



# **Namespaces and junction points**

## **ONTAP 9**

NetApp  
November 28, 2022

# Table of Contents

- Namespaces and junction points ..... 1
  - Namespaces and junction points overview ..... 1
  - What the typical NAS namespace architectures are ..... 2

# Namespaces and junction points

## Namespaces and junction points overview

A NAS *namespace* is a logical grouping of volumes joined together at *junction points* to create a single file system hierarchy. A client with sufficient permissions can access files in the namespace without specifying the location of the files in storage. Junctioned volumes can reside anywhere in the cluster.

Rather than mounting every volume containing a file of interest, NAS clients mount an NFS *export* or access an SMB *share*. The export or share represents the entire namespace or an intermediate location within the namespace. The client accesses only the volumes mounted below its access point.

You can add volumes to the namespace as needed. You can create junction points directly below a parent volume junction or on a directory within a volume. A path to a volume junction for a volume named “vol3” might be /vol1/vol2/vol3, or /vol1/dir2/vol3, or even /dir1/dir2/vol3. The path is called the *junction path*.

Every SVM has a unique namespace. The SVM root volume is the entry point to the namespace hierarchy.



To ensure that data remains available in the event of a node outage or failover, you should create a *load-sharing mirror* copy for the SVM root volume.



*A namespace is a logical grouping of volumes joined together at junction points to create a single file system hierarchy.*

### Example

The following example creates a volume named “home4” located on SVM vs1 that has a junction path /eng/home:

```
cluster1::> volume create -vserver vs1 -volume home4 -aggregate aggr1
-size 1g -junction-path /eng/home
[Job 1642] Job succeeded: Successful
```

## What the typical NAS namespace architectures are

There are several typical NAS namespace architectures that you can use as you create your SVM name space. You can choose the namespace architecture that matches your business and workflow needs.

The top of the namespace is always the root volume, which is represented by a slash (/). The namespace architecture under the root falls into three basic categories:

- A single branched tree, with only a single junction to the root of the namespace

- Multiple branched trees, with multiple junction points to the root of the namespace
- Multiple stand-alone volumes, each with a separate junction point to the root of the name space

## Namespace with single branched tree

An architecture with a single branched tree has a single insertion point to the root of the SVM namespace. The single insertion point can be either a junctioned volume or a directory beneath the root. All other volumes are mounted at junction points beneath the single insertion point (which can be a volume or a directory).



For example, a typical volume junction configuration with the above namespace architecture might look like the following configuration, where all volumes are junctioned below the single insertion point, which is a directory named “data”:

| Vserver | Volume   | Junction Active | Junction Path     | Junction Path Source |
|---------|----------|-----------------|-------------------|----------------------|
| vs1     | corp1    | true            | /data/dir1/corp1  | RW_volume            |
| vs1     | corp2    | true            | /data/dir1/corp2  | RW_volume            |
| vs1     | data1    | true            | /data/data1       | RW_volume            |
| vs1     | eng1     | true            | /data/data1/eng1  | RW_volume            |
| vs1     | eng2     | true            | /data/data1/eng2  | RW_volume            |
| vs1     | sales    | true            | /data/data1/sales | RW_volume            |
| vs1     | vol1     | true            | /data/vol1        | RW_volume            |
| vs1     | vol2     | true            | /data/vol2        | RW_volume            |
| vs1     | vol3     | true            | /data/vol3        | RW_volume            |
| vs1     | vs1_root | -               | /                 | -                    |

## Namespace with multiple branched trees

An architecture with multiple branched trees has multiple insertion points to the root of the SVM namespace. The insertion points can be either junctioned volumes or directories beneath the root. All other volumes are mounted at junction points beneath the insertion points (which can be volumes or directories).



For example, a typical volume junction configuration with the above namespace architecture might look like the following configuration, where there are three insertion points to the root volume of the SVM. Two insertion points are directories named “data” and “projects”. One insertion point is a junctioned volume named “audit”:

| Vserver Volume |             | Junction |                    | Junction    |
|----------------|-------------|----------|--------------------|-------------|
|                |             | Active   | Junction Path      | Path Source |
| vs1            | audit       | true     | /audit             | RW_volume   |
| vs1            | audit_logs1 | true     | /audit/logs1       | RW_volume   |
| vs1            | audit_logs2 | true     | /audit/logs2       | RW_volume   |
| vs1            | audit_logs3 | true     | /audit/logs3       | RW_volume   |
| vs1            | eng         | true     | /data/eng          | RW_volume   |
| vs1            | mktg1       | true     | /data/mktg1        | RW_volume   |
| vs1            | mktg2       | true     | /data/mktg2        | RW_volume   |
| vs1            | project1    | true     | /projects/project1 | RW_volume   |
| vs1            | project2    | true     | /projects/project2 | RW_volume   |
| vs1            | vs1_root    | -        | /                  | -           |

## Namespace with multiple stand-alone volumes

In an architecture with stand-alone volumes, every volume has an insertion point to the root of the SVM namespace; however, the volume is not junctioned below another volume. Each volume has a unique path,

and is either junctioned directly below the root or is junctioned under a directory below the root.



For example, a typical volume junction configuration with the above namespace architecture might look like the following configuration, where there are five insertion points to the root volume of the SVM, with each insertion point representing a path to one volume.

| Vserver | Volume   | Junction |           | Junction Path | Junction Path Source |
|---------|----------|----------|-----------|---------------|----------------------|
|         |          | Active   |           |               |                      |
| vs1     | eng      | true     | /eng      | RW_volume     |                      |
| vs1     | mktg     | true     | /vol/mktg | RW_volume     |                      |
| vs1     | project1 | true     | /project1 | RW_volume     |                      |
| vs1     | project2 | true     | /project2 | RW_volume     |                      |
| vs1     | sales    | true     | /sales    | RW_volume     |                      |
| vs1     | vs1_root | -        | /         | -             |                      |



## Copyright information

Copyright © 2022 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.