Planning

ONTAP 9

NetApp
November 04, 2021

This PDF was generated from https://docs.netapp.com/us-en/ontap/smbc/smbc_plan_prerequisites.html on November 04, 2021. Always check docs.netapp.com for the latest.

Table of Contents

Planning . . . 1
- Prerequisites . . . 1
- Additional restrictions and limitations . . . 2
- ONTAP access options . . . 3
- Prepare to use the ONTAP CLI . . . 4
- Prepare to use the ONTAP Mediator . . . 4
- Summary of deployment best practices . . . 5

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:

Mediator version	Supported Linux versions
1.3	Red Hat Enterprise Linux: 7.6, 7.7, 7.8, 7.9, 8.0, 8.1, 8.2, 8.3, 8.4 CentOS: 7.6, 7.7, 7.8, 7.9
1.2	Red Hat Enterprise Linux: 7.6, 7.7, 7.8, 8.0, 8.1 CentOS: 7.6, 7.7, 7.8

Licensing

- SnapMirror synchronous (SM-S) license must be applied on both clusters
- SnapMirror 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 round trip time (RTT) 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.
- For more information about the ONTAP Mediator, see Installing or upgrading the ONTAP Mediator service.

Read-write destination volumes

- SM-BC relationships are not supported on read-write destination volumes. Before you can use a read-write volume, you must convert it to a DP volume by creating a volume-level SnapMirror relationship and then deleting the relationship. For details, see Converting existing relationships to SM-BC relationships

Large LUNs and large volumes

- Large LUNs and large volumes greater than 100TB are supported only on All SAN Arrays

> You must ensure that both the primary and secondary cluster are All SAN Arrays, and that they both have ONTAP 9.8 installed. If the secondary cluster is running a version earlier than ONTAP 9.8 or if it is not an All SAN Array, the synchronous relationship can go out of sync if the primary volume grows larger than 100 TB.

Additional restrictions and limitations

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

Consistency groups

From ONTAP 9.8 to 9.9.1, the maximum number of SnapMirror Synchronous consistency group relationships in a cluster is five, a limit which is platform-independent. Beginning in ONTAP 9.10.1, the maximum number of SnapMirror Synchronous consistency group relationships in a cluster is 20. If you reach or attempt to exceed this limit, an error message will display.

Volumes per consistency group

From ONTAP 9.8 to 9.9.1, the maximum number of volumes supported per SnapMirror Synchronous consistency group relationship is twelve, a limit which is platform-independent. Beginning in ONTAP 9.10.1, the maximum number of volumes supported per SnapMirror Synchronous relationship is sixteen. If you reach or attempt to exceed this limit, an error message will display.

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	
		ONTAP 9.8-9.9	ONTAP 9.10.1	ONTAP 9.8-9.9	ONTAP 9.10.1
1	AFF	60	200	80	200
2	ASA	60	200	80	200

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

NTFS security style

NTFS security style is not supported on SM-BC volumes.

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.

Prepare 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.

SM-BC does not support the `snapmirror quiesce` and `snapmirror resume` commands for relationships with active
sync policy.

For more information about the following ONTAP commands, 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

Prepare 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

Copyright Information

Copyright © 2021 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.

RESTRICTED RIGHTS LEGEND: Use, duplication, or disclosure by the government is subject to restrictions as set forth in subparagraph (c)(1)(ii) of the Rights in Technical Data and Computer Software clause at DFARS 252.277-7103 (October 1988) and FAR 52-227-19 (June 1987).

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.