Manage the snapshot reserve

ONTAP 9

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Manage the snapshot reserve

Learn about managing the ONTAP snapshot reserve

The *snapshot reserve* sets aside a percentage of disk space for snapshots, five percent by default. Because snapshots use space in the active file system when the snapshot reserve is exhausted, you might want to increase the snapshot reserve as needed. Alternatively, you can autodelete snapshots when the reserve is full.

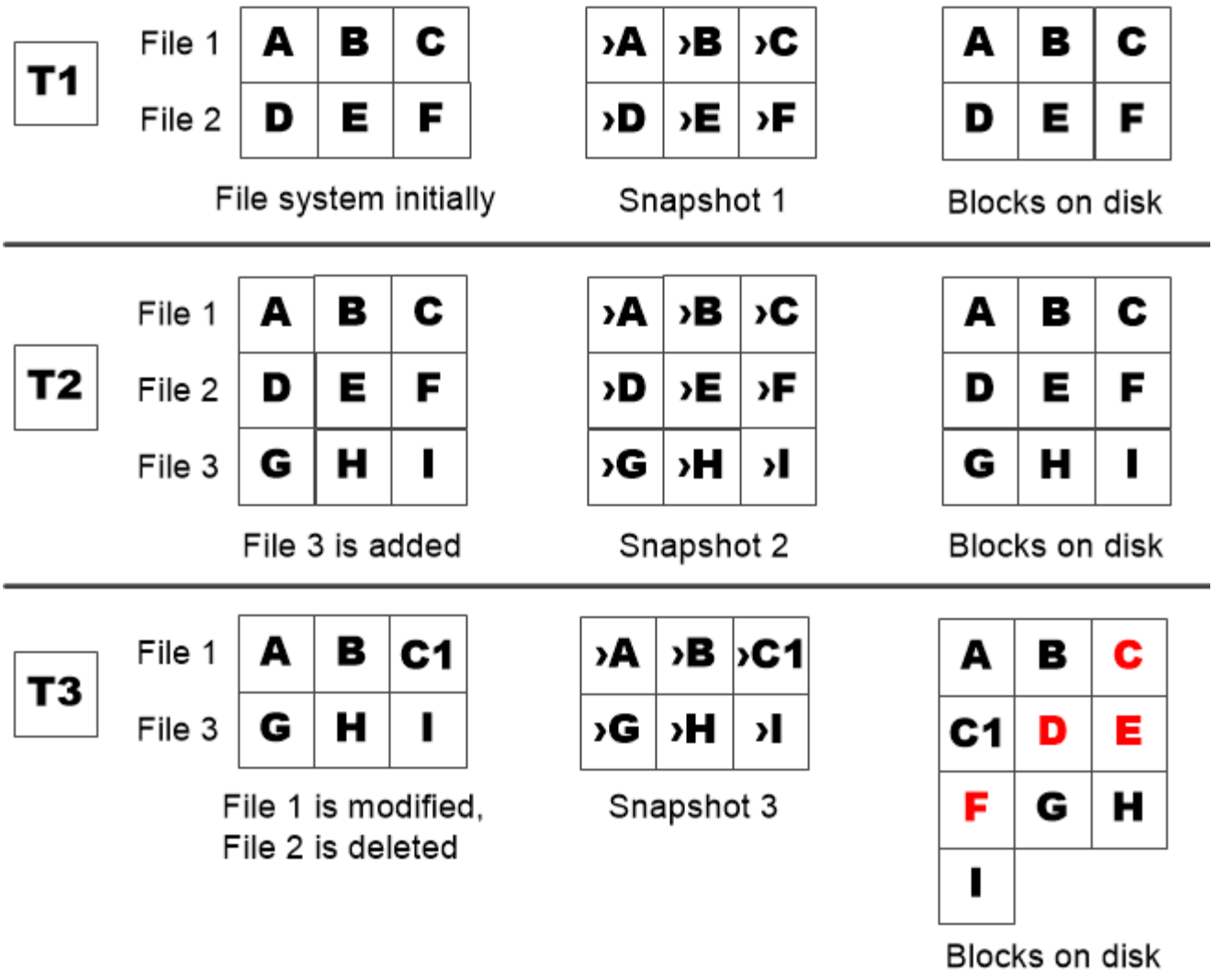
When to increase the snapshot reserve

In deciding whether to increase the snapshot reserve, it's important to remember that a snapshot records only changes to files since the last snapshot was made. It consumes disk space only when blocks in the active file system are modified or deleted.

This means that the rate of change of the file system is the key factor in determining the amount of disk space used by snapshots. No matter how many snapshots you create, they will not consume disk space if the active file system has not changed.

A FlexVol volume containing database transaction logs, for example, might have a snapshot reserve as large as 20% to account for its greater rate of change. Not only will you want to create more snapshots to capture the more frequent updates to the database, you will also want to have a larger snapshot reserve to handle the additional disk space the snapshots consume.

A snapshot consists of pointers to blocks rather than copies of blocks. You can think of a pointer as a "claim" on a block: ONTAP "holds" the block until the snapshot is deleted.



A Snapshot copy consumes disk space only when blocks in the active file system are modified or deleted.

How deleting protected files can lead to less file space than expected

A snapshot points to a block even after you delete the file that used the block. This explains why an exhausted snapshot reserve might lead to the counter-intuitive result in which deleting an entire file system results in less space being available than the file system occupied.

Consider the following example. Before deleting any files, the `df` command output is as follows:

```
Filesystem          kbytes  used    avail  capacity
/vol/vol0/          3000000 3000000 0       100%
/vol/vol0/.snapshot 1000000 500000  500000   50%
```

After deleting the entire file system and making a snapshot of the volume, the `df` command generates the following output:

```
Filesystem           kbytes  used    avail  capacity
/vol/vol0/           3000000 2500000 500000   83%
/vol/vol0/.snapshot 1000000 3500000 0       350%
```

As the output shows, the entire 3 GB formerly used by the active file system is now being used by snapshots, in addition to the 0.5 GB used before the deletion.

Because the disk space used by the snapshots now exceeds the snapshot reserve, the overflow of 2.5 GB “spills” into the space reserved for active files, leaving you with 0.5 GB free space for files where you might reasonably have expected 3 GB.

Learn more about the commands described in this procedure in the ONTAP command reference.

Monitor ONTAP snapshot disk consumption

You can monitor snapshot disk consumption using the `df` command. The command displays the amount of free space in the active file system and the snapshot reserve.

Step

1. Display snapshot disk consumption: `df`

   The following example shows snapshot disk consumption:

```
cluster1::> df
Filesystem           kbytes  used    avail  capacity
/vol/vol0/           3000000 3000000 0       100%
/vol/vol0/.snapshot 1000000 500000  500000   50%
```

Learn more about the commands described in this procedure in the ONTAP command reference.

Check available ONTAP snapshot reserve on a volume

You might want to check how much snapshot reserve is available on a volume by using the `snapshot-reserve-available` parameter with the `volume show` command. Learn more about `volume show` in the ONTAP command reference.

Step

1. Check the snapshot reserve available on a volume:

   `vol show -vserver` *`SVM`* `-volume` *`volume`* `-fields snapshot-reserve-available`

   The following example displays the available snapshot reserve for `vol1`:

```
cluster1::> vol show -vserver vs0 -volume vol1 -fields snapshot-reserve-
available

vserver volume snapshot-reserve-available
------- ------ --------------------------
vs0     vol1   4.84GB
```

Modify the ONTAP snapshot reserve

You might want to configure a larger snapshot reserve to prevent snapshots from using space reserved for the active file system. You can decrease the snapshot reserve when you no longer need as much space for snapshots.

Step

1. Modify the snapshot reserve:

   `volume modify -vserver` *`SVM`* `-volume` *`volume`* `-percent-snapshot-space` *`snap_reserve`*

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

   The following example sets the snapshot reserve for `vol1` to 10 percent:

   ```
   cluster1::> volume modify -vserver vs0 -volume vol1 -percent-snapshot
   -space 10
   ```

Autodelete ONTAP snapshots

You can use the `volume snapshot autodelete modify` command to trigger automatic deletion of snapshots when the Snapshot reserve is exceeded. By default, the oldest snapshots are deleted first. Learn more about `volume snapshot autodelete modify` in the ONTAP command reference.

About this task

LUN and file clones are deleted when there are no more snapshots to be deleted.

Step

1. Autodelete snapshots:

   `volume snapshot autodelete modify -vserver` *`SVM`* `-volume` *`volume`* `-enabled true|false -trigger volume|snap_reserve`

   The following example autodeletes snapshots for `vol1` when the snapshot reserve is exhausted:

```
cluster1::> volume snapshot autodelete modify -vserver vs0 -volume vol1
-enabled true -trigger snap_reserve
```

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