Special kinds of quotas
ONTAP 9
NetApp
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Special kinds of quotas

How default quotas work

You can use default quotas to apply a quota to all instances of a given quota type. For example, a default user quota affects all users on the system for the specified FlexVol volume or qtree. In addition, default quotas enable you to modify your quotas easily.

You can use default quotas to automatically apply a limit to a large set of quota targets without having to create separate quotas for each target. For example, if you want to limit most users to 10 GB of disk space, you can specify a default user quota of 10 GB of disk space instead of creating a quota for each user. If you have specific users for whom you want to apply a different limit, you can create explicit quotas for those users. (Explicit quotas—quotas with a specific target or list of targets—override default quotas.)

In addition, default quotas enable you to use resizing rather than reinitialization when you want quota changes to take effect. For example, if you add an explicit user quota to a volume that already has a default user quota, you can activate the new quota by resizing.

Default quotas can be applied to all three types of quota target (users, groups, and qtrees).

Default quotas do not necessarily have specified limits; a default quota can be a tracking quota.

A quota is indicated by a target that is either an empty string ("") or an asterisk (*), depending on the context:

- When you create a quota using the volume quota policy rule create command, setting the -target parameter to an empty string (""") creates a default quota.
- In the volume quota policy rule create command, the -qtree parameter specifies the name of the qtree to which the quota rule applies. This parameter is not applicable for tree type rules. For user or group type rules at the volume level, this parameter should contain "".
- In the output of the volume quota policy rule show command, a default quota appears with an empty string (""") as the target.
- In the output of the volume quota report command, a default quota appears with an asterisk (*) as the ID and Quota Specifier.

Default user quota example

The following quota rule uses a default user quota to apply a 50-MB limit on each user for vol1:
If any user on the system enters a command that would cause that user’s data to take up more than 50 MB in vol1 (for example, writing to a file from an editor), the command fails.

How you use explicit quotas

You can use explicit quotas to specify a quota for a specific quota target, or to override a default quota for a specific target.

An explicit quota specifies a limit for a particular user, group, or qtree. An explicit quota replaces any default quota that is in place for the same target.

When you add an explicit user quota for a user that has a derived user quota, you must use the same user mapping setting as the default user quota. Otherwise, when you resize quotas, the explicit user quota is rejected because it is considered a new quota.

Explicit quotas only affect default quotas at the same level (volume or qtree). For example, an explicit user quota for a qtree does not affect the default user quota for the volume that contains that qtree. However, the explicit user quota for the qtree overrides (replaces the limits defined by) the default user quota for that qtree.

Examples of explicit quotas

The following quota rules define a default user quota that limits all users in vol1 to 50MB of space. However, one user, jsmith, is allowed 80MB of space, because of the explicit quota (shown in bold):
The following quota rule restricts the specified user, represented by four IDs, to 550MB of disk space and 10,000 files in the vol1 volume:

```bash
cluster1::> volume quota policy rule create -vserver vs0 -volume vol1 -policy-name default -type user -target "jsmith,corp\jsmith,engineering\john smith,S-1-5-32-544" -qtree "" -disk-limit 550m -file-limit 10000
```

<table>
<thead>
<tr>
<th>Vserver: vs0</th>
<th>Policy: default</th>
<th>Volume: vol1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
<td>Target</td>
<td>Qtree</td>
</tr>
<tr>
<td>Threshold</td>
<td></td>
<td></td>
</tr>
<tr>
<td>user</td>
<td>&quot;&quot;</td>
<td>&quot;&quot;</td>
</tr>
<tr>
<td>user</td>
<td>jsmith</td>
<td>&quot;&quot;</td>
</tr>
</tbody>
</table>

The following quota rule restricts the eng1 group to 150MB of disk space and an unlimited number of files in the proj1 qtree:

```bash
cluster1::> volume quota policy rule create -vserver vs0 -volume vol1 -policy-name default -type user -target "jsmith,corp\jsmith,engineering\john smith,S-1-5-32-544" -qtree "" -disk-limit 550m -file-limit 10000
```

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<thead>
<tr>
<th>Vserver: vs0</th>
<th>Policy: default</th>
<th>Volume: vol1</th>
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</thead>
<tbody>
<tr>
<td>Type</td>
<td>Target</td>
<td>Qtree</td>
</tr>
<tr>
<td>Threshold</td>
<td></td>
<td></td>
</tr>
<tr>
<td>user</td>
<td>&quot;jsmith,corp\jsmith,engineering\john smith,S-1-5-32-544&quot;</td>
<td>&quot;&quot;</td>
</tr>
</tbody>
</table>

The following quota rule restricts the eng1 group to 150MB of disk space and an unlimited number of files in the proj1 qtree:
cluster1::> volume quota policy rule create -vserver vs0 -volume vol2
-policy-name default -type group -target "eng1" -qtree "proj1" -disk-limit 150m

cluster1::> volume quota policy rule show -vserver vs0 -volume vol2

Vserver: vs0             Policy: default           Volume: vol2

<table>
<thead>
<tr>
<th>Type</th>
<th>Target</th>
<th>Qtree</th>
<th>Mapping</th>
<th>Disk Limit</th>
<th>Files Limit</th>
<th>Files Threshold</th>
</tr>
</thead>
<tbody>
<tr>
<td>group</td>
<td>eng1</td>
<td>proj1</td>
<td>off</td>
<td>150MB</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

The following quota rule restricts the proj1 qtree in the vol2 volume to 750MB of disk space and 75,000 files:

cluster1::> volume quota policy rule create -vserver vs0 -volume vol2
-policy-name default -type tree -target "proj1" -disk-limit 750m -file-limit 75000

cluster1::> volume quota policy rule show -vserver vs0 -volume vol2

Vserver: vs0             Policy: default           Volume: vol2

<table>
<thead>
<tr>
<th>Type</th>
<th>Target</th>
<th>Qtree</th>
<th>Mapping</th>
<th>Disk Limit</th>
<th>Files Limit</th>
<th>Files Threshold</th>
</tr>
</thead>
<tbody>
<tr>
<td>tree</td>
<td>proj1</td>
<td>&quot;&quot;</td>
<td>-</td>
<td>750MB</td>
<td>-</td>
<td>75000</td>
</tr>
</tbody>
</table>

How derived quotas work

A quota enforced as a result of a default quota, rather than an explicit quota (a quota with a specific target), is referred to as a derived quota.

The number and location of the derived quotas depends on the quota type:

- A default tree quota on a volume creates derived default tree quotas for every qtree on the volume.
- A default user or group quota creates a derived user or group quota for every user or group that owns a file at the same level (volume or qtree).
• A default user or group quota on a volume creates a derived default user or group quota on every qtree that also has a tree quota.

The settings—including limits and user mapping—of derived quotas are the same as the settings of the corresponding default quotas. For example, a default tree quota with a 20-GB disk limit on a volume creates derived tree quotas with 20-GB disk limits on the qtrees in the volume. If a default quota is a tracking quota (with no limits), the derived quotas are also tracking quotas.

To see derived quotas, you can generate a quota report. In the report, a derived user or group quota is indicated by a Quota Specifier that is either blank or an asterisk (*). A derived tree quota, however, has a Quota Specifier; to identify a derived tree quota, you must look for a default tree quota on the volume with the same limits.

Explicit quotas interact with derived quotas in the following ways:

• Derived quotas are not created if an explicit quota already exists for the same target.
• If a derived quota exists when you create an explicit quota for a target, you can activate the explicit quota by resizing rather than having to perform a full quota initialization.

How you use tracking quotas

Tracking quotas generate reports of disk and file usage and do not limit resource usage. When tracking quotas are used, modifying quota values is less disruptive, because you can resize quotas rather than turning them off and back on.

To create a tracking quota, you omit the Disk Limit and Files Limit parameters. This tells ONTAP to monitor disk and files usage for that target at that level (volume or qtree), without imposing any limits. Tracking quotas are indicated in the output of show commands and the quota report with a dash ("-" for all limits. ONTAP automatically creates tracking quotas when you use the System Manager UI to create explicit quotas (quotas with specific targets). When using the CLI, the storage administrator creates tracking quotas on top of explicit quotas.

You can also specify a default tracking quota, which applies to all instances of the target. Default tracking quotas enable you to track usage for all instances of a quota type (for example, all qtrees or all users). In addition, they enable you use resizing rather than reinitialization when you want quota changes to take effect.

Examples

The output for a tracking rule shows tracking quotas in place for a qtree, user, and group, as shown in the following example for a volume-level tracking rule:

<table>
<thead>
<tr>
<th>Vserver: vs0</th>
<th>Policy: default</th>
<th>Volume: fv1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
<td>Target</td>
<td>Qtree</td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>tree</td>
<td>&quot;&quot;</td>
<td>&quot;&quot;</td>
</tr>
<tr>
<td>user</td>
<td>&quot;&quot;</td>
<td>&quot;&quot;</td>
</tr>
<tr>
<td>group</td>
<td>&quot;&quot;</td>
<td>&quot;&quot;</td>
</tr>
</tbody>
</table>
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