Cord - US, Chicago	2076	212,224	9737

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## Education support

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Two courses will be available worldwide for this new product with sessions beginning in November 2010:

Course number	Course title
SSE0	IBM System Storage Storwize V7000 Implementation Workshop

For more information and course schedules, visit

[http://www.ibm.com/services/learning/ites.wss/zz/en?pageType=tp\\_search](http://www.ibm.com/services/learning/ites.wss/zz/en?pageType=tp_search)

Search on the course number - 'SSE0'

Or link to course offering information directly as follows (these links will be available on November 7, 2010).

SSE0 course information

[http://www.ibm.com/services/learning/ites.wss/tp/en?pageType=tp\\_search\\_results&rowStart=0&rowsToReturn=20&searchString=sse0](http://www.ibm.com/services/learning/ites.wss/tp/en?pageType=tp_search_results&rowStart=0&rowsToReturn=20&searchString=sse0)

### **Business Partner information**

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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).

<https://www.ibm.com/partnerworld/mem/sla.jsp?num=110-220>

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## **Publications**

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The following publications are shipped as hardcopy with the product.

Title	Order number
IBM Storwize V7000 Quick Installation Guide	GC27-2290-00
IBM Storwize V7000 Read First	GC27-2293-00
IBM Systems Safety Notices	G229-9054-03
IBM Storwize V7000 Customer Documentation (DVD containing the customer documentation and information center)	SK5T-8813-00

Additional copies of the above listed publications will be available on November 12, 2010. To view online information and link to a download site, visit the IBM Storwize V7000 Information Center at

<http://publib.boulder.ibm.com/infocenter/storwize/ic/index.jsp>

### **IBM Publications Center Portal**

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Hardcopy of selected IBM Storwize V7000 publications are available for a fee from the IBM Publications Center, as well as free softcopy publications. The Publications Center is a worldwide central repository for IBM product publications and marketing material with a catalog of 70,000 items. Extensive search facilities are provided, as well as payment options via credit card. A large number of publications are available online.

## **Additional publications information**

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- 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/storwize/v7000>
- Call the Publications Support Group at 800-879-2755, and select option 1
- Contact your IBM representative

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## **Services**

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### **Global Technology Services**

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

These services help you learn about, plan, install, manage, or optimize your IT infrastructure to be an On Demand Business. They can help you integrate your high-speed networks, storage systems, application servers, wireless protocols, and an array of platforms, middleware, and communications software for IBM and many non-IBM offerings. IBM is your one-stop shop for IT support needs.

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.

### **System x and BladeCenter support services**

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#### ***Recommended core technical support***

When you buy IBM System x technology, include the support services you need -- to help keep both your hardware and software working for you, day after day, at peak performance. It's your first step toward helping to protect your investment and sustain high levels of system availability. We offer service-level and response-time options to fit your business needs. And we'll help you get started with a core support package that includes:

- **Continuous system monitoring**  
Electronic monitoring that helps speed up problem-solving with automated, early detection of potential problems and system errors.
- **Hardware maintenance**  
World-class remote and on-site hardware problem determination and repair services.
- **Software technical support**  
Access to help line calls for fast, accurate answers to your questions during installation and throughout ongoing operations.

For more information, visit

<http://www.ibm.com/servers/eserver/xseries/services.html>

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## Technical information

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### Specified operating environment

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#### IBM Storwize V7000 12-bay enclosures 2076-112 and 2076-212

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- Width: 483 mm (19.0 in)
- Depth: 630 mm (24.8 in)
- Height: 87.9 mm (3.46 in)
- Weight:
  - Drive-ready (without drive modules installed): 17.7 kg (37.6 lb)
  - Fully configured (12 drive modules installed): 27.2 kg (59.8 lb)

#### IBM Storwize V7000 24-bay enclosures 2076-124 and 2076-224

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- Width: 483 mm (19.0 in)
- Depth: 630 mm (24.8 in)
- Height: 87.9 mm (3.46 in)
- Weight:
  - Drive-ready (without drive modules installed): 17.7 kg (37.6 lb)
  - Fully configured (24 drive modules installed): 25.2 kg (55.4 lb)

To assure installability and serviceability in non-IBM industry-standard racks, review the installation planning information for any product-specific installation requirements.

### Operating environment

#### IBM Storwize V7000 12-bay control enclosure 2076-112

- Temperature (operating):
  - 10 to 35° C (50 to 95° F) at 0 to 914 m (0 to 3,000 ft)
  - 10 to 32° C (50 to 90° F) at 914 to 2,133 m (3,000 to 7,000 ft)
- Temperature (powered off): 10 to 43° C (50 to 109° F)
- Temperature (storage): 1 to 60° C (34 to 140° F) at 0 to 2,133 m (0 to 7,000 ft)
- Temperature (shipping): -20 to 60° C (-4 to 140° F) at 0 to 10,668 m (0 to 35,000 ft)
- Electrical power: 100-240 V ac, 3.8 - 9.0 A, 50/60 Hz
- Relative humidity (operating and powered off): 8% to 80%
- Relative humidity (storage): 5% to 80%
- Relative humidity (shipping): 5% to 100% (including condensation but excluding rain)
- Wet bulb:
  - Wet bulb (operating temp): 23° C
  - Wet bulb (powered off temp): 27° C
  - Wet bulb (storage and shipping temp): 29° C
- Noise level (Operating): 7.5 bels LwAd
- Noise level (Idle): 7.5 bels LwAd
- Additional Information on system noise characteristics: No impulsive noise, no prominent tones

**Note:** The noise emission level stated is the declared (upper limit) A-weighted sound power level, in bels, for a random sample of machines. All measurements are made in accordance with ISO 7779 and reported in conformance with ISO 9296.

#### **IBM Storwize V7000 12-bay expansion enclosure 2076-212**

- Temperature (operating):
  - 10 to 35° C (50 to 95° F) at 0 to 914 m (0 to 3,000 ft)
  - 10 to 32° C (50 to 90° F) at 914 to 2,133 m (3,000 to 7,000 ft)
- Temperature (powered off): 10 to 43° C (50 to 109° F)
- Temperature (storage): 1 to 60° C (34 to 140° F) at 0 to 2,133 m (0 to 7,000 ft)
- Temperature (shipping): -20 to 60° C (-4 to 140° F) at 0 to 10,668 m (0 to 35,000 ft)
- Electrical power: 100-240 V ac, 3.2 - 8.0 A, 50/60 Hz
- Relative humidity (operating and powered off): 8% to 80%
- Relative humidity (storage): 5% to 80%
- Relative humidity (shipping): 5% to 100% (including condensation but excluding rain)
- Wet bulb:
  - Wet bulb (operating temp): 23° C
  - Wet bulb (powered off temp): 27° C
  - Wet bulb (storage and shipping temp): 29° C
- Noise level (Operating): 6.6 bels LwAd
- Noise level (Idle): 6.6 bels LwAd
- Additional Information on system noise characteristics: No impulsive noise, no prominent tones

**Note:** The noise emission level stated is the declared (upper limit) A-weighted sound power level, in bels, for a random sample of machines. All measurements are made in accordance with ISO 7779 and reported in conformance with ISO 9296.

#### **IBM Storwize V7000 24-bay control enclosure 2076-124**

- Temperature (operating):
  - 10 to 35° C (50 to 95° F) at 0 to 914 m (0 to 3,000 ft)
  - 10 to 32° C (50 to 90° F) at 914 to 2,133 m (3,000 to 7,000 ft)
- Temperature (powered off): 10 to 43° C (50 to 109° F)
- Temperature (storage): 1 to 60° C (34 to 140° F) at 0 to 2,133 m (0 to 7,000 ft)
- Temperature (shipping): -20 to 60° C (-4 to 140° F) at 0 to 10,668 m (0 to 35,000 ft)
- Electrical power: 100-240 V ac, 3.8 - 9.0 A, 50/60 Hz
- Relative humidity (operating and powered off): 8% to 80%
- Relative humidity (storage): 5% to 80%
- Relative humidity (shipping): 5% to 100% (including condensation but excluding rain)
- Wet bulb:
  - Wet bulb (operating temp): 23° C
  - Wet bulb (powered off temp): 27° C
  - Wet bulb (storage and shipping temp): 29° C
- Noise level (Operating): 7.5 bels LwAd
- Noise level (Idle): 7.5 bels LwAd
- Additional Information on system noise characteristics: No impulsive noise, no prominent tones

**Note:** The noise emission level stated is the declared (upper limit) A-weighted sound power level, in bels, for a random sample of machines. All measurements are made in accordance with ISO 7779 and reported in conformance with ISO 9296.

### **IBM Storwize V7000 24-bay expansion enclosure 2076-224**

- Temperature (operating):
  - 10 to 35° C (50 to 95° F) at 0 to 914 m (0 to 3,000 ft)
  - 10 to 32° C (50 to 90° F) at 914 to 2,133 m (3,000 to 7,000 ft)
- Temperature (powered off): 10 to 43° C (50 to 109° F)
- Temperature (storage): 1 to 60° C (34 to 140° F) at 0 to 2,133 m (0 to 7,000 ft)
- Temperature (shipping): -20 to 60° C (-4 to 140° F) at 0 to 10,668 m (0 to 35,000 ft)
- Electrical power: 100-240 V ac, 3.2 - 8.0 A, 50/60 Hz
- Relative humidity (operating and powered off): 8% to 80%
- Relative humidity (storage): 5% to 80%
- Relative humidity (shipping): 5% to 100% (including condensation but excluding rain)
- Wet bulb:
  - Wet bulb (operating temp): 23° C
  - Wet bulb (powered off temp): 27° C
  - Wet bulb (storage and shipping temp): 29° C
- Noise level (Operating): 7.5 bels LwAd
- Noise Level (Idle): 7.5 bels LwAd
- Additional Information on system noise characteristics: No impulsive noise, no prominent tones

**Note:** The noise emission level stated is the declared (upper limit) A-weighted sound power level, in bels, for a random sample of machines. All measurements are made in accordance with ISO 7779 and reported in conformance with ISO 9296.

### **Power cords**

Two power cords to connect the IBM Storwize V7000 enclosure to a standard PDU can be specified by feature number.

A country-specific power cord may be specified by feature number for connection to wall-type outlets should the rack not have a compatible PDU or if the PDU has wall-type outlets. One of the following power cord specific features is required to connect the IBM Storwize V7000 to the alternate power source.

Each power cord feature provides two country-specific power cords. Countries supported by these features include:

- Power Cord (feature number 9731)
  - Provides power cords for Antigua and Barbuda, Aruba, Bahamas, Barbados, Belize, Bermuda, Bolivia, Canada, Cayman Islands, Costa Rica, Columbia, Cuba, Dominican Republic, Ecuador, El Salvador, Guam, Guatemala, Haiti, Honduras, Jamaica, Mexico, Micronesia (Federal States of), Netherlands Antilles, Nicaragua, Panama, Peru, Philippines, Saudi Arabia, Thailand, Turks and Caicos Islands, United States, Venezuela.
  - Nine feet (2.8 m) unshielded, rated 125 v / 10 a
  - Attached plug (nema L5-15) designed for 125 v ac input
  - Part number: 39M5081
- Power Cord (feature number 9718)
  - Provides power cords for Afghanistan, Albania, Algeria, Andorra, Angola, Armenia, Austria, Azerbaijan, Belarus, Belgium, Benin, Bosnia and Herzegovina, Bulgaria, Burkina Faso, Burundi, Cambodia, Cameroon, Cape Verde, Central African Republic, Chad, Comoros, Congo (Democratic Republic

of), Congo (Republic of), Cote D'Ivoire (Ivory Coast), Croatia (Republic of), Czech Rep, Dahomey, Djibouti, Egypt, Equatorial Guinea, Eritrea, Estonia, Ethiopia, Finland, France, French Guyana, French Polynesia, Gabon, Georgia, Germany, Greece, Guadeloupe, Guinea, Guinea Bissau, Hungary, Iceland, Indonesia, Iran, Kazakhstan, Kyrgyzstan, Laos (Peoples Democratic Republic of), Latvia, Lebanon, Lithuania, Luxembourg, Macedonia (former Yugoslav Republic of), Madagascar, Mali, Martinique, Mauritania, Mauritius, Mayotte, Moldova (Republic of), Monaco, Mongolia, Morocco, Mozambique, Netherlands, New Caledonia, Niger, Norway, Poland, Portugal, Reunion, Romania, Russian Federation, Rwanda, Sao Tome and Principe, Saudi Arabia, Senegal, Serbia, Slovakia, Slovenia (Republic of), Somalia, Spain, Suriname, Sweden, Syrian Arab Republic, Tajikistan, Tahiti, Togo, Tunisia, Turkey, Turkmenistan, Ukraine, Upper Volta, Uzbekistan, Vanuatu, Vietnam, Wallis and Futuna, Yugoslavia (Federal Republic of), Zaire.

- Nine feet (2.8 m), unshielded, rated 250 v / 10 a
- Attached plug (CEE 7/7) designed for 200 - 240 V ac input.
- Part number: 39M5123
- Power Cord (feature number 9719)
  - Provides power cords for Denmark
  - Nine feet (2.8 m) unshielded, rated 250 v / 10 a
  - Attached plug (SB 107-2-D1/DK 5-2a) designed for 200 - 240 v ac input
  - Part number: 39M5130
- Power Cord (feature number 9716)
  - Provides power cords for Abu Dhabi, Bahrain, Botswana, Brunei Darussalam, Channel Islands, Cyprus, Dominica, Gambia, Ghana, Grenada, Guyana, Hong Kong, Iraq, Ireland, Jordan, Kenya, Kuwait, Liberia, Malawi, Malaysia, Malta, Myanmar (Burma), Nigeria, Oman, Qatar, Saint Kitts, Nevis, Saint Lucia, Saint Vincent and the Grenadines, Seychelles, Sierra Leone, Singapore, Sudan, Tanzania (United Republic of), Trinidad, Tobago, United Arab Emirates (Dubai), United Kingdom, Yemen, Zambia, Zimbabwe, Uganda.
  - Nine feet (2.8 m) unshielded, rated 250 v / 10 a
  - Attached plug (bs 1363a) designed for 200 - 240 v ac input
  - Part number: 39M5151
- Power Cord (feature number 9723)
  - Provides power cords for Israel.
  - Nine feet (2.8 m) unshielded, rated 250 v / 10 a
  - Attached plug (si 32) designed for 200 - 240 v ac input
  - Part number: 39M5172
- Power Cord (feature number 9721)
  - Provides power cords for Liechtenstein, Switzerland.
  - Nine feet (2.8 m) unshielded, rated 250 v / 10 a
  - Attached plug (iec 60884 Stnd. Sheet 416534-2 (ch type 12)) designed for 200 - 240 v ac input
  - Part number: 39M5158
- Power Cord (feature number 9720)
  - Provides power cords for Bangladesh, Lesotho, Maceo, Maldives, Namibia, Nepal, Pakistan, Samoa, South Africa, Sri Lanka, Swaziland, Uganda.
  - Nine feet (2.8 m) unshielded, rated 250 v / 10 a
  - Attached plug (sans 164-1) designed for 200 - 240 v ac input
  - Part number: 39M5144
- Power Cord (feature number 9722)
  - Provides power cords for Italy, Chile, Libyan Arab Jamahiriya.
  - Nine feet (2.8 m) unshielded, rated 250 v / 10 a



- Attached plug (cei-unfl table 23-16) designed for 200 - 240 v ac input
- Part number: 39M5165
- Power Cord (feature number 9717)
  - Provides power cords for Australia, Fiji, Kiribati, Nauru, New Zealand, Papua New Guinea.
  - Nine feet (2.8 m) unshielded, rated 250 v / 10 a
  - Attached plug (as/nzs 3112/2000) designed for 200 - 240 v ac input
  - Part number: 39M5102
- Power Cord (feature number 9725)
  - Provides power cords for Uruguay, Argentina, Paraguay
  - Nine feet (2.8 m) unshielded, rated 250 v / 10 a
  - Attached plug (IRAM 2073) designed for 200 - 240 v ac input
  - Part number: 39M5068
- Power Cord (feature number 9726)
  - Provides power cords for Peoples Republic of China.
  - Nine feet (2.8 m) unshielded, rated 250 v / 10 a
  - Attached plug (gb 2099.1 1002) designed for 200 - 240 v ac input
  - Part number: 39M5206
- Power Cord (feature number 9732)
  - Provides power cords for Taiwan.
  - Nine feet (2.8 m) unshielded, rated 125 v / 10 a
  - Attached plug (cns 10917-3) designed for 125 v ac input
  - Part number: 39M5247
- Power Cord (feature number 9734)
  - Provides power cords for India.
  - Nine feet (2.8 m) unshielded, rated 250 v / 10 a
  - Attached plug (is 6538) designed for 200 - 240 v ac input
  - Part number: 39M5226
- Power Cord (feature number 9735)
  - Provides power cords for Japan.
  - Fourteen feet (4.3 m) unshielded, rated 125 v / 12 a
  - Attached plug (JIS C8303, C8306) designed for 125 v ac input
  - Part number: 39M5200
- Power Cord (feature number 9736)
  - Provides power cords for Korea.
  - Nine feet (2.8 m) unshielded, rated 250 v / 12 a
  - Attached plug (ks c8305, k60884-1) designed for 200 - 240 v ac input
  - Part number: 39M5219
- Power Cord (feature number 9733)
  - Provides power cords for Brazil.
  - Nine feet (2.8 m) unshielded, rated 125 v / 10 a
  - Attached plug (InMetro) designed for 125 v ac input
  - Part number: 39M5233
- Power Cord (feature number 9737)
  - Provides power cords for US/Chicago.
  - Six feet (1.8 m) unshielded, rated 125 v / 15 a
  - Attached plug (NEMA L5-15P) designed for 125 v ac input

- Part number: 39M5080

### **Software requirements**

Because of the SAN Volume Controller technology that the IBM Storwize V7000 is built on, it is designed to manage a large number of external storage controllers from IBM and other vendors, the same as San Volume Controller supports today. External storage virtualization is available as part of the IBM Storwize V7000 software offerings. See the [Reference information](#) section for more information about IBM Storwize V7000 software.

Feature number 0010 provides the required IBM Storwize V7000 Software that must be preloaded by IBM on the IBM Storwize V7000 system. It must be included with each IBM Storwize V7000 controller ordered. This feature is plant-installed only.

### **Planning information**

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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**

Cables can be ordered by feature number.

- 5301 - 1 m Fiber Optic Cable LC-LC
- 5305 - 5 m Fiber Optic Cable LC-LC
- 5325 - 25 m Fiber Opt Cable LC-LC
- 5401 - 1 m 6 Gbps external mini SAS cable
- 5403 - 3 m 6 Gbps external mini SAS cable
- 5406 - 6 m 6 Gbps external mini SAS cable
- 5608 - 8 Gbps LW SFP

### **Direct customer support**

For technical support or assistance, visit the following Web site and select appropriate country, or contact your IBM representative for additional assistance.

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

### **Security, auditability, and control**

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This product uses the security and auditability features of the preloaded application software.

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

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## **Terms and conditions**

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**Volume orders:** Contact your IBM representative.

### **IBM Global Financing**

Yes

### **Warranty period**

Three 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. 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**

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:

- Node canister
- Expansion canister
- Power supplies
- Battery back up unit
- SAS cables
- Fiber cables
- Power cords
- Disk drives (including SSDs) in carrier assembly
- SFP transceivers
- Blank carriers
- Rail kit
- Enclosure end caps
- USB key

### **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, next business day response

### **Warranty service upgrades**

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#### ***Usage plan machine***

No

**IBM hourly service rate classification**

Three

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 internal code and licensed machine code**

This product does not contain Licensed Internal Code or Licensed Machine Code.

**Educational allowance**

A limited time offering reduced tuition charges may be available to qualified IBM and business partner education customers for IBM Storwize V7000 courses.

The educational allowance is 15% for the products in this announcement.

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**Pricing**


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**Product charges**

Description	Machine type	Model number	Feat number	MMMC
IBM Storwize V7000 Controller LFF 12-drive enclosure	2076	112		
IBM Storwize V7000 Controller SFF 24-drive enclosure (SSDs)	2076	124		
IBM Storwize V7000 Control Enclosure	2076	112,124		
Preload IBM Storwize V7000 SW	2076	112,124	0010	NC
Cache 8 GB	2076	112,124	6008	NC
Battery	2076	112,124	8001	NC
AC Power Supply	2076	112,124	9801	NC
JEMT Indicator	2076	112,124	0021	NC
STG Lab Services	2076	112,124	1888	NC
300 GB 2.5-inch 10k HDD	2076	124	3203	NC
450 GB 2.5-inch 10k HDD	2076	124	3204	NC
600 GB 2.5-inch 10k HDD	2076	124	3206	NC
2 TB 3.5-inch 7.2k HDD	2076	112	3302	NC
300 GB 2.5-inch SSD (E-MLC)	2076	124	3504	
Bulk Ordering Feature Ind.	2076	112,124	5555	NC
IBM Storwize V7000 engine removal	2076	112,124	3905	NC
1 m Fiber Optic Cable LC-LC	2076	112,124	5301	NC
5 m Fiber Optic Cable LC-LC	2076	112,124	5305	NC
25 m Fiber Optic Cable LC-LC	2076	112,124	5325	NC
IBM 8 Gbps LW SFP	2076	112,124	5608	NC
RFID tag - discretionary	2076	112,124	0203	NC

POWER (LINE) CORDS (ONE SELECTION REQUIRED):

Power Cord - EMEA	2076	112,124	9716	NC
Power Cord - Austr/NZ	2076	112,124	9717	NC
Power Cord - Eur.,Africa	2076	112,124	9718	NC
Power Cord - Eur.,Denmark	2076	112,124	9719	NC
Power Cord - Pakist SAfrica	2076	112,124	9720	NC
Power Cord - Switz, Liecht	2076	112,124	9721	NC
Power Cord - Chile,It,Eth	2076	112,124	9722	NC
Power Cord - Israel	2076	112,124	9723	NC
Power Cord - Argentina	2076	112,124	9725	NC
Power Cord - China	2076	112,124	9726	NC
Power Cord - PDU connection	2076	112,124	9730	NC
Power Cord - Group 1 (incl. USA)	2076	112,124	9731	NC
Power Cord - Taiwan	2076	112,124	9732	NC
Power Cord - Brazil	2076	112,124	9733	NC
Power Cord - India	2076	112,124	9734	NC
Power Cord - Japan	2076	112,124	9735	NC
Power Cord - Korea	2076	112,124	9736	NC
Power Cord - US, Chicago	2076	112,124	9737	NC

IBM Storwize V7000 Expansion LFF 12-drive enclosure	2076	212		
IBM Storwize V7000 Expansion SFF 24-drive enclosure (SSDs)	2076	224		
IBM Storwize V7000 Expansion Enclosure	2076	212,224		
AC Power Supply	2076	212,224	9802	NC
JEMT Indicator	2076	212,224	0021	NC
STG Lab Services	2076	212,224	1888	NC
300 GB 2.5-inch 10k HDD	2076	224	3203	NC
450 GB 2.5-inch 10k HDD	2076	224	3204	NC
600 GB 2.5-inch 10k HDD	2076	224	3206	NC
2 TB 3.5-inch 7.2k HDD	2076	212	3302	NC
300 GB 2.5-inch SSD (E-MLC)	2076	224	3504	
Bulk Ordering Feature Ind.	2076	212,224	5555	NC
IBM Storwize V7000 engine removal	2076	212,224	3905	NC
1 m 6 Gb/s external mini SAS	2076	212,224	5401	NC
3 m 6 Gb/s external mini SAS	2076	212,224	5403	NC
6 m 6 Gb/s external mini SAS	2076	212,224	5406	NC
RFID tag - discretionary	2076	212,224	0203	NC

POWER (LINE) CORDS (ONE SELECTION REQUIRED):

Power Cord - EMEA	2076	212,224	9716	NC
Power Cord - Austr/NZ	2076	212,224	9717	NC
Power Cord - Eur.,Africa	2076	212,224	9718	NC
Power Cord - Eur.,Denmark	2076	212,224	9719	NC
Power Cord - Pakist SAfrica	2076	212,224	9720	NC
Power Cord - Switz, Liecht	2076	212,224	9721	NC
Power Cord - Chile,It,Eth	2076	212,224	9722	NC
Power Cord - Israel	2076	212,224	9723	NC
Power Cord - Argentina	2076	212,224	9725	NC
Power Cord - China	2076	212,224	9726	NC
Power Cord - PDU connection	2076	212,224	9730	NC
Power Cord - Group 1 (incl. USA)	2076	212,224	9731	NC
Power Cord - Taiwan	2076	212,224	9732	NC
Power Cord - Brazil	2076	212,224	9733	NC
Power Cord - India	2076	212,224	9734	NC
Power Cord - Japan	2076	212,224	9735	NC
Power Cord - Korea	2076	212,224	9736	NC
Power Cord - US, Chicago	2076	212,224	9737	NC

MT/Mod	Feature	Description	List price
2076_124		IBM System Storage Storwize - SFF 24 drives (SSD's)	\$ 25,000.00
2076_112		IBM System Storage Storwize - LFF 12 drives	\$ 22,500.00

2076_224		IBM System Storage Storwize - SFF 24 drives (SSD's)	\$	6,000.00
2076_212		IBM System Storage Storwize - LFF 12 drives	\$	5,300.00
2076_124	2200	Rack Mount in 2101	\$	-
2076_124	3206	600GB SAS SFF 10K HDD	\$	1,799.00
2076_124	3204	450GB SAS SFF 10K HDD	\$	1,399.00
2076_124	3203	300GB SAS SFF 10K HDD	\$	1,099.00
2076_124	3504	300GB SFF E-MLC SSD	\$	26,399.00
2076_124	5301	1M Fibre Optic Cables	\$	79.00
2076_124	5305	5M Fibre Optic Cables	\$	129.00
2076_124	5325	25M Fibre Optic Cables	\$	189.00
2076_124	6008	8 GB Cache (Default)	\$	-
2076_124	9801	AC Power Supply (Default)	\$	-
2076_124	0010	Storage Preload SW	\$	-
2076_124	5608	8 Gbps LW SFPs	\$	398.00
2076_124	9716	EMEA Line Cord	\$	-
2076_124	9717	Australia Line Cord	\$	-
2076_124	9718	Africa Line Cord	\$	-
2076_124	9719	Denmark Line Cord	\$	-
2076_124	9720	Pakistan Line Cord	\$	-
2076_124	9721	Switzerland Line Cord	\$	-
2076_124	9722	Chile Line Cord	\$	-
2076_124	9723	Israel Line Cord	\$	-
2076_124	9725	Argentina Line Cord	\$	-
2076_124	9726	China Line Cord	\$	-
2076_124	9730	PDU Connection	\$	-
2076_124	9731	GROUP 1 Cord	\$	-
2076_124	9732	Taiwan Cord	\$	-
2076_124	9733	Brazil Cord	\$	-
2076_124	9734	India Cord	\$	-
2076_124	9735	Japan Cord	\$	-
2076_124	9736	Korea Cord	\$	-
2076_124	9737	US, Chicago Cord	\$	-
2076_112	2200	Rack Mount in 2101	\$	-
2076_112	3302	2TB NL SAS LFF HDD	\$	1,499.00
2076_112	5301	1M Fibre Optic Cables	\$	79.00
2076_112	5305	5M Fibre Optic Cables	\$	129.00
2076_112	5325	25M Fibre Optic Cables	\$	189.00
2076_112	6008	8 GB Cache (Default)	\$	-
2076_112	9801	AC Power Supply (Default)	\$	-
2076_112	0010	Storage Preload SW	\$	-
2076_112	5608	8 Gbps LW SFPs	\$	398.00
2076_112	9716	EMEA Line Cord	\$	-
2076_112	9717	Australia Line Cord	\$	-

2076_112	9718	Africa Line Cord	\$	-
2076_112	9719	Denmark Line Cord	\$	-
2076_112	9720	Pakistan Line Cord	\$	-
2076_112	9721	Switzerland Line Cord	\$	-
2076_112	9722	Chile Line Cord	\$	-
2076_112	9723	Israel Line Cord	\$	-
2076_112	9725	Argentina Line Cord	\$	-
2076_112	9726	China Line Cord	\$	-
2076_112	9730	PDU Connection	\$	-
2076_112	9731	GROUP 1 Cord	\$	-
2076_112	9732	Taiwan Cord	\$	-
2076_112	9733	Brazil Cord	\$	-
2076_112	9734	India Cord	\$	-
2076_112	9735	Japan Cord	\$	-
2076_112	9736	Korea Cord	\$	-
2076_112	9737	US, Chicago Cord	\$	-
2076_224	2200	Rack Mount in 2101	\$	-
2076_224	3206	600GB SAS SFF 10K HDD	\$	1,799.00
2076_224	3204	450GB SAS SFF 10K HDD	\$	1,399.00
2076_224	3203	300GB SAS SFF 10K HDD	\$	1,099.00
2076_224	3504	300GB SFF E-MLC SSD	\$	26,399.00
2076_224	5401	1M SAS 6Gbps External Cable	\$	179.00
2076_224	5403	3M SAS 6Gbps External Cable	\$	199.00
2076_224	5406	6M SAS 6Gbps External Cable	\$	369.00
2076_224	9802	AC Power Supply (Default)	\$	-
2076_224	0010	Storage Preload SW	\$	-
2076_224	9716	EMEA Line Cord	\$	-
2076_224	9717	Australia Line Cord	\$	-
2076_224	9718	Africa Line Cord	\$	-
2076_224	9719	Denmark Line Cord	\$	-
2076_224	9720	Pakistan Line Cord	\$	-
2076_224	9721	Switzerland Line Cord	\$	-
2076_224	9722	Chile Line Cord	\$	-
2076_224	9723	Israel Line Cord	\$	-
2076_224	9725	Argentina Line Cord	\$	-
2076_224	9726	China Line Cord	\$	-
2076_224	9730	PDU Connection	\$	-
2076_224	9731	GROUP 1 Cord	\$	-
2076_224	9732	Taiwan Cord	\$	-
2076_224	9733	Brazil Cord	\$	-
2076_224	9734	India Cord	\$	-
2076_224	9735	Japan Cord	\$	-
2076_224	9736	Korea Cord	\$	-
2076_224	9737	US, Chicago Cord	\$	-
2076_212	2306	Rack Mount in 2101	\$	-
2076_212	3302	2TB NL SAS LFF HDD	\$	1,499.00
2076_212	5401	1M SAS 6Gbps External Cable	\$	179.00
2076_212	5403	3M SAS 6Gbps External Cable	\$	199.00
2076_212	5406	6M SAS 6Gbps External Cable	\$	369.00



2076_212	9802	AC Power Supply (Default)	\$	-
2076_212	0010	Storage Preload SW	\$	-
2076_212	9716	EMEA Line Cord	\$	-
2076_212	9717	Australia Line Cord	\$	-
2076_212	9718	Africa Line Cord	\$	-
2076_212	9719	Denmark Line Cord	\$	-
2076_212	9720	Pakistan Line Cord	\$	-
2076_212	9721	Switzerland Line Cord	\$	-
2076_212	9722	Chile Line Cord	\$	-
2076_212	9723	Israel Line Cord	\$	-
2076_212	9725	Argentina Line Cord	\$	-
2076_212	9726	China Line Cord	\$	-
2076_212	9730	PDU Connection	\$	-
2076_212	9731	GROUP 1 Cord	\$	-
2076_212	9732	Taiwan Cord	\$	-
2076_212	9733	Brazil Cord	\$	-
2076_212	9734	India Cord	\$	-
2076_212	9735	Japan Cord	\$	-
2076_212	9736	Korea Cord	\$	-
2076_212	9737	US, Chicago Cord	\$	-

	Machine Model Mach/Mod/Feat	Field Install Only	Plant Install Only	MES Remov
Preload	2076/112/0010	N	Y	N
IBM Storwize v7000 SW				
Cache 8GB	2076/112/6008	N	Y	N
Battery	2076/112/8001	N	Y	N
AC Power Supply	2076/112/9801	N	Y	N
JEMT Indicator	2076/112/0021	N	Y	N
STG Lab Services	2076/112/1888	N	N	N
2 TB 3.5-inch 7.2k HDD	2076/112/3302	N	N	N
Bulk Ordering Feature Ind.	2076/112/5555	Y	N	N
IBM Storwize v7000 engine removal	2076/112/3905	N	N	N
1 m Fiber Optic Cable LC-LC	2076/112/5301	N	N	N
5 m Fiber Optic Cable LC-LC	2076/112/5305	N	N	N
25 m Fiber Optic Cable LC-LC	2076/112/5325	N	N	N
IBM 8 Gbps LW SFP	2076/112/5608	N	N	N
RFID tag - discretionary	2076/112/0203	N	Y	N
Power Cord - EMEA	2076/112/9716	N	N	N
Power Cord - Austr/NZ	2076/112/9717	N	N	N
Power Cord - Eur.,Africa	2076/112/9718	N	N	N
Power Cord - Eur.,Denmark	2076/112/9719	N	N	N
Power Cord - Pakist SAfrica	2076/112/9720	N	N	N
Power Cord - Switz, Liecht	2076/112/9721	N	N	N
Power Cord - Chile,It,Eth	2076/112/9722	N	N	N
Power Cord - Israel	2076/112/9723	N	N	N
Power Cord - Argentina	2076/112/9725	N	N	N
Power Cord - China	2076/112/9726	N	N	N
Power Cord - PDU connection	2076/112/9730	N	N	N
Power Cord - Group 1(incl. USA)	2076/112/9731	N	N	N
Power Cord - Taiwan	2076/112/9732	N	N	N
Power Cord - Brazil	2076/112/9733	N	N	N
Power Cord - India	2076/112/9734	N	N	N
Power Cord - Japan	2076/112/9735	N	N	N
Power Cord - Korea	2076/112/9736	N	N	N
Power Cord - US, Chicago	2076/112/9737	N	N	N
Preload	2076/124/0010	N	Y	N
IBM Storwize v7000 SW				
Cache 8 GB	2076/124/6008	N	Y	N
Battery	2076/124/8001	N	Y	N
AC Power Supply	2076/124/9801	N	Y	N
JEMT Indicator	2076/124/0021	N	Y	N
STG Lab Services	2076/124/1888	N	N	N
300 GB 2.5-inch 10k HDD	2076/124/3203	N	N	N

450 GB 2.5-inch 10k HDD	2076/124/3204	N	N	N
600 GB 2.5-inch 10k HDD	2076/124/3206	N	N	N
300 GB 2.5-inch SSD (E-MLC)	2076/124/3504	N	N	N
Bulk Ordering Feature Ind.	2076/124/5555	Y	N	N
IBM Storwize v7000 engine removal	2076/124/3905	N	N	N
1 m Fiber Optic Cable LC-LC	2076/124/5301	N	N	N
5 m Fiber Optic Cable LC-LC	2076/124/5305	N	N	N
25 m Fiber Optic Cable LC-LC	2076/124/5325	N	N	N
IBM 8 Gbps LW SFP	2076/124/5608	N	N	N
RFID tag - discretionary	2076/124/0203	N	Y	N
Power Cord - EMEA	2076/124/9716	N	N	N
Power Cord - Austr/NZ	2076/124/9717	N	N	N
Power Cord - Eur.,Africa	2076/124/9718	N	N	N
Power Cord - Eur.,Denmark	2076/124/9719	N	N	N
Power Cord - Pakist SAfrica	2076/124/9720	N	N	N
Power Cord - Switz, Liecht	2076/124/9721	N	N	N
Power Cord - Chile,It,Eth	2076/124/9722	N	N	N
Power Cord - Israel	2076/124/9723	N	N	N
Power Cord - Argentina	2076/124/9725	N	N	N
Power Cord - China	2076/124/9726	N	N	N
Power Cord - PDU connection	2076/124/9730	N	N	N
Power Cord - Group 1(incl. USA)	2076/124/9731	N	N	N
Power Cord - Taiwan	2076/124/9732	N	N	N
Power Cord - Brazil	2076/124/9733	N	N	N
Power Cord - India	2076/124/9734	N	N	N
Power Cord - Japan	2076/124/9735	N	N	N
Power Cord - Korea	2076/124/9736	N	N	N
Power Cord - US, Chicago	2076/124/9737	N	N	N
AC Power Supply	2076/212/9802	N	Y	N
JEMT Indicator	2076/212/0021	N	Y	N
STG Lab Services	2076/212/1888	N	N	N
2 TB 3.5-inch 7.2k HDD	2076/212/3302	N	N	N
Bulk Ordering Feature Ind.	2076/212/5555	Y	N	N
IBM Storwize v7000 engine removal	2076/212/3905	N	N	N
1 m 6 Gb/s external mini SAS	2076/212/5401	N	N	N
3 m 6 Gb/s external mini SAS	2076/212/5403	N	N	N
6 m 6 Gb/s external mini SAS	2076/212/5406	N	N	N
RFID tag - discretionary	2076/212/0203	N	Y	N
Power Cord - EMEA	2076/212/9716	N	N	N
Power Cord - Austr/NZ	2076/212/9717	N	N	N
Power Cord - Eur.,Africa	2076/212/9718	N	N	N
Power Cord - Eur.,Denmark	2076/212/9719	N	N	N
Power Cord - Pakist SAfrica	2076/212/9720	N	N	N
Power Cord - Switz, Liecht	2076/212/9721	N	N	N
Power Cord - Chile,It,Eth	2076/212/9722	N	N	N
Power Cord - Israel	2076/212/9723	N	N	N
Power Cord - Argentina	2076/212/9725	N	N	N
Power Cord - China	2076/212/9726	N	N	N
Power Cord - PDU connection	2076/212/9730	N	N	N
Power Cord - Group 1(incl. USA)	2076/212/9731	N	N	N
Power Cord - Taiwan	2076/212/9732	N	N	N
Power Cord - Brazil	2076/212/9733	N	N	N
Power Cord - India	2076/212/9734	N	N	N
Power Cord - Japan	2076/212/9735	N	N	N
Power Cord - Korea	2076/212/9736	N	N	N
Power Cord - US, Chicago	2076/212/9737	N	N	N
AC Power Supply	2076/224/9802	N	Y	N
JEMT Indicator	2076/224/0021	N	Y	N
STG Lab Services	2076/224/1888	N	N	N
300 GB 2.5-inch 10k HDD	2076/224/3203	N	N	N
450 GB 2.5-inch 10k HDD	2076/224/3204	N	N	N
600 GB 2.5-inch 10k HDD	2076/224/3206	N	N	N
300 GB 2.5-inch SSD (E-MLC)	2076/224/3504	N	N	N
Bulk Ordering Feature Ind.	2076/224/5555	Y	N	N
IBM Storwize v7000 engine removal	2076/224/3905	N	N	N
1 m 6 Gb/s external mini SAS	2076/224/5401	N	N	N
3 m 6 Gb/s external mini SAS	2076/224/5403	N	N	N
6 m 6 Gb/s external mini SAS	2076/224/5406	N	N	N
RFID tag - discretionary	2076/224/0203	N	Y	N

Power Cord - EMEA	2076/224/9716	N	N	N
Power Cord - Austr/NZ	2076/224/9717	N	N	N
Power Cord - Eur.,Africa	2076/224/9718	N	N	N
Power Cord - Eur.,Denmark	2076/224/9719	N	N	N
Power Cord - Pakist SAfrica	2076/224/9720	N	N	N
Power Cord - Switz, Liecht	2076/224/9721	N	N	N
Power Cord - Chile,It,Eth	2076/224/9722	N	N	N
Power Cord - Israel	2076/224/9723	N	N	N
Power Cord - Argentina	2076/224/9725	N	N	N
Power Cord - China	2076/224/9726	N	N	N
Power Cord - PDU connection	2076/224/9730	N	N	N
Power Cord - Group 1(incl. USA)	2076/224/9731	N	N	N
Power Cord - Taiwan	2076/224/9732	N	N	N
Power Cord - Brazil	2076/224/9733	N	N	N
Power Cord - India	2076/224/9734	N	N	N
Power Cord - Japan	2076/224/9735	N	N	N
Power Cord - Korea	2076/224/9736	N	N	N
Power Cord - US, Chicago	2076/224/9737	N	N	N

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## **Corrections**

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### **(Corrected on March 14, 2011)**

The Customer setup column as been removed from the Prices section.

### **(Corrected on February 8, 2011)**

Feature number 0203 RFID tag has been added to the Description, Product number, and Pricing sections.

### **(Corrected on October 27, 2010)**

The Planned availability and CRU Service sections have been updated. The configuration restriction dates have been updated in the Description section.

### **(Corrected on October 22, 2010)**

The configuration restriction dates in the At a glance have been corrected.