



# **Manage SVM-scoped NDMP mode for FlexVol volumes**

**ONTAP 9**

NetApp  
August 11, 2022

# Table of Contents

- Manage SVM-scoped NDMP mode for FlexVol volumes . . . . . 1
  - Manage SVM-scoped NDMP mode for FlexVol volumes overview . . . . . 1
  - Commands for managing SVM-scoped NDMP mode . . . . . 1
  - What Cluster Aware Backup extension does . . . . . 3
  - Availability of volumes and tape devices for backup and restore on different LIF types . . . . . 3
  - What affinity information is . . . . . 4
  - NDMP server supports secure control connections in SVM-scoped mode . . . . . 5
  - NDMP data connection types . . . . . 5
  - User authentication in the SVM-scoped NDMP mode . . . . . 6
  - Generate an NDMP-specific password for NDMP users . . . . . 7
  - How tape backup and restore operations are affected during disaster recovery in MetroCluster configuration . . . . . 7

# Manage SVM-scoped NDMP mode for FlexVol volumes

## Manage SVM-scoped NDMP mode for FlexVol volumes overview

You can manage NDMP on a per SVM basis by using the NDMP options and commands. You can modify the NDMP options by using the `vserver services ndmp modify` command. In the SVM-scoped NDMP mode, user authentication is integrated with the role-based access control mechanism.

You can add NDMP in the allowed or disallowed protocols list by using the `vserver modify` command. By default, NDMP is in the allowed protocols list. If NDMP is added to the disallowed protocols list, NDMP sessions cannot be established.

You can control the LIF type on which an NDMP data connection is established by using the `-preferred-interface-role` option. During an NDMP data connection establishment, NDMP chooses an IP address that belongs to the LIF type as specified by this option. If the IP addresses do not belong to any of these LIF types, then the NDMP data connection cannot be established. For more information about the `-preferred-interface-role` option, see the man pages.

For more information about the `vserver services ndmp modify` command, see the man pages.

### Related information

[Commands for managing SVM-scoped NDMP mode](#)

[What Cluster Aware Backup extension does](#)

[ONTAP concepts](#)

[What SVM-scoped NDMP mode is](#)

[System administration](#)

## Commands for managing SVM-scoped NDMP mode

You can use the `vserver services ndmp` commands to manage NDMP on each storage virtual machine (SVM, formerly known as Vserver).

| If you want to...                                    | Use this command...   |
|--|---|
| Enable NDMP service                                  | <pre>vserver services ndmp on</pre> <div>  <p>NDMP service must always be enabled on all nodes in a cluster. You can enable NDMP service on a node by using the <code>system services ndmp on</code> command. By default, NDMP service is always enabled on a node.</p> </div> |
| Disable NDMP service                                 | <pre>vserver services ndmp off</pre>  |
| Display NDMP configuration                           | <pre>vserver services ndmp show</pre>   |
| Modify NDMP configuration                            | <pre>vserver services ndmp modify</pre>   |
| Display default NDMP version                         | <pre>vserver services ndmp version</pre>  |
| Display all NDMP sessions                            | <pre>vserver services ndmp status</pre>   |
| Display detailed information about all NDMP sessions | <pre>vserver services ndmp probe</pre>  |
| Terminate a specified NDMP session                   | <pre>vserver services ndmp kill</pre>   |
| Terminate all NDMP sessions                          | <pre>vserver services ndmp kill-all</pre>   |
| Generate the NDMP password                           | <pre>vserver services ndmp generate-password</pre>  |
| Display NDMP extension status                        | <pre>vserver services ndmp extensions show</pre> <p>This command is available at the advanced privilege level.</p>  |
| Modify (enable or disable) NDMP extension status     | <pre>vserver services ndmp extensions modify</pre> <p>This command is available at the advanced privilege level.</p>  |
| Start logging for the specified NDMP session         | <pre>vserver services ndmp log start</pre> <p>This command is available at the advanced privilege level.</p>  |

| If you want to...                           | Use this command...   |
|---|---|
| Stop logging for the specified NDMP session | <pre>vserver services ndmp log stop</pre> <p>This command is available at the advanced privilege level.</p> |

For more information about these commands, see the man pages for the `vserver services ndmp` commands.

## What Cluster Aware Backup extension does

CAB (Cluster Aware Backup) is an NDMP v4 protocol extension. This extension enables the NDMP server to establish a data connection on a node that owns a volume. This also enables the backup application to determine if volumes and tape devices are located on the same node in a cluster.

To enable the NDMP server to identify the node that owns a volume and to establish a data connection on such a node, the backup application must support the CAB extension. CAB extension requires the backup application to inform the NDMP server about the volume to be backed up or restored prior to establishing the data connection. This allows the NDMP server to determine the node that hosts the volume and appropriately establish the data connection.

With the CAB extension supported by the backup application, the NDMP server provides affinity information about volumes and tape devices. Using this affinity information, the backup application can perform a local backup instead of a three-way backup if a volume and tape device are located on the same node in a cluster.

## Availability of volumes and tape devices for backup and restore on different LIF types

You can configure a backup application to establish an NDMP control connection on any of the LIF types in a cluster. In the storage virtual machine (SVM)-scoped NDMP mode, you can determine the availability of volumes and tape devices for backup and restore operations depending upon these LIF types and the status of the CAB extension.

The following tables show the availability of volumes and tape devices for NDMP control connection LIF types and the status of the CAB extension:

### Availability of volumes and tape devices when CAB extension is not supported by the backup application

| NDMP control connection LIF type | Volumes available for backup or restore | Tape devices available for backup or restore                       |
|----------------------------------|---|--|
| Node-management LIF              | All volumes hosted by a node            | Tape devices connected to the node hosting the node-management LIF |

| <b>NDMP control connection LIF type</b> | <b>Volumes available for backup or restore</b>                               | <b>Tape devices available for backup or restore</b>             |
|---|--|---|
| Data LIF                                | Only volumes that belong to the SVM hosted by a node that hosts the data LIF | None  |
| Cluster-management LIF                  | All volumes hosted by a node that hosts the cluster-management LIF           | None  |
| Intercluster LIF                        | All volumes hosted by a node that hosts the intercluster LIF                 | Tape devices connected to the node hosting the intercluster LIF |

## **Availability of volumes and tape devices when CAB extension is supported by the backup application**

| <b>NDMP control connection LIF type</b> | <b>Volumes available for backup or restore</b>             | <b>Tape devices available for backup or restore</b>                |
|---|--|--|
| Node-management LIF                     | All volumes hosted by a node                               | Tape devices connected to the node hosting the node-management LIF |
| Data LIF                                | All volumes that belong to the SVM that hosts the data LIF | None   |
| Cluster-management LIF                  | All volumes in the cluster                                 | All tape devices in the cluster                                    |
| Intercluster LIF                        | All volumes in the cluster                                 | All tape devices in the cluster                                    |

## **What affinity information is**

With the backup application being CAB aware, the NDMP server provides unique location information about volumes and tape devices. Using this affinity information, the backup application can perform a local backup instead of a three-way backup if a volume and a tape device share the same affinity.

If the NDMP control connection is established on a node management LIF, cluster management LIF, or an intercluster LIF, the backup application can use the affinity information to determine if a volume and tape device are located on the same node and then perform either a local or a three-way backup or restore operation. If the NDMP control connection is established on a data LIF, then the backup application always performs a three-way backup.

### **Local NDMP backup and Three-way NDMP backup**



Using the affinity information about volumes and tape devices, the DMA (backup application) performs a local NDMP backup on the volume and tape device located on Node 1 in the cluster. If the volume moves from Node 1 to Node 2, affinity information about the volume and tape device changes. Hence, for a subsequent backup the DMA performs a three-way NDMP backup operation. This ensures continuity of the backup policy for the volume irrespective of the node to which the volume is moved to.

### Related information

[What Cluster Aware Backup extension does](#)

## NDMP server supports secure control connections in SVM-scoped mode

A secure control connection can be established between the Data Management Application (DMA) and NDMP server by using secure sockets (SSL/TLS) as the communication mechanism. This SSL communication is based on the server certificates. The NDMP server listens on port 30000 (assigned by IANA for “ndmps” service).

After establishing the connection from the client on this port, the standard SSL handshake ensues where the server presents the certificate to the client. When the client accepts the certificate, the SSL handshake is complete. After this process is complete, all of the communication between the client and the server is encrypted. The NDMP protocol workflow remains exactly as before. The secure NDMP connection requires server-side certificate authentication only. A DMA can choose to establish a connection either by connecting to the secure NDMP service or the standard NDMP service.

By default, secure NDMP service is disabled for a storage virtual machine (SVM). You can enable or disable the secure NDMP service on a given SVM by using the `vserver services ndmp modify -vserver vserver -is-secure-control-connection-enabled [true|false]` command.

## NDMP data connection types

In the storage virtual machine (SVM)-scoped NDMP mode, the supported NDMP data connection types depend on the NDMP control connection LIF type and the status of the CAB extension. This NDMP data connection type indicates whether you can perform a local or a three-way NDMP backup or restore operation.

You can perform a three-way NDMP backup or restore operation over a TCP or TCP/IPv6 network. The following tables show the NDMP data connection types based on the NDMP control connection LIF type and

the status of the CAB extension.

## NDMP data connection type when CAB extension is supported by the backup application

| NDMP control connection LIF type | NDMP data connection type |
|----------------------------------|---------------------------|
| Node-management LIF              | LOCAL, TCP, TCP/IPv6      |
| Data LIF                         | TCP, TCP/IPv6             |
| Cluster-management LIF           | LOCAL, TCP, TCP/IPv6      |
| Intercluster LIF                 | LOCAL, TCP, TCP/IPv6      |

## NDMP data connection type when CAB extension is not supported by the backup application

| NDMP control connection LIF type | NDMP data connection type |
|----------------------------------|---------------------------|
| Node-management LIF              | LOCAL, TCP, TCP/IPv6      |
| Data LIF                         | TCP, TCP/IPv6             |
| Cluster-management LIF           | TCP, TCP/IPv6             |
| Intercluster LIF                 | LOCAL, TCP, TCP/IPv6      |

### Related information

[What Cluster Aware Backup extension does](#)

[Network management](#)

## User authentication in the SVM-scoped NDMP mode

In the storage virtual machine (SVM)-scoped NDMP mode, NDMP user authentication is integrated with role-based access control. In the SVM context, the NDMP user must have either the “vsadmin” or “vsadmin-backup” role. In a cluster context, the NDMP user must have either the “admin” or “backup” role.

Apart from these pre-defined roles, a user account associated with a custom role can also be used for NDMP authentication provided that the custom role has the “vserver services ndmp” folder in its command directory and the access level of the folder is not “none”. In this mode, you must generate an NDMP password for a given user account, which is created through role-based access control. Cluster users in an admin or backup role can access a node-management LIF, a cluster-management LIF, or an intercluster LIF. Users in a vsadmin-backup or vsadmin role can access only the data LIF for that SVM. Therefore, depending on the role of a user, the availability of volumes and tape devices for backup and restore operations vary.



This mode also supports user authentication for NIS and LDAP users. Therefore, NIS and LDAP users can access multiple SVMs with a common user ID and password. However, NDMP authentication does not support Active Directory users.

In this mode, a user account must be associated with the SSH application and the “User password” authentication method.

#### Related information

[Commands for managing SVM-scoped NDMP mode](#)

[System administration](#)

[ONTAP concepts](#)

## Generate an NDMP-specific password for NDMP users

In the storage virtual machine (SVM)-scoped NDMP mode, you must generate a password for a specific user ID. The generated password is based on the actual login password for the NDMP user. If the actual login password changes, you must generate the NDMP-specific password again.

#### Steps

1. Use the `vserver services ndmp generate-password` command to generate an NDMP-specific password.

You can use this password in any current or future NDMP operation that requires password input.



From the storage virtual machine (SVM, formerly known as Vserver) context, you can generate NDMP passwords for users belonging only to that SVM.

The following example shows how to generate an NDMP-specific password for a user ID `user1`:

```
cluster1::vserver services ndmp> generate-password -vserver vs1 -user  
user1
```

```
Vserver: vs1
```

```
User: user1
```

```
Password: jWZiNt57huPOoD8d
```

2. If you change the password to your regular storage system account, repeat this procedure to obtain your new NDMP-specific password.

## How tape backup and restore operations are affected during disaster recovery in MetroCluster configuration

You can perform tape backup and restore operations simultaneously during disaster recovery in a MetroCluster configuration. You must understand how these operations are affected during disaster recovery.

If tape backup and restore operations are performed on a volume of an SVM in a disaster recovery relationship, then you can continue performing incremental tape backup and restore operations after a switchover and switchback.

## 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.

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.