

IBM FlashSystem A9000/A9000R software version 12.3 introduces supreme data protection with multisite high availability and disaster recovery

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Overview

IBM FlashSystem^(R) A9000/A9000R software version 12.3 introduces:

- Multisite high availability and disaster recovery with HyperSwap^(R) between two primary sites and disaster recovery through simultaneous asynchronous replication from the primary sites to a third site
- New FlashSystem A9000R systems can now be ordered with a new entry-level configuration of one flash enclosure and three grid controllers¹, reducing entry point capacity by 50%
- Maximum configurable pool capacity dynamically matches the full system capacity

Note: Hyper-Scale manager new software version 5.5 will be generally available at the same time as IBM FlashSystem A9000/A9000R software version 12.3. This version will enable you to monitor internal and external latency at the system level.

¹ As before, FlashSystem A9000R system is delivered in a rack form factor, including the interconnect and power components, in addition to the flash enclosures and grid controllers.

Key prerequisites

FlashSystem A9000/A9000R software V12 (5639-FS1) requires a FlashSystem A9000R (9835-415, 9835-425, 9837-415, 9837-425, or 9837-U25) or FlashSystem A9000 (9836-415, 9836-425, 9838-415, 9838-425, or 9838-U25) storage system. It is preinstalled on, and shipped with, these systems.

All the new enhancements require software version 12.3, or later.

Multisite high availability and disaster recovery require:

- Minimal deployment with three systems, all with software V12.3, or later
- FlashSystem A9000 or A9000R
- Models 415, 425, and U25
- Mixing A9000 and A9000R systems of different models is allowed

Planned availability date

- November 7, 2018: Electronic availability
- November 23, 2018: General availability

Description

Multisite high availability and disaster recovery

FlashSystem A9000 and A9000R introduce multisite high availability and disaster recovery. This new data protection capability is applicable to individual volumes or consistency groups.

When protected with multisite high availability and disaster recovery, the volume or consistency group becomes available on three systems. Two active-active copies, the primary and secondary, are established using HyperSwap between two systems. The third copy, the tertiary volume or consistency group, is created through asynchronous replication of the primary volume to the third system. A standby asynchronous replication can be configured between the secondary and the tertiary copies.

In case that a HyperSwap failover occurs, the secondary copy becomes the primary one, and vice versa. In addition, the standby replication is activated, to immediately and nondisruptively resume the asynchronous replication from the same point in time, between the new primary copy and the tertiary copy. The formerly active replication becomes nonactive.

In the unlikely event where both the primary and secondary copies become unavailable for any reason, the tertiary copy can be activated and used on the third site.

Support for new entry-level minimum configuration

New FlashSystem A9000R systems can now be ordered with an entry-level configuration including one flash enclosure and three grid controllers. This new configuration introduces entry-point capacities that are 50% smaller than previously available without limiting future scalability, as listed below.

Flash enclosure FC	Flash enclosure description	Entry-point physical capacity ²	Entry-point effective capacity ³
AFE4	12 x 3.6 TB MicroLatency ^(R) Modules	36 TB	180 TB
AFE5	12 x 8.5 TB MicroLatency Modules	85 TB	425 TB
AFE6	12 x 18 TB MicroLatency Modules	180 TB	900 TB

² Physical capacity is the available capacity after system overhead, including flash media over-provisioning and RAID protection.

³ Typical effective capacity is the available capacity after system overhead (including flash media over-provisioning and RAID protection) and after the data reduction benefits of pattern removal, deduplication, and compression. This assumes data reduction multiple of 5 to 1.

Maximum pool capacity scales to match system capacity

In software versions older than version 12.3, the maximum configurable pool capacity was fixed at 1 PB. Starting with software version 12.3, the maximum configurable pool capacity is dynamically matched with the full system capacity,

depending on the system configuration. This enhancement is particularly useful for deployments that utilize the full system capacity in a single pool.

FlashSystem A9000 and A9000R continue to deliver a rich set of enterprise-level capabilities including:

- Harness the performance of IBM FlashCore^(R) technology with highly parallel architecture, and achieve consistent performance with automatic load balancing
- Enable capacity-optimized configurations using 18 TB 3DTLC IBM FlashCore modules (models 425 and U25)
- Increase data protection and system availability with enterprise-grade high availability and HyperSwap active-active storage clustering across systems and data centers
- Optimize storage economics with pattern removal, deduplication, and compression
- Encrypt data at rest with server-based or local key management
- Support multitenant, mixed workload clouds with enterprise-grade high availability, security, and quality of service features that prevent *noisy neighbors* in mixed workload environments
- Deliver consistent performance and exceed service-level agreements for data-intensive workloads
- Integrate easily with VMware, OpenStack, Linux^(R), and MicrosoftTM platforms, as well as most infrastructures
- Simplify storage administration with an innovative, new user interface

Version 12.3 will be available for software upgrades starting November 7, 2018, new systems that are preinstalled with version 12.3 will start shipping November 23, 2018.

Section 508 of the US Rehabilitation Act

IBM FlashSystem A9000/A9000R Software is capable as of October 9, 2018, when used in accordance with IBM^(R)'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 through the [Product accessibility information](#) website.

Statement of general direction

With this announcement, IBM introduces a new entry-level configuration of one flash enclosure and three grid controllers for A9000R that is supported with software version 12.3. However, adding flash enclosures and grid controllers to this configuration, is not supported with version 12.3.

IBM currently plans to provide a future software version that will support adding flash enclosures and grid controllers to this new configuration. Once available, entitled⁴ customers who purchased new FlashSystem A9000R model 425 and U25 systems with the new minimum configuration and software version 12.3, will be able to hot-upgrade to that software version, and then scale these systems out with additional grid controllers and flash enclosures.

⁴ The system must be under warranty and have an active software maintenance agreement.

IBM also intends to address common FlashSystem A9000 and A9000R capacity management queries that are difficult to answer with deduplication:

- How much capacity will I reclaim by deletion? Deletions vacate less than the nominal volume capacity.

- How much capacity did I save for this application with Compression alone? With deduplication alone?
- Since my volume shares capacity with other volumes via deduplication, how much capacity should I fairly attribute to it, for charge-back?

Therefore, IBM currently plans to enhance FlashSystem A9000 and A9000R systems with patented IBM Research technology that:

- Analyzes vast amounts of data without performance impact.
- Provides effective estimates, per volume, for reclaimable capacity, attributed capacity, compression saving, deduplication saving, and total capacity saving.
- Requires no management, configuration, or training, and no extra cost.

IBM's statements regarding its plans, directions, and intent are subject to change or withdrawal without notice at IBM's sole discretion. Information regarding potential future products is intended to outline our general product direction and it should not be relied on in making a purchasing decision. The information mentioned regarding potential future products is not a commitment, promise, or legal obligation to deliver any material, code, or functionality. Information about potential future products may not be incorporated into any contract. The development, release, and timing of any future features or functionality described for our products remain at our sole discretion.

Program number

Program number	VRM	Program name
5639-FS1	12.3.0	IBM FlashSystem A9000/ A9000R Software V12
5639-FS2	12.3.0	IBM FlashSystem A9000/ A9000R HW Int. with IBM SA License V12

Product identification number

Program number	Maintenance 1 year PID number	Maintenance 3 year PID number
5639-FS1	5639-FSJ	5639-FSL
	5639-FSK	5639-FSM
		5639-FSN

Program number	Maintenance 2 year PID number	Maintenance 4 year PID number	Maintenance 5 year PID number
5639-FS1	5639-FSP	5639-FSQ	5639-FSR

Program number	Maintenance 1 year PID number	Maintenance 3 year PID number
5639-FS2	5639-FSS	5639-FSU
	5639-FST	5639-FSV
		5639-FSW

Program number	Maintenance 2 year PID number	Maintenance 4 year PID number	Maintenance 5 year PID number
5639-FS2	5639-FSX	5639-FSY	5639-FSZ

Business Partner information

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

[BP Attachment for Announcement Letter 218-464](#)

Offering Information

Product information is available on the [IBM Offering Information](#) website.

Publications

All associated publications are shipped with the corresponding hardware orders. To order, see the [IBM Publications Center](#) or contact your IBM representative.

IBM Publications Center

The [IBM Publications Center](#) is a worldwide central repository for IBM product publications and marketing material with a catalog of 70,000 items. Extensive search facilities are provided. A large number of publications are available online in various file formats, and they can all be downloaded by all countries.

Services

Software Services

IBM Software Services has the breadth, depth, and reach to manage your services needs. You can leverage the deep technical skills of our lab-based, software services team and the business consulting, project management, and infrastructure expertise of our IBM Global Services team. Also, we extend our IBM Software Services reach through IBM Business Partners to provide an extensive portfolio of capabilities. Together, we provide the global reach, intellectual capital, industry insight, and technology leadership to support a wide range of critical business needs.

To learn more about IBM Software Services, contact your Lab Services Sales or Delivery Leader.

Technical information

Specified operating environment

Hardware requirements

FlashSystem A9000/A9000R Software V12 (5639-FS1) requires a FlashSystem A9000R (9835-415, 9835-425, 9837-415, 9837-425, or 9837-U25) or A9000 (9836-415, 9836-425, 9838-415, 9838-425, or 9838-U25) system.

FlashSystem A9000/A9000R HW Int. with IBM SA License V12 (5639-FS2) requires a FlashSystem A9000R (9837-415 and 9837-425) or A9000 (9838-415 and 9838-425) system.

Current support summaries, including specific software, hardware, and firmware levels supported, are maintained on the [IBM Support Portal](#).

Software requirements

For all currently supported storage systems and host environments, go to the [IBM Support Portal](#).

Compatibility

For information regarding currently supported environments and operating guidelines, go to the [IBM Support Portal](#).

Limitations

Programs in this release only operate on specified storage hardware, currently defined as IBM 9835-415, 9836-415, 9837-415, 9838-415, 9835-425, 9836-425, 9836-U25, 9837-425, 9838-425, or 9838-U25 products.

For additional information, see the [Terms and conditions](#) section of this announcement and the License Information document that is available on the [IBM Software License Agreement](#) website.

Additional information on configuration limitations and configuration guidelines is further documented in the readme file accompanying FlashSystem A9000 and A9000R Software V12 included with the publications for this product.

Planning information

Planning considerations required for FlashSystem A9000 and A9000R apply. Go to the [Product information](#) page in the IBM Publications library.

Customers with 5639-FS1 and 5639-FS2 licenses are responsible to ensure the total enclosures managed are within license entitlement.

Client responsibilities

The customer is responsible for planning, provisioning, power, and environmental support required for FlashSystem A9000 and A9000R.

Support for the server, its operating system, and the web browser from which the FlashSystem A9000 and A9000R console are accessed is a customer responsibility and is separately ordered.

Packaging

New order packaging

FlashSystem A9000/9000R Software V12 (5639-FS1) is preinstalled on, and shipped with, the required FlashSystem A9000 and A9000R hardware. For code updates, go to the [IBM Support Portal](#).

The paid invoice acts as Proof of Entitlement (PoE) for all orders of FlashSystem A9000/A9000R Software V12. All associated media listed in the [Publications](#) section are also shipped with the new hardware order. One media set per FlashSystem A9000 or A9000R storage system will be shipped.

Subsequent media orders

For additional available publications, see the [Publications](#) section.

For assistance in placing orders with or without media features, contact your IBM representative.

Publications are in English. This program, when downloaded from a website, contains the applicable IBM license agreement and License Information, if appropriate, and will be presented for acceptance at the time of installation of the program. For future reference, the license and License Information will be stored in a directory such as LICENSE.TXT.

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Direct client support

For technical support or assistance, contact your IBM representative or go to the [IBM Support Portal](#).

Security, auditability, and control

Use of supplementary antivirus software is recommended, but not required.

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

Ordering information

Consult your IBM representative.

5639-FS1 - IBM FlashSystem A9000/A9000R Software V12

Use-based OTC with One-year Software Maintenance

Feature description	OTC feature number
Flash Enclosure-60 SW Per Storage Device with 1 Year SW Maintenance	0001
Flash Enclosure-150 SW Per Storage Device with 1 Year SW Maintenance	0003
Flash Enclosure-300 SW Per Storage Device with 1 Year SW Maintenance	0004
Flash Enclosure-FE4 SW Per Storage Device with 1 Year SW Maintenance	0005
Flash Enclosure-FE5 SW Per Storage Device with 1 Year SW Maintenance	0006
Flash Enclosure-FE6 SW Per Storage Device with 1 Year SW Maintenance	0007
Flash Enclosure-FE7 SW Per Storage Device with 1 Year SW Maintenance	0008

5639-FS2 - IBM FlashSystem A9000/A9000R HW Int. with IBM SA License V12

Use-based OTC with One-year Software Maintenance

Feature description	OTC feature number
Flash Enclosure-60 HW Int Per Storage Device with 1 Year SW Maintenance	0001
Flash Enclosure-150 HW Int Per Storage Device with 1 Year SW Maintenance	0003
Flash Enclosure-300 HW Int Per Storage Device with 1 Year SW Maintenance	0004
Flash Enclosure-FE4 HW Int Per Storage Device with 1 Year SW Maintenance	0005
Flash Enclosure-FE5 HW Int Per Storage Device with 1 Year SW Maintenance	0006
Flash Enclosure-FE6 HW Int Per Storage Device with 1 Year SW Maintenance	0007
Flash Enclosure-FE7 HW Int Per Storage Device with 1 Year SW Maintenance	0008

Maintenance PID number	Description
5639-FSJ	IBM FlashSystem A9000/A9000R Software V12 Software Maintenance - One-year Registration and Renewal
5639-FSK	IBM FlashSystem A9000/A9000R Software V12 Software Maintenance - One-year After License
5639-FSL	IBM FlashSystem A9000/A9000R Software V12 Software Maintenance - Three-year Registration

Maintenance PID number	Description
5639-FSM	IBM FlashSystem A9000/A9000R Software V12 Software Maintenance - Three-year Renewal
5639-FSN	IBM FlashSystem A9000/A9000R Software V12 Software Maintenance - Three-year After License
5639-FSP	IBM FlashSystem A9000/A9000R Software V12 Software Maintenance - Two-year Registration
5639-FSQ	IBM FlashSystem A9000/A9000R Software V12 Software Maintenance - Four-year Registration
5639-FSR	IBM FlashSystem A9000/A9000R Software V12 Software Maintenance - Five-year Registration
5639-FSS	IBM FlashSystem A9000/A9000R HW Int. with IBM SA License V12 Software Maintenance - One-year Registration and Renewal
5639-FST	IBM FlashSystem A9000/A9000R HW Int. with IBM SA License V12 Software Maintenance - One-year After License
5639-FSU	IBM FlashSystem A9000/A9000R HW Int. with IBM SA License V12 Software Maintenance - Three-year Registration
5639-FSV	IBM FlashSystem A9000/A9000R HW Int. with IBM SA License V12 Software Maintenance - Three-year Renewal
5639-FSW	IBM FlashSystem A9000/A9000R HW Int. with IBM SA License V12 Software Maintenance - Three-year After License
5639-FSX	IBM FlashSystem A9000/A9000R HW Int. with IBM SA License V12 Software Maintenance - Two-year Registration
5639-FSY	IBM FlashSystem A9000/A9000R HW Int. with IBM SA License V12 Software Maintenance - Four-year Registration
5639-FSZ	IBM FlashSystem A9000/A9000R HW Int. with IBM SA License V12 Software Maintenance - Five-year Registration

5639-FSJ -IBM FlashSystem A9000/A9000R Software V12 Software Maintenance - One-year Registration and Renewal

One-year No Charge Registration:

Feature description	No charge feature number
Flash Enclosure-60 SW One-year NC Registration per Storage Device	0002
Flash Enclosure-150 SW One-year NC Registration per Storage Device	0006
Flash Enclosure-300 SW One-year NC Registration per Storage Device	0008
Flash Enclosure-FE4 SW One-year NC Registration per Storage Device	0010
Flash Enclosure-FE5 SW One-year NC Registration per Storage Device	0012
Flash Enclosure-FE6 SW One-year NC Registration per Storage Device	0014
Flash Enclosure-FE7 SW One-year NC Registration per Storage Device	0016

One-year Registration and Renewal:

Feature description	OTC feature number
Flash Enclosure-60 SW One-year Renewal One-time charge per Storage Device	0001
Flash Enclosure-150 SW One-year Renewal One-time charge per Storage Device	0005
Flash Enclosure-300 SW One-year Renewal One-time charge per Storage Device	0007
Flash Enclosure-FE4 SW One-year Renewal One-time charge per Storage Device	0009
Flash Enclosure-FE5 SW One-year Renewal One-time charge per Storage Device	0011
Flash Enclosure-FE6 SW One-year Renewal One-time charge per Storage Device	0013
Flash Enclosure-FE7 SW One-year Renewal One-time charge per Storage Device	0015

No-Charge Features:

Feature description	No charge feature number
SWMA Auto Renewal Registration	9000

5639-FSK -IBM FlashSystem A9000/A9000R Software V12 Software Maintenance - One-year After License

Feature description	OTC feature number
Flash Enclosure-60 SW One-year After License One-time charge per Storage Device	0001
Flash Enclosure-150 SW One-year After License One-time charge per Storage Device	0003
Flash Enclosure-300 SW One-year After License One-time charge per Storage Device	0004
Flash Enclosure-FE4 SW One-year After License One-time charge per Storage Device	0005
Flash Enclosure-FE5 SW One-year After License One-time charge per Storage Device	0006
Flash Enclosure-FE6 SW One-year After License One-time charge per Storage Device	0007
Flash Enclosure-FE7 SW One-year After License One-time charge per Storage Device	0008

5639-FSL -IBM FlashSystem A9000/A9000R Software V12 Software Maintenance - Three-year Registration

Feature description	OTC feature number
Flash Enclosure-60 SW Three-year Registration One-time charge per Storage Device	0001
Flash Enclosure-150 SW Three-year Registration One-time charge per Storage Device	0003
Flash Enclosure-300 SW Three-year Registration One-time charge per Storage Device	0004
Flash Enclosure-FE4 SW Three-year Registration One-time charge per Storage Device	0005
Flash Enclosure-FE5 SW Three-year Registration One-time charge per Storage Device	0006

Feature description	OTC feature number
Flash Enclosure-FE6 SW Three-year Registration One-time charge per Storage Device	0007
Flash Enclosure-FE7 SW Three-year Registration One-time charge per Storage Device	0008

No-Charge Features:

Feature description	No charge feature number
SWMA Auto Renewal Registration	9000

5639-FSM -IBM FlashSystem A9000/A9000R Software V12 Software Maintenance - Three-year Renewal

Feature description	OTC feature number
Flash Enclosure-60 SW Three-year Renewal One-time charge per Storage Device	0001
Flash Enclosure-150 SW Three-year Renewal One-time charge per Storage Device	0003
Flash Enclosure-300 SW Three-year Renewal One-time charge per Storage Device	0004
Flash Enclosure-FE4 SW Three-year Renewal One-time charge per Storage Device	0005
Flash Enclosure-FE5 SW Three-year Renewal One-time charge per Storage Device	0006
Flash Enclosure-FE6 SW Three-year Renewal One-time charge per Storage Device	0007
Flash Enclosure-FE7 SW Three-year Renewal One-time charge per Storage Device	0008

5639-FSN -IBM FlashSystem A9000/A9000R Software V12 Software Maintenance - Three-year After License

Feature description	OTC feature number
Flash Enclosure-60 SW Three-year After License One-time charge per Storage Device	0001
Flash Enclosure-150 SW Three-year After License One-time charge per Storage Device	0003
Flash Enclosure-300 SW Three-year After License One-time charge per Storage Device	0004
Flash Enclosure-FE4 SW Three-year After License One-time charge per Storage Device	0005
Flash Enclosure-FE5 SW Three-year After License One-time charge per Storage Device	0006
Flash Enclosure-FE6 SW Three-year After License One-time charge per Storage Device	0007
Flash Enclosure-FE7 SW Three-year After License One-time charge per Storage Device	0008

5639-FSP -IBM FlashSystem A9000/A9000R Software V12 Software Maintenance - Two-year Registration

Feature description	OTC feature number
Flash Enclosure-60 SW Two-year Registration One-time charge per Storage Device	0001
Flash Enclosure-150 SW Two-year Registration One-time charge per Storage Device	0003
Flash Enclosure-300 SW Two-year Registration One-time charge per Storage Device	0004
Flash Enclosure-FE4 SW Two-year Registration One-time charge per Storage Device	0005
Flash Enclosure-FE5 SW Two-year Registration One-time charge per Storage Device	0006
Flash Enclosure-FE6 SW Two-year Registration One-time charge per Storage Device	0007
Flash Enclosure-FE7 SW Two-year Registration One-time charge per Storage Device	0008

No-Charge Features:

Feature description	No charge feature number
SWMA Auto Renewal Registration	9000

5639-FSQ -IBM FlashSystem A9000/A9000R Software V12 Software Maintenance - Four-year Registration

Feature description	OTC feature number
Flash Enclosure-60 SW Four-year Registration One-time charge per Storage Device	0001
Flash Enclosure-150 SW Four-year Registration One-time charge per Storage Device	0003
Flash Enclosure-300 SW Four-year Registration One-time charge per Storage Device	0004
Flash Enclosure-FE4 SW Four-year Registration One-time charge per Storage Device	0005
Flash Enclosure-FE5 SW Four-year Registration One-time charge per Storage Device	0006
Flash Enclosure-FE6 SW Four-year Registration One-time charge per Storage Device	0007
Flash Enclosure-FE7 SW Four-year Registration One-time charge per Storage Device	0008

No-Charge Features:

Feature description	No charge feature number
SWMA Auto Renewal Registration	9000

5639-FSR -IBM FlashSystem A9000/A9000R Software V12 Software Maintenance - Five-year Registration

Feature description	OTC feature number
Flash Enclosure-60 SW Five-year Registration One-time charge per Storage Device	0001
Flash Enclosure-150 SW Five-year Registration One-time charge per Storage Device	0003

Feature description	OTC feature number
Flash Enclosure-300 SW Five-year Registration One-time charge per Storage Device	0004
Flash Enclosure-FE4 SW Five-year Registration One-time charge per Storage Device	0005
Flash Enclosure-FE5 SW Five-year Registration One-time charge per Storage Device	0006
Flash Enclosure-FE6 SW Five-year Registration One-time charge per Storage Device	0007
Flash Enclosure-FE7 SW Five-year Registration One-time charge per Storage Device	0008

No-Charge Features:

Feature description	No charge feature number
SWMA Auto Renewal Registration	9000

5639-FSS -IBM FlashSystem A9000/A9000R HW Int. with IBM SA License V12 Software Maintenance - One-year Registration and Renewal

One-year No Charge Registration:

Feature description	No charge feature number
Flash Enclosure-60 HW Int One-year NC Registration per Storage Device	0002
Flash Enclosure-150 HW Int One-year NC Registration per Storage Device	0006
Flash Enclosure-300 HW Int One-year NC Registration per Storage Device	0008
Flash Enclosure-FE4 HW Int One-year NC Registration per Storage Device	0010
Flash Enclosure-FE5 HW Int One-year NC Registration per Storage Device	0012
Flash Enclosure-FE6 HW Int One-year NC Registration per Storage Device	0014
Flash Enclosure-FE7 HW Int One-year NC Registration per Storage Device	0016

One-year Registration and Renewal:

Feature description	OTC feature number
Flash Enclosure-60 HW Int One-year Renewal One-time charge per Storage Device	0001
Flash Enclosure-150 HW Int One-year Renewal One-time charge per Storage Device	0005
Flash Enclosure-300 HW Int One-year Renewal One-time charge per Storage Device	0007
Flash Enclosure-FE4 HW Int One-year Renewal One-time charge per Storage Device	0009
Flash Enclosure-FE5 HW Int One-year Renewal One-time charge per Storage Device	0011
Flash Enclosure-FE6 HW Int One-year Renewal One-time charge per Storage Device	0013
Flash Enclosure-FE7 HW Int One-year Renewal One-time charge per Storage Device	0015

No-Charge Features:

Feature description	No charge feature number
SWMA Auto Renewal Registration	9000

5639-FST -IBM FlashSystem A9000/A9000R HW Int. with IBM SA License V12 Software Maintenance - One-year After License

Feature description	OTC feature number
Flash Enclosure-60 HW Int One-year After License One-time charge per Storage Device	0001
Flash Enclosure-150 HW Int One-year After License One-time charge per Storage Device	0003
Flash Enclosure-300 HW Int One-year After License One-time charge per Storage Device	0004
Flash Enclosure-FE4 HW Int One-year After License One-time charge per Storage Device	0005
Flash Enclosure-FE5 HW Int One-year After License One-time charge per Storage Device	0006
Flash Enclosure-FE6 HW Int One-year After License One-time charge per Storage Device	0007
Flash Enclosure-FE7 HW Int One-year After License One-time charge per Storage Device	0008

5639-FSU -IBM FlashSystem A9000/A9000R HW Int. with IBM SA License V12 Software Maintenance - Three-year Registration

Feature description	OTC feature number
Flash Enclosure-60 HW Int Three-year Registration One-time charge per Storage Device	0001
Flash Enclosure-150 HW Int Three-year Registration One-time charge per Storage Device	0003
Flash Enclosure-300 HW Int Three-year Registration One-time charge per Storage Device	0004
Flash Enclosure-FE4 HW Int Three-year Registration One-time charge per Storage Device	0005
Flash Enclosure-FE5 HW Int Three-year Registration One-time charge per Storage Device	0006
Flash Enclosure-FE6 HW Int Three-year Registration One-time charge per Storage Device	0007
Flash Enclosure-FE7 HW Int Three-year Registration One-time charge per Storage Device	0008

No-Charge Features:

Feature description	No charge feature number
SWMA Auto Renewal Registration	9000

5639-FSV -IBM FlashSystem A9000/A9000R HW Int. with IBM SA License V12 Software Maintenance - Three-year Renewal

Feature description	OTC feature number
Flash Enclosure-60 HW Int Three-year Renewal One-time charge per Storage Device	0001

Feature description	OTC feature number
Flash Enclosure-150 HW Int Three-year Renewal One-time charge per Storage Device	0003
Flash Enclosure-300 HW Int Three-year Renewal One-time charge per Storage Device	0004
Flash Enclosure-FE4 HW Int Three-year Renewal One-time charge per Storage Device	0005
Flash Enclosure-FE5 HW Int Three-year Renewal One-time charge per Storage Device	0006
Flash Enclosure-FE6 HW Int Three-year Renewal One-time charge per Storage Device	0007
Flash Enclosure-FE7 HW Int Three-year Renewal One-time charge per Storage Device	0008

5639-FSW -IBM FlashSystem A9000/A9000R HW Int. with IBM SA License V12 Software Maintenance - Three-year After License

Feature description	OTC feature number
Flash Enclosure-60 HW Int Three-year After License One-time charge per Storage Device	0001
Flash Enclosure-150 HW Int Three-year After License One-time charge per Storage Device	0003
Flash Enclosure-300 HW Int Three-year After License One-time charge per Storage Device	0004
Flash Enclosure-FE4 HW Int Three-year After License One-time charge per Storage Device	0005
Flash Enclosure-FE5 HW Int Three-year After License One-time charge per Storage Device	0006
Flash Enclosure-FE6 HW Int Three-year After License One-time charge per Storage Device	0007
Flash Enclosure-FE7 HW Int Three-year After License One-time charge per Storage Device	0008

5639-FSX -IBM FlashSystem A9000/A9000R HW Int. with IBM SA License V12 Software Maintenance - Two-year Registration

Feature description	OTC feature number
Flash Enclosure-60 HW Int Two-year Registration One-time charge per Storage Device	0001
Flash Enclosure-150 HW Int Two-year Registration One-time charge per Storage Device	0003
Flash Enclosure-300 HW Int Two-year Registration One-time charge per Storage Device	0004
Flash Enclosure-FE4 HW Int Two-year Registration One-time charge per Storage Device	0005
Flash Enclosure-FE5 HW Int Two-year Registration One-time charge per Storage Device	0006
Flash Enclosure-FE6 HW Int Two-year Registration One-time charge per Storage Device	0007

Feature description	OTC feature number
Flash Enclosure-FE7 HW Int Two-year Registration One-time charge per Storage Device	0008

No-Charge Features:

Feature description	No charge feature number
SWMA Auto Renewal Registration	9000

**5639-FSY -IBM FlashSystem A9000/A9000R HW Int. with IBM SA License
V12 Software Maintenance - Four-year Registration**

Feature description	OTC feature number
Flash Enclosure-60 HW Int Four-year Registration One-time charge per Storage Device	0001
Flash Enclosure-150 HW Int Four-year Registration One-time charge per Storage Device	0003
Flash Enclosure-300 HW Int Four-year Registration One-time charge per Storage Device	0004
Flash Enclosure-FE4 HW Int Four-year Registration One-time charge per Storage Device	0005
Flash Enclosure-FE5 HW Int Four-year Registration One-time charge per Storage Device	0006
Flash Enclosure-FE6 HW Int Four-year Registration One-time charge per Storage Device	0007
Flash Enclosure-FE7 HW Int Four-year Registration One-time charge per Storage Device	0008

No-Charge Features:

Feature description	No charge feature number
SWMA Auto Renewal Registration	9000

**5639-FSZ -IBM FlashSystem A9000/A9000R HW Int. with IBM SA License
V12 Software Maintenance - Five-year Registration**

Feature description	OTC feature number
Flash Enclosure-60 HW Int Five-year Registration One-time charge per Storage Device	0001
Flash Enclosure-150 HW Int Five-year Registration One-time charge per Storage Device	0003
Flash Enclosure-300 HW Int Five-year Registration One-time charge per Storage Device	0004
Flash Enclosure-FE4 HW Int Five-year Registration One-time charge per Storage Device	0005
Flash Enclosure-FE5 HW Int Five-year Registration One-time charge per Storage Device	0006
Flash Enclosure-FE6 HW Int Five-year Registration One-time charge per Storage Device	0007
Flash Enclosure-FE7 HW Int Five-year Registration One-time charge per Storage Device	0008

No-Charge Features:

Feature description	No charge feature number
SWMA Auto Renewal Registration	9000

Charge metric

Program name	PID number	Charge metric
IBM FlashSystem A9000/A9000R Software V12	5639-FS1	Per Storage Device
IBM FlashSystem A9000/A9000R HW Int. with IBM SA License V12	5639-FS2	Per Storage Device

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Form number LC27-8600

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