How ONTAP exports differ from 7-Mode exports

ONTAP 9

NetApp
August 10, 2023

This PDF was generated from https://docs.netapp.com/us-en/ontap/nfs-config/exports-differ-concept.html on August 10, 2023. Always check docs.netapp.com for the latest.

Table of Contents

How ONTAP exports differ from 7-Mode exports 1
How ONTAP exports differ from 7-Mode exports 1
Comparison of exports in 7-Mode and ONTAP 1
Examples of ONTAP export policies 2

How ONTAP exports differ from 7-Mode exports

How ONTAP exports differ from 7-Mode exports

If you are unfamiliar with how ONTAP implements NFS exports, you can compare 7-Mode and ONTAP export configuration tools, as well as sample 7-Mode `/etc/exports` files with clustered policies and rules.

In ONTAP there is no `/etc/exports` file and no `exportfs` command. Instead, you must define an export policy. Export policies enable you to control client access in much the same way as you did in 7-Mode, but give you additional functionality such as the ability to reuse the same export policy for multiple volumes.

Related information

NFS management

NetApp Technical Report 4067: NFS Best Practice and Implementation Guide

Comparison of exports in 7-Mode and ONTAP

Exports in ONTAP are defined and used differently than they are in 7-Mode environments.

Areas of difference	7-Mode	ONTAP
How exports are defined	Exports are defined in the `/etc/exports` file.	Exports are defined by creating an export policy within an SVM. An SVM can include more than one export policy.
Scope of export	• Exports apply to a specified file path or qtree. • You must create a separate entry in `/etc/exports` for each file path or qtree. • Exports are persistent only if they are defined in the `/etc/exports` file.	• Export policies apply to an entire volume, including all of the file paths and qtrees contained in the volume. • Export policies can be applied to more than one volume if you want. • All export policies are persistent across system restarts.

Fencing (specifying different access for specific clients to the same resources)	To provide specific clients different access to a single exported resource, you have to list each client and its permitted access in the `/etc/exports` file.	Export policies are composed of a number of individual export rules. Each export rule defines specific access permissions for a resource and lists the clients that have those permissions. To specify different access for specific clients, you have to create an export rule for each specific set of access permissions, list the clients that have those permissions, and then add the rules to the export policy.
Name aliasing	When you define an export, you can choose to make the name of the export different from the name of the file path. You should use the `-actual` parameter when defining such an export in the `/etc/exports` file.	You can choose to make the name of the exported volume different from the actual volume name. To do this, you must mount the volume with a custom junction path name within the SVM namespace. By default, volumes are mounted with their volume name. To customize a volume's junction path name you need to unmount it, rename it, and then remount it.

Examples of ONTAP export policies

You can review example export policies to better understand how export policies work in ONTAP.

Sample ONTAP implementation of a 7-Mode export

The following example shows a 7-Mode export as it appears in the `/etc/export` file:

```
/vol/vol1 -sec=sys,ro=@readonly_netgroup,rw=@readwrite_netgroup1:
@readwrite_netgroup2:@rootaccess_netgroup,root=@rootaccess_netgroup
```

To reproduce this export as a clustered export policy, you have to create an export policy with three export rules, and then assign the export policy to the volume vol1.

Rule	Element	Value
Rule 1	`-clientmatch` (client specification)	`@readonly_netgroup`
	`-ruleindex`(position of export rule in the list of rules)	`1`
	`-protocol`	`nfs`
	`-rorule`(allow read-only access)	`sys` (client authenticated with AUTH_SYS)
	`-rwrule`(allow read-write access)	`never`
	`-superuser`(allow superuser access)	`none`(root *squashed* to anon)
Rule 2	`-clientmatch`	`@rootaccess_netgroup`
	`-ruleindex`	`2`
	`-protocol`	`nfs`
	`-rorule`	`sys`
	`-rwrule`	`sys`
	`-superuser`	`sys`
Rule 3	`-clientmatch`	`@readwrite_netgroup1,@readwrite_netgroup2`
	`-ruleindex`	`3`
	`-protocol`	`nfs`
	`-rorule`	`sys`
	`-rwrule`	`sys`
	`-superuser`	`none`

1. Create an export policy called exp_vol1:

```
vserver export-policy create -vserver NewSVM -policyname exp_vol1
```

2. Create three rules with the following parameters to the base command:
   - Base command:
     `vserver export-policy rule create -vserver NewSVM -policyname exp_vol1`
   - Rule parameters:
     `-clientmatch @readonly_netgroup -ruleindex 1 -protocol nfs -rorule sys -rwrule never -superuser none`
     `-clientmatch @rootaccess_netgroup -ruleindex 2 -protocol nfs -rorule sys -rwrule sys -superuser sys`
     `-clientmatch @readwrite_netgroup1,@readwrite_netgroup2 -ruleindex 3 -protocol nfs -rorule sys -rwrule sys -superuser none`
3. Assign the policy to the volume vol1:

```
volume modify -vserver NewSVM -volume vol1 -policy exp_vol1
```

Sample consolidation of 7-Mode exports

The following example shows a 7-Mode `/etc/export` file that includes one line for each of 10 qtrees:

```
/vol/vol1/q_1472 -sec=sys,rw=host1519s,root=host1519s
/vol/vol1/q_1471 -sec=sys,rw=host1519s,root=host1519s
/vol/vol1/q_1473 -sec=sys,rw=host1519s,root=host1519s
/vol/vol1/q_1570 -sec=sys,rw=host1519s,root=host1519s
/vol/vol1/q_1571 -sec=sys,rw=host1519s,root=host1519s
/vol/vol1/q_2237 -sec=sys,rw=host2057s,root=host2057s
/vol/vol1/q_2238 -sec=sys,rw=host2057s,root=host2057s
/vol/vol1/q_2239 -sec=sys,rw=host2057s,root=host2057s
/vol/vol1/q_2240 -sec=sys,rw=host2057s,root=host2057s
/vol/vol1/q_2241 -sec=sys,rw=host2057s,root=host2057s
```

In ONTAP, one of two policies is needed for each qtree: one with a rule including `-clientmatch host1519s`, or one with a rule including `-clientmatch host2057s`.

1. Create two export policies called exp_vol1q1 and exp_vol1q2:
   - `vserver export-policy create -vserver NewSVM -policyname exp_vol1q1`
   - `vserver export-policy create -vserver NewSVM -policyname exp_vol1q2`
2. Create a rule for each policy:
   - `vserver export-policy rule create -vserver NewSVM -policyname exp_vol1q1 -clientmatch host1519s -rwrule sys -superuser sys`
   - `vserver export-policy rule create -vserver NewSVM -policyname exp_vol1q2 -clientmatch host1519s -rwrule sys -superuser sys`
3. Apply the policies to the qtrees:
   - `volume qtree modify -vserver NewSVM -qtree-path /vol/vol1/q_1472 -export`

```
-policy exp_vol1q1
```

- [next 4 qtrees…]
- `volume qtree modify -vserver NewSVM -qtree-path /vol/vol1/q_2237 -export -policy exp_vol1q2`
- [next 4 qtrees…]

If you need to add additional qtrees for those hosts later, you would use the same export policies.

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.