

IBM Storwize V5000E models deliver innovative and simplified storage with enhanced performance to meet the growing needs of small and medium organizations

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At a glance

IBM^(R) Storwize^(R) V5030E and V5010E models are the next-generation Storwize control enclosure designed to deliver a range of performance, scalability, and functional capabilities:

- Storwize V5030E features six-core processors with up to 64 GB total cache, and the attachment of up to twenty 2U expansion enclosures or up to eight 5U expansion enclosures. This delivers support for up to 760 drives. Storwize V5030E supports system clustering including HyperSwap^(R), data reduction pools with deduplication and compression, and encryption of data at rest.
- Storwize V5010E features two-core processors with up to 64 GB total cache, and the attachment of up to ten 2U expansion enclosures or up to four 5U expansion enclosures. This delivers support for up to 392 drives.

All Storwize V5000E next-generation models include:

- Dual-active intelligent array node canisters
- I/O connectivity options for 16 Gb Fibre Channel (FC), 12 Gb SAS, 10 Gb iSCSI, or 25 Gb iSCSI
- Twelve 3.5-inch large form factor (LFF) or twenty-four 2.5-inch small form factor (SFF) drive slots within the enclosure
- Support for the attachment of Storwize V5000E 12 Gb SAS expansion enclosures
- Support for optional licensed features including thin provisioning, Easy Tier^(R), FlashCopy^(R), and remote mirroring
- Innovative, intuitive web-based GUI for easy system setup and management
- A 2U, 19-inch rack mount enclosure with either AC or DC power

All models are delivered in a 2U, 19-inch rack mount enclosure and include a three-year warranty with customer replaceable unit (CRU) and on-site service. Optional warranty service upgrades are available for enhanced levels of warranty service.

Overview

IBM Storwize V5000E is a member of the Storwize family of storage solutions. Storwize V5000E delivers increased performance and new levels of storage efficiency with superior ease of use for an entry storage solution which enables organizations to overcome their storage challenges. Built with IBM Spectrum^(R) Virtualize software,

the IBM Storwize family is an industry-leading solution for storage virtualization that includes technologies to complement and enhance virtual environments, delivering a simpler, more scalable, and cost-efficient IT infrastructure.

Storwize V5000E features two node canisters in a compact, 2U 19-inch rackmount enclosure. Four models are available to deliver a range of performance, scalability, and functional capabilities:

Storwize V5000E is available in the following models:

- Control enclosures:
 - Storwize V5030E SFF Dual Control Enclosure
 - Storwize V5030E LFF Dual Control Enclosure
 - Storwize V5010E SFF Dual Control Enclosure
 - Storwize V5010E LFF Dual Control Enclosure
- Expansion enclosures:
 - Storwize V5000E SFF Expansion Enclosure
 - Storwize V5000E LFF Expansion Enclosure
 - Storwize V5000E High Density LFF Expansion Enclosure

Storwize V5030E control enclosure models offer the highest level of performance, scalability, and functionality:

- Two 6-core processors and up to 64 GB of cache
- Support for 760 drives per system with the attachment of eight Storwize V5000E High Density LFF Expansion Enclosures and 1,520 drives with a two-way clustered configuration
- Data reduction pools with deduplication¹, compression¹, and thin provisioning for improved storage efficiency
- Encryption of data at rest stored within the Storwize V5030E system

¹ Requires 64 GB of system cache

Storwize V5010E control enclosure models offer entry-level performance, scalability, and functionality:

- Two 2-core processors and up to 64 GB of cache
- Support for 392 drives per system with the attachment of four Storwize V5000E High Density LFF Expansion Enclosures
- Data reduction pools with thin provisioning for improved storage efficiency

All Storwize V5000E next-generation models include:

- A 2U, 19-inch rackmount enclosure with either AC or DC power
- Dual-active intelligent array node canisters
- Twelve 3.5-inch LFF or twenty-four 2.5-inch SFF drive slots within the enclosure
- Support for the attachment of Storwize V5000E 12 Gb SAS expansion enclosures
- I/O connectivity options for 16 Gb FC, 12 Gb SAS, 10 Gb iSCSI, or 25 Gb iSCSI
- Innovative, intuitive web-based GUI for easy system setup and management
- Virtualization of internal storage for rapid, flexible provisioning and simple configuration changes
- RAID levels 0, 1, 5, 6, 10 with RAID levels 5 and 6 as distributed RAID
- Support for optional licensed features including thin provisioning, Easy Tier, FlashCopy, and remote mirroring
 - IBM System Storage^(R) Easy Tier for automatic migration of frequently accessed data from disk drives to high performing flash drives
 - FlashCopy for creating instant copies of data for backup or application testing

- Remote mirroring for data replication between systems at different locations through Metro Mirror and Global Mirror functions
- Extensive interoperability support with support for most major server platforms and operating systems
- One-way data migration to easily move your data onto the Storwize V5000E system

The three Storwize V5000E expansion enclosure models are 12F, 24F, and 92F. The 12F LFF enclosure models support up to twelve 3.5-inch drives, while the 24F SFF enclosure models support up to twenty-four 2.5-inch drives. High-performance disk drives, high-capacity nearline disk drives, and flash (solid state) drives are supported. Drives of the same form factor can be intermixed within an enclosure, and LFF and SFF expansion enclosures can be intermixed within a Storwize V5000E system.

All Storwize V5000E functional capabilities are provided through IBM Spectrum Virtualize Licensed Machine Code. For additional information about Storwize V5000E functional capabilities and Licensed Machine Code, see the materials listed in the [Reference information](#) section.

Key requirements

Storwize V5000E requires Spectrum Virtualize licensed machine code level 8.2.1, or later.

See the Storwize V5000E product documentation and the [IBM Support site](#) for additional information on licensed machine code levels and other requirements.

For a comprehensive list of supported environments, devices, and configurations, go to the [IBM System Storage Interoperation Center](#).

Planned availability date

- April 26, 2019: All models and features, except as noted below
- June 7, 2019: 14TB NL-SAS drive Features AL3E and AL4B
- July 19, 2019: TAA Designated Country features ADZ1
- June 21, 2019: All Models and features in Russia

The Encryption Enablement feature and the Encryption USB Drive feature (feature numbers ALE1 and ALEC) are not available in the following countries:

- Armenia
- Belarus
- Kazakhstan
- Kyrgyzstan
- Russia

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

Description

IBM Storwize V5000E is a member of the Storwize family of storage solutions. Storwize V5000E delivers increased performance and new levels of storage efficiency with superior ease of use. This entry storage solution enables organizations to overcome their storage challenges. Built with IBM Spectrum Virtualize software, the

IBM Storwize family is an industry-leading solution for storage virtualization that includes technologies to complement and enhance virtual environments, delivering a simpler, more scalable, and cost-efficient IT infrastructure.

Storwize V5000E models consist of four new control enclosure and three new expansion enclosure models:

- **Storwize V5030E Control Enclosure models 312 and 324**
 - Two node canisters, each with a six-core processor
 - 32 GB cache (16 GB per canister) with optional 64 GB cache (32 GB per canister)
 - 10 Gb iSCSI (copper) connectivity standard with optional 16 Gb FC, 12 Gb SAS, 10 Gb iSCSI (optical), 25 Gb iSCSI (optical)
 - 12 Gb SAS port for expansion enclosure attachment
 - Twelve slots for 3.5-inch LFF SAS drives (Model 312) and 24 slots for 2.5-inch SFF SAS drives (Model 324)
 - 2U, 19-inch rack mount enclosure with 100 - 240 V AC or -48 V DC power supplies
- **Storwize V5010E Control Enclosure models 212 and 224**
 - Two node canisters, each with a two-core processor
 - 16 GB cache (8 GB per canister) with optional 32 GB cache (16 GB per canister) or 64 GB cache (32 GB per canister)
 - 1 Gb iSCSI connectivity standard with optional 16 Gb FC, 12 Gb SAS, 10 Gb iSCSI (optical), 25 Gb iSCSI (optical), 1 Gb iSCSI connectivity
 - 12 Gb SAS port for expansion enclosure attachment
 - Twelve slots for 3.5-inch LFF SAS drives (Model 212) and 24 slots for 2.5-inch SFF SAS drives (Model 224)
 - 2U, 19-inch rack mount enclosure with 100 - 240 V AC or -48 V DC power supplies
- **Storwize V5000E Expansion Enclosures models 12F and 24F**
 - Two expansion canisters
 - 12 Gb SAS port for control enclosure and expansion enclosure attachment
 - Twelve slots for 3.5-inch LFF SAS drives (Model 12F) and 24 slots for 2.5-inch SFF SAS drives (Model 24F)
 - 2U, 19-inch rack mount enclosure with 100 - 240 V AC or -48 V DC power supplies
- **Storwize V5000E Expansion Enclosure Model 92F**
 - Two expansion canisters
 - 12 Gb SAS port for control enclosure and expansion enclosure attachment
 - Ninety-two slots for 3.5-inch LFF SAS drives
 - 5U, 19-inch rack mount enclosure with 180 - 264 V AC power supplies

All models are available with a three-year warranty.

FC, SAS, and iSCSI connectivity with intermix flexibility

All Storwize V5000E control enclosures include 1 Gb or 10 Gb Ethernet ports standard for iSCSI connectivity. The standard connectivity can be extended with additional ports or enhanced with additional connectivity through an optional I/O adapter card feature. The following configurations are available:

	1 Gb Ethernet (iSCSI)	10 Gb Ethernet - Copper (iSCSI)	12 Gb SAS	16 Gb FC	10 Gb Ethernet - Optical (iSCSI)	25 Gb iSCSI Ethernet
Storwize V5030E	N/A	4 ports (standard)	8 ports (with optional adapter)	8 ports (with optional adapter)	8 ports (with optional adapter)	4ports (with optional adapter)

	1 Gb Ethernet (iSCSI)	10 Gb Ethernet - Copper (iSCSI)	12 Gb SAS	16 Gb FC	10 Gb Ethernet - Optical (iSCSI)	25 Gb iSCSI Ethernet
			card feature ²)	card feature ²)	card feature ²)	card feature ²)
Storwize V5010E	4 ports (standard)	N/A	8 ports (with optional adapter card feature ²)	8 ports (with optional adapter card feature ²)	8 ports (with optional adapter card feature ²)	4 ports (with optional adapter card feature ²)

² One optional I/O adapter card feature is allowed per Storwize V5000E control enclosure.

Select ports on Storwize V5000E control enclosures support additional link speeds. For example, the 10 Gb Ethernet (copper) ports on Storwize V5030E also support 1 Gb iSCSI. For a comprehensive list of supported environments, devices, and configurations, go to the [IBM System Storage Interoperation Center \(SSIC\)](#) website.

Drive options and intermix flexibility meet a complete range of needs

Storwize V5000E is designed to support a complete range of data storage requirements, from highly utilized applications to high-capacity, low usage applications, and with hybrid or all-flash solutions.

The following 3.5-inch LFF drives are supported:

- High-performance, enterprise class disk drives: 900 GB, 1.2 TB, 1.8 TB, and 2.4 TB 10,000 rpm (These are 2.5-inch drives packaged in a 3.5-inch carrier.)
- High-capacity, archival class nearline disk drives: 4 TB, 6 TB, 8 TB, 10 TB, 12 TB, and 14 TB 7,200 rpm

The following 2.5-inch SFF drives are supported:

- Flash drives: 800 GB, 1.92 TB, 3.84 TB, 7.68 TB, 15.36 TB and 30.72 TB
- High-performance, enterprise class disk drives: 900 GB, 1.2 TB, 1.8 TB, and 2.4 TB 10,000 rpm
- High-capacity, archival class nearline disk drives: 2 TB 7,200 rpm

All drives are dual-port and hot-swappable. Drives of the same form factor can be intermixed within an enclosure, and LFF and SFF expansion enclosures can be intermixed behind either a LFF or SFF control enclosure.

Scalable configurations respond to growing capacity needs

A Storwize V5030E system scales to 760 drives per system with the attachment of eight Storwize V5000E High Density LFF Expansion Enclosures. Storwize V5030E systems can be clustered to help deliver even greater performance, bandwidth, and storage capacity. With two-way system clustering, the maximum size of a Storwize V5030E system increases to 1,520 drives.

Storwize V5010E systems scales to 392 drives per system with the attachment of four Storwize V5000E High Density LFF Expansion Enclosures.

Designed for high availability

Storwize V5000E is designed to offer high system and data availability with the following features:

- Dual-active, intelligent node canisters with mirrored cache
- Dual-port drives with automatic drive failure detection
- RAID levels 0, 1, 5, 6, 10 with RAID levels 5 and 6 as distributed RAID

- Redundant hardware, including power supplies and fans
- Hot-swappable and customer replaceable components
- Automated path failover support for the data path between the server and the drives
- HyperSwap on V5030E only

Rich set of functional capabilities standard with every system

As a member of the Storwize family, Storwize V5000E leverages IBM Spectrum Virtualize Software functions and management tools. The following functions are included with Storwize V5000E models:

- **RAID levels 0, 1, 5, 6, 10 with RAID levels 5 and 6 as distributed RAID:** Provides the flexibility to choose the level of data protection required.
- **Virtualization of internal storage:** Enables rapid, flexible provisioning and simple configuration changes.
- **Thin provisioning:** Optimizes efficiency by allocating disk storage space in a flexible manner among multiple users, based on the minimum space required by each user at any given time. With thin provisioning, applications consume only the space they are actually using, not the total space that has been allocated to them.
- **Data reduction pools:** Increases existing infrastructure capacity utilization by leveraging new efficiency functions:
 - Automatically de-allocate and reclaim capacity of thin-provisioned volumes containing deleted data and, for the first time, enable this reclaimed capacity to be reused by other volumes.
 - Block deduplication for increased efficiency of storage usage by utilizing pointers in duplicate blocks rather than keeping multiple copies (Storwize V5030E only).
 - Compression improves efficiency by storing more active primary data in the same physical disk space (Storwize V5030E only).
- Dynamic migration delivers efficiency and business value through a nondisruptive migration function.
- FlashCopy enables you to create copies of data for backup, parallel processing, testing, and development, and have the copies available almost immediately. Storwize V5000E supports up to 64 FlashCopy targets per system.
- HyperSwap delivers high-availability configurations for resilient virtualized environments (Storwize V5030E only).
- Graphical user interface delivers intuitive data management designed with point-and-click system management capabilities.

Optional licensed functions and 90-day trial period

Storwize V5000E capabilities can be expanded with the following optional licensed functions. Each function is licensed to a Storwize V5000E control enclosure and covers the entire Storwize V5000E system (control enclosure and all attached expansion enclosures).

To help evaluate the benefits of these new capabilities, licensed functions (with the exception of FlashCopy upgrade) can be enabled at no charge for a 90-day trial period. Trials are initiated from the Storwize management GUI and do not require any IBM intervention. Upon expiration of the trial, the function will be automatically disabled unless a license key for that function has been installed onto the machine.

- **FlashCopy upgrade:** FlashCopy enables the creation of copies of data for backup, parallel processing, testing, and development, and have the copies available almost immediately. All Storwize V5000E systems support up to 64 targets per system at no charge. The FlashCopy upgrade option increases this support to 2,040 FlashCopy targets per system.
- **Easy Tier:** Storage tiering helps optimize storage use with data location to improve system performance, reduce costs, and simplify management. Easy Tier automatically and dynamically moves frequently accessed data to flash

(solid state) drives in the system, resulting in flash drive performance without manually creating and managing storage tier policies. Easy Tier makes it easy and economical to deploy flash drives in the environment.

- **Remote mirroring:** This feature provides storage system-based data replication using either synchronous or asynchronous data transfers:
 - Metro Mirror is designed to maintain a fully synchronized copy at metropolitan distances (up to 300 km).
 - Global Mirror is designed to operate asynchronously and helps maintain a copy at much greater distances (up to 8000 km).
 - Both functions are designed to support VMware Site Recovery Manager to help speed disaster recovery.
 - For ultimate flexibility, Storwize V5000E remote mirroring is designed to interoperate with any other IBM Spectrum Virtualize family system, including Storwize V7000, Storwize V5000, FlashSystem V9000, FlashSystem 9100 and SAN Volume Controller.
 - The remote mirroring option must be acquired (or licensed) for both the primary (local) and secondary (remote) systems. If Storwize V5000E is mirrored to a system other than Storwize V5000E, the other system must have the appropriate and applicable license for remote mirroring.

Encryption for enhanced data security (Storwize V5030E Only)

Storwize V5030E supports encryption for data at rest. Encryption is performed by the Storwize V5030E control enclosure for data stored within the entire Storwize V5030E system, the Storwize V5030E control enclosure and all attached Storwize V5000E expansion enclosures.

Encryption is enabled on Storwize V5030E through the acquisition of the Encryption Enablement feature. This feature enables encryption on the entire Storwize V5030E system.

The Encryption USB Flash Drives (Four Pack) feature or IBM Security Key Manager (SKLM) are required for encryption keys management.

IBM Storage Insights

Available at no charge, cloud-based IBM Storage Insights provides a single dashboard that gives you a clear view of all your IBM block storage. You'll be able to make better decisions by seeing trends in performance and capacity. Storage health information enables you to focus on areas needing attention and when IBM support is needed, Storage Insights simplifies uploading logs, speeds resolution with online configuration data, and provides an overview of open tickets all in one place. Storage Insights Pro is a subscription service that provides longer historical views of data, more reporting and optimization options, and supports IBM file and block storage together with EMC VNX and VMAX.

There is no ordering required. For registration and installation information, see the [IBM Storage Insights Enrollment](#) website.

Accessibility by people with disabilities

A US Section 508 Accessibility Compliance Report containing details on accessibility compliance can be found on the [Product accessibility information](#) website.

Reference information

Storwize family product information is available on the [IBM Storwize family](#) website.

Product number

The following are newly announced features and models on the specified models of the IBM System Storage 2072 machine type:

Description	Machine type	Model	Feature
IBM Storwize V5000E LFF Expansion Enclosure	2072	12F	
JEMT Indicator	2072	12F	0021
Bulk Ordering Feature	2072	12F	5555
Power Cord - EMEA	2072	12F	9716
Power Cord - Australia/NZ	2072	12F	9717
Power Cord - Europe/Africa	2072	12F	9718
Power Cord - Denmark	2072	12F	9719
Power Cord - South Africa	2072	12F	9720
Power Cord - Switzerland	2072	12F	9721
Power Cord - Chile/Italy	2072	12F	9722
Power Cord - Israel	2072	12F	9723
Power Cord - Argentina	2072	12F	9725
Power Cord - China	2072	12F	9726
Power Cord - PDU Connection	2072	12F	9730
Power Cord - US/ Group 1	2072	12F	9731
Power Cord - Taiwan	2072	12F	9732
Power Cord - Brazil	2072	12F	9733
Power Cord - India	2072	12F	9734
Power Cord - Japan	2072	12F	9735
Power Cord - Korea	2072	12F	9736
Power Cord - Chicago	2072	12F	9737
RFID AG/AP: 902-928 MHz	2072	12F	A2EV
RFID EMEA: 865.6-867.8 MHz	2072	12F	A2EW
0.6m 12 Gb SAS Cable (mSAS HD to mSAS HD)	2072	12F	ACUA
1.5m 12 Gb SAS Cable (mSAS HD to mSAS HD)	2072	12F	ACUB
3m 12 Gb SAS Cable (mSAS HD to mSAS HD)	2072	12F	ACUC
6m 12 Gb SAS Cable (mSAS HD to mSAS HD)	2072	12F	ACUE
OEM 1 FC Order Indicator	2072	12F	ACW1

Description	Machine type	Model	Feature
OEM 2 FC Order Indicator	2072	12F	ACW2
OEM 3 FC Order Indicator	2072	12F	ACW3
OEM 4 FC Order Indicator	2072	12F	ACW4
OEM 5 FC Order Indicator	2072	12F	ACW5
OEM 6 FC Order Indicator	2072	12F	ACW6
OEM 7 FC Order Indicator	2072	12F	ACW7
OEM 8 FC Order Indicator	2072	12F	ACW8
OEM 9 FC Order Indicator	2072	12F	ACW9
OEM 10 FC Order Indicator	2072	12F	ACWA
OEM 11 FC Order Indicator	2072	12F	ACWB
OEM 12 FC Order Indicator	2072	12F	ACWC
OEM 13 FC Order Indicator	2072	12F	ACWD
OEM 14 FC Order Indicator	2072	12F	ACWE
OEM 15 FC Order Indicator	2072	12F	ACWF
OEM 1 MTM Order Indicator	2072	12F	ACY1
OEM 2 MTM Order Indicator	2072	12F	ACY2
OEM 3 MTM Order Indicator	2072	12F	ACY3
OEM 4 MTM Order Indicator	2072	12F	ACY4
OEM 5 MTM Order Indicator	2072	12F	ACY5
OEM 6 MTM Order Indicator	2072	12F	ACY6
OEM 7 MTM Order Indicator	2072	12F	ACY7
OEM 8 MTM Order Indicator	2072	12F	ACY8
OEM 9 MTM Order Indicator	2072	12F	ACY9
OEM 10 MTM Order Indicator	2072	12F	ACYA
OEM 11 MTM Order Indicator	2072	12F	ACYB
OEM 12 MTM Order Indicator	2072	12F	ACYC
OEM 13 MTM Order Indicator	2072	12F	ACYD
OEM 14 MTM Order Indicator	2072	12F	ACYE
OEM 15 MTM Order Indicator	2072	12F	ACYF
Generic Bezel	2072	12F	ACZA
Generic Packaging	2072	12F	ACZF
Order Type 1 - CTO	2072	12F	ADN1

Description	Machine type	Model	Feature
Order Type 2 - MTM Only	2072	12F	ADN2
Order Type 3 - FC Only	2072	12F	ADN3
No Rules Order Indicator	2072	12F	ADNR
TAA Designated Country	2072	12F	ADZ1
Shipping and Handling NC	2072	12F	AG00
Shipping and Handling - Model 12F	2072	12F	AGJX
Power Cord - DC	2072	12F	AHP4
Power Cord - PDU Connection (C20)	2072	12F	AHP6
AC Power Supply High Efficiency (Pair)	2072	12F	AHPA
DC Power Supply -48V (Pair)	2072	12F	AHPB
20A Circuit Breaker (Pair)	2072	12F	AHPC
VersaStack Solution Indicator	2072	12F	AHZC
900 GB 10,000 rpm 12 Gb SAS 3.5 Inch HDD	2072	12F	AL27
1.2 TB 10,000 rpm 12 Gb SAS 3.5 Inch HDD	2072	12F	AL28
1.8 TB 10,000 rpm 12 Gb SAS 3.5 Inch HDD	2072	12F	AL29
2.4 TB 10,000 rpm 12 Gb SAS 3.5 Inch HDD	2072	12F	AL2A
4 TB 7,200 rpm 12 Gb SAS NL 3.5 Inch HDD	2072	12F	AL39
6 TB 7,200 rpm 12 Gb SAS NL 3.5 Inch HDD	2072	12F	AL3A
8 TB 7,200 rpm 12 Gb SAS NL 3.5 Inch HDD	2072	12F	AL3B
10 TB 7,200 rpm 12 Gb SAS NL 3.5 Inch HDD	2072	12F	AL3C
12 TB 7,200 rpm 12 Gb SAS NL 3.5 Inch HDD	2072	12F	AL3D
14 TB 7,200 rpm 12 Gb SAS NL 3.5 Inch HDD	2072	12F	AL3E
ServicePac ^(R) Warranty and Maintenance Option 5 YR 24x7 Same Day rCL/4hrPD	2072	12F	B0MT
ServicePac for Hard Drive or Media Retention	2072	12F	B0NQ

Description	Machine type	Model	Feature
for Storage 3 years			
ServicePac for Hard Drive or Media Retention for Storage 5 years	2072	12F	B0PF
ServicePac Warranty Service Upgrade 3 YR 24x7 Same Day ORT 6hrCL/4hrPD	2072	12F	B0PC
ServicePac Warranty Service Upgrade 3 YR 24x7 Committed Fix 24h	2072	12F	B0YH
ServicePac Warranty and Maintenance Option 5 YR 24x7 Committed Fix 24h	2072	12F	B17H
IBM Storwize V5010E LFF Control Enclosure	2072	212	
JEMT Indicator	2072	212	0021
Bulk Ordering Feature	2072	212	5555
Power Cord - EMEA	2072	212	9716
Power Cord - Australia/NZ	2072	212	9717
Power Cord - Europe/Africa	2072	212	9718
Power Cord - Denmark	2072	212	9719
Power Cord - South Africa	2072	212	9720
Power Cord - Switzerland	2072	212	9721
Power Cord - Chile/Italy	2072	212	9722
Power Cord - Israel	2072	212	9723
Power Cord - Argentina	2072	212	9725
Power Cord - China	2072	212	9726
Power Cord - PDU Connection	2072	212	9730
Power Cord - US/ Group 1	2072	212	9731
Power Cord - Taiwan	2072	212	9732
Power Cord - Brazil	2072	212	9733
Power Cord - India	2072	212	9734
Power Cord - Japan	2072	212	9735
Power Cord - Korea	2072	212	9736
Power Cord - Chicago	2072	212	9737

Description	Machine type	Model	Feature
RFID AG/AP: 902-928 MHz	2072	212	A2EV
RFID EMEA: 865.6-867.8 MHz	2072	212	A2EW
Storwize V5000E Cache Upgrade	2072	212	ALGA
16 Gb FC LW SFP Transceivers (Pair)	2072	212	ACHU
0.6m SAS Cable (mSAS HD to mSAS)	2072	212	ACSA
1.5m SAS Cable (mSAS HD to mSAS)	2072	212	ACSB
3m SAS Cable (mSAS HD to mSAS)	2072	212	ACSC
1m OM3 Fiber Cable (LC)	2072	212	ACSQ
5m OM3 Fiber Cable (LC)	2072	212	ACSR
10m OM3 Fiber Cable (LC)	2072	212	ACSS
25m OM3 Fiber Cable (LC)	2072	212	ACST
0.6m 12 Gb SAS Cable (mSAS HD to mSAS HD)	2072	212	ACUA
1.5m 12 Gb SAS Cable (mSAS HD to mSAS HD)	2072	212	ACUB
3m 12 Gb SAS Cable (mSAS HD to mSAS HD)	2072	212	ACUC
6m 12 Gb SAS Cable (mSAS HD to mSAS HD)	2072	212	ACUE
OEM 1 FC Order Indicator	2072	212	ACW1
OEM 2 FC Order Indicator	2072	212	ACW2
OEM 3 FC Order Indicator	2072	212	ACW3
OEM 4 FC Order Indicator	2072	212	ACW4
OEM 5 FC Order Indicator	2072	212	ACW5
OEM 6 FC Order Indicator	2072	212	ACW6
OEM 7 FC Order Indicator	2072	212	ACW7
OEM 8 FC Order Indicator	2072	212	ACW8
OEM 9 FC Order Indicator	2072	212	ACW9
OEM 10 FC Order Indicator	2072	212	ACWA
OEM 11 FC Order Indicator	2072	212	ACWB
OEM 12 FC Order Indicator	2072	212	ACWC
OEM 13 FC Order Indicator	2072	212	ACWD

Description	Machine type	Model	Feature
OEM 14 FC Order Indicator	2072	212	ACWE
OEM 15 FC Order Indicator	2072	212	ACWF
OEM 1 MTM Order Indicator	2072	212	ACY1
OEM 2 MTM Order Indicator	2072	212	ACY2
OEM 3 MTM Order Indicator	2072	212	ACY3
OEM 4 MTM Order Indicator	2072	212	ACY4
OEM 5 MTM Order Indicator	2072	212	ACY5
OEM 6 MTM Order Indicator	2072	212	ACY6
OEM 7 MTM Order Indicator	2072	212	ACY7
OEM 8 MTM Order Indicator	2072	212	ACY8
OEM 9 MTM Order Indicator	2072	212	ACY9
OEM 10 MTM Order Indicator	2072	212	ACYA
OEM 11 MTM Order Indicator	2072	212	ACYB
OEM 12 MTM Order Indicator	2072	212	ACYC
OEM 13 MTM Order Indicator	2072	212	ACYD
OEM 14 MTM Order Indicator	2072	212	ACYE
OEM 15 MTM Order Indicator	2072	212	ACYF
Generic Bezel	2072	212	ACZA
Generic Packaging	2072	212	ACZF
Order Type 1 - CTO	2072	212	ADN1
Order Type 2 - MTM Only	2072	212	ADN2
Order Type 3 - FC Only	2072	212	ADN3
No Rules Order Indicator	2072	212	ADNR
TAA Designated Country	2072	212	ADZ1
Shipping and Handling NC	2072	212	AG00
Shipping and Handling - Model 212	2072	212	AGJT
Power Cord - DC	2072	212	AHP4
Power Cord - PDU Connection (C20)	2072	212	AHP6
AC Power Supply High Efficiency (Pair)	2072	212	AHPA
DC Power Supply -48V (Pair)	2072	212	AHPB
20A Circuit Breaker (Pair)	2072	212	AHPC

Description	Machine type	Model	Feature
VersaStack Solution Indicator	2072	212	AHZC
900 GB 10,000 rpm 12 Gb SAS 3.5 Inch HDD	2072	212	AL27
1.2 TB 10,000 rpm 12 Gb SAS 3.5 Inch HDD	2072	212	AL28
1.8 TB 10,000 rpm 12 Gb SAS 3.5 Inch HDD	2072	212	AL29
2.4 TB 10,000 rpm 12 Gb SAS 3.5 Inch HDD	2072	212	AL2A
4 TB 7,200 rpm 12 Gb SAS NL 3.5 Inch HDD	2072	212	AL39
6 TB 7,200 rpm 12 Gb SAS NL 3.5 Inch HDD	2072	212	AL3A
8 TB 7,200 rpm 12 Gb SAS NL 3.5 Inch HDD	2072	212	AL3B
10 TB 7,200 rpm 12 Gb SAS NL 3.5 Inch HDD	2072	212	AL3C
12 TB 7,200 rpm 12 Gb SAS NL 3.5 Inch HDD	2072	212	AL3D
14 TB 7,200 rpm 12 Gb SAS NL 3.5 Inch HDD	2072	212	AL3E
12 Gb SAS 4 Port Adapter Cards (Pair)	2072	212	ALBA
16 Gb FC 4 Port Adapter Cards (Pair)	2072	212	ALBB
10 Gb Ethernet 4 Port Adapter Cards (Pair)	2072	212	ALBD
25GbE (RoCE) Adapter Cards (Pair)	2072	212	ALBE
25GbE (iWARP) Adapter Cards (Pair)	2072	212	ALBF
FlashCopy Upgrade	2072	212	ALE7
Remote Mirroring	2072	212	ALE8
Easy Tier	2072	212	ALE9
ServicePac Warranty and Maintenance Option 5 YR 24x7 Same Day rCL/4hrPD	2072	212	B0MT
ServicePac for Hard Drive or Media Retention for Storage 3 years	2072	212	B0NQ
ServicePac for Hard Drive or Media Retention	2072	212	B0PF

Description	Machine type	Model	Feature
for Storage 5 years			
ServicePac Warranty Service Upgrade 3 YR 24x7 Same Day ORT 6hrCL/4hrPD	2072	212	B0PC
ServicePac Warranty Service Upgrade 3 YR 24x7 Committed Fix 24h	2072	212	B0YH
ServicePac Warranty and Maintenance Option 5 YR 24x7 Committed Fix 24h	2072	212	B17H
IBM Storwize V5010E SFF Control Enclosure	2072	224	
JEMT Indicator	2072	224	0021
Bulk Ordering Feature	2072	224	5555
Power Cord - EMEA	2072	224	9716
Power Cord - Australia/NZ	2072	224	9717
Power Cord - Europe/Africa	2072	224	9718
Power Cord - Denmark	2072	224	9719
Power Cord - South Africa	2072	224	9720
Power Cord - Switzerland	2072	224	9721
Power Cord - Chile/Italy	2072	224	9722
Power Cord - Israel	2072	224	9723
Power Cord - Argentina	2072	224	9725
Power Cord - China	2072	224	9726
Power Cord - PDU Connection	2072	224	9730
Power Cord - US/ Group 1	2072	224	9731
Power Cord - Taiwan	2072	224	9732
Power Cord - Brazil	2072	224	9733
Power Cord - India	2072	224	9734
Power Cord - Japan	2072	224	9735
Power Cord - Korea	2072	224	9736
Power Cord - Chicago	2072	224	9737
RFID AG/AP: 902-928 MHz	2072	224	A2EV
RFID EMEA: 865.6-867.8 MHz	2072	224	A2EW
Storwize V5000E Cache Upgrade	2072	224	ALGA

Description	Machine type	Model	Feature
16 Gb FC LW SFP Transceivers (Pair)	2072	224	ACHU
0.6m SAS Cable (mSAS HD to mSAS)	2072	224	ACSA
1.5m SAS Cable (mSAS HD to mSAS)	2072	224	ACSB
3m SAS Cable (mSAS HD to mSAS)	2072	224	ACSC
1m OM3 Fiber Cable (LC)	2072	224	ACSQ
5m OM3 Fiber Cable (LC)	2072	224	ACSR
10m OM3 Fiber Cable (LC)	2072	224	ACSS
25m OM3 Fiber Cable (LC)	2072	224	ACST
0.6m 12 Gb SAS Cable (mSAS HD to mSAS HD)	2072	224	ACUA
1.5m 12 Gb SAS Cable (mSAS HD to mSAS HD)	2072	224	ACUB
3m 12 Gb SAS Cable (mSAS HD to mSAS HD)	2072	224	ACUC
6m 12 Gb SAS Cable (mSAS HD to mSAS HD)	2072	224	ACUE
OEM 1 FC Order Indicator	2072	224	ACW1
OEM 2 FC Order Indicator	2072	224	ACW2
OEM 3 FC Order Indicator	2072	224	ACW3
OEM 4 FC Order Indicator	2072	224	ACW4
OEM 5 FC Order Indicator	2072	224	ACW5
OEM 6 FC Order Indicator	2072	224	ACW6
OEM 7 FC Order Indicator	2072	224	ACW7
OEM 8 FC Order Indicator	2072	224	ACW8
OEM 9 FC Order Indicator	2072	224	ACW9
OEM 10 FC Order Indicator	2072	224	ACWA
OEM 11 FC Order Indicator	2072	224	ACWB
OEM 12 FC Order Indicator	2072	224	ACWC
OEM 13 FC Order Indicator	2072	224	ACWD
OEM 14 FC Order Indicator	2072	224	ACWE
OEM 15 FC Order Indicator	2072	224	ACWF
OEM 1 MTM Order Indicator	2072	224	ACY1

Description	Machine type	Model	Feature
OEM 2 MTM Order Indicator	2072	224	ACY2
OEM 3 MTM Order Indicator	2072	224	ACY3
OEM 4 MTM Order Indicator	2072	224	ACY4
OEM 5 MTM Order Indicator	2072	224	ACY5
OEM 6 MTM Order Indicator	2072	224	ACY6
OEM 7 MTM Order Indicator	2072	224	ACY7
OEM 8 MTM Order Indicator	2072	224	ACY8
OEM 9 MTM Order Indicator	2072	224	ACY9
OEM 10 MTM Order Indicator	2072	224	ACYA
OEM 11 MTM Order Indicator	2072	224	ACYB
OEM 12 MTM Order Indicator	2072	224	ACYC
OEM 13 MTM Order Indicator	2072	224	ACYD
OEM 14 MTM Order Indicator	2072	224	ACYE
OEM 15 MTM Order Indicator	2072	224	ACYF
Generic Bezel	2072	224	ACZA
Generic Packaging	2072	224	ACZF
Order Type 1 - CTO	2072	224	ADN1
Order Type 2 - MTM Only	2072	224	ADN2
Order Type 3 - FC Only	2072	224	ADN3
No Rules Order Indicator	2072	224	ADNR
TAA Designated Country	2072	224	ADZ1
Shipping and Handling NC	2072	224	AG00
Shipping and Handling - Model 224	2072	224	AGJU
Power Cord - DC	2072	224	AHP4
Power Cord - PDU Connection (C20)	2072	224	AHP6
AC Power Supply High Efficiency (Pair)	2072	224	AHPA
DC Power Supply -48V (Pair)	2072	224	AHPB
20A Circuit Breaker (Pair)	2072	224	AHPC
VersaStack Solution Indicator	2072	224	AHZC
900 GB 10,000 rpm 12 Gb SAS 2.5 Inch HDD	2072	224	AL68
1.2 TB 10,000 rpm 12 Gb SAS 2.5 Inch HDD	2072	224	AL69

Description	Machine type	Model	Feature
1.8 TB 10,000 rpm 12 Gb SAS 2.5 Inch HDD	2072	224	AL6A
2.4 TB 10,000 rpm 12 Gb SAS 2.5 Inch HDD	2072	224	AL6B
2 TB 7,200 rpm 12 Gb SAS NL 2.5 Inch HDD	2072	224	AL76
1.92TB 12 Gb SAS 2.5 Inch Flash Drive	2072	224	AL80
3.84TB 12 Gb SAS 2.5 Inch Flash Drive	2072	224	AL81
7.68TB 12 Gb SAS 2.5 Inch Flash Drive	2072	224	AL82
15.36TB 12 Gb SAS 2.5 Inch Flash Drive	2072	224	AL83
30.72TB 12 Gb SAS 2.5 Inch Flash Drive	2072	224	AL84
800 GB 3DWPD 12 Gb SAS 2.5 Inch Flash Drive	2072	224	AL8A
12 Gb SAS 4 Port Adapter Cards (Pair)	2072	224	ALBA
16 Gb FC 4 Port Adapter Cards (Pair)	2072	224	ALBB
10 Gb Ethernet 4 Port Adapter Cards (Pair)	2072	224	ALBD
25GbE (RoCE) Adapter Cards (Pair)	2072	224	ALBE
25GbE (iWARP) Adapter Cards (Pair)	2072	224	ALBF
FlashCopy Upgrade	2072	224	ALE7
Remote Mirroring	2072	224	ALE8
Easy Tier	2072	224	ALE9
ServicePac Warranty and Maintenance Option 5 YR 24x7 Same Day rCL/4hrPD	2072	224	B0MT
ServicePac for Hard Drive or Media Retention for Storage 3 years	2072	224	B0NQ
ServicePac for Hard Drive or Media Retention for Storage 5 years	2072	224	B0PF
ServicePac Warranty Service Upgrade 3 YR	2072	224	B0PC

Description	Machine type	Model	Feature
24x7 Same Day ORT 6hrCL/4hrPD			
ServicePac Warranty Service Upgrade 3 YR 24x7 Committed Fix 24h	2072	224	B0YH
ServicePac Warranty and Maintenance Option 5 YR 24x7 Committed Fix 24h	2072	224	B17H
IBM Storwize V5000E SFF Expansion Enclosure	2072	24F	
JEMT Indicator	2072	24F	0021
Bulk Ordering Feature	2072	24F	5555
Power Cord - EMEA	2072	24F	9716
Power Cord - Australia/NZ	2072	24F	9717
Power Cord - Europe/Africa	2072	24F	9718
Power Cord - Denmark	2072	24F	9719
Power Cord - South Africa	2072	24F	9720
Power Cord - Switzerland	2072	24F	9721
Power Cord - Chile/Italy	2072	24F	9722
Power Cord - Israel	2072	24F	9723
Power Cord - Argentina	2072	24F	9725
Power Cord - China	2072	24F	9726
Power Cord - PDU Connection	2072	24F	9730
Power Cord - US/ Group 1	2072	24F	9731
Power Cord - Taiwan	2072	24F	9732
Power Cord - Brazil	2072	24F	9733
Power Cord - India	2072	24F	9734
Power Cord - Japan	2072	24F	9735
Power Cord - Korea	2072	24F	9736
Power Cord - Chicago	2072	24F	9737
RFID AG/AP: 902-928 MHz	2072	24F	A2EV
RFID EMEA: 865.6-867.8 MHz	2072	24F	A2EW
0.6m 12 Gb SAS Cable (mSAS HD to mSAS HD)	2072	24F	ACUA
1.5m 12 Gb SAS Cable (mSAS HD to mSAS HD)	2072	24F	ACUB

Description	Machine type	Model	Feature
3m 12 Gb SAS Cable (mSAS HD to mSAS HD)	2072	24F	ACUC
6m 12 Gb SAS Cable (mSAS HD to mSAS HD)	2072	24F	ACUE
OEM 1 FC Order Indicator	2072	24F	ACW1
OEM 2 FC Order Indicator	2072	24F	ACW2
OEM 3 FC Order Indicator	2072	24F	ACW3
OEM 4 FC Order Indicator	2072	24F	ACW4
OEM 5 FC Order Indicator	2072	24F	ACW5
OEM 6 FC Order Indicator	2072	24F	ACW6
OEM 7 FC Order Indicator	2072	24F	ACW7
OEM 8 FC Order Indicator	2072	24F	ACW8
OEM 9 FC Order Indicator	2072	24F	ACW9
OEM 10 FC Order Indicator	2072	24F	ACWA
OEM 11 FC Order Indicator	2072	24F	ACWB
OEM 12 FC Order Indicator	2072	24F	ACWC
OEM 13 FC Order Indicator	2072	24F	ACWD
OEM 14 FC Order Indicator	2072	24F	ACWE
OEM 15 FC Order Indicator	2072	24F	ACWF
OEM 1 MTM Order Indicator	2072	24F	ACY1
OEM 2 MTM Order Indicator	2072	24F	ACY2
OEM 3 MTM Order Indicator	2072	24F	ACY3
OEM 4 MTM Order Indicator	2072	24F	ACY4
OEM 5 MTM Order Indicator	2072	24F	ACY5
OEM 6 MTM Order Indicator	2072	24F	ACY6
OEM 7 MTM Order Indicator	2072	24F	ACY7
OEM 8 MTM Order Indicator	2072	24F	ACY8
OEM 9 MTM Order Indicator	2072	24F	ACY9
OEM 10 MTM Order Indicator	2072	24F	ACYA
OEM 11 MTM Order Indicator	2072	24F	ACYB
OEM 12 MTM Order Indicator	2072	24F	ACYC
OEM 13 MTM Order Indicator	2072	24F	ACYD

Description	Machine type	Model	Feature
OEM 14 MTM Order Indicator	2072	24F	ACYE
OEM 15 MTM Order Indicator	2072	24F	ACYF
Generic Bezel	2072	24F	ACZA
Generic Packaging	2072	24F	ACZF
Order Type 1 - CTO	2072	24F	ADN1
Order Type 2 - MTM Only	2072	24F	ADN2
Order Type 3 - FC Only	2072	24F	ADN3
No Rules Order Indicator	2072	24F	ADNR
TAA Designated Country	2072	24F	ADZ1
Shipping and Handling NC	2072	24F	AG00
Shipping and Handling - Model 24F	2072	24F	AGJY
Power Cord - DC	2072	24F	AHP4
Power Cord - PDU Connection (C20)	2072	24F	AHP6
AC Power Supply High Efficiency (Pair)	2072	24F	AHPA
DC Power Supply -48V (Pair)	2072	24F	AHPB
20A Circuit Breaker (Pair)	2072	24F	AHPC
VersaStack Solution Indicator	2072	24F	AHZC
900 GB 10,000 rpm 12 Gb SAS 2.5 Inch HDD	2072	24F	AL68
1.2 TB 10,000 rpm 12 Gb SAS 2.5 Inch HDD	2072	24F	AL69
1.8 TB 10,000 rpm 12 Gb SAS 2.5 Inch HDD	2072	24F	AL6A
2.4 TB 10,000 rpm 12 Gb SAS 2.5 Inch HDD	2072	24F	AL6B
2 TB 7,200 rpm 12 Gb SAS NL 2.5 Inch HDD	2072	24F	AL76
1.92TB 12 Gb SAS 2.5 Inch Flash Drive	2072	24F	AL80
3.84TB 12 Gb SAS 2.5 Inch Flash Drive	2072	24F	AL81
7.68TB 12 Gb SAS 2.5 Inch Flash Drive	2072	24F	AL82
15.36TB 12 Gb SAS 2.5 Inch Flash Drive	2072	24F	AL83
30.72TB 12 Gb SAS 2.5 Inch Flash Drive	2072	24F	AL84

Description	Machine type	Model	Feature
800 GB 3DWPD 12 Gb SAS 2.5 Inch Flash Drive	2072	24F	AL8A
ServicePac Warranty and Maintenance Option 5 YR 24x7 Same Day rCL/4hrPD	2072	24F	B0MT
ServicePac for Hard Drive or Media Retention for Storage 3 years	2072	24F	B0NQ
ServicePac for Hard Drive or Media Retention for Storage 5 years	2072	24F	B0PF
ServicePac Warranty Service Upgrade 3 YR 24x7 Same Day ORT 6hrCL/4hrPD	2072	24F	B0PC
ServicePac Warranty Service Upgrade 3 YR 24x7 Committed Fix 24h	2072	24F	B0YH
ServicePac Warranty and Maintenance Option 5 YR 24x7 Committed Fix 24h	2072	24F	B17H
IBM Storwize V5030E LFF Control Enclosure	2072	312	
JEMT Indicator	2072	312	0021
Bulk Ordering Feature	2072	312	5555
Power Cord - EMEA	2072	312	9716
Power Cord - Australia/NZ	2072	312	9717
Power Cord - Europe/Africa	2072	312	9718
Power Cord - Denmark	2072	312	9719
Power Cord - South Africa	2072	312	9720
Power Cord - Switzerland	2072	312	9721
Power Cord - Chile/Italy	2072	312	9722
Power Cord - Israel	2072	312	9723
Power Cord - Argentina	2072	312	9725
Power Cord - China	2072	312	9726
Power Cord - PDU Connection	2072	312	9730
Power Cord - US/ Group 1	2072	312	9731

Description	Machine type	Model	Feature
Power Cord - Taiwan	2072	312	9732
Power Cord - Brazil	2072	312	9733
Power Cord - India	2072	312	9734
Power Cord - Japan	2072	312	9735
Power Cord - Korea	2072	312	9736
Power Cord - Chicago	2072	312	9737
RFID AG/AP: 902-928 MHz	2072	312	A2EV
RFID EMEA: 865.6-867.8 MHz	2072	312	A2EW
Storwize V5000E Cache Upgrade	2072	312	ALGA
16 Gb FC LW SFP Transceivers (Pair)	2072	312	ACHU
0.6m SAS Cable (mSAS HD to mSAS)	2072	312	ACSA
1.5m SAS Cable (mSAS HD to mSAS)	2072	312	ACSB
3m SAS Cable (mSAS HD to mSAS)	2072	312	ACSC
1m OM3 Fiber Cable (LC)	2072	312	ACSQ
5m OM3 Fiber Cable (LC)	2072	312	ACSR
10m OM3 Fiber Cable (LC)	2072	312	ACSS
25m OM3 Fiber Cable (LC)	2072	312	ACST
0.6m 12 Gb SAS Cable (mSAS HD to mSAS HD)	2072	312	ACUA
1.5m 12 Gb SAS Cable (mSAS HD to mSAS HD)	2072	312	ACUB
3m 12 Gb SAS Cable (mSAS HD to mSAS HD)	2072	312	ACUC
6m 12 Gb SAS Cable (mSAS HD to mSAS HD)	2072	312	ACUE
OEM 1 FC Order Indicator	2072	312	ACW1
OEM 2 FC Order Indicator	2072	312	ACW2
OEM 3 FC Order Indicator	2072	312	ACW3
OEM 4 FC Order Indicator	2072	312	ACW4
OEM 5 FC Order Indicator	2072	312	ACW5
OEM 6 FC Order Indicator	2072	312	ACW6
OEM 7 FC Order Indicator	2072	312	ACW7

Description	Machine type	Model	Feature
OEM 8 FC Order Indicator	2072	312	ACW8
OEM 9 FC Order Indicator	2072	312	ACW9
OEM 10 FC Order Indicator	2072	312	ACWA
OEM 11 FC Order Indicator	2072	312	ACWB
OEM 12 FC Order Indicator	2072	312	ACWC
OEM 13 FC Order Indicator	2072	312	ACWD
OEM 14 FC Order Indicator	2072	312	ACWE
OEM 15 FC Order Indicator	2072	312	ACWF
OEM 1 MTM Order Indicator	2072	312	ACY1
OEM 2 MTM Order Indicator	2072	312	ACY2
OEM 3 MTM Order Indicator	2072	312	ACY3
OEM 4 MTM Order Indicator	2072	312	ACY4
OEM 5 MTM Order Indicator	2072	312	ACY5
OEM 6 MTM Order Indicator	2072	312	ACY6
OEM 7 MTM Order Indicator	2072	312	ACY7
OEM 8 MTM Order Indicator	2072	312	ACY8
OEM 9 MTM Order Indicator	2072	312	ACY9
OEM 10 MTM Order Indicator	2072	312	ACYA
OEM 11 MTM Order Indicator	2072	312	ACYB
OEM 12 MTM Order Indicator	2072	312	ACYC
OEM 13 MTM Order Indicator	2072	312	ACYD
OEM 14 MTM Order Indicator	2072	312	ACYE
OEM 15 MTM Order Indicator	2072	312	ACYF
Generic Bezel	2072	312	ACZA
Generic Packaging	2072	312	ACZF
Order Type 1 - CTO	2072	312	ADN1
Order Type 2 - MTM Only	2072	312	ADN2
Order Type 3 - FC Only	2072	312	ADN3
No Rules Order Indicator	2072	312	ADNR
TAA Designated Country	2072	312	ADZ1
Shipping and Handling NC	2072	312	AG00

Description	Machine type	Model	Feature
Shipping and Handling - Model 312	2072	312	AGJV
Power Cord - DC	2072	312	AHP4
Power Cord - PDU Connection (C20)	2072	312	AHP6
AC Power Supply High Efficiency (Pair)	2072	312	AHPA
DC Power Supply -48V (Pair)	2072	312	AHPB
20A Circuit Breaker (Pair)	2072	312	AHPC
VersaStack Solution Indicator	2072	312	AHZA
900 GB 10,000 rpm 12 Gb SAS 3.5 Inch HDD	2072	312	AL27
1.2 TB 10,000 rpm 12 Gb SAS 3.5 Inch HDD	2072	312	AL28
1.8 TB 10,000 rpm 12 Gb SAS 3.5 Inch HDD	2072	312	AL29
2.4 TB 10,000 rpm 12 Gb SAS 3.5 Inch HDD	2072	312	AL2A
4 TB 7,200 rpm 12 Gb SAS NL 3.5 Inch HDD	2072	312	AL39
6 TB 7,200 rpm 12 Gb SAS NL 3.5 Inch HDD	2072	312	AL3A
8 TB 7,200 rpm 12 Gb SAS NL 3.5 Inch HDD	2072	312	AL3B
10 TB 7,200 rpm 12 Gb SAS NL 3.5 Inch HDD	2072	312	AL3C
12 TB 7,200 rpm 12 Gb SAS NL 3.5 Inch HDD	2072	312	AL3D
14 TB 7,200 rpm 12 Gb SAS NL 3.5 Inch HDD	2072	312	AL3E
12 Gb SAS 4 Port Adapter Cards (Pair)	2072	312	ALBA
16 Gb FC 4 Port Adapter Cards (Pair)	2072	312	ALBB
10 Gb Ethernet 4 Port Adapter Cards (Pair)	2072	312	ALBD
25GbE (RoCE) Adapter Cards (Pair)	2072	312	ALBE
25GbE (iWARP) Adapter Cards (Pair)	2072	312	ALBF
Encryption Enablement	2072	312	ALE1
FlashCopy Upgrade	2072	312	ALE7

Description	Machine type	Model	Feature
Remote Mirroring	2072	312	ALE8
Easy Tier	2072	312	ALE9
Encryption USB Flash Drives (Four Pack)	2072	312	ALEC
ServicePac Warranty and Maintenance Option 5 YR 24x7 Same Day rCL/4hrPD	2072	312	B0MT
ServicePac for Hard Drive or Media Retention for Storage 3 years	2072	312	B0NQ
ServicePac for Hard Drive or Media Retention for Storage 5 years	2072	312	B0PF
ServicePac Warranty Service Upgrade 3 YR 24x7 Same Day ORT 6hrCL/4hrPD	2072	312	B0PC
ServicePac Warranty Service Upgrade 3 YR 24x7 Committed Fix 24h	2072	312	B0YH
ServicePac Warranty and Maintenance Option 5 YR 24x7 Committed Fix 24h	2072	312	B17H
IBM Storwize V5030E SFF Control Enclosure	2072	324	
JEMT Indicator	2072	324	0021
Bulk Ordering Feature	2072	324	5555
Power Cord - EMEA	2072	324	9716
Power Cord - Australia/NZ	2072	324	9717
Power Cord - Europe/Africa	2072	324	9718
Power Cord - Denmark	2072	324	9719
Power Cord - South Africa	2072	324	9720
Power Cord - Switzerland	2072	324	9721
Power Cord - Chile/Italy	2072	324	9722
Power Cord - Israel	2072	324	9723
Power Cord - Argentina	2072	324	9725
Power Cord - China	2072	324	9726
Power Cord - PDU Connection	2072	324	9730

Description	Machine type	Model	Feature
Power Cord - US/ Group 1	2072	324	9731
Power Cord - Taiwan	2072	324	9732
Power Cord - Brazil	2072	324	9733
Power Cord - India	2072	324	9734
Power Cord - Japan	2072	324	9735
Power Cord - Korea	2072	324	9736
Power Cord - Chicago	2072	324	9737
RFID AG/AP: 902-928 MHz	2072	324	A2EV
RFID EMEA: 865.6-867.8 MHz	2072	324	A2EW
Storwize V5000E Cache Upgrade	2072	324	ALGA
16 Gb FC LW SFP Transceivers (Pair)	2072	324	ACHU
0.6m SAS Cable (mSAS HD to mSAS)	2072	324	ACSA
1.5m SAS Cable (mSAS HD to mSAS)	2072	324	ACSB
3m SAS Cable (mSAS HD to mSAS)	2072	324	ACSC
1m OM3 Fiber Cable (LC)	2072	324	ACSQ
5m OM3 Fiber Cable (LC)	2072	324	ACSR
10m OM3 Fiber Cable (LC)	2072	324	ACSS
25m OM3 Fiber Cable (LC)	2072	324	ACST
0.6m 12 Gb SAS Cable (mSAS HD to mSAS HD)	2072	324	ACUA
1.5m 12 Gb SAS Cable (mSAS HD to mSAS HD)	2072	324	ACUB
3m 12 Gb SAS Cable (mSAS HD to mSAS HD)	2072	324	ACUC
6m 12 Gb SAS Cable (mSAS HD to mSAS HD)	2072	324	ACUE
OEM 1 FC Order Indicator	2072	324	ACW1
OEM 2 FC Order Indicator	2072	324	ACW2
OEM 3 FC Order Indicator	2072	324	ACW3
OEM 4 FC Order Indicator	2072	324	ACW4
OEM 5 FC Order Indicator	2072	324	ACW5
OEM 6 FC Order Indicator	2072	324	ACW6

Description	Machine type	Model	Feature
OEM 7 FC Order Indicator	2072	324	ACW7
OEM 8 FC Order Indicator	2072	324	ACW8
OEM 9 FC Order Indicator	2072	324	ACW9
OEM 10 FC Order Indicator	2072	324	ACWA
OEM 11 FC Order Indicator	2072	324	ACWB
OEM 12 FC Order Indicator	2072	324	ACWC
OEM 13 FC Order Indicator	2072	324	ACWD
OEM 14 FC Order Indicator	2072	324	ACWE
OEM 15 FC Order Indicator	2072	324	ACWF
OEM 1 MTM Order Indicator	2072	324	ACY1
OEM 2 MTM Order Indicator	2072	324	ACY2
OEM 3 MTM Order Indicator	2072	324	ACY3
OEM 4 MTM Order Indicator	2072	324	ACY4
OEM 5 MTM Order Indicator	2072	324	ACY5
OEM 6 MTM Order Indicator	2072	324	ACY6
OEM 7 MTM Order Indicator	2072	324	ACY7
OEM 8 MTM Order Indicator	2072	324	ACY8
OEM 9 MTM Order Indicator	2072	324	ACY9
OEM 10 MTM Order Indicator	2072	324	ACYA
OEM 11 MTM Order Indicator	2072	324	ACYB
OEM 12 MTM Order Indicator	2072	324	ACYC
OEM 13 MTM Order Indicator	2072	324	ACYD
OEM 14 MTM Order Indicator	2072	324	ACYE
OEM 15 MTM Order Indicator	2072	324	ACYF
Generic Bezel	2072	324	ACZA
Generic Packaging	2072	324	ACZF
Order Type 1 - CTO	2072	324	ADN1
Order Type 2 - MTM Only	2072	324	ADN2
Order Type 3 - FC Only	2072	324	ADN3
No Rules Order Indicator	2072	324	ADNR
TAA Designated Country	2072	324	ADZ1
Shipping and Handling NC	2072	324	AG00

Description	Machine type	Model	Feature
Shipping and Handling - Model 324	2072	324	AGJW
Power Cord - DC	2072	324	AHP4
Power Cord - PDU Connection (C20)	2072	324	AHP6
AC Power Supply High Efficiency (Pair)	2072	324	AHPA
DC Power Supply -48V (Pair)	2072	324	AHPB
20A Circuit Breaker (Pair)	2072	324	AHPC
VersaStack Solution Indicator	2072	324	AHZA
900 GB 10,000 rpm 12 Gb SAS 2.5 Inch HDD	2072	324	AL68
1.2 TB 10,000 rpm 12 Gb SAS 2.5 Inch HDD	2072	324	AL69
1.8 TB 10,000 rpm 12 Gb SAS 2.5 Inch HDD	2072	324	AL6A
2.4 TB 10,000 rpm 12 Gb SAS 2.5 Inch HDD	2072	324	AL6B
2 TB 7,200 rpm 12 Gb SAS NL 2.5 Inch HDD	2072	324	AL76
1.92TB 12 Gb SAS 2.5 Inch Flash Drive	2072	324	AL80
3.84TB 12 Gb SAS 2.5 Inch Flash Drive	2072	324	AL81
7.68TB 12 Gb SAS 2.5 Inch Flash Drive	2072	324	AL82
15.36TB 12 Gb SAS 2.5 Inch Flash Drive	2072	324	AL83
30.72TB 12 Gb SAS 2.5 Inch Flash Drive	2072	324	AL84
800 GB 3DWPD 12 Gb SAS 2.5 Inch Flash Drive	2072	324	AL8A
12 Gb SAS 4 Port Adapter Cards (Pair)	2072	324	ALBA
16 Gb FC 4 Port Adapter Cards (Pair)	2072	324	ALBB
10 Gb Ethernet 4 Port Adapter Cards (Pair)	2072	324	ALBD
25GbE (RoCE) Adapter Cards (Pair)	2072	324	ALBE
25GbE (iWARP) Adapter Cards (Pair)	2072	324	ALBF
Encryption Enablement	2072	324	ALE1

Description	Machine type	Model	Feature
FlashCopy Upgrade	2072	324	ALE7
Remote Mirroring	2072	324	ALE8
Easy Tier	2072	324	ALE9
Encryption USB Flash Drives (Four Pack)	2072	324	ALEC
ServicePac Warranty and Maintenance Option 5 YR 24x7 Same Day rCL/4hrPD	2072	324	B0MT
ServicePac for Hard Drive or Media Retention for Storage 3 years	2072	324	B0NQ
ServicePac for Hard Drive or Media Retention for Storage 5 years	2072	324	B0PF
ServicePac Warranty Service Upgrade 3 YR 24x7 Same Day ORT 6hrCL/4hrPD	2072	324	B0PC
ServicePac Warranty Service Upgrade 3 YR 24x7 Committed Fix 24h	2072	324	B0YH
ServicePac Warranty and Maintenance Option 5 YR 24x7 Committed Fix 24h	2072	324	B17H
IBM Storwize V5000E High Density LFF Expansion Enclosure	2072	92F	
JEMT Indicator	2072	92F	0021
Bulk Ordering Feature	2072	92F	5555
RFID AG/AP: 902-928 MHz	2072	92F	A2EV
RFID EMEA: 865.6-867.8 MHz	2072	92F	A2EW
3m 12 Gb SAS Cable (mSAS HD to mSAS HD)	2072	92F	ACUC
6m 12 Gb SAS Cable (mSAS HD to mSAS HD)	2072	92F	ACUE
OEM 1 FC Order Indicator	2072	92F	ACW1
OEM 2 FC Order Indicator	2072	92F	ACW2
OEM 3 FC Order Indicator	2072	92F	ACW3
OEM 4 FC Order Indicator	2072	92F	ACW4

Description	Machine type	Model	Feature
OEM 5 FC Order Indicator	2072	92F	ACW5
OEM 6 FC Order Indicator	2072	92F	ACW6
OEM 7 FC Order Indicator	2072	92F	ACW7
OEM 8 FC Order Indicator	2072	92F	ACW8
OEM 9 FC Order Indicator	2072	92F	ACW9
OEM 10 FC Order Indicator	2072	92F	ACWA
OEM 11 FC Order Indicator	2072	92F	ACWB
OEM 12 FC Order Indicator	2072	92F	ACWC
OEM 13 FC Order Indicator	2072	92F	ACWD
OEM 14 FC Order Indicator	2072	92F	ACWE
OEM 15 FC Order Indicator	2072	92F	ACWF
OEM 1 MTM Order Indicator	2072	92F	ACY1
OEM 2 MTM Order Indicator	2072	92F	ACY2
OEM 3 MTM Order Indicator	2072	92F	ACY3
OEM 4 MTM Order Indicator	2072	92F	ACY4
OEM 5 MTM Order Indicator	2072	92F	ACY5
OEM 6 MTM Order Indicator	2072	92F	ACY6
OEM 7 MTM Order Indicator	2072	92F	ACY7
OEM 8 MTM Order Indicator	2072	92F	ACY8
OEM 9 MTM Order Indicator	2072	92F	ACY9
OEM 10 MTM Order Indicator	2072	92F	ACYA
OEM 11 MTM Order Indicator	2072	92F	ACYB
OEM 12 MTM Order Indicator	2072	92F	ACYC
OEM 13 MTM Order Indicator	2072	92F	ACYD
OEM 14 MTM Order Indicator	2072	92F	ACYE
OEM 15 MTM Order Indicator	2072	92F	ACYF
Generic Bezel	2072	92F	ACZA
Generic Packaging	2072	92F	ACZF
Order Type 1 - CTO	2072	92F	ADN1
Order Type 2 - MTM Only	2072	92F	ADN2
Order Type 3 - FC Only	2072	92F	ADN3
No Rules Order Indicator	2072	92F	ADNR

Description	Machine type	Model	Feature
TAA Designated Country	2072	92F	ADZ1
Shipping and Handling NC	2072	92F	AG00
Shipping and Handling - Model 92F	2072	92F	AGJZ
Power Cord - PDU High Density Expansion	2072	92F	AHP5
VersaStack Solution Indicator	2072	92F	AHZC
1.2 TB 10,000 rpm 12 Gb SAS 3.5 Inch HDD	2072	92F	AL43
1.8 TB 10,000 rpm 12 Gb SAS 3.5 Inch HDD	2072	92F	AL44
2.4 TB 10,000 rpm 12 Gb SAS 3.5 Inch HDD	2072	92F	AL45
6 TB 7,200 rpm 12 Gb SAS NL 3.5 Inch HDD	2072	92F	AL47
8 TB 7,200 rpm 12 Gb SAS NL 3.5 Inch HDD	2072	92F	AL48
10 TB 7,200 rpm 12 Gb SAS NL 3.5 Inch HDD	2072	92F	AL49
12 TB 7,200 rpm 12 Gb SAS NL 3.5 Inch HDD	2072	92F	AL4A
14 TB 7,200 rpm 12 Gb SAS NL 3.5 Inch HDD	2072	92F	AL4B
1.92TB 12 Gb SAS 3.5 Inch Flash Drive	2072	92F	AL4J
3.84TB 12 Gb SAS 3.5 Inch Flash Drive	2072	92F	AL4K
7.68TB 12 Gb SAS 3.5 Inch Flash Drive	2072	92F	AL4L
15.36TB 12 Gb SAS 3.5 Inch Flash Drive	2072	92F	AL4M
30.72TB 12 Gb SAS 3.5 Inch Flash Drive	2072	92F	AL4N
ServicePac Warranty and Maintenance Option 5 YR 24x7 Same Day rCL/4hrPD	2072	92F	B0MT
ServicePac for Hard Drive or Media Retention for Storage 3 years	2072	92F	B0NQ
ServicePac for Hard Drive or Media Retention	2072	92F	B0PF

Description	Machine type	Model	Feature
for Storage 5 years			
ServicePac Warranty Service Upgrade 3 YR 24x7 Same Day ORT 6hrCL/4hrPD	2072	92F	B0PC
ServicePac Warranty Service Upgrade 3 YR 24x7 Committed Fix 24h	2072	92F	B0YH
ServicePac Warranty and Maintenance Option 5 YR 24x7 Committed Fix 24h	2072	92F	B17H

Education support

IBM Global Services IT Education Services provides education and training to support many IBM offerings. Course descriptions, training paths, and links to other IBM learning resources are available at the [IBM Authorized Training](#) website.

Publications

The *Storwize V5000E: Quick Installation Guide* publication is available.

Product documentation, including the *Storwize V5000E Information Center*, is available in [IBM Knowledge Center](#).

IBM Knowledge Center provides you with a single point of reference where you can access product documentation for IBM systems hardware, operating systems, and server software. Through a consistent framework, you can efficiently find information and personalize your access by going to [IBM Knowledge Center](#) for all your product information needs.

To access the IBM Publications Center Portal, go to the [IBM Publications Center](#) website.

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. A large number of publications are available online in various file formats, which can currently be downloaded.

National language support

When available, translated product documentation can be found in the [IBM Support Portal](#).

Services

IBM Systems Lab Services

IBM Systems Lab Services offers a wide array of services available for your enterprise. It brings expertise on the latest technologies from the IBM development community and can help with your most difficult technical challenges.

IBM Systems Lab Services exists to help you successfully implement emerging technologies so as to accelerate your return on investment and improve your satisfaction with your IBM systems and solutions. Services examples include initial implementation, integration, migration, and skills transfer on IBM systems solution

capabilities and recommended practices. IBM Systems Lab Services is one of the service organizations of IBM's world-renowned IBM Systems Group development labs.

For details on available services, contact your IBM representative or go to the [Lab Services](#) website.

Global Technology Services

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 go to the [IBM Global Technology Services^{\(R\)}](#) website.

For details on available IBM Business Continuity and Recovery Services, contact your IBM representative or go to the [Resiliency Services](#) website.

Details on education offerings related to specific products can be found on the [IBM authorized training](#) website.

Technical information

Specified operating environment

Physical specifications

- Height: 8.7 cm (3.4 in.)
- Width: 48.3 cm (19.0 in.)
- Depth: 55.6 cm (21.9 in.)
- Approximate weight:
 - LFF control enclosure:
 - Empty: 17.4 kg (38.3 lb)
 - Fully configured: 27.7 kg (61.0 lb)
 - LFF expansion enclosure:
 - Empty: 16.4 kg (36.1 lb)
 - Fully configured: 26.7 kg (58.7 lb)
 - SFF control enclosure:
 - Empty: 17.7 kg (38.9 lb)
 - Fully configured: 26.0 kg (57.2 lb)
 - SFF expansion enclosure:
 - Empty: 16.7 kg (36.7 lb)
 - Fully configured: 25.0 kg (55.0 lb)
- LFF HD expansion enclosure:
 - Height: 220 mm (8.66 in.)
 - Width: 438 mm (17.24 in.)
 - Depth: 1013 mm (39.88 in.)
 - Approximate weight:
 - Empty: 42.5 kg (93.7 lb)

- Fully configured with flash drives: 78.6 kg (173.3 lb)
- Fully configured with 10k rpm HDDs: 86 kg (189.6 lb)
- Fully configured with 7.2k rpm HDDs: 138.6 kg (305.6 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

Air temperature:

- Operating: 5°C - 40°C (41°F - 104°F) up to 950 m (3,117 ft) above sea level. Above 950 m, de-rate maximum air temperature 1 degree per 175 m.
- Model 92F: 5°C - 35°C (41°F - 95°F) up to 950 m (3,117 ft) above sea level. Above 950 m, de-rate maximum air temperature 1 degree per 175 m.
- Nonoperating: 1°C - 60°C (33.8°F - 140°F)

Relative humidity:

- Operating: 8% - 85%
- Nonoperating: 8% - 85%

Electrical power:

- AC power:
 - Voltage range: 100 - 240 V AC
 - Frequency: 50 - 60 Hz
 - Power:
 - Control enclosure: 800 watts
 - Expansion enclosures: 800 watts
- DC power:
 - Voltage range: -42 to -60 V DC
 - Voltage nominal: -48 V DC
 - Current: 12.0 A
 - Power:
 - Control enclosure: 800 watts
 - Expansion enclosures: 800 watts

Models with the DC power feature require an electrically rated 20A circuit breaker for the -48 V DC input. The wiring between the dc power source and the Storwize V5000E DC power supply connectors must be with 12AWG copper wires.

Heat dissipation:

- Control enclosure: 2,730 BTU per hour
- Expansion enclosure: 2,730 BTU per hour
- HD expansion enclosure: 8,189 BTU per hour

Acoustical noise emission:

- LFF and SFF control enclosures:
 - 6.2 bels (idling)
 - 6.1 bels (operating)
- LFF expansion enclosure:
 - 6.1 bels (idling)

- 6.1 bels (operating)
- SFF expansion enclosure:
 - 6.2 bels (idling)
 - 6.2 bels (operating)
- HD expansion enclosure:
 - 7.8 bels (idling)
 - 7.8 bels (operating)

Software requirements

Storwize V5000E requires licensed machine code level 8.2.1, or later.

See the Storwize V5000E product documentation and the [IBM Support](#) site for additional information on licensed machine code levels and other requirements.

For a comprehensive list of supported environments, devices, and configurations, go to the [SSIC](#) website.

Compatibility

For a comprehensive list of supported environments, devices, and configurations, go to the [IBM SSIC](#).

Limitations

Drive Considerations: Distributed RAID 6 (recommended) and Distributed RAID 5 (supported)

Configuration limitations and restrictions: For Storwize V5000E configuration limitations and restrictions, go to the [IBM Support Portal](#) and enter *Storwize V5000E configuration limitations and restrictions* in the Search support box.

Consider the following rules when planning for the maximum configuration in terms of drive slots and expansion enclosures that a specific system can be configured with.

Expansion enclosure attachment rules:

Product	Machine type	Model	SAS chains per control enclosure or node pair	Max. expansion per SAS chain (2U- / 5U-92F)	Max. qty of drive slots per SAS chain	Max. qty of drive slots per control enclosure or node pair	Max. qty of drive slots per clustered system
Storwize V5010E	2072	212,224	1	10/4	368	392	N/A
Storwize V5030E	2072	312,324	2	10/4	368	760	1520

2U expansion enclosures and 5U expansion enclosure mix rules:

Maximum # of Drive Slots per SAS expansion string												
5U												
2U	0	1	2	3	4	5	6	7	8	9	10	
0	0	24	48	72	96	120	144	168	192	216	240	
1	92	116	140	164	188	212	236	260	-	-	-	
2	184	208	232	256	280	304	-	-	-	-	-	
3	276	300	324	-	-	-	-	-	-	-	-	
4	368	-	-	-	-	-	-	-	-	-	-	

Encryption: For Storwize V5030E only, The Encryption Enablement feature (number ALE1) and the Encryption USB Drive Pack feature (feature number ALEC) are not available in the following countries:

- Belarus
- Kazakhstan
- People's Republic of China
- Russia

Shipments to India, Russia, Japan, and Korea: Storwize V5000E machines shipped prior to the published planned availability date for India, Russia, Japan and Korea are not compliant with associated India, Russia, Japan or Korea certification and product labeling requirements. If you did not acquire your machine from IBM as a direct shipment to these countries, you are responsible for validating the machine has the appropriate certifications and product labels.

Contact your IBM sales representative or Business Partner for assistance with this validation.

Certifications and product labels: Machines directly shipped from IBM are compliant with certification and product labeling requirements for the country into which the machine is shipped. You are responsible for validating the machine has the appropriate certifications and product labels if the machine is relocated to another country.

Contact your IBM sales representative or Business Partner for assistance with this validation.

Planning information

Client responsibilities

Physical configuration and installation planning are customer responsibilities.

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 website 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 are required for the following:

- I/O connectivity to servers and fabric components
- Expansion enclosure attachment

- System management

As a convenience, a limited selection of cables can be ordered with the Storwize V5000E machine. See the [Product number](#) section for features numbers.

Cables, along with installation services, are also available from IBM Network Integration and Deployment Services, an IBM Global Services offering.

I/O connectivity cables

Host interface cables are required to connect Storwize V5000E I/O ports to server or fabric ports.

16 Gb FC: Storwize V5000E requires a 50.0/125 micrometer fiber optic cable terminated with an LC Duplex connector. The following fiber optic cables can be ordered with Storwize V5000E control enclosure models:

- 1-meter OM3 fiber cable (LC)
- 5-meter OM3 fiber cable (LC)
- 25-meter OM3 fiber cable (LC)
- 10-meter OM3 fibre cable (LC)

12 Gb SAS: Storwize V5000E requires a 12 Gb mini-SAS HD 4x cable terminated with an SFF-8644 (HD) connector. The following SAS cables can be ordered with Storwize V5000E control enclosure models:

- Cables terminated with a SFF-8088 connector for attachment to the server SAS port:
 - 0.6-meter SAS cable (mSAS HD to mSAS)
 - 1.5-meter SAS cable (mSAS HD to mSAS)
 - 3-meter SAS cable (mSAS HD to mSAS)
- Cables terminated with a SFF-8644 (HD) connector for attachment to the server SAS port:
 - 0.6-meter 12 Gb SAS cable (mSAS HD)
 - 1.5-meter 12 Gb SAS cable (mSAS HD)
 - 3-meter 12 Gb SAS cable (mSAS HD)

10 Gb Ethernet - Optical: Storwize V5000E requires a 10GBASE-SR cable terminated with an LC Duplex connector. The following can be ordered with Storwize V5000E control enclosure models:

- 1-meter OM3 fiber cable (LC)
- 5-meter OM3 fiber cable (LC)
- 25-meter OM3 fiber cable (LC)
- 10-meter OM3 fibre cable (LC)

A 50.0/125 micrometer fiber optic cable can also be used, subject to distance limitations.

10 Gb Ethernet - Copper (Storwize V5030E only): The 10 Gb Ethernet (copper) ports standard on Storwize V5030E require a 10GBASE-T Category 6A shielded cable terminated with an 8P8C modular connector (RJ45 compatible connector). This cable is not available for ordering with the machine and must be supplied by the customer.

If these ports are used at a 1 Gb link speed, the 1Gb Ethernet cables described below can be used.

1 Gb Ethernet: Storwize V5000E requires a Category 5 or Category 5E Ethernet cable terminated with an 8P8C modular connector (RJ45 compatible connector). This

cable is not available for ordering with the machine and must be supplied by the customer.

Expansion enclosure attachment cables

Expansion enclosure attachment cables are required to connect a Storwize V5000E expansion enclosure to the control enclosure and to another expansion enclosure. This requires a 12 Gb mini-SAS HD 4x cable terminated with SFF-8644 (HD) connectors.

The following SAS cables can be ordered with Storwize V5000E expansion enclosure models:

- 0.6-meter 12 Gb SAS cable (mSAS HD)
- 1.5-meter 12 Gb SAS cable (mSAS HD)
- 3-meter 12 Gb SAS cable (mSAS HD)
- 6-meter 12 Gb SAS cable (mSAS HD)

System management cables

Storwize V5030E requires:

- A 10GBASE-T Category 6A shielded cable terminated with an 8P8C modular connector (RJ45 compatible connector) when system management is performed over a 10 Gb link speed.
- A Category 5 or Category 5E Ethernet cable terminated with an 8P8C modular connector (RJ45 compatible connector) when system management is performed over a 1 Gb link speed.

Storwize V5010E require a Category 5 or Category 5E Ethernet cable terminated with an 8P8C modular connector (RJ45 compatible connector).

These cables are not available for ordering with the machine and must be supplied by the customer.

Security, auditability, and control

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

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

IBM Systems Lab Services

For details on available services, contact your IBM representative or go to the [Lab Services](#) website.

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/or integration of this product.

Terms and conditions

Volume orders

Contact your IBM representative.

Products - terms and conditions

Warranty period

Warranty and additional coverage options	Coverage summary ¹
Warranty Period:	Three years standard warranty
Service Level:	IBM CRU and On-Site Limited, 9x5 Next Business Day
Service upgrade options	
Warranty Service Upgrade	IBM CRU and On-Site Repair, 9x5 Same Day ² and 24x7 Same Day options
Maintenance Services (Post-Warranty):	IBM On-Site Repair, Next Business Day and Same Day options
IBM Hardware Maintenance Services - committed maintenance ³	Yes

¹ See complete coverage details below

² Only offered in the US and EMEA

³ Not offered in the US

- Three years (including the battery)

An IBM part or feature installed during the initial installation of an IBM machine is subject to a full warranty period specified by IBM. An IBM part or feature that 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. Unless specified otherwise, the warranty period, type of warranty service, and service level of a part or feature are the same as those for the machine in which 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 through an IBM website. 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 Client 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-specific 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 (5000E control enclosures):

- Power Cable
- I/O adapter
- SFP
- DIMM
- system disk
- Fibre cable
- SAS cable
- Drive
- Coin cell
- Bezel
- Node battery
- PSU
- Rail kit
- Drive blank
- Node canister

The following parts have been designated as Tier 1 CRUs (5000E 2U expansion enclosures):

- Power cable
- Drive
- Bezel
- PSU
- Rail kit
- Drive blank
- Mini SAS-HD cable
- Expansion canister

The following parts have been designated as Tier 1 CRUs (5000E 5U expansion enclosures):

- Power cable
- Drive
- Fascia
- PSU
- Rail kit
- Fan module
- Drive blank
- Mini SAS-HD cable
- Control panel
- SAS expander module

- Cable management arms
- Lid
- Fan interface board
- Expansion canister
- Enclosure

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

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 clients, and normal warranty service procedures for the IBM machine apply.

International Warranty Service

International Warranty Service allows you to relocate any machine that is eligible for International Warranty Service and receive continued warranty service in any country where the IBM machine is serviced. If you move your machine to a different country, you are required to report the machine information to your Business Partner or IBM representative.

The warranty service type and the service level provided in the servicing country may be different from that provided in the country in which the machine was purchased. Warranty service will be provided with the prevailing warranty service type and service level available for the eligible machine type in the servicing country, and the warranty period observed will be that of the country in which the machine was purchased.

The following types of information can be found on the [International Warranty Service](#) website

- Machine warranty entitlement and eligibility
- Directory of contacts by country with technical support contact information
- Announcement Letters

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 website. 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.

- IBM On-Site Repair, Same Day On-Site Response Target, Monday-Friday 08:00-17:00 (excluding public holidays), Last Call Registration: 12:00

- IBM On-Site Repair, Same Day On-Site Response Target, Monday-Sunday 00:00-24:00, 365 days a year

Maintenance service options

Maintenance services

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, through an IBM website. 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. 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-specific 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.

- IBM On-Site Repair, Next Business Day Response Target, Monday-Friday during core business
- IBM On-Site Repair, Same Day On-Site Response Target, Monday-Friday 08:00-17:00 (excluding public holidays), Last Call Registration: 12:00
- IBM On-Site Repair, Same Day On-Site Response Target, Monday-Sunday 00:00-24:00, 365 days a year

Client Replaceable Unit (CRU) Service

If your problem can be resolved with a CRU (for example, keyboard, mouse, speaker, memory, or hard disk drive), and depending upon the maintenance service offerings in your geography, IBM will ship the replacement CRU to you for you to install. CRU information and replacement instructions are shipped with your machine and are available from IBM upon your request.

Based upon availability, CRUs will be shipped for next business day delivery. IBM specifies, in the materials shipped with a replacement CRU, whether a defective CRU must be returned to IBM. When return is required, 1) return instructions and a container are shipped with the replacement CRU, and 2) 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.

CRUs are designated as being either a Tier 1 (mandatory) or a Tier 2 (optional) CRU.

Tier 1 (mandatory) CRUs: 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.

For machines with On-site Same-day Response Service, IBM will replace a Tier 1 CRU part at your request, at no additional charge.

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

The following parts have been designated as Tier 1 CRUs (5000E control enclosures):

- Power Cable
- I/O adapter
- SFP
- DIMM
- system disk
- Fibre cable
- SAS cable
- Drive
- Coin cell
- Bezel
- Node battery
- PSU
- Rail kit
- Drive blank
- Node canister

The following parts have been designated as Tier 1 CRUs (5000E 2U expansion enclosures):

- Power cable
- Drive
- Bezel
- PSU
- Rail kit
- Drive blank
- Mini SAS-HD cable
- Expansion canister

The following parts have been designated as Tier 1 CRUs (5000E 5U expansion enclosures):

- Power cable
- Drive
- Fascia
- PSU
- Rail kit
- Fan module
- Drive blank
- Mini SAS-HD cable
- Control panel
- SAS expander module
- Cable management arms
- Lid
- Fan interface board
- Expansion canister
- Enclosure

Feature codes for which there is a maintenance charge:

Description	Machine type	Model	Feature
800 GB 3DHPD 12 Gb SAS 2.5 Inch Flash Drive	2072	224	AL8A

Description	Machine type	Model	Feature
1.92TB 12 Gb SAS 2.5 Inch Flash Drive	2072	224	AL80
3.84TB 12 Gb SAS 2.5 Inch Flash Drive	2072	224	AL81
7.68TB 12 Gb SAS 2.5 Inch Flash Drive	2072	224	AL82
15.36TB 12 Gb SAS 2.5 Inch Flash Drive	2072	224	AL83
30.72TB 12 Gb SAS 2.5 Inch Flash Drive	2072	224	AL84
800 GB 3DWPD 12 Gb SAS 2.5 Inch Flash Drive	2072	324	AL8A
1.92TB 12 Gb SAS 2.5 Inch Flash Drive	2072	324	AL80
3.84TB 12 Gb SAS 2.5 Inch Flash Drive	2072	324	AL81
7.68TB 12 Gb SAS 2.5 Inch Flash Drive	2072	324	AL82
15.36TB 12 Gb SAS 2.5 Inch Flash Drive	2072	324	AL83
30.72TB 12 Gb SAS 2.5 Inch Flash Drive	2072	324	AL84
800 GB 3DWPD 12 Gb SAS 2.5 Inch Flash Drive	2072	24F	AL8A
1.92TB 12 Gb SAS 2.5 Inch Flash Drive	2072	24F	AL80
3.84TB 12 Gb SAS 2.5 Inch Flash Drive	2072	24F	AL81
7.68TB 12 Gb SAS 2.5 Inch Flash Drive	2072	24F	AL82
15.36TB 12 Gb SAS 2.5 Inch Flash Drive	2072	24F	AL83
30.72TB 12 Gb SAS 2.5 Inch Flash Drive	2072	24F	AL84
1.92TB 12 Gb SAS 3.5 Inch Flash Drive	2072	92F	AL4J
3.84TB 12 Gb SAS 3.5 Inch Flash Drive	2072	92F	AL4K
7.68TB 12 Gb SAS 3.5 Inch Flash Drive	2072	92F	AL4L
15.36TB 12 Gb SAS 3.5 Inch Flash Drive	2072	92F	AL4M

Description	Machine type	Model	Feature
30.72TB 12 Gb SAS 3.5 Inch Flash Drive	2072	92F	AL4N

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, clients are responsible for sourcing the parts. Installation labor is provided at no additional charge, if the machine is covered under a warranty service upgrade or a maintenance service.

Usage plan machine

No

IBM hourly service rate classification

Two

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

Maintenance service offerings

These machines are 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.

General terms and conditions

Field-installable features

Yes

Model conversions

Yes

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 client 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

client. You can obtain the agreement from the [License Agreement for Machine Code and Licensed Internal Code](#) website.

Access to Machine Code updates is conditioned on entitlement and license validation in accordance with IBM policy and practice. IBM may verify entitlement through customer number, serial number, electronic restrictions, or any other means or methods employed by IBM in its discretion.

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.

Machine Code License Acceptance Requirement

A.) Acceptance-By-Use Machine: Yes, acceptance of the Machine Code license terms is conveyed through the user's initial use of the Machine.

Prices

For all local charges, contact your IBM representative.

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Corrections

(Corrected on April 16, 2019)

RAID information has been updated in the Overview and Description sections. The Machine installation information in the Terms and conditions section has also been updated.