

IBM FlashSystem A9000R
Version 12.0.0.c

Release Notes



Second Edition (August 2016)

This edition applies to IBM FlashSystem A9000R version 12.0.0.c. 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.

What's new in version 12.0.0.c

Software version 12.0.0.c resolves two high-impact issues.

General availability date: 28 July 2016

For more information about the fixes in this version, see “Fixed issues” on page 3.

Hot upgrade from earlier versions

Version 12.0.0.c supports direct non-disruptive upgrade (hot upgrade) from version 12.0.0.a. Upgrade from version 12.0.0 is not supported.

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

Prior to initiating software upgrade, consult with IBM Support regarding the required time allocation and expected duration of the upgrade procedure.

Note: The system e-license may automatically prompt in the management GUI upon the first post-upgrade operation, if the e-license was updated since it was last accepted. In such a case, the new e-license must be accepted before any GUI operation can be performed.

Management and automation tools

IBM FlashSystem A9000R version 12.0.0.c 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 12.0.0.c 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 12.0.0.c 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	Version 1.7.0 supports only the OpenStack Mitaka release

Cloud storage solution	Version	Compatibility note
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).

Fixed issues

Version 12.0.0.c of IBM FlashSystem A9000R includes the following fixes.

Ticket ID	Description
SYS-281016	<p>Fixed: If a grid controller or cache node fails and then at some future point a volume is formatted, a volume is deleted, or VAAI issues a write_same command (with zeros), it is possible that in rare cases, the data which was not explicitly written by the application might contain data other than the expected zeros. This will be undetected.</p> <p>Severity: High Impact</p> <p>Affected versions: 12.0.0 or later</p>
SYS-281468	<p>Fixed: If a snapshot of a volume is deleted, a very rare instance of undetected data corruption on a small part of the volume might occur.</p> <p>Severity: High Impact</p> <p>Affected versions: 12.0.0 or later</p>

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 versions 12.0, 12.0.0.a and 12.0.0.c, 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 12.0.0.c, 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 12.0.0.c or earlier versions.** As long as a newer version has not yet been released, a newer release notes edition for version 12.0.0.c 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 12.0.0.c will no longer be updated. Accordingly, check the release notes of the newer version to learn whether any newly discovered issues affect version 12.0.0.c or whether the newer version resolves any of the issues listed below.
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Ticket ID	Severity	Affected versions	Description
SYS-279484	Moderate	12.0.0 or later	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-280320	Moderate	12.0.0 or later	In rare cases of workloads that include a mixture of 4KB random write and read, an increase in latency might occur upon intensive access to a volume with snapshots. Workaround: To avoid this issue, consider the following actions: <ol style="list-style-type: none">1. Maintain a high cache hit ratio.2. Use a larger block size.3. Disable snapshot usage for that specific volume.
SYS-279815	Service	12.0.0 or later	If a MicroLatency module card that is pulled out of the flash enclosure when the enclosure's internal redundancy state is either 'Synching' or 'Degraded', the management GUI indicates that the card has a spare, even if no spare is available. Workaround: Use the flash_card_list CLI command to display the correct status of spares.

Ticket ID	Severity	Affected versions	Description
SYS-280124	Service	12.0.0 or later	<p>Numerous MODULE_BBU_IS_CHARGING and MODULE_BBU_IS_FULL events are issued during the periodic discharge of a grid controller's battery backup unit (BBU).</p> <p>Workaround: These events can be ignored.</p>
SYS-276870	Low	12.0.0 or later	<p>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.</p> <p>This issue has a noticeable effect only when 1TB or less is written to the system.</p> <p>Workaround: No workaround is currently available.</p>
SYS-279304	Low	12.0.0 or later	<p>Latency is indicated in the performance statistics, even when the actual Input/Output Operations Per Second (IOPS) rate is close to 0.</p> <p>Workaround: No workaround is currently available.</p>
SYS-279421	Low	12.0.0 or later	<p>Time stamp is incorrect in statistics reported over SMI-S.</p> <p>Workaround: No workaround is currently available.</p>
SYS-279455	Low	12.0.0 or later	<p>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.</p> <p>Workaround: No workaround is currently available.</p>

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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