



# **Manage routing in an SVM**

## **ONTAP 9**

NetApp  
December 18, 2022

This PDF was generated from [https://docs.netapp.com/us-en/ontap/networking/manage\\_routing\\_in\\_an\\_svm\\_overview.html](https://docs.netapp.com/us-en/ontap/networking/manage_routing_in_an_svm_overview.html) on December 18, 2022. Always check docs.netapp.com for the latest.

# Table of Contents

- Manage routing in an SVM . . . . . 1
  - Overview . . . . . 1
  - Create a static route . . . . . 1
  - Enable multipath routing . . . . . 1
  - Delete a static route . . . . . 2
  - Display routing information . . . . . 2
  - Remove dynamic routes from routing tables . . . . . 4

# Manage routing in an SVM

## Overview

The routing table for an SVM determines the network path the SVM uses to communicate with a destination. It's important to understand how routing tables work so that you can prevent network problems before they occur.

Routing rules are as follows:

- ONTAP routes traffic over the most specific available route.
- ONTAP routes traffic over a default gateway route (having 0 bits of netmask) as a last resort, when more specific routes are not available.

In the case of routes with the same destination, netmask, and metric, there is no guarantee that the system will use the same route after a reboot or after an upgrade. This is especially an issue if you have configured multiple default routes.

It is a best practice to configure one default route only for an SVM. To avoid disruption, you should ensure that the default route is able to reach any network address that is not reachable by a more specific route. For more information, see the Knowledgebase article [SU134: Network access might be disrupted by incorrect routing configuration in clustered ONTAP](#)

## Create a static route

You can create static routes within a storage virtual machine (SVM) to control how LIFs use the network for outbound traffic.

When you create a route entry associated with an SVM, the route will be used by all LIFs that are owned by the specified SVM and that are on the same subnet as the gateway.

### Step

Use the `network route create` command to create a route.

```
network route create -vserver vs0 -destination 0.0.0.0/0 -gateway
10.61.208.1
```

## Enable multipath routing

If multiple routes have the same metric for a destination, only one of the routes is picked for outgoing traffic. This leads to other routes being unutilized for sending outgoing traffic. You can enable multipath routing to load balance and utilize all the available routes.

### Steps

1. Log in to the advanced privilege level:

```
set -privilege advanced
```

## 2. Enable multipath routing:

```
network options multipath-routing modify -is-enabled true
```

Multipath routing is enabled for all nodes in the cluster.

```
network options multipath-routing modify -is-enabled true
```

## Delete a static route

You can delete an unneeded static route from a storage virtual machine (SVM).

### Step

Use the `network route delete` command to delete a static route.

For more information about this command, see the `network route` man page: [ONTAP 9 commands](#).

The following example deletes a static route associated with SVM vs0 with a gateway of 10.63.0.1 and a destination IP address of 0.0.0.0/0:

```
network route delete -vserver vs0 -gateway 10.63.0.1 -destination
0.0.0.0/0
```

## Display routing information

You can display information about the routing configuration for each SVM on your cluster. This can help you diagnose routing problems involving connectivity issues between client applications or services and a LIF on a node in the cluster.

### Steps

1. Use the `network route show` command to display routes within one or more SVMs. The following example shows a route configured in the vs0 SVM:

```
network route show
(network route show)
Vserver          Destination      Gateway          Metric
-----
vs0
                0.0.0.0/0       172.17.178.1    20
```

2. Use the `network route show-lifs` command to display the association of routes and LIFs within one or more SVMs.

The following example shows LIFs with routes owned by the vs0 SVM:

```
network route show-lifs
(network route show-lifs)
```

Vserver: vs0

Destination	Gateway	Logical Interfaces
-----	-----	-----
0.0.0.0/0	172.17.178.1	cluster_mgmt, LIF-b-01_mgmt1, LIF-b-02_mgmt1

3. Use the `network route active-entry show` command to display installed routes on one or more nodes, SVMs, subnets, or routes with specified destinations.

The following example shows all installed routes on a specific SVM:

```
network route active-entry show -vserver Data0
```

Vserver: Data0

Node: node-1

Subnet Group: 0.0.0.0/0

Destination	Gateway	Interface	Metric	Flags
-----	-----	-----	-----	-----
127.0.0.1	127.0.0.1	lo	10	UHS
127.0.10.1	127.0.20.1	losk	10	UHS
127.0.20.1	127.0.20.1	losk	10	UHS

Vserver: Data0

Node: node-1

Subnet Group: fd20:8b1e:b255:814e::/64

Destination	Gateway	Interface	Metric	Flags
-----	-----	-----	-----	-----
default	fd20:8b1e:b255:814e::1	e0d	20	UGS
fd20:8b1e:b255:814e::/64	link#4	e0d	0	UC

Vserver: Data0

Node: node-2

Subnet Group: 0.0.0.0/0

Destination	Gateway	Interface	Metric	Flags
-----	-----	-----	-----	-----
127.0.0.1	127.0.0.1	lo	10	UHS

Vserver: Data0

Node: node-2

```
Subnet Group: 0.0.0.0/0
```

Destination	Gateway	Interface	Metric	Flags
127.0.10.1	127.0.20.1	losk	10	UHS
127.0.20.1	127.0.20.1	losk	10	UHS

```
Vserver: Data0
```

```
Node: node-2
```

```
Subnet Group: fd20:8b1e:b255:814e::/64
```

Destination	Gateway	Interface	Metric	Flags
default	fd20:8b1e:b255:814e::1	e0d	20	UGS
fd20:8b1e:b255:814e::/64	link#4	e0d	0	UC
fd20:8b1e:b255:814e::1	link#4	e0d	0	UHL

```
11 entries were displayed.
```

## Remove dynamic routes from routing tables

When ICMP redirects are received for IPv4 and IPv6, dynamic routes are added to the routing table. By default, the dynamic routes are removed after 300 seconds. If you want to maintain dynamic routes for a different amount of time, you can change the time out value.

### About this task

You can set the timeout value from 0 to 65,535 seconds. If you set the value to 0, the routes never expire. Removing dynamic routes prevents loss of connectivity caused by the persistence of invalid routes.

### Steps

1. Display the current timeout value.

- For IPv4:

```
network tuning icmp show
```

- For IPv6:

```
network tuning icmp6 show
```

2. Modify the timeout value.

- For IPv4:

```
network tuning icmp modify -node node_name -redirect-timeout  
timeout_value
```

- For IPv6:

```
network tuning icmp6 modify -node node_name -redirect-v6-timeout  
timeout_value
```

### 3. Verify that the timeout value was modified correctly.

- For IPv4:

```
network tuning icmp show
```

- For IPv6:

```
network tuning icmp6 show
```

## 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.