Create and manage data volumes in NAS namespaces

ONTAP 9

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Create ONTAP NAS 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.
- Beginning with ONTAP 9.13.1, you can create volumes with capacity analytics and Activity Tracking enabled. To enable capacity or Activity Tracking, issue the `volume create` command with `-analytics-state` or `-activity-tracking-state` set to `on`.

  To learn more about capacity analytics and Activity Tracking, see Enable File System Analytics. Learn more about `volume create` in the ONTAP command reference.

> 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 SMB share must start with `/ENG`, not `/eng`.

   There are many optional parameters that you can use to customize a data volume. Learn more about `volume create` in the ONTAP command reference.

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 ONTAP NAS volumes without specific 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.
- Beginning with ONTAP 9.13.1, you can create volumes with capacity analytics and Activity Tracking enabled. To enable capacity or Activity Tracking, issue the `volume create` command with `-analytics-state` or `-activity-tracking-state` set to `on`.

  To learn more about capacity analytics and Activity Tracking, see Enable File System Analytics. Learn more about `volume create` in the ONTAP command reference.

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. Learn more about `volume create` in the ONTAP command reference.

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 ONTAP NFS 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 take a volume offline, 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.

> To discontinue NAS client access to a volume, it is not sufficient to simply unmount the volume. You must take the volume offline, or take other steps to ensure that client-side file handle caches are invalidated. For more information, see the following Knowledge Base article:
>
> 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`

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 svm_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 takes offline 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 ONTAP NAS 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.

Step

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 ?` 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
```

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