# NetApp

# Create and manage data volumes in NAS namespaces

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## Create and manage data volumes in NAS namespaces overview

To manage file access in a NAS environment, you must manage data volumes and junction points on your storage virtual machine (SVM). This includes planning your namespace architecture, creating volumes with or without junction points, mounting or unmounting volumes, and displaying information about data volumes and NFS server or CIFS server namespaces.

## Create data volumes with specified junction points

You can specify the junction point when you create a data volume. The resultant volume is automatically mounted at the junction point and is immediately available to configure for NAS access.

**Before you begin**

The aggregate in which you want to create the volume must already exist.

> The following characters cannot be used in the junction path: * # " > < | ? \
>
> In addition, the junction path length cannot be more than 255 characters.

**Steps**

1. Create the volume with a junction point: `volume create -vserver` *`vserver_name`* `-volume` *`volume_name`* `-aggregate` *`aggregate_name`* `-size {integer[KB|MB|GB|TB|PB]}` `-security-style {ntfs|unix|mixed} -junction-path` *`junction_path`*

   The junction path must start with the root (/) and can contain both directories and junctioned volumes. The junction path does not need to contain the name of the volume. Junction paths are independent of the volume name.

   Specifying a volume security style is optional. If you do not specify a security style, ONTAP creates the volume with the same security style that is applied to the root volume of the storage virtual machine (SVM). However, the root volume's security style might not be the security style you want applied to the data volume you create. The recommendation is to specify the security style when you create the volume to minimize difficult-to-troubleshoot file-access issues.

   The junction path is case insensitive; `/ENG` is the same as `/eng`. If you create a CIFS share, Windows treats the junction path as if it is case sensitive. For example, if the junction is `/ENG`, the path of a CIFS share must start with `/ENG`, not `/eng`.

   There are many optional parameters that you can use to customize a data volume. To learn more about them, see the man pages for the `volume create` command.

2. Verify that the volume was created with the desired junction point: `volume show -vserver`

*vserver_name* -volume *volume_name* -junction

**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

cluster1::> volume show -vserver vs1 -volume home4 -junction
                 Junction                Junction
Vserver   Volume  Active   Junction Path  Path Source
--------- ------- -------- -------------- -----------
vs1       home4   true     /eng/home      RW_volume
```

# Create data volumes without specifying junction points

You can create a data volume without specifying a junction point. The resultant volume is not automatically mounted, and is not available to configure for NAS access. You must mount the volume before you can configure SMB shares or NFS exports for that volume.

**Before you begin**

The aggregate in which you want to create the volume must already exist.

**Steps**

1. Create the volume without a junction point by using the following command: `volume create -vserver` *vserver_name* `-volume` *volume_name* `-aggregate` *aggregate_name* `-size {integer[KB|MB|GB|TB|PB]} -security-style {ntfs|unix|mixed}`

   Specifying a volume security style is optional. If you do not specify a security style, ONTAP creates the volume with the same security style that is applied to the root volume of the storage virtual machine (SVM). However, the root volume's security style might not be the security style you want applied to the data volume. The recommendation is to specify the security style when you create the volume to minimize difficult-to-troubleshoot file-access issues.

   There are many optional parameters that you can use to customize a data volume. To learn more about them, see the man pages for the `volume create` command.

2. Verify that the volume was created without a junction point: `volume show -vserver` *vserver_name* `-volume` *volume_name* `-junction`

**Example**

The following example creates a volume named "sales" located on SVM vs1 that is not mounted at a junction point:

```
cluster1::> volume create -vserver vs1 -volume sales -aggregate aggr3
-size 20GB
[Job 3406] Job succeeded: Successful

cluster1::> volume show -vserver vs1 -junction
                         Junction                  Junction
Vserver    Volume        Active   Junction Path    Path Source
---------  ----------    -------- ---------------  -----------
vs1        data          true     /data            RW_volume
vs1        home4         true     /eng/home        RW_volume
vs1        vs1_root      -        /                -
vs1        sales         -        -                -
```

# Mount or unmount existing volumes in the NAS namespace

A volume must be mounted on the NAS namespace before you can configure NAS client access to data contained in the storage virtual machine (SVM) volumes. You can mount a volume to a junction point if it is not currently mounted. You can also unmount volumes.

**About this task**

If you unmount and offline a volume, all data within the junction point, including data in volumes with junction points contained within the unmounted volume's namespace, are inaccessible to NAS clients.

> (i) To discontinue NAS client access to a volume, it is not sufficient to simply unmount the volume. You must offline the volume, or take other steps to ensure that client-side file handle caches are invalidated. For more information, see the following Knowledge Base article:https://kb.netapp.com/Advice_and_Troubleshooting/Data_Storage_Software/ONTAP_OS/NFSv3_clients_still_have_access_to_a_volume_after_being_removed_from_the_namespace_in_ONTAP[NFSv3 clients still have access to a volume after being removed from the namespace in ONTAP]

When you unmount and offline a volume, data within the volume is not lost. Additionally, existing volume export policies and SMB shares created on the volume or on directories and junction points within the unmounted volume are retained. If you remount the unmounted volume, NAS clients can access the data contained within the volume using existing export policies and SMB shares.

**Steps**

1. Perform the desired action:

| If you want to… | Enter the commands… |
|---|---|
| Mount a volume | volume mount -vserver *svm_name* -volume *volume_name* -junction-path *junction_path* |

| If you want to… | Enter the commands… |
|---|---|
| Unmount a volume | `volume unmount -vserver svm_name -volume volume_name volume offline -vserver svm_name -volume volume_name` |

2. Verify that the volume is in the desired mount state: `volume show -vserver vserver_name -volume volume_name -fields state,junction-path,junction-active`

**Examples**

The following example mounts a volume named "sales" located on SVM vs1 to the junction point `/sales`:

```
cluster1::> volume mount -vserver vs1 -volume sales -junction-path /sales

cluster1::> volume show -vserver vs1 state,junction-path,junction-active

vserver    volume     state     junction-path   junction-active
---------  ---------- --------  --------------  ----------------
vs1        data       online    /data           true
vs1        home4      online    /eng/home       true
vs1        sales      online    /sales          true
```

The following example unmounts and offlines a volume named "data" located on SVM vs1:

```
cluster1::> volume unmount -vserver vs1 -volume data
cluster1::> volume offline -vserver vs1 -volume data

cluster1::> volume show -vserver vs1 -fields state,junction-path,junction-active

vserver    volume     state      junction-path   junction-active
---------  ---------- ---------  --------------  ---------------
vs1        data       offline    -               -
vs1        home4      online     /eng/home       true
vs1        sales      online     /sales          true
```

# Display volume mount and junction point information

You can display information about mounted volumes for storage virtual machines (SVMs) and the junction points to which the volumes are mounted. You can also determine which volumes are not mounted to a junction point. You can use this information to understand and manage your SVM namespace.

**Steps**

1. Perform the desired action:

| If you want to display… | Enter the command… |
|---|---|
| Summary information about mounted and unmounted volumes on the SVM | `volume show -vserver vserver_name -junction` |
| Detailed information about mounted and unmounted volumes on the SVM | `volume show -vserver vserver_name -volume volume_name -instance` |
| Specific information about mounted and unmounted volumes on the SVM | a. If necessary, you can display valid fields for the `-fields` parameter by using the following command: `volume show -fields ?`<br><br>b. Display the desired information by using the `-fields` parameter: volume show -vserver vserver_name -fields fieldname,… |

**Examples**

The following example displays a summary of mounted and unmounted volumes on SVM vs1:

```
cluster1::> volume show -vserver vs1 -junction
                     Junction                  Junction
Vserver    Volume    Active    Junction Path   Path Source
---------  --------- --------  --------------- -----------
vs1        data      true      /data           RW_volume
vs1        home4     true      /eng/home       RW_volume
vs1        vs1_root  -         /               -
vs1        sales     true      /sales          RW_volume
```

The following example displays information about specified fields for volumes located on SVM vs2:

```
cluster1::> volume show -vserver vs2 -fields
vserver,volume,aggregate,size,state,type,security-style,junction-
path,junction-parent,node
vserver volume   aggregate size state  type security-style junction-path
junction-parent node
------- ------   --------- ---- ------ ---- -------------- -------------
--------------- -----
vs2     data1    aggr3     2GB  online RW   unix           -               -
node3
vs2     data2    aggr3     1GB  online RW   ntfs           /data2
vs2_root        node3
vs2     data2_1  aggr3     8GB  online RW   ntfs           /data2/d2_1
data2           node3
vs2     data2_2  aggr3     8GB  online RW   ntfs           /data2/d2_2
data2           node3
vs2     pubs     aggr1     1GB  online RW   unix           /publications
vs2_root        node1
vs2     images   aggr3     2TB  online RW   ntfs           /images
vs2_root        node3
vs2     logs     aggr1     1GB  online RW   unix           /logs
vs2_root        node1
vs2     vs2_root aggr3     1GB  online RW   ntfs           /               -
node3
```