



# **SnapMirror technical details**

ONTAP 9

NetApp  
July 12, 2023

# Table of Contents

- SnapMirror technical details ..... 1
  - Use path name pattern matching ..... 1
  - Use extended queries to act on many SnapMirror relationships ..... 2
  - Ensure a common Snapshot copy in a mirror-vault deployment ..... 2
  - Compatible ONTAP versions for SnapMirror relationships ..... 3
  - SnapMirror limitations ..... 7

# SnapMirror technical details

## Use path name pattern matching

You can use pattern matching to specify the source and destination paths in `snapmirror` commands.

`snapmirror` commands use fully qualified path names in the following format: `vserver:volume`. You can abbreviate the path name by not entering the SVM name. If you do this, the `snapmirror` command assumes the local SVM context of the user.

Assuming that the SVM is called “vserver1” and the volume is called “vol1”, the fully qualified path name is `vserver1:vol1`.

You can use the asterisk (\*) in paths as a wildcard to select matching, fully qualified path names. The following table provides examples of using the wildcard to select a range of volumes.

*	Matches all paths.
vs*	Matches all SVMs and volumes with SVM names beginning with <code>vs</code> .
:*src	Matches all SVMs with volume names containing the <code>src</code> text.
:vol	Matches all SVMs with volume names beginning with <code>vol</code> .

```
vs1::> snapmirror show -destination-path *:*dest*

Progress
Source          Destination  Mirror          Relationship  Total
Last
Path            Type   Path            State          Status          Progress
Healthy Updated
-----
vs1:sm_src2
DP   vs2:sm_dest1
Snapmirrored Idle
true -
```

# Use extended queries to act on many SnapMirror relationships

You can use *extended queries* to perform SnapMirror operations on many SnapMirror relationships at one time. For example, you might have multiple uninitialized SnapMirror relationships that you want to initialize using one command.

## About this task

You can apply extended queries to the following SnapMirror operations:

- Initializing uninitialized relationships
- Resuming quiesced relationships
- Resynchronizing broken relationships
- Updating idle relationships
- Aborting relationship data transfers

## Step

1. Perform a SnapMirror operation on many relationships:

```
snapmirror command {-state state } *
```

The following command initializes SnapMirror relationships that are in an Uninitialized state:

```
vs1::> snapmirror initialize {-state Uninitialized} *
```

# Ensure a common Snapshot copy in a mirror-vault deployment

You can use the `snapmirror snapshot-owner create` command to preserve a labeled Snapshot copy on the secondary in a mirror-vault deployment. Doing so ensures that a common Snapshot copy exists for the update of the vault relationship.

## About this task

If you use a combination mirror-vault fan-out or cascade deployment, you should keep in mind that updates will fail if a common Snapshot copy does not exist on the source and destination volumes.

This is never an issue for the mirror relationship in a mirror-vault fan-out or cascade deployment, since SnapMirror always creates a Snapshot copy of the source volume before it performs the update.

It might be an issue for the vault relationship, however, since SnapMirror does not create a Snapshot copy of the source volume when it updates a vault relationship. You need to use the `snapmirror snapshot-owner create` to ensure that there is at least one common Snapshot copy on both the source and destination of the vault relationship.

## Steps

1. On the source volume, assign an owner to the labeled Snapshot copy you want to preserve:

```
snapmirror snapshot-owner create -vserver SVM -volume volume -snapshot snapshot -owner owner
```

The following example assigns ApplicationA as the owner of the snap1 Snapshot copy:

```
clust1::> snapmirror snapshot-owner create -vserver vs1 -volume vol1 -snapshot snap1 -owner ApplicationA
```

2. Update the mirror relationship, as described in [Updating a replication relationship manually](#).

Alternatively, you can wait for the scheduled update of the mirror relationship.

3. Transfer the labeled Snapshot copy to the vault destination:

```
snapmirror update -source-path SVM:volume|cluster://SVM/volume, ... -destination -path SVM:volume|cluster://SVM/volume, ... -source-snapshot snapshot
```

For complete command syntax, see the man page.

**The following example transfers the snap1 Snapshot copy**

```
clust1::> snapmirror update -vserver vs1 -volume vol1 -source-snapshot snap1
```

The labeled Snapshot copy will be preserved when the vault relationship is updated.

4. On the source volume, remove the owner from the labeled Snapshot copy:

```
snapmirror snapshot-owner delete -vserver SVM -volume volume -snapshot snapshot -owner owner
```

The following examples removes ApplicationA as the owner of the snap1 Snapshot copy:

```
clust1::> snapmirror snapshot-owner delete -vserver vs1 -volume vol1 -snapshot snap1 -owner ApplicationA
```

## Compatible ONTAP versions for SnapMirror relationships

You should verify that the source and destination volumes are running compatible ONTAP versions before creating a SnapMirror data protection relationship.



Version-independence is not supported for SVM replication.

### Unified replication relationships

For SnapMirror relationships of type “XDP”, using on premises or Cloud Volumes ONTAP releases:

Beginning with ONTAP 9.9.0:



- ONTAP 9.x.0 releases are cloud-only releases and support Cloud Volumes ONTAP (CVO) systems. The asterisk (\*) after the release version indicates a cloud-only release.
- ONTAP 9.x.1 releases are general releases and support both on-premises and CVO systems.



Interoperability is bidirectional.

## Interoperability for ONTAP version 9.3 and later

ONTAP version...	Interoperates with these previous ONTAP versions...															
	9.13.1	9.13.0*	9.12.1	9.12.0*	9.11.1	9.11.0*	9.10.1	9.10.0*	9.9.1	9.9.0*	9.8	9.7	9.6	9.5	9.4	9.3
9.13.1	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No	No	No
9.13.0*	Yes	Yes	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	No	No	No	No
9.12.1	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No	No
9.12.0*	Yes	No	Yes	Yes	Yes	No	Yes	No	Yes	No	Yes	Yes	No	No	No	No
9.11.1	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No
9.11.0*	Yes	No	Yes	No	Yes	Yes	Yes	No	Yes	No	Yes	Yes	Yes	No	No	No
9.10.1	Yes	Yes	Yes	Yes	n/a	n/a	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No
9.10.0*	Yes	No	Yes	No	Yes	No	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No	No
9.9.1	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No
9.9.0*	Yes	No	Yes	No	Yes	No	Yes	n/a	Yes	Yes	Yes	Yes	Yes	Yes	No	No
9.8	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes
9.7	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes
9.6	No	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes
9.5	No	No	No	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
9.4	No	No	No	No	No	No	No	No	No	No	No	No	No	Yes	Yes	Yes
9.3	No	No	No	No	No	No	No	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes

## SnapMirror Synchronous relationships



SnapMirror Synchronous is not supported for ONTAP cloud instances.

ONTAP version ...	Interoperates with these previous ONTAP versions...								
	9.13.1	9.12.1	9.11.1	9.10.1	9.9.1	9.8	9.7	9.6	9.5
9.13.1	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No
9.12.1	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No
9.11.1	Yes	Yes	Yes	Yes	Yes	No	No	No	No
9.10.1	No	Yes	Yes	Yes	Yes	Yes	No	No	No
9.9.1	No	Yes	Yes	Yes	Yes	Yes	Yes	No	No
9.8	No	Yes	No	Yes	Yes	Yes	Yes	Yes	No
9.7	No	Yes	No	No	Yes	Yes	Yes	Yes	Yes
9.6	No	No	No	No	No	Yes	Yes	Yes	Yes
9.5	No	No	No	No	No	No	Yes	Yes	Yes

## SnapMirror SVM disaster recovery relationships

For SVM disaster recovery data and SVM protection:

SVM disaster recovery is only supported between clusters running the same version of ONTAP.

For SVM disaster recovery for SVM migration:

- Replication is supported in a single direction from an earlier version of ONTAP on the source to the same or later version of ONTAP on the destination; for example, from ONTAP 9.11.1 to ONTAP 9.12.1.
- The ONTAP version on the target cluster must be no more than 2 versions newer, as shown in the table below.
- Replication is not supported for long-term data protection use cases.

The asterisk (\*) after the release version indicates a cloud-only release.

Source	Destination															
	9.3	9.4	9.5	9.6	9.7	9.8	9.9.0*	9.9.1	9.10.0*	9.10.1	9.11.0*	9.11.1	9.12.0*	9.12.1	9.13.0*	9.13.1
9.3	Yes	Yes	Yes													
9.4		Yes	Yes	Yes												
9.5			Yes	Yes	Yes											
9.6				Yes	Yes	Yes										

9.7					Yes	Yes	Yes									
9.8						Yes	Yes	Yes								
9.9.0*							Yes	Yes	Yes							
9.9.1								Yes	Yes	Yes						
9.10.0*									Yes	Yes	Yes					
9.10.1										Yes	Yes	Yes				
9.11.0*											Yes	Yes	Yes			
9.11.1												Yes	Yes	Yes		
9.12.0*													Yes	Yes	Yes	
9.12.1														Yes	Yes	Yes
9.13.0*															Yes	Yes
9.13.1																Yes

## SnapMirror disaster recovery relationships

For SnapMirror relationships of type “DP” and policy type “async-mirror”:



DP-type mirrors cannot be initialized beginning with ONTAP 9.11.1 and are completely deprecated in ONTAP 9.12.1. For more information, see [Deprecation of data protection SnapMirror relationships](#).



In the following table, the column on the left indicates the ONTAP version on the source volume, and the top row indicates the ONTAP versions you can have on your destination volume.

Source	Destination											
	9.11.1	9.10.1	9.9.1	9.8	9.7	9.6	9.5	9.4	9.3	9.2	9.1	9
9.11.1	Yes	No	No	No	No	No	No	No	No	No	No	No
9.10.1	Yes	Yes	No	No	No	No	No	No	No	No	No	No
9.9.1	Yes	Yes	Yes	No	No	No	No	No	No	No	No	No
9.8	No	Yes	Yes	Yes	No	No	No	No	No	No	No	No
9.7	No	No	Yes	Yes	Yes	No	No	No	No	No	No	No



9.6	No	No	No	Yes	Yes	Yes	No	No	No	No	No	No
9.5	No	No	No	No	Yes	Yes	Yes	No	No	No	No	No
9.4	No	No	No	No	No	Yes	Yes	Yes	No	No	No	No
9.3	No	No	No	No	No	No	Yes	Yes	Yes	No	No	No
9.2	No	No	No	No	No	No	No	Yes	Yes	Yes	No	No
9.1	No	No	No	No	No	No	No	No	Yes	Yes	Yes	No
9	No	No	No	No	No	No	No	No	No	Yes	Yes	Yes



Interoperability is not bidirectional.

## SnapMirror limitations

You should be aware of basic SnapMirror limitations before creating a data protection relationship.

- A destination volume can have only one source volume.



A source volume can have multiple destination volumes. The destination volume can be the source volume for any type of SnapMirror replication relationship.

- Depending on the array model, you can fan out a maximum of eight or sixteen destination volumes from a single source volume. See the [Hardware Universe](#) to learn details for your specific configuration.
- You cannot restore files to the destination of a SnapMirror DR relationship.
- Source or destination SnapVault volumes cannot be 32-bit.
- The source volume for a SnapVault relationship should not be a FlexClone volume.



The relationship will work, but the efficiency offered by FlexClone volumes will not be preserved.

## 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.