IBM System Storage DS8800 series high-performance flagship - Function Authorizations for machine type 239x

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At a glance

The IBM® System Storage® 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 DS8800 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 IBM System Storage 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 Authorization for:

2396 Model LFA

- IBM System Storage DS® Operating Environment (OEL feature numbers 70xx)

- 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 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 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 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 109-702, dated October 20, 2009 (IBM System Storage DS8700 series (Machine type 2421) high-performance Flagship high-end disk, one-year warranty model addresses your business and financial needs)
- Hardware Announcement 109-749, dated October 20, 2009 (IBM System Storage DS7000 series (M/T 239x) high-performance Flagship - Function Authorizations

Key prerequisites

All features and functions in this announcement are supported on the IBM System Storage DS8000 series and require DS8000 Licensed Machine Code (LMC) level 6.6.x.xx (bundle version 86.0.xx.xx), or later.

Planned availability date

Limited availability - Volume restriction

October 22, 2010

General Availability

November 19, 2010

Description

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

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   IBM System Storage z/OS Metro/Global Mirror
 Incremental Resync        Incremental Resync

Parallel Access Volumes    IBM Parallel Access Volumes

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 the model 951.
  - A 242x expansion unit refers to the model 95E.

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
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 Incremental Resync	242x feature numbers 0763 and 76xx
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
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 Model 951
and two Model 95E expansion units requires only one operating environment (239x
Model LFA feature numbers 70xx) function authorization. The authorization levels
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): This 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
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
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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 physical capacity (TB).

On the Model 951, license value assignment is an optional activity that can be 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 a license value of zero (0.0 TB) has been assigned.

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, the function will be deactivated during the next IML of the machine.

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

When a licensed function is deactivated using the DSFA application, the installed function authorization feature numbers remain on the machine record. The function authorization feature numbers do not need to be reacquired 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. The physical capacity for each storage type can be logically configured up to the given authorization level. If there are 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 (#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

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

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

Section 508 of the U.S. Rehabilitation Act

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

http://www-03.ibm.com/able/product_accessibility/index.html

Reference information

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

- Hardware Announcement 109-702, dated October 20, 2009 (IBM System Storage DS8700 series (Machine type 2421) high-performance Flagship high-end disk, one-year warranty model addresses your business and financial needs)
- Hardware Announcement 109-749, dated October 20, 2009 (IBM System Storage DS7000 series (M/T 239x) high-performance Flagship - Function Authorizations

Product number

```
Description                               Machine  Model   Feature

DS8000 series Function Authorization      2396     LFA

Function Authorization indicators:
- 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

- FICON indicator                                          7091
- zHPF indicator                                           7092

- PTC - inactive                                           7250
- PTC - 1 TB                                               7251
- PTC - 5 TB                                               7252
- PTC - 10 TB                                              7253
- PTC - 25 TB                                              7254
```

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- 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

Function Authorization indicators:
- 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

- FICON indicator                                              7091
- zHPF indicator                                               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
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- PAV - 50 TB                                        7825
- PAV - 100 TB                                       7830
- HyperPAV                                           7899


Description                        Machine  Model  Feature

DS8000 series Function Authorization  2398   LFA

Function Authorization indicators:
- 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

- FICON indicator                                    7091
- zHPF indicator                                     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
```

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- 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

Function Authorization indicators:
- 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

- FICON indicator                                        7091
- zHPF indicator                                         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
```

Business Partner information

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

https://www.ibm.com/partnerworld/mem/sla.jsp?num=110-216

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

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publications and marketing material with a catalog of 70,000 items. Extensive
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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.

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:

Licensed function	IBM 242x Indicator Feature number	IBM 239x Function Authorization Models and Feature numbers
Operating Environment	0700 and 70xx	Model LFA 7030-7065
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 Incremental Resync	0763 and 76xx	Model LFA 7680-7690
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 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
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 is not supported, such as the intermixing of machine type 2396 model LFA and 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

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.
- Standby CoD disk drives (#2xx9 features) can be excluded from the authorization level calculation. However, the authorization levels must be increased as Standby CoD disk drives are activated (logically configured for use).
- Refer to *IBM System Storage DS8000 Introduction and Planning Guide (GC27-2297)* for physical capacity calculation guidelines.

Licensed function management and activation

Licensed function management and activation activities responsibilities:

- 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

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 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

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

IBM Electronic Services

IBM has transformed its delivery of hardware and software support services to help you achieve higher system availability. Electronic Services is a Web-enabled solution that offers an exclusive, no-additional-charge enhancement to the service and support available for IBM servers. These services are designed to provide the opportunity for greater system availability with faster problem resolution and preemptive monitoring. Electronic Services comprises two separate, but complementary, elements: Electronic Services news page and Electronic Services Agent.

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

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

To learn how Electronic Services can work for you, visit

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

Terms and conditions

Volume orders: Contact your IBM representative.

IBM Global Financing

Yes

Warranty period

- Machine Type 2396, 1 year (tied to Machine Type 2421)
- Machine Type 2397, 2 years (tied to Machine Type 2422)
- Machine Type 2398, 3 years (tied to Machine Type 2423)
- Machine Type 2399, 4 years (tied to Machine Type 2424)

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

IBM On-Site Repair (IOR) 24 hours a day, 7 days a week, same-day response.

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.

Warranty service upgrades

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.

Pricing

Product charges

Description	Machine type	Model	Feature number	Minimum monthly maintenance charge
DS8000 Series Function Authorization	2396	LFA		NC
Administrative Indicators:				
- IBM/Openwave Alliance			0930	NC
- IBM System i® Indicator			0931	NC
- IBM System p® Indicator			0932	NC
- IBM System x® Indicator			0933	NC
- IBM System z Indicator			0934	NC
- Linux® Indicator			0940	NC
Operating Environment (OEL) License:				
- OEL - inactive			7030	NC
- OEL - 1 TB unit			7031	NC
- OEL - 5 TB unit			7032	NC
- OEL - 10 TB unit			7033	NC
- OEL - 25 TB unit			7034	NC
- OEL - 50 TB unit			7035	NC
- OEL - 100 TB unit			7040	NC
- OEL - 200 TB unit			7045	NC
- OEL - Value Unit inactive			7050	NC
- OEL - 1 Value Unit			7051	NC
- OEL - 5 Value Unit			7052	NC
- OEL - 10 Value Unit			7053	NC
- OEL - 25 Value Unit			7054	NC
- OEL - 50 Value Unit			7055	NC
- OEL - 100 Value Unit			7060	NC
- OEL - 200 Value Unit			7065	NC
- FICON indicator			7091	NC
- zHPF indicator			7092	NC
- PTC - inactive indicator			7250	NC
- PTC - 1 TB indicator			7251	NC
- PTC - 5 TB indicator			7252	NC
- PTC - 10 TB indicator			7253	NC
- PTC - 25 TB indicator			7254	NC
- PTC - 50 TB indicator			7255	NC
- PTC - 100 TB indicator			7260	NC
- SE - inactive indicator			7350	NC
- SE - 1 TB indicator			7351	NC
- SE - 5 TB indicator			7352	NC
- SE - 10 TB indicator			7353	NC
- SE - 25 TB indicator			7354	NC
- SE - 50 TB indicator			7355	NC
- SE - 100 TB indicator			7360	NC
- MGM - inactive indicator			7480	NC
- MGM - 1 TB indicator			7481	NC
- MGM - 5 TB indicator			7482	NC
- MGM - 10 TB indicator			7483	NC

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

Description	Machine type	Model	Feature number	Minimum monthly maintenance charge
DS8000 Series Function Authorization	2397	LFA		NC
Administrative Indicators:				
- IBM/Openwave Alliance			0930	NC
- IBM System i Indicator			0931	NC
- IBM System p Indicator			0932	NC
- IBM System x Indicator			0933	NC
- IBM System z Indicator			0934	NC
- Linux Indicator			0940	NC
Operating Environment (OEL) License:				
- OEL - inactive			7030	NC
- OEL - 1 TB unit			7031	NC
- OEL - 5 TB unit			7032	NC
- OEL - 10 TB unit			7033	NC
- OEL - 25 TB unit			7034	NC
- OEL - 50 TB unit			7035	NC
- OEL - 100 TB unit			7040	NC
- OEL - 200 TB unit			7045	NC

Description	Code	
- OEL - Value Unit inactive	7050	NC
- OEL - 1 Value Unit	7051	NC
- OEL - 5 Value Unit	7052	NC
- OEL - 10 Value Unit	7053	NC
- OEL - 25 Value Unit	7054	NC
- OEL - 50 Value Unit	7055	NC
- OEL - 100 Value Unit	7060	NC
- OEL - 200 Value Unit	7065	NC
- FICON indicator	7091	NC
- zHPF indicator	7092	NC
- PTC - inactive indicator	7250	NC
- PTC - 1 TB indicator	7251	NC
- PTC - 5 TB indicator	7252	NC
- PTC - 10 TB indicator	7253	NC
- PTC - 25 TB indicator	7254	NC
- PTC - 50 TB indicator	7255	NC
- PTC - 100 TB indicator	7260	NC
- SE - inactive indicator	7350	NC
- SE - 1 TB indicator	7351	NC
- SE - 5 TB indicator	7352	NC
- SE - 10 TB indicator	7353	NC
- SE - 25 TB indicator	7354	NC
- SE - 50 TB indicator	7355	NC
- SE - 100 TB indicator	7360	NC
- MGM - inactive indicator	7480	NC
- MGM - 1 TB indicator	7481	NC
- MGM - 5 TB indicator	7482	NC
- MGM - 10 TB indicator	7483	NC
- MGM - 25 TB indicator	7484	NC
- MGM - 50 TB indicator	7485	NC
- MGM - 100 TB indicator	7490	NC
- MM - inactive indicator	7500	NC
- MM - 1 TB indicator	7501	NC
- MM - 5 TB indicator	7502	NC
- MM - 10 TB indicator	7503	NC
- MM - 25 TB indicator	7504	NC
- MM - 50 TB indicator	7505	NC
- MM - 100 TB indicator	7510	NC
- GM - inactive indicator	7520	NC
- GM - 1 TB indicator	7521	NC
- GM - 5 TB indicator	7522	NC
- GM - 10 TB indicator	7523	NC
- GM - 25 TB indicator	7524	NC
- GM - 50 TB indicator	7525	NC
- GM - 100 TB indicator	7530	NC
- RMZ - inactive indicator	7650	NC
- RMZ - 1 TB indicator	7651	NC
- RMZ - 5 TB indicator	7652	NC
- RMZ - 10 TB indicator	7653	NC
- RMZ - 25 TB indicator	7654	NC
- RMZ - 50 TB indicator	7655	NC
- RMZ - 100 TB indicator	7660	NC
- RMZ resync - inactive indicator	7680	NC
- RMZ resync - 1 TB indicator	7681	NC
- RMZ resync - 5 TB indicator	7682	NC
- RMZ resync - 10 TB indicator	7683	NC
- RMZ resync - 25 TB indicator	7684	NC
- RMZ resync - 50 TB indicator	7685	NC
- RMZ resync - 100 TB indicator	7690	NC
- PAV - inactive indicator	7820	NC
- PAV - 1 TB indicator	7821	NC
- PAV - 5 TB indicator	7822	NC
- PAV - 10 TB indicator	7823	NC
- PAV - 25 TB indicator	7824	NC
- PAV - 50 TB indicator	7825	NC

```
- PAV - 100 TB indicator                    7830   NC

- HyperPAV indicator                         7899   NC
```

| | Machine | | Feature | Minimum monthly maintenance |
Description	type	Model	number	charge
DS8000 Series Function Authorization	2398	LFA		NC

```
Administrative Indicators:
- IBM/Openwave Alliance                       0930   NC
- IBM System i Indicator                      0931   NC
- IBM System p Indicator                      0932   NC
- IBM System x Indicator                      0933   NC
- IBM System z Indicator                      0934   NC
- Linux Indicator                             0940   NC

Operating Environment (OEL) License:
- OEL - inactive                              7030   NC
- OEL - 1 TB unit                             7031   NC
- OEL - 5 TB unit                             7032   NC
- OEL - 10 TB unit                            7033   NC
- OEL - 25 TB unit                            7034   NC
- OEL - 50 TB unit                            7035   NC
- OEL - 100 TB unit                           7040   NC
- OEL - 200 TB unit                           7045   NC

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

- FICON indicator                             7091   NC
- zHPF indicator                              7092   NC

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

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

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

- MM - inactive indicator                     7500   NC
- MM - 1 TB indicator                         7501   NC
- MM - 5 TB indicator                         7502   NC
- MM - 10 TB indicator                        7503   NC
- MM - 25 TB indicator                        7504   NC
```

```
- MM - 50 TB indicator                      7505    NC
- MM - 100 TB indicator                     7510    NC

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

- RMZ - inactive indicator                  7650    NC
- RMZ - 1 TB indicator                      7651    NC
- RMZ - 5 TB indicator                      7652    NC
- RMZ - 10 TB indicator                     7653    NC
- RMZ - 25 TB indicator                     7654    NC
- RMZ - 50 TB indicator                     7655    NC
- RMZ - 100 TB indicator                    7660    NC

- RMZ resync - inactive indicator           7680    NC
- RMZ resync - 1 TB indicator               7681    NC
- RMZ resync - 5 TB indicator               7682    NC
- RMZ resync - 10 TB indicator              7683    NC
- RMZ resync - 25 TB indicator              7684    NC
- RMZ resync - 50 TB indicator              7685    NC
- RMZ resync - 100 TB indicator             7690    NC

- PAV - inactive indicator                  7820    NC
- PAV - 1 TB indicator                      7821    NC
- PAV - 5 TB indicator                      7822    NC
- PAV - 10 TB indicator                     7823    NC
- PAV - 25 TB indicator                     7824    NC
- PAV - 50 TB indicator                     7825    NC
- PAV - 100 TB indicator                    7830    NC

- HyperPAV indicator                        7899    NC
```

Description	Machine type	Model	Feature number	Minimum monthly maintenance charge
DS8000 Series Function Authorization	2399	LFA		NC
Administrative Indicators:				
- IBM/Openwave Alliance			0930	NC
- IBM System i Indicator			0931	NC
- IBM System p Indicator			0932	NC
- IBM System x Indicator			0933	NC
- IBM System z Indicator			0934	NC
- Linux Indicator			0940	NC
Operating Environment (OEL) License:				
- OEL - inactive			7030	NC
- OEL - 1 TB unit			7031	NC
- OEL - 5 TB unit			7032	NC
- OEL - 10 TB unit			7033	NC
- OEL - 25 TB unit			7034	NC
- OEL - 50 TB unit			7035	NC
- OEL - 100 TB unit			7040	NC
- OEL - 200 TB unit			7045	NC
- OEL - Value Unit inactive			7050	NC
- OEL - 1 Value Unit			7051	NC
- OEL - 5 Value Unit			7052	NC
- OEL - 10 Value Unit			7053	NC
- OEL - 25 Value Unit			7054	NC
- OEL - 50 Value Unit			7055	NC
- OEL - 100 Value Unit			7060	NC
- OEL - 200 Value Unit			7065	NC

```
- FICON indicator                          7091    NC
- zHPF indicator                            7092    NC

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

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

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

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

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

- RMZ - inactive indicator                  7650    NC
- RMZ - 1 TB indicator                      7651    NC
- RMZ - 5 TB indicator                      7652    NC
- RMZ - 10 TB indicator                     7653    NC
- RMZ - 25 TB indicator                     7654    NC
- RMZ - 50 TB indicator                     7655    NC
- RMZ - 100 TB indicator                    7660    NC

- RMZ resync - inactive indicator           7680    NC
- RMZ resync - 1 TB indicator               7681    NC
- RMZ resync - 5 TB indicator               7682    NC
- RMZ resync - 10 TB indicator              7683    NC
- RMZ resync - 25 TB indicator              7684    NC
- RMZ resync - 50 TB indicator              7685    NC
- RMZ resync - 100 TB indicator             7690    NC

- PAV - inactive indicator                  7820    NC
- PAV - 1 TB indicator                      7821    NC
- PAV - 5 TB indicator                      7822    NC
- PAV - 10 TB indicator                     7823    NC
- PAV - 25 TB indicator                     7824    NC
- PAV - 50 TB indicator                     7825    NC
- PAV - 100 TB indicator                    7830    NC

- HyperPAV indicator                        7899    NC

NC = No charge
```

MT	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

MT	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	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	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	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	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

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