Manage the Snapshot copy reserve

ONTAP 9

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Manage the Snapshot copy reserve overview

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

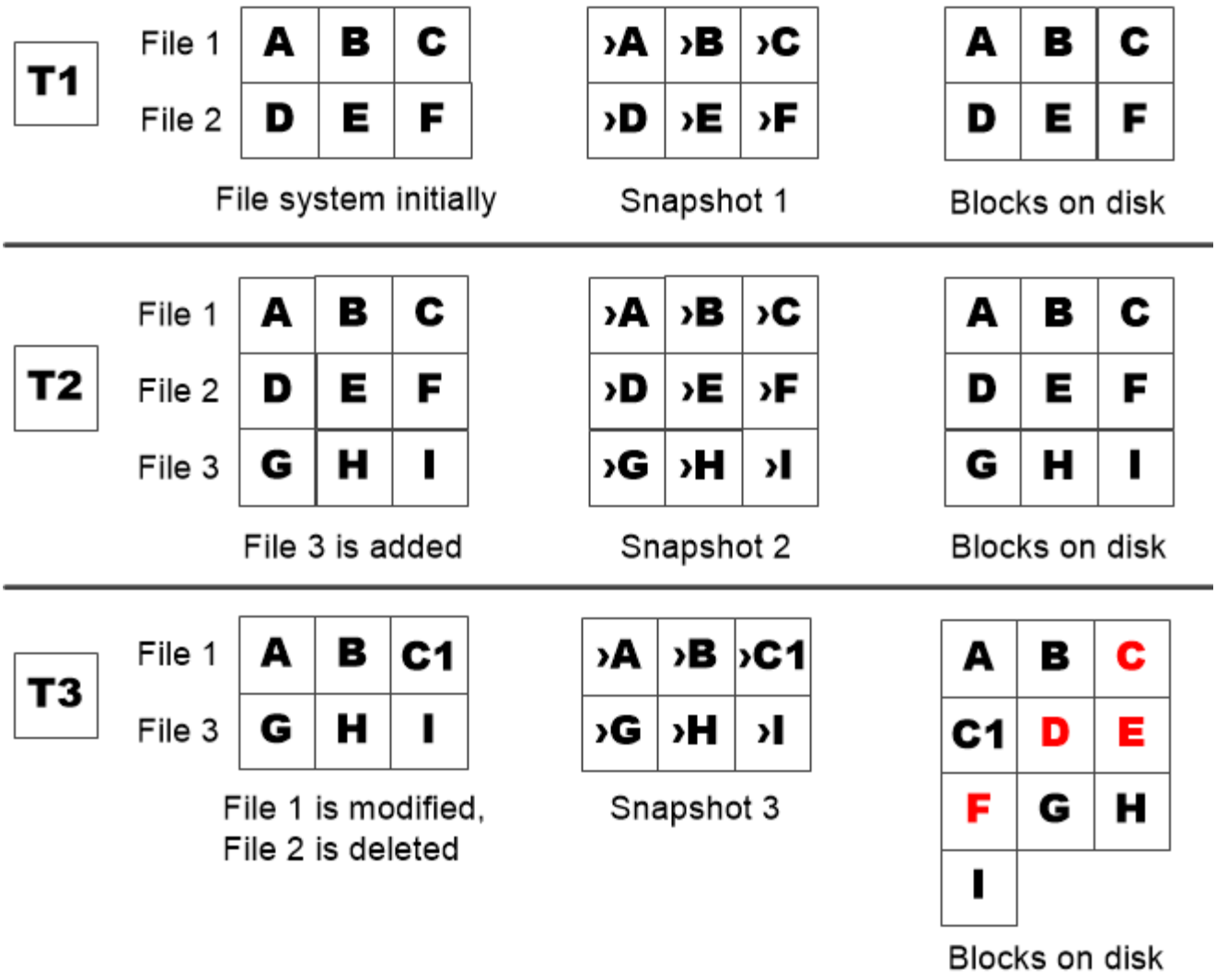
When to increase the Snapshot copy reserve

In deciding whether to increase the Snapshot reserve, it's important to remember that a Snapshot copy records only changes to files since the last Snapshot copy 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 Snapshot copies. No matter how many Snapshot copies 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 copy reserve as large as 20% to account for its greater rate of change. Not only will you want to create more Snapshot copies to capture the more frequent updates to the database, you will also want to have a larger Snapshot copy reserve to handle the additional disk space the Snapshot copies consume.

A Snapshot copy 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 copy 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 copy points to a block even after you delete the file that used the block. This explains why an exhausted Snapshot copy 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 copy 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 Snapshot copies, in addition to the 0.5 GB used before the deletion.

Because the disk space used by the Snapshot copies now exceeds the Snapshot copy 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.

Monitor Snapshot copy disk consumption

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

Step

1. Display Snapshot copy disk consumption: `df`

   The following example shows Snapshot copy disk consumption:

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

Check available Snapshot copy reserve on a volume

You might want to check how much Snapshot copy reserve is available on a volume by using the `snapshot-reserve-available` parameter with the `volume show` command.

Step

1. Check the Snapshot copy reserve available on a volume:

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

   For complete command syntax, see the man page.

   The following example displays the available Snapshot copy 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 Snapshot copy reserve

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

Step

1. Modify the Snapshot copy reserve:

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

   For complete command syntax, see the man page.

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

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

Autodelete Snapshot copies

You can use the `volume snapshot autodelete modify` command to trigger automatic deletion of Snapshot copies when the Snapshot reserve is exceeded. By default, the oldest Snapshot copies are deleted first.

About this task

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

Step

1. Autodelete Snapshot copies:

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

   For complete command syntax, see the man page.

   The following example autodeletes Snapshot copies for `vol1` when the Snapshot copy reserve is exhausted:

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