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How you can view quota information
ONTAP 9

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How you can view quota information overview

You can use quota reports to view details such as the configuration of quota rules and policies, enforced and configured quotas, and errors that occur during quota resizing and reinitialization.

Viewing quota information is useful in situations such as the following:

- Configuring quotas—for example, to configure quotas and verify the configurations
- Responding to notifications that disk space or file limits will soon be reached or that they have been reached
- Responding to requests for more space

How you can use the quota report to see what quotas are in effect

Because of the various ways that quotas interact, more quotas are in effect than just the ones you have explicitly created. To see what quotas are in effect, you can view the quota report.

The following examples show quota reports for different types of quotas applied on a FlexVol volume vol1, and a qtree q1 contained in that volume:

Example with no user quotas specified for the qtree

In this example, there is one qtree, q1, which is contained by the volume vol1. The administrator has created three quotas:

- A default tree quota limit on vol1 of 400 MB
- A default user quota limit on vol1 of 100 MB
- An explicit user quota limit on vol1 of 200 MB for the user jsmith

The quotas file for these quotas looks similar to the following excerpt:

```
#Quota target type              disk files  thold sdisk  sfile
#-----------  ----              ---  -----  ----  -----  -----
*             tree@/vol/vol1  400M
*             user@/vol/vol1  100M
jsmith        user@/vol/vol1  200M
```

The quota report for these quotas looks similar to the following excerpt:

```
cluster1::> volume quota report
Vserver: vs1
                                        ----Disk----   ----Files-----     Quota
Volume    Tree       Type    ID          Used  Limit    Used    Limit
Specifier
-------   --------   ------  -------     -----  -----   ------   ------
---------
vol1      -          tree    *             0B   400MB      0       -    *
vol1      -          user    *             0B   100MB      0       -    *
vol1      -          user    corp/jsmith
                                         150B   200MB      7       -
corp/jsmith
vol1      q1         tree    1             0B   400MB      6       -    q1
vol1      q1         user    *             0B   100MB      0       -
vol1      q1         user    corp/jsmith 0B   100MB      5       -
vol1      -          user    root          0B    0MB      1       -
vol1      q1         user    root          0B    0MB      8       -
```

The first three lines of the quota report display the three quotas specified by the administrator. Since two of these quotas are default quotas, ONTAP automatically creates derived quotas.

The fourth line displays the tree quota that is derived from the default tree quota for every qtree in vol1 (in this example, only q1).

The fifth line displays the default user quota that is created for the qtree as a result of the existence of the default user quota on the volume and the qtree quota.

The sixth line displays the derived user quota that is created for jsmith on the qtree because there is a default user quota for the qtree (line 5) and the user jsmith owns files on that qtree. Note that the limit applied to the user jsmith in the qtree q1 is not determined by the explicit user quota limit (200 MB). This is because the explicit user quota limit is on the volume, so it does not affect limits for the qtree. Instead, the derived user quota limit for the qtree is determined by the default user quota for the qtree (100 MB).

The last two lines display more user quotas that are derived from the default user quotas on the volume and on the qtree. A derived user quota was created for the root user on both the volume and the qtree because the root user owned files on both the volume and the qtree. Since the root user gets special treatment in terms of quotas, its derived quotas are tracking quotas only.

Example with user quotas specified for the qtree

This example is similar to the previous one, except that the administrator has added two quotas on the qtree.

There is still one volume, vol1, and one qtree, q1. The administrator has created the following quotas:

- A default tree quota limit on vol1 of 400 MB

- A default user quota limit on vol1 of 100 MB

- An explicit user quota limit on vol1 for the user jsmith of 200 MB

- A default user quota limit on qtree q1 of 50 MB

- An explicit user quota limit on qtree q1 for the user jsmith of 75 MB

The quotas file for these quotas looks like this:

```
#Quota target type                  disk files  thold sdisk  sfile
#----------- ----                   --- -----   ----  -----  -----
*            tree@/vol/vol1    400M
*            user@/vol/vol1    100M
jsmith       user@/vol/vol1    200M
*            user@/vol/vol1/q1 50M
jsmith       user@/vol/vol1/q1 75M
```

The quota report for these quotas looks like this:

```
cluster1::> volume quota report
Vserver: vs1
                                      ----Disk----  ----Files-----   Quota
Volume  Tree      Type    ID          Used  Limit   Used   Limit
Specifier
------- --------  ------  -------     ----- -----   ------  ------
---------
vol1    -         tree    *              0B 400MB        0      -    *
vol1    -         user    *              0B 100MB        0      -    *
vol1    -         user    corp/jsmith
                                      2000B 200MB        7      -
corp/jsmith
vol1    q1        user    *              0B  50MB        0      -    *
vol1    q1        user    corp/jsmith 0B   75MB         5      -
corp/jsmith
vol1    q1        tree    1              0B 400MB        6      -    q1
vol1    -         user    root           0B  0MB         2      -
vol1    q1        user    root           0B  0MB         1      -
```

The first five lines of the quota report display the five quotas created by the administrator. Since some of these quotas are default quotas, ONTAP automatically creates derived quotas.

The sixth line displays the tree quota that is derived from the default tree quota for every qtree in vol1 (in this example, only q1).

The last two lines display the user quotas that are derived from the default user quotas on the volume and on the qtree. A derived user quota was created for the root user on both the volume and the qtree because the root user owned files on both the volume and the qtree. Since the root user gets special treatment in terms of quotas, its derived quotas are tracking quotas only.

No other default quotas or derived quotas were created for the following reasons:

- A derived user quota was not created for the jsmith user even though the user owns files on both the volume and the qtree because the user already has explicit quotas at both levels.

- No derived user quotas were created for other users because no other users own files on either the volume or the qtree.
- The default user quota on the volume did not create a default user quota on the qtree because the qtree already had a default user quota.

Why enforced quotas differ from configured quotas

Enforced quotas differ from configured quotas because derived quotas are enforced without being configured but configured quotas are enforced only after they are successfully initialized. Understanding these differences can help you compare the enforced quotas that are shown in quota reports to the quotas that you configured.

Enforced quotas, which appear in quota reports, might differ from the configured quota rules for the following reasons:

- Derived quotas are enforced without being configured as quota rules; ONTAP creates derived quotas automatically in response to default quotas.
- Quotas might not have been reinitialized on a volume after quota rules were configured.
- Errors might have occurred when quotas were initialized on a volume.

Use the quota report to determine which quotas limit writes to a specific file

You can use the volume quota report command with a specific file path to determine which quota limits affect write operations to a file. This can help you understand which quota is preventing a write operation.

Step

1. Use the volume quota report command with the -path parameter.

Example of showing quotas affecting a specific file

The following example shows the command and output to determine what quotas are in effect for writes to the file file1, which resides in the qtree q1 in the FlexVol volume vol2:

```
cluster1:> volume quota report -vserver vs0 -volume vol2 -path
/vol/vol2/q1/file1
Virtual Server: vs0
                                  ----Disk----  ----Files-----   Quota
Volume     Tree      Type    ID       Used  Limit    Used   Limit    Specifier
-------   --------   ------  -------  -----  -----   ------  ------
---------
vol2       q1         tree    jsmith   1MB   100MB       2   10000   q1
vol2       q1         group   eng      1MB   700MB       2   70000
vol2                  group   eng      1MB   700MB       6   70000   *
vol2                  user    corp\jsmith
                                       1MB    50MB       1       -   *
vol2       q1         user    corp\jsmith
                                       1MB    50MB       1       -
5 entries were displayed.
```

Commands for displaying information about quotas

You can use commands to display a quota report containing enforced quotas and resource usage, display information about quota state and errors, or about quota policies and quota rules.

ⓘ   You can run the following commands only on FlexVol volumes.

If you want to…	Use this command…
View information about enforced quotas	`volume quota report`
View resource usage (disk space and number of files) of quota targets	`volume quota report`
Determine which quota limits are affected when a write to a file is allowed	`volume quota report` with the `-path` parameter
Display the quota state, such as `on`, `off`, and `initializing`	`volume quota show`
View information about quota message logging	`volume quota show` with the `-logmsg` parameter
View errors that occur during quota initialization and resizing	`volume quota show` with the `-instance` parameter
View information about quota policies	`volume quota policy show`

If you want to…	Use this command…
View information about quota rules	`volume quota policy rule show`
View the name of the quota policy that is assigned to a storage virtual machine (SVM, formerly known as Vserver)	`vserver show` with the `-instance` parameter

See the man page for each command for more information.

When to use the volume quota policy rule show and volume quota report commands

Although both commands show information about quotas, the `volume quota policy rule show` quickly displays configured quota rules while the `volume quota report` command, which consumes more time and resources, displays enforced quotas and resource usage.

The `volume quota policy rule show` command is useful for the following purposes:

- Check the configuration of quota rules before activating them

  This command displays all configured quota rules regardless of whether the quotas have been initialized or resized.

- Quickly view quota rules without affecting system resources

  Because it does not display disk and file usage, this command is not as resource intensive as a quota report.

- Display the quota rules in a quota policy that is not assigned to the SVM.

The `volume quota report` command is useful for the following purposes:

- View enforced quotas, including derived quotas
- View the disk space and number of files used by every quota in effect, including targets affected by derived quotas

  (For default quotas, the usage appears as "0" because the usage is tracked against the resulting derived quota.)

- Determine which quota limits affect when a write to a file will be allowed

  Add the `-path` parameter to the `volume quota report` command.

> ⓘ The quota report is resource-intensive operation. If you run it on many FlexVol volumes in the cluster, it might take a long time to complete. A more efficient way would be to view the quota report for a particular volume in an SVM.