CSI Driver for Dell EMC PowerMax

1.3

Release Notes

Rev. 02
June 2020

These release notes contain supplemental information about the CSI Driver for Dell EMC PowerMax. Topics include:

Revision history

The following table presents the revision history of this document.

Table 1. Revision history

Revision	Date	Description
01	April 2020	The following sections were updated for CSI Driver for Dell EMC PowerMax Version 1.2: • Product description • Features of the CSI Driver for Dell EMC PowerMax • Known problems and limitations
02	June 2020	The following sections were updated for CSI Driver for Dell EMC PowerMax Version 1.3: • Product description • Features of the CSI Driver for Dell EMC PowerMax

Product description

The CSI Driver for Dell EMC PowerMax is a plug-in that is installed into Kubernetes to provide persistent storage using Dell EMC PowerMax storage systems.

The CSI Driver adheres to the Container Storage Interface (CSI) specification version 1.1. It is compatible with Kubernetes versions 1.14 and 1.16 running within a host operating system of Red Hat Enterprise Linux (RHEL) 7.6. It is also compatible with OpenShift 4.2 and 4.3 with CoreOS on master nodes and RHEL 7.6 on worker nodes.

Features of the CSI Driver for Dell EMC PowerMax

The CSI Driver for Dell EMC PowerMax has the following features:

- Supports CSI 1.1
- Supports Kubernetes versions 1.14 and 1.16
- Supports OpenShift 4.2 and 4.3 with Red Hat Enterprise Linux CoreOS on master nodes and Red Hat Enterprise Linux 7.6 on worker nodes
- Requires Unisphere for PowerMax 9.1
- Supports Fibre Channel
- Supports Red Hat Enterprise Linux 7.6 host operating system
- Supports PowerMax Enginuity versions 5978.479.479, 5978.444.444 and 5978.221.221
- Supports Linux native multipathing
- Persistent Volume (PV) capabilities:
  - Create
  - Delete
  - Create from Snapshot
  - Create from Volume (supported only in kubernetes 1.16 and Openshift 4.3)
- Dynamic and Static PV provisioning
- Volume mount as ext4 or xfs file system on the worker node
- Volume prefix for easier LUN identification in Unisphere
- Helm 3 charts installer
- Dell EMC Storage CSI Operator deployment
- Snapshot Capabilities - create, delete (Kubernetes Only, not supported on Openshift)
- Access modes:
  - SINGLE_NODE_WRITER

- SINGLE_NODE_READER_ONLY

NOTE: Volume Snapshots is an Alpha feature in Kubernetes. It is recommended for use only in short-lived testing clusters, as features in the Alpha stage have an increased risk of issues and a lack of long-term support. See Kubernetes documentation for more information about feature stages.

Known problems and limitations

List of known problems and limitations in this release.

Support for volume snapshots

Support for volume snapshots was added in the 1.2.0 release, to enable customers to create and delete volume snapshots and create volumes from these snapshots. Volume snapshots are a point in time copy of the source volume. Kubernetes does not support any type of grouping mechanism for volumes. So, these snapshots are taken for each individual volume and they should not be confused with the Storage Group level snapshots on the PowerMax array.

NOTE: Unisphere for PowerMax only supports manipulation of snapshots at a storage group level.

Support for *VolumeSnapshots* is in the Alpha stage for Kubernetes v1.14. Therefore, it may not be suitable for use in production environments. There are a few limitations in the *external-snapshotter* sidecar that is provided by the Kubernetes community which can have impact on snapshot-related operations with the CSI driver. These include:

1. Create snapshot requests are not retried by the external-snapshotter if an error occurs. This can happen if the driver is overloaded with many snapshot requests. If there is an initial error in creating a snapshot, the *volumesnapshot* object is left unbound with no corresponding *volumesnapshotcontent* object. To retry the operation, you must delete and re-create the *volumesnapshot* object manually.
2. If you encounter one of these errors, a finalizer `snapshot.storage.kubernetes.io/pvc-protection` may be left on the Persistent Volume Claim (PVC) for the source volume from which the snapshot was being created. This prevents the deletion of this PVC, and the PVC object has to be updated to remove the finalizer to enable deletion of the PVC.
3. Due to restrictions around the maximum number of parallel RESTAPI operations which are supported by Unisphere for PowerMax, the driver throttles incoming requests to create snapshots. If there is a significant number of volume snapshots being created in parallel, you may see

   ```
   context deadline exceeded
   ```

   messages because the external snapshotter timed out waiting for the response. Because of the restriction mentioned in step a, this operation will not be retried. To avoid this, the recommendation is to not take more than a few snapshots concurrently.

In some cases when installing the driver, the driver fails to start successfully (the pods are continually restarting) and the last messages in the controller log appear similar to the following log:

```
time="2020-04-10T20:52:02Z" level=debug msg="Restricting access to the following Arrays:
[000197900046]"

time="2020-04-10T20:52:02Z" level=info msg="Successfully started the lock request handler"

time="2020-04-10T20:52:02Z" level=info msg="CleanupMapEntries: Successfully started the cleanup
worker. This will wake up every 240.00 minutes to clean up stale entries
```

This can happen if the Unisphere REST service the driver is trying to communicate with is unreachable. Check the health of the Unisphere service and ensure it is reachable from the Kubernetes nodes.

Linux native multipathing package - device-mapper-multipath

If the Linux native multipathing package *device-mapper-multipath* is installed on the Kubernetes nodes and the multipath daemon is not configured, then driver operations may fail.

To get around this problem, either configure multipathing using the instructions that are provided in the *CSI Driver for Dell EMC PowerMax Product Guide* or remove the *device-mapper-multipath* package from the nodes.

NOTE: Stopping or disabling the multipath daemon can still result in driver failure. If usage of Linux native multipathing is not required, it is recommended to remove the package entirely from the node .

Software media, organization, and files

This section provides information about where to find the software files for this release of CSI Driver for Dell EMC PowerMax.

The software package is available for download from the CSI Driver for Dell EMC PowerMax GitHub page.

Additional resources

This section provides more information about the product, how to get support, and provide feedback.

Documentation

This section lists the related documentation for CSI Driver for Dell EMC PowerMax.

The CSI Driver for Dell EMC PowerMax is available on the CSI Driver for Dell EMC PowerMax GitHub page. The documentation includes the following:

- CSI Driver for Dell EMC PowerMax Release Notes (this document)
- CSI Driver for Dell EMC PowerMax Product Guide

Troubleshooting and getting help

Use the resources in this topic to get help and support.

Product information

For documentation, release notes, software updates, and other information about Dell EMC products, go to Dell EMC Online Support.

Technical support

The CSI Driver for Dell EMC PowerMax image available on Dell EMC Dockerhub is officially supported by Dell EMC. The source code available on Dell EMC Github is unsupported and provided solely under the terms of the license attached to the source code. For clarity, Dell EMC does not provide support for any source code modifications. For CSI driver setup, configuration issues, queries, and feedback, use the Dell EMC Container Community page. For any issues related to Dell EMC storage, contact Dell EMC Online Support.

Notes, cautions, and warnings

NOTE: A NOTE indicates important information that helps you make better use of your product.

CAUTION: A CAUTION indicates either potential damage to hardware or loss of data and tells you how to avoid the problem.

WARNING: A WARNING indicates a potential for property damage, personal injury, or death.