IBM System Storage DS8700 and DS8800 (M/T 242x) delivers DS8000 I/O Priority Manager and advanced features to enhance data protection for multi-tenant copy services

At a glance

New features for IBM® System Storage® DS8700 and DS8800 offer a greater choice in price and performance, including:

- DS8000™ I/O Priority Manager
- IBM System Storage Easy Tier enhancements
- Copy Services Scope management
- Large LUN sizes
- DS8000 Storage Manager GUI
- Security enhancements

New options for the IBM System Storage DS8700 include:

- 8 Gbps 4 port Fibre Channel/FICON host adapters.

IBM System Storage DS8800 includes the following DS8700 functional equivalencies:

- Quick initialization and thin provisioning for open volumes
- Remote Pair FlashCopy®
- Eight drive install groups of Solid State Disk (SSD)
- z/HPF extended distance
- Encryption recovery key disabling
- Ability to rekey data keys of an encryption group
- Concurrent code load improvements
- Ability to prevent deletion of count key data (CKD) and fixed block (FB) volumes in use
- IBM z/OS® Distributed Data Backup
- z/OS FICON® Discovery and Auto Configuration (zDAC)

Overview

IBM System Storage DS8700 and DS8800 (machine types 2421, 2422, 2423, and 2424) are designed to deliver DS8000 I/O Priority Manager and advanced features to enhance data protection for multi-tenant copy services. New options include:

- **Quality of service and resource management:**
  - DS8000 I/O Priority Manager - Prioritizes incoming I/O according to application requirements, allowing policy based performance tuning for mixed workloads.
  - IBM System Storage Easy Tier enhancements - Tiering support for any two tiers of storage, allowing two types of storage within a managed pool to intelligently align the system with workload requirements.
  - Copy Services Scope management - Tenants can only use copy services within the domain of their assigned logical volumes. This function is applicable to all host types.
  - Large LUN sizes - Support for 16 TB open devices. Support for larger than 2 TB devices may require specific operating system levels (Open only).
- **User interfaces:**
  - DS8000 Storage Manager GUI - Graphical user interface (GUI) provides better usability and configuration capabilities for copy services function as well as system management tasks.
- **Security enhancements:**
  - Security password rule updates - IBM System Storage DS8000 is now compliant to Information Technology Security and Computing (ITSC) password requirements, as well as giving the administrator the ability to determine which users are currently logged into the DS8000 and able to disconnect users who may no longer be authorized to access the DS8000 with their current authorization roles or resource scopes.

IBM System Storage DS8700 (machine types 2421, 2422, 2423, and 2424) delivers more options for new and existing customers with new host adapters. DS8700 offers:

- 8 Gbps 4 port and Fibre Channel/FICON host adapters.

IBM System Storage DS8800 (machine types 2421, 2422, 2423, and 2424) deliver more options for new and existing customers with functional equivalencies with the DS8700, including:

- Quick initialization and thin provisioning
- Remote Pair FlashCopy
- Eight drive install groups of SSD
- z/HPF extended distance
- Encryption recovery key disabling
- Ability to rekey data keys of an encryption group
- Concurrent code load improvements
- Ability to prevent deletion of CKD and FB volumes in use
- IBM z/OS Distributed Data Backup
- z/OS FICON Discovery and Auto Configuration (zDAC)

Key prerequisites

All features and functions in this announcement are supported on the IBM System Storage DS8700 and DS8800 series, and require DS8000 licensed machine code as follows:

- IBM System Storage DS8700 - level 7.6.1.xx.xx (bundle version 76.10.xxx.xx), or later.
- IBM System Storage DS8800 - level 7.6.1.xx.xx (bundle version 86.10.xxx.xx), or later.

Planned availability date

June 3, 2011

Description

This new release delivers many new capabilities, achieves functional equivalency between the DS8700 and DS8800 products, and enhances existing function. In addition, several new and existing capabilities combine to enable effective multi-tenant environments, as well as enable more effective consolidation.

When I/O Priority Manager, new copy services resource group management, and enhancements to Easy Tier are used together, they can provide even greater benefits, allow performance balancing between workloads, dynamically configured drive tiering for maximal drive utilization, and effective copy services management tools. The second generation of Easy Tier enhancements extends the automated tiering capabilities of the DS8000 to support more drive type combinations, thus allowing clients to address the performance needs of different workloads supported by the system, while increasing storage capacity utilization. I/O Priority Manager can help provide an effective quality of service management solution for clients looking to simplify performance management of the various applications supported by the DS8000. New resource group management and new GUI enhancements provide easy to use and flexible configurations tools to simplify routine administrative tasks, as well as a more effective copy services operations management.

Together these functions can help the various applications running on DS8000 systems meet their respective service levels in a simple and cost effective manner. The DS8000 can help address storage consolidation requirements, helping to manage increasing amounts of data with less effort and lower infrastructure costs.

The addition of automated and sophisticated service management to its outstanding flexibility, scalability, and high availability offer yet another reason to consider the DS8000 over its competitors to support the most demanding application environments.

DS8000 I/O Priority Manager

The DS8000 now features I/O Priority Manager, which enables more effective storage consolidation and performance management combined with the ability to align quality of service levels to separate workloads in the system.

The system will prioritize access to system resources to achieve the volume's desired quality of service based on defined performance goals (high, medium, or low) of any volume. I/O Priority Manager will constantly monitor and balance system resources to help applications meet their performance targets automatically, without operator intervention.

The DS8000 I/O Priority Manager feature is available for open systems. Support for DS8000 I/O Priority Manager is an optional feature for DS8700 model 941 and DS8800 model 951, is available with the I/O priority Manager licensed feature indicator DS8000 Function Authorization (239x-LFA) I/O Priority Manager feature number 784x.

IBM System Storage Easy Tier enhancements

The second generation of IBM System Storage Easy Tier is designed to balance system resources to address application performance objectives by automating data placement across enterprise-class (tier 1) and near-line (tier 2) drives, as

well as among the ranks of the same tier. This includes the ability for the system to automatically and non-disruptively relocate data (at the extent level) across any 2 tiers of storage and the ability to manually relocate full volumes. The potential benefit is to align performance of the system with the appropriate application workloads.

This enhancement can help clients to improve storage utilization and address performance requirements for multi-tier systems that are not yet deploying solid-state drives (SSDs). Depending on the workload, up to 50% or more of tier one application data can be migrated to nearline (tier 2) without impacting application performance.

Effective automated tiering between enterprise-class and nearline drives can help reduce overall footprint and provide more cost effective capacity, while addressing performance requirements.

The extended capabilities of Easy Tier version 2 support:

- Cold demotion - Inactive "cold" data stored on Enterprise performance Tier is demoted to a more appropriate tier.
- Warm demotion - When a specific rank in the higher tier exceeds its optimal performance level, selected extents are moved to other ranks to eliminate the growing hotspot.
- Auto-Rebalance - Automatically relocates extents among the ranks within the tiers to remove workload skews between ranks.
- Automated relocation - Now supporting migration between any two classes of drive.
- Volume migration - Enables the manual relocation of volumes between extent pools, the restriping of volumes within an extent pool, and the ability to merge existing extent pools into a single extent pool. Intra-pool restriping is now available to rebalance the volume across the available ranks, with a general bias toward providing pure striping, without requiring pre-allocation of all extents.
- Rank depopulation - Allows customers to non-disruptively relocate extents away from selected ranks and stop using the ranks.

Cold demotion

Cold demotion is designed to automatically recognize and demote inactive (cold) extents that are stored on a higher-performance tier to an appropriate lower-cost tier.

Cold demotion occurs when Easy Tier version 2 detects any of the following scenarios:

- Segments in a storage pool become inactive over time, while other data remains active. This action can free up segments on the enterprise tier before the segments on the lower tier become "hot," helping the system be more responsive to new data.
- All the segments in a storage pool become inactive simultaneously due to either a planned or unplanned outage. In this situation, Easy Tier disables cold demote when storage pools are inactive for between 15.5 and 24 hours. Disabling cold demote assists in scheduling extended outages or experiencing the outage without affecting the segment placement.

Warm demotion

Warm demote operation demotes "hot" extents in SSD to HDD, or from Enterprise FC to SATA drives to protect the drive performance on the system. In the enhanced Easy Tier version 2, warm demotion is rank-based and target rank is randomly selected from the lower tier. This function is triggered when bandwidth or IOPS thresholds are exceeded in the higher tier.

Auto-rebalance

In any tier, placing highly active (hot) data on the same physical rank can cause the drives or the associated device adapter (DA) to become a performance bottleneck. Over time, skews can also appear within a single tier that cannot be addressed by migrating data to a faster tier alone, and requires some degree of workload rebalancing within the same tier. Auto-rebalance addresses these issues within a tier. It also helps the system respond in a more timely and appropriate manner to overloading, skews, and any under-utilization that might occur from addition or deletion of hardware, migration of extents between tiers, changes in the underlying volume configurations, and variations in the workload. Auto-rebalance adjusts the system in order to continuously provide good performance by balancing the load on the ranks and on DA pairs.

Easy Tier enhancements provide extended and improved capabilities to support the automatic functions of auto-rebalance, warm demotion, and cold demotion, and will be made available on both DS8700 model 941 and DS8800 model 951.

Rank depopulation

In the situations of drive technology upgrade, storage reconfiguration, and tearing down hybrid pools, rank depopulation allows users to relocate in-use extents away to the other ranks in the same pool and unassign the ranks from the pool. When ranks of a tier are depopulated from the hybrid pool, the pool is automatically treated as a traditionally managed pool, without dynamic optimization. After the depopulation, the ranks can be deleted or re-configured to another pool.

Copy services scope management

This release also provides enhanced data protection for muli-tenancy environments that use copy services. With copy services scope management, copy service relationships can be limited to the domain of a set of user specified resources. Additionally, user IDs can be configured to limit a given user ID to issuing copy services requests to a specific domain. This capability allows specific resources to be managed for copy services by specific user and prevents any host or user from initiating a copy services operation that would cross any domain boundaries. The copy services scope management capability is available for any host type on any volume type (CKD or FB). In addition to this multi-tenant capability, copy services domains can also provide general purpose partitioning to isolate heterogenous environments from each other.

Large LUN sizes (Open only)

IBM System Storage DS8000 series introduces the ability to support volumes up to 16 TB in size for increased flexibility in managing the growing amount of data in enterprise environments. This can help storage administrators simplify management by reducing the number of overall volumes they must actively manage. Support for large LUN sizes is an included feature of DS8700 model 941 and DS8800 model 951.

DS8000 Storage Manager GUI

An updated GUI now enables easier, more effective management of the system and its advanced features. The enhanced design was inspired by the IBM System Storage XIV® GUI and includes more intuitive navigation panels and streamlined configuration processes, as well as embedded links to relevant videos for quick access to useful DS8000 information. These changes were based on newer GUI technology and the common UI elements across the storage portfolio. This common GUI now supports DS8000, Storwize V7000, and SAN Volume Controllers (SVC) by having a common look and feel, as well as common terminology and icons, can greatly simplify management of the various systems that use this common GUI and significantly reduce the costs associated with administrator training.

Security enhancements

Users logging onto the DS8000 storage system have to be compliant to ITSC104 password requirements. Storage administrators have the ability to determine which

users are currently logged into the DS8000 and disconnect users who may no longer be authorized to access the DS8000 with their current authorization roles or resource scopes.

8Gbps Host adapter

The DS8700 model offers enhanced connectivity with four-port 8Gbps Fibre Channel/FICON host adapters, designed to offer up to 100% improvement in the single-port MBps throughput performance and up to 400% improvement in single adapter throughput performance.

The DS8700 8 Gbps Fibre Channel/FICON host adapter supports FICON attachment to FICON Express8 on zEnterprise 196 (z196) and System z10® (z10™ EC, z10 BC).

DS8700 and DS8800 functional equivalence

The DS8700 and DS8800 platforms, with this release, will now be functionally equivalent, using the same firmware to provide an identical set of advance features on both platforms.

These functional equivalencies of DS8700 and DS8800 include:

- Quick initialization and thin provisioning for open volumes
- Remote Pair FlashCopy
- Eight drive install groups of SSD
- z/HPF extended distance
- Disable encryption recovery key
- Ability to rekey data keys of an encryption group
- Concurrent code load improvements
- Ability to prevent deletion of count key data (CKD) and fixed block (FB) volumes in use
- IBM z/OS Distributed Data Backup
- z/OS FICON Discovery and Auto Configuration (zDAC)

With this release, the two separate hardware platforms of the DS8700 and DS8800 are enabled with the same function, and designed with the same high performance and quality goals.

Plant availability - June 3, 2011

Release R6.1 LMC supporting both DS8700 and DS8800

- DS8000 I/O Priority Manager
- IBM System Storage Easy Tier enhancements
- Copy Services Scope management
- Large LUN sizes
- DS8000 Storage Manager GUI
- Security enhancements

DS8700 hardware features:

- 8 Gbps 4 port Fibre Channel/FICON host adapters.

DS8800 hardware features:

- 16GB Processor Cache Memory

Field availability - June 3, 2011

Release R6.1 LMC supporting both DS8700 and DS8800

- DS8000 I/O Priority Manager
- IBM System Storage Easy Tier enhancements
- Copy Services Scope management
- Large LUN sizes
- DS8000 Storage Manager GUI
- Security enhancements

DS8700 hardware features:

- 8 Gbps 4 port Fibre Channel/FICON host adapters.

Accessibility by people with disabilities

A U.S. Section 508 Voluntary Product Accessibility Template (VPAT) containing details on accessibility compliance can be requested at

http://www.ibm.com/able/product_accessibility/index.html

Section 508 of the U.S. Rehabilitation Act

The IBM System Storage DS8800 and IBM System Storage DS8800 Expansion Unit are capable, as of October 22, 2010, when used in accordance with IBM's associated documentation, of satisfying the applicable requirements of Section 508 of the Rehabilitation Act, provided that any assistive technology used with the product properly interoperates with it. A U.S. Section 508 Voluntary Product Accessibility Template (VPAT) can be requested at

http://www.ibm.com/able/product_accessibility/index.html

Reference information

For more information, refer to the following announcements:

- Hardware Announcement 110-213, dated October 07, 2010, IBM System Storage DS8800 (Machine type 2421) high-performance flagship high-end disk, one-year warranty model addresses your business and financial needs.
- Hardware Announcement 110-214, dated October 07, 2010, IBM System Storage DS8800 (Machine type 2422) high-performance flagship high-end disk, two-year warranty model addresses your business and financial needs.
- Hardware Announcement 110-218, dated October 07, 2010, IBM System Storage DS8800 (Machine type 2423) high-performance flagship high-end disk, three-year warranty model addresses your business and financial needs.
- Hardware Announcement 110-215, dated October 07, 2010, IBM System Storage DS8800 (Machine type 2424) high-performance flagship high-end disk, four-year warranty model addresses your business and financial needs.
- Hardware Announcement 110-168, dated July 20, 2010, IBM System Storage DS8700 delivers z/OS Distributed Data Backup and new functional capabilities for machine types 2421, 2422, 2423, and 2424.
- Hardware Announcement 110-092, dated April 13, 2010, IBM System Storage DS8700 (Machine types 2421, 2422, 2423, and 2424) is designed to deliver new Easy Tier solid-state storage workload optimizer, advanced features supporting business continuity, and new drive options that can help to double the system's maximum capacity

For IBM statement on compliance with 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

```
                                        Machine
Description                             type      Model    Feature

DS8700                                  2421      941

Licensed Function Indicators:
-I/O Priority Manager                                      0784

Administrative indicators:
- IBM System Storage ProtecTIER® indicator                  0960

DS8000 Licensed Machine Code:
-DS8000 LMC R6.1                                           1722

Host Adapters:
-8 Gb 4 port SW FCP/FICON Adapter PCIE                     3153
-8 Gb 4 port LW FCP/FICON Adapter PCIE                     3253

Function Authorization Indicators:
-I/O Priority Manager - inactive                           7840
-I/O Priority Manager - 1TB Indicator                      7841
-I/O Priority Manager - 5TB Indicator                      7842
-I/O Priority Manager - 10TB Indicator                     7843
-I/O Priority Manager - 25TB Indicator                     7844
-I/O Priority Manager - 50TB Indicator                     7845
-I/O Priority Manager - 100TB Indicator                    7850


                                        Machine
Description                             type      Model    Feature

DS8700                                  2421      94E

Administrative indicators:
- IBM System Storage ProtecTIER indicator                  0960

DS8000 Licensed Machine Code:
-DS8000 LMC R6.1                                           1822

Host Adapters:
-8 Gb 4 port SW FCP/FICON Adapter PCIE                     3153
-8 Gb 4 port LW FCP/FICON Adapter PCIE                     3253


                                        Machine
Description                             type      Model    Feature

DS8700                                  2422      941

Licensed Function Indicators:
-I/O Priority Manager                                      0784

Administrative indicators:
- IBM System Storage ProtecTIER indicator                  0960

DS8000 Licensed Machine Code:
-DS8000 LMC R6.1                                           1722

Host Adapters:
-8 Gb 4 port SW FCP/FICON Adapter PCIE                     3153
-8 Gb 4 port LW FCP/FICON Adapter PCIE                     3253

Function Authorization Indicators:
-I/O Priority Manager - inactive                           7840
-I/O Priority Manager - 1TB Indicator                      7841
-I/O Priority Manager - 5TB Indicator                      7842
-I/O Priority Manager - 10TB Indicator                     7843
-I/O Priority Manager - 25TB Indicator                     7844
-I/O Priority Manager - 50TB Indicator                     7845
```

```
-I/O Priority Manager - 100TB Indicator                          7850
```

Description	Machine type	Model	Feature
DS8700	2422	94E	

```
Administrative indicators:
- IBM System Storage ProtecTIER indicator                        0960

DS8000 Licensed Machine Code:
-DS8000 LMC R6.1                                                  1822

Host Adapters:
-8 Gb 4 port SW FCP/FICON Adapter PCIE                            3153
-8 Gb 4 port LW FCP/FICON Adapter PCIE                            3253
```

Description	Machine type	Model	Feature
DS8700	2423	941	

```
Licensed Function Indicators:
-I/O Priority Manager                                            0784

Administrative indicators:
- IBM System Storage ProtecTIER indicator                        0960

DS8000 Licensed Machine Code:
-DS8000 LMC R6.1                                                  1722

Host Adapters:
-8 Gb 4 port SW FCP/FICON Adapter PCIE                            3153
-8 Gb 4 port LW FCP/FICON Adapter PCIE                            3253

Function Authorization Indicators:
-I/O Priority Manager - inactive                                 7840
-I/O Priority Manager - 1TB Indicator                            7841
-I/O Priority Manager - 5TB Indicator                            7842
-I/O Priority Manager - 10TB Indicator                           7843
-I/O Priority Manager - 25TB Indicator                           7844
-I/O Priority Manager - 50TB Indicator                           7845
-I/O Priority Manager - 100TB Indicator                          7850
```

Description	Machine type	Model	Feature
DS8700	2423	94E	

```
Administrative indicators:
- IBM System Storage ProtecTIER indicator                        0960

DS8000 Licensed Machine Code:
-DS8000 LMC R6.1                                                  1822

Host Adapters:
-8 Gb 4 port SW FCP/FICON Adapter PCIE                            3153
-8 Gb 4 port LW FCP/FICON Adapter PCIE                            3253
```

Description	Machine type	Model	Feature
DS8700	2424	941	

```
Licensed Function Indicators:
-I/O Priority Manager                                            0784

Administrative indicators:
- IBM System Storage ProtecTIER indicator                        0960
```

```
DS8000 Licensed Machine Code:
-DS8000 LMC R6.1                                          1722

Host Adapters:
-8 Gb 4 port SW FCP/FICON Adapter PCIE                    3153
-8 Gb 4 port LW FCP/FICON Adapter PCIE                    3253

Function Authorization Indicators:
-I/O Priority Manager - inactive                          7840
-I/O Priority Manager - 1TB Indicator                    7841
-I/O Priority Manager - 5TB Indicator                    7842
-I/O Priority Manager - 10TB Indicator                   7843
-I/O Priority Manager - 25TB Indicator                   7844
-I/O Priority Manager - 50TB Indicator                   7845
-I/O Priority Manager - 100TB Indicator                  7850
```

Description	Machine type	Model	Feature
DS8700	2424	94E	

```
Administrative indicators:
- IBM System Storage ProtecTIER indicator                0960

DS8000 Licensed Machine Code:
-DS8000 LMC R6.1                                          1822

Host Adapters:
-8 Gb 4 port SW FCP/FICON Adapter PCIE                    3153
-8 Gb 4 port LW FCP/FICON Adapter PCIE                    3253
```

Description	Machine type	Model	Feature
DS8800	2421	951	

```
Licensed Function Indicators:
-Thin Provisioning indicator                             0707
-IBM System Storage Easy Tier indicator                  0713
-z/OS Distributed Data Backup indicator                  0714
-I/O Priority Manager                                    0784

Administrative indicators:
- IBM System z® B/C indicator                             0935
- IBM System Storage ProtecTIER indicator                0960

DS8000 Licensed Machine Code:
-DS8000 LMC R6.1                                          1722

Disk enclosure filler:
-Disk enclosure filler half set                          2998

Processor Memory:
-16GB Processor memory                                   4211

SSD Half Drive Sets:
-300 GB SSD half drive set                               6006

Function Authorization Indicators:
-Thin Provisioning Indicator                             7071
-IBM System Storage Easy Tier                            7083
-z/OS Distributed Data Backup indicator                  7094

I/O Priority Manager - inactive                          7840
-I/O Priority Manager - 1TB Indicator                    7841
-I/O Priority Manager - 5TB Indicator                    7842
-I/O Priority Manager - 10TB Indicator                   7843
-I/O Priority Manager - 25TB Indicator                   7844
-I/O Priority Manager - 50TB Indicator                   7845
-I/O Priority Manager - 100TB Indicator                  7850
```

Description	Machine type	Model	Feature
DS8800	2421	95E	
Administrative indicators:			
- IBM System z B/C indicator			0935
- IBM System Storage ProtecTIER indicator			0960
DS8000 Licensed Machine Code:			
-DS8800 LMC R6.0			1821
-DS8000 LMC R6.1			1822
Disk enclosure filler:			
-Disk enclosure filler half set			2998
SSD Half Drive Sets:			
-300 GB SSD half drive set			6006

Description	Machine type	Model	Feature
DS8800	2422	951	
Licensed Function Indicators:			
-Thin Provisioning indicator			0707
-IBM System Storage Easy Tier indicator			0713
-z/OS Distributed Data Backup indicator			0714
-I/O Priority Manager			0784
Administrative indicators:			
- IBM System z B/C indicator			0935
- IBM System Storage ProtecTIER indicator			0960
DS8000 Licensed Machine Code:			
-DS8000 LMC R6.1			1722
Disk enclosure filler:			
-Disk enclosure filler half set			2998
Processor Memory:			
-16GB Processor memory			4211
SSD Half Drive Sets:			
-300 GB SSD half drive set			6006
Function Authorization Indicators:			
-Thin Provisioning Indicator			7071
-IBM System Storage Easy Tier			7083
-z/OS Distributed Data Backup indicator			7094
I/O Priority Manager - inactive			7840
-I/O Priority Manager - 1TB Indicator			7841
-I/O Priority Manager - 5TB Indicator			7842
-I/O Priority Manager - 10TB Indicator			7843
-I/O Priority Manager - 25TB Indicator			7844
-I/O Priority Manager - 50TB Indicator			7845
-I/O Priority Manager - 100TB Indicator			7850

Description	Machine type	Model	Feature
DS8800	2422	95E	
Administrative indicators:			
- IBM System z B/C indicator			0935
- IBM System Storage ProtecTIER indicator			0960
DS8000 Licensed Machine Code:			
-DS8800 LMC R6.0			1821
-DS8000 LMC R6.1			1822

```
Disk enclosure filler:
-Disk enclosure filler half set                                    2998

SSD Half Drive Sets:
-300 GB SSD half drive set                                         6006
```

Description	Machine type	Model	Feature
DS8800	2423	951	

```
Licensed Function Indicators:
-Thin Provisioning indicator                                       0707
-IBM System Storage Easy Tier indicator                            0713
-z/OS Distributed Data Backup indicator                            0714
-I/O Priority Manager                                              0784

Administrative indicators:
- IBM System z B/C indicator                                       0935
- IBM System Storage ProtecTIER indicator                          0960

DS8000 Licensed Machine Code:
-DS8000 LMC R6.1                                                   1722

Disk enclosure filler:
-Disk enclosure filler half set                                    2998

Processor Memory:
-16GB Processor memory                                             4211

SSD Half Drive Sets:
-300 GB SSD half drive set                                         6006

Function Authorization Indicators:
-Thin Provisioning Indicator                                       7071
-IBM System Storage Easy Tier                                      7083
-z/OS Distributed Data Backup indicator                            7094

I/O Priority Manager - inactive                                    7840
-I/O Priority Manager - 1TB Indicator                              7841
-I/O Priority Manager - 5TB Indicator                              7842
-I/O Priority Manager - 10TB Indicator                             7843
-I/O Priority Manager - 25TB Indicator                             7844
-I/O Priority Manager - 50TB Indicator                             7845
-I/O Priority Manager - 100TB Indicator                            7850
```

Description	Machine type	Model	Feature
DS8800	2423	95E	

```
Administrative indicators:
- IBM System z B/C indicator                                       0935
- IBM System Storage ProtecTIER indicator                          0960

DS8000 Licensed Machine Code:
-DS8800 LMC R6.0                                                   1821
-DS8000 LMC R6.1                                                   1822

Disk enclosure filler:
-Disk enclosure filler half set                                    2998

SSD Half Drive Sets:
-300 GB SSD half drive set                                         6006
```

Description	Machine type	Model	Feature
DS8800	2424	951	

```
Licensed Function Indicators:
```

```
-Thin Provisioning indicator                        0707
-IBM System Storage Easy Tier indicator             0713
-z/OS Distributed Data Backup indicator             0714
-I/O Priority Manager                               0784


Administrative indicators:
- IBM System z B/C indicator                        0935
- IBM System Storage ProtecTIER indicator           0960

DS8000 Licensed Machine Code:
-DS8000 LMC R6.1                                    1722

Disk enclosure filler:
-Disk enclosure filler half set                     2998

Processor Memory:
-16GB Processor memory                              4211

SSD Half Drive Sets:
-300 GB SSD half drive set                          6006

Function Authorization Indicators:
-Thin Provisioning Indicator                        7071
-IBM System Storage Easy Tier                       7083
-z/OS Distributed Data Backup indicator             7094

I/O Priority Manager - inactive                     7840
-I/O Priority Manager - 1TB Indicator               7841
-I/O Priority Manager - 5TB Indicator               7842
-I/O Priority Manager - 10TB Indicator              7843
-I/O Priority Manager - 25TB Indicator              7844
-I/O Priority Manager - 50TB Indicator              7845
-I/O Priority Manager - 100TB Indicator             7850
```

Description	Machine type	Model	Feature
DS8800	2424	95E	
Administrative indicators:			
- IBM System z B/C indicator			0935
- IBM System Storage ProtecTIER indicator			0960
DS8000 Licensed Machine Code:			
-DS8800 LMC R6.0			1821
-DS8000 LMC R6.1			1822
Disk enclosure filler:			
-Disk enclosure filler half set			2998
SSD Half Drive Sets:			
-300 GB SSD half drive set			6006

Model conversions - None

There are no new model conversions with this announcement. This is a reminder that model conversions are disruptive. In addition, data may not be preserved during the model conversion.

DS8300 and DS8700 to DS8800 model conversions can only be done using IBM Global Financing. IBM Global Financing can assist with alternatives to convert installed DS8300 and DS8700 to DS8800. Contact IBM Global Services for model conversion upgrade planning solutions. With this program, disruptive upgrades are avoidable. Data migration can be done side by side to reduce implementation time and cost. Returned hardware will be assigned value according to condition.

For more information on IBM Global Financing offerings, visit

http://www-03.ibm.com/financing/us/lifecycle/acquire/diskx.html

Feature conversions

Feature conversions (Machine types 2421, 2422, 2423, and 2424 model 941 and
94E):

```
Host adapter:

Feature        Returned
from  to       parts *  Description

3143  3153     Yes      Host adapter conversion
3143  3253     Yes      Host adapter conversion

3153  3253     Yes      Host adapter conversion

3243  3153     Yes      Host adapter conversion
3243  3253     Yes      Host adapter conversion

3245  3153     Yes      Host adapter conversion
3245  3253     Yes      Host adapter conversion

3253  3153     Yes      Host adapter conversion
```

Feature conversions (Machine types 2421, 2422, 2423, and 2424 model 951):

```
Processor memory:

Feature        Returned
from  to       parts *  Description

4211  4212     No       Processor memory conversion
4211  4213     Yes      Processor memory conversion
```

Feature conversions (Machine types 2421, 2422, 2423, and 2424 model 951 and
95E):

```
Solid State Disk drive sets:

Feature        Returned
from  to       parts *  Description

6006  6008     No       Solid State Disk drive conversion
```

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

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® ID and password are required (use IBM ID).

   https://www.ibm.com/partnerworld/mem/sla.jsp?num=111-080

Publications

The *IBM System Storage DS8000 Introduction and Planning Guide (GC27-2297)* has
been updated to reflect this announcement and will be available by June 3, 2011.

The following publications are shipped with the DS8000 series:

```
Title                                   Order number

IBM System Storage DS8000 Series        LCD8-1642-00
```

```
   Documentation CDROM
```

The CD contains the following documents and are not shipped hardcopy:

```
Title                                    Order number

IBM System Storage DS8000 Introduction and   GC27-2297
 Planning Guide

IBM System Storage DS8000 Host Systems       SC27-2298
 Attachment Guide

IBM System Storage DS® Command-Line          GC53-1127
 Interface User's Guide

IBM System Storage DS Open Application        GC35-0516
 Programming Interface Referee

IBM System Storage Licensed Machine           GC26-7918
 Code Agreement

IBM System Storage Multipath Subsystem        GC52-1309
 Device driver User's Guide
```

The following documents are on the CD and are also shipped hardcopy:

```
Title                                    Order number

IBM System Storage DS Storage Mgr R6 &        GC27-3907
 CIM Agent for DS Open Application
 Programming Interface 5.6

IBM Warranty Information                       GC26-7919

IBM System Storage DS8000 Licensed            GC26-7918
 Machine Code Agreement
```

For DS8000 publications, visit

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

The DS8000 information center is designed to provide comprehensive, browser-based information. It can help provide easy access to tasks, concepts, referee information, tutorials, code samples, scenarios, and other product information. It contains assistance for the tasks that users must perform and links to additional information. To find information, users can search, browse the contents, use the index, follow links from one topic to related topics, and print the topics they want to read offline.

The information center is available at

   http://www.ibm.com/support/publications/us/library/

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

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

For details on education offerings related to specific products, visit

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

Technical information

Specified operating environment

Hardware requirements

Licensed Machine Code

All features and functions in this announcement are supported on the IBM System Storage DS8700 and DS8800 series and require DS8000 licensed machine code as follows:

- IBM System Storage DS8700 - level 7.6.1.xx.xx (bundle version 76.1.xxx.xx), or later.
- IBM System Storage DS8800 - level 7.6.1.xx.xx (bundle version 86.1.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 online at

Planning information

Customer responsibilities

Physical configuration planning

Physical configuration planning is a customer responsibility. Your disk marketing specialist can help you plan and select the DS8000 series physical configuration and features. Introductory information, including required and optional features, can be found in the *IBM System Storage DS8000 Introduction and Planning Guide (GC27-2297).*

Capacity and performance planning assistance is also available. Through the use of Disk Magic, your disk marketing specialist can help you 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 your DS8000 series, including equipment, site, and power requirements, can be found in the *IBM System Storage DS8000 Introduction and Planning Guide (GC27-2297).*

Logical configuration planning and application

Logical configuration planning is a customer responsibility. Logical configuration refers to the creation of RAID ranks, volumes, or 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.

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

Licensed Machine Code planning and application

IBM may release changes to the DS8000 series Licensed Machine Code. IBM plans to make most DS8000 series Licensed Machine Code changes available for download by the DS8000 series system from the IBM System Storage technical support worldwide Web. Note that not all Licensed Machine Code changes may be available via the support website. If the machine does not function as warranted and your problem can be resolved through your application of downloadable Licensed Machine Code, you are 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. If you would prefer, you may request IBM to install downloadable Licensed Machine Code changes; however, you may be charged for that service.

Calculating physical and effective capacity

Refer to the *IBM System Storage DS8000 Introduction and Planning Guide (GC27-2297)* 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 your installation considerations.

- Key Server Planning
- Tivoli® Key Lifecycle Manager Planning
- Full Disk Encryption Activation Review Planning

Key server planning

Key server planning is a customer responsibility. Introductory information, including required and optional features, can be found in the *IBM System Storage DS8000 Introduction and Planning Guide (GC27-2297).*

DS8800 requires at least two key servers and associated software for each site which has one or more encryption-enabled DS8000 systems, according to the encryption best practices. One server must be isolated and the others can be of any supported key server configuration. Any site that operates independently of other sites must have key servers for the encryption enabled DS8000 systems at that site.

DS8000 Encryption environments are recommended to configure external Laptop HMC for high availability (feature #1130).

It is the customer's responsibility to replicate any key labels across all key servers attached to a given encryption-enabled DS8000 before configuring that key label on the DS8000.

Dual platform key server planning

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

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

Tivoli Key Lifecycle Manager planning

The DS8000 series supports IBM Tivoli Key Lifecycle Manager V1.0 and V2.0.

```
Program
number      VRM      Program name

5724-T60    1.0.0/   IBM Tivoli Key Lifecycle Manager
            2.0.0
5608-A91    1.0.0    IBM Tivoli Key Lifecycle Manager (distributed
                      for non-Passport Advantage)
                     IBM Tivoli Key Lifecycle Manager for z/OS V1.0

Program
number      VRM      Program name

5698-B35    1.0.0    IBM Tivoli Key Lifecycle Manager for z/OS
```

Isolated key servers ordered with feature number 1760 will have a Linux® operating system and TKLM software preinstalled. Customers will need to acquire a TKLM license for use of the TKLM software, ordered separately from the standalone server hardware.

Refer to the following publications:

- IBM Tivoli Key Lifecycle Manager Quick Start Guide (GI11-8738)
- IBM Tivoli Key Lifecycle Manager Installation and Configuration Guide (SC27-2741)
- IBM Tivoli Key Lifecycle Manager Program Directory (for z/OS) (GI11-4300)

Full Disk Encryption Activation review planning

Full Disk Encryption Activation is a customer responsibility. IBM Full Disk 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/

You are responsible for downloading or obtaining from IBM, and installing designated Machine Code (microcode, basic input/output system code (called BIOS), utility programs, device drivers, and diagnostics delivered with an IBM machine) and other software updates in a timely manner from an IBM Internet Web site or from other electronic media, and following the instructions that IBM provides. You may request IBM to install Machine Code changes; however, you may be charged for that service.

Model conversions

DS8300 and DS8700 to DS8800 model conversions are disruptive. In addition, data may not be preserved during the conversion. Data migration or backup/restore is a customer responsibility. Fee-based data migration services are available from IBM Global Services.

For more information on the IBM Global Financing offering, visit

IBM Global Finance can assist with alternatives to convert installed DS8300 and DS8700 to DS8800. Please contact IBM Global Financing for Model Conversion Upgrade Planning solutions.

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 FCP/FICON host adapters 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 (multimode) fiber optic cable terminated with an 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 either a 9-micron (singlemode) or 50-micron (multimode) fiber optic cable terminated with an LC connector. A 50-micron cable is required when the longwave port is operating at a 4 Gb per second transfer rate.

Fibre Channel cables can be purchased using feature numbers 141x for 50-micron cables and numbers 142x for 9-micron cables.

Cable orders

No cables required.

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 via Support Line, visit the following Web site

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.

You are responsible for downloading or obtaining from IBM, and installing designated Machine Code (microcode, basic input/output system code (called BIOS), utility programs, device drivers, and diagnostics delivered with an IBM machine) and other software updates in a timely manner from an IBM Internet Web site or from other electronic media, and following the instructions that IBM provides. You may request IBM to install Machine Code changes; however, you may be charged for that service.

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

MES Discount Applicable

No

Field Installable Feature

Yes

Warranty period

Machine type 2421: One year

Machine type 2422: Two years

Machine type 2423: Three years

Machine type 2424: Four years This product is provided with 1 year of standard warranty and additional years of extended warranty services to make these offerings. Customers should consult with their financial personnel on the appropriate financial treatment for this offering.

Customer setup

No

Licensed Internal Code

Same license terms and conditions as designated machine.

Pricing

Description	Machine type	Model	Feature number
System Storage DS8700	2421	941	
Licensed Function Indicators:			
-I/O Priority Manager			0784
Administrative indicators:			
-IBM System Storage ProtecTIER indicator			0960
DS8000 Licensed Machine Code:			
-DS8000 LMC R6.1			1722
Host Adapters:			
-8 Gb 4 port SW FCP/FICON Adapter PCIe			3153
-8 Gb 4 port LW FCP/FICON Adapter PCIe			3253
Function Authorization Indicators:			
-I/O Priority Manager - inactive			7840
-I/O Priority Manager - 1TB Indicator			7841
-I/O Priority Manager - 5TB Indicator			7842
-I/O Priority Manager - 10TB Indicator			7843
-I/O Priority Manager - 25TB Indicator			7844
-I/O Priority Manager - 50TB Indicator			7845
-I/O Priority Manager - 100TB Indicator			7850

Description	Machine type	Model	Feature number
System Storage DS8700	2421	94E	
Administrative indicators:			
-IBM System Storage ProtecTIER indicator			0960
DS8000 Licensed Machine Code:			
-DS8000 LMC R6.1			1822
Host Adapters:			
-8 Gb 4 port SW FCP/FICON Adapter PCIe			3153
-8 Gb 4 port LW FCP/FICON Adapter PCIe			3253

Description	Machine Type	Model	Feature Number
System Storage DS8700	2422	941	
Licensed Function Indicators:			
-I/O Priority Manager			0784
Administrative indicators:			
-IBM System Storage ProtecTIER indicator			0960
DS8000 Licensed Machine Code:			
-DS8000 LMC R6.1			1722

```
Host Adapters:
-8 Gb 4 port SW FCP/FICON Adapter PCIe        3153
-8 Gb 4 port LW FCP/FICON Adapter PCIe        3253


Function Authorization Indicators:
-I/O Priority Manager - inactive              7840
-I/O Priority Manager - 1TB Indicator         7841
-I/O Priority Manager - 5TB Indicator         7842
-I/O Priority Manager - 10TB Indicator        7843
-I/O Priority Manager - 25TB Indicator        7844
-I/O Priority Manager - 50TB Indicator        7845
-I/O Priority Manager - 100TB Indicator       7850


                              Machine      Feature
         Description          type   Model number

         System Storage DS8700    2422   94E


         Administrative indicators:
         -IBM System Storage ProtecTIER indicator   0960

         DS8000 Licensed Machine Code:
         -DS8000 LMC R6.1                       1822

         Host Adapters:
         -8 Gb 4 port SW FCP/FICON Adapter PCIe     3153
         -8 Gb 4 port LW FCP/FICON Adapter PCIe     3253


                              Machine      Feature
         Description          type   Model number

         System Storage DS8700    2423   941

         Licensed Function Indicators:
         -I/O Priority Manager                  0784

         Administrative indicators:
         -IBM System Storage ProtecTIER indicator   0960

         DS8000 Licensed Machine Code:
         -DS8000 LMC R6.1                       1722

         Host Adapters:
         -8 Gb 4 port SW FCP/FICON Adapter PCIe     3153
         -8 Gb 4 port LW FCP/FICON Adapter PCIe     3253

         Function Authorization Indicators:
         -I/O Priority Manager - inactive       7840
         -I/O Priority Manager - 1TB Indicator  7841
         -I/O Priority Manager - 5TB Indicator  7842
         -I/O Priority Manager - 10TB Indicator 7843
         -I/O Priority Manager - 25TB Indicator 7844
         -I/O Priority Manager - 50TB Indicator 7845
         -I/O Priority Manager - 100TB Indicator 7850


                              Machine      Feature
         Description          type   Model number

         System Storage DS8700    2423   94E

         Administrative indicators:
         -IBM System Storage ProtecTIER indicator   0960

         DS8000 Licensed Machine Code:
         -DS8000 LMC R6.1                       1822

         Host Adapters:
         -8 Gb 4 port SW FCP/FICON Adapter PCIe     3153
         -8 Gb 4 port LW FCP/FICON Adapter PCIe     3253
```

```
                                      Machine          Feature
        Description                   type    Model    number
        System Storage DS8700         2424    941

          Licensed Function Indicators:
          -I/O Priority Manager                        0784

          Administrative indicators:
          -IBM System Storage ProtecTIER indicator     0960

          DS8000 Licensed Machine Code:
          -DS8000 LMC R6.1                             1722

          Host Adapters:
          -8 Gb 4 port SW FCP/FICON Adapter PCIe       3153
          -8 Gb 4 port LW FCP/FICON Adapter PCIe       3253

          Function Authorization Indicators:
          -I/O Priority Manager - inactive             7840
          -I/O Priority Manager - 1TB Indicator        7841
          -I/O Priority Manager - 5TB Indicator        7842
          -I/O Priority Manager - 10TB Indicator       7843
          -I/O Priority Manager - 25TB Indicator       7844
          -I/O Priority Manager - 50TB Indicator       7845
          -I/O Priority Manager - 100TB Indicator      7850


                                      Machine          Feature
        Description                   type    Model    number

        System Storage DS8700         2424    94E

          Administrative indicators:
          -IBM System Storage ProtecTIER indicator     0960

          DS8000 Licensed Machine Code:
          -DS8000 LMC R6.1                             1822

          Host Adapters:
          -8 Gb 4 port SW FCP/FICON Adapter PCIe       3153
          -8 Gb 4 port LW FCP/FICON Adapter PCIe       3253


                                      Machine          Feature
        Description                   type    Model    number

        System Storage DS8800         2421    951

          Licensed Function Indicators:
          -Thin Provisioning Indicator                 0707
          -Easy Tier indicator                         0713
          -z/OS Distributed Data Backup indicator      0714
          -I/O Priority Manager                        0784

          Administrative indicators:
          -IBM System z B/C indicator                  0935
          -IBM System Storage ProtecTIER indicator     0960

          DS8000 Licensed Machine Code:
          -DS8000 LMC R6.1                             1722

          Disk enclosure filler
          -Disk enclosure half filler set              2998

          Processor memory:
          -16GB Processor memory                       4211

          SSD Disk Drive Sets:
          -300 GB SSD half drive set                   6006

          Function Authorization Indicators:
          -Thin Provisioning Indicator                 7071
          -Easy Tier indicator                         7083
          -z/OS Distributed Data Backup indicator      7094
```

```
-I/O Priority Manager - inactive            7840
-I/O Priority Manager - 1TB Indicator       7841
-I/O Priority Manager - 5TB Indicator       7842
-I/O Priority Manager - 10TB Indicator      7843
-I/O Priority Manager - 25TB Indicator      7844
-I/O Priority Manager - 50TB Indicator      7845
-I/O Priority Manager - 100TB Indicator     7850
```

Description	Machine type	Model	Feature number
System Storage DS8800	2421	95E	

```
Administrative indicators:
-IBM System z B/C indicator                 0935
-IBM System Storage ProtecTIER indicator    0960

DS8000 Licensed Machine Code:
DS8000 LMC R6.0                             1821
DS8000 LMC R6.1                             1822

Disk enclosure filler
-Disk enclosure half filler set            2998

SSD Disk Drive Sets:
-300 GB SSD half drive set                 6006
```

Description	Machine type	Model	Feature number
System Storage DS8800	2422	951	

```
Licensed Function Indicators:
-Thin Provisioning Indicator                0707
-Easy Tier indicator                        0713
-z/OS Distributed Data Backup indicator     0714
-I/O Priority Manager                       0784

Administrative indicators:
-IBM System z B/C indicator                 0935
-IBM System Storage ProtecTIER indicator    0960

DS8000 Licensed Machine Code:
-DS8000 LMC R6.1                            1722

Disk enclosure filler
-Disk enclosure half filler set            2998

Processor memory:
-16GB Processor memory                      4211

SSD Disk Drive Sets:
-300 GB SSD half drive set                 6006

Function Authorization Indicators:
-Thin Provisioning Indicator                7071
-Easy Tier indicator                        7083
-z/OS Distributed Data Backup indicator     7094

-I/O Priority Manager - inactive            7840
-I/O Priority Manager - 1TB Indicator       7841
-I/O Priority Manager - 5TB Indicator       7842
-I/O Priority Manager - 10TB Indicator      7843
-I/O Priority Manager - 25TB Indicator      7844
-I/O Priority Manager - 50TB Indicator      7845
-I/O Priority Manager - 100TB Indicator     7850
```

```
                                     Machine        Feature
           Description               type    Model  number

           System Storage DS8800     2422    95E

           Administrative indicators:
           -IBM System z B/C indicator                0935
           -IBM System Storage ProtecTIER indicator   0960

           DS8000 Licensed Machine Code:
           DS8000 LMC R6.0                            1821
           DS8000 LMC R6.1                            1822

           Disk enclosure filler
           -Disk enclosure half filler set           2998

           SSD Disk Drive Sets:
           -300 GB SSD half drive set                6006


                                     Machine        Feature
           Description               type    Model  number

           System Storage DS8800     2423    951

           Licensed Function Indicators:
           -Thin Provisioning Indicator              0707
           -Easy Tier indicator                      0713
           -z/OS Distributed Data Backup indicator   0714
           -I/O Priority Manager                     0784

           Administrative indicators:
           -IBM System z B/C indicator               0935
           -IBM System Storage ProtecTIER indicator  0960

           DS8000 Licensed Machine Code:
           -DS8000 LMC R6.1                          1722

           Disk enclosure filler
           -Disk enclosure half filler set           2998

           Processor memory:
           -16GB Processor memory                    4211

           SSD Disk Drive Sets:
           -300 GB SSD half drive set                6006

           Function Authorization Indicators:
           -Thin Provisioning Indicator              7071
           -Easy Tier indicator                      7083
           -z/OS Distributed Data Backup indicator   7094

           -I/O Priority Manager - inactive          7840
           -I/O Priority Manager - 1TB Indicator     7841
           -I/O Priority Manager - 5TB Indicator     7842
           -I/O Priority Manager - 10TB Indicator    7843
           -I/O Priority Manager - 25TB Indicator    7844
           -I/O Priority Manager - 50TB Indicator    7845
           -I/O Priority Manager - 100TB Indicator   7850


                                     Machine        Feature
           Description               type    Model  number

           System Storage DS8800     2423    95E

           Administrative indicators:
           -IBM System z B/C indicator               0935
           -IBM System Storage ProtecTIER indicator  0960

           DS8000 Licensed Machine Code:
           DS8000 LMC R6.0                           1821
```

```
DS8000 LMC R6.1                              1822

Disk enclosure filler
-Disk enclosure half filler set             2998

SSD Disk Drive Sets:
-300 GB SSD half drive set                  6006
```

| | Machine | | Feature |
Description	type	Model	number
System Storage DS8800	2424	951	

```
Licensed Function Indicators:
-Thin Provisioning Indicator                0707
-Easy Tier indicator                        0713
-z/OS Distributed Data Backup indicator     0714
-I/O Priority Manager                       0784

Administrative indicators:
-IBM System z B/C indicator                 0935
-IBM System Storage ProtecTIER indicator    0960

DS8000 Licensed Machine Code:
-DS8000 LMC R6.1                            1722

Disk enclosure filler
-Disk enclosure half filler set             2998

Processor memory:
-16GB Processor memory                      4211

SSD Disk Drive Sets:
-300 GB SSD half drive set                  6006

Function Authorization Indicators:
-Thin Provisioning Indicator                7071
-Easy Tier indicator                        7083
-z/OS Distributed Data Backup indicator     7094

-I/O Priority Manager - inactive            7840
-I/O Priority Manager - 1TB Indicator       7841
-I/O Priority Manager - 5TB Indicator       7842
-I/O Priority Manager - 10TB Indicator      7843
-I/O Priority Manager - 25TB Indicator      7844
-I/O Priority Manager - 50TB Indicator      7845
-I/O Priority Manager - 100TB Indicator     7850
```

| | Machine | | Feature |
Description	type	Model	number
System Storage DS8800	2424	95E	

```
Administrative indicators:
-IBM System z B/C indicator                 0935
-IBM System Storage ProtecTIER indicator    0960

DS8000 Licensed Machine Code:
DS8000 LMC R6.0                             1821
DS8000 LMC R6.1                             1822

Disk enclosure filler
-Disk enclosure half filler set             2998

SSD Disk Drive Sets:
-300 GB SSD half drive set                  6006
```

```
Feature change options

                             Feature Install* Feature   Feature  Feature
Description                  number  type     conversion exchange remove

Licensed Function Indicators:
-Thin Provisioning           0707    Both     No         No       Yes
-Easy Tier indicator         0713    Both     No         No       Yes
-z/OS Distributed Data       0714    Both     No         No       Yes
 Backup indicator
-I/O Priority Manager        0784    Both     No         No       Yes

Administrative indicators:
- IBM System z B/C indicator 0935    Both     No         No       Yes
- IBM System Storage         0960    Both     No         No       Yes
   ProtecTIER indicator

DS8000 Licensed Machine Code:
-DS8000 LMC R6.1             1722    Both     No         No       Yes
-DS8000 LMC R6.0 indicator   1821    Both     No         No       Yes
-DS8000 LMC R6.1 indicator   1822    Both     No         No       Yes

Disk enclosure filler
-Disk enclosure half         2998    Both     No         No       Yes
 filler set
Host Adapters:
-8Gb 4 port SW FCP/FICON     3153    Both     Yes        No       No
 Adapter PCIe
-8Gb 4 port LW FCP/FICON     3253    Both     Yes        No       No
 Adapter PCIe

Processor Memory:
-16 GB Processor Memory      4211    Both     Yes        No       No
  (2-Way only)

SSD Disk Drive Sets:
-300 GB SSD half drive set   6006    Both     Yes        No       No

Function Authorization Indicators:
-Thin Provisioning Indicator 7071    Both     No         No       Yes
-IBM System Storage Easy     7083    Both     No         No
 Tier indicator
-z/OS Distributed Data       7094    Both     No         No       Yes
 Backup indicator

-I/O Priority Manager        7840    Both     No         No       Yes
-inactive
-I/O Priority Manager        7841    Both     No         No       Yes
-1TB Indicator
-I/O Priority Manager        7842    Both     No         No       Yes
-5TB Indicator
-I/O Priority Manager        7843    Both     No         No       Yes
-10TB Indicator
-I/O Priority Manager        7844    Both     No         No       Yes
-25TB Indicator
-I/O Priority Manager        7845    Both     No         No       Yes
-50TB Indicator
-I/O Priority Manager        7850    Both     No         No       Yes
-100TB Indicator
```

* 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.

Pricing terms

Prices in the following PDF prices link are suggested list prices on day of announcement for the U.S. only. They are provided for your information only. Dealer prices may vary, and prices may also vary by country. IBM list price does not include tax or shipping and is subject to change without notice.

ENUS-111-080-List_prices_2011_05_09.PDF

Feature conversion purchase price

Feature Conversions (Machine Types 2421, 2422, 2423, and 2424 Models 941 and 94E):

Feature from	to	Returned parts*	Description	Continuous maintenance
Host adapter:				
3143	3153	Yes	Host adapter conversion	Yes
3143	3253	Yes	Host adapter conversion	Yes
3153	3253	Yes	Host adapter conversion	Yes
3243	3153	Yes	Host adapter conversion	Yes
3243	3253	Yes	Host adapter conversion	Yes
3245	3153	Yes	Host adapter conversion	Yes
3245	3253	Yes	Host adapter conversion	Yes
3253	3153	Yes	Host adapter conversion	Yes

Feature Conversions (Machine Types 2421, 2422, 2423, and 2424 Models 951):

Feature from	to	Returned parts*	Description	Continuous maintenance
4211	4212	No	Processor memory conversion	Yes
4211	4213	Yes	Processor memory conversion	Yes

Feature Conversions (Machine Types 2421, 2422, 2423, and 2424 Models 951 and 95E):

Feature from	to	Returned parts*	Description	Continuous maintenance
6006	6008	No	Solid State Disk drive conversion	Yes

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

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