Planning

ONTAP System Manager

NetApp
November 16, 2020

Table of Contents

Planning

Prerequisites

There are several prerequisites that you should consider as part of planning a SnapMirror Business Continuity solution deployment.

Hardware

- Only two-node HA clusters are supported
- Both clusters must be either AFF or ASA (no mixing)

Software

- ONTAP 9.8 or later
- ONTAP Mediator 1.2 or later
- A Linux server or virtual machine for the ONTAP Mediator running one of the following:
  - RedHat Enterprise Linux 7.6 or 7. 7
  - CentOS 8.0 or 8.1

Licensing

- SnapMirror synchronous (SM-S) license must be applied on both clusters

If your ONTAP storage systems were purchased before June 2019, click NetApp ONTAP Master License Keys to get the required SM-S license.

Networking environment

- Inter-cluster latency must be less than 10 milliseconds

Supported protocols

- Only SAN protocols are supported (not NFS/CIFS)
- Only Fibre Channel and iSCSI protocols are supported

ONTAP Mediator

- Must be provisioned externally and attached to ONTAP for transparent application failover

AppDM Application volumes

Volumes associated with an AppDM Application are not supported with SM-BC. Before creating an SM-BC relationship for a set of volumes, make sure that none of the volumes are associated with an AppDM Application.

In ONTAP 9.8 RC releases, SM-BC does not automatically check before creating a relationship with a set of AppDM Application volumes.

Additional restrictions and limitations

There are several additional restrictions and limitations when using the SnapMirror Business Continuity solution.

Consistency groups

The maximum number of SnapMirror Synchronous Consistency Group relationships in a cluster is five, a limit which is platform-independent. If you reach or attempt to exceed this limit, the following message is displayed:

```
The number of SnapMirror Synchronous Consistency Group relationships in a cluster cannot
exceed 5
```

Volumes per consistency group

The maximum number of volumes supported per SnapMirror Synchronous Consistency Group relationship is twelve, a limit which is platform-independent. If you reach or attempt to exceed this limit, the following message is displayed:

```
The number of volumes in a SnapMirror Synchronous Consistency Group cannot exceed 12
```

Volumes

The limit is on the number of endpoints and not the number of relationships. A consistency group with 12 volumes contributes 12 endpoints on both the source and destination.A SnapMirror Synchronous relationship with both source and destination volumes on the same HA pair contributes 2 endpoints.

The maximum endpoints per platform are included in the following table.

S. No	Platform	Endpoints per HA for SM-BC	Overall sync and SM-BC endpoints per HA
1	AFF	60	80
2	ASA	60	80

SAN object limits

The following SAN object limits are included in the following table and apply regardless of the platform.

Limits of objects in an SM-BC relationship	Count
LUNs per volume	256
LUN maps per node	2048
LUN maps per cluster	4096
LIFs per VServer (with at least one volume in an SM-BC relationship)	256
Inter-cluster LIFs per node	4
Inter-cluster LIFs per cluster	8

ONTAP access options

You have several access options available when configuring the ONTAP nodes participating in an SM- BC deployment. You should select the option that best matches your specific environment and deployment goals.

In all cases, you must sign in using the administrator account with a valid password.

Command line interface

The text-based command line interface is available through the ONTAP management shell. You can access the CLI using secure shell (SSH).

System Manager

You can connect to the ONTAP System Manager using a modern web browser. The web GUI provides an intuitive and easy-to-use interface when accessing the SnapMirror Business Continuity functionality. For more information about using System Manager, see ONTAP System Manager documentation.

REST API

The ONTAP REST API exposed to external clients provides another option when connecting to the ONTAP. You can access the API using any mainstream programming language or tool that supports

REST web services. Popular choices include:

- Python (including the ONTAP Python client library)
- Java
- Curl

Using a programming or scripting language provides an opportunity to automate the deployment and management of a SnapMirror Business Continuity deployment. For more information, see the ONTAP online documentation page at your ONTAP storage system or click NetApp DevNet ONTAP REST API.

Preparing to use the ONTAP CLI

You should be familiar with the following commands when deploying the SnapMirror Business Continuity solution using the ONTAP command line interface.

For more information, see NetApp Documentation: ONTAP 9.

Command	Description
lun igroup create	Create an igroup on a cluster
lun map	Map a LUN to an igroup
lun show	Display a list of LUNs
snapmirror create	Create a new SnapMirror relationship
snapmirror initialize	Initialize an SM-BC consistency group
snapmirror update	Initiates a common snapshot creation operation
snapmirror show	Display a list of SnapMirror relationships
snapmirror failover	Start a planned failover operation
snapmirror resync	Start a resynchronization operation
snapmirror delete	Delete a SnapMirror relationship
snapmirror release	Remove source information for a SnapMirror relationship

Preparing to use the ONTAP Mediator

The ONTAP Mediator establishes a quorum for the ONTAP clusters in an SM-BC relationship. It coordinates automated failover when a failure is detected and helps to avoids split-brain scenarios when each cluster simultaneously tries to establish control as the primary cluster.

Prerequisites for the ONTAP Mediator

The ONTAP Mediator includes its own set of prerequisites. You must meet these prerequisites before installing the mediator. For more information, see Installing or upgrading the ONTAP Mediator service.

Network configuration

By default, the ONTAP Mediator provides service through TCP port 31784. You should make sure that port 31784 is open and available between the ONTAP clusters and the mediator.

Summary of deployment best practices

There are several best practices that you should consider as part of planning an SnapMirror Business Continuity deployment.

SAN

The SnapMirror Business Continuity solution supports only SAN workloads. You should follow the SAN best practices in all cases.

In addition:

- Replicated LUNs in the secondary cluster must be mapped to the host and the I/O paths to the LUNs from both the primary and secondary cluster must be discovered at the time of host configuration.
- After an out of sync (OOS) event exceeds 80 seconds, or after an automatic unplanned failover, it is important to rescan the host LUN I/O path to ensure that there is no I/O path loss. For more information, see the respective host OS vendor's documentation on rescan of LUN I/O paths.

Mediator

To be fully functional and to enable automatic unplanned failover, the external ONTAP mediator should be provisioned and configured with ONTAP clusters.

When installing the mediator, you should replace the self-signed certificate with a valid certificate signed by a mainstream reliable CA.

SnapMirror

You should terminate an SnapMirror relationship in the following order:

1. Perform `snapmirror delete` at the destination cluster
2. Perform `snapmirror release` at the source cluster