

IBM block storage CSI driver
1.3.0

Release Notes



Second Edition (December 2020)

This edition applies to version 1.3.0 of the IBM® block storage CSI driver software package. 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 block storage CSI driver is leveraged by Kubernetes persistent volumes (PVs) to dynamically provision for block storage used with stateful containers.

IBM block storage CSI driver is based on an open-source IBM project ([CSI driver](#)), included as a part of IBM storage orchestration for containers. IBM storage orchestration for containers enables enterprises to implement a modern container-driven hybrid multicloud environment that can reduce IT costs and enhance business agility, while continuing to derive value from existing systems.

By leveraging CSI (Container Storage Interface) drivers for IBM storage systems, Kubernetes persistent volumes (PVs) can be dynamically provisioned for block or file storage to be used with stateful containers, such as database applications (IBM Db2®, MongoDB, PostgreSQL, etc) running in Red Hat® OpenShift® Container Platform and/or Kubernetes clusters. Storage provisioning can be fully automatized with additional support of cluster orchestration systems to automatically deploy, scale, and manage containerized applications.

IBM storage orchestration for containers includes the following driver types for storage provisioning:

- The IBM block storage CSI driver, for block storage (documented here).
- The IBM Spectrum Scale CSI driver, for file storage. For more information on Spectrum Scale and the Spectrum Scale CSI driver see the [IBM Spectrum® Scale knowledge center website](#) ([ibm.com®/support/knowledgecenter/STXKQY](https://ibm.com/support/knowledgecenter/STXKQY)).

For details about volume provisioning with Kubernetes, refer to [Persistent volumes on Kubernetes](#) (kubernetes.io/docs/concepts/storage/volumes).

Note: For the user convenience, this guide might refer to IBM block storage CSI driver as CSI driver.

Kubernetes Cluster

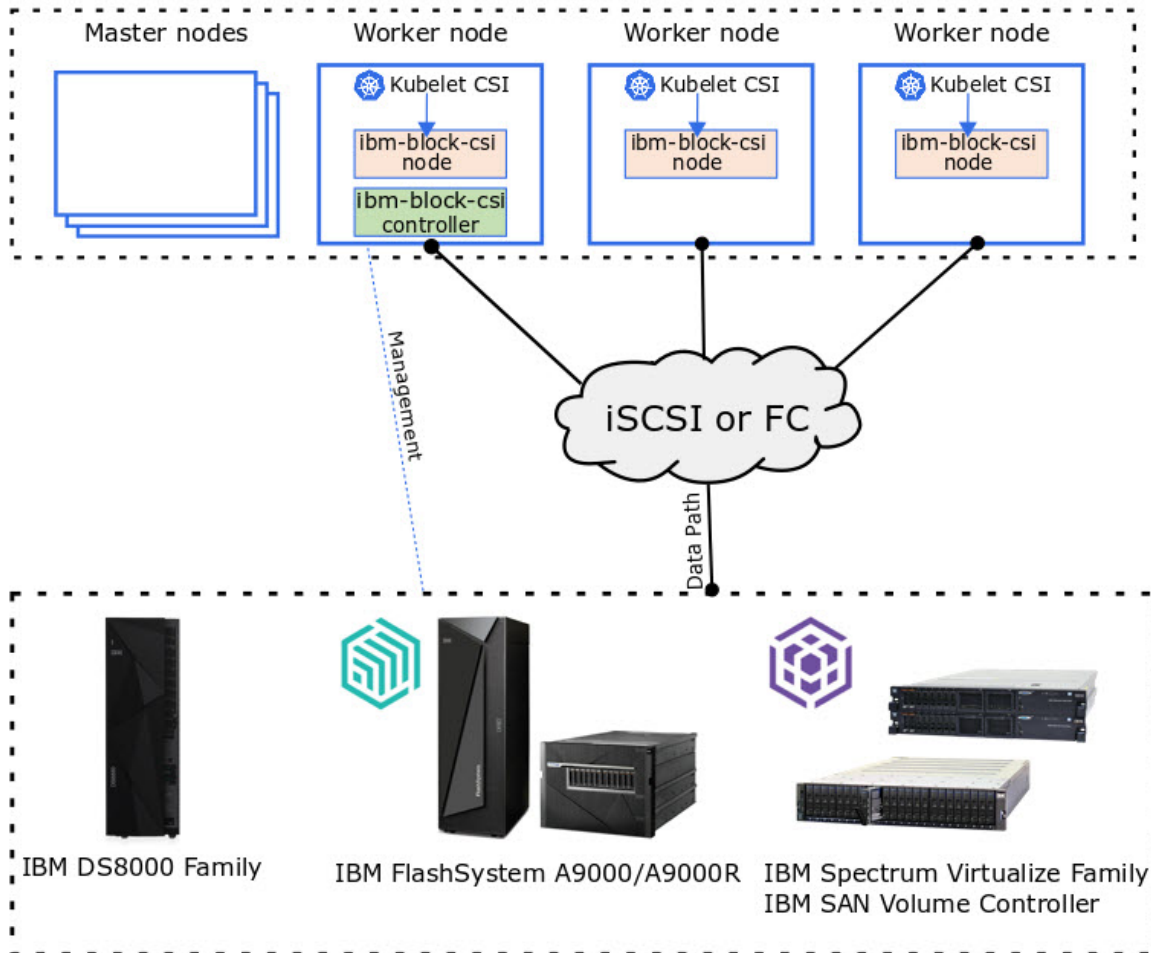


Figure 1. Integration of IBM block storage systems and CSI driver in a Kubernetes environment

What's new in 1.3.0

IBM block storage CSI driver 1.3.0 introduces a range of enhancements and fixes, as detailed in the following sections.

General availability date: 17 September 2020

More supported orchestration platforms for deployment with x86 architecture

This version adds support for orchestration platforms Kubernetes 1.18 and Red Hat OpenShift 4.5, suitable for deployment of the CSI (Container Storage Interface) driver.

Additional IBM Z architecture support

This version adds IBM Z® support for Red Hat OpenShift 4.4.

Note: Refer to the User Guide for specific installation instructions of the CSI driver on OpenShift Container Platform with IBM Z.

Enhanced volume mount functionality

This release enhances volume mount functionality and fixes various issues that were found in the CSI driver. For more information, see the [“1.3.0 \(September 2020\)” on page 7](#) change log.

Compatibility and requirements

This section specifies the compatibility and requirements of version 1.3.0 of IBM block storage CSI driver.

Supported storage systems

IBM block storage CSI driver 1.3.0 supports different IBM storage systems as listed in the following table.

Table 1. Supported storage systems	
Storage system	Microcode version
IBM FlashSystem A9000	12.x
IBM FlashSystem A9000R	12.x
IBM Spectrum Virtualize Family including IBM SAN Volume Controller (SVC) and IBM FlashSystem® family members built with IBM Spectrum Virtualize (FlashSystem 5010, 5030, 5100, 7200, 9100, 9200, 9200R)	7.x, 8.x
IBM Spectrum Virtualize as software only	7.x, 8.x
IBM DS8000® Family	8.x and higher with same API interface

Note:

- Newer microcode versions may also be compatible. When a newer microcode version becomes available, contact IBM Support to inquire whether the new microcode version is compatible with the current version of the CSI driver.
- The IBM Spectrum Virtualize Family and IBM SAN Volume Controller storage systems run the IBM Spectrum Virtualize software. In addition, IBM Spectrum Virtualize package is available as a deployable solution that can be run on any compatible hardware.

Supported operating systems

The following table lists operating systems required for deployment of the IBM block storage CSI driver.

Table 2. Operating systems	
Operating system	Architecture
Red Hat Enterprise Linux® (RHEL) 7.x	x86
Red Hat Enterprise Linux CoreOS (RHCOS)	x86, IBM Z, IBM Power Systems ¹

¹IBM Power Systems architecture is only supported on Spectrum Virtualize Family storage systems.

Supported orchestration platforms

The following table details orchestration platforms suitable for deployment of the IBM block storage CSI driver.

Table 3. Orchestration platforms		
Orchestration platform	Version	Architecture
Kubernetes	1.17	x86

<i>Table 3. Orchestration platforms (continued)</i>		
Orchestration platform	Version	Architecture
Kubernetes	1.18	x86
Red Hat OpenShift	4.3	IBM Z, IBM Power Systems ¹
Red Hat OpenShift	4.4	x86, IBM Z
Red Hat OpenShift	4.5	x86

¹IBM Power Systems architecture is only supported on Spectrum Virtualize Family storage systems.

Change log

This section summarizes the changes that were made in each released version of the IBM block storage CSI driver.

Note: New functional features of these versions are only briefly summarized. For a detailed summary of the new functional features of a specific version, refer to the 'What's new' section of its release notes.

1.3.0 (September 2020)

IBM block storage CSI driver 1.3.0 provides a range of enhancements:

- Additional support for Kubernetes 1.18 and Red Hat OpenShift 4.5 with x86 architecture
- Supports for IBM Z for Red Hat OpenShift 4.4
- Enhanced volume mount functionality

Table 4. Fixed issues

Ticket ID	Severity	Description
CSI-1672	Moderate	Fixed: In rare cases, if the volume devices have an unexpected udev path on the node host, the CSI driver may not be able to find the device mapper in order to mount the volume.
CSI-1658	Moderate	Fixed: In some cases, when mounting a volume through the CSI driver on a Spectrum Virtualize Family system, the same LUN ID may be defined on different I/O groups on the same storage system. This causes the volume mount to fail.

1.2.0 (June 2020)

IBM block storage CSI driver 1.2.0 provided a range of enhancements:

- Enabled volume snapshots (IBM FlashCopy® function) [Kubernetes beta support only]
- IBM Power Systems architecture support
- Additional support for Kubernetes 1.17 and Red Hat OpenShift 4.4
- Additional support of IBM Z for Red Hat OpenShift 4.3
- New operator installation support from OperatorHub.io

1.1.0 (March 2020)

IBM block storage CSI driver 1.1.0 provided a range of enhancements:

- Added support for DS8000 Family storage systems
- RHCOS support
- Now supports Kubernetes 1.16 and Red Hat OpenShift 4.3
- IBM Z architecture support
- Raw block volume support for Kubernetes
- Automatic iSCSI login

1.0.0 (November 2019)

IBM block storage CSI driver 1.0.0 was the initial release of this new driver, supporting a range of functional CSI (Container Storage Interface) component features.

The following functional CSI (Container Storage Interface) component features were included in the initial release of the IBM block storage CSI driver:

- CSI parameters:
 - **Operator**
 - **Identity**
 - **Controller**
 - **Node**
- RWO (read/write once) access mode
- Both xfs and Ext4 file system types

Limitations

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

Volume snapshot limitations

The following limitations apply when using volume snapshots with the IBM block storage CSI driver:

- When deleting a PersistentVolumeClaim (PVC), the persistent volume (PV) remains until all snapshots of the specific PV are deleted.
- When using the CSI (Container Storage Interface) driver with Spectrum Virtualize Family products, a snapshot can only be used to provision a new volume of equal size.

IBM DS8000 usage limitations

When using the CSI (Container Storage Interface) driver with DS8000 Family products, connectivity limit on the storage side may be reached because of too many open connections. This occurs due to connection closing lag times from the storage side.

Known issues

This section details the known issues in IBM block storage CSI driver 1.3.0, along with possible solutions or workarounds (if available).

The following severity levels apply to known issues:

- **HIPER** – High Impact Pervasive. A critical issue that IBM has either fixed or plans to fix promptly. Requires immediate customer attention or code upgrade.
- **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 IBM block storage CSI driver 1.3.0.** As long as a newer version has not yet been released, a newer release notes edition for IBM block storage CSI driver 1.3.0 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 this version will no longer be updated. Accordingly, check the release notes of the newer version to learn whether any newly discovered issues affect IBM block storage CSI driver 1.3.0 or whether the newer version resolves any of the issues listed below.
-

Table 5. Known issues

Ticket ID	Severity	Description
CSI-1842	Service	<p>When creating a new volume on a DS8000 Family storage system, if an error occurs during PersistentVolumeClaim (PVC) attachment, the attachment retry may fail.</p> <p>Workaround: Delete the volume from the storage system and it will automatically be recreated and attached to the PVC.</p>
CSI-702	Service	<p>Modifying the controller or node affinity settings may not take effect.</p> <p>Workaround: If needed, delete the controller StatefulSet and/or the DaemonSet node after modifying the affinity settings in the IBMBlockCSI custom resource.</p>
CSI-645	Low	<p>In some cases, during high-scale operations, such as pod creation with many PersistentVolumeClaims (PVCs), the "ibm-block-csi-controller-0" controller pod restarts.</p> <p>Workaround: No workaround is necessary as the pod restarts automatically.</p>

Related information and publications

You can find additional information and publications related to IBM block storage CSI driver on the following information sources.

- [IBM SAN Volume Controller on IBM Knowledge Center](https://ibm.com/support/knowledgecenter/STPVGU) (ibm.com/support/knowledgecenter/STPVGU)
- [IBM Spectrum Scale on IBM Knowledge Center](https://ibm.com/support/knowledgecenter/STXKQY) (ibm.com/support/knowledgecenter/STXKQY)
- [IBM FlashSystem 5000, 5100, and Storwize® V5000E on IBM Knowledge Center](https://ibm.com/support/knowledgecenter/STHGJ) (ibm.com/support/knowledgecenter/STHGJ)
- [IBM FlashSystem 7200 and Storwize V7000 on IBM Knowledge Center](https://ibm.com/support/knowledgecenter/ST3FR7) (ibm.com/support/knowledgecenter/ST3FR7)
- [IBM Spectrum Virtualize as Software Only on IBM Knowledge Center](https://ibm.com/support/knowledgecenter/STVLF4) (ibm.com/support/knowledgecenter/STVLF4)
- [IBM FlashSystem 9200 and 9100 on IBM Knowledge Center](https://ibm.com/support/knowledgecenter/STSLR9) (ibm.com/support/knowledgecenter/STSLR9)
- [IBM FlashSystem A9000 on IBM Knowledge Center](https://ibm.com/support/knowledgecenter/STJKMM) (ibm.com/support/knowledgecenter/STJKMM)
- [IBM FlashSystem A9000R on IBM Knowledge Center](https://ibm.com/support/knowledgecenter/STJKN5) (ibm.com/support/knowledgecenter/STJKN5)
- [IBM DS8880 on IBM Knowledge Center](https://ibm.com/support/knowledgecenter/ST5GLJ) (ibm.com/support/knowledgecenter/ST5GLJ)
- [IBM DS8900 on IBM Knowledge Center](https://ibm.com/support/knowledgecenter/SSHGBU) (ibm.com/support/knowledgecenter/SSHGBU)
- [Persistent volumes on Kubernetes](https://kubernetes.io/docs/concepts/storage/volumes) (kubernetes.io/docs/concepts/storage/volumes)
- [Kubernetes Documentation](https://kubernetes.io/docs/home/) (kubernetes.io/docs/home/)
- [Kubernetes Blog](https://kubernetes.io/blog/) (kubernetes.io//blog)
- [IBM Spectrum Access for IBM Cloud® Private Blueprint](https://ibm.com/downloads/cas/KK5PGD8E) (ibm.com/downloads/cas/KK5PGD8E)
Used as the FlexVolume driver based solution for OpenShift 3.11, using [IBM Storage Enabler for Containers](https://ibm.com/support/knowledgecenter/SSCKLT) (ibm.com/support/knowledgecenter/SSCKLT)
- [IBM Storage for Red Hat OpenShift Blueprint](http://www.redbooks.ibm.com/abstracts/redp5565.html?Open) (http://www.redbooks.ibm.com/abstracts/redp5565.html?Open)

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- [#get-help_csi](#) Slack channel
- [IBM website](#) (ibm.com)
- [IBM Support Portal website](#) (ibm.com/support/entry/portal/support?brandind=Hardware~System_Storage)
- [IBM Directory of Worldwide Contacts website](#) (ibm.com/planetwide)

Use the Directory of Worldwide Contacts to find the appropriate phone number for initiating voice call support. Select the Software option, when using voice response system.

When asked, provide your Internal Customer Number (ICN) and/or the serial number of the storage system that requires support. Your call will then be routed to the relevant support team, to whom you can provide the specifics of your problem.

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