SnapMirror technical details

ONTAP 9

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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 `vs`.
`:*src`	Matches all SVMs with volume names containing the `src` text.
`:vol`	Matches all SVMs with volume names beginning with `vol`.

```
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.

Locate the higher, more recent ONTAP version in the left column, and in the top row locate the lower ONTAP version to determine interoperability. Interoperability is bidirectional.

Table 2: Interoperability for ONTAP version 9.0 and later

ONTAP version …	**Interoperates with these previous ONTAP versions…**																	
	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	9.2	9.1	9
9.13.0*	**Yes**	**Yes**	No	**Yes**	No	**Yes**	No	**Yes**	No	**Yes**	No	No	No	No	No	No	No	No
9.12.1	n/a	**Yes**	**Yes**	**Yes**	No	**Yes**	No	**Yes**	No	**Yes**	**Yes**	No	No	No	No	No	No	No
9.12.0*	n/a	n/a	**Yes**	**Yes**	No	**Yes**	No	**Yes**	No	**Yes**	**Yes**	No	No	No	No	No	No	No
9.11.1	n/a	n/a	n/a	**Yes**	**Yes**	**Yes**	No	**Yes**	No	**Yes**	**Yes**	**Yes**	No	No	No	No	No	No
9.11.0*	n/a	n/a	n/a	n/a	**Yes**	**Yes**	No	**Yes**	No	**Yes**	**Yes**	**Yes**	No	No	No	No	No	No
9.10.1	n/a	n/a	n/a	n/a	n/a	**Yes**	**Yes**	**Yes**	No	**Yes**	**Yes**	**Yes**	**Yes**	No	No	No	No	No
9.10.0*	n/a	n/a	n/a	n/a	n/a	n/a	**Yes**	**Yes**	No	**Yes**	**Yes**	**Yes**	**Yes**	No	No	No	No	No
9.9.1	n/a	n/a	n/a	n/a	n/a	n/a	n/a	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	No	No	No	No	No
9.9.0*	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	No	No	No	No	No
9.8	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	**Yes**	**Yes**	**Yes**	**Yes**	No	**Yes**	No	No	No
9.7	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	**Yes**	**Yes**	**Yes**	No	**Yes**	No	No	No
9.6	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	**Yes**	**Yes**	No	**Yes**	No	**Yes**	No
9.5	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	**Yes**	**Yes**	**Yes**	No	**Yes**	No
9.4	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	**Yes**	**Yes**	No	**Yes**	**Yes**
9.3	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	**Yes**	**Yes**	**Yes**	**Yes**

9.2	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	**Yes**	**Yes**	**Yes**
9.1	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	**Yes**	**Yes**
9	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	**Yes**

SnapMirror Synchronous relationships

SnapMirror Synchronous is not supported for ONTAP cloud instances.

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

SnapMirror DR 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	9.0
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
9.0	No	No	No	No	No	No	No	No	No	**Yes**	**Yes**	**Yes**

Interoperability is not bidirectional.

SnapMirror SVM DR relationships

- For SVM DR data and SVM protection:

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

- For SVM DR for SVM migration:
  - Replication is supported in a single direction from an earlier version of ONTAP to a later version of ONTAP; 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.

Source	**Destination**									
	9.12.1	9.11.1	9.10.1	9.9.1	9.8	9.7	9.6	9.5	9.4	9.3
9.12.1	Yes	Yes	Yes							
9.11.1		Yes	Yes	Yes						
9.10.1			Yes	Yes	Yes					
9.9.1				Yes	Yes	Yes				
9.8					Yes	Yes	Yes			
9.7						Yes	Yes	Yes		
9.6							Yes	Yes	Yes	
9.5								Yes	Yes	Yes
9.4									Yes	Yes
9.3										Yes

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.

- You can fan out a maximum of eight destination volumes from a single source volume.
- 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.

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