



# IBM System Storage DS8700 series (M/T 239x) high-performance flagship -- Function Authorizations

## Table of contents

<b>1</b>	<a href="#">Overview</a>	<b>15</b>	<a href="#">Publications</a>
<b>3</b>	<a href="#">Key prerequisites</a>	<b>16</b>	<a href="#">Technical information</a>
<b>3</b>	<a href="#">Planned availability date</a>	<b>20</b>	<a href="#">Prices</a>
<b>3</b>	<a href="#">Description</a>	<b>52</b>	<a href="#">Order now</a>
<b>8</b>	<a href="#">Product number</a>		

## 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.

This announcement introduces the Function Authorizations for IBM System Storage DS8700 series (M/T 239x) high-performance flagship -- feature numbers 7xxx (239x LFA).

For ordering, contact your IBM representative, an IBM Business Partner, or IBM Americas Call Centers at 800-IBM-CALL (Reference: YE001).

## Overview

The 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). This announcement introduces the Function Authorizations for:

2396 Model LFA

- IBM System Storage DS® Operating Environment (OEL feature numbers 70xx)
- IBM Database Protection Feature License (feature number 7080)
- IBM System Storage FICON® Attachment License (feature number 7091)
- IBM System Storage High Performance FICON for System z® (feature number 7092)
- IBM System Storage FlashCopy® (PTC feature numbers 72xx)
- IBM System Storage Space Efficient FlashCopy (SE feature numbers 73xx)
- IBM System Storage Metro/Global Mirror (MGM feature numbers 74xx)
- IBM System Storage Metro Mirror includes Global Copy (MM feature numbers 75xx)
- IBM System Storage Global Mirror includes Global Copy (GM feature numbers 75xx)
- IBM System Storage z/OS® Global Mirror (RMZ feature numbers 76xx)
- IBM System Storage z/OS Metro/Global Mirror Incremental Resync (RMZ Resync feature numbers 76xx)
- IBM Parallel Access Volumes (PAV feature numbers 78xx)
- IBM HyperPAV (feature number 7899)

#### 2397 Model LFA

- IBM System Storage DS Operating Environment (OEL feature numbers 70xx)
- IBM Database Protection Feature License (feature number 7080)
- IBM System Storage FICON Attachment License (feature number 7091)
- IBM System Storage High Performance FICON for System z (feature number 7092)
- IBM System Storage FlashCopy (PTC feature numbers 72xx)
- IBM System Storage Space Efficient FlashCopy (SE feature numbers 73xx)
- IBM System Storage Metro/Global Mirror (MGM feature numbers 74xx)
- IBM System Storage Metro Mirror includes Global Copy (MM feature numbers 75xx)
- IBM System Storage Global Mirror includes Global Copy (GM feature numbers 75xx)
- IBM System Storage z/OS Global Mirror (RMZ feature numbers 76xx)
- IBM System Storage z/OS Metro/Global Mirror Incremental Resync (RMZ Resync feature numbers 76xx)
- IBM Parallel Access Volumes (PAV feature numbers 78xx)
- IBM HyperPAV (feature number 7899)

#### 2398 Model LFA

- IBM System Storage DS Operating Environment (OEL feature numbers 70xx)
- IBM Database Protection Feature License (feature number 7080)
- IBM System Storage FICON Attachment License (feature number 7091)
- IBM System Storage High Performance FICON for System z (feature number 7092)
- IBM System Storage FlashCopy (PTC feature numbers 72xx)
- IBM System Storage Space Efficient FlashCopy (SE feature numbers 73xx)
- IBM System Storage Metro/Global Mirror (MGM feature numbers 74xx)
- IBM System Storage Metro Mirror includes Global Copy (MM feature numbers 75xx)
- IBM System Storage Global Mirror includes Global Copy (GM feature numbers 75xx)
- IBM System Storage z/OS Global Mirror (RMZ feature numbers 76xx)
- IBM System Storage z/OS Metro/Global Mirror Incremental Resync (RMZ Resync feature numbers 76xx)
- IBM Parallel Access Volumes (PAV feature numbers 78xx)
- IBM HyperPAV (feature number 7899)

#### 2399 Model LFA

- IBM System Storage DS Operating Environment (OEL feature numbers 70xx)
- IBM Database Protection Feature License (feature number 7080)
- IBM System Storage FICON Attachment License (feature number 7091)
- IBM System Storage High Performance FICON for System z (feature number 7092)
- IBM System Storage FlashCopy (PTC feature numbers 72xx)
- IBM System Storage Space Efficient FlashCopy (SE feature numbers 73xx)
- IBM System Storage Metro/Global Mirror (MGM feature numbers 74xx)
- IBM System Storage Metro Mirror includes Global Copy (MM feature numbers 75xx)
- IBM System Storage Global Mirror includes Global Copy (GM feature numbers 75xx)
- IBM System Storage z/OS Global Mirror (RMZ feature numbers 76xx)

- IBM System Storage z/OS Metro/Global Mirror Incremental Resync (RMZ Resync feature numbers 76xx)
- IBM Parallel Access Volumes (PAV feature numbers 78xx)
- IBM HyperPAV (feature number 7899)

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

- Hardware Announcement [108-870](#), dated October 21, 2008 (IBM System Storage DS8000 series (Machine types 2421, 2422, 2423, and 2424) delivers new functional capabilities (zHPF and RMZ resync))
- Hardware Announcement [108-327](#), dated August 12, 2008 (IBM System Storage DS8000 series (Machine types 2421, 2422, 2423, and 2424) delivers new flexibility and data protection options)
- Hardware Announcement [108-155](#), dated February 26, 2008 (IBM System Storage DS8000 series (Machine types 2421, 2422, 2423, and 2424) delivers IBM System z capabilities)
- Hardware Announcement [106-810](#), dated October 31, 2006 (IBM System Storage DS8000 Series - Machine type 239x - 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 DS8000 series and require DS8000 Licensed Machine Code (LMC) level 5.5.0.xx (bundle version 65.0.xx.xx), or later.

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## Planned availability date

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October 23, 2009:

Plant and field installation:

- IBM System Storage DS Operating Environment (OEL feature numbers 70xx)
- IBM Database Protection Feature License (feature number 7080)
- IBM System Storage FICON Attachment License (feature number 7091)
- IBM System Storage High Performance FICON for System z (feature number 7092)
- IBM System Storage FlashCopy (PTC feature numbers 72xx)
- IBM System Storage Space Efficient FlashCopy (SE feature numbers 73xx)
- IBM System Storage Metro/Global Mirror (MGM feature numbers 74xx)
- IBM System Storage Metro Mirror includes Global Copy (MM feature numbers 75xx)
- IBM System Storage Global Mirror includes Global Copy (GM feature numbers 75xx)
- IBM System Storage z/OS Global Mirror (RMZ feature numbers 76xx)
- IBM System Storage z/OS Metro/Global Mirror Incremental Resync (RMZ Resync feature numbers 76xx)
- IBM Parallel Access Volumes (PAV feature numbers 78xx)
- IBM HyperPAV (feature number 7899)

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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
Database Protection	IBM Database Protection Feature
FICON Attachment	IBM System Storage FICON Attachment
High Performance FICON	IBM System Storage High Performance FICON for System z
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
HyperPAV	IBM HyperPAV

All DS8700 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 the Models 941.
  - A 242x expansion unit refers to the Models 94E.

"Enablement" refers to the selection of a 242x licensed function indicator feature number to technically activate the associated licensed 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's 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
Database Protection	242x feature numbers 0708 and 7080
FICON Attachment	242x feature numbers 0703 and 7091
High Performance FICON	242x feature numbers 0709 and 7092
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
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
Database Protection	239x Model LFA feature number 7080
FICON Attachment	239x Model LFA feature number 7091
High Performance FICON	239x Model LFA feature number 7092
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
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 941 and two Model 94E 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 941 must also cover the physical capacity of the attached Model 94E expansion units.

The authorization level provided by each feature number is stated within the feature number description. The unit represents physical capacity, where a TB (terabyte) equals one trillion bytes. A 242x system's total authorization level for a given licensed function is the sum of the units (terabytes) 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
Database Protection	FB, CKD, or ALL
FICON Attachment	CKD
High Performance FICON	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
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 terabytes (TB) of physical capacity.

On the Model 941, license value assignment is an optional activity you can perform 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 you assign 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 you install it into the machine, the function will be deactivated during the next IML of the machine.

You can also reactivate a deactivated licensed function by changing the license value to a non-zero value. A new feature activation code will be generated and when you install it into the machine, the function will be activated. Reactivation is a nondisruptive activity.

When you deactivate a licensed function using the DSFA application, the installed function authorization feature numbers remain on the machine record. This means that you do not need to reacquire your function authorization feature numbers if you want to reactivate the licensed function at a future date.

### **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 CoD disk drives (#2xx7 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 DS8700 and IBMSystem Storage DS8700 Expansion Unit are capable, as of October 23, 2009, 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 US Section 508 Voluntary Product Accessibility Template (VPAT) can be requested via IBM's Web site at

[http://www-03.ibm.com/able/product\\_accessibility/index.html](http://www-03.ibm.com/able/product_accessibility/index.html)

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## **Reference information**

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

- Hardware Announcement [108-155](#), dated February 26, 2008, IBM System Storage DS8000 series (Machine types 2421, 2422, 2423, and 2424) delivers IBM System z capabilities
- Hardware Announcement [106-810](#), dated October 31, 2006, IBM System Storage DS8000 Series - Machine type 239x - Function Authorizations
- Hardware Announcement [106-809](#), dated October 31, 2006, IBM System Storage DS8000 series offers a one year "Enterprise Choice" length of warranty
- Hardware Announcement [106-813](#), dated October 31, 2006, IBM System Storage DS8000 series offers a two year "Enterprise Choice" length of warranty
- Hardware Announcement [106-808](#), dated October 31, 2006, IBM System Storage DS8000 series offers a three year "Enterprise Choice" length of warranty
- Hardware Announcement [106-814](#), dated October 31, 2006, IBM System Storage DS8000 series offers a four year "Enterprise Choice" length of warranty

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## Product number

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Description	Machine	Model	Feature
DS8000 series Function Authorization	2396	LFA	
Operating Environment (OEL) License:			
- OEL - inactive			7030
- OEL - 1 TB unit			7031
- OEL - 5 TB unit			7032
- OEL - 10 TB unit			7033
- OEL - 25 TB unit			7034
- OEL - 50 TB unit			7035
- OEL - 100 TB unit			7040
- OEL - 200 TB unit			7045
- OEL - Value Unit inactive			7050
- OEL - 1 Value Unit			7051
- OEL - 5 Value Unit			7052
- OEL - 10 Value Unit			7053
- OEL - 25 Value Unit			7054
- OEL - 50 Value Unit			7055
- OEL - 100 Value Unit			7060
- OEL - 200 Value Unit			7065
- DB protection indicator			7080
- FICON Attachment			7091
- High Performance FICON			7092
- PTC - inactive			7250
- PTC - 1 TB			7251
- PTC - 5 TB			7252
- PTC - 10 TB			7253
- PTC - 25 TB			7254
- PTC - 50 TB			7255
- PTC - 100 TB			7260
- SE - inactive			7350
- SE - 1 TB			7351
- SE - 5 TB			7352
- SE - 10 TB			7353
- SE - 25 TB			7354
- SE - 50 TB			7355
- SE - 100 TB			7360
- MGM - inactive			7480
- MGM - 1 TB			7481
- MGM - 5 TB			7482
- MGM - 10 TB			7483
- MGM - 25 TB			7484
- MGM - 50 TB			7485
- MGM - 100 TB			7490
- MM - inactive			7500
- MM - 1 TB			7501



- MM - 5 TB	7502
- MM - 10 TB	7503
- MM - 25 TB	7504
- MM - 50 TB	7505
- MM - 100 TB	7510
- GM - inactive	7520
- GM - 1 TB	7521
- GM - 5 TB	7522
- GM - 10 TB	7523
- GM - 25 TB	7524
- GM - 50 TB	7525
- GM - 100 TB	7530
- RMZ - inactive	7650
- RMZ - 1 TB	7651
- RMZ - 5 TB	7652
- RMZ - 10 TB	7653
- RMZ - 25 TB	7654
- RMZ - 50 TB	7655
- RMZ - 100 TB	7660
- RMZ resync - inactive	7680
- RMZ resync - 1 TB	7681
- RMZ resync - 5 TB	7682
- RMZ resync - 10 TB	7683
- RMZ resync - 25 TB	7684
- RMZ resync - 50 TB	7685
- RMZ resync - 100 TB	7690
- PAV - inactive	7820
- PAV - 1 TB	7821
- PAV - 5 TB	7822
- PAV - 10 TB	7823
- PAV - 25 TB	7824
- PAV - 50 TB	7825
- PAV - 100 TB	7830
- HyperPAV	7899

Description	Machine	Model	Feature
DS8000 series Function Authorization	2397	LFA	
Operating Environment (OEL) License:			
- OEL - inactive			7030
- OEL - 1 TB unit			7031
- OEL - 5 TB unit			7032
- OEL - 10 TB unit			7033
- OEL - 25 TB unit			7034
- OEL - 50 TB unit			7035
- OEL - 100 TB unit			7040
- OEL - 200 TB unit			7045
- OEL - Value Unit inactive			7050
- OEL - 1 value Unit			7051
- OEL - 5 value Unit			7052
- OEL - 10 Value Unit			7053
- OEL - 25 Value Unit			7054
- OEL - 50 Value Unit			7055
- OEL - 100 Value Unit			7060
- OEL - 200 Value Unit			7065
- DB protection indicator			7080
- FICON Attachment			7091
- High Performance FICON			7092
- PTC - inactive			7250
- PTC - 1 TB			7251
- PTC - 5 TB			7252
- PTC - 10 TB			7253
- PTC - 25 TB			7254
- PTC - 50 TB			7255
- PTC - 100 TB			7260

- SE - inactive	7350
- SE - 1 TB	7351
- SE - 5 TB	7352
- SE - 10 TB	7353
- SE - 25 TB	7354
- SE - 50 TB	7355
- SE - 100 TB	7360
- MGM - inactive	7480
- MGM - 1 TB	7481
- MGM - 5 TB	7482
- MGM - 10 TB	7483
- MGM - 25 TB	7484
- MGM - 50 TB	7485
- MGM - 100 TB	7490
- MM - inactive	7500
- MM - 1 TB	7501
- MM - 5 TB	7502
- MM - 10 TB	7503
- MM - 25 TB	7504
- MM - 50 TB	7505
- MM - 100 TB	7510
- GM - inactive	7520
- GM - 1 TB	7521
- GM - 5 TB	7522
- GM - 10 TB	7523
- GM - 25 TB	7524
- GM - 50 TB	7525
- GM - 100 TB	7530
- RMZ - inactive	7650
- RMZ - 1 TB	7651
- RMZ - 5 TB	7652
- RMZ - 10 TB	7653
- RMZ - 25 TB	7654
- RMZ - 50 TB	7655
- RMZ - 100 TB	7660
- RMZ resync - inactive	7680
- RMZ resync - 1 TB	7681
- RMZ resync - 5 TB	7682
- RMZ resync - 10 TB	7683
- RMZ resync - 25 TB	7684
- RMZ resync - 50 TB	7685
- RMZ resync - 100 TB	7690
- PAV - inactive	7820
- PAV - 1 TB	7821
- PAV - 5 TB	7822
- PAV - 10 TB	7823
- PAV - 25 TB	7824
- PAV - 50 TB	7825
- PAV - 100 TB	7830
- HyperPAV	7899

Description	Machine	Model	Feature
DS8000 series Function Authorization	2398	LFA	
Operating Environment (OEL) License:			
- OEL - inactive			7030
- OEL - 1 TB unit			7031
- OEL - 5 TB unit			7032
- OEL - 10 TB unit			7033
- OEL - 25 TB unit			7034
- OEL - 50 TB unit			7035
- OEL - 100 TB unit			7040
- OEL - 200 TB unit			7045

- OEL - Value Unit inactive	7050
- OEL - 1 Value Unit	7051
- OEL - 5 Value Unit	7052
- OEL - 10 Value Unit	7053
- OEL - 25 Value Unit	7054
- OEL - 50 Value Unit	7055
- OEL - 100 Value Unit	7060
- OEL - 200 Value Unit	7065
- DB protection indicator	7080
- FICON Attachment	7091
- High Performance FICON	7092
- PTC - inactive	7250
- PTC - 1 TB	7251
- PTC - 5 TB	7252
- PTC - 10 TB	7253
- PTC - 25 TB	7254
- PTC - 50 TB	7255
- PTC - 100 TB	7260
- SE - inactive	7350
- SE - 1 TB	7351
- SE - 5 TB	7352
- SE - 10 TB	7353
- SE - 25 TB	7354
- SE - 50 TB	7355
- SE - 100 TB	7360
- MGM - inactive	7480
- MGM - 1 TB	7481
- MGM - 5 TB	7482
- MGM - 10 TB	7483
- MGM - 25 TB	7484
- MGM - 50 TB	7485
- MGM - 100 TB	7490
- MM - inactive	7500
- MM - 1 TB	7501
- MM - 5 TB	7502
- MM - 10 TB	7503
- MM - 25 TB	7504
- MM - 50 TB	7505
- MM - 100 TB	7510
- GM - inactive	7520
- GM - 1 TB	7521
- GM - 5 TB	7522
- GM - 10 TB	7523
- GM - 25 TB	7524
- GM - 50 TB	7525
- GM - 100 TB	7530
- RMZ - inactive	7650
- RMZ - 1 TB	7651
- RMZ - 5 TB	7652
- RMZ - 10 TB	7653
- RMZ - 25 TB	7654
- RMZ - 50 TB	7655
- RMZ - 100 TB	7660
- RMZ resync - inactive	7680
- RMZ resync - 1 TB	7681
- RMZ resync - 5 TB	7682
- RMZ resync - 10 TB	7683
- RMZ resync - 25 TB	7684
- RMZ resync - 50 TB	7685
- RMZ resync - 100 TB	7690
- PAV - inactive	7820
- PAV - 1 TB	7821
- PAV - 5 TB	7822
- PAV - 10 TB	7823
- PAV - 25 TB	7824

- PAV - 50 TB 7825
- PAV - 100 TB 7830
  
- HyperPAV 7899

Description	Machine	Model	Feature
DS8000 series Function Authorization	2399	LFA	
Operating Environment (OEL) License:			
- OEL - inactive			7030
- OEL - 1 TB unit			7031
- OEL - 5 TB unit			7032
- OEL - 10 TB unit			7033
- OEL - 25 TB unit			7034
- OEL - 50 TB unit			7035
- OEL - 100 TB unit			7040
- OEL - 200 TB unit			7045
- OEL - Value Unit inactive			7050
- OEL - 1 Value Unit			7051
- OEL - 5 Value Unit			7052
- OEL - 10 Value Unit			7053
- OEL - 25 Value Unit			7054
- OEL - 50 Value Unit			7055
- OEL - 100 Value Unit			7060
- OEL - 200 Value Unit			7065
- DB protection indicator			7080
- FICON Attachment			7091
- High Performance FICON			7092
- PTC - inactive			7250
- PTC - 1 TB			7251
- PTC - 5 TB			7252
- PTC - 10 TB			7253
- PTC - 25 TB			7254
- PTC - 50 TB			7255
- PTC - 100 TB			7260
- SE - inactive			7350
- SE - 1 TB			7351
- SE - 5 TB			7352
- SE - 10 TB			7353
- SE - 25 TB			7354
- SE - 50 TB			7355
- SE - 100 TB			7360
- MGM - inactive			7480
- MGM - 1 TB			7481
- MGM - 5 TB			7482
- MGM - 10 TB			7483
- MGM - 25 TB			7484
- MGM - 50 TB			7485
- MGM - 100 TB			7490
- MM - inactive			7500
- MM - 1 TB			7501
- MM - 5 TB			7502
- MM - 10 TB			7503
- MM - 25 TB			7504
- MM - 50 TB			7505
- MM - 100 TB			7510
- GM - inactive			7520
- GM - 1 TB			7521
- GM - 5 TB			7522
- GM - 10 TB			7523
- GM - 25 TB			7524
- GM - 50 TB			7525
- GM - 100 TB			7530
- RMZ - inactive			7650

- RMZ - 1 TB	7651
- RMZ - 5 TB	7652
- RMZ - 10 TB	7653
- RMZ - 25 TB	7654
- RMZ - 50 TB	7655
- RMZ - 100 TB	7660
- RMZ resync - inactive	7680
- RMZ resync - 1 TB	7681
- RMZ resync - 5 TB	7682
- RMZ resync - 10 TB	7683
- RMZ resync - 25 TB	7684
- RMZ resync - 50 TB	7685
- RMZ resync - 100 TB	7690
- PAV - inactive	7820
- PAV - 1 TB	7821
- PAV - 5 TB	7822
- PAV - 10 TB	7823
- PAV - 25 TB	7824
- PAV - 50 TB	7825
- PAV - 100 TB	7830
- HyperPAV	7899

## Feature conversions

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### Machine type 2396, 2397, 2398, and 2399 Model LFA

Function authorization indicators:

Feature From	Feature To	Returned parts *	Description
7000	7030	No	OEL function authorization indicator conversion
7001	7031	No	OEL function authorization indicator conversion
7002	7032	No	OEL function authorization indicator conversion
7003	7033	No	OEL function authorization indicator conversion
7004	7034	No	OEL function authorization indicator conversion
7005	7035	No	OEL function authorization indicator conversion
7010	7040	No	OEL function authorization indicator conversion
7015	7045	No	OEL function authorization indicator conversion
7090	7091	No	FICON function authorization indicator conversion
7200	7250	No	PTC function authorization indicator conversion
7201	7251	No	PTC function authorization indicator conversion
7202	7252	No	PTC function authorization indicator conversion
7203	7253	No	PTC function authorization indicator conversion
7204	7254	No	PTC function authorization indicator conversion
7205	7255	No	PTC function authorization indicator conversion
7210	7260	No	PTC function authorization indicator conversion
7230	7250	No	PTC Add function authorization indicator conversion
7231	7251	No	PTC Add function authorization indicator conversion
7232	7252	No	PTC Add function authorization indicator conversion
7233	7253	No	PTC Add function authorization indicator conversion
7234	7254	No	PTC Add function authorization indicator conversion
7235	7255	No	PTC Add function authorization indicator conversion
7240	7260	No	PTC Add function authorization indicator Conversion
7300	7350	No	SE function authorization indicator conversion
7301	7351	No	SE function authorization indicator conversion
7302	7352	No	SE function authorization indicator conversion
7303	7353	No	SE function authorization indicator conversion

7304	7354	No	SE function authorization indicator conversion
7305	7355	No	SE function authorization indicator conversion
7310	7360	No	SE function authorization indicator conversion
7330	7350	No	SE Add function authorization indicator conversion
7331	7351	No	SE Add function authorization indicator conversion
7332	7352	No	SE Add function authorization indicator conversion
7333	7353	No	SE Add function authorization indicator conversion
7334	7354	No	SE Add function authorization indicator conversion
7335	7355	No	SE Add function authorization indicator conversion
7340	7360	No	SE Add function authorization indicator conversion
7420	7480	No	MGM function authorization indicator conversion
7421	7481	No	MGM function authorization indicator conversion
7422	7482	No	MGM function authorization indicator conversion
7423	7483	No	MGM function authorization indicator conversion
7424	7484	No	MGM function authorization indicator conversion
7425	7485	No	MGM function authorization indicator conversion
7430	7490	No	MGM function authorization indicator conversion
7440	7500	No	MM function authorization indicator conversion
7441	7501	No	MM function authorization indicator conversion
7442	7502	No	MM function authorization indicator conversion
7443	7503	No	MM function authorization indicator conversion
7444	7504	No	MM function authorization indicator conversion
7445	7505	No	MM function authorization indicator conversion
7450	7510	No	MM function authorization indicator conversion
7540	7500	No	MM Add function authorization indicator conversion
7541	7501	No	MM Add function authorization indicator conversion
7542	7502	No	MM Add function authorization indicator conversion
7543	7503	No	MM Add function authorization indicator conversion
7544	7504	No	MM Add function authorization indicator conversion
7545	7505	No	MM Add function authorization indicator conversion
7550	7510	No	MM Add function authorization indicator conversion
7460	7520	No	GM function authorization indicator conversion
7461	7521	No	GM function authorization indicator conversion
7462	7522	No	GM function authorization indicator conversion
7463	7523	No	GM function authorization indicator conversion
7464	7524	No	GM function authorization indicator conversion
7465	7525	No	GM function authorization indicator conversion
7470	7530	No	GM function authorization indicator conversion
7560	7520	No	GM Add function authorization indicator conversion
7561	7521	No	GM Add function authorization indicator conversion
7562	7522	No	GM Add function authorization indicator conversion
7563	7523	No	GM Add function authorization indicator conversion
7564	7524	No	GM Add function authorization indicator conversion
7565	7525	No	GM Add function authorization indicator conversion
7570	7530	No	GM Add function authorization indicator conversion
7600	7650	No	RMZ function authorization indicator conversion
7601	7651	No	RMZ function authorization indicator conversion
7602	7652	No	RMZ function authorization indicator conversion
7603	7653	No	RMZ function authorization indicator conversion
7604	7654	No	RMZ function authorization indicator conversion
7605	7655	No	RMZ function authorization indicator conversion
7610	7660	No	RMZ function authorization indicator conversion
7630	7680	No	RMZ resync function authorization indicator conversion
7631	7681	No	RMZ resync function authorization indicator conversion
7632	7682	No	RMZ resync function authorization indicator conversion
7633	7683	No	RMZ resync function authorization indicator conversion
7634	7684	No	RMZ resync function authorization indicator conversion
7635	7685	No	RMZ resync function authorization indicator conversion
7640	7690	No	RMZ resync function authorization indicator conversion

7800	7820	No	PAV function authorization indicator conversion
7801	7821	No	PAV function authorization indicator conversion
7802	7822	No	PAV function authorization indicator conversion
7803	7823	No	PAV function authorization indicator conversion
7804	7824	No	PAV function authorization indicator conversion
7805	7825	No	PAV function authorization indicator conversion
7810	7830	No	PAV function authorization indicator conversion

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

### **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=109-749>

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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://publib14.boulder.ibm.com/infocenter/systems>

### **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**

### **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

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

## Technical information

### Specified operating environment

#### 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 is was acquired:

IBM 242x	IBM 239x	indicator feature number	function authorization models and feature numbers
Licensed function			
Operating Environment		0700 and 70xx	Model LFA 7030-7065
Database Protection		0708 and 7080	Model LFA 7080
FICON Attachment		0703 and 7091	Model LFA 7091
High Performance FICON		0709 and 7092	Model LFA 7092
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
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 (Models 941). 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
6016	73 GB	SSD	N/A	No	Yes	10
6116	146 GB	SSD	N/A	No	Yes	16



2216	146 GB	FC	15K rpm	No	Yes	4.6
2416	300 GB	FC	15K rpm	No	Yes	6.4
2616	450 GB	FC	15K rpm	No	Yes	8.2
5016	146 GB	FC	15K rpm	Yes	No	4.6
5116	300 GB	FC	15K rpm	Yes	No	6.4
5216	450 GB	FC	15K rpm	Yes	No	8.2
2816	1 TB	SATA	7.2K rpm	No	Yes	10

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 (#2xx7 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 are 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 941).
  - 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 941).

### **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 (#2xx7 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* (GC35-0515) 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 are required.

### **Direct customer support**

Direct customer support for the DS8000 Function Authorization 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

<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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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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### ***IBM Global Financing***

Yes

**Volume orders:** Contact your IBM representative.

### ***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.

### ***Warranty service***

Warranty service for a DS8000 series licensed function is provided on the 242x machine for which the licensed function is authorized, under the terms and conditions associated with that machine, and is available until the expiration of that machine's warranty period.

### ***Usage plan machine***

No

### **IBM hourly service rate classification**

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

### **Field-installable features**

Yes

### **Model conversions**

No

### **Machine installation**

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

### **Graduated program license charges apply**

No

### **Educational allowance**

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

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

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## **Prices**

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For all charges, contact your IBM representative.

Description	Machine type	Model	Feature number
DS8000 Series Function Authorization	2396	LFA	
Administrative Indicators:			
- IBM/Openwave Alliance			0930
- IBM System i® Indicator			0931
- IBM System p® Indicator			0932
- IBM System x® Indicator			0933
- IBM System z Indicator			0934
- Linux® Indicator			0940
Operating Environment (OEL) License:			
- OEL - inactive			7030
- OEL - 1 TB unit			7031
- OEL - 5 TB unit			7032
- OEL - 10 TB unit			7033
- OEL - 25 TB unit			7034
- OEL - 50 TB unit			7035
- OEL - 100 TB unit			7040
- OEL - 200 TB unit			7045
- OEL - Value Unit inactive			7050
- OEL - 1 Value Unit			7051
- OEL - 5 Value Unit			7052
- OEL - 10 Value Unit			7053
- OEL - 25 Value Unit			7054
- OEL - 50 Value Unit			7055
- OEL - 100 Value Unit			7060
- OEL - 200 Value Unit			7065
- DB protection indicator			7080
- FICON indicator			7091

- zHPF indicator	7092
- PTC - inactive indicator	7250
- PTC - 1 TB indicator	7251
- PTC - 5 TB indicator	7252
- PTC - 10 TB indicator	7253
- PTC - 25 TB indicator	7254
- PTC - 50 TB indicator	7255
- PTC - 100 TB indicator	7260
- SE - inactive indicator	7350
- SE - 1 TB indicator	7351
- SE - 5 TB indicator	7352
- SE - 10 TB indicator	7353
- SE - 25 TB indicator	7354
- SE - 50 TB indicator	7355
- SE - 100 TB indicator	7360
- MGM - inactive indicator	7480
- MGM - 1 TB indicator	7481
- MGM - 5 TB indicator	7482
- MGM - 10 TB indicator	7483
- MGM - 25 TB indicator	7484
- MGM - 50 TB indicator	7485
- MGM - 100 TB indicator	7490
- MM - inactive indicator	7500
- MM - 1 TB indicator	7501
- MM - 5 TB indicator	7502
- MM - 10 TB indicator	7503
- MM - 25 TB indicator	7504
- MM - 50 TB indicator	7505
- MM - 100 TB indicator	7510
- GM - inactive indicator	7520
- GM - 1 TB indicator	7521
- GM - 5 TB indicator	7522
- GM - 10 TB indicator	7523
- GM - 25 TB indicator	7524
- GM - 50 TB indicator	7525
- GM - 100 TB indicator	7530
- RMZ - inactive indicator	7650
- RMZ - 1 TB indicator	7651
- RMZ - 5 TB indicator	7652
- RMZ - 10 TB indicator	7653
- RMZ - 25 TB indicator	7654
- RMZ - 50 TB indicator	7655
- RMZ - 100 TB indicator	7660
- RMZ resync - inactive indicator	7680
- RMZ resync - 1 TB indicator	7681
- RMZ resync - 5 TB indicator	7682
- RMZ resync - 10 TB indicator	7683
- RMZ resync - 25 TB indicator	7684
- RMZ resync - 50 TB indicator	7685
- RMZ resync - 100 TB indicator	7690
- PAV - inactive indicator	7820
- PAV - 1 TB indicator	7821
- PAV - 5 TB indicator	7822
- PAV - 10 TB indicator	7823
- PAV - 25 TB indicator	7824
- PAV - 50 TB indicator	7825
- PAV - 100 TB indicator	7830
- HyperPAV indicator	7899

Description	Machine type	Model	Feature number
DS8000 Series Function Authorization	2397	LFA	

Administrative Indicators:

- IBM/Openwave Alliance	0930
- IBM System i Indicator	0931
- IBM System p Indicator	0932
- IBM System x Indicator	0933
- IBM System z Indicator	0934
- Linux Indicator	0940

Operating Environment (OEL) License:

- OEL - inactive	7030
- OEL - 1 TB unit	7031
- OEL - 5 TB unit	7032
- OEL - 10 TB unit	7033
- OEL - 25 TB unit	7034
- OEL - 50 TB unit	7035
- OEL - 100 TB unit	7040
- OEL - 200 TB unit	7045

- OEL - Value Unit inactive	7050
- OEL - 1 Value Unit	7051
- OEL - 5 value Unit	7052
- OEL - 10 Value Unit	7053
- OEL - 25 Value Unit	7054
- OEL - 50 Value Unit	7055
- OEL - 100 Value Unit	7060
- OEL - 200 Value Unit	7065

- DB protection indicator	7080
- FICON indicator	7091
- zHPF indicator	7092

- PTC - inactive indicator	7250
- PTC - 1 TB indicator	7251
- PTC - 5 TB indicator	7252
- PTC - 10 TB indicator	7253
- PTC - 25 TB indicator	7254
- PTC - 50 TB indicator	7255
- PTC - 100 TB indicator	7260

- SE - inactive indicator	7350
- SE - 1 TB indicator	7351
- SE - 5 TB indicator	7352
- SE - 10 TB indicator	7353
- SE - 25 TB indicator	7354
- SE - 50 TB indicator	7355
- SE - 100 TB indicator	7360

- MGM - inactive indicator	7480
- MGM - 1 TB indicator	7481
- MGM - 5 TB indicator	7482
- MGM - 10 TB indicator	7483
- MGM - 25 TB indicator	7484
- MGM - 50 TB indicator	7485
- MGM - 100 TB indicator	7490

- MM - inactive indicator	7500
- MM - 1 TB indicator	7501
- MM - 5 TB indicator	7502
- MM - 10 TB indicator	7503
- MM - 25 TB indicator	7504
- MM - 50 TB indicator	7505
- MM - 100 TB indicator	7510

- GM - inactive indicator	7520
- GM - 1 TB indicator	7521
- GM - 5 TB indicator	7522
- GM - 10 TB indicator	7523
- GM - 25 TB indicator	7524
- GM - 50 TB indicator	7525
- GM - 100 TB indicator	7530

- RMZ - inactive indicator	7650
- RMZ - 1 TB indicator	7651
- RMZ - 5 TB indicator	7652

- RMZ - 10 TB indicator	7653
- RMZ - 25 TB indicator	7654
- RMZ - 50 TB indicator	7655
- RMZ - 100 TB indicator	7660
- RMZ resync - inactive indicator	7680
- RMZ resync - 1 TB indicator	7681
- RMZ resync - 5 TB indicator	7682
- RMZ resync - 10 TB indicator	7683
- RMZ resync - 25 TB indicator	7684
- RMZ resync - 50 TB indicator	7685
- RMZ resync - 100 TB indicator	7690
- PAV - inactive indicator	7820
- PAV - 1 TB indicator	7821
- PAV - 5 TB indicator	7822
- PAV - 10 TB indicator	7823
- PAV - 25 TB indicator	7824
- PAV - 50 TB indicator	7825
- PAV - 100 TB indicator	7830
- HyperPAV indicator	7899

Description	Machine type	Model	Feature number
DS8000 Series Function Authorization	2398	LFA	

Administrative Indicators:

- IBM/Openwave Alliance	0930
- IBM System i Indicator	0931
- IBM System p Indicator	0932
- IBM System x Indicator	0933
- IBM System z Indicator	0934
- Linux Indicator	0940

Operating Environment (OEL) License:

- OEL - inactive	7030
- OEL - 1 TB unit	7031
- OEL - 5 TB unit	7032
- OEL - 10 TB unit	7033
- OEL - 25 TB unit	7034
- OEL - 50 TB unit	7035
- OEL - 100 TB unit	7040
- OEL - 200 TB unit	7045
- OEL - Value Unit inactive	7050
- OEL - 1 Value Unit	7051
- OEL - 5 Value Unit	7052
- OEL - 10 Value Unit	7053
- OEL - 25 Value Unit	7054
- OEL - 50 Value Unit	7055
- OEL - 100 Value Unit	7060
- OEL - 200 Value Unit	7065
- DB protection indicator	7080
- FICON indicator	7091
- zHPPF indicator	7092
- PTC - inactive indicator	7250
- PTC - 1 TB indicator	7251
- PTC - 5 TB indicator	7252
- PTC - 10 TB indicator	7253
- PTC - 25 TB indicator	7254
- PTC - 50 TB indicator	7255
- PTC - 100 TB indicator	7260
- SE - inactive indicator	7350
- SE - 1 TB indicator	7351
- SE - 5 TB indicator	7352
- SE - 10 TB indicator	7353
- SE - 25 TB indicator	7354
- SE - 50 TB indicator	7355

- SE - 100 TB indicator 7360
- MGM - inactive indicator 7480
- MGM - 1 TB indicator 7481
- MGM - 5 TB indicator 7482
- MGM - 10 TB indicator 7483
- MGM - 25 TB indicator 7484
- MGM - 50 TB indicator 7485
- MGM - 100 TB indicator 7490
- MM - inactive indicator 7500
- MM - 1 TB indicator 7501
- MM - 5 TB indicator 7502
- MM - 10 TB indicator 7503
- MM - 25 TB indicator 7504
- MM - 50 TB indicator 7505
- MM - 100 TB indicator 7510
- GM - inactive indicator 7520
- GM - 1 TB indicator 7521
- GM - 5 TB indicator 7522
- GM - 10 TB indicator 7523
- GM - 25 TB indicator 7524
- GM - 50 TB indicator 7525
- GM - 100 TB indicator 7530
- RMZ - inactive indicator 7650
- RMZ - 1 TB indicator 7651
- RMZ - 5 TB indicator 7652
- RMZ - 10 TB indicator 7653
- RMZ - 25 TB indicator 7654
- RMZ - 50 TB indicator 7655
- RMZ - 100 TB indicator 7660
- RMZ resync - inactive indicator 7680
- RMZ resync - 1 TB indicator 7681
- RMZ resync - 5 TB indicator 7682
- RMZ resync - 10 TB indicator 7683
- RMZ resync - 25 TB indicator 7684
- RMZ resync - 50 TB indicator 7685
- RMZ resync - 100 TB indicator 7690
- PAV - inactive indicator 7820
- PAV - 1 TB indicator 7821
- PAV - 5 TB indicator 7822
- PAV - 10 TB indicator 7823
- PAV - 25 TB indicator 7824
- PAV - 50 TB indicator 7825
- PAV - 100 TB indicator 7830
- HyperPAV indicator 7899

Description	Machine type	Model	Feature number
DS8000 Series Function Authorization	2399	LFA	
Administrative Indicators:			
- IBM/Openwave Alliance			0930
- IBM System i Indicator			0931
- IBM System p Indicator			0932
- IBM System x Indicator			0933
- IBM System z Indicator			0934
- Linux Indicator			0940
Operating Environment (OEL) License:			
- OEL - inactive			7030
- OEL - 1 TB unit			7031
- OEL - 5 TB unit			7032
- OEL - 10 TB unit			7033
- OEL - 25 TB unit			7034
- OEL - 50 TB unit			7035
- OEL - 100 TB unit			7040



- OEL - 200 TB unit	7045
- OEL - Value Unit inactive	7050
- OEL - 1 Value Unit	7051
- OEL - 5 Value Unit	7052
- OEL - 10 Value Unit	7053
- OEL - 25 Value Unit	7054
- OEL - 50 Value Unit	7055
- OEL - 100 Value Unit	7060
- OEL - 200 Value Unit	7065
- DB protection indicator	7080
- FICON indicator	7091
- zHPPF indicator	7092
- PTC - inactive indicator	7250
- PTC - 1 TB indicator	7251
- PTC - 5 TB indicator	7252
- PTC - 10 TB indicator	7253
- PTC - 25 TB indicator	7254
- PTC - 50 TB indicator	7255
- PTC - 100 TB indicator	7260
- SE - inactive indicator	7350
- SE - 1 TB indicator	7351
- SE - 5 TB indicator	7352
- SE - 10 TB indicator	7353
- SE - 25 TB indicator	7354
- SE - 50 TB indicator	7355
- SE - 100 TB indicator	7360
- MGM - inactive indicator	7480
- MGM - 1 TB indicator	7481
- MGM - 5 TB indicator	7482
- MGM - 10 TB indicator	7483
- MGM - 25 TB indicator	7484
- MGM - 50 TB indicator	7485
- MGM - 100 TB indicator	7490
- MM - inactive indicator	7500
- MM - 1 TB indicator	7501
- MM - 5 TB indicator	7502
- MM - 10 TB indicator	7503
- MM - 25 TB indicator	7504
- MM - 50 TB indicator	7505
- MM - 100 TB indicator	7510
- GM - inactive indicator	7520
- GM - 1 TB indicator	7521
- GM - 5 TB indicator	7522
- GM - 10 TB indicator	7523
- GM - 25 TB indicator	7524
- GM - 50 TB indicator	7525
- GM - 100 TB indicator	7530
- RMZ - inactive indicator	7650
- RMZ - 1 TB indicator	7651
- RMZ - 5 TB indicator	7652
- RMZ - 10 TB indicator	7653
- RMZ - 25 TB indicator	7654
- RMZ - 50 TB indicator	7655
- RMZ - 100 TB indicator	7660
- RMZ resync - inactive indicator	7680
- RMZ resync - 1 TB indicator	7681
- RMZ resync - 5 TB indicator	7682
- RMZ resync - 10 TB indicator	7683
- RMZ resync - 25 TB indicator	7684
- RMZ resync - 50 TB indicator	7685
- RMZ resync - 100 TB indicator	7690
- PAV - inactive indicator	7820
- PAV - 1 TB indicator	7821
- PAV - 5 TB indicator	7822

- PAV - 10 TB indicator	7823
- PAV - 25 TB indicator	7824
- PAV - 50 TB indicator	7825
- PAV - 100 TB indicator	7830
- HyperPAV indicator	7899

Feature change options\*

Description	Feature number	Install type	Feature Conversion	Feature Exchange	Feature Remove
Administrative Indicators:					
- IBM/Openwave Alliance	0930	Both	No	No	No
- IBM System i Indicator	0931	Plant only	No	No	No
- IBM System p Indicator	0932	Plant only	No	No	No
- IBM System x Indicator	0933	Plant only	No	No	No
- IBM System z Indicator	0934	Plant only	No	No	No
- Linux Indicator	0940	Both	No	No	No
Operating Environment (OEL) License:					
- OEL - inactive	7030	Both	No	No	Yes
- OEL - 1 TB unit	7031	Both	No	No	Yes
- OEL - 5 TB unit	7032	Both	No	No	Yes
- OEL - 10 TB unit	7033	Both	No	No	Yes
- OEL - 25 TB unit	7034	Both	No	No	Yes
- OEL - 50 TB unit	7035	Both	No	No	Yes
- OEL - 100 TB unit	7040	Both	No	No	Yes
- OEL - 200 TB unit	7045	Both	No	No	Yes
- OEL - Value Unit inactive	7050	Both	No	No	Yes
- OEL - 1 Value Unit	7051	Both	No	No	Yes
- OEL - 5 Value Unit	7052	Both	No	No	Yes
- OEL - 10 Value Unit	7053	Both	No	No	Yes
- OEL - 25 Value Unit	7054	Both	No	No	Yes
- OEL - 50 Value Unit	7055	Both	No	No	Yes
- OEL - 100 Value Unit	7060	Both	No	No	Yes
- OEL - 200 Value Unit	7065	Both	No	No	Yes
- DB protection indicator	7080	Both	No	No	Yes
- FICON indicator	7091	Both	No	No	Yes
- zHPF indicator	7092	Both	No	No	Yes
- PTC - inactive indicator	7250	Both	No	No	Yes
- PTC - 1 TB indicator	7251	Both	No	No	Yes
- PTC - 5 TB indicator	7252	Both	No	No	Yes
- PTC - 10 TB indicator	7253	Both	No	No	Yes
- PTC - 25 TB indicator	7254	Both	No	No	Yes
- PTC - 50 TB indicator	7255	Both	No	No	Yes
- PTC - 100 TB indicator	7260	Both	No	No	Yes
- SE - inactive indicator	7350	Both	No	No	Yes
- SE - 1 TB indicator	7351	Both	No	No	Yes
- SE - 5 TB indicator	7352	Both	No	No	Yes
- SE - 10 TB indicator	7353	Both	No	No	Yes
- SE - 25 TB indicator	7354	Both	No	No	Yes
- SE - 50 TB indicator	7355	Both	No	No	Yes
- SE - 100 TB indicator	7360	Both	No	No	Yes
- MGM - inactive indicator	7480	Both	No	No	Yes
- MGM - 1 TB indicator	7481	Both	No	No	Yes
- MGM - 5 TB indicator	7482	Both	No	No	Yes
- MGM - 10 TB indicator	7483	Both	No	No	Yes
- MGM - 25 TB indicator	7484	Both	No	No	Yes
- MGM - 50 TB indicator	7485	Both	No	No	Yes
- MGM - 100 TB indicator	7490	Both	No	No	Yes
- MM - inactive indicator	7500	Both	No	No	Yes
- MM - 1 TB indicator	7501	Both	No	No	Yes
- MM - 5 TB indicator	7502	Both	No	No	Yes
- MM - 10 TB indicator	7503	Both	No	No	Yes
- MM - 25 TB indicator	7504	Both	No	No	Yes
- MM - 50 TB indicator	7505	Both	No	No	Yes
- MM - 100 TB indicator	7510	Both	No	No	Yes

- GM - inactive indicator	7520	Both	No	No	Yes
- GM - 1 TB indicator	7521	Both	No	No	Yes
- GM - 5 TB indicator	7522	Both	No	No	Yes
- GM - 10 TB indicator	7523	Both	No	No	Yes
- GM - 25 TB indicator	7524	Both	No	No	Yes
- GM - 50 TB indicator	7525	Both	No	No	Yes
- GM - 100 TB indicator	7530	Both	No	No	Yes
- RMZ - inactive indicator	7650	Both	No	No	Yes
- RMZ - 1 TB indicator	7651	Both	No	No	Yes
- RMZ - 5 TB indicator	7652	Both	No	No	Yes
- RMZ - 10 TB indicator	7653	Both	No	No	Yes
- RMZ - 25 TB indicator	7654	Both	No	No	Yes
- RMZ - 50 TB indicator	7655	Both	No	No	Yes
- RMZ - 100 TB indicator	7660	Both	No	No	Yes
- RMZ resync - inactive indicator	7680	Both	No	No	Yes
- RMZ resync - 1 TB indicator	7681	Both	No	No	Yes
- RMZ resync - 5 TB indicator	7682	Both	No	No	Yes
- RMZ resync - 10 TB indicator	7683	Both	No	No	Yes
- RMZ resync - 25 TB indicator	7684	Both	No	No	Yes
- RMZ resync - 50 TB indicator	7685	Both	No	No	Yes
- RMZ resync - 100 TB indicator	7690	Both	No	No	Yes
- PAV - inactive indicator	7820	Both	No	No	Yes
- PAV - 1 TB indicator	7821	Both	No	No	Yes
- PAV - 5 TB indicator	7822	Both	No	No	Yes
- PAV - 10 TB indicator	7823	Both	No	No	Yes
- PAV - 25 TB indicator	7824	Both	No	No	Yes
- PAV - 50 TB indicator	7825	Both	No	No	Yes
- PAV - 100 TB indicator	7830	Both	No	No	Yes
- HyperPAV indicator	7899	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.

### **Feature conversions**

Machine type 2396, 2397, 2398, and 2399 Model LFA

Feature From	To	Returned parts *	Description	Continuous maintenance
7000	7030	No	OEL function authorization indicator conversion	Yes
7001	7031	No	OEL function authorization indicator conversion	Yes
7002	7032	No	OEL function authorization indicator conversion	Yes
7003	7033	No	OEL function authorization indicator conversion	Yes
7004	7034	No	OEL function authorization indicator conversion	Yes
7005	7035	No	OEL function authorization indicator conversion	Yes
7010	7040	No	OEL function authorization indicator conversion	Yes
7015	7045	No	OEL function authorization indicator conversion	Yes
7090	7091	No	FICON function authorization indicator conversion	Yes

7200	7250	No	PTC function authorization indicator conversion	Yes
7201	7251	No	PTC function authorization indicator conversion	Yes
7202	7252	No	PTC function authorization indicator conversion	Yes
7203	7253	No	PTC function authorization indicator conversion	Yes
7204	7254	No	PTC function authorization indicator conversion	Yes
7205	7255	No	PTC function authorization indicator conversion	Yes
7210	7260	No	PTC function authorization indicator conversion	Yes
7230	7250	No	PTC Add function authorization indicator conversion	Yes
7231	7251	No	PTC Add function authorization indicator conversion	Yes
7232	7252	No	PTC Add function authorization indicator conversion	Yes
7233	7253	No	PTC Add function authorization indicator conversion	Yes
7234	7254	No	PTC Add function authorization indicator conversion	Yes
7235	7255	No	PTC Add function authorization indicator conversion	Yes
7240	7260	No	PTC Add function conversion	Yes
7300	7350	No	SE function authorization indicator conversion	Yes
7301	7351	No	SE function authorization indicator conversion	Yes
7302	7352	No	SE function authorization indicator conversion	Yes
7303	7353	No	SE function authorization indicator conversion	Yes
7304	7354	No	SE function authorization indicator conversion	Yes
7305	7355	No	SE function authorization indicator conversion	Yes
7310	7360	No	SE function authorization indicator conversion	Yes
7330	7350	No	SE Add function authorization indicator conversion	Yes
7331	7351	No	SE Add function authorization indicator conversion	Yes
7332	7352	No	SE Add function authorization indicator conversion	Yes
7333	7353	No	SE Add function authorization indicator conversion	Yes
7334	7354	No	SE Add function authorization indicator conversion	Yes
7335	7355	No	SE Add function authorization indicator conversion	Yes
7340	7360	No	SE Add function authorization indicator conversion	Yes
7420	7480	No	MGM function authorization indicator conversion	Yes
7421	7481	No	MGM function authorization indicator conversion	Yes
7422	7482	No	MGM function authorization indicator conversion	Yes
7423	7483	No	MGM function authorization indicator conversion	Yes
7424	7484	No	MGM function authorization indicator conversion	Yes
7425	7485	No	MGM function authorization indicator conversion	Yes
7430	7490	No	MGM function authorization	Yes

			indicator conversion	
7440	7500	No	MM function authorization	Yes
			indicator conversion	
7441	7501	No	MM function authorization	Yes
			indicator conversion	
7442	7502	No	MM function authorization	Yes
			indicator conversion	
7443	7503	No	MM function authorization	Yes
			indicator conversion	
7444	7504	No	MM function authorization	Yes
			indicator conversion	
7445	7505	No	MM function authorization	Yes
			indicator conversion	
7450	7510	No	MM function authorization	Yes
			indicator conversion	
7540	7500	No	MM Add function authorization	Yes
			indicator conversion	
7541	7501	No	MM Add function authorization	Yes
			indicator conversion	
7542	7502	No	MM Add function authorization	Yes
			indicator conversion	
7543	7503	No	MM Add function authorization	Yes
			indicator conversion	
7544	7504	No	MM Add function authorization	Yes
			indicator conversion	
7545	7505	No	MM Add function authorization	Yes
			indicator conversion	
7550	7510	No	MM Add function authorization	Yes
			indicator conversion	
7460	7520	No	GM function authorization	Yes
			indicator conversion	
7461	7521	No	GM function authorization	Yes
			indicator conversion	
7462	7522	No	GM function authorization	Yes
			indicator conversion	
7463	7523	No	GM function authorization	Yes
			indicator conversion	
7464	7524	No	GM function authorization	Yes
			indicator conversion	
7465	7525	No	GM function authorization	Yes
			indicator conversion	
7470	7530	No	GM function authorization	Yes
			indicator conversion	
7560	7520	No	GM Add function authorization	Yes
			indicator conversion	
7561	7521	No	GM Add function authorization	Yes
			indicator conversion	
7562	7522	No	GM Add function authorization	Yes
			indicator conversion	
7563	7523	No	GM Add function authorization	Yes
			indicator conversion	
7564	7524	No	GM Add function authorization	Yes
			indicator conversion	
7565	7525	No	GM Add function authorization	Yes
			indicator conversion	
7570	7530	No	GM Add function authorization	Yes
			indicator conversion	
7600	7650	No	RMZ function authorization	Yes
			indicator conversion	
7601	7651	No	RMZ function authorization	Yes
			indicator conversion	
7602	7652	No	RMZ function authorization	Yes
			indicator conversion	
7603	7653	No	RMZ function authorization	Yes
			indicator conversion	
7604	7654	No	RMZ function authorization	Yes
			indicator conversion	
7605	7655	No	RMZ function authorization	Yes
			indicator conversion	

7610	7660	No	RMZ function authorization indicator conversion	Yes
7630	7680	No	RMZ resync function authorization indicator conversion	Yes
7631	7681	No	RMZ resync function authorization indicator conversion	Yes
7632	7682	No	RMZ resync function authorization indicator conversion	Yes
7633	7683	No	RMZ resync function authorization indicator conversion	Yes
7634	7684	No	RMZ resync function authorization indicator conversion	Yes
7635	7685	No	RMZ resync function authorization indicator conversion	Yes
7640	7690	No	RMZ resync function authorization indicator conversion	Yes
7800	7820	No	PAV function authorization indicator conversion	Yes
7801	7821	No	PAV function authorization indicator conversion	Yes
7802	7822	No	PAV function authorization indicator conversion	Yes
7803	7823	No	PAV function authorization indicator conversion	Yes
7804	7824	No	PAV function authorization indicator conversion	Yes
7805	7825	No	PAV function authorization indicator conversion	Yes
7810	7830	No	PAV function authorization indicator conversion	Yes

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

Mach type	Model	Description	List price	
2396	LFA	DS8000 Function Authorization	\$0	
2397	LFA	DS8000 Function Authorization	\$0	
2398	LFA	DS8000 Function Authorization	\$0	
2399	LFA	DS8000 Function Authorization	\$0	
Mach type	Model	Feature	Description	List price
2396	LFA	0930	IBM/Openwave Alliance	\$0
2396	LFA	0931	IBM System i Indicator	\$0
2396	LFA	0932	IBM System p Indicator	\$0
2396	LFA	0933	IBM System x Indicator	\$0
2396	LFA	0934	IBM System z Indicator	\$0
2396	LFA	0940	Linux Indicator	\$0
2396	LFA	7030	OEL - inactive	\$0
2396	LFA	7031	OEL - 1 TB unit	\$0
2396	LFA	7032	OEL - 5 TB unit	\$0
2396	LFA	7033	OEL - 10 TB unit	\$0
2396	LFA	7034	OEL - 25 TB unit	\$0
2396	LFA	7035	OEL - 50 TB unit	\$0

2396	LFA	7040	OEL - 100 TB unit	\$0
2396	LFA	7045	OEL - 200 TB unit	\$0
2396	LFA	7050	OEL - Value Unit inactive	\$0
2396	LFA	7051	OEL - 1 Value Unit	\$6,498
2396	LFA	7052	OEL - 5 Value Unit	\$25,988
2396	LFA	7053	OEL - 10 Value Unit	\$51,977
2396	LFA	7054	OEL - 25 Value Unit	\$81,191
2396	LFA	7055	OEL - 50 Value Unit	\$132,383
2396	LFA	7060	OEL - 100 Value Unit	\$209,765
2396	LFA	7065	OEL - 200 Value Unit	\$396,031
2396	LFA	7080	DB protection indicator	\$0
2396	LFA	7091	FICON indicator	\$18,812
2396	LFA	7092	zHPF indicator	\$9,406
2396	LFA	7250	PTC - inactive indicator	\$0
2396	LFA	7251	PTC - 1 TB indicator	\$12,514
2396	LFA	7252	PTC - 5 TB indicator	\$52,820
2396	LFA	7253	PTC - 10 TB indicator	\$104,890
2396	LFA	7254	PTC - 25 TB indicator	\$157,850
2396	LFA	7255	PTC - 50 TB indicator	\$260,700
2396	LFA	7260	PTC - 100 TB indicator	\$416,400
2396	LFA	7350	SE - inactive indicator	\$0
2396	LFA	7351	SE - 1 TB indicator	\$12,514
2396	LFA	7352	SE - 5 TB indicator	\$52,820
2396	LFA	7353	SE - 10 TB indicator	\$104,890
2396	LFA	7354	SE - 25 TB indicator	\$157,850
2396	LFA	7355	SE - 50 TB indicator	\$260,700
2396	LFA	7360	SE - 100 TB indicator	\$416,400
2396	LFA	7480	MGM - inactive indicator	\$0
2396	LFA	7481	MGM - 1 TB indicator	\$2,439
2396	LFA	7482	MGM - 5 TB indicator	\$11,250
2396	LFA	7483	MGM - 10 TB indicator	\$21,515
2396	LFA	7484	MGM - 25 TB indicator	\$33,300
2396	LFA	7485	MGM - 50 TB indicator	\$53,100

2396	LFA	7490	MGM - 100 TB indicator	\$84,600
2396	LFA	7500	MM - inactive indicator	\$0
2396	LFA	7501	MM - 1 TB indicator	\$16,272
2396	LFA	7502	MM - 5 TB indicator	\$75,060
2396	LFA	7503	MM - 10 TB indicator	\$143,550
2396	LFA	7504	MM - 25 TB indicator	\$222,300
2396	LFA	7505	MM - 50 TB indicator	\$354,600
2396	LFA	7510	MM - 100 TB indicator	\$565,200
2396	LFA	7520	GM - inactive indicator	\$0
2396	LFA	7521	GM - 1 TB indicator	\$16,272
2396	LFA	7522	GM - 5 TB indicator	\$75,060
2396	LFA	7523	GM - 10 TB indicator	\$143,550
2396	LFA	7524	GM - 25 TB indicator	\$222,300
2396	LFA	7525	GM - 50 TB indicator	\$354,600
2396	LFA	7530	GM - 100 TB indicator	\$565,200
2396	LFA	7650	RMZ - inactive indicator	\$0
2396	LFA	7651	RMZ - 1 TB indicator	\$15,356
2396	LFA	7652	RMZ - 5 TB indicator	\$69,530
2396	LFA	7653	RMZ - 10 TB indicator	\$131,760
2396	LFA	7654	RMZ - 25 TB indicator	\$205,150
2396	LFA	7655	RMZ - 50 TB indicator	\$335,300
2396	LFA	7660	RMZ - 100 TB indicator	\$535,600
2396	LFA	7680	RMZ resync - inactive indic	\$0
2396	LFA	7681	RMZ resync - 1 TB indicator	\$3,254
2396	LFA	7682	RMZ resync - 5 TB indicator	\$15,012
2396	LFA	7683	RMZ resync - 10 TB indicator	\$28,710
2396	LFA	7684	RMZ resync - 25 TB indicator	\$44,460
2396	LFA	7685	RMZ resync - 50 TB indicator	\$70,920
2396	LFA	7690	RMZ resync - 100 TB indicat	\$113,040
2396	LFA	7820	PAV - inactive indicator	\$0
2396	LFA	7821	PAV - 1 TB indicator	\$7,521
2396	LFA	7822	PAV - 5 TB indicator	\$31,605
2396	LFA	7823	PAV - 10 TB indicator	\$62,210



2396	LFA	7824	PAV - 25 TB indicator	\$96,025
2396	LFA	7825	PAV - 50 TB indicator	\$158,050
2396	LFA	7830	PAV - 100 TB indicator	\$251,100
2396	LFA	7899	HyperPAV indicator	\$40,932
2397	LFA	0930	IBM/Openwave Alliance	\$0
2397	LFA	0931	IBM System i Indicator	\$0
2397	LFA	0932	IBM System p Indicator	\$0
2397	LFA	0933	IBM System x Indicator	\$0
2397	LFA	0934	IBM System z Indicator	\$0
2397	LFA	0940	Linux Indicator	\$0
2397	LFA	7030	OEL - inactive	\$0
2397	LFA	7031	OEL - 1 TB unit	\$0
2397	LFA	7032	OEL - 5 TB unit	\$0
2397	LFA	7033	OEL - 10 TB unit	\$0
2397	LFA	7034	OEL - 25 TB unit	\$0
2397	LFA	7035	OEL - 50 TB unit	\$0
2397	LFA	7040	OEL - 100 TB unit	\$0
2397	LFA	7045	OEL - 200 TB unit	\$0
2397	LFA	7050	OEL - Value Unit inactive	\$0
2397	LFA	7051	OEL - 1 Value Unit	\$6,582
2397	LFA	7052	OEL - 5 Value Unit	\$26,409
2397	LFA	7053	OEL - 10 Value Unit	\$52,818
2397	LFA	7054	OEL - 25 Value Unit	\$83,294
2397	LFA	7055	OEL - 50 Value Unit	\$136,588
2397	LFA	7060	OEL - 100 Value Unit	\$218,177
2397	LFA	7065	OEL - 200 Value Unit	\$412,854
2397	LFA	7080	DB protection indicator	\$0
2397	LFA	7091	FICON indicator	\$19,208
2397	LFA	7092	zHPF indicator	\$9,604
2397	LFA	7250	PTC - inactive indicator	\$0
2397	LFA	7251	PTC - 1 TB indicator	\$12,676
2397	LFA	7252	PTC - 5 TB indicator	\$53,630
2397	LFA	7253	PTC - 10 TB indicator	\$106,510
2397	LFA	7254	PTC - 25 TB indicator	\$161,900
2397	LFA	7255	PTC - 50 TB indicator	\$268,800

2397	LFA	7260	PTC - 100 TB indicator	\$432,600
2397	LFA	7350	SE - inactive indicator	\$0
2397	LFA	7351	SE - 1 TB indicator	\$12,676
2397	LFA	7352	SE - 5 TB indicator	\$53,630
2397	LFA	7353	SE - 10 TB indicator	\$106,510
2397	LFA	7354	SE - 25 TB indicator	\$161,900
2397	LFA	7355	SE - 50 TB indicator	\$268,800
2397	LFA	7360	SE - 100 TB indicator	\$432,600
2397	LFA	7480	MGM - inactive indicator	\$0
2397	LFA	7481	MGM - 1 TB indicator	\$2,472
2397	LFA	7482	MGM - 5 TB indicator	\$11,415
2397	LFA	7483	MGM - 10 TB indicator	\$21,845
2397	LFA	7484	MGM - 25 TB indicator	\$34,125
2397	LFA	7485	MGM - 50 TB indicator	\$54,750
2397	LFA	7490	MGM - 100 TB indicator	\$87,900
2397	LFA	7500	MM - inactive indicator	\$0
2397	LFA	7501	MM - 1 TB indicator	\$16,488
2397	LFA	7502	MM - 5 TB indicator	\$76,140
2397	LFA	7503	MM - 10 TB indicator	\$145,710
2397	LFA	7504	MM - 25 TB indicator	\$227,700
2397	LFA	7505	MM - 50 TB indicator	\$365,400
2397	LFA	7510	MM - 100 TB indicator	\$586,800
2397	LFA	7520	GM - inactive indicator	\$0
2397	LFA	7521	GM - 1 TB indicator	\$16,488
2397	LFA	7522	GM - 5 TB indicator	\$76,140
2397	LFA	7523	GM - 10 TB indicator	\$145,710
2397	LFA	7524	GM - 25 TB indicator	\$227,700
2397	LFA	7525	GM - 50 TB indicator	\$365,400
2397	LFA	7530	GM - 100 TB indicator	\$586,800
2397	LFA	7650	RMZ - inactive indicator	\$0
2397	LFA	7651	RMZ - 1 TB indicator	\$15,554
2397	LFA	7652	RMZ - 5 TB indicator	\$70,520
2397	LFA	7653	RMZ - 10 TB indicator	\$133,740

2397	LFA	7654	RMZ - 25 TB indicator	\$210,100
2397	LFA	7655	RMZ - 50 TB indicator	\$345,200
2397	LFA	7660	RMZ - 100 TB indicator	\$555,400
2397	LFA	7680	RMZ resync - inactive indic	\$0
2397	LFA	7681	RMZ resync - 1 TB indicator	\$3,298
2397	LFA	7682	RMZ resync - 5 TB indicator	\$15,228
2397	LFA	7683	RMZ resync - 10 TB indicator	\$29,142
2397	LFA	7684	RMZ resync - 25 TB indicator	\$45,540
2397	LFA	7685	RMZ resync - 50 TB indicator	\$73,080
2397	LFA	7690	RMZ resync - 100 TB indicat	\$117,360
2397	LFA	7820	PAV - inactive indicator	\$0
2397	LFA	7821	PAV - 1 TB indicator	\$7,614
2397	LFA	7822	PAV - 5 TB indicator	\$32,070
2397	LFA	7823	PAV - 10 TB indicator	\$63,140
2397	LFA	7824	PAV - 25 TB indicator	\$98,350
2397	LFA	7825	PAV - 50 TB indicator	\$162,700
2397	LFA	7830	PAV - 100 TB indicator	\$260,400
2397	LFA	7899	HyperPAV indicator	\$42,288
2398	LFA	0930	IBM/Openwave Alliance	\$0
2398	LFA	0931	IBM System i Indicator	\$0
2398	LFA	0932	IBM System p Indicator	\$0
2398	LFA	0933	IBM System x Indicator	\$0
2398	LFA	0934	IBM System z Indicator	\$0
2398	LFA	0940	Linux Indicator	\$0
2398	LFA	7030	OEL - inactive	\$0
2398	LFA	7031	OEL - 1 TB unit	\$0
2398	LFA	7032	OEL - 5 TB unit	\$0
2398	LFA	7033	OEL - 10 TB unit	\$0
2398	LFA	7034	OEL - 25 TB unit	\$0
2398	LFA	7035	OEL - 50 TB unit	\$0
2398	LFA	7040	OEL - 100 TB unit	\$0
2398	LFA	7045	OEL - 200 TB unit	\$0
2398	LFA	7050	OEL - Value Unit inactive	\$0
2398	LFA	7051	OEL - 1 Value Unit	\$6,666
2398	LFA	7052	OEL - 5 Value Unit	\$26,829

2398	LFA	7053	OEL - 10 Value Unit	\$53,659
2398	LFA	7054	OEL - 25 Value Unit	\$85,397
2398	LFA	7055	OEL - 50 Value Unit	\$140,794
2398	LFA	7060	OEL - 100 Value Unit	\$226,588
2398	LFA	7065	OEL - 200 Value Unit	\$429,677
2398	LFA	7080	DB protection indicator	\$0
2398	LFA	7091	FICON indicator	\$19,604
2398	LFA	7092	zHPF indicator	\$9,802
2398	LFA	7250	PTC - inactive indicator	\$0
2398	LFA	7251	PTC - 1 TB indicator	\$12,838
2398	LFA	7252	PTC - 5 TB indicator	\$54,440
2398	LFA	7253	PTC - 10 TB indicator	\$108,130
2398	LFA	7254	PTC - 25 TB indicator	\$165,950
2398	LFA	7255	PTC - 50 TB indicator	\$276,900
2398	LFA	7260	PTC - 100 TB indicator	\$448,800
2398	LFA	7350	SE - inactive indicator	\$0
2398	LFA	7351	SE - 1 TB indicator	\$12,838
2398	LFA	7352	SE - 5 TB indicator	\$54,440
2398	LFA	7353	SE - 10 TB indicator	\$108,130
2398	LFA	7354	SE - 25 TB indicator	\$165,950
2398	LFA	7355	SE - 50 TB indicator	\$276,900
2398	LFA	7360	SE - 100 TB indicator	\$448,800
2398	LFA	7480	MGM - inactive indicator	\$0
2398	LFA	7481	MGM - 1 TB indicator	\$2,505
2398	LFA	7482	MGM - 5 TB indicator	\$11,580
2398	LFA	7483	MGM - 10 TB indicator	\$22,175
2398	LFA	7484	MGM - 25 TB indicator	\$34,950
2398	LFA	7485	MGM - 50 TB indicator	\$56,400
2398	LFA	7490	MGM - 100 TB indicator	\$91,200
2398	LFA	7500	MM - inactive indicator	\$0
2398	LFA	7501	MM - 1 TB indicator	\$16,704
2398	LFA	7502	MM - 5 TB indicator	\$77,220
2398	LFA	7503	MM - 10 TB indicator	\$147,870

2398	LFA	7504	MM - 25 TB indicator	\$233,100
2398	LFA	7505	MM - 50 TB indicator	\$376,200
2398	LFA	7510	MM - 100 TB indicator	\$608,400
2398	LFA	7520	GM - inactive indicator	\$0
2398	LFA	7521	GM - 1 TB indicator	\$16,704
2398	LFA	7522	GM - 5 TB indicator	\$77,220
2398	LFA	7523	GM - 10 TB indicator	\$147,870
2398	LFA	7524	GM - 25 TB indicator	\$233,100
2398	LFA	7525	GM - 50 TB indicator	\$376,200
2398	LFA	7530	GM - 100 TB indicator	\$608,400
2398	LFA	7650	RMZ - inactive indicator	\$0
2398	LFA	7651	RMZ - 1 TB indicator	\$15,752
2398	LFA	7652	RMZ - 5 TB indicator	\$71,510
2398	LFA	7653	RMZ - 10 TB indicator	\$135,720
2398	LFA	7654	RMZ - 25 TB indicator	\$215,050
2398	LFA	7655	RMZ - 50 TB indicator	\$355,100
2398	LFA	7660	RMZ - 100 TB indicator	\$575,200
2398	LFA	7680	RMZ resync - inactive indic	\$0
2398	LFA	7681	RMZ resync - 1 TB indicator	\$3,341
2398	LFA	7682	RMZ resync - 5 TB indicator	\$15,444
2398	LFA	7683	RMZ resync - 10 TB indicator	\$29,574
2398	LFA	7684	RMZ resync - 25 TB indicator	\$46,620
2398	LFA	7685	RMZ resync - 50 TB indicator	\$75,240
2398	LFA	7690	RMZ resync - 100 TB indicat	\$121,680
2398	LFA	7820	PAV - inactive indicator	\$0
2398	LFA	7821	PAV - 1 TB indicator	\$7,707
2398	LFA	7822	PAV - 5 TB indicator	\$32,535
2398	LFA	7823	PAV - 10 TB indicator	\$64,070
2398	LFA	7824	PAV - 25 TB indicator	\$100,675
2398	LFA	7825	PAV - 50 TB indicator	\$167,350
2398	LFA	7830	PAV - 100 TB indicator	\$269,700
2398	LFA	7899	HyperPAV indicator	\$43,644
2399	LFA	0930	IBM/Openwave Alliance	\$0

2399	LFA	0931	IBM System i Indicator	\$0
2399	LFA	0932	IBM System p Indicator	\$0
2399	LFA	0933	IBM System x Indicator	\$0
2399	LFA	0934	IBM System z Indicator	\$0
2399	LFA	0940	Linux Indicator	\$0
2399	LFA	7030	OEL - inactive	\$0
2399	LFA	7031	OEL - 1 TB unit	\$0
2399	LFA	7032	OEL - 5 TB unit	\$0
2399	LFA	7033	OEL - 10 TB unit	\$0
2399	LFA	7034	OEL - 25 TB unit	\$0
2399	LFA	7035	OEL - 50 TB unit	\$0
2399	LFA	7040	OEL - 100 TB unit	\$0
2399	LFA	7045	OEL - 200 TB unit	\$0
2399	LFA	7050	OEL - Value Unit inactive	\$0
2399	LFA	7051	OEL - 1 Value Unit	\$6,750
2399	LFA	7052	OEL - 5 Value Unit	\$27,250
2399	LFA	7053	OEL - 10 Value Unit	\$54,500
2399	LFA	7054	OEL - 25 Value Unit	\$87,500
2399	LFA	7055	OEL - 50 Value Unit	\$145,000
2399	LFA	7060	OEL - 100 Value Unit	\$235,000
2399	LFA	7065	OEL - 200 Value Unit	\$446,500
2399	LFA	7080	DB protection indicator	\$0
2399	LFA	7091	FICON indicator	\$20,000
2399	LFA	7092	zHPF indicator	\$10,000
2399	LFA	7250	PTC - inactive indicator	\$0
2399	LFA	7251	PTC - 1 TB indicator	\$13,000
2399	LFA	7252	PTC - 5 TB indicator	\$55,250
2399	LFA	7253	PTC - 10 TB indicator	\$109,750
2399	LFA	7254	PTC - 25 TB indicator	\$170,000
2399	LFA	7255	PTC - 50 TB indicator	\$285,000
2399	LFA	7260	PTC - 100 TB indicator	\$465,000
2399	LFA	7350	SE - inactive indicator	\$0
2399	LFA	7351	SE - 1 TB indicator	\$13,000
2399	LFA	7352	SE - 5 TB indicator	\$55,250
2399	LFA	7353	SE - 10 TB indicator	\$109,750

2399	LFA	7354	SE - 25 TB indicator	\$170,000
2399	LFA	7355	SE - 50 TB indicator	\$285,000
2399	LFA	7360	SE - 100 TB indicator	\$465,000
2399	LFA	7480	MGM - inactive indicator	\$0
2399	LFA	7481	MGM - 1 TB indicator	\$2,538
2399	LFA	7482	MGM - 5 TB indicator	\$11,745
2399	LFA	7483	MGM - 10 TB indicator	\$22,505
2399	LFA	7484	MGM - 25 TB indicator	\$35,775
2399	LFA	7485	MGM - 50 TB indicator	\$58,050
2399	LFA	7490	MGM - 100 TB indicator	\$94,500
2399	LFA	7500	MM - inactive indicator	\$0
2399	LFA	7501	MM - 1 TB indicator	\$16,920
2399	LFA	7502	MM - 5 TB indicator	\$78,300
2399	LFA	7503	MM - 10 TB indicator	\$150,030
2399	LFA	7504	MM - 25 TB indicator	\$238,500
2399	LFA	7505	MM - 50 TB indicator	\$387,000
2399	LFA	7510	MM - 100 TB indicator	\$630,000
2399	LFA	7520	GM - inactive indicator	\$0
2399	LFA	7521	GM - 1 TB indicator	\$16,920
2399	LFA	7522	GM - 5 TB indicator	\$78,300
2399	LFA	7523	GM - 10 TB indicator	\$150,030
2399	LFA	7524	GM - 25 TB indicator	\$238,500
2399	LFA	7525	GM - 50 TB indicator	\$387,000
2399	LFA	7530	GM - 100 TB indicator	\$630,000
2399	LFA	7650	RMZ - inactive indicator	\$0
2399	LFA	7651	RMZ - 1 TB indicator	\$15,950
2399	LFA	7652	RMZ - 5 TB indicator	\$72,500
2399	LFA	7653	RMZ - 10 TB indicator	\$137,700
2399	LFA	7654	RMZ - 25 TB indicator	\$220,000
2399	LFA	7655	RMZ - 50 TB indicator	\$365,000
2399	LFA	7660	RMZ - 100 TB indicator	\$595,000
2399	LFA	7680	RMZ resync - inactive indic	\$0
2399	LFA	7681	RMZ resync - 1 TB indicator	\$3,384

2399	LFA	7682	RMZ resync - 5 TB indicator	\$15,660
2399	LFA	7683	RMZ resync - 10 TB indicator	\$30,006
2399	LFA	7684	RMZ resync - 25 TB indicator	\$47,700
2399	LFA	7685	RMZ resync - 50 TB indicator	\$77,400
2399	LFA	7690	RMZ resync - 100 TB indicat	\$126,000
2399	LFA	7820	PAV - inactive indicator	\$0
2399	LFA	7821	PAV - 1 TB indicator	\$7,800
2399	LFA	7822	PAV - 5 TB indicator	\$33,000
2399	LFA	7823	PAV - 10 TB indicator	\$65,000
2399	LFA	7824	PAV - 25 TB indicator	\$103,000
2399	LFA	7825	PAV - 50 TB indicator	\$172,000
2399	LFA	7830	PAV - 100 TB indicator	\$279,000
2399	LFA	7899	HyperPAV indicator	\$45,000
Mach type	Model	Part number	Description	List price
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2396	LFA	239670017031	OEL function auth ind conv	\$0
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2396	LFA	239670037033	OEL function auth ind conv	\$0
2396	LFA	239670047034	OEL function auth ind conv	\$0
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2396	LFA	239670107040	OEL function auth ind conv	\$0
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2396	LFA	239672007250	PTC function auth ind conv	\$0
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2396	LFA	239672327252	PTC function auth ind conv	\$0



2396	LFA	239672337253	PTC function auth ind conv	\$0
2396	LFA	239672347254	PTC function auth ind conv	\$0
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2396	LFA	239672407260	PTC function auth ind conv	\$0
2396	LFA	239673007350	SE function auth ind conv	\$0
2396	LFA	239673017351	SE function auth ind conv	\$0
2396	LFA	239673027352	SE function auth ind conv	\$0
2396	LFA	239673037353	SE function auth ind conv	\$0
2396	LFA	239673047354	SE function auth ind conv	\$0
2396	LFA	239673057355	SE function auth ind conv	\$0
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2396	LFA	239673317351	SE Add funct auth ind conv	\$0
2396	LFA	239673327352	SE Add funct auth ind conv	\$0
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2396	LFA	239673357355	SE Add funct auth ind conv	\$0
2396	LFA	239673407360	SE Add funct auth ind conv	\$0
2396	LFA	239674207480	MGM function auth ind conv	\$0
2396	LFA	239674217481	MGM function auth ind conv	\$0
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2396	LFA	239674237483	MGM function auth ind conv	\$0
2396	LFA	239674247484	MGM function auth ind conv	\$0
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