



Manage SnapMirror root volume replication

ONTAP 9

NetApp
April 10, 2023

Table of Contents

- Manage SnapMirror root volume replication 1
 - Manage SnapMirror root volume replication overview 1
 - Create and initializing load-sharing mirror relationships 1
 - Update a load-sharing mirror relationship 2
 - Promote a load-sharing mirror 3

Manage SnapMirror root volume replication

Manage SnapMirror root volume replication overview

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 initializing load-sharing mirror relationships

You should create a load-sharing mirror (LSM) for each SVM root volume that serves NAS data in the cluster. You can create the LSM on any node other than the one containing the root volume, such as the partner node in an HA pair, or preferably in a different HA pair. For a two-node cluster, you should create the LSM on the partner of the node with the SVM root volume.

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`.

For complete command syntax, see the man page.

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 replication job schedule, as described in [Creating a replication 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|cluster://SVM/volume -destination  
-path SVM:volume|cluster://SVM/volume -type LS -schedule schedule
```

For complete command syntax, see the man page.

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`.

4. Initialize the load-sharing mirror:

```
snapmirror initialize-ls-set -source-path SVM:volume|cluster://SVM/volume
```

Initialization can be time-consuming. You might want to run the baseline transfer in off-peak hours.

For complete command syntax, see the man page.

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
```

Update a 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 `juntion-path` option

Step

1. Update a load-sharing mirror relationship manually:

```
snapmirror update-ls-set -source-path SVM:volume|cluster://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
```

Promote a 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.

What you'll need

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:

```
snapmirror promote -destination-path SVM:volume|cluster://SVM/volume
```

For complete command syntax, see the man page.

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.

3. Return to admin privilege level:

```
set -privilege admin
```

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

```
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](#).

Copyright information

Copyright © 2023 NetApp, Inc. All Rights Reserved. Printed in the U.S. No part of this document covered by copyright may be reproduced in any form or by any means—graphic, electronic, or mechanical, including photocopying, recording, taping, or storage in an electronic retrieval system—without prior written permission of the copyright owner.

Software derived from copyrighted NetApp material is subject to the following license and disclaimer:

THIS SOFTWARE IS PROVIDED BY NETAPP “AS IS” AND WITHOUT ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, WHICH ARE HEREBY DISCLAIMED. IN NO EVENT SHALL NETAPP BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

NetApp reserves the right to change any products described herein at any time, and without notice. NetApp assumes no responsibility or liability arising from the use of products described herein, except as expressly agreed to in writing by NetApp. The use or purchase of this product does not convey a license under any patent rights, trademark rights, or any other intellectual property rights of NetApp.

The product described in this manual may be protected by one or more U.S. patents, foreign patents, or pending applications.

LIMITED RIGHTS LEGEND: Use, duplication, or disclosure by the government is subject to restrictions as set forth in subparagraph (b)(3) of the Rights in Technical Data -Noncommercial Items at DFARS 252.227-7013 (FEB 2014) and FAR 52.227-19 (DEC 2007).

Data contained herein pertains to a commercial product and/or commercial service (as defined in FAR 2.101) and is proprietary to NetApp, Inc. All NetApp technical data and computer software provided under this Agreement is commercial in nature and developed solely at private expense. The U.S. Government has a non-exclusive, non-transferrable, nonsublicensable, worldwide, limited irrevocable license to use the Data only in connection with and in support of the U.S. Government contract under which the Data was delivered. Except as provided herein, the Data may not be used, disclosed, reproduced, modified, performed, or displayed without the prior written approval of NetApp, Inc. United States Government license rights for the Department of Defense are limited to those rights identified in DFARS clause 252.227-7015(b) (FEB 2014).

Trademark information

NETAPP, the NETAPP logo, and the marks listed at <http://www.netapp.com/TM> are trademarks of NetApp, Inc. Other company and product names may be trademarks of their respective owners.