



# **Manage SnapMirror root volume replication**

## **ONTAP 9**

NetApp  
January 23, 2026

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# Manage SnapMirror root volume replication

## Learn about ONTAP SnapMirror root volume replication

Every SVM in a NAS environment has a unique namespace. The SVM *root volume*, containing operating system and related information, is the entry point to the namespace hierarchy. To ensure that data remains accessible to clients in the event of a node outage or failover, you should create a load-sharing mirror copy of the SVM root volume.

The main purpose of load-sharing mirrors for SVM root volumes is no longer for load sharing; instead, their purpose is for disaster recovery.

- If the root volume is temporarily unavailable, the load-sharing mirror automatically provides read-only access to root volume data.
- If the root volume is permanently unavailable, you can promote one of the load-sharing volumes to provide write access to root volume data.

## Create and initialize ONTAP load-sharing mirror relationships

You should create a load-sharing mirror (LSM) for each SVM root volume that serves NAS data in the cluster. For clusters consisting of two or more HA pairs, you should consider load-sharing mirrors of SVM root volumes to ensure the namespace remains accessible to clients in the event that both nodes of an HA pair fail. Load-sharing mirrors are not suitable for clusters consisting of a single HA pair.

### Before you begin

Beginning with ONTAP 9.16.1, when you create a load-sharing mirror relationship, the destination SVM cannot have a storage limit enabled.

### About this task

If you create an LSM on the same node, and the node is unavailable, you have a single point of failure, and you do not have a second copy to ensure the data remains accessible to clients. But when you create the LSM on a node other than the one containing the root volume, or on a different HA pair, your data is still accessible in the event of an outage.

For example, in a four-node cluster with a root volume on three nodes:

- For the root volume on HA 1 node 1, create the LSM on HA 2 node 1 or HA 2 node 2.
- For the root volume on HA 1 node 2, create the LSM on HA 2 node 1 or HA 2 node 2.
- For the root volume on HA 2 node 1, create the LSM on HA 1 node 1 or HA 1 node 2.

### Steps

1. Create a destination volume for the LSM:

```
volume create -vserver <SVM> -volume <volume> -aggregate <aggregate>
-type DP -size <size>
```

The destination volume should be the same or greater in size than the root volume.

It is a best practice to name the root and destination volume with suffixes, such as `_root` and `_m1`.

Learn more about `volume create` in the [ONTAP command reference](#).

The following example creates a load-sharing mirror volume for the root volume `svm1_root` in `cluster_src`:

```
cluster_src:> volume create -vserver svm1 -volume svm1_m1 -aggregate
aggr_1 -size 1gb -state online -type DP
```

## 2. Create a replications job schedule.

3. Create a load-sharing mirror relationship between the SVM root volume and the destination volume for the LSM:

```
snapmirror create -source-path <SVM:volume> -destination-path
<SVM:volume> -type LS -schedule <schedule>
```

The following example creates a load-sharing mirror relationship between the root volume `svm1_root` and the load-sharing mirror volume `svm1_m1`:

```
cluster_src:> snapmirror create -source-path svm1:svm1_root
-destination-path svm1:svm1_m1 -type LS -schedule hourly
```

The type attribute of the load-sharing mirror changes from `DP` to `LS`.

Learn more about `snapmirror create` in the [ONTAP command reference](#).

4. Initialize the load-sharing mirror:

```
snapmirror initialize-ls-set -source-path <SVM:volume>
```

The following example initializes the load-sharing mirror for the root volume `svm1_root`:

```
cluster_src:> snapmirror initialize-ls-set -source-path svm1:svm1_root
```

Learn more about `snapmirror initialize` in the [ONTAP command reference](#).

# Update an ONTAP load-sharing mirror relationship

Load-sharing mirror (LSM) relationships are updated automatically for SVM root volumes after a volume in the SVM is mounted or unmounted, and during volume create operations that include the `junction-path` option. You can manually update a LSM relationship if you want it updated before the next scheduled update.

Load-sharing mirror relationships update automatically in the following circumstances:

- It's time for a scheduled update
- A mount or unmount operation is performed on a volume in the SVM root volume
- A `volume create` command is issued that includes the `junction-path` option

Learn more about `volume create` in the [ONTAP command reference](#).

## Step

1. Update a load-sharing mirror relationship manually:

You must replace the variables in angle brackets with the required values before running this command.

```
snapmirror update-ls-set -source-path <SVM:volume>
```

The following example updates the load-sharing mirror relationship for the root volume `svm1_root`:

```
cluster_src::> snapmirror update-ls-set -source-path svm1:svm1_root
```

Learn more about `snapmirror update` in the [ONTAP command reference](#).

# Promote an ONTAP load-sharing mirror

If a root volume is permanently unavailable, you can promote the load-sharing mirror (LSM) volume to provide write access to root volume data.

## Before you begin

You must use advanced privilege level commands for this task.

## Steps

1. Change to advanced privilege level:

```
set -privilege advanced
```

2. Promote an LSM volume:

You must replace the variables in angle brackets with the required values before running this command.

```
snapmirror promote -destination-path <SVM:volume>
```

The following example promotes the volume `svm1_m2` as the new SVM root volume:

```
cluster_src::*> snapmirror promote -destination-path svm1:svm1_m2

Warning: Promote will delete the offline read-write volume
cluster_src://svm1/svm1_root and replace it with
cluster_src://svm1/svm1_m2. Because the volume is offline,
it is not possible to determine whether this promote will
affect other relationships associated with this source.

Do you want to continue? {y|n}: y
```

Enter `y`. ONTAP makes the LSM volume a read/write volume, and deletes the original root volume if it is accessible.



The promoted root volume might not have all of the data that was in the original root volume if the last update did not occur recently.

Learn more about `snapmirror promote` in the [ONTAP command reference](#).

3. Return to admin privilege level:

```
set -privilege admin
```

4. Rename the promoted volume following the naming convention you used for the root volume:

You must replace the variables in angle brackets with the required values before running this command.

```
volume rename -vserver <SVM> -volume <volume> -newname <new_name>
```

The following example renames the promoted volume `svm1_m2` with the name `svm1_root`:

```
cluster_src::> volume rename -vserver svm11 -volume svm1_m2 -newname
svm1_root
```

5. Protect the renamed root volume, as described in step 3 through step 4 in [Creating and initializing load-sharing mirror relationships](#).

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