



# IBM System Storage DS8700 and DS8800 (M/T 239x) delivers DS8000 Function Authorization for I/O Priority Manager and other advanced features

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## At a glance

The DS8000™ series Function Authorizations establish the extent of IBM® authorization for use of the licensed functions on the IBM System Storage® DS8000 series.

The DS8000 series now offers Function Authorizations for IBM System Storage DS8800 series (M/T 239x) high-performance flagship - Feature numbers 7xxx (239x LFA).

## Overview

DS8000 series Function Authorizations are for billing purposes only and establish the extent of IBM authorization for use of the licensed functions on an IBM System Storage DS8000 series (IBM 242x).

Function Authorizations are now offered for:

- 2396 Model LFA: I/O Priority Manager (feature number 784x-7850)
- 2397 Model LFA: I/O Priority Manager (feature number 784x-7850)
- 2398 Model LFA: I/O Priority Manager (feature number 784x-7850)
- 2399 Model LFA: I/O Priority Manager (feature number 784x-7850)

For more information, refer to the following announcements on the DS8000 series and licensed functions:

- 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 [110-216](#), dated October 07, 2010, IBM System Storage DS8800 series (M/T 239x) high-performance flagship - Function Authorizations.

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## Key prerequisites

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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.

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## Planned availability date

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June 3, 2011

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## Description

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The following licensed functions are available on the IBM System Storage DS8000 series (IBM 242x):

Licensed Function	Description
Operating Environment	IBM System Storage DS® Operating Environment
Thin Provisioning	IBM System Storage Thin Provisioning
FICON Attachment	IBM System Storage FICON® Attachment
High Performance FICON	IBM System Storage High Performance FICON for System z
IBM System Storage Easy Tier	IBM System Storage Easy Tier
z/OS Distributed Data Backup	IBM System Storage z/OS® Distributed Data Backup
FlashCopy	IBM System Storage FlashCopy
Space Efficient FlashCopy®	IBM System Storage Space Efficient FlashCopy
Metro/Global Mirror	IBM System Storage Metro/Global Mirror
Metro Mirror	IBM System Storage Metro Mirror IBM System Storage Global Copy
Global Mirror	IBM System Storage Global Mirror IBM System Storage Global Copy
z/OS Global Mirror	IBM System Storage z/OS Global Mirror
z/OS Metro/Global Mirror Incremental Resync	IBM System Storage z/OS Metro/Global Mirror Incremental Resync
Parallel Access Volumes	IBM Parallel Access Volumes
I/O Priority Manager	DS8000 I/O Priority Manager
HyperPAV	IBM HyperPAV

All DS8800 series licensed functions are enabled, authorized, managed, activated, and enforced based upon the physical capacity contained in a 242x system. In the context of licensed functions, these terms are defined as follows:

- *242x system* refers to the 242x base unit and all physically attached 242x expansion units:
  - A 242x base unit refers to model 951.
  - A 242x expansion unit refers to model 95E.
- *Enablement* refers to the selection of a 242x licensed function indicator feature number to technically activate the associated license d function.
- *Authorization* refers to the acquisition of a DS8000 series Function Authorization (IBM 239x) feature number to establish the extent of IBM authorization (license size in terms of physical capacity) for use of an associated licensed function. This is also referred to as the *authorization level*.
- *Management* refers to client use of the Disk Storage Feature Activation (DSFA) application to select the license scope, assign the license value, and deactivate a licensed function.
- *Activation* refers to the client retrieval and installation of the feature activation code into the 242x system. The feature activation code is made available by IBM and obtained using the DSFA application.
- *Enforcement* refers to logic and other technology within the 242x Licensed Machine Code to maintain compliance with established IBM authorization levels.

## Enablement

Each licensed function is enabled for a 242x system through the selection of the appropriate licensed function indicator feature number on the 242x base unit.

Licensed Function	Licensed Function Indicator
Operating Environment	242x feature numbers 0700 and 70xx
Thin Provisioning	242x feature numbers 0707 and 7071
FICON Attachment	242x feature numbers 0703 and 7091
High Performance FICON	242x feature numbers 0709 and 7092
IBM System Storage Easy Tier	242x feature numbers 0713 and 7083
z/OS Distributed Data Backup	242x feature numbers 0714 and 7094
FlashCopy	242x feature numbers 0720 and 72xx
Space Efficient FlashCopy	242x feature numbers 0730 and 73xx
Metro/Global Mirror	242x feature numbers 0742 and 74xx
Metro Mirror	242x feature numbers 0744 and 75xx
Global Mirror	242x feature numbers 0746 and 75xx
z/OS Global Mirror	242x feature numbers 0760 and 76xx
z/OS Metro/Global Mirror	242x feature numbers 0763 and 76xx
Incremental Resync	
Parallel Access Volumes	242x feature numbers 0780 and 78xx
I/O Priority Manager	242x feature numbers 0784 and 78xx
HyperPAV	242x feature numbers 0782 and 7899

Each licensed function indicator feature selected on a 242x base unit enables that function at the system level. These features are not selected on any attached 242x expansion units.

## Authorization

The extent of IBM authorization for the use of a licensed function on a 242x system is established by acquiring 239x function authorization models and feature numbers for the 242x base unit:

Licensed Function	Function Authorization
Operating Environment	239x Model LFA feature number 7030-7065
Thin Provisioning	239x Model LFA feature number 7071
FICON Attachment	239x Model LFA feature number 7091
High Performance FICON	239x Model LFA feature number 7092
IBM System Storage Easy Tier	239x Model LFA feature number 7083
z/OS Distributed Data Backup	239x Model LFA feature number 7094
FlashCopy	239x Model LFA feature number 7250-7260
Space Efficient FlashCopy	239x Model LFA feature number 7350-7360
Metro/Global Mirror	239x Model LFA feature number 7480-7490
Metro Mirror	239x Model LFA feature number 7500-7510

Global Mirror	239x Model LFA feature number 7520-7530
z/OS Global Mirror	239x Model LFA feature number 7650-7660
z/OS Metro/Global Mirror	239x Model LFA feature number 7680-7690
Incremental Resync	
Parallel Access Volumes	239x Model LFA feature number 7820-7830
I/O Priority Manager	239x Model LFA feature number 7840-7850
HyperPAV	239x Model LFA feature number 7899

Each function authorization acquired for a 242x base unit establishes the authorization level for the 242x system. For example, a system with a Model 951 and two Model 95E expansion units requires only one operating environment (239x Model LFA feature numbers 70xx) function authorization. Therefore, the authorization level(s) established by acquiring one or more function authorizations for the Model 951 must also cover the physical capacity of the attached Model 95E expansion units.

The authorization level provided by each feature number is stated within the feature number description. The unit represents physical capacity, where a terabyte (TB) equals one trillion bytes. A 242x system's total authorization level for a given licensed function is the sum of the units (TB) associated with all the acquired feature numbers.

## Management

Licensed functions are managed using the Disk Storage Feature Activation (DSFA) application at

<http://www.ibm.com/storage/dsfa>

To access DSFA, you will be required to enter information about your 242x machine. You can find this information on the Storage Unit General Properties page in the IBM System Storage DS8000 Storage Manager application.

Management activities include:

- Selection of a license scope
- Assignment of a license value
- Deactivation of a licensed function

**License scope:** Licensed functions are activated and enforced within a defined license scope. License scope refers to the type of storage, and therefore the type of servers, that the function can be used with:

- Fixed Block (FB): The function can be used only with data from Fibre Channel-attached servers.
- Count Key Data (CKD): The function can be used only with data from FICON-attached servers.
- Both FB and CKD (ALL): The function can be used with data from all attached servers.

Selected licensed functions have multiple license scope options, while other functions have only a single license scope.

Licensed Function	License Scope Options
Operating Environment	ALL
Thin Provisioning	FB
FICON Attachment	CKD
High Performance FICON	CKD
IBM System Storage Easy Tier	FB, CKD, or ALL
z/OS Distributed Data Backup	CKD
FlashCopy	FB, CKD, or ALL
Space Efficient FlashCopy	FB, CKD, or ALL
Metro/Global Mirror	FB, CKD, or ALL
Metro Mirror	FB, CKD, or ALL
Global Mirror	FB, CKD, or ALL

z/OS Global Mirror	CKD
z/OS Metro/Global Mirror	CKD
Incremental Resync	
Parallel Access Volumes	CKD
I/O Priority Manager	FB
HyperPAV	CKD

If a licensed function has multiple license scope options, you will be required to select a license scope during the initial retrieval of the feature activation code. This activity is performed using the DSFA application.

The license scope is not selected while ordering function authorization feature numbers; the feature numbers only establish the extent of IBM authorization (in terms of physical capacity) regardless of the storage type.

You can also change the license scope using the DSFA application after a licensed function has been activated. A new feature activation code will be generated and when you install it into the machine, the function will be activated and enforced using the newly selected license scope. Only an increase in the license scope (changing FB or CKD to ALL) is a nondisruptive activity. A lateral change (changing FB to CKD or changing CKD to FB) or a reduction of the license scope (changing ALL to FB or CKD) is a disruptive activity and requires a machine IML.

**License value:** Licensed functions are activated and enforced based upon an assigned license value.

License value refers to extent of IBM authorization and is referenced as TB of physical capacity.

On Model 951, license value assignment is an optional activity that can be performed using the DSFA application.

On these models, the feature activation codes will always be generated using the total license value for each licensed function, unless assigned a license value of zero (0.0 TB).

**Deactivation:** Assigning a license value of zero (0.0 TB) provides the ability to deactivate (disable) a licensed function. A new feature activation code will be generated and when installed into the machine and the function will be deactivated during the next IML of the machine.

**Activation:** Licensed functions are activated by the installation of feature activation codes into the 242x system. The feature activation codes are made available by IBM and are obtained using the DSFA application.

**Enforcement:** The 242x Licensed Machine Code contains logic and other technology to maintain compliance with established authorization levels. For each storage type, you will be allowed to logically configure physical capacity (that is, disk drives) only up to the extent of your authorization level for that storage type. If you have multiple licensed functions with the same license scope, the extent of IBM authorization is defined by the licensed function with the lowest license value.

For a 242x machine with Standby Capacity on Demand (CoD) disk drives (#2xx9 features), activation (logical configuration) of CoD disk drives may exceed the extent of IBM authorization for a licensed function, in which case an increased authorization level must be acquired.

### **Accessibility by people with disabilities**

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

[http://www.ibm.com/able/product\\_accessibility/index.html](http://www.ibm.com/able/product_accessibility/index.html)

## Section 508 of the U.S. Rehabilitation Act

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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 via IBM's Web site at

[http://www.ibm.com/able/product\\_accessibility/index.html](http://www.ibm.com/able/product_accessibility/index.html)

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## Reference information

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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 [110-216](#), dated October 07, 2010, IBM System Storage DS8800 series (M/T 239x) high-performance flagship - Function Authorizations.

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>

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## Product number

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Description	Machine type	Model	Feature
DS8000 series Function Authorization	2396	LFA	
Administrative indicators:			
- IBM System z® B/C indicator			0935
- IBM System Storage ProtecTIER® indicator			0960
-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
DS8000 series Function Authorization	2397	LFA	
Administrative indicators:			
- IBM System z B/C indicator			0935
- IBM System Storage ProtecTIER indicator			0960

-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
DS8000 series Function Authorization	2398	LFA	
Administrative indicators:			
- IBM System z B/C indicator			0935
- IBM System Storage ProtecTIER indicator			0960
-I/O Priority Manager - inactive			
-I/O Priority Manager - 1TB Indicator			7840
-I/O Priority Manager - 5TB Indicator			7841
-I/O Priority Manager - 10TB Indicator			7842
-I/O Priority Manager - 25TB Indicator			7843
-I/O Priority Manager - 50TB Indicator			7844
-I/O Priority Manager - 100TB Indicator			7845

Description	Machine type	Model	Feature
DS8000 series Function Authorization	2399	LFA	
Administrative indicators:			
- IBM System z B/C indicator			0935
- IBM System Storage ProtecTIER indicator			0960
-I/O Priority Manager - inactive			
-I/O Priority Manager - 1TB Indicator			7840
-I/O Priority Manager - 5TB Indicator			7841
-I/O Priority Manager - 10TB Indicator			7842
-I/O Priority Manager - 25TB Indicator			7843
-I/O Priority Manager - 50TB Indicator			7844
-I/O Priority Manager - 100TB Indicator			7845

### **Business Partner information**

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

<https://www.ibm.com/partnerworld/mem/sla.jsp?num=111-081>

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### **Publications**

No publications are shipped with the DS8000 series Function Authorizations.

The IBM Systems Information Center provides you with a single information center where you can access product documentation for IBM systems hardware, operating systems, and server software. Through a consistent framework, you can efficiently find information and personalize your access. The IBM Systems Information Center is at

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

### **IBM Publications Center Portal**

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

The Publications Center is a worldwide central repository for IBM product publications and marketing material with a catalog of 70,000 items. Extensive search facilities are provided, as well as payment options via credit card. A large number of publications are available online in various file formats, which can currently be downloaded free of charge.

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## Services

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### Global Technology Services

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

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

For details on available services, contact your IBM representative or visit

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

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

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

For details on education offerings related to specific products, visit

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

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

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## Technical information

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### Specified operating environment

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#### Hardware requirements

Each DS8000 series Function Authorization (IBM 239x) establishes the extent of IBM authorization for one or more licensed functions acquired for an IBM System Storage DS8000 series (IBM 242x). Each 239x function authorization is applicable only for the specific 242x (by serial number) for which it was acquired and is not transferable to another serial numbered 242x.

Each 239x function authorization requires a corequisite licensed function indicator feature number on the 242x for which it was acquired:

Licensed function	IBM 242x Indicator Feature number	IBM 239x Function Authorization Models and Feature numbers
Operating Environment	0700 and 70xx	Model LFA 7030-7065
Thin Provisioning	0707 and 7071	Model LFA 7071
FICON Attachment	0703 and 7091	Model LFA 7091
High Performance FICON	0709 and 7092	Model LFA 7092
IBM System Storage Easy Tier	0713 and 7083	Model LFA 7083
z/OS Distributed Data Backup	0714 and 7094	Model LFA 7094
FlashCopy	0720 and 72xx	Model LFA 7250-7260
Space Efficient FlashCopy	0730 and 73xx	Model LFA 7350-7360
Metro/Global Mirror	0742 and 74xx	Model LFA 7480-7490
Metro Mirror	0744 and 75xx	Model LFA 7500-7510
Global Mirror	0746 and 75xx	Model LFA 7520-7530



z/OS Global Mirror	0760 and 76xx	Model LFA 7650-7660
z/OS Metro/Global Mirror	0763 and 76xx	Model LFA 7680-7690
Incremental Resync		
Parallel Access Volumes	0780 and 78xx	Model LFA 7820-7830
I/O Priority Manager	0784 and 78xx	Model LFA 7840-7850
HyperPAV	0782 and 7899	Model LFA 7899

**Operating environment:** A per TB unit operating environment license and a value unit operating environment license are required on every 242x base unit (Model 951). The extent of IBM authorization acquired through the 239x Model LFA feature numbers must cover the physical capacity and the value units required for each acquired drive set of the 242x system, where system is defined as the base unit and all physically attached expansion units (excluding Standby CoD capacity).

Feature	Description	Corequisite
7030	OEL - inactive indicator	Model LFA feature #7030
7031	OEL - 1 TB unit indicator	Model LFA feature #7031
7032	OEL - 5 TB unit indicator	Model LFA feature #7032
7033	OEL - 10 TB unit indicator	Model LFA feature #7033
7034	OEL - 25 TB unit indicator	Model LFA feature #7034
7035	OEL - 50 TB unit indicator	Model LFA feature #7035
7040	OEL - 100 TB unit indicator	Model LFA feature #7040
7045	OEL - 200 TB unit indicator	Model LFA feature #7045
7050	OEL - inactive indicator	Model LFA feature #7050
7051	OEL - 1 Value Unit indicator	Model LFA feature #7051
7052	OEL - 5 Value Unit indicator	Model LFA feature #7052
7053	OEL - 10 Value Unit indicator	Model LFA feature #7053
7054	OEL - 25 Value Unit indicator	Model LFA feature #7054
7055	OEL - 50 Value Unit indicator	Model LFA feature #7055
7060	OEL - 100 Value Unit indicator	Model LFA feature #7060
7065	OEL - 200 value Unit indicator	Model LFA feature #7065

Feature number	Size	Drive type	Drive speed	Encryption drive	Non-encryption drive	Value Units required
6006	300 GB	SSD	N/A	No	Yes	14.5
6008	300 GB	SSD	N/A	No	Yes	29.0
2208	146 GB	SAS	15K rpm	No	Yes	4.8
2608	450 GB	SAS	10K rpm	No	Yes	9.0
2708	600 GB	SAS	10K rpm	No	Yes	11.5
5608	450 GB	SAS	10K rpm	Yes	No	9.0
5708	600 GB	SAS	10K rpm	Yes	No	11.5

The value unit operating environment licenses (Model LFA 7050-7065) are required in addition to the per TB unit operating environment licenses (features #7030-7045). For each drive set listed above, the corresponding number of value units must be purchased. This is required for the operating environment and for a valid system configuration.

The per TB unit operating environment license feature activation code can be retrieved and activated by using the DSFA application. The value unit operating environment licenses are mainly a pricing mechanism, so there will not be any feature activation code to be retrieved and activated by using the DSFA application.

If the operating environment license has not been acquired and activated on the machine, disk drives installed within the 242x system cannot be logically configured for use. Upon activation of the operating environment, disk drives can be logically configured up to the extent of IBM authorization.

As additional disk drives are installed, the extent of IBM authorization must be increased by acquiring additional 239x Model LFA feature numbers. Otherwise, the additional disk drives cannot be logically configured for use.

For a 242x system with Standby CoD disk drives (#2xx9 features), activation (logical configuration) of CoD disk drives may exceed the extent of IBM

authorization for the operating environment, in which case an increased authorization level must be acquired.

### **Limitations**

- Conversions between machine types is not supported.
- The intermix of models and features between machine types (M/T) is not supported such as, intermix of Machine Type 2396 Model LFA and a Machine Type 2398 Model LFA is not supported.
- The amount of physical capacity within a 242x system that can be logically configured for use will be enforced by the 242x Licensed Machine Code to maintain compliance with the extent of IBM authorization established for licensed functions activated on the machine. The 242x Licensed Machine Code will not allow the logical configuration of physical capacity beyond the extent of IBM authorization (except when activating Standby CoD capacity).
- The lateral change or reduction in the license scope, is a disruptive activity and requires a machine IML (Model 951).
  - A lateral change is defined as changing the license scope from FB to CKD or from CKD to FB.
  - A reduction is defined as changing the license scope from ALL to FB or from ALL to CKD.
  - The deactivation of an activated licensed function occurs at the next machine IML (Model 951).

### **Planning information**

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#### **Customer responsibilities**

#### **Determining the required extent of IBM authorization**

You are responsible for determining the extent of IBM authorization required for each licensed function. Your disk marketing specialist can help you with this activity.

Below are some general guidelines:

- The required authorization level depends upon the license scope:
  - If the license scope is FB, the authorization level must be equal to or greater than the total amount of physical capacity within the system that will be logically configured as FB.
  - If the license scope is CKD, the authorization level must be equal to or greater than the total amount of physical capacity within the system that will be logically configured as CKD.
  - If the license scope is ALL, the authorization level must be equal to or greater than the total system physical capacity.
- You can exclude Standby CoD disk drives (#2xx9 features) from your authorization level calculation. However, you must increase your authorization levels as Standby CoD disk drives are activated (logically configured for use).
- Refer to the *IBM System Storage DS8000 Introduction and Planning Guide* (GC27-2297) for physical capacity calculation guidelines.

#### **Licensed Function Management and activation**

You are responsible for licensed function management and activation activities:

- Management refers to use of the Disk Storage Feature Activation (DSFA) application to select the license scope and assign the license value.
- Activation refers to the retrieval and installation of the feature activation code into the 242x system. The feature activation code is made available by IBM and obtained using the DSFA application.

These activities are your responsibility during the initial activation of a licensed function and when you increase the extent of IBM authorization.

**DSFA Application:** To access DSFA, you will be required to enter information about your 242x machine. You can find this information on the Storage Unit General Properties page in the IBM System Storage DS8000 Storage Manager application.

The DSFA application is available at

<http://www.ibm.com/storage/dsfa>

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

### ***Cable orders***

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***

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This product uses the security and auditability features of the host hardware, host software, and/or 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.

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## **IBM Electronic Services**

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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>

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## Terms and conditions

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### ***MES Discount Applicable***

Equal to the volume commitment discount

### ***Field Installable Feature***

Yes

### ***Warranty period***

Warranty for a DS8000 series licensed function is entitled as a feature of the 242x machine for which the licensed function is authorized, under the terms and conditions associated with that machine.

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***

Customers are responsible for installation according to the instructions IBM provides with the machine.

### ***Licensed Internal 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 for which the customer has acquired.

You can obtain the agreement at

[http://www-1.ibm.com/servers/support/machine\\_warranties/machine\\_code.html](http://www-1.ibm.com/servers/support/machine_warranties/machine_code.html)

or by contacting your IBM representative.

DS8000 series Function Authorizations (IBM 239x) are acquired for 242x base unit models and establish the extent of IBM authorization for the licensed function at the 242x system level. A 242x system is defined as the 242x base unit model (Model 931, 932, and 9B2) and any physically attached 242x expansion unit models (Model 92E and 9AE).

Each DS8000 Function Authorization acquired for a 242x Model 9B2 establishes the extent of IBM authorization for one or more licensed functions on all System Storage LPARs within that system.

## Pricing

Description	Machine type	Model	Feature number
DS8000 series Function Authorization	2396	LFA	
Administrative Indicators:			
IBM System z B/C Indicator			0935
IBM System Storage ProtecTIER indicator			0960
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
DS8000 series Function Authorization	2397	LFA	
Administrative Indicators:			
IBM System z B/C Indicator			0935
IBM System Storage ProtecTIER indicator			0960
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
DS8000 series Function Authorization	2398	LFA	
Administrative Indicators:			
IBM System z B/C Indicator			0935
IBM System Storage ProtecTIER indicator			0960
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
DS8000 series Function Authorization	2399	LFA	
Administrative Indicators:			
IBM System z B/C Indicator			0935
IBM System Storage ProtecTIER indicator			0960
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

## Feature change options

Description	Feature number	Install type	Feature conversion	Feature exchange	Feature remove
IBM System z B/C Indicator	0935	Both	No	No	Yes
IBM System Storage ProtecTIER indicator	0960	Both	No	No	Yes
I/O Priority Manager - inactive	7840	Both	No	No	Yes
I/O Priority Manager - 1TB Indicator	7841	Both	No	No	Yes
I/O Priority Manager - 5TB Indicator	7842	Both	No	No	Yes
I/O Priority Manager - 10TB Indicator	7843	Both	No	No	Yes
I/O Priority Manager - 25TB Indicator	7844	Both	No	No	Yes
I/O Priority Manager - 50TB Indicator	7845	Both	No	No	Yes
I/O Priority Manager - 100TB Indicator	7850	Both	No	No	Yes

The feature change options define the approach by which the feature number is removed from the machine and/or IBM machine-level inventory records.

- 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

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