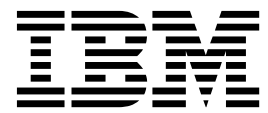


IBM FlashSystem A9000R
Version 12.0

Release Notes



First Edition (April 2016)

This edition applies to IBM FlashSystem A9000R version 12.0. Newer document editions may be issued for the same product version in order to add missing information, update information, or amend typographical errors. The edition is reset to 'First Edition' for every new product version.

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Overview

IBM FlashSystem® A9000R is a high-end, all-flash storage system that delivers ultra-fast storage together with mission-critical features, including data reduction by compression and inline deduplication, smart scaling, distributed data, automatic load balancing, and a multitude of advanced enterprise-class features and capabilities.

As a pre-integrated rack offering, IBM FlashSystem A9000R comprises grid controllers and flash enclosures that are interconnected by integrated InfiniBand switches, forming a scale-out grid fabric that delivers exceptional IOPS performance.

In its core architecture, IBM FlashSystem A9000R utilizes IBM FlashCore™ technology together with IBM® MicroLatency® modules, providing high density, low latency, and storage reliability. In addition, IBM FlashSystem Enhanced Endurance Technology reduces flash disk wearout and ensures long-term durability of the flash storage components, even under heavy workloads.

IBM FlashSystem A9000R is ideal for large enterprises that rely on fast, redundant, and high-capacity data storage, offering high service levels for dynamic workloads and easy hyper-scaling, while supporting multi-tenant environments, flexible consumption models, and robust cloud automation and integration capabilities. IBM FlashSystem A9000R offers security and data protection through advanced remote mirroring, hot encryption, and self-healing mechanisms.

For more detailed information about IBM FlashSystem A9000R, refer to its user documentation and online information.

Release scope and highlights

IBM FlashSystem A9000R is a brand new IBM product that has been released for general availability.

Software version: 12.0

General availability date: 29 April 2016

Supported features in this release

The following functional features are included in this release of IBM FlashSystem A9000R:

- Flash-optimized data reduction by:
 - Pattern detection and removal
 - Inline deduplication
 - Inline compression
- Flash-optimized data path and data protection, including –
 - Hyper-RAID distributed cache resiliency
 - Two-dimensional RAID protection
 - Advanced vaulting mechanism
 - Advanced scrubbing mechanism

- IBM enhanced Error Correction Code (ECC)
- Capacity statistics
- Space-efficient snapshots and consistency groups
- Redirect-on-Write (ROW)
- Quality of Service (QoS) performance classes
- Firehose dump (RAS)
- Data-at-rest encryption
- Multi-tenancy
- System performance metrics, including history metrics of no less than 300 days
- Remote support and proactive support

Software upgrade

IBM FlashSystem A9000R version 12.0 can be upgraded to newer software versions.

Refer to the release notes of the newer version for information about available non-disruptive upgrade (hot upgrade) paths.

The upgrade must be performed only by an authorized IBM service technician.

Management and automation tools

IBM FlashSystem A9000R version 12.0 can be managed and monitored with IBM Hyper-Scale Manager version 5.0 or later.

IBM Hyper-Scale Manager version 5.0 provides an advanced web-based graphical user interface (GUI) from which one or more IBM FlashSystem A9000R (or A9000) systems can be managed and monitored in real time from a web browser.

IBM FlashSystem A9000R can also be managed from its command-line interface (CLI) or through representational state transfer (REST) application programming interfaces (APIs).

IBM FlashSystem A9000R customers are entitled to free use of IBM Hyper-Scale Manager, which can be obtained at any time from the IBM Fix Central website (ibm.com/support/fixcentral).

IBM Spectrum Control™ Base Edition

IBM FlashSystem A9000R version 12.0 is supported by IBM Spectrum Control Base Edition version 3.0.0 or later, which provides the following VMware platform integration tools.

- IBM Storage Provider for VMware VASA
- IBM Storage Enhancements for VMware vSphere Web Client
- IBM Storage Plug-in for VMware vRealize Orchestrator
- IBM Storage Management Pack for VMware vRealize Operations Manager

For more information, see IBM Spectrum Control Base Edition on IBM Knowledge Center (ibm.com/support/knowledgecenter/STWMS9).

IBM FlashSystem A9000R customers are entitled to free use of IBM Spectrum Control Base Edition, which can be obtained at any time from either the IBM

Hyper-Scale Manager software package or from the IBM Fix Central website (ibm.com/support/fixcentral).

Available cloud storage solutions

IBM FlashSystem A9000R version 12.0 can be integrated with various independent software vendor (ISV) platform, application, virtualization, and cloud environments.

To facilitate this integration, IBM provides the following software solutions, also referred to as cloud storage solutions.

Cloud storage solution	Version	Compatibility note
IBM Storage Host Attachment Kit	2.6.0 or later	Available for: HP Unix, IBM AIX®, Linux (Red Hat Enterprise Linux; SUSE Linux Enterprise Server), Microsoft Windows Server, and Oracle Solaris.
IBM Storage Driver for OpenStack	1.7.0 or later	
IBM XIV® Provider for Microsoft Windows Volume Shadow Copy Service (VSS)	2.8.0 or later	

IBM FlashSystem A9000R customers are entitled to free use of the IBM cloud storage solutions, which can be obtained at any time from the IBM Fix Central website (ibm.com/support/fixcentral).

For more information about the available cloud storage solutions for IBM FlashSystem A9000R, see '**Platform and application integration**' topic in the IBM FlashSystem A9000R space on IBM Knowledge Center (ibm.com/support/knowledgecenter/STJKN5).

Limitations

As opposed to known issues, limitations are functionality restrictions that are part of the predefined system design and capabilities in a particular version.

Note: For information about specification-related functional boundaries, such as maximum number of volumes and hosts per storage system, refer to the IBM FlashSystem A9000R specification sheet document, which can be provided to IBM customers under non-disclosure agreement (NDA).

MES hardware expansion

In software version 12.0, additional grid controllers and flash enclosures cannot be added to an existing rack. Accordingly, a rack system with a sufficient amount of components must be ordered in advance.

In future software versions, check whether this limitation still applies.

Known issues

This section details the known issues in IBM FlashSystem A9000R version 12.0, along with possible solutions or workarounds (if available).

The following severity levels apply to known issues:

- **High Impact** – Potentially irrecoverable error that might impact data or access to data in rare cases or specific situations/configurations.
- **Moderate** – Limited functionality issue and/or performance issue with a noticeable effect.
- **Service** – Non-disruptive recoverable error that can be resolved through a workaround.
- **Low** – Low-impact usability-related issue.

Important:

- **The issues listed below apply to version 12.0.** As long as a newer version has not yet been released, a newer release notes edition for version 12.0 might be issued to provide a more updated list of known issues and workarounds.
 - When a newer version is released for general availability, the release notes of version 12.0 will no longer be updated. Accordingly, check the release notes of the newer version to learn whether any newly discovered issues affect version 12.0 or whether the newer version resolves any of the issues listed below.
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Ticket ID	Severity	Description
SYS-279484	Moderate	Data-at-rest encryption is not applied on the SSD vault device that holds user data from the write cache during emergency shutdown situations. Workaround: No workaround is currently available.
SYS-279855	Moderate	Emergency shutdown is not automatically carried out if more than three grid controllers fail in a rack configuration that contains 6 grid controllers. This issue does not occur in rack configurations that contain 8 grid controllers. Workaround: If such a rare situation occurs, shut down the system manually.
SYS-276870	Low	When a grid controller is replaced, or whenever the system is undergoing a software initiation process, data reduction saving statistics could be temporarily inaccurate. The statistics accuracy is regained as data is being accessed and processed again. This issue has a noticeable effect only when 1TB or less is written to the system. Workaround: No workaround is currently available.
SYS-279304	Low	Latency is indicated in the performance statistics, even when the actual Input/Output Operations Per Second (IOPS) rate is close to 0. Workaround: No workaround is currently available.
SYS-279421	Low	Time stamp is incorrect in statistics reported over SMI-S. Workaround: No workaround is currently available.

Ticket ID	Severity	Description
SYS-279455	Low	The SCSI inquiry page C0 byte 3 reports the system's RAID type. The current code incorrectly reports RAID 10, while it should report RAID 5. Workaround: No workaround is currently available.

Related information and publications

You can find additional information and publications related to IBM FlashSystem A9000R on the following information sources.

- IBM Flash Storage marketing website (ibm.com/systems/storage/flash)
- IBM FlashSystem A9000R on IBM Knowledge Center (ibm.com/support/knowledgecenter/STJKN5)
- IBM FlashSystem A9000 on IBM Knowledge Center (ibm.com/support/knowledgecenter/STJKMM)
- IBM Storage Redbooks® website (redbooks.ibm.com/portals/storage)

Getting information, help, and service

If you need help, service, technical assistance, or want more information about IBM products, you can find various sources to assist you. You can view the following websites to get information about IBM products and services and to find the latest technical information and support.

- IBM website (ibm.com®)
- IBM Support Portal website (ibm.com/storage/support)
- IBM Directory of Worldwide Contacts website (ibm.com/planetwide)
- IBM service requests and PMRs (ibm.com/support/servicerequest/Home.action)

Use the Directory of Worldwide Contacts to find the appropriate phone number for initiating voice call support. Voice calls arrive to Level 1 or Front Line Support.

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