IBM DS8880 delivers faster performance than the previous DS8000 models with the reliability and availability to support digital business

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IBM[(R)] DS8880 delivers faster performance than the previous DS8000[(R)] models while maintaining the reliability and availability of the enterprise storage platform to support digital business. DS8000 has extended enterprise storage system leadership by offering the following options:

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- DS8884 Model 980 and Model 98B Expansion Unit
- IBM POWER8-based processors
- Scalable system memory and process cores in the controllers
- Repackage rack power system
- Improved I/O enclosure pairs
- Reduced 19-inch rack footprint
- Small form factor hardware management console (HMC)
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Reference: YE001

Overview

Our world is evolving faster than ever in this digital age. According to a Gartner report, more than 7 billion people will be connected to the Internet using 25 billion digital devices by 2020. We are already interconnected with each other and engage in a global network that delivers information to the palm of our hands. We are living smarter and more informative lives, with expectations to have constant access to our business transactions. With the shift in how business is conducted and people communicate, a digital business era has emerged.

As businesses accelerate their use of digital devices over the Internet, they struggle to protect consumer data from being stolen or accessed without authorization.

IBM is introducing the new DS8880, a family of business-critical, hybrid data systems that span a wide range of price points. The family is powered by the next generation of the proven DS8000 platform from IBM and delivers critical application acceleration, uncompromising availability, and industry-leading capabilities.

The new IBM DS8880 family includes two high-performance models (DS8884 Model 980 with its associated DS8884 Expansion Unit Model 98B, and DS8886 Model 981 with its associated DS8886 Expansion Unit Model 98E) that can be ordered with one, two, three, or four years of support, which covers both the hardware and advanced function features.

The DS8880 is also designed to deliver new hardware features for a combination of price and efficiency that is right for all application needs. In order to fulfill different application needs, DS8880 enables both hybrid-flash and traditional disk configuration options. Incorporating DS8880 with advanced storage tiering and thin provisioning can improve storage efficiency and reduce the total cost of ownership.

DS8880 also boasts world-class high availability and special integration with z Systems™ to deliver extraordinary value. For organizations seeking an ideal combination of performance, high availability, resilience, and agility, DS8880 is the ideal choice.

IBM POWER8$^{(R)}$ processor technology

IBM DS8880 systems feature IBM POWER8 server technology to help support high performance. These DS8880 models deliver up to two times throughput improvement over DS8870.

Each model within the DS8880 enables a concurrent upgrade from the smallest to the largest configuration. This includes adding cache and processors for increased performance, adding host ports for increased connectivity, adding HDDs and SSDs and additional expansion frames to the base frame for increased capacity, and adding advanced feature functions.

Memory support

Total memory support with the new DS8880 has increased by 100% as compared to DS8870. These new models deliver from 64 GB to 2 TB of system processor memory, while continuing to be managed in 4 KB segments for optimal cache efficiency. The additional memory on the new DS8880 platform increases the system read and write cache capacity, improving its performance capability based on workload.

Repackaged rack power system

The DS8880 power distribution system is based on the DS8870 power supply. The power supply has been repackaged to fit the 19-inch rack. These repackaged power supplies maintain energy efficiency and are designed to support emerging energy efficiency standards. The repackaged power system provides 8 KW and is single phase power only.

Improved I/O enclosure pairs

The new I/O enclosure pairs are PCIe Gen3 capable. The new I/O enclosure supports 6 PCIe adapter slots and two additional direct attached, high-performance flash enclosure ports. The I/O enclosures are attached to the POWER8 servers by two 8x PCIe Gen3 cables. Internal transfer rate to each I/O bay is four times faster compared to the prior model.

Reduced footprint rack

The DS8880 is implemented in a standard 19-inch rack footprint. The rack footprint is only occupies two floor tiles on a raised floor. The standard footprint assists clients in floor space planning and can help to reduce the footprint by up to 30%.

The rack ships as a 40U configuration that can be expanded to 46U at installation. The rack includes integrated anti-tip caster outriggers that stow under the rack, and also has an integrated keyboard and display pocket in the side wall accessed from the front of the rack. The keyboard and display do not take up additional rack space in the 19-inch rail area.

A small form factor HMC is used on the DS8880. One or two HMCs are supported in the base rack.

IBM DS8884 configuration options

This model delivers a lower cost system and smaller scale solution with performance on par with the DS8870. The DS8884 supports six core processors, up to 256 GB system memory, 64 host adapter ports, four high-performance flash enclosures, and 768 disk drives.

DS8884 and DS8886 advanced function features can now be purchased based on customer usage and not the total physical capacity of the system (exclude base function licenses).

IBM DS8884 Model cannot be upgraded to IBM DS8886 Model.

Drive support

DS8880 offers the following drive capacities which are encryption capable:

- 300 GB 15,000 rpm SAS
- 600 GB 15,000 rpm SAS
- 600 GB 10,000 rpm SAS
- 1.2 TB 10,000 rpm SAS
- 4 TB 7,200 rpm nearline SAS
- 200 GB SSD
- 400 GB SSD
- 800 GB SSD
- 1.6 TB SSD

Machine Type Model conversion from DS8870 to DS8886

The field model conversion from DS8870 to DS8886 is available for existing customers. This offering will only be available for DS8870 Enterprise Configurations (2-core processors excluded). Some restrictions apply for the model conversions. Refer to the Model conversions section for details.

Value-based pricing and licensing

IBM DS8880 requires a corresponding advanced function license (283x-LF8) for the total physical capacity of the storage system.

For more information on the function authorizations, refer to the Hardware Announcement 115-138, dated October 20, 2015.

Product preview

IBM plans to announce a new member of the DS8880 family in 2016.

This new model will be flash optimized to provide an all-flash, higher performance storage subsystem model.

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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.

Key prerequisites

All announced features and functions are supported on the IBM DS8000 series and require DS8000 LMC 8.8.00.xx.xx (bundle version 88.0.xxx.xx), or later.

Planned availability date

- December 4, 2015: All features and feature conversions, except feature number 1906 (Earthquake kit)
- January 22, 2016: General availability for Taiwan, Korea, and Vietnam
- March 4, 2016: Feature number 1906

These products will not be available for ordering in Argentina.

Description

IBM DS8880, the newest DS8000 family, has integrated IBM POWER8 processors to handle vast amounts of data, delivering new levels of performance and capacity for large-scale consolidation and growth.

IBM POWER8 processor technology

DS8880 high-performance flagship models feature IBM POWER8 server technology to help support high performance. Compared to the performance of the previous DS8000 system, this new processor aids the DS8880 in improving the performance of both sequential read and sequential write throughputs by over 100%, and delivers up to two times throughput performance.

The new DS8000 offers a single-socket, 6-core processor complex and up to a dual-socket, 24-core processor complex per controller.

Configuration options available

The new IBM DS8000 offers two types of configuration models. DS8886 Model 981 which enables a system to be configured with up to 1536 drives and 240 flash cards within the storage system. DS8884 Model 980 enables a system to be configured with up to 768 drives and 120 flash cards within the storage system.

DS8884 configuration is intended for environments where the price and capabilities of a smaller DS8880 configuration are preferred. DS8886 is optimized for performance and highly scalable configurations with large, long-term growth.

IBM DS8884 Model cannot be upgraded to IBM DS8886 Model.

Processor memory offerings

DS8884 Model 980 with 6-core configuration offers up to 256 GB of processor memory. DS8886 Model 981 with 8-core configuration offers up to 256 GB, with 16-core configuration offers up to 512 GB, and with 24-core configuration offers up to 2,048 GB. In addition, the write cache scales according to the processor memory size selected to help optimize performance. The total memory has been increased 100% when compared to the previous Model 961.

Enterprise disk drives

DS8880 offers a selection of disk drives, including a 2.5-inch form factor for increased density and performance per frame and 3.5-inch nearline SAS drives

which offer larger capacities. All of the drives are Serial Attached SCSI third generation 12 Gbps SAS drives (SAS-3). The following options are available:

- 300 GB 15,000 rpm SAS
- 600 GB 15,000 rpm SAS
- 600 GB 10,000 rpm SAS
- 1200 GB 10,000 rpm SAS
- 4 TB 7,200 rpm nearline SAS

Solid state drives (SSDs)

To improve data transfer rate (IOPS) and response time, the IBM DS8000 series enables support for SSDs. SSDs have improved I/O transaction-based performance over traditional platter-based drives. SSDs are a high-IOPS, enterprise class storage device targeted at Tier 0 applications that can use a high level of fast-access storage. SSDs offer a number of potential benefits over hard disk drives, including better IOPS performance, lower power consumption, less heat generation, and lower acoustical noise. SSDs are optional to the DS8000 series and are available with feature numbers 6xxx. RAID-6 is not supported for SSD arrays and RAID-10 are supported via RPQ.

The following capacities are offered for DS8880:

- 200 GB SSD
- 400 GB SSD
- 800 GB SSD
- 1600 GB SSD

Flash cards

Each Flash card capacity is 400 GB. Feature number 1596 offers 16 flash cards and feature number 1598 offers an additional 14 flash cards. Flash cards arrays are configured as RAID 5.

19-inch rack for a reduced footprint

The DS8880 is delivered in a reduced footprint 19-inch rack which will fit well in most data centers and eliminates the existing wide rack package. The I/O enclosure used for DS8870 has been replaced by a new I/O enclosure, attached to the POWER8 servers with PCIe Gen3 x8 cables. The new I/O enclosure has six PCIe adapter slots and two additional direct attached, high-performance flash enclosure ports.

The rack also has an integrated keyboard and display pocket in the side wall that can be accessed from the front of the rack. A small form factor HMC is used on the DS8880. One or two HMCs are supported in the base rack.

A unique feature of the new rack is the ability to expand from the height of 40U configuration to 46U concurrently. The expansion enables customers to have more capacity added to their storage systems.

Repackaged rack power system

The DS8880 power system provides up to 8 KW distribution with 4 second full rack battery backup for power line disturbance ride through. Extended power line disturbance ride through feature of 40 seconds is also available. Input power is single phase 200-240 V 60 A service.

Connectivity with Fibre Channel/FICON host adapters

The DS8880 series is designed to offer enhanced connectivity with the availability of four-port or eight-port Fibre Channel/FICON host adapters. The 8 Gbps and 16 Gbps Fibre Channel/FICON host adapters, offered in longwave and shortwave, auto-negotiate to either 16 Gbps, 8 Gbps, 4 Gbps, or 2 Gbps link speeds. This flexibility

enables exploitation of the potential benefits offered by the higher performance, 16 Gbps SAN-based solutions, while also maintaining compatibility with existing 2 Gbps, 4 Gbps, and 8 Gbps infrastructures. In addition, the individual ports on the adapter can be configured with Fibre Channel Protocol (FCP) or FICON[R]. This can help protect investment in Fibre Channel adapters and increase the ability to migrate to new servers. DS8886 Model 981 can support up to a maximum of 32 four-port or 16 eight-port host adapters, which equates to a maximum of 128 Fibre Channel ports.

DS8880 models offer extensive connectivity support, including Fibre Channel or FICON, across a broad range of server environments, such as IBM z Systems[TM], System p, System i[R], and System x servers, as well as servers from Sun, Hewlett-Packard, and non-IBM Intel-based servers. This rich support of heterogeneous environments and attachments, along with the flexibility to easily partition the DS8880 series storage capacity among the attached environments, can help support storage consolidation requirements and dynamic, changing environments.

Concurrent upgrade path

The DS8880 continues supporting a concurrent upgrade from the smallest to the largest configuration on each model. This includes adding cache and processors for increased performance, adding host ports for increased connectivity, adding HDDs, SSDs, and additional expansion frames to the base frame for increased capacity, and adding advanced function features.

High availability

DS8880 models are designed and implemented with component redundancy to eliminate single points of failure.

Logical Unit Number (LUN) and volume management

Concurrent LUN and volume creation and deletion are supported. When a LUN or volume is deleted, the capacity can be reformatted and reused.

LUNs and volumes can be configured to span arrays, therefore the size of the volume or LUN is not constrained by the size of the array. LUNs up to 16 TB are supported. CKD volumes up to 1 TB (1,182,006 cylinders) are also supported.

Dynamic Volume Expansion supporting application data growth

The IBM DS8880 series supports Dynamic Volume Expansion, enabling the size of a logical volume to be increased while it is online to a host system. This capability can simplify management by enabling easier online volume expansion to support application data growth. The maximum volume size is limited to the currently supported maximum size for DS8880:

• Open systems (Fixed Block - FB) volumes - 16 TB

• System z[R] (CKD) volumes - 1 TB (1,182,006 cylinders)

Volumes that are expanded can be online during and after the execution of the function. Volumes may not be in copy services relationships (Point-in-Time Copy, FlashCopy[R] SE, Metro Mirror, Global Mirror, Metro/Global Mirror, and z/OS[R] Global Mirror functions) while expansion is taking place. The function can be managed and configured through the DS Storage Manager, DS CLI, and DS Open API. IBM z Systems and System p servers support and recognize the expanded volumes within the DS8880.

All other servers may require additional steps to be put into place in order to support and recognize the expanded volumes within the DS8880. The Dynamic Volume Expansion capability is provided with the DS8880 series at no additional charge.

Addressing capabilities

Support for logical subsystems, logical devices, and logical paths defined as:

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- Up to 256 logical subsystems
- Up to 65,280 logical devices
- Up to 130,560 FICON logical paths (1,280 logical paths per port and up to 500 logical paths per control unit image)
- Up to 8,000 process logins (509 per SCSI-FCP port)

Simplified storage management for z Systems with z/OS

For z Systems and z/OS environments, DS8880 models can support 1 TB (1,182,006 cylinders) 3390 volumes. It can help relieve addressing constraints, improve disk resource utilization, and improve storage administrator productivity by providing the ability to consolidate multiple disk volumes into a single address.

Administration and management

- Online configuration capability features a web-based GUI designed to offer increased ease of use
- A single command-line interface supports both logical configuration and copy services
- Capabilities such as remote code distribution and email notification of link failures can also improve availability

Choice of models and features

DS8880 delivers extensive scalability as compared to previous DS8870 systems. With a 6-core processor complex, DS8884 Model 980 supports up to 240 2.5-inch disk drives and 60 flash cards for a maximum capacity of up to 408 TB. It also supports up to 256 GB of processor memory with up to 32 Fibre Channel/FICON ports. With an optional expansion unit (DS8884 Model 98B), it scales as follows:

- With one DS8884 Model 98B Expansion Unit, the DS8884 Model 980 (128 or 256 GB memory) supports up to 64 fibre Channel/FICON ports, 528 disk drives and 120 flash cards, providing up to 892.8 TB of physical capacity with 1.6 TB SSD drives, up to 264 drives for up to 1.1 PB of physical capacity with 4 TB nearline SAS disk drives
- With two DS8884 Model 98B Expansion Units, the DS8884 Model 980 (128 or 256 GB memory) supports up to 768 disk drives, providing up to 1.23 PB of physical capacity with 1.6 TB SSD drives, up to 384 drives for up to 1.54 PB of physical capacity with 4 TB nearline SAS disk drives

With 8, 16, and 24-core processor complex, the DS8886 Model 981 supports up to 192 2.5-inch disk drives and 120 flash cards for a maximum capacity of up to 355.2 TB. It also supports up to 2 TB of processor memory with up to 64 Fibre Channel/ FICON ports. With an optional expansion unit (DS8886 Model 98E), it scales as follows:

- With one DS8886 Model 98E Expansion Unit, the DS8886 Model 981 (16 or 24-core) supports up to 128 fibre Channel/FICON ports, 480 disk drives and 240 flash cards, providing up to 864 TB of physical capacity with 1.6 TB SSD drives, up to 240 drives for up to 1.06 PB of physical capacity with 4 TB nearline SAS disk drives
- With two DS8886 Model 98E Expansion Units, the DS8886 Model 981 (16 or 24-core) supports up to 912 disk drives, providing up to 1.46 PB of physical capacity with 1.6 TB SSD drives, up to 456 drives for up to 1.82 PB of physical capacity with 4 TB nearline SAS disk drives
- With a third DS8886 Model 98E Expansion Unit, the DS8886 Model 981 (16 or 24-core) supports up to 1,344 disk drives, providing up to 2.15 PB of physical capacity with 1.6 TB SSD drives, up to 672 drives for up to 2.69 PB of physical capacity with 4 TB nearline SAS disk drives
- With a fourth DS8886 Model 98E Expansion Unit, the DS8886 Model 981 (16 or 24-core) supports up to 1,536 disk drives, providing up to 2.46 PB of physical capacity with 1.6 TB SSD drives, up to 768 drives for up to 3.1 PB of physical capacity with 4 TB nearline SAS disk drives

To meet performance and configuration needs, new DS8880 offers a 6-, 8-, 16-, or 24-core processor complex. Refer to the following table for more information about supported drive and adapter counts with the two available configuration options.

Model	Core per Processor Complex	Physical capacity	Disk drives	Processor memory	Host adapters	9xE attach	Flash enclosures
DS8886 configuration:							
981	8-core	355 TB	192	256 GB	16	0	4
981	16-core	2.55 PB	1,536	512 GB	32	0 to 4	8
981	24-core	2.55 PB	1,536	2048 GB	32	0 to 4	8
DS8884 configuration:							
980	6-core	408 TB	240	64 GB	8	0	2
980	6-core	1.28 PB	768	256 GB	16	0 to 2	4

Model	Processor	Physical capacity	Disk drives	Processor memory	Host adapters	9xx attach	Flash enclosures
DS8886 configuration first expansion:							
98E	N/A	508.8 TB	288	N/A	16	981	4
DS8886 configuration second/third expansions:							
98E	N/A	691.2 TB	432	N/A	0	981	0
DS8886 configuration fourth expansion:							
98E	N/A	307.2 TB	192	N/A	0	981	0
DS8884 first expansion configuration first expansion:							
98B	N/A	460.8 TB	288	N/A	8	980	2
DS8884 first expansion configuration second expansion:							
98B	N/A	384 TB	240	N/A	0	980	0

Variety of configuration options

Price, performance, and capacity flexibility to help address specific application and business requirements is provided through drive intermix support.

Physical capacity for the DS8880 series is purchased through disk drive sets. A disk drive set contains 16 identical disk drives with the same capacity and rpm. For additional flexibility, feature conversions are available to exchange existing disk drive sets when purchasing new disk drive sets with higher capacity. The following disk drive sets are available:

Size	Drive type	Drive speed	Encryption drive	RAID support	Field supported
300 GB	SAS	15K rpm	Yes	5, 6, 10	Yes
600 GB	SAS	15K rpm	Yes	5, 6, 10	Yes
600 GB	SAS	10K rpm	Yes	5, 6, 10	Yes
1.2 TB	SAS	10K rpm	Yes	5, 6, 10	Yes
4 TB	SAS nearline	7.2K rpm	Yes	6, 10	Yes
200 GB	SSD	N/A	Yes	5, 10	Yes
400 GB	SSD	N/A	Yes	5, 10	Yes
800 GB	SSD	N/A	Yes	5, 10	Yes
1.6 TB	SSD	N/A	Yes	5, 10	Yes
400 GB	Flash	N/A	Yes	5	Yes

Encryption capability

IBM recognizes the requirement for data protection, not only from hardware or software failures, but also from physical relocation of hardware, theft, and retasking of existing hardware. The DS8880 series storage controllers support encryption which helps mitigate the threat of theft, mismanagement, or loss of business critical data.

Encryption may be enabled for all data at rest using any of the available drives with key management services supported by Security Key Lifecycle Manager (SKLM) software. Enabling encryption is optional, and may be activated using a storage appliance with SKLM installed.

The encryption support feature is not available for China or Russia.

Additionally, an environment verification process must be completed to support best practice configuration of the encryption solution. This verification can be requested from IBM Lab Based Services (recommended), or completed by the customer, but is a prerequisite of the encryption solution activation process.

Call home options

On DS8880, the call home function is no longer offered through a modem, and is only implemented through an Internet SSL-AOS connection.

The following availability dates apply worldwide, except for Vietnam, Korea, Taiwan, and Argentina.

General availability is December 4, 2015, for the following:

- DS8886 Models 981 and 98E
- DS8884 Models 980 and 98B
- DS8000 LMC R8.0

General and field availability is March 4, 2016, for the Earthquake kit, feature number 1906.

Field (MES) availability is March 4, 2016, for the following:

- Field install Model 98E
- Field install Model 98B
- Field merge of expansion frames
- Cache and processor options
- HD disk enclosure
- PCIe I/O enclosure pair
- PCIe HD cable groups
- 8 Gbps device adapters
- 8/16 Gbps PCIe based host adapters
- Disk drive sets
- Encryption SSD disk drive sets
- Flash cards
- High-performance flash enclosure
- Model conversion from DS8870 to DS8886

Reference information

For more information on the function authorizations refer to the Hardware Announcement 115-138, dated October 20, 2015.

For the IBM statement on compliance with the European Union Directive on Restriction of the use of certain Hazardous Substances in Electrical and Electronic Equipment (2002/95/EC) (RoHS), visit

http://www.ibm.com/ibm/environment/products/rohs.shtml

Product number

Description	Machine type	Model	Feature
DS8884	2831	980	
DS8884 Expansion Unit	2831	98B	
DS8886	2831	981	
DS8886 Expansion Unit	2831	98E	
Model 9xE merge indicators:			
- 9xE factory merge	2831	980, 981, 98B, 98E	0001
- 9xE field merge	2831	98B, 98E	0002
- DoD indicator	2831	980, 981, 98B, 98E	0020
- JEMT indicator	2831	980, 981, 98B, 98E	0021
Custom features:			
- Top Expansion	2831	981, 98E	0170
- Top Storage placement indicator	2831	980	0171
- Shipping weight reduction	2831	980, 981, 98B, 98E	0200
Model 9xE position indicators:			
- 981 - 98E position 1	2831	981, 98E	0371
- 981 - 98E position 2	2831	981, 98E	0372
- 981 - 98E position 3	2831	981, 98E	0373
- 981 - 98E position 4	2831	981, 98E	0374
Model 9xB position indicators:			
- 980 - 98B position 1	2831	980, 98B	0376
- 980 - 98B position 2	2831	980, 98B	0377
Encryption not capable	2831	980, 981	0403
All-flash indicator	2831	980, 981	0600

Description	Machine type	Model	Feature
SAS-SSD mix indicators	2831	980, 981, 98B, 98E	0603
SSD custom placement indicators	2831	980, 981, 98B, 98E	0604
Initial system capacity:			
- Up to 100 TB capacity	2831	980, 981, 98B, 98E	0801
- 100.1 TB to 250 TB capacity	2831	980, 981, 98B, 98E	0803
- 250.1 TB to 500 TB capacity	2831	980, 981, 98B, 98E	0804
- 500.1 TB to 1250 TB capacity	2831	980, 981, 98B, 98E	0806
- 1250.1 TB to 3000 TB capacity	2831	980, 981, 98B, 98E	0807
- 3000.1 TB to 6000 TB capacity	2831	980, 981, 98B, 98E	0808
- 6000.1 TB to 10000 TB capacity	2831	980, 981, 98B, 98E	0809
Attachment indicators:			
- IBM/Openwave Alliance indicator	2831	980, 981, 98B, 98E	0930
- IBM System i indicator	2831	980, 981, 98B, 98E	0931
- IBM System p indicator	2831	980, 981, 98B, 98E	0932
- IBM System x indicator	2831	980, 981, 98B, 98E	0933
- IBM System z indicator	2831	980, 981, 98B, 98E	0934
- IBM System z B/C indicator	2831	980, 981, 98B, 98E	0935
- IBM System zEnterprise(R) Cloud indicator	2831	980, 981, 98B, 98E	0936
- Linux(TM) indicator	2831	980, 981, 98B, 98E	0940
- Storage Appliance indicator	2831	980, 981	0952
- IBM ProtecTIER(R) indicator	2831	980, 981, 98B, 98E	0960
- IBM Storwize(R) V7000 indicator	2831	980, 981, 98B, 98E	0961
- IBM N series indicator	2831	980, 981, 98B, 98E	0962
- IBM SAN Volume Controller indicator	2831	980, 981, 98B, 98E	0963
- IBM/EPIC attachment indicator	2831	980, 981, 98B, 98E	0964
- VMware VAAI indicator	2831	980, 981, 98B, 98E	0965
- OpenStack indicator	2831	980, 981, 98B, 98E	0966

Description	Machine type	Model	Feature
- US TAA compliance indicator	2831	980, 981, 98B, 98E	0983
Power:			
- Single phase DC-UPS	2831	980, 981, 98B, 98E	1050
- Extended PLD	2831	980, 981, 98B, 98E	1055
Single phase line cords:			
- SPP cord, 200-240V, 60A, 3-pin connector	2831	980, 981, 98B, 98E	1062
- SPP cord, 200-240V, 63A, no connector	2831	980, 981, 98B, 98E	1063
Special tool:			
- Overhead ladder - 5ft	2831	980, 981	1101
- Ladder - Top Expansion - 3ft	2831	981	1102
Management Console:			
- Mgmt console - Primary	2831	980, 981	1140
- Mgmt console - Secondary	2831	980, 981	1150
Disk drive enclosures:			
- HD disk enclosure pair	2831	980, 981, 98B, 98E	1241
- HD STD enclosure indicator	2831	980, 981, 98B, 98E	1242
- 3.5-inch disk enclosure indicator	2831	980, 981, 98B, 98E	1244
- HD 400 GB SSD enclosure indicator	2831	980, 981, 98B, 98E	1245
- HD 200 GB SSD enclosure indicator	2831	980, 981, 98B, 98E	1255
- HD 800 GB SSD enclosure indicator	2831	980, 981, 98B, 98E	1256
- HD 1.6 TB SSD enclosure indicator	2831	980, 981, 98B, 98E	1257
Disk drive cables:			
- Disk drive cable group A	2831	981	1246
- HD disk drive cable group B	2831	98E	1247
- HD disk drive cable group C	2831	98E	1248
- HD disk drive cable group D	2831	98E	1249
- HD disk drive cable group E	2831	98E	1251

Description	Machine type	Model	Feature
- Extended HD disk drive cable group C	2831	98E	1252
- Extended HD disk drive cable group D	2831	98E	1253
- Extended HD disk drive cable group E	2831	98E	1254
- BC Disk drive cable group A	2831	980	1261
- BC disk drive cable group B	2831	98B	1262
- BC disk drive cable group C	2831	98B	1263
- Extended BC disk drive cable group C	2831	98B	1266
I/O enclosure pair PCIe 3	2831	980, 981, 98B, 98E	1302
I/O cables:			
- PCI-E cable group 1	2831	981	1320
- PCI-E cable group 2	2831	981	1321
Top exit bracket:			
- Top exit bracket for Fibre cable	2831	980, 981, 98B, 98E	1400
Fibre Channel/ FICON cables:			
- 50 um Fibre cable (LC)	2831	980, 981, 98B, 98E	1410
- 50 um Fibre cable (LC/SC)	2831	980, 981, 98B, 98E	1411
- 50 um Fibre cable (Jumper)	2831	980, 981, 98B, 98E	1412
- 9 um Fibre cable (LC)	2831	980, 981, 98B, 98E	1420
- 9 um Fibre cable (LC/SC)	2831	980, 981, 98B, 98E	1421
- 9 um Fibre cable (Jumper)	2831	980, 981, 98B, 98E	1422
High-performance flash card sets:			
- High-performance flash enclosure	2831	980, 981, 98B, 98E	1500
- 400 GB 1.8-inch flash card set A (R)	2831	980, 981, 98B, 98E	1596
- 400 GB 1.8-inch flash card set B (R)	2831	980, 981, 98B, 98E	1598
- Flash enclosure filler set	2831	980, 981, 98B, 98E	1599

Description	Machine type	Model	Feature
DS8000 Licensed Machine Code:			
- DS8000 LMC R8.0	2831	980, 981	1880
- DS8000 LMC R8.0 indicator	2831	98B, 98E	1980
Earthquake kit	2831	980, 981, 98B, 98E	1906
Hardware installation MES	2831	980, 981, 98B, 98E	1999
Disk enclosure filler sets:			
- 3.5-inch disk enclosure filler set	2831	980, 981, 98B, 98E	2997
- 2.5-inch disk enclosure filler set	2831	980, 981, 98B, 98E	2999
Device adapters:			
- Device adapter pair I	2831	980, 981, 98B, 98E	3053
Host adapters:			
- 8 Gb 4 port SW FCP/FICON adapter PCIe	2831	980, 981, 98B, 98E	3153
- 8 Gb 8 port SW FCP/FICON adapter PCIe	2831	980, 981, 98B, 98E	3157
- 8 Gb 4 port LW FCP/FICON adapter PCIe	2831	980, 981, 98B, 98E	3253
- 8 Gb 8 port LW FCP/FICON adapter PCIe	2831	980, 981, 98B, 98E	3257
- 16 Gb 4 port SW FCP/FICON adapter PCIE	2831	980, 981, 98B, 98E	3353
- 16 Gb 4 port LW FCP/FICON adapter PCIE	2831	980, 981, 98B, 98E	3453
Processor memory:			
- 64 GB Processor memory (6-core only)	2831	980	4223
- 128 GB Processor memory (6-core only)	2831	980	4224
- 256 GB Processor memory (6-core only)	2831	980	4225
- 128 GB Processor memory (8-core only)	2831	981	4324
- 256 GB Processor memory (8-core or 16-core)	2831	981	4325

Description	Machine type	Model	Feature
- 512 GB Processor memory (16-core only)	2831	981	4326
- 1 TB Processor memory (24-core only)	2831	981	4327
- 2 TB Processor memory (24-core only)	2831	981	4328
Processor license indicators:			
- 6-core processor indicator	2831	980	4421
- 8-core processor indicator	2831	981	4422
- 16-core processor indicator	2831	981	4423
- 24-core processor indicator	2831	981	4424
Encryption disk drive sets:			
- 300 GB 15K drive set	2831	980, 981, 98B, 98E	5308
- 600 GB 15K drive set	2831	980, 981, 98B, 98E	5618
- 600 GB 10K drive set	2831	980, 981, 98B, 98E	5708
- 1.2 TB 10K drive set	2831	980, 981, 98B, 98E	5768
- 4 TB 7.2K half drive set	2831	980, 981, 98B, 98E	5868
Encryption SSD drive sets:			
- 200 GB SSD drive set	2831	980, 981, 98B, 98E	6058
- 400 GB SSD drive set	2831	980, 981, 98B, 98E	6158
- 800 GB SSD drive set	2831	980, 981, 98B, 98E	6258
- 1.6 TB SSD drive set	2831	980, 981, 98B, 98E	6358
Function Authorization indicators			
Base Function (BF):			
- BF - Up to 100 TB capacity	2831	980, 981	8151
- BF - 100.1 TB to 250 TB capacity	2831	980, 981	8152
- BF - 250.1 TB to 500 TB capacity	2831	980, 981	8153
- BF - 500.1 TB to 1250 TB capacity	2831	980, 981	8154
- BF - 1250.1 TB to 3000 TB capacity	2831	980, 981	8155

Description	Machine type	Model	Feature
- BF - 3000.1 TB to 6000 TB capacity	2831	980, 981	8156
- BF - 6000.1 TB to 10000 TB	2831	980, 981	8160
Copy Services (CS) license:			
- CS - Inactive	2831	980, 981	8250
- CS - Up to 100 TB capacity	2831	980, 981	8251
- CS - 100.1 TB to 250 TB capacity	2831	980, 981	8252
- CS - 250.1 TB to 500 TB capacity	2831	980, 981	8253
- CS - 500.1 TB to 1250 TB capacity	2831	980, 981	8254
- CS - 1250.1 TB to 3000 TB capacity	2831	980, 981	8255
- CS - 3000.1 TB to 6000 TB capacity	2831	980, 981	8256
- CS - 6000.1 TB to 10000 TB	2831	980, 981	8260
z-synergy Services (zsS) license:			
- zsS - Active	2831	980, 981	8300
- zsS - Inactive	2831	980, 981	8350
- zsS - Up to 100 TB capacity	2831	980, 981	8351
- zsS - 100.1 TB to 250 TB capacity	2831	980, 981	8352
- zsS - 250.1 TB to 500 TB capacity	2831	980, 981	8353
- zsS - 500.1 TB to 1250 TB capacity	2831	980, 981	8354
- zsS - 1250.1 TB to 3000 TB capacity	2831	980, 981	8355
- zsS - 3000.1 TB to 6000 TB capacity	2831	980, 981	8356
- zsS - 6000.1 TB to 10000 TB	2831	980, 981	8360
IGF transaction:			
- IGF transaction indicator	2831	980, 981	8999
Shipping and Handling NC	2831	980, 981, 98B, 98E	AG00
Shipping and handling 981	2831	981	AGA4
Shipping and handling 98E	2831	98E	AGA5
Shipping and handling 980	2831	980	AGA6
Shipping and handling 98B	2831	98B	AGA7

Model conversions

Remaining warranty (years)	From Model	To Model	Description
0.1 to < 1 years	2421-961	2831-981	DS8886 Model 981
0.1 to < 1 years	2422-961	2831-981	DS8886 Model 981
0.1 to < 1 years	2423-961	2831-981	DS8886 Model 981
0.1 to < 1 years	2424-961	2831-981	DS8886 Model 981

From Model	To Model	Description
2421-961	2831-98E	DS8886 Model 98E
2422-961	2831-98E	DS8886 Model 98E
2423-961	2831-98E	DS8886 Model 98E
2424-961	2831-98E	DS8886 Model 98E
2421-96E	2831-98E	DS8886 Model 98E
2422-96E	2831-98E	DS8886 Model 98E
2423-96E	2831-98E	DS8886 Model 98E
2424-96E	2831-98E	DS8886 Model 98E

Conversion from Model 961 to Model 98E is for those base models with five disk enclosures since an additional expansion is required to contain the additional disk enclosure.

Every configuration that needs to perform a model conversion has to be submitted through SCORE process and have the configuration validated before the password is provided to enable the model conversion option on e-config. You can access SCORE at

https://scores.boulder.ibm.com/webapp/snicrs/int/ssic/logon.do

Note: This is a reminder that model conversions are disruptive. Customers are responsible for backing up all data on the DS8870 and restoring it when the DS8886 is ready for production. The approximate duration for the conversion is three days.

Note: Prerequisites for model conversions can be found in the *IBM System Storage$^{(R)}$ DS8880 Introduction and Planning Guide (GC27-8525)*.

Note: Certain restrictions apply based on the machine and remaining warranty years, contact your sales representative for additional information.

* Parts removed as a result of a model conversion become the property of IBM.

Feature conversions

From feature	To feature	Returned parts*	Description	Remarks
Model 9xE merge indicators:				
0001	0001	N/A	9xE factory merge	
0002	0002	N/A	9xE field merge	
0020	0020	N/A	DoD Indicator	
0021	0021	N/A	JEMT indicator	
Custom features:				
0168	Not supported			
0169	Not supported			
0200	0200	N/A	Shipping weight reduction	

From feature	To feature	Returned parts*	Description	Remarks
0202	Not supported			
0203	Not supported			
Model 9xE position indicators:				
0361	0371	N/A	981 - 98E position 1	Required if model 961 has five disk enclosures (DE)
0361/0362	0372	N/A	981 - 98E position 2	Required if 961 exceeds four DE, 96E first expansion frame exceeds six DE
0362/0363	0373	N/A	981 - 98E position 3	Required if 96E second expansion frame exceeds eight DE
0363	0374	N/A	981 - 98E position 4	Required if 96E third expansion frame exceeds six DE
BSMI certifications:				
0400	0400	N/A	BSMI Certificate - Taiwan	
0401	Not supported			
0983	0983	N/A	US TAA compliance indicator	
0403	0403	N/A	Encryption not capable	
Ultra-SSD I/O drawer placement indicators:				
0411	Not supported			
0412	Not supported			
0413	Not supported			
0414	Not supported			
0415	Not supported			
0416	Not supported			
0417	Not supported			
0418	Not supported			

From feature	To feature	Returned parts*	Description	Remarks
0511	Not supported			
0512	Not supported			
0513	Not supported			
0514	Not supported			
0515	Not supported			
0516	Not supported			
0517	Not supported			
0518	Not supported			
Custom drive placement indicators:				
0600	0600	N/A	Flash indicators	
0601	Not supported			
0602	Not supported			
0603	0603	N/A	SAS-SSD mix indicators	
0604	0604	N/A	SSD custom placement indicators	
0605	Not supported			
Licensed function indicators:				
0700	Not supported			
0703	Not supported			
0707	Not supported			
0708	Not supported			
0709	Not supported			
0713	Not supported			
0714	Not supported			
0715	Not supported			
0720	Not supported			
0730	Not supported			
0742	Not supported			
0744	Not supported			
0745	Not supported			

From feature	To feature	Returned parts*	Description	Remarks
0746	Not supported			
0760	Not supported			
0763	Not supported			
0780	Not supported			
0782	Not supported			
0784	Not supported			
Initial system capacity:				
0800	0801	N/A	Up to 100 TB capacity	
0802	0801	N/A	Up to 100 TB capacity	
0805	0801	N/A	Up to 100 TB capacity	
0810	0801	N/A	Up to 100 TB capacity	
0815	0801	N/A	Up to 100 TB capacity	
0820	0801	N/A	Up to 100 TB capacity	
0825	0801	N/A	Up to 100 TB capacity	
0830	0803	N/A	100.1 TB to 250 TB capacity	
0835	0803	N/A	100.1 TB to 250 TB capacity	
0840	0803	N/A	100.1 TB to 250 TB capacity	
0845	0804	N/A	250.1 TB to 500 TB capacity	
0850	0804	N/A	250.1 TB to 500 TB capacity	
0855	0804	N/A	250.1 TB to 500 TB capacity	
0860	0804	N/A	250.1 TB to 500 TB capacity	
0865	0804	N/A	250.1 TB to 500 TB capacity	
0870	0806	N/A	500.1 TB to 1250 TB capacity	
0871	0806	N/A	500.1 TB to 1250 TB capacity	
0872	0806	N/A	500.1 TB to 1250 TB capacity	

From feature	To feature	Returned parts*	Description	Remarks
0873	0806	N/A	500.1 TB to 1250 TB capacity	
0874	0806	N/A	500.1 TB to 1250 TB capacity	
0875	0806	N/A	500.1 TB to 1250 TB capacity	
0876	0806	N/A	500.1 TB to 1250 TB capacity	
0877	0806	N/A	500.1 TB to 1250 TB capacity	
0878	0806 or 0807	N/A	500.1 TB to 1250 TB capacity or 1250.1 TB to 3000 TB capacity	
0879	0807	N/A	1250.1 TB to 3000 TB capacity	
0880	0807	N/A	1250.1 TB to 3000 TB capacity	
0881	0807	N/A	1250.1 TB to 3000 TB capacity	
0882	0807	N/A	1250.1 TB to 3000 TB capacity	
0883	0807	N/A	1250.1 TB to 3000 TB capacity	
0884	0807	N/A	1250.1 TB to 3000 TB capacity	
0885	0807	N/A	1250.1 TB to 3000 TB capacity	
0886	0807	N/A	1250.1 TB to 3000 TB capacity	
0887	0807	N/A	1250.1 TB to 3000 TB capacity	
0888	0807	N/A	1250.1 TB to 3000 TB capacity	
0889	0807	N/A	1250.1 TB to 3000 TB capacity	
0890	0807	N/A	1250.1 TB to 3000 TB capacity	
Standby CoD indicators:				
0900	Not supported			
0901	Not supported			

From feature	To feature	Returned parts*	Description	Remarks
0902	Not supported			
0903	Not supported			
0904	Not supported			
Administrative indicators:				
0930	0930	N/A	IBM / Openwave alliance	
0931	0931	N/A	IBM System i indicator	
0932	0932	N/A	IBM System p indicator	
0933	0933	N/A	IBM System x indicator	
0934	0934	N/A	IBM System z indicator	
0935	0935	N/A	IBM System z B/C indicator	
0936	0936	N/A	IBM System zEnterprise$^{(R)}$ Cloud indicator	
0940	0940	N/A	Linux^{TM} indicator	
0950	Not supported			
0960	0960	N/A	IBM System Storage ProtecTIER$^{(R)}$ indicator	
0961	0961	N/A	IBM Storwize$^{(R)}$ V7000 indicator	
0962	0962	N/A	IBM System Storage Nseries indicator	
0963	0963	N/A	IBM System Storage SAN Volume Controller indicator	
0964	0964	N/A	IBM / EPIC attachment indicator	
0965	0965	N/A	VMware VAAI indicator	
0966	0966	N/A	OpenStack indicator	
Power:				
1000	Not supported			
1051	Not supported			
1055	1055	No	Extended PLD	
Single phase power cords:				

From feature	To feature	Returned parts*	Description	Remarks
1061	1062	Yes	SPP cord, 200-240V, 60A, 3 pin connector (US, Canada, LA, JP & AP)	It requires feature number 1050
1068	1063	Yes	SPP cord, 200-240V, 63A, no connector (EMEA, ME & AP)	It requires feature number 1050
1072	1062	Yes	SPP cord, 200-240V, 60A, 3 pin connector (US, Canada, LA, JP & AP)	It requires feature number 1050
1073	1063	Yes	SPP cord, 200-240V, 63A, no connector (EMEA, ME & AP)	It requires feature number 1050
Line cords:				
1080	1062 or 1063	Yes	SPP cord, 200-240V, 60A, 3 pin connector or 63A, no connector.	It requires feature number 1050
1081	1062 or 1063	Yes	SPP cord, 200-240V, 60A, 3 pin connector or 63A, no connector.	It requires feature number 1050
1082	1062 or 1063	Yes	SPP cord, 200-240V, 60A, 3 pin connector or 63A, no connector.	It requires feature number 1050
1083	1062 or 1063	Yes	SPP cord, 200-240V, 60A, 3 pin connector or 63A, no connector.	It requires feature number 1050
1084	1062 or 1063	Yes	SPP cord, 200-240V, 60A, 3 pin connector or 63A, no connector.	It requires feature number 1050
1085	1062 or 1063	Yes	SPP cord, 200-240V, 60A, 3 pin connector or 63A, no connector.	It requires feature number 1050
Special tool:				
1101	1101	No	Overhead ladder - 5 feet	
Management console:				

From feature	To feature	Returned parts*	Description	Remarks
1120	1140	Yes	Management console - primary	
1130	1150	Yes	Management console - secondary	
Disk enclosures:				
1241	1241	No	HD disk enclosure pair	
1242	1242	No	HD STD enclosure indicator	
1244	1244	No	3.5-inch disk enclosure indicator	
1245	1245	No	HD 400 GB SSD enclosure indicator	
1255	1255	No	200 GB SSD enclosure indicator	
1256	1256	No	800 GB SSD enclosure indicator	
1257	1257	No	1.6 TB SSD enclosure indicator	
Disk cables:				
1246	1246	No	HD Disk drive cable group A	
1247	1247	No	HD Disk drive cable group B	
1248	1248	No	HD Disk drive cable group C	
1249	1249	No	HD Disk drive cable group D	
1250	Not supported			
I/O enclosures:				
1301	1302	Yes	I/O enclosure pair PCIE G3	
I/O cables:				
1320	1320	No	PCI-E cable group 1	
1321	1321	No	PCI-E cable group 2	
1322	Not supported			
Top exit bracket:				
1400	1400	No	Top exit bracket for fibre cable	
Fibre Channel cables (50 micron:				
1410	1410	No	50 um Fibre cable (LC)	

From feature	To feature	Returned parts*	Description	Remarks
1411	1411	No	50 um Fibre cable (LC/SC)	
1412	1412	No	50 um Fibre cable (jumper)	
Fibre Channel cables (9 micron):				
1420	1420	No	9 um Fibre cable (LC)	
1421	1421	No	9 um Fibre cable (LC/SC)	
1422	1422	No	9 um Fibre cable (jumper)	
High Performance flash family:				
1500	1500	No	High Perf. SSD enclosure	
1506	p-listed RPQ	No	400 GB 1.8-inch flash card set A	No MES upgrade since feature code is already withdrawn
1508	p-listed RPQ	No	400 GB 1.8-inch flash card set B	No MES upgrade since feature code is already withdrawn
1596	1596	No	400 GB 1.8-inch flash card set A (R)	
1598	1598	No	400 GB 1.8-inch flash card set B (R)	
1599	1599	No	Flash enclosure filler set	
Microcode bundle family:				
1731	1880	No	DS8000 LMC R8.0	
1732	1880	No	DS8000 LMC R8.0	
1733	1880	No	DS8000 LMC R8.0	
1734	1880	No	DS8000 LMC R8.0	
1735	1880	No	DS8000 LMC R8.0	
1736	1880	No	DS8000 LMC R8.0	
Encryption Support:				
1750	Not supported			
1754	Not supported			
1760	MT 2421-AP1 with feature code			

From feature	To feature	Returned parts*	Description	Remarks
	1761 and RPQ8S1426			
Microcode Bundle Family:				
1831	1980	No	DS8000 LMC R8.0 indicator	
1832	1980	No	DS8000 LMC R8.0 indicator	
1833	1980	No	DS8000 LMC R8.0 indicator	
1834	1980	No	DS8000 LMC R8.0 indicator	
1835	1980	No	DS8000 LMC R8.0 indicator	
1836	1980	No	DS8000 LMC R8.0 indicator	
1906	1906	No	Earthquake kit	It requires first expansion frame ordering
1999	1999	No	Hardware installation MES	
Disk enclosure filler:				
2997	2997	No	3.5-inch disk enclosure filler set	
2998	Not supported			
2999	2999	No	2.5-inch disk enclosure filler set	
Device adapters:				
3053	3053	No	8 Gb 4 port device adapter pair I	
3054	Not supported			
Host adapters:				
3153	3153	No	8 Gb 4 port SW FCP/FICON adapter PCIE	
3157	3157	No	8 Gb 8 port SW FCP/FICON adapter PCIE	
3253	3253	No	8 Gb 4 port LW	

From feature	To feature	Returned parts*	Description	Remarks
			FCP/FICON adapter PCIE	
3257	3257	No	8 Gb 8 port LW FCP/FICON adapter PCIE	
3353	3353	No	16 Gb 4 port SW FCP/FICON adapter PCIE	
3453	3453	No	16 Gb 4 port LW FCP/FICON adapter PCIE	
Processor memory:				
4311	Not supported			
4312	Not supported			
4313	4324, 4325, 4326, 4327,4328	Yes	128, 256, 512, 1024, 2048 GB processor memory	If there are five storage enclosures, it requires additional expansion frame (I/O bay and DA adapters), min 16-core 256 GB processor memory
4314	4324, 4325, 4326, 4327,4328	Yes	128, 256, 512, 1024, 2048 GB processor memory	If there are five storage enclosures, it requires additional expansion frame (I/O bay and DA adapters), min 16-core 256 GB processor memory
4315	4325, 4326, 4327. 4328	Yes	256, 512, 1024, 2048 GB processor memory	
4316	4326, 4327, 4328	Yes	512 GB, 1 TB and 2 TB processor memory	
4317	4327, 4328	Yes	1 TB and 2 TB processor memory	
Processor license feature indicators:				
4401	Not supported			
4402	4422, 4423, 4424	Yes	8, 16, 24 P8 processor indicator	

From feature	To feature	Returned parts*	Description	Remarks
4403	4422, 4423, 4424	Yes	8, 16, 24 P8 processor indicator	
4404	4423, 4424	Yes	16 or 24 processor indicator	
4411	Not supported			
4412	4422, 4423, 4424	Yes	8, 16, 24 P8 processor indicator	
4413	4422, 4423, 4424	Yes	8, 16, 24 P8 processor indicator	
4414	4423, 4424	Yes	16 or 24 processor indicator	
Encryption disk drive sets:				
5108	p-listed RPQ	No	146 GB 15K SAS E drive set	
5308	5308	No	300 GB 15K SAS E drive set	
5618	5618	No	600 GB 15K SAS E drive set	
5708	5708	No	600 GB 10K SAS E drive set	
5768	5768	No	1.2 TB 10K SAS E drive set	
5868	5868	No	4 TB 7.2K SAS E drive set	
Encryption standby CoD disk drive sets:				
5109	p-listed RPQ	No	146 GB 15K SAS E drive set	
5309	5308	No	300 GB 15K SAS E drive set	
5619	5618	No	600 GB 15K SAS E drive set	
5709	5708	No	600 GB 10K SAS E drive set	
5769	5768	No	1.2 TB 10K SAS E drive set	
5869	5868	No	4 TB 7.2K SAS E drive set	
Encryption solid state disk drive sets:				

From feature	To feature	Returned parts*	Description	Remarks
6058	6058	No	200 GB SSD E drive set	
6158	6158	No	400 GB SSD E drive set	
6258	6258	No	800 GB SSD E drive set	
6358	6358	No	1.6 TB SSD E drive set	

From feature	To feature	Returned parts*	Description
Disk enclosures:			
1242	1244	No	HD STD enclosure indicator to 3.5-inch disk enclosure indicator
1242	1245	No	HD STD enclosure indicator to 400 GB SSD enclosure indicator
1242	1255	No	HD STD enclosure indicator to 200 GB SSD enclosure indictor
1242	1256	No	HD STD enclosure indicator to 800 GB SSD enclosure indicator
1242	1257	No	HD STD enclosure indicator to 1.6 TB SSD enclosure indicator
1245	1256	No	SSD enclosure indicator
1245	1257	No	SSD enclosure indicator
1255	1245	No	SSD enclosure indicator
1255	1256	No	SSD enclosure indicator
1255	1257	No	SSD enclosure indicator
1256	1257	No	SSD enclosure indicator
Host adapters:			
3153	3157	Yes	Host adapter conversion
3153	3253	Yes	Host adapter conversion
3153	3257	Yes	Host adapter conversion
3157	3153	Yes	Host adapter conversion
3157	3253	Yes	Host adapter conversion
3157	3257	Yes	Host adapter conversion

From feature	To feature	Returned parts*	Description
3253	3153	Yes	Host adapter conversion
3253	3157	Yes	Host adapter conversion
3253	3257	Yes	Host adapter conversion
3257	3153	Yes	Host adapter conversion
3257	3157	Yes	Host adapter conversion
3257	3253	Yes	Host adapter conversion
3353	3453	Yes	Host adapter conversion
3453	3353	Yes	Host adapter conversion
Encryption disk drive sets:			
5308	5618	Yes	Encryption disk drive set conversion
5308	5708	Yes	Encryption disk drive set conversion
5308	5768	Yes	Encryption disk drive set conversion
5308	5868	Yes	Encryption disk drive set conversion
5618	5708	Yes	Encryption disk drive set conversion
5618	5768	Yes	Encryption disk drive set conversion
5618	5868	Yes	Encryption disk drive set conversion
5708	5618	Yes	Encryption disk drive set conversion
5708	5768	Yes	Encryption disk drive set conversion
5708	5868	Yes	Encryption disk drive set conversion
Encryption SSD drive sets:			
6058	6158	Yes	Encryption SSD drive conversion
6058	6258	Yes	Encryption SSD drive conversion
6058	6358	Yes	Encryption SSD drive conversion

From feature	To feature	Returned parts*	Description
6158	6258	Yes	Encryption SSD drive conversion
6158	6358	Yes	Encryption SSD drive conversion
6258	6358	Yes	Encryption SSD drive conversion
Encryption SAS to SSD drive sets:			
5308	6058	Yes	Encryption SAS to SSD drive conversion
5308	6158	Yes	Encryption SAS to SSD drive conversion
5308	6258	Yes	Encryption SAS to SSD drive conversion
5308	6358	Yes	Encryption SAS to SSD drive conversion
5618	6058	Yes	Encryption SAS to SSD drive conversion
5618	6158	Yes	Encryption SAS to SSD drive conversion
5618	6258	Yes	Encryption SAS to SSD drive conversion
5618	6358	Yes	Encryption SAS to SSD drive conversion
5708	6058	Yes	Encryption SAS to SSD drive conversion
5708	6158	Yes	Encryption SAS to SSD drive conversion
5708	6258	Yes	Encryption SAS to SSD drive conversion
5708	6358	Yes	Encryption SAS to SSD drive conversion
5768	6058	Yes	Encryption SAS to SSD drive conversion
5768	6158	Yes	Encryption SAS to SSD drive conversion
5768	6258	Yes	Encryption SAS to SSD drive conversion
5768	6358	Yes	Encryption SAS to SSD drive conversion

From feature	To feature	Returned parts*	Description
5868	6058	Yes	Encryption SAS to SSD drive conversion
5868	6158	Yes	Encryption SAS to SSD drive conversion
5868	6258	Yes	Encryption SAS to SSD drive conversion
5868	6358	Yes	Encryption SAS to SSD drive conversion

From feature	To feature	Returned parts*	Description
Processor memory:			
4223	4224	No	Processor memory conversion
4223	4225	No	Processor memory conversion
4224	4225	No	Processor memory conversion

From feature	To feature	Returned parts*	Description
I/O cables:			
1320	1321	Yes	I/O cable conversion
Processor memory:			
4324	4325	No	Processor memory conversion
4324	4326	No	Processor memory conversion
4325	4326	No	Processor memory conversion
4325	4327	No	Processor memory conversion
4326	4327	No	Processor memory conversion
4326	4328	No	Processor memory conversion
4327	4328	Yes	Processor memory conversion
Processor License feature indicators:			
4422	4423	No	Processor License feature conversion
4422	4424	No	Processor License feature conversion
4423	4424	No	Processor License feature conversion

From feature	To feature	Returned parts*	Description
Disk enclosures:			
1242	1244	No	HD STD enclosure indicator to 3.5-

From feature	To feature	Returned parts*	Description
			inch disk enclosure indicator
1242	1245	No	HD STD enclosure indicator to 400 GB SSD enclosure indicator
1242	1255	No	HD STD enclosure indicator to 200 GB SSD enclosure indictor
1242	1256	No	HD STD enclosure indicator to 800 GB SSD enclosure indicator
1242	1257	No	HD STD enclosure indicator to 1.6 TB SSD enclosure indicator
1245	1256	No	SSD enclosure indicator
1245	1257	No	SSD enclosure indicator
1255	1245	No	SSD enclosure indicator
1255	1256	No	SSD enclosure indicator
1255	1257	No	SSD enclosure indicator
1256	1257	No	SSD enclosure indicator
Host adapters:			
3153	3157	Yes	Host adapter conversion
3153	3253	Yes	Host adapter conversion
3153	3257	Yes	Host adapter conversion
3157	3153	Yes	Host adapter conversion
3157	3253	Yes	Host adapter conversion
3157	3257	Yes	Host adapter conversion
3253	3153	Yes	Host adapter conversion
3253	3157	Yes	Host adapter conversion
3253	3257	Yes	Host adapter conversion
3257	3153	Yes	Host adapter conversion
3257	3157	Yes	Host adapter conversion
3257	3253	Yes	Host adapter conversion

From feature	To feature	Returned parts*	Description
3353	3453	Yes	Host adapter conversion
3453	3353	Yes	Host adapter conversion
Encryption disk drive sets:			
5308	5618	Yes	Encryption disk drive set conversion
5308	5708	Yes	Encryption disk drive set conversion
5308	5768	Yes	Encryption disk drive set conversion
5308	5868	Yes	Encryption disk drive set conversion
5618	5708	Yes	Encryption disk drive set conversion
5618	5768	Yes	Encryption disk drive set conversion
5618	5868	Yes	Encryption disk drive set conversion
5708	5618	Yes	Encryption disk drive set conversion
5708	5768	Yes	Encryption disk drive set conversion
5708	5868	Yes	Encryption disk drive set conversion
Encryption SSD drive sets:			
6058	6158	Yes	Encryption SSD drive conversion
6058	6258	Yes	Encryption SSD drive conversion
6058	6358	Yes	Encryption SSD drive conversion
6158	6258	Yes	Encryption SSD drive conversion
6158	6358	Yes	Encryption SSD drive conversion
6258	6358	Yes	Encryption SSD drive conversion
Encryption SAS to SSD drive sets:			

From feature	To feature	Returned parts*	Description
5308	6058	Yes	Encryption SAS to SSD drive conversion
5308	6158	Yes	Encryption SAS to SSD drive conversion
5308	6258	Yes	Encryption SAS to SSD drive conversion
5308	6358	Yes	Encryption SAS to SSD drive conversion
5618	6058	Yes	Encryption SAS to SSD drive conversion
5618	6158	Yes	Encryption SAS to SSD drive conversion
5618	6258	Yes	Encryption SAS to SSD drive conversion
5618	6358	Yes	Encryption SAS to SSD drive conversion
5708	6058	Yes	Encryption SAS to SSD drive conversion
5708	6158	Yes	Encryption SAS to SSD drive conversion
5708	6258	Yes	Encryption SAS to SSD drive conversion
5708	6358	Yes	Encryption SAS to SSD drive conversion
5768	6058	Yes	Encryption SAS to SSD drive conversion
5768	6158	Yes	Encryption SAS to SSD drive conversion
5768	6258	Yes	Encryption SAS to SSD drive conversion
5768	6358	Yes	Encryption SAS to SSD drive conversion
5868	6058	Yes	Encryption SAS to SSD drive conversion
5868	6158	Yes	Encryption SAS to SSD drive conversion
5868	6258	Yes	Encryption SAS to SSD drive conversion
5868	6358	Yes	Encryption SAS to SSD drive conversion

N/A = Not available

*Parts removed as a result of a feature conversion become the property of IBM.

Business Partner information

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

BP Attachment for Announcement Letter 115-139

Publications

The following publication has been updated to reflect this announcement and will be available October 20, 2015.

Title	Order number
IBM DS8880 Introduction and Planning Guide	GC27-8525

The following publications are shipped with the DS8000 series:

Title	Order number
IBM DS8000 Customer Series Publications CD-ROM	00VN159
IBM DS8000 Series License Documentation CD-ROM	00VN160

The publications CD contains the following documents:

Title	Order number
License Agreement for Machine Code	SC28-6872
IBM DS8880 Introduction and Planning Guide	GC27-8525
IBM DS8000 Host Systems Attachment Guide	SC27-8527
IBM DS Command-Line Interface User's Guide for DS8000 series	SC27-8526
IBM System Storage Multipath Subsystem Device Driver User's Guide	GC52-1309
IBM DS Open Application Programming Interface Installation and Reference	GC27-4211
IBM DS8000 series Non-IBM_Licenses_and_Notices-Rel 5.x-7.x, 8.0	GA32-2204
IBM Warranty Information	GC26-7919
READ ME FIRST for IBM Products	GA32-1061
IBM System Storage Notice Regarding Storage Encryption	45W6389

The license CD contains the following documentation:

Title	Order number
IBM System Storage DS$^{(R)}$ Storage Mgr R8.0 & CIM Agent for DS Open Application Programming Interface 5.8.0	GC27-3907
IBM International License Agreement for Non-Warranted Programs (ILAN)	98Y2827
Global Mirroring Utilities for ICKDSF Users and Open Systems Environments License Information	GC26-7644

DS8000 publications are available at

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

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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.

The IBM Publications Center Portal is located at

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Services

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 visit

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

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

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

For details on education offerings related to specific products, visit

http://www.ibm.com/services/learning/ites.wss/zz/en?pageType=tp_search_new

Technical information

Specified operating environment

Physical specifications
- Width: 606 mm (23.86 in)
- Depth:
  - 1,200 mm (47.25 in) without doors
  - 1,380 mm (54.3 in) with doors
- Height:
  - 40U: 1,924 mm (75.75 in)
  - 46U: 2,190 mm (86.22 in)
- Weight:
  - 40U: 975.7 kg (2,151 lb)
  - 46U: 1,095 kg (2,413 lb)

Operating environment

- Temperature: 16°C - 32°C (60°F - 90°F)
- Relative humidity: 20 - 80%
- Wet bulb (caloric value):
  - DS8886
    -- 24279 BTU for A rack
    -- 23001 BTU for B rack
    -- 17679 BTU for C or D rack
    -- 7865 BTU for E rack
  - DS8884
    -- 19731 BTU for A rack
    -- 15969 BTU for B rack
    -- 9832 BTU for C rack
- Electrical power:
  - DS8886
    -- 7.1 KW for A rack
    -- 6.7 KW for B rack
    -- 5.2 KW for C or D rack
    -- 2.3 KW for E rack
  - DS8884
    -- 5.8 KW for A rack
    -- 5.0 KW for B rack
    -- 2.9 KW for C rack
- Capacity of exhaust:
  - 1300 cubic feet/minute for 981
  - 1500 cubic feet/minute for 98E
  - 1200 cubic meter/minute for 980
  - 1100 cubic meter/minute for 98B

- Declared operating A-weighted sound power level: 7.9 bels
- Leakage and starting current: 42.9 mA/<100 ampere

Power consumption

- Model 980 (6-core) with 240 drives and 2 HPFE: 5.8 KW
- Model 98B with 288 drives and 2 HPFE: 5.0 KW
- Model 98B with 240 drives: 2.9 KW
- Model 981 (8, 16, and 24-core) with 192 drives and 4 HPFE: 7.1 KW
- Model 98E with 288 drives and 4 HPFE: 6.7 KW
- Model 98E with 432 drives: 5.2 KW
- Model 98E with 192 drives: 2.3 KW

DASD Subsystems

- Product Category (2011 law): N
- Maximum physical storage capacity: 2,457,600 Gigabytes
- Power consumption: 21,300 watts
- DASD Energy Consumption Efficiency: 0.009 watts/Gigabytes

Homologation

This product is not certified for connection to interfaces of public telecommunications networks in the following countries:

- Chad
- Eritrea
- Guinea-Bissau
- Haiti
- Macau (China)
- Moldavia
- Sri Lanka

This product is also restricted for use in the embargoed countries:

- Cuba
- Iran, Islamic Republic of
- North Korea
- Sudan
- Syria (Syrian Arab Republic)

Hardware requirements

Licensed Machine Code

All announced features and functions are supported on the IBM System Storage DS8000 series and require DS8000 LMC 8.8.00.xx.xx (bundle version 88.0.xxx.xx), or later.

Some DS8000 series features and functions may not be available or supported in all environments. Current information on supported environments, prerequisites, and minimum operating system levels is available at

http://www-03.ibm.com/systems/support/storage/config/ssic

Planning information

Customer responsibilities

Physical configuration planning

Physical configuration planning is a customer responsibility. A marketing specialist can help plan and select the DS8000 series physical configuration and features. Introductory information, including required and optional features, can be found in the *IBM DS8880 Introduction and Planning Guide (GC27-8525)*.

Capacity and performance planning assistance is also available. Through the use of Disk Magic, a disk marketing specialist can help plan and anticipate performance characteristics for specific workloads by modeling proposed configurations.

Installation planning

Installation planning is a customer responsibility. Information about planning the installation of a DS8000 series, including equipment, site, and power requirements, can be found in the *IBM DS8880 Introduction and Planning Guide (GC27-8525)*.

Logical configuration planning and application

Logical configuration planning is a customer responsibility. Logical configuration refers to the creation of RAID ranks, volumes, and LUNs, and the assignment of the configured capacity to servers.

Application of the initial logical configuration and all subsequent modifications to the logical configuration is a customer responsibility. The logical configuration can be created, applied, and modified using the DS Storage Manager, DS CLI, or DS Open API, and also DS8000 Graphical User Interface (GUI).

IBM Global Services will also apply or modify the logical configuration (fee-based service).

Licensed Machine Code planning and application

IBM may release changes to the DS8000 series Licensed Machine Code. IBM plans to make the most current DS8000 series Licensed Machine Code changes available for download by the DS8000 series system from the IBM System Storage technical support website. Not all Licensed Machine Code changes may be available through the support website. If the machine does not function as warranted and a problem can be resolved through the application of downloadable Licensed Machine Code, the customer is responsible for downloading and installing these designated Licensed Machine Code changes as IBM specifies. IBM has responsibility for installing changes that IBM does not make available for you to download. The DS8000 series includes many enhancements to make the Licensed Machine Code change process simpler, quicker, and more automated. A request can be made for IBM to install downloadable Licensed Machine Code changes, however there may be a charge for that service.

Calculating physical and effective capacity

Refer to the *IBM DS8880 Introduction and Planning Guide (GC27-8525)* for capacity calculation guidelines.

Encryption planning

Encryption planning is a customer responsibility. There are three major planning components to the implementation of an encryption environment. Review all planning requirements and include them in the installation considerations.

- Storage Appliance planning
- Security Key Lifecycle Manager planning
- Encryption activation review planning

Storage Appliance planning

Storage Appliance planning is a customer responsibility. Introductory information, including required and optional features, can be found in the *IBM DS8880 Introduction and Planning Guide (GC27-8525)*.

DS8880 requires at least two storage appliances and associated software for each site which has one or more encryption-enabled DS8000 systems, according to encryption best practices. One server must be isolated and the others can be of any supported appliance configuration. Any site that operates independently of other sites must have storage appliances for the encryption-enabled DS8000 systems at that site.

It is the customer's responsibility to replicate any key labels and their associated key material across all storage appliances attached to a given encryption-enabled DS8000 before configuring that key label on the DS8000.

Dual storage appliance server planning

DS8000 supports the ability to configure two independent key labels for each encryption-enabled DS8000. This capability enables the use of two independent storage appliance server platforms when one or both storage appliance server platforms are using secure-key mode key stores, enabling the isolated storage appliance server platform to be used in conjunction with a second appliance server platform that is operating with a secure-key mode key store.

For customers desiring NIST 800-131a compliance, IBM Security Key Lifecycle Manager (formerly named IBM Tivoli$^{(R)}$ Key Lifecycle Manager (TKLM)) V2.5, or later, is required.

For customers needing dual platform key server support on the DS8000 system, the installation of SKLM IFIX 2 (SKLM Version 1.0.0.2, or later) is recommended to support displaying both key labels in the GUI. Additionally, for customers who intend to replicate keys between separate z Series Sysplexes using ICSF with the JCECCARACFKS key store in secure key mode and with the secure key configuration flag set in SKLM, SKLM Fix Pack 3 (SKLM Version 1.0.0.3, or later) is required.

IBM Security Key Lifecycle Manager planning

The DS8000 series supports IBM Security Key Lifecycle Manager V2.5 and IBM Security Key Lifecycle Manager V1.1.

Program number	VRM	Program name
5724-T60	2.5.0	IBM Security Key Lifecycle Manager
5608-A99	2.5.0	IBM Security Key Lifecycle Manager

To support enterprise-wide encryption-key management, a new set of pricing metrics is now available. These pricing metrics are simpler and more comprehensive for devices, users, and server capacity.

For self-encrypting disk drives, the metric is per client device with the disk drive feature number.

For more information on the licensing requirements and pricing of the metric, refer to Software Announcement 213-470, dated October 29, 2013.

Isolated key server ordering options:

- **Single/Dual storage appliance server - feature numbers 1761 and 1762:** New storage appliance server options are available in addition to the existing SKLM isolated key manager (feature number #0204).
- **Customer acquired isolated key server:** Refer to the *IBM Security Key Lifecycle Manager Installation and Configuration Guide (SC27-5335)* for hardware and operating system requirements.

Note: Regardless of the ordering method, customers will need to acquire a SKLM license for use of the SKLM software ordered separately from the stand-alone server hardware.

Note: The licensing for SKLM includes both an install license for the SKLM management software as well as licensing for the encrypting drives.

Refer to the following publications:

- *IBM Security Key Lifecycle Manager Quick Start Guide (GI13-2316)*
- *IBM Security Key Lifecycle Manager Installation and Configuration Guide (SC27-5335)*

Encryption activation review planning

Encryption activation is a customer responsibility. IBM encryption offerings must be activated prior to use. This activation is part of the installation and configuration

steps required for use of the technology. This installation and activation review is performed by the IBM Systems and Technology Lab Services group.

Send email to

storsvcs@us.ibm.com

Visit the website below and click on **Contact now** to submit your inquiry or request.

http://www-03.ibm.com/systems/services/labservices/platforms/labservices_storage.html

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 to connect DS8000 series 8 Gb or 16 Gb FCP/FICON host adapter ports to server or fabric ports. Cables can be purchased using DS8000 series feature numbers. Additional cable options, along with product support services such as installation, is offered by IBM Global Services' Networking Services.

Fibre Channel/FICON (shortwave)

Shortwave Fibre Channel and FICON ports on the DS8000 series require a 50 micron (multi-mode) Fibre optic cable terminated with a LC connector. Fibre Channel cables can be purchased using feature numbers 141x for 50 micron cables.

Fibre Channel/FICON (longwave)

Longwave Fibre Channel and FICON ports on the DS8000 series require a 9 micron (single-mode) Fibre optic cable terminated with a LC connector. Fibre Channel cables can be purchased using feature numbers 142x for 9 micron cables.

Direct customer support

Direct customer support for the DS8000 series is provided by IBM Operational Support Services - Support Line. This fee service can enhance your productivity by providing voice and electronic access into the IBM support organization. IBM Operational Support Services - Support Line will help answer questions pertaining to product and feature usage (how to), configuration, and product compatibility for eligible products. For a list of the products supported by Support Line, visit

http://www.ibm.com/services/sl/products/

For more information on services, call 800-IBM-4YOU (426-4968).

Security, auditability, and control

This product uses the security and auditability features of the host hardware, host software, and application software to which it is attached.

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

IBM Electronic Services

IBM has transformed its delivery of hardware and software support services to help you achieve higher system availability. Electronic Services is a web-enabled

solution that offers an exclusive, no-additional-charge enhancement to the service and support available for IBM servers. These services are designed to provide the opportunity for greater system availability with faster problem resolution and preemptive monitoring. Electronic Services comprises two separate, but complementary, elements: Electronic Services news page and Electronic Services Agent.

The Electronic Services news page is a single Internet entry point that replaces the multiple entry points traditionally used to access IBM Internet services and support. The news page enables you to gain easier access to IBM resources for assistance in resolving technical problems.

The Electronic Service Agent™ is no-additional-charge software that resides on your server. It monitors events and transmits system inventory information to IBM on a periodic, client-defined timetable. The Electronic Service Agent automatically reports hardware problems to IBM. Early knowledge about potential problems enables IBM to deliver proactive service that may result in higher system availability and performance. In addition, information collected through the Service Agent is made available to IBM service support representatives when they help answer your questions or diagnose problems. Installation and use of IBM Electronic Service Agent for problem reporting enables IBM to provide better support and service for your IBM server.

To learn how Electronic Services can work for you, visit

http://www.ibm.com/support/electronic

Terms and conditions

Volume orders

Contact your IBM representative.

IBM Global Financing

Yes

Products - terms and conditions

Warranty period

One year

To obtain copies of the IBM Statement of Limited Warranty, contact your reseller or IBM.

An IBM part or feature installed during the initial installation of an IBM machine is subject to the 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.

Premium Support Services

IBM DS8880 models offer enhanced worldwide client care support, including the availability of one year Premium Support Services in a single machine type. The Premium Support Services enhance client communications regarding problem status and actions, and will include the following service enhancements:

- Hardware installation & hardware configuration support
- Improved client problem management

- Faster initial response time to prioritize the resolution of high severity problems
- Improved coordination across support teams within IBM: Technical Advisor support is included during the warranty period

Warranty service

On-site 24x7 Same Day (SD)

Improvement in the worldwide support processes, including addition response to severity 2 calls 24 hours a day, seven days a week.

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.

On-site Service

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

Service level is:

- 24 hours per day, 7 days a week, 4 hour average, same day response.

Usage plan machine

No

IBM hourly service rate classification

Three

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

General terms and conditions

Field-installable features

Yes

Model conversions

Yes

Machine installation

Installation is performed by IBM. IBM will install the machine in accordance with the IBM installation procedures for the machine. In the United States, contact IBM at 1-800-IBM-SERV (426-7378). In other countries, contact the local IBM office.

The following activities are a customer responsibility:

- Installation planning
- Retrieval and installation of feature activation codes
- Encryption planning

Refer to the Customer responsibilities section for more information.

Customer requests for installation of items not covered in the installation guide may be performed at IBM's hourly service rate designated for the machine.

Graduated program license charges apply

No

Licensed Machine Code

IBM Machine Code is licensed for use by a customer on the IBM machine for which it was provided by IBM under the terms and conditions of the IBM License Agreement for Machine Code, to enable the machine to function in accordance with its specifications, and only for the capacity authorized by IBM and acquired by the customer. You can obtain the agreement at

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

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

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

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 additional information and current prices, contact your local IBM representative.

Description	Machine type	Models	Feature numbers
DS8884	2831	980	

Description	Machine type	Models	Feature numbers
DS8884 Expansion Unit	2831	98B	
DS8886	2831	981	
DS8886 Expansion Unit	2831	98E	
Model 9xE merge indicators:			
- 9xE factory merge	2831	980, 981, 98B, 98E	0001
- 9xE field merge	2831	98B, 98E	0002
- DoD indicator	2831	980, 981, 98B, 98E	0020
- JEMT indicator	2831	980, 981, 98B, 98E	0021
Custom features:			
- Top Expansion	2831	981, 98E	0170
- Top Storage placement indicator	2831	980	0171
- Shipping weight reduction	2831	980, 981, 98B, 98E	0200
Model 9xE position indicators:			
- 981 - 98E position 1	2831	981, 98E	0371
- 981 - 98E position 2	2831	981, 98E	0372
- 981 - 98E position 3	2831	981, 98E	0373
- 981 - 98E position 4	2831	981, 98E	0374
Model 9xB position indicators:			
- 980 - 98B position 1	2831	980, 98B	0376
- 980 - 98B position 2	2831	980, 98B	0377
Encryption not capable	2831	980, 981	0403
All-flash indicator	2831	980, 981	0600
SAS-SSD mix indicators	2831	980, 981, 98B, 98E	0603
SSD custom placement indicators	2831	980, 981, 98B, 98E	0604
Initial system capacity:			
- Up to 100 TB capacity	2831	980, 981, 98B, 98E	0801
- 100.1 TB to 250 TB capacity	2831	980, 981, 98B, 98E	0803

Description	Machine type	Models	Feature numbers
- 250.1 TB to 500 TB capacity	2831	980, 981, 98B, 98E	0804
- 500.1 TB to 1250 TB capacity	2831	980, 981, 98B, 98E	0806
- 1250.1 TB to 3000 TB capacity	2831	980, 981, 98B, 98E	0807
- 3000.1 TB to 6000 TB capacity	2831	980, 981, 98B, 98E	0808
- 6000.1 TB to 10000 TB capacity	2831	980, 981, 98B, 98E	0809
Attachment indicators:			
- IBM/Openwave Alliance indicator	2831	980, 981, 98B, 98E	0930
- IBM System i indicator	2831	980, 981, 98B, 98E	0931
- IBM System p indicator	2831	980, 981, 98B, 98E	0932
- IBM System x indicator	2831	980, 981, 98B, 98E	0933
- IBM System z indicator	2831	980, 981, 98B, 98E	0934
- IBM System z B/C indicator	2831	980, 981, 98B, 98E	0935
- IBM System zEnterprise Cloud indicator	2831	980, 981, 98B, 98E	0936
- Linux indicator	2831	980, 981, 98B, 98E	0940
- Storage Appliance indicator	2831	980, 981	0952
- IBM ProtecTIER indicator	2831	980, 981, 98B, 98E	0960
- IBM Storwize V7000 indicator	2831	980, 981, 98B, 98E	0961
- IBM N series indicator	2831	980, 981, 98B, 98E	0962
- IBM SAN Volume Controller indicator	2831	980, 981, 98B, 98E	0963
- IBM/EPIC attachment indicator	2831	980, 981, 98B, 98E	0964
- VMware VAAI indicator	2831	980, 981, 98B, 98E	0965
- OpenStack indicator	2831	980, 981, 98B, 98E	0966
- US TAA compliance indicator	2831	980, 981, 98B, 98E	0983
Power:			
- Single phase DC-UPS	2831	980, 981, 98B, 98E	1050
- Extended PLD	2831	980, 981, 98B, 98E	1055
Single phase line cords:			
- SPP cord, 200-240V, 60A, 3-pin connector	2831	980, 981, 98B, 98E	1062

Description	Machine type	Models	Feature numbers
- SPP cord, 200-240V, 63A, no connector	2831	980, 981, 98B, 98E	1063
Special tool:			
- Overhead ladder - 5ft	2831	980, 981	1101
- Ladder - Top Expansion - 3ft	2831	981	1102
Management Console:			
- Mgmt console - Primary	2831	980, 981	1140
- Mgmt console - Secondary	2831	980, 981	1150
Disk drive enclosures:			
- HD disk enclosure pair	2831	980, 981, 98B, 98E	1241
- HD STD enclosure indicator	2831	980, 981, 98B, 98E	1242
- 3.5-inch disk enclosure indicator	2831	980, 981, 98B, 98E	1244
- HD 400 GB SSD enclosure indicator	2831	980, 981, 98B, 98E	1245
- HD 200 GB SSD enclosure indicator	2831	980, 981, 98B, 98E	1255
- HD 800 GB SSD enclosure indicator	2831	980, 981, 98B, 98E	1256
- HD 1.6 TB SSD enclosure indicator	2831	980, 981, 98B, 98E	1257
Disk drive cables:			
- Disk drive cable group A	2831	981	1246
- HD disk drive cable group B	2831	98E	1247
- HD disk drive cable group C	2831	98E	1248
- HD disk drive cable group D	2831	98E	1249
- HD disk drive cable group E	2831	98E	1251
- Extended HD disk drive cable group C	2831	98E	1252
- Extended HD disk drive cable group D	2831	98E	1253
- Extended HD disk drive cable group E	2831	98E	1254
- BC Disk drive cable group A	2831	980	1261
- BC disk drive cable group B	2831	98B	1262
- BC disk drive cable group C	2831	98B	1263

Description	Machine type	Models	Feature numbers
- Extended BC disk drive cable group C	2831	98B	1266
I/O enclosure pair PCIe 3	2831	980, 981, 98B, 98E	1302
I/O cables:			
- PCI-E cable group 1	2831	981	1320
- PCI-E cable group 2	2831	981	1321
Top exit bracket:			
- Top exit bracket for Fibre cable	2831	980, 981, 98B, 98E	1400
Fibre Channel/ FICON cables:			
- 50 um Fibre cable (LC)	2831	980, 981, 98B, 98E	1410
- 50 um Fibre cable (LC/SC)	2831	980, 981, 98B, 98E	1411
- 50 um Fibre cable (Jumper)	2831	980, 981, 98B, 98E	1412
- 9 um Fibre cable (LC)	2831	980, 981, 98B, 98E	1420
- 9 um Fibre cable (LC/SC)	2831	980, 981, 98B, 98E	1421
- 9 um Fibre cable (Jumper)	2831	980, 981, 98B, 98E	1422
High-performance flash card sets:			
- High-performance flash enclosure	2831	980, 981, 98B, 98E	1500
- 400 GB 1.8-inch flash card set A (R)	2831	980, 981, 98B, 98E	1596
- 400 GB 1.8-inch flash card set B (R)	2831	980, 981, 98B, 98E	1598
- Flash enclosure filler set	2831	980, 981, 98B, 98E	1599
DS8000 Licensed Machine Code:			
- DS8000 LMC R8.0	2831	980, 981	1880
- DS8000 LMC R8.0 indicator	2831	98B, 98E	1980
Earthquake kit	2831	980, 981, 98B, 98E	1906
Hardware installation MES	2831	980, 981, 98B, 98E	1999
Disk enclosure filler sets:			
- 3.5-inch disk enclosure filler set	2831	980, 981, 98B, 98E	2997

Description	Machine type	Models	Feature numbers
- 2.5-inch disk enclosure filler set	2831	980, 981, 98B, 98E	2999
Device adapters:			
- Device adapter pair I	2831	980, 981, 98B, 98E	3053
Host adapters:			
- 8 Gb 4 port SW FCP/FICON adapter PCIe	2831	980, 981, 98B, 98E	3153
- 8 Gb 8 port SW FCP/FICON adapter PCIe	2831	980, 981, 98B, 98E	3157
- 8 Gb 4 port LW FCP/FICON adapter PCIe	2831	980, 981, 98B, 98E	3253
- 8 Gb 8 port LW FCP/FICON adapter PCIe	2831	980, 981, 98B, 98E	3257
- 16 Gb 4 port SW FCP/FICON adapter PCIE	2831	980, 981, 98B, 98E	3353
- 16 Gb 4 port LW FCP/FICON adapter PCIE	2831	980, 981, 98B, 98E	3453
Processor memory:			
- 64 GB Processor memory (6-core only)	2831	980	4223
- 128 GB Processor memory (6-core only)	2831	980	4224
- 256 GB Processor memory (6-core only)	2831	980	4225
- 128 GB Processor memory (8-core only)	2831	981	4324
- 256 GB Processor memory (8-core or 16-core)	2831	981	4325
- 512 GB Processor memory (16-core only)	2831	981	4326
- 1 TB Processor memory (24-core only)	2831	981	4327
- 2 TB Processor memory (24-core only)	2831	981	4328
Processor license indicators:			
- 6-core processor indicator	2831	980	4421
- 8-core processor indicator	2831	981	4422
- 16-core processor indicator	2831	981	4423

Description	Machine type	Models	Feature numbers
- 24-core processor indicator	2831	981	4424
Encryption disk drive sets:			
- 300 GB 15K drive set	2831	980, 981, 98B, 98E	5308
- 600 GB 15K drive set	2831	980, 981, 98B, 98E	5618
- 600 GB 10K drive set	2831	980, 981, 98B, 98E	5708
- 1.2 TB 10K drive set	2831	980, 981, 98B, 98E	5768
- 4 TB 7.2K half drive set	2831	980, 981, 98B, 98E	5868
Encryption SSD drive sets:			
- 200 GB SSD drive set	2831	980, 981, 98B, 98E	6058
- 400 GB SSD drive set	2831	980, 981, 98B, 98E	6158
- 800 GB SSD drive set	2831	980, 981, 98B, 98E	6258
- 1.6 TB SSD drive set	2831	980, 981, 98B, 98E	6358
Function Authorization indicators			
Base function (BF) license:			
- BF - Up to 100 TB capacity	2831	980, 981	8151
- BF - 100.1 TB to 250 TB capacity	2831	980, 981	8152
- BF - 250.1 TB to 500 TB capacity	2831	980, 981	8153
- BF - 500.1 TB to 1250 TB capacity	2831	980, 981	8154
- BF - 1250.1 TB to 3000 TB capacity	2831	980, 981	8155
- BF - 3000.1 TB to 6000 TB capacity	2831	980, 981	8156
- BF - 6000.1 TB to 10000 TB	2831	980, 981	8160
Copy Services (CS) license:			
- CS - Inactive	2831	980, 981	8250
- CS - Up to 100 TB capacity	2831	980, 981	8251
- CS - 100.1 TB to 250 TB capacity	2831	980, 981	8252
- CS - 250.1 TB to 500 TB capacity	2831	980, 981	8253
- CS - 500.1 TB to 1250 TB capacity	2831	980, 981	8254

Description	Machine type	Models	Feature numbers
- CS - 1250.1 TB to 3000 TB capacity	2831	980, 981	8255
- CS - 3000.1 TB to 6000 TB capacity	2831	980, 981	8256
- CS - 6000.1 TB to 10000 TB	2831	980, 981	8260
z-synergy Services (zsS) license:			
- zsS - Active	2831	980, 981	8300
- zsS - Inactive	2831	980, 981	8350
- zsS - Up to 100 TB capacity	2831	980, 981	8351
- zsS - 100.1 TB to 250 TB capacity	2831	980, 981	8352
- zsS - 250.1 TB to 500 TB capacity	2831	980, 981	8353
- zsS - 500.1 TB to 1250 TB capacity	2831	980, 981	8354
- zsS - 1250.1 TB to 3000 TB capacity	2831	980, 981	8355
- zsS - 3000.1 TB to 6000 TB capacity	2831	980, 981	8356
- zsS - 6000.1 TB to 10000 TB	2831	980, 981	8360
IGF transaction:			
- IGF transaction indicator	2831	980, 981	8999
Shipping and Handling NC	2831	980, 981, 98B, 98E	AG00
Shipping and handling 981	2831	981	AGA4
Shipping and handling 98E	2831	98E	AGA5
Shipping and handling 980	2831	980	AGA6
Shipping and handling 98B	2831	98B	AGA7

NC = No charge

Description	Feature number	Install type	Feature conversion	Feature exchange	Feature remove	CSU
Model 9xE merge indicators:						
- 9xE factory merge	0001	Plant only	No	No	No	N/A
- 9xE field merge	0002	Plant only	No	No	No	N/A
- DoD indicator	0020	Plant only	No	No	No	N/A
- JEMT indicator	0021	Plant only	No	No	No	N/A

Description	Feature number	Install type	Feature conversion	Feature exchange	Feature remove	CSU
Custom features:						
- Top Expansion	0170	Both	No	No	No	No
- Top Storage placement indicator	0171	Both	No	No	No	No
- Shipping weight reduction	0200	Plant only	No	No	No	N/A
Model 9xE position indicators:						
- 981 - 98E position 1	0371	Both	No	No	Yes	N/A
- 981 - 98E position 2	0372	Both	No	No	Yes	N/A
- 981 - 98E position 3	0373	Both	No	No	Yes	N/A
- 981 - 98E position 4	0374	Both	No	No	Yes	N/A
Model 9xB position indicators:						
- 980 - 98B position 1	0376	Both	No	No	Yes	N/A
- 980 - 98B position 2	0377	Both	No	No	Yes	N/A
Encryption not capable	0403	Plant only	No	No	No	N/A
All-flash indicator	0600	Plant only	No	No	No	N/A
SAS-SSD mix indicators	0603	Field only	No	No	No	N/A
SSD custom placement indicators	0604	Both	No	No	No	N/A

Description	Feature number	Install type	Feature conversion	Feature exchange	Feature remove	CSU
Initial system capacity:						
- Up to 100 TB capacity	0801	Plant only	No	No	Yes	N/A
- 100.1 TB to 250 TB capacity	0803	Plant only	No	No	Yes	N/A
- 250.1 TB to 500 TB capacity	0804	Plant only	No	No	Yes	N/A
- 500.1 TB to 1250 TB capacity	0806	Plant only	No	No	Yes	N/A
- 1250.1 TB to 3000 TB capacity	0807	Plant only	No	No	Yes	N/A
- 3000.1 TB to 6000 TB capacity	0808	Plant only	No	No	Yes	N/A
- 6000.1 TB to 10000 TB capacity	0809	Plant only	No	No	Yes	N/A
Attachment indicators:						
- IBM/ Openwave Alliance indicator	0930	Both	No	No	No	N/A
- IBM System i indicator	0931	Both	No	No	No	N/A
- IBM System p indicator	0932	Both	No	No	No	N/A
- IBM System x indicator	0933	Both	No	No	No	N/A
- IBM System z indicator	0934	Both	No	No	No	N/A
- IBM System z B/C indicator	0935	Both	No	No	No	N/A
- IBM System zEnterprise Cloud indicator	0936	Both	No	No	No	N/A
- Linux indicator	0940	Both	No	No	No	N/A

Description	Feature number	Install type	Feature conversion	Feature exchange	Feature remove	CSU
- Storage Appliance indicator	0952	Both	No	No	No	N/A
- IBM ProtecTIER indicator	0960	Both	No	No	No	N/A
- IBM Storwize V7000 indicator	0961	Both	No	No	No	N/A
- IBM N series indicator	0962	Both	No	No	No	N/A
- IBM SAN Volume Controller indicator	0963	Both	No	No	No	N/A
- IBM/ EPIC attachment indicator	0964	Both	No	No	No	N/A
- VMware VAAI indicator	0965	Both	No	No	No	N/A
- OpenStack indicator	0966	Both	No	No	No	N/A
- US TAA compliance indicator	0983	Both	No	No	No	N/A
Power:						
- Single phase DC-UPS	1050	Both	No	No	No	No
- Extended PLD	1055	Both	No	No	No	No
Single phase line cords:						
- SPP cord, 200-240V, 60A, 3-pin connector	1062	Plant only	No	No	No	No
- SPP cord, 200-240V, 63A, no connector	1063	Plant only	No	No	No	No
Special tool:						
- Overhead ladder - 5ft	1101	Both	No	No	No	No

Description	Feature number	Install type	Feature conversion	Feature exchange	Feature remove	CSU
- Ladder - Top Expansion - 3ft	1102	Both	No	No	No	No
Management Console:						
- Mgmt console - Primary	1140	Plant only	No	No	No	No
- Mgmt console - Secondary	1150	Both	No	No	No	No
Disk drive enclosures:						
- HD disk enclosure pair	1241	Both	No	No	No	No
- HD STD enclosure indicator	1242	Both	No	No	No	No
- 3.5-inch disk enclosure indicator	1244	Both	No	No	No	No
- HD 400 GB SSD enclosure indicator	1245	Both	Yes	No	Yes	No
- HD 200 GB SSD enclosure indicator	1255	Both	Yes	No	Yes	No
- HD 800 GB SSD enclosure indicator	1256	Both	Yes	No	Yes	No
- HD 1.6 TB SSD enclosure indicator	1257	Both	Yes	No	Yes	No
Disk drive cables:						
- Disk drive cable group A	1246	Plant only	No	No	No	No
- HD disk drive cable group B	1247	Both	No	No	Yes	No
- HD disk	1248	Both	No	No	Yes	No

Description	Feature number	Install type	Feature conversion	Feature exchange	Feature remove	CSU
drive cable group C						
- HD disk drive cable group D	1249	Both	No	No	Yes	No
- HD disk drive cable group E	1251	Both	No	No	Yes	No
- Extended HD disk drive cable group C	1252	Both	No	No	Yes	No
- Extended HD disk drive cable group D	1253	Both	No	No	Yes	No
- Extended HD disk drive cable group E	1254	Both	No	No	Yes	No
- BC Disk drive cable group A	1261	Plant only	No	No	No	No
- BC disk drive cable group B	1262	Both	No	No	Yes	No
- BC disk drive cable group C	1263	Both	No	No	Yes	No
- Extended BC disk drive cable group C	1266	Both	No	No	No	No
I/O enclosure pair PCIe 3	1302	Both	No	No	No	No
I/O cables:						
- PCI-E cable group 1	1320	Both	No	No	No	No
- PCI-E cable group 2	1321	Both	No	No	No	No

Description	Feature number	Install type	Feature conversion	Feature exchange	Feature remove	CSU
Top exit bracket:						
- Top exit bracket for Fibre cable	1400	Both	No	No	No	No
Fibre Channel/ FICON cables:						
- 50 um Fibre cable (LC)	1410	Both	No	No	No	No
- 50 um Fibre cable (LC/SC)	1411	Both	No	No	No	No
- 50 um Fibre cable (Jumper)	1412	Both	No	No	No	No
- 9 um Fibre cable (LC)	1420	Both	No	No	No	No
- 9 um Fibre cable (LC/SC)	1421	Both	No	No	No	No
- 9 um Fibre cable (Jumper)	1422	Both	No	No	No	No
High-performance flash card sets:						
- High-performance flash enclosure	1500	Both	No	No	No	No
- 400 GB 1.8-inch flash card set A (R)	1596	Both	No	No	Yes	No
- 400 GB 1.8-inch flash card set B (R)	1598	Both	No	No	Yes	No
- Flash enclosure filler set	1599	Both	No	No	Yes	No
DS8000 Licensed						

Description	Feature number	Install type	Feature conversion	Feature exchange	Feature remove	CSU
Machine Code:						
- DS8000 LMC R8.0	1880	Both	No	No	Yes	No
- DS8000 LMC R8.0 indicator	1980	Both	No	No	Yes	N/A
Earthquake kit	1906	Both	No	No	Yes	No
Hardware installation MES	1999	Field only	No	No	No	No
Disk enclosure filler sets:						
- 3.5-inch disk enclosure filler set	2997	Both	No	No	Yes	No
- 2.5-inch disk enclosure filler set	2999	Both	No	No	Yes	No
Device adapters:						
- Device adapter pair I	3053	Both	No	No	No	No
Host adapters:						
- 8 Gb 4 port SW FCP/ FICON adapter PCIe	3153	Both	Yes	No	No	No
- 8 Gb 8 port SW FCP/ FICON adapter PCIe	3157	Both	Yes	No	No	No
- 8 Gb 4 port LW FCP/ FICON adapter PCIe	3253	Both	Yes	No	No	No
- 8 Gb 8 port LW FCP/ FICON adapter PCIe	3257	Both	Yes	No	No	No
- 16 Gb 4 port	3353	Both	Yes	No	Yes	No

Description	Feature number	Install type	Feature conversion	Feature exchange	Feature remove	CSU
SW FCP/ FICON adapter PCIE						
- 16 Gb 4 port LW FCP/ FICON adapter PCIE	3453	Both	Yes	No	Yes	No
Processor memory:						
- 64 GB Processor memory (6-core only)	4223	Both	Yes	No	No	No
- 128 GB Processor memory (6-core only)	4224	Both	Yes	No	No	No
- 256 GB Processor memory (6-core only)	4225	Both	Yes	No	No	No
- 128 GB Processor memory (8-core only)	4324	Both	Yes	No	No	No
- 256 GB Processor memory (8-core or 16-core)	4325	Both	Yes	No	No	No
- 512 GB Processor memory (16-core only)	4326	Both	Yes	No	No	No
- 1 TB Processor memory (24-core only)	4327	Both	Yes	No	No	No
- 2 TB Processor memory (24-core only)	4328	Both	Yes	No	No	No
Processor license indicators:						
- 6-core processor indicator	4421	Both	No	No	No	No

Description	Feature number	Install type	Feature conversion	Feature exchange	Feature remove	CSU
- 8-core processor indicator	4422	Both	No	No	Yes	No
- 16-core processor indicator	4423	Both	No	No	Yes	No
- 24-core processor indicator	4424	Both	No	No	Yes	No
Encryption disk drive sets:						
- 300 GB 15K drive set	5308	Both	Yes	Yes	No	No
- 600 GB 15K drive set	5618	Both	Yes	Yes	No	No
- 600 GB 10K drive set	5708	Both	Yes	Yes	No	No
- 1.2 TB 10K drive set	5768	Both	Yes	Yes	No	No
- 4 TB 7.2K half drive set	5868	Both	Yes	Yes	No	No
Encryption SSD drive sets:						
- 200 GB SSD drive set	6058	Both	Yes	Yes	No	No
- 400 GB SSD drive set	6158	Both	Yes	Yes	No	No
- 800 GB SSD drive set	6258	Both	Yes	Yes	No	No
- 1.6 TB SSD drive set	6358	Both	Yes	Yes	No	No
Function Authorization indicators						
Base function (BF) license:						
- BF - Up to 100 TB capacity	8151	Both	No	No	Yes	N/A
- BF - 100.1 TB to	8152	Both	No	No	Yes	N/A

Description	Feature number	Install type	Feature conversion	Feature exchange	Feature remove	CSU
250 TB capacity						
- BF - 250.1 TB to 500 TB capacity	8153	Both	No	No	Yes	N/A
- BF - 500.1 TB to 1250 TB capacity	8154	Both	No	No	Yes	N/A
- BF - 1250.1 TB to 3000 TB capacity	8155	Both	No	No	Yes	N/A
- BF - 3000.1 TB to 6000 TB capacity	8156	Both	No	No	Yes	N/A
- BF - 6000.1 TB to 10000 TB	8160	Both	No	No	Yes	N/A
Copy Services (CS) license:						
- CS - Inactive	8250	Both	No	No	Yes	N/A
- CS - Up to 100 TB capacity	8251	Both	No	No	Yes	N/A
- CS - 100.1 TB to 250 TB capacity	8252	Both	No	No	Yes	N/A
- CS - 250.1 TB to 500 TB capacity	8253	Both	No	No	Yes	N/A
- CS - 500.1 TB to 1250 TB capacity	8254	Both	No	No	Yes	N/A
- CS - 1250.1 TB to 3000 TB capacity	8255	Both	No	No	Yes	N/A
- CS - 3000.1 TB to 6000 TB capacity	8256	Both	No	No	Yes	N/A
- CS - 6000.1 TB to	8260	Both	No	No	Yes	N/A

Description	Feature number	Install type	Feature conversion	Feature exchange	Feature remove	CSU
10000 TB						
z-synergy Services (zsS) license:						
- zsS - Active	8300	Both	No	No	Yes	N/A
- zsS - Inactive	8350	Both	No	No	Yes	N/A
- zsS - Up to 100 TB capacity	8351	Both	No	No	Yes	N/A
- zsS - 100.1 TB to 250 TB capacity	8352	Both	No	No	Yes	N/A
- zsS - 250.1 TB to 500 TB capacity	8353	Both	No	No	Yes	N/A
- zsS - 500.1 TB to 1250 TB capacity	8354	Both	No	No	Yes	N/A
- zsS - 1250.1 TB to 3000 TB capacity	8355	Both	No	No	Yes	N/A
- zsS - 3000.1 TB to 6000 TB capacity	8356	Both	No	No	Yes	N/A
- zsS - 6000.1 TB to 10000 TB	8360	Both	No	No	Yes	N/A
IGF transaction:						
- IGF transaction indicator	8999	Field only	No	No	Yes	N/A
Shipping and Handling NC	AG00	Plant only	No	No	No	N/A
Shipping and handling 981	AGA4	Plant only	No	No	No	N/A
Shipping and handling 98E	AGA5	Plant only	No	No	No	N/A

Description	Feature number	Install type	Feature conversion	Feature exchange	Feature remove	CSU
Shipping and handling 980	AGA6	Plant only	No	No	No	N/A
Shipping and handling 98B	AGA7	Plant only	No	No	No	N/A

CSU = Customer setup

N/A = Not applicable

* Parts removed or replaced become the property of IBM and must be returned.

- Feature Conversion: As necessary, IBM service personnel will remove components from the machine and/or install additional components required to complete the conversion.
- Feature Remove: This is an administrative transaction and only updates IBM machine and inventory records, except under the following condition:
  - IBM will remove components from the machine if the Feature Remove is ordered in conjunction with a Feature Add transaction.

ServiceElect (ESA) charges

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

Model conversion purchase price

From Model	To Model	Description
2421-961	2831-981	DS8886 Model 981
2422-961	2831-981	DS8886 Model 981
2423-961	2831-981	DS8886 Model 981
2424-961	2831-981	DS8886 Model 981
2421-961	2831-98E	DS8886 Model 98E
2422-961	2831-98E	DS8886 Model 98E
2423-961	2831-98E	DS8886 Model 98E
2424-961	2831-98E	DS8886 Model 98E
2421-96E	2831-98E	DS8886 Model 98E
2422-96E	2831-98E	DS8886 Model 98E
2423-96E	2831-98E	DS8886 Model 98E
2424-96E	2831-98E	DS8886 Model 98E

* Parts removed or replaced become property of IBM and must be returned.

Feature conversion purchase price

From feature	To feature	Returned parts*	Description	Continuous maintenance
Model 9xE merge indicators:				
0001	0001	N/A	9xE factory merge	No
0002	0002	N/A	9xE field merge	No
0020	0020	N/A	DoD Indicator	No

From feature	To feature	Returned parts*	Description	Continuous maintenance
0021	0021	N/A	JEMT indicator	No
Custom features:				
0200	0200	N/A	Shipping weight reduction	No
Model 9xE position indicators:				
0361	0371	N/A	981 - 98E position 1	No
0361/0362	0372	N/A	981 - 98E position 2	No
0362/0363	0373	N/A	981 - 98E position 3	No
0363	0374	N/A	981 - 98E position 4	No
BSMI certifications:				
0400	0400	N/A	BSMI Certificate - Taiwan	No
0983	0983	N/A	US TAA compliance indicator	No
0403	0403	N/A	Encryption not capable	No
Custom drive placement indicators:				
0600	0600	N/A	Flash indicators	No
0603	0603	N/A	SAS-SSD mix indicators	No
0604	0604	N/A	SSD custom placement indicators	No
Initial system capacity:				
0800	0801	N/A	Up to 100 TB capacity	No
0802	0801	N/A	Up to 100 TB capacity	No
0805	0801	N/A	Up to 100 TB capacity	No
0810	0801	N/A	Up to 100 TB capacity	No
0815	0801	N/A	Up to 100 TB capacity	No
0820	0801	N/A	Up to 100 TB capacity	No
0825	0801	N/A	Up to 100 TB capacity	No
0830	0803	N/A	100.1 TB to 250 TB capacity	No
0835	0803	N/A	100.1 TB to 250 TB capacity	No
0840	0803	N/A	100.1 TB to 250 TB capacity	No

From feature	To feature	Returned parts*	Description	Continuous maintenance
0845	0804	N/A	250.1 TB to 500 TB capacity	No
0850	0804	N/A	250.1 TB to 500 TB capacity	No
0855	0804	N/A	250.1 TB to 500 TB capacity	No
0860	0804	N/A	250.1 TB to 500 TB capacity	No
0865	0804	N/A	250.1 TB to 500 TB capacity	No
0870	0806	N/A	500.1 TB to 1250 TB capacity	No
0871	0806	N/A	500.1 TB to 1250 TB capacity	No
0872	0806	N/A	500.1 TB to 1250 TB capacity	No
0873	0806	N/A	500.1 TB to 1250 TB capacity	No
0874	0806	N/A	500.1 TB to 1250 TB capacity	No
0875	0806	N/A	500.1 TB to 1250 TB capacity	No
0876	0806	N/A	500.1 TB to 1250 TB capacity	No
0877	0806	N/A	500.1 TB to 1250 TB capacity	No
0878	0806 or 0807	N/A	500.1 TB to 1250 TB capacity or 1250.1 TB to 3000 TB capacity	No
0879	0807	N/A	1250.1 TB to 3000 TB capacity	No
0880	0807	N/A	1250.1 TB to 3000 TB capacity	No
0881	0807	N/A	1250.1 TB to 3000 TB capacity	No
0882	0807	N/A	1250.1 TB to 3000 TB capacity	No
0883	0807	N/A	1250.1 TB to 3000 TB capacity	No
0884	0807	N/A	1250.1 TB to 3000 TB capacity	No

From feature	To feature	Returned parts*	Description	Continuous maintenance
0885	0807	N/A	1250.1 TB to 3000 TB capacity	No
0886	0807	N/A	1250.1 TB to 3000 TB capacity	No
0887	0807	N/A	1250.1 TB to 3000 TB capacity	No
0888	0807	N/A	1250.1 TB to 3000 TB capacity	No
0889	0807	N/A	1250.1 TB to 3000 TB capacity	No
0890	0807	N/A	1250.1 TB to 3000 TB capacity	No
Administrative indicators:				
0930	0930	N/A	IBM / Openwave alliance	No
0931	0931	N/A	IBM System i indicator	No
0932	0932	N/A	IBM System p indicator	No
0933	0933	N/A	IBM System x indicator	No
0934	0934	N/A	IBM System z indicator	No
0935	0935	N/A	IBM System z B/C indicator	No
0936	0936	N/A	IBM System zEnterprise Cloud indicator	No
0940	0940	N/A	Linux indicator	No
0960	0960	N/A	IBM System Storage ProtecTIER indicator	No
0961	0961	N/A	IBM Storwize V7000 indicator	No
0962	0962	N/A	IBM System Storage Nseries indicator	No
0963	0963	N/A	IBM System Storage SAN Volume Controller indicator	No
0964	0964	N/A	IBM / EPIC attachment indicator	No
0965	0965	N/A	VMware VAAI indicator	No
0966	0966	N/A	OpenStack indicator	No
Power:				
1055	1055	No	Extended PLD	No

From feature	To feature	Returned parts*	Description	Continuous maintenance
Single phase power cords:				
1061	1062	Yes	SPP cord, 200-240V, 60A, 3 pin connector (US, Canada, LA, JP & AP)	No
1068	1063	Yes	SPP cord, 200-240V, 63A, no connector (EMEA, ME & AP)	No
1072	1062	Yes	SPP cord, 200-240V, 60A, 3 pin connector (US, Canada, LA, JP & AP)	No
1073	1063	Yes	SPP cord, 200-240V, 63A, no connector (EMEA, ME & AP)	No
Line cords:				
1080	1062	Yes	SPP cord, 200-240V, 60A, 3 pin connector (US, Canada, LA, JP & AP)	No
1080	1063	Yes	SPP cord, 200-240V, 63A, no connector (EMEA, ME & AP)	No
1081	1062	Yes	SPP cord, 200-240V, 60A, 3 pin connector (US, Canada, LA, JP & AP)	No
1081	1063	Yes	SPP cord, 200-240V, 63A, no connector (EMEA, ME & AP)	No
1082	1062	Yes	SPP cord, 200-240V, 60A, 3 pin connector (US, Canada, LA, JP & AP)	No
1082	1063	Yes	SPP cord, 200-240V, 63A, no connector (EMEA, ME & AP)	No
1083	1062	Yes	SPP cord, 200-240V, 60A, 3 pin connector	No

From feature	To feature	Returned parts*	Description	Continuous maintenance
			(US, Canada, LA, JP & AP)	
1083	1063	Yes	SPP cord, 200-240V, 63A, no connector (EMEA, ME & AP)	No
1084	1062	Yes	SPP cord, 200-240V, 60A, 3 pin connector (US, Canada, LA, JP & AP)	No
1084	1063	Yes	SPP cord, 200-240V, 63A, no connector (EMEA, ME & AP)	No
1085	1062	Yes	SPP cord, 200-240V, 60A, 3 pin connector (US, Canada, LA, JP & AP)	No
1085	1063	Yes	SPP cord, 200-240V, 63A, no connector (EMEA, ME & AP)	No
Special tool:				
1101	1101	No	Overhead ladder - 5 feet	No
Management console:				
1120	1140	Yes	Management console - primary	Yes
1130	1150	Yes	Management console - secondary	Yes
Disk enclosures:				
1241	1241	No	HD disk enclosure pair	No
1242	1242	No	HD STD enclosure indicator	No
1244	1244	No	3.5-inch disk enclosure indicator	No
1245	1245	No	HD 400 GB SSD enclosure indicator	No
1255	1255	No	200 GB SSD enclosure indicator	No
1256	1256	No	800 GB SSD enclosure indicator	No

From feature	To feature	Returned parts*	Description	Continuous maintenance
1257	1257	No	1.6 TB SSD enclosure indicator	No
Disk cables:				
1246	1246	No	HD Disk drive cable group A	No
1247	1247	No	HD Disk drive cable group B	No
1248	1248	No	HD Disk drive cable group C	No
1249	1249	No	HD Disk drive cable group D	No
I/O enclosures:				
1301	1302	Yes	I/O enclosure pair PCIE G3	Yes
I/O cables:				
1320	1320	No	PCI-E cable group 1	No
1321	1321	No	PCI-E cable group 2	No
Top exit bracket:				
1400	1400	No	Top exit bracket for fibre cable	No
Fibre Channel cables (50 micron:				
1410	1410	No	50 um Fibre cable (LC)	No
1411	1411	No	50 um Fibre cable (LC/SC)	No
1412	1412	No	50 um Fibre cable (jumper)	No
Fibre Channel cables (9 micron):				
1420	1420	No	9 um Fibre cable (LC)	No
1421	1421	No	9 um Fibre cable (LC/SC)	No
1422	1422	No	9 um Fibre cable (jumper)	No
High Performance flash family:				
1500	1500	No	High Perf. SSD enclosure	No
1506	1506	No	400 GB 1.8-inch flash card set A	Yes
1508	1508	No	400 GB 1.8-inch flash card set B	Yes
1596	1596	No	400 GB 1.8-inch flash card set A	Yes

From feature	To feature	Returned parts*	Description	Continuous maintenance
1598	1598	No	400 GB 1.8-inch flash card set B	Yes
1599	1599	No	Flash enclosure filler set	No
Microcode bundle family:				
1731	1880	No	DS8000 LMC R8.0	No
1732	1880	No	DS8000 LMC R8.0	No
1733	1880	No	DS8000 LMC R8.0	No
1734	1880	No	DS8000 LMC R8.0	No
1735	1880	No	DS8000 LMC R8.0	No
1736	1880	No	DS8000 LMC R8.0	No
Encryption Support:				
1760	MT 2421-AP1 with feature code 1761 and RPQ8S1426			Yes
Microcode Bundle Family:				
1831	1980	No	DS8000 LMC R8.0 indicator	No
1832	1980	No	DS8000 LMC R8.0 indicator	No
1833	1980	No	DS8000 LMC R8.0 indicator	No
1834	1980	No	DS8000 LMC R8.0 indicator	No
1835	1980	No	DS8000 LMC R8.0 indicator	No
1836	1980	No	DS8000 LMC R8.0 indicator	No
1906	1906	No	Earthquake kit	Yes
1999	1999	No	Hardware installation MES	No
Disk enclosure filler:				
2997	2997	No	3.5-inch disk enclosure filler set	No

From feature	To feature	Returned parts*	Description	Continuous maintenance
2999	2999	No	2.5-inch disk enclosure filler set	No
Device adapters:				
3053	3053	No	8 Gb 4 port device adapter pair I	No
Host adapters:				
3153	3153	No	8 Gb 4 port SW FCP/FICON adapter PCIE	Yes
3157	3157	No	8 Gb 8 port SW FCP/FICON adapter PCIE	Yes
3253	3253	No	8 Gb 4 port LW FCP/FICON adapter PCIE	Yes
3257	3257	No	8 Gb 8 port LW FCP/FICON adapter PCIE	Yes
3353	3353	No	16 Gb 4 port SW FCP/FICON adapter PCIE	Yes
3453	3453	No	16 Gb 4 port LW FCP/FICON adapter PCIE	Yes
Processor memory:				
4313	4324	Yes	128 GB processor memory	Yes
4313	4325	Yes	256 GB processor memory	Yes
4313	4326	Yes	512 GB processor memory	Yes
4313	4327	Yes	1024 GB processor memory	Yes
4313	4328	Yes	2048 GB processor memory	Yes
4314	4324	Yes	128 GB processor memory	Yes
4314	4325	Yes	256 GB processor memory	Yes
4314	4326	Yes	512 GB processor memory	Yes
4314	4327	Yes	1024 GB processor memory	Yes

From feature	To feature	Returned parts*	Description	Continuous maintenance
4314	4328	Yes	2048 GB processor memory	Yes
4315	4325	Yes	256 GB processor memory	Yes
4315	4326	Yes	512 GB processor memory	Yes
4315	4327	Yes	1024 GB processor memory	Yes
4315	4328	Yes	2048 GB processor memory	Yes
4316	4326	Yes	512 GB processor memory	Yes
4316	4327	Yes	1024 GB processor memory	Yes
4316	4328	Yes	2048 GB processor memory	Yes
4317	4327	Yes	1024 GB processor memory	Yes
4317	4328	Yes	2048 GB processor memory	Yes
Processor license feature indicators:				
4402	4422	Yes	8 P8 processor indicator	Yes
4402	4423	Yes	16 P8 processor indicator	Yes
4402	4424	Yes	24 P8 processor indicator	Yes
4403	4422	Yes	8 P8 processor indicator	Yes
4403	4423	Yes	16 P8 processor indicator	Yes
4403	4424	Yes	24 P8 processor indicator	Yes
4404	4423	Yes	16 P8 processor indicator	Yes
4404	4424	Yes	24 P8 processor indicator	Yes
4412	4422	Yes	8 P8 processor indicator	Yes
4412	4423	Yes	16 P8 processor indicator	Yes

From feature	To feature	Returned parts*	Description	Continuous maintenance
4412	4424	Yes	24 P8 processor indicator	Yes
4413	4422	Yes	8 P8 processor indicator	Yes
4413	4423	Yes	16 P8 processor indicator	Yes
4413	4424	Yes	24 P8 processor indicator	Yes
4414	4423	Yes	16 P8 processor indicator	Yes
4414	4424	Yes	24 P8 processor indicator	Yes
Encryption disk drive sets:				
5108	i-listed RPQ	No	146 GB 15K SAS E drive set	Yes
5308	5308	No	300 GB 15K SAS E drive set	Yes
5618	5618	No	600 GB 15K SAS E drive set	Yes
5708	5708	No	600 GB 10K SAS E drive set	Yes
5768	5768	No	1.2 TB 10K SAS E drive set	Yes
5868	5868	No	4 TB 7.2K SAS E drive set	Yes
Encryption standby CoD disk drive sets:				
5109	i-listed RPQ	No	146 GB 15K SAS E drive set	Yes
5309	5308	No	300 GB 15K SAS E drive set	Yes
5619	5618	No	600 GB 15K SAS E drive set	Yes
5709	5708	No	600 GB 10K SAS E drive set	Yes
5769	5768	No	1.2 TB 10K SAS E drive set	Yes
5869	5868	No	4 TB 7.2K SAS E drive set	Yes
Encryption solid state disk drive sets:				

From feature	To feature	Returned parts*	Description	Continuous maintenance
6058	6058	No	200 GB SSD E drive set	Yes
6158	6158	No	400 GB SSD E drive set	Yes
6258	6258	No	800 GB SSD E drive set	Yes
6358	6358	No	1.6 TB SSD E drive set	Yes

From feature	To feature	Returned parts*	Description	Continuous maintenance
Disk enclosures:				
1242	1244	No	HD STD enclosure indicator to 3.5-inch disk enclosure indicator	NA
1242	1245	No	HD STD enclosure indicator to 400 GB SSD enclosure indicator	NA
1242	1255	No	HD STD enclosure indicator to 200 GB SSD enclosure indictor	NA
1242	1256	No	HD STD enclosure indicator to 800 GB SSD enclosure indicator	NA
1242	1257	No	HD STD enclosure indicator to 1.6 TB SSD enclosure indicator	NA
1245	1256	No	SSD enclosure indicator	NA
1245	1257	No	SSD enclosure indicator	NA
1255	1245	No	SSD enclosure indicator	NA
1255	1256	No	SSD enclosure indicator	NA
1255	1257	No	SSD enclosure indicator	NA
1256	1257	No	SSD enclosure indicator	NA

From feature	To feature	Returned parts*	Description	Continuous maintenance
Host adapters:				
3153	3157	Yes	Host adapter conversion	Yes
3153	3253	Yes	Host adapter conversion	Yes
3153	3257	Yes	Host adapter conversion	Yes
3157	3153	Yes	Host adapter conversion	Yes
3157	3253	Yes	Host adapter conversion	Yes
3157	3257	Yes	Host adapter conversion	Yes
3253	3153	Yes	Host adapter conversion	Yes
3253	3157	Yes	Host adapter conversion	Yes
3253	3257	Yes	Host adapter conversion	Yes
3257	3153	Yes	Host adapter conversion	Yes
3257	3157	Yes	Host adapter conversion	Yes
3257	3253	Yes	Host adapter conversion	Yes
3353	3453	Yes	Host adapter conversion	Yes
3453	3353	Yes	Host adapter conversion	Yes
Encryption disk drive sets:				
5308	5618	Yes	Encryption disk drive set conversion	Yes
5308	5708	Yes	Encryption disk drive set conversion	Yes
5308	5768	Yes	Encryption disk drive set conversion	Yes
5308	5868	Yes	Encryption disk drive set conversion	Yes
5618	5708	Yes	Encryption disk drive set conversion	Yes
5618	5768	Yes	Encryption disk drive set conversion	Yes
5618	5868	Yes	Encryption disk drive set conversion	Yes

From feature	To feature	Returned parts*	Description	Continuous maintenance
5708	5618	Yes	Encryption disk drive set conversion	Yes
5708	5768	Yes	Encryption disk drive set conversion	Yes
5708	5868	Yes	Encryption disk drive set conversion	Yes
Encryption SSD drive sets:				
6058	6158	Yes	Encryption SSD drive conversion	Yes
6058	6258	Yes	Encryption SSD drive conversion	Yes
6058	6358	Yes	Encryption SSD drive conversion	Yes
6158	6258	Yes	Encryption SSD drive conversion	Yes
6158	6358	Yes	Encryption SSD drive conversion	Yes
6258	6358	Yes	Encryption SSD drive conversion	Yes
Encryption SAS to SSD drive sets:				
5308	6058	Yes	Encryption SAS to SSD drive conversion	Yes
5308	6158	Yes	Encryption SAS to SSD drive conversion	Yes
5308	6258	Yes	Encryption SAS to SSD drive conversion	Yes
5308	6358	Yes	Encryption SAS to SSD drive conversion	Yes
5618	6058	Yes	Encryption SAS to SSD drive conversion	Yes
5618	6158	Yes	Encryption SAS to SSD drive conversion	Yes
5618	6258	Yes	Encryption SAS to	Yes

From feature	To feature	Returned parts*	Description	Continuous maintenance
			SSD drive conversion	
5618	6358	Yes	Encryption SAS to SSD drive conversion	Yes
5708	6058	Yes	Encryption SAS to SSD drive conversion	Yes
5708	6158	Yes	Encryption SAS to SSD drive conversion	Yes
5708	6258	Yes	Encryption SAS to SSD drive conversion	Yes
5708	6358	Yes	Encryption SAS to SSD drive conversion	Yes
5768	6058	Yes	Encryption SAS to SSD drive conversion	Yes
5768	6158	Yes	Encryption SAS to SSD drive conversion	Yes
5768	6258	Yes	Encryption SAS to SSD drive conversion	Yes
5768	6358	Yes	Encryption SAS to SSD drive conversion	Yes
5868	6058	Yes	Encryption SAS to SSD drive conversion	Yes
5868	6158	Yes	Encryption SAS to SSD drive conversion	Yes
5868	6258	Yes	Encryption SAS to SSD drive conversion	Yes
5868	6358	Yes	Encryption SAS to SSD drive conversion	Yes

From feature	To feature	Returned parts*	Description	Continuous maintenance
Processor memory:				
4223	4224	No	Processor memory conversion	Yes

From feature	To feature	Returned parts*	Description	Continuous maintenance
4223	4225	No	Processor memory conversion	Yes
4224	4225	No	Processor memory conversion	Yes

From feature	To feature	Returned parts*	Description	Continuous maintenance
I/O cables:				
1320	1321	No	I/O cables	No
Processor memory:				
4324	4325	No	Processor memory conversion	Yes
4324	4326	No	Processor memory conversion	Yes
4325	4326	No	Processor memory conversion	Yes
4325	4327	No	Processor memory conversion	Yes
4326	4327	No	Processor memory conversion	Yes
4326	4328	No	Processor memory conversion	Yes
4327	4328	No	Processor memory conversion	Yes
Processor License feature indicators:				
4422	4423	No	Processor License feature conversion	Yes
4422	4424	No	Processor License feature conversion	Yes
4423	4424	No	Processor License feature conversion	Yes

From feature	To feature	Returned parts*	Description	Continuous maintenance
Disk enclosures:				
1242	1244	No	HD STD enclosure indicator to	NA

From feature	To feature	Returned parts*	Description	Continuous maintenance
			3.5-inch disk enclosure indicator	
1242	1245	No	HD STD enclosure indicator to 400 GB SSD enclosure indicator	NA
1242	1255	No	HD STD enclosure indicator to 200 GB SSD enclosure indictor	NA
1242	1256	No	HD STD enclosure indicator to 800 GB SSD enclosure indicator	NA
1242	1257	No	HD STD enclosure indicator to 1.6 TB SSD enclosure indicator	NA
1245	1256	No	SSD enclosure indicator	NA
1245	1257	No	SSD enclosure indicator	NA
1255	1245	No	SSD enclosure indicator	NA
1255	1256	No	SSD enclosure indicator	NA
1255	1257	No	SSD enclosure indicator	NA
1256	1257	No	SSD enclosure indicator	NA
Host adapters:				
3153	3157	Yes	Host adapter conversion	Yes
3153	3253	Yes	Host adapter conversion	Yes
3153	3257	Yes	Host adapter conversion	Yes
3157	3153	Yes	Host adapter conversion	Yes
3157	3253	Yes	Host adapter conversion	Yes
3157	3257	Yes	Host adapter conversion	Yes

From feature	To feature	Returned parts*	Description	Continuous maintenance
3253	3153	Yes	Host adapter conversion	Yes
3253	3157	Yes	Host adapter conversion	Yes
3253	3257	Yes	Host adapter conversion	Yes
3257	3153	Yes	Host adapter conversion	Yes
3257	3157	Yes	Host adapter conversion	Yes
3257	3253	Yes	Host adapter conversion	Yes
3353	3453	Yes	Host adapter conversion	Yes
3453	3353	Yes	Host adapter conversion	Yes
Encryption disk drive sets:				
5308	5618	Yes	Encryption disk drive set conversion	Yes
5308	5708	Yes	Encryption disk drive set conversion	Yes
5308	5768	Yes	Encryption disk drive set conversion	Yes
5308	5868	Yes	Encryption disk drive set conversion	Yes
5618	5708	Yes	Encryption disk drive set conversion	Yes
5618	5768	Yes	Encryption disk drive set conversion	Yes
5618	5868	Yes	Encryption disk drive set conversion	Yes
5708	5618	Yes	Encryption disk drive set conversion	Yes
5708	5768	Yes	Encryption disk drive set conversion	Yes
5708	5868	Yes	Encryption disk drive set conversion	Yes
Encryption SSD drive sets:				

From feature	To feature	Returned parts*	Description	Continuous maintenance
6058	6158	Yes	Encryption SSD drive conversion	Yes
6058	6258	Yes	Encryption SSD drive conversion	Yes
6058	6358	Yes	Encryption SSD drive conversion	Yes
6158	6258	Yes	Encryption SSD drive conversion	Yes
6158	6358	Yes	Encryption SSD drive conversion	Yes
6258	6358	Yes	Encryption SSD drive conversion	Yes
Encryption SAS to SSD drive sets:				
5308	6058	Yes	Encryption SAS to SSD drive conversion	Yes
5308	6158	Yes	Encryption SAS to SSD drive conversion	Yes
5308	6258	Yes	Encryption SAS to SSD drive conversion	Yes
5308	6358	Yes	Encryption SAS to SSD drive conversion	Yes
5618	6058	Yes	Encryption SAS to SSD drive conversion	Yes
5618	6158	Yes	Encryption SAS to SSD drive conversion	Yes
5618	6258	Yes	Encryption SAS to SSD drive conversion	Yes
5618	6358	Yes	Encryption SAS to SSD drive conversion	Yes
5708	6058	Yes	Encryption SAS to SSD drive conversion	Yes
5708	6158	Yes	Encryption SAS to	Yes

From feature	To feature	Returned parts*	Description	Continuous maintenance
			SSD drive conversion	
5708	6258	Yes	Encryption SAS to SSD drive conversion	Yes
5708	6358	Yes	Encryption SAS to SSD drive conversion	Yes
5768	6058	Yes	Encryption SAS to SSD drive conversion	Yes
5768	6158	Yes	Encryption SAS to SSD drive conversion	Yes
5768	6258	Yes	Encryption SAS to SSD drive conversion	Yes
5768	6358	Yes	Encryption SAS to SSD drive conversion	Yes
5868	6058	Yes	Encryption SAS to SSD drive conversion	Yes
5868	6158	Yes	Encryption SAS to SSD drive conversion	Yes
5868	6258	Yes	Encryption SAS to SSD drive conversion	Yes
5868	6358	Yes	Encryption SAS to SSD drive conversion	Yes

* Parts removed or replaced become the property of IBM and must be returned.

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Corrections

(Corrected on December 10, 2015)
The IBM DS8884 configuration options section in the Overview has been updated. The list under the Addressing capabilities section of the Description has also been updated. Feature conversion information for feature numbers 1243 and 5778 has been removed.

(Corrected on November 2, 2015)
The Choice of models and features list in the Description section and the Premium Support Services section under the Terms and conditions have been updated.