

IBM block storage CSI driver  
Version 1.1.0

*Release Notes*



**Third Edition (August 2020)**

This edition applies to version 1.1.0 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](https://ibm.com/support/knowledgecenter/STXKQY) (ibm.com/support/knowledgecenter/STXKQY).

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

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

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# Kubernetes Cluster

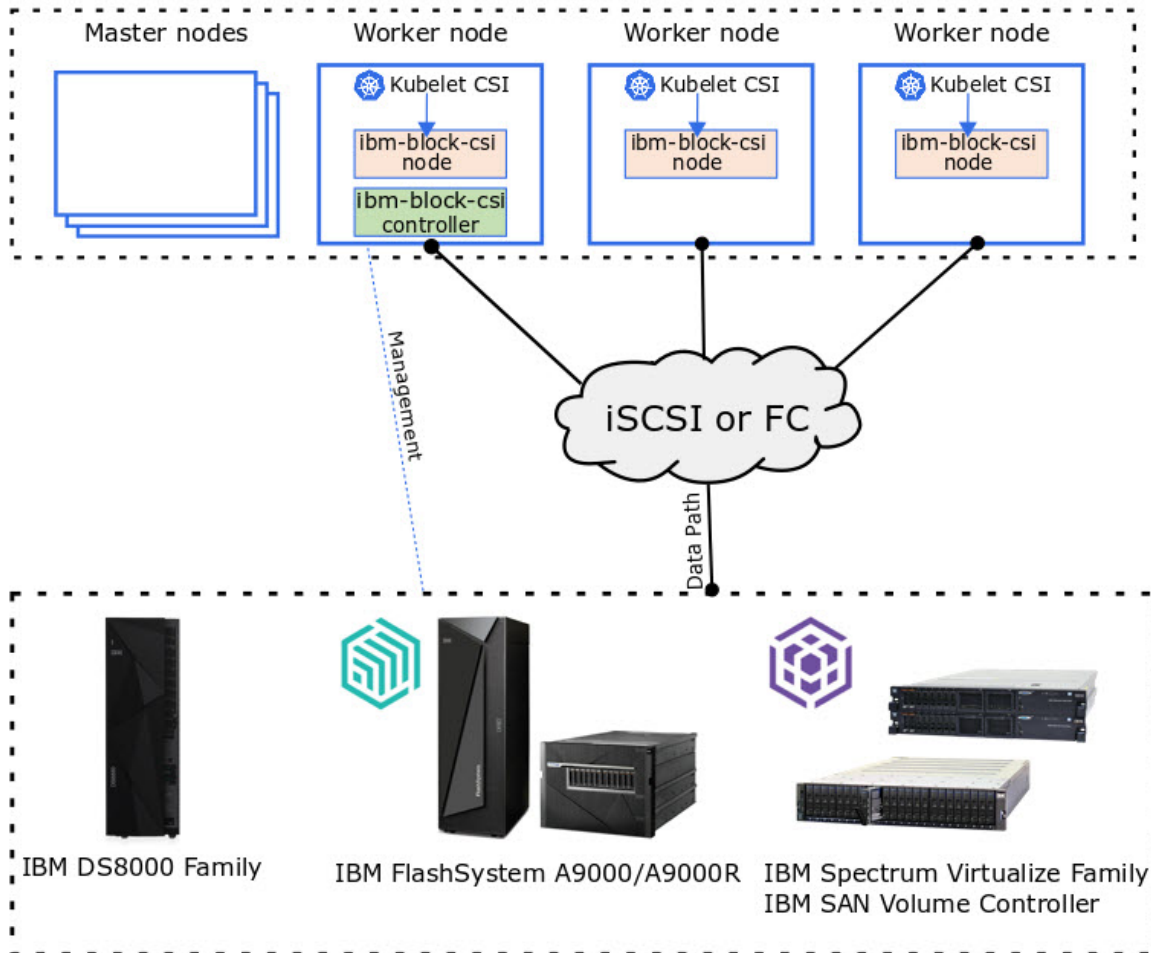


Figure 1. Integration of IBM block storage systems and CSI driver in a Kubernetes environment

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# What's new in version 1.1.0

IBM block storage CSI driver version 1.1.0 introduces a range of enhancements and fixes, as detailed in the following sections.

**Software version:** 1.1.0

**General availability date:** 30 March 2020

## **IBM block storage CSI driver support for DS8000 Family products**

Version 1.1.0 allows storage provisioning by the IBM block storage CSI driver for DS8000 Family products.

## **RHCOS support**

Version 1.1.0 adds support for Red Hat Enterprise Linux CoreOS (RHCOS).

## **More supported orchestration platforms for deployment**

Version 1.1.0 adds support for orchestration platforms Kubernetes 1.16 and Red Hat OpenShift 4.3, suitable for deployment of the CSI driver.

## **IBM Z architecture support**

Version 1.1.0 adds IBM Z support for Red Hat OpenShift 4.2.

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

## **Raw block volume support for Kubernetes**

Version 1.1.0 now allows persistent volumes (PVs) to be defined inside containers as a block device instead of as a mounted file system.

## **Automatic iSCSI login**

Version 1.1.0 contains automatic iSCSI login, allowing the system to automatically log into an iSCSI node.





# Compatibility and requirements

This section specifies the compatibility and requirements of version 1.1.0 of IBM block storage CSI driver.

## Supported storage systems

IBM block storage CSI driver version 1.1.0 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	7.5 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

## Supported orchestration platforms

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

<i>Table 3. Orchestration platforms</i>		
<b>Orchestration platform</b>	<b>Version</b>	<b>Architecture</b>
Kubernetes	1.14	x86
Kubernetes	1.16	x86
Red Hat OpenShift	4.2	x86, IBM Z
Red Hat OpenShift	4.3	x86

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# Change log

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

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**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.

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## Version 1.1.0 (March 2020)

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Version 1.1.0 provides 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

## Version 1.0.0 (November 2019)

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Version 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



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## Limitations

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

Currently there are no known limitations for the IBM block storage CSI driver. Check for newer release note publications to learn about limitations that could be discovered and advertised in the future.



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## Known issues

This section details the known issues in version 1.1.0 of IBM block storage CSI driver, 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.

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### Important:

- **The issues listed below apply to version 1.1.0.** As long as a newer version has not yet been released, a newer release notes edition for version 1.1.0 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 1.1.0 will no longer be updated. Accordingly, check the release notes of the newer version to learn whether any newly discovered issues affect version 1.1.0 or whether the newer version resolves any of the issues listed below.
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Table 4. Known issues

Ticket ID	Severity	Description
CSI-702	Service	Modifying the controller or node <b>affinity</b> settings may not take effect.  <b>Workaround:</b> If needed, delete the controller StatefulSet and/or the DaemonSet node after modifying the <b>affinity</b> settings in the IBMBlockCSI custom resource.
CSI-645	Low	In some cases, during high-scale operations, such as pod creation with many PersistentVolumeClaims (PVCs), the "ibm-block-csi-controller-0" controller pod restarts.  <b>Workaround:</b> No workaround is necessary as the pod restarts automatically.

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## 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 \(ibm.com/support/knowledgecenter/STPVGU\)](https://ibm.com/support/knowledgecenter/STPVGU)
- [IBM Spectrum Scale on IBM Knowledge Center \(ibm.com/support/knowledgecenter/STXKQY\)](https://ibm.com/support/knowledgecenter/STXKQY)
- [IBM FlashSystem 5000, 5100, and Storwize V5000E on IBM Knowledge Center \(ibm.com/support/knowledgecenter/STHGJ\)](https://ibm.com/support/knowledgecenter/STHGJ)
- [IBM Storwize® 7x00 on IBM Knowledge Center \(ibm.com/support/knowledgecenter/ST3FR7\)](https://ibm.com/support/knowledgecenter/ST3FR7)
- [IBM Spectrum Virtualize as Software Only on IBM Knowledge Center \(ibm.com/support/knowledgecenter/STVLF4\)](https://ibm.com/support/knowledgecenter/STVLF4)
- [IBM FlashSystem 9100 on IBM Knowledge Center \(ibm.com/support/knowledgecenter/STSLR9\)](https://ibm.com/support/knowledgecenter/STSLR9)
- [IBM FlashSystem A9000 on IBM Knowledge Center \(ibm.com/support/knowledgecenter/STJKMM\)](https://ibm.com/support/knowledgecenter/STJKMM)
- [IBM FlashSystem A9000R on IBM Knowledge Center \(ibm.com/support/knowledgecenter/STJKN5\)](https://ibm.com/support/knowledgecenter/STJKN5)
- [IBM DS8880 on IBM Knowledge Center \(ibm.com/support/knowledgecenter/ST5GLJ\)](https://ibm.com/support/knowledgecenter/ST5GLJ)
- [IBM DS8900 on IBM Knowledge Center \(ibm.com/support/knowledgecenter/SSHGBU\)](https://ibm.com/support/knowledgecenter/SSHGBU)
- [Persistent volumes on Kubernetes \(kubernetes.io/docs/concepts/storage/volumes\)](https://kubernetes.io/docs/concepts/storage/volumes)
- [IBM Spectrum Access for IBM Cloud Private Blueprint \(ibm.com/downloads/cas/KK5PGD8E\)](https://ibm.com/downloads/cas/KK5PGD8E)  
Used as the FlexVolume driver based solution for OpenShift 3.11, using [IBM Storage Enabler for Containers \(ibm.com/support/knowledgecenter/SSCKLT\)](https://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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