



New IBM Storwize V7000 delivers improved performance, scalability, and efficiency

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At a glance

IBM® Storwize® V7000 next-generation models offer increased performance and connectivity, integrated compression acceleration, and additional scalability with the following features:

- Two node canisters, each with an eight-core processor and integrated hardware-assisted compression acceleration
- 64 GB cache (per system) standard, with optional 128 GB cache (per system) for Real-time Compression™ workloads
- 8 Gb Fibre Channel (FC), 10 Gb iSCSI / Fibre Channel over Ethernet (FCoE), and 1 Gb iSCSI connectivity options
- 12 Gb SAS expansion enclosures supporting twelve 3.5-inch large form factor (LFF) or twenty-four 2.5-inch small form factor (SFF) drives
- Scaling for up to 504 drives per system with the attachment of 20 Storwize V7000 expansion enclosures and up to 1,056 drives in a four-way clustered configuration
- The ability to be added into existing clustered systems with previous generation Storwize V7000 systems
- Compatibility with IBM Storwize V7000 Unified File Modules for unified storage capability

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 V7000 is a virtualized, software-defined storage system designed to consolidate workloads into a single storage system for simplicity of management, reduced cost, highly scalable capacity, and high performance and availability. New Storwize V7000 models deliver improved performance, scalability, and efficiency.

The Storwize V7000 SFF Control Enclosure Model 524 features:

- Two node canisters, each with an eight-core processor and 32 GB cache for a system total of 64 GB cache
- 1 Gb Ethernet ports standard for 1 Gb iSCSI connectivity
- Up to two I/O adapter features for 8 Gb FC and 10 Gb iSCSI/FCoE connectivity
- Supports up to twenty-four 2.5-inch drives

- 2U, 19-inch rack mount enclosure

Model 524 comes standard with integrated, hardware-assisted compression acceleration. Real-time Compression workloads can further benefit from the optional cache upgrade to increase the total system cache to 128 GB and the optional compression accelerator card feature for additional hardware-assisted compression acceleration.

Storwize V7000 offers both LFF and SFF 12 Gb SAS expansion enclosure models. The Storwize V7000 LFF Expansion Enclosure Model 12F supports up to twelve 3.5-inch drives, while the Storwize V7000 SFF Expansion Enclosure Model 24F supports 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 V7000 system.

A Storwize V7000 Model 524 system scales up to 504 drives with the attachment of 20 Storwize V7000 expansion enclosures. Storwize V7000 systems can be clustered to help deliver greater performance, bandwidth, and scalability. A Storwize V7000 clustered system can contain up to four Storwize V7000 systems and up to 1,056 drives. Storwize V7000 Model 524 systems can be added into existing clustered systems that include previous generation Storwize V7000 systems.

For unified storage capability, Storwize V7000 can be combined with Storwize V7000 File Modules to create a Storwize V7000 Unified solution that consolidates block and file workloads into a single storage system for greater simplicity and efficiency.

All Storwize V7000 functional capabilities are provided through IBM Storwize Family Software for Storwize V7000. For additional information on Storwize V7000 functional capabilities and software, refer to the materials listed in the [Reference information](#) section.

Key prerequisites

Storwize V7000 requires Storwize Family Software for Storwize V7000 version 7.3, or later, for operation. Use of the software is entitled through the acquisition of Storwize V7000 software licenses.

For a comprehensive list of supported environments, devices, and configurations, refer to the IBM System Storage® Interoperation Center (SSIC) at

<http://www.ibm.com/systems/support/storage/ssic>

Planned availability date

June 6, 2014: Storwize V7000 models and features except as noted below.

- July 18, 2014: Storwize V7000U Indicator (feature number 1173)
- September 19, 2014: Storwize V7000 models and features in India

Description

IBM Storwize V7000 is a virtualized, software-defined storage system comprised of hardware components and a requisite licensed software program product, IBM Storwize Family Software for Storwize V7000. All functional capabilities for the Storwize V7000 system are provided through Storwize V7000 software.

Storwize V7000 models are the next-generation hardware components of Storwize V7000 systems.

- Storwize V7000 SFF Control Enclosure Model 524 includes:

- Two node canisters, each with an eight-core processor and integrated hardware-assisted compression acceleration
- 64 GB cache (32 GB per canister) with optional 128 GB cache (64 GB per canister)¹
- 8 Gb FC, 10 Gb Ethernet, and 1 Gb Ethernet ports for FC, iSCSI, and FCoE connectivity
- Optional compression accelerator card for additional hardware-assisted compression acceleration
- 12 Gb SAS ports for expansion enclosure attachment
- Twenty-four slots for 2.5-inch SAS drives
- 2U, 19-inch rack mount enclosure with ac power supplies
- Storwize V7000 LFF Expansion Enclosure Model 12F includes:
 - Two expansion canisters
 - 12 Gb SAS ports for control enclosure and expansion enclosure attachment
 - Twelve slots for 3.5-inch SAS drives
 - 2U, 19-inch rack mount enclosure with ac power supplies
- Storwize V7000 SFF Expansion Enclosure Model 24F includes:
 - Two expansion canisters
 - 12 Gb SAS ports for control enclosure and expansion enclosure attachment
 - Twenty-four slots for 2.5-inch SAS drives
 - 2U, 19-inch rack mount enclosure with ac power supplies

¹ This optional 128 GB cache (64 GB per canister) provides performance benefits only when the IBM Real-time Compression software function is used.

iSCSI, FC, and FCoE connectivity with intermix flexibility

Model 524 includes six 1 Gb Ethernet ports standard for iSCSI connectivity and can be configured with two I/O adapter features to provide up to sixteen 8 Gb FC ports or up to eight 10 Gb Ethernet (iSCSI/ FCoE) ports. The following configurations are available:

8 Gb FC	10 Gb iSCSI/FCoE	1 Gb iSCSI
8 ports	--	6 ports
--	8 ports	6 ports
8 ports	8 ports	6 ports
16 ports	--	6 ports

Note: A minimum quantity of one 8 Gb FC adapter feature or one 10 Gb Ethernet adapter feature is required.

Drive options and intermix flexibility meet a complete range of needs

Storwize V7000 is designed to support the complete range of data storage requirements, from highly utilized applications to high-capacity, low usage applications.

The following 3.5-inch (LFF) drives are supported:

- High-capacity, archival-class nearline disk drives in 2 TB, 3 TB, and 4 TB 7,200 rpm (6 Gb SAS)

The following 2.5-inch (SFF) drives are supported:

- Flash drives in 200 GB, 400 GB, and 800 GB (12 Gb SAS)
- High-performance, enterprise class disk drives
 - 300 GB and 600 GB 15,000 rpm (12 Gb SAS)
 - 600 GB, 900 GB, and 1.2 TB 10,000 rpm (6 Gb SAS)
- High-capacity, archival-class nearline disk drives with 1 TB 7,200 rpm (6 Gb SAS)

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 the SFF control enclosure.

Scalable configurations respond to growing capacity needs

A single Storwize Model 524 control enclosure can support up to 20 Storwize V7000 expansion enclosures with a maximum of 504 drives per system. Expansion enclosures are designed to be dynamically added with virtually no downtime, helping to quickly and seamlessly respond to growing capacity demands.

With four-way system clustering, the size of the system can be increased to a maximum of 1,056 drives. Storwize V7000 Model 524 systems can be added into existing Storwize V7000 clustered systems that include previous generation Storwize V7000 systems.

Further scalability can be achieved with virtualization of external storage. When Storwize V7000 virtualizes an external disk system, capacity in the external system inherits the functional richness and ease of use of Storwize V7000.

Designed for high availability

Storwize V7000 is designed to offer high system and data availability with the following features:

- Dual-active, intelligent node canisters with mirrored cache
- Dual-port disk drives with automatic disk drive failure detection and RAID rebuild with global hot spares
- 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

Rich set of functional capabilities

Storwize V7000 combines a variety of IBM technologies, including thin provisioning, automated tiering, storage virtualization, Real-time Compression, clustering, replication, multiprotocol support, and a next-generation GUI. It also includes leading third-party technologies, such as Bridgewater's SANSlide network optimization. These technologies are designed to enable Storwize V7000 to offer a rich set of functional capabilities and deliver extraordinary levels of storage efficiency when used together.

For unified storage capability, Storwize V7000 can be combined with Storwize V7000 File Modules to create a Storwize V7000 Unified solution that consolidates block and file workloads into a single storage system for greater simplicity and efficiency.

All Storwize V7000 functional capabilities are provided through IBM Storwize Family Software for Storwize V7000. For additional information on the Storwize V7000 functional capabilities and software, refer to the [Reference information](#) section.

Accessibility by people with disabilities

A US 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

Statement of general direction

IBM intends to enhance Storwize V7000 Model 524 to support 16 Gb Fibre Channel connectivity.

The cache upgrade feature on Storwize V7000 Model 524 provides performance benefit only when Real-time Compression is used. IBM intends to enhance IBM Storwize Family Software for Storwize V7000 to extend support of this feature to also benefit uncompressed workloads.

IBM's statements regarding its plans, directions, and intent are subject to change or withdrawal without notice at IBM's sole discretion. Information regarding potential future products is intended to outline our general product direction and it should not be relied on in making a purchasing decision. The information mentioned regarding potential future products is not a commitment, promise, or legal obligation to deliver any material, code, or functionality. Information about potential future products may not be incorporated into any contract. The development, release, and timing of any future features or functionality described for our products remains at our sole discretion.

Reference information

Storwize V7000 product information is available at

http://www.ibm.com/systems/storage/disk/storwize_v7000/

For additional information on Storwize V7000 software, refer to Software Announcement [AP14-0231](#), dated May 06, 2014.

Product number

Description	Machine type	Model	Feature number
V7000 SFF Control	2076	524	
V7000 LFF Expansion	2076	12F	
V7000 SFF Expansion	2076	24F	
Hardware:			
8Gb FC Adapter Pair	2076	524	AHB1
10Gb Ethernet Adapter Pair	2076	524	AHB5
Compression Accelerator	2076	524	AHC1
Cache Upgrade	2076	524	AHCB
8Gb FC LW SFP Transceivers	2076	524	ACHT
3.5 Inch (LFF) Disk Drives:			
2TB 7.2K 3.5 Inch NL HDD	2076	12F	AHD1
3TB 7.2K 3.5 Inch NL HDD	2076	12F	AHD2
4TB 7.2K 3.5 Inch NL HDD	2076	12F	AHD3
2.5 Inch (SFF) Disk Drives:			
300GB 15K 2.5 Inch HDD	2076	524,24F	AHE1
600GB 15K 2.5 Inch HDD	2076	524,24F	AHE2
600GB 10K 2.5 Inch HDD	2076	524,24F	AHF1
900GB 10K 2.5 Inch HDD	2076	524,24F	AHF2
1.2TB 10K 2.5 Inch HDD	2076	524,24F	AHF3
1TB 7.2K 2.5 Inch NL HDD	2076	524,24F	AHG1
2.5 Inch (SFF) Flash Drives:			
200GB 2.5 Inch Flash Drive	2076	524,24F	AHH1
400GB 2.5 Inch Flash Drive	2076	524,24F	AHH2
800GB 2.5 Inch Flash Drive	2076	524,24F	AHH3
I/O Cables:			
1m Fiber Cable (LC)	2076	524	5301
5m Fiber Cable (LC)	2076	524	5305
25m Fiber Cable (LC)	2076	524	5325
10m OM3 Fiber Cable (LC)	2076	524	ACSS
Expansion Enclosure Cables:			
0.6m 12Gb SAS Cable(mSAS HD)	2076	12F,24F	ACUA
1.5m 12Gb SAS Cable(mSAS HD)	2076	12F,24F	ACUB

3m 12Gb SAS Cable (mSAS HD)	2076	12F,24F	ACUC
6m 12Gb SAS Cable (mSAS HD)	2076	12F,24F	ACUD
Miscellaneous:			
TAA Compliance	2076	524,12F,24F	0983
Generic Bezel	2076	524,12F,24F	ACZA
Generic Packaging	2076	524,12F,24F	ACZF
RFID AG/AP: 902-928 Mhz	2076	524,12F,24F	A2EV
RFID EMEA: 865.6-867.8 Mhz	2076	524,12F,24F	A2EW
Power Cords:			
Power Cord - EMEA	2076	524,12F,24F	9716
Power Cord - Australia/NZ	2076	524,12F,24F	9717
Power Cord - Europe/Africa	2076	524,12F,24F	9718
Power Cord - Denmark	2076	524,12F,24F	9719
Power Cord - South Africa	2076	524,12F,24F	9720
Power Cord - Switzerland	2076	524,12F,24F	9721
Power Cord - Chile/Italy	2076	524,12F,24F	9722
Power Cord - Israel	2076	524,12F,24F	9723
Power Cord - Argentina	2076	524,12F,24F	9725
Power Cord - China	2076	524,12F,24F	9726
Power Cord - PDU Connection	2076	524,12F,24F	9730
Power Cord - US/Group 1	2076	12F,24F	9731
Power Cord - Taiwan	2076	12F,24F	9732
Power Cord - Brazil	2076	524,12F,24F	9733
Power Cord - India	2076	524,12F,24F	9734
Power Cord - Japan	2076	524,12F,24F	9735
Power Cord - Korea	2076	524,12F,24F	9736
Power Cord - Chicago	2076	524,12F,24F	9737
Power Cord - US/Group 1	2076	524	AHP1
Power Cord - Taiwan	2076	524	AHP2
Administrative:			
JEMT Indicator	2076	524,12F,24F	0021
Storwize V7000U Indicator	2076	524,12F,24F	1173
Cluster Unit 1 Indicator	2076	524	1201
Cluster Unit 2 Indicator	2076	524	1202
Cluster Unit 3 Indicator	2076	524	1203
Cluster Unit 4 Indicator	2076	524	1204
Bulk Order Indicator	2076	524,12F,24F	5555
OEM 1 Order Indicator	2076	524,12F,24F	ACY1
OEM 2 Order Indicator	2076	524,12F,24F	ACY2
OEM 3 Order Indicator	2076	524,12F,24F	ACY3
OEM 4 Order Indicator	2076	524,12F,24F	ACY4
OEM 5 Order Indicator	2076	524,12F,24F	ACY5
OEM 6 Order Indicator	2076	524,12F,24F	ACY6
OEM 7 Order Indicator	2076	524,12F,24F	ACY7
OEM 8 Order Indicator	2076	524,12F,24F	ACY8
OEM 9 Order Indicator	2076	524,12F,24F	ACY9
Shipping and Handling NC	2076	524,12F,24F	AG00
Shipping and Handling 524	2076	524	AGBH
Shipping and Handling 12F	2076	12F	AGBJ
Shipping and Handling 24F	2076	24F	AGBK
Solutions and Integration:			
Rack Indicator None	2076	524,12F,24F	4650
Rack Indicator Rack 1	2076	524,12F,24F	4651
Rack Indicator Rack 2	2076	524,12F,24F	4652
Rack Indicator Rack 3	2076	524,12F,24F	4653
Rack Indicator Rack 4	2076	524,12F,24F	4654
Rack Indicator Rack 5	2076	524,12F,24F	4655
Rack Indicator Rack 6	2076	524,12F,24F	4656
Rack Indicator Rack 7	2076	524,12F,24F	4657
Rack Indicator Rack 8	2076	524,12F,24F	4658
Rack Indicator Rack 9	2076	524,12F,24F	4659
Rack Indicator Rack 10	2076	524,12F,24F	4660
Rack Indicator Rack 11	2076	524,12F,24F	4661
Rack Indicator Rack 12	2076	524,12F,24F	4662
Rack Indicator Rack 13	2076	524,12F,24F	4663
Rack Indicator Rack 14	2076	524,12F,24F	4664
Rack Indicator Rack 15	2076	524,12F,24F	4665
Rack Indicator Rack 16	2076	524,12F,24F	4666
Storage Subsystem ID 1	2076	524,12F,24F	9170
Storage Subsystem ID 2	2076	524,12F,24F	9171

Storage Subsystem ID 3	2076	524,12F,24F	9172
Storage Subsystem ID 4	2076	524,12F,24F	9173
Storage Subsystem ID 5	2076	524,12F,24F	9174
Storage Subsystem ID 6	2076	524,12F,24F	9175
Storage Subsystem ID 7	2076	524,12F,24F	9176
Storage Subsystem ID 8	2076	524,12F,24F	9177
Storage Subsystem ID 9	2076	524,12F,24F	9178
Storage Subsystem ID 10	2076	524,12F,24F	9179
Storage Subsystem ID 11	2076	524,12F,24F	9180
Storage Subsystem ID 12	2076	524,12F,24F	9181
Storage Subsystem ID 13	2076	524,12F,24F	9182
Storage Subsystem ID 14	2076	524,12F,24F	9183
Storage Subsystem ID 15	2076	524,12F,24F	9184
Storage Subsystem ID 16	2076	524,12F,24F	9185
Storage Subsystem ID 17	2076	524,12F,24F	9186
Storage Subsystem ID 18	2076	524,12F,24F	9187
Storage Subsystem ID 19	2076	524,12F,24F	9188
Storage Subsystem ID 20	2076	524,12F,24F	9189
Month Indicator	2076	524,12F,24F	9461
Day Indicator	2076	524,12F,24F	9462
Hour Indicator	2076	524,12F,24F	9463
Minute Indicator	2076	524,12F,24F	9464
Quantity Indicator	2076	524,12F,24F	9465
Countable Member Indicator	2076	524,12F,24F	9466
ECS Routing Indicator	2076	524,12F,24F	AHZB
Route to Power Mfg	2076	524,12F,24F	EFD0
PureData Analytics Indicator	2076	524,12F,24F	EHK2
PureApp Gen2 Indicator	2076	524,12F,24F	EHK6
PureData Indicator	2076	524,12F,24F	ESPA

Additional information

Storwize V7000 Control Enclosure

The Storwize V7000 SFF Control Enclosure (Model 524) base model configuration includes:

- 2U, 19-inch rack mount enclosure
- Two node canisters each with:
 - One eight-core processor
 - 32 GB cache
 - Compression accelerator chip
- Six 1 Gb Ethernet ports for 1 Gb iSCSI connectivity and system management (three ports per node canister)
- Two 1 Gb Ethernet ports for service technician use (one port per node canister)
- Four 12 Gb SAS ports for Storwize V7000 expansion enclosure attachment (two ports per node canister)
- Twenty-four slots for 2.5-inch SAS drives
- Two ac power supplies and cooling units

The following optional features are available. Refer to the [Product number](#) section for feature numbers.

- 8 Gb FC adapter pair for 8 Gb FC connectivity (two cards each with four 8 Gb FC ports and shortwave SFP transceivers)
- 10 Gb Ethernet adapter pair for 10 Gb iSCSI/FCoE connectivity (two cards each with four 10 Gb Ethernet ports and SFP+ transceivers)
- Compression accelerator
- 8 Gb FC longwave SFP transceivers
- 2.5-inch SAS disk drives:
 - 300 GB and 600 GB 15,000 rpm (12 Gb SAS)

- 600 GB, 900 GB, and 1.2 TB 10,000 rpm (6 Gb SAS)
- 1 TB 7,200 rpm (6 Gb SAS)
- 2.5-inch flash (solid state) drives:
 - 200 GB, 400 GB, and 800 GB (12 Gb SAS)
- Fiber optic I/O cables
- Rack power distribution unit (PDU) and wall outlet power cords
- RFID tag
- US Trade Agreements Act (TAA) compliance

Storwize V7000 Expansion Enclosures

The Storwize V7000 LFF Expansion Enclosure (Model 12F) base model configuration includes:

- 2U, 19-inch rack mount enclosure
- Two expansion canisters
- Four 12 Gb SAS ports for attachment to a Storwize V7000 control enclosure or to another Storwize V7000 expansion enclosure (two ports per canister)
- Twelve slots for 3.5-inch SAS drives
- Two ac power supplies and cooling units

The Storwize V7000 SFF Expansion Enclosure (Model 24F) base model configuration includes:

- 2U, 19-inch rack mount enclosure
- Two expansion canisters
- Four 12 Gb SAS ports for attachment to a Storwize V7000 control enclosure or to another Storwize V7000 expansion enclosure (two ports per canister)
- Twenty-four slots for 2.5-inch SAS drives
- Two ac power supplies and cooling units

The following optional features are available. Refer to the [Product number](#) section for feature numbers.

- 3.5-inch SAS disk drives:
 - 2 TB, 3 TB, and 4 TB 7,200 rpm (6 Gb SAS)
- 2.5-inch SAS disk drives:
 - 300 GB and 600 GB 15,000 rpm (12 Gb SAS)
 - 600 GB, 900 GB, and 1.2 TB 10,000 rpm (6 Gb SAS)
 - 1 TB 7,200 rpm (6 Gb SAS)
- 2.5-inch flash (solid state) drives:
 - 200 GB, 400 GB, and 800 GB (12 Gb SAS)
- 12 Gb SAS expansion enclosure attachment cables
- Rack PDU and wall outlet power cords
- RFID tag
- US TAA compliance

Publications

The following publications are available:

- *IBM Storwize V7000 Quick Installation Guide*
- *IBM Storwize V7000 Troubleshooting, Recovery, and Maintenance Guide*

Product documentation, including the Storwize V7000 Information Center, is available at

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

IBM Publications Center Portal

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 in various file formats, which can currently be downloaded free of charge.

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

When available, translated product documentation is available at

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

Services

Global Technology Services®

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

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

For details on education offerings related to specific products, visit

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

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

Technical information

EMC conformance

- Taiwan BSMI CNS13438 (Taiwan EMC Standard)
- ACA C-Tick (Australia and New Zealand)

Specified operating environment

Physical specifications

- Height: 8.7 cm (3.4 in)
- Width: 48.3 cm (19.0 in)
- Depth: 74.6 cm (29.4 in)
 - Control enclosure: 74.4 cm (29.3 in)

- Expansion enclosure: 55.6 cm (21.9 in)
- Approximate weight:
 - Control enclosure:
 - Empty: 31.8 kg (70.0 lb)
 - Fully configured: 36.7 kg (80.7 lb)
 - LFF expansion enclosure:
 - Empty: 16.4 kg (36.1 lb)
 - Fully configured: 26.7 kg (58.8 lb)
 - SFF expansion enclosure:
 - Empty: 16.7 kg (36.7 lb)
 - Fully configured: 25.0 kg (55.2 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 to 40°C (41°F to 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.
- Non-operating: 1°C to 60° C (33.8°F to 140° F)

Relative humidity:

- Operating: 8% - 85%
- Non-operating: 8% - 85%

Electrical power:

- Voltage range: 100-240 V ac
- Frequency: 50-60 Hz
- Power :
 - Control enclosure: 541 watts
 - Expansion enclosure: 304 watts

Heat dissipation (BTU per hour):

- Control enclosure: 1,846
- Expansion enclosure: 1,037

Acoustical noise emission:

- Control enclosure:
 - 6.5 bels (idling)
 - 6.5 bels (operating)
- Expansion enclosure:
 - 6.3 bels (idling)
 - 6.3 bels (operating)

OEM disk drives

- Product Category (2005 law): A
- Product Category (2007 law): F

- Control enclosure
 - Maximum physical storage capacity: 28,800 Gigabytes
 - Power consumption: 442 watts
- LFF expansion enclosure
 - Maximum physical storage capacity: 48,000 Gigabytes
 - Power consumption: 217 watts
- SFF control enclosure
 - Maximum physical storage capacity: 28,800 Gigabytes
 - Power consumption: 278 watts

Homologation

This product is not certified for direct connection by any means whatsoever to interfaces of public telecommunications networks. Certification may be required by law prior to making any such connection. Contact an IBM representative or reseller for any questions.

Software requirements

Storwize V7000 machines require IBM Storwize Family Software for Storwize V7000 version 7.3, or later, for operation.

Storwize V7000 software is preloaded by IBM on Storwize V7000 machines. Use of the software is entitled through the acquisition of a Storwize V7000 Software license. Use of optional features offered with the Storwize V7000 software is entitled through the acquisition of their respective licenses.

For additional information on the Storwize V7000 software, refer to the announcement listed in the [Reference information](#) section.

Compatibility

Storwize V7000 Model 524 systems can be added into existing Storwize V7000 clustered systems that include previous generation Storwize V7000 systems. All systems within a cluster must be using the same version of Storwize V7000 software.

The Model 524 control enclosure supports only the attachment of Model 12F and 24F expansion enclosures. Previous generation Storwize V7000 expansion enclosures (Models 212 and 224) are not supported with the Model 524 control enclosure.

Model 12F and 24F expansion enclosures are only supported for attachment to the Model 524 control enclosure. Previous generation Storwize V7000 control enclosures (Models 112, 124, 312, and 324) do not support the attachment of Model 12F and 24F expansion enclosures.

For a comprehensive list of supported environments, devices, and configurations, refer to the IBM System Storage Interoperation Center (SSIC) at

<http://www.ibm.com/systems/support/storage/ssic>

Limitations

Cache Upgrade (feature number AHCB): This optional feature provides performance benefits only when the IBM Real-time Compression software function is used.

Refer to the [Statement of general direction](#) section for additional information.

Shipments to India: Storwize V7000 machines shipped prior to the published planned availability date for India are not compliant with India certification and product labeling requirements.

If you did not acquire your machine from IBM as a direct shipment to India, 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.

Planning information

Customer responsibilities

Physical configuration and installation planning, along with machine installation and configuration, 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 V7000 machine. Refer to the [Product number](#) section for feature 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

Cables are required to connect the Storwize V7000 I/O ports to server or fabric ports.

8 Gb FC: Storwize V7000 requires a 50.0/125 micrometer fiber optic cable terminated with an LC Duplex connector. The following can be ordered with the Storwize V7000 control enclosure model:

- 1 m fiber cable (LC)
- 5 m fiber cable (LC)
- 25 m fiber cable (LC)
- 10 m OM3 fiber cable (LC)

10 Gb iSCSI/FCoE: Storwize V7000 requires a 10GBASE-SR cable terminated with an LC Duplex connector. The following can be ordered with the Storwize V7000 control enclosure model:

- 10 m OM3 fiber cable (LC)

A 50.0/125 micrometer fiber optic cable can also be used, subject to distance limitations. An OM3 cable is strongly recommended for use with 10 Gb iSCSI/FCoE.

1 Gb iSCSI: Storwize V7000 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

Cables are required to connect a Storwize V7000 expansion enclosure to the Storwize V7000 control enclosure and to another Storwize V7000 expansion enclosure. This requires a 12 Gb mini-SAS HD 4x cable terminated with SFF-8644 connectors.

The following SAS cables can be ordered with the Storwize V7000 expansion enclosure:

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

System management cables

Storwize V7000 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.

Direct customer support

Technical support information is available at

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

You may also contact your IBM representative.

Security, auditability, and control

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.

Terms and conditions

Volume Orders

Contact your IBM representative.

Products - terms and conditions

Warranty period

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 effective on the date of installation of the machine. 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 effective on its date of installation. 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 via 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 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-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:

- Battery
- Bezel
- Cache
- Canister
- Drive
- Filler panel
- I/O adapter
- Compression accelerator card
- I/O cable
- I/O transceiver
- Power cord
- Power supply unit

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 holidays, next business day response. Calls must be received by 3:00 p.m. 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 customers, and normal warranty service procedures for the IBM machine apply.

Warranty service upgrades

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

IBM will attempt to resolve your problem over the telephone or electronically by access to an IBM 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.

CRU and On-site Service

At IBM's discretion you will receive 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. The following on-site response-time objectives are available as warranty service upgrades for your machine. Available offerings are:

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

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

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, via 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.

Service levels are:

- 9 hours per day, Monday through Friday, excluding holidays, next business day response
- 9 hours per day, Monday through Friday, excluding holidays, 4 hour average response, same business day
- 24 hours per day, 7 days a week, 4 hour average response, same day
- 24 hours per day, 7 days a week, 2 hour average response, same day

Customer 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 may be provided as part of the machine's standard maintenance service except that you may install a CRU yourself or request IBM installation, at no additional charge, under any of the On-site Service levels specified above.

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 and feature(s) have been designated as Tier 1 CRUs:

- Battery
- Bezel
- Cache
- Canister
- Drive
- Filler panel
- I/O adapter
- Compression accelerator card
- I/O cable
- I/O transceiver

- Power cord
- Power supply unit

Models and feature codes for which there is a maintenance charge:

Description	Machine type	Model	Feature number
Storwize V7000 SFF Control	2076	524	
Storwize V7000 LFF Expansion	2076	12F	
Storwize V7000 SFF Expansion	2076	24F	
200GB 2.5 Inch Flash Drive	2076	524, 24F	AHH1
400GB 2.5 Inch Flash Drive	2076	524, 24F	AHH2
800GB 2.5 Inch Flash Drive	2076	524, 24F	AHH3

Non-IBM parts service

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

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

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

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.

General terms and conditions

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

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

Prices

For all local charges, contact your IBM representative.

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AP distribution

Country/Region	Announce
AP IOT	
ASEAN *	Yes
India/South Asia **	Yes
Australia	Yes
People's Republic of China	Yes
Hong Kong S.A.R of the PRC	Yes
Macao S.A.R of the PRC	Yes
Taiwan	Yes
South Korea	Yes
New Zealand	Yes
Japan IOT	
Japan	Yes

* Brunei Darussalam, Indonesia, Cambodia, Lao People's Democratic Republic, Malaysia, Philippines, Singapore, Thailand, and Vietnam

** Bangladesh, Bhutan, India, Sri Lanka, Maldives, Nepal, and Afghanistan

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Corrections

(Corrected on May 20, 2014)

There has been an editorial change made to the Planned availability date section.