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PROFESSIONAL SERVICES TECH NOTE #066

Application Consistent Snapshot

The Concept

SnapManager users are familiar with application-consistent snapshots (note the hyphen) which are taken when the application is quiesced. Data ONTAP 7.3.2 and Data ONTAP 8 7-mode added some confusion by introducing Application Consistent Snapshots (ACS). These snapshots are not associated with SnapManager but with SnapVault. ACS tagged snapshots use a soft-lock to prevent deletion until all changes have propagated to the SnapVault destination in a SnapMirror-SnapVault cascade. (A cascade is two or more replications of source data, e.g, FAS1 -> FAS2 -> FAS3). The purpose of Application Consistent Snapshots is to keep SnapVault relationships synchronized with the original source SnapMirror snapshot. Despite their name, these snapshots do NOT offer the same protection as application-consistent snapshots unless they are taken while applications are quiesced.

application-consistent snapshot: Snapshot taken while an application is quiesced. Optimal snapshot for recovery purposes.

Crash-consistent snapshot: Snapshot taken while an application is running. Equivalent to pulling the power on an application and having it figure out how to recover.

Application Consistent Snapshot: A snapshot with a soft-lock placed on it for use by SnapVault.

Examples

Use the following commands to manually set ACS soft-locks on snapshots and to view preserved snapshots.

usage: snapvault snap preserve <vol> <snapname> [<tagname>]

```
fas1> snapvault snap preserve sql_db snap1 sqlbackup
fas1> snap list sql_db
```

%/used	%/total	date	name
29% (29%)	0% (0%)	Jun 24 08:07	snap1 (acs)

usage: snapvault snap preservations <vol> [<snapname>]

```
fas1> snapvault snap preservations sql_db
```

snapid	snapname
1	snap1

```
fas1> snapvault snap preservations sql_db snap1
type      tagname
-----
cli       oracle
```

```
fas1> snap list dr_vol1
```

%/used	%/total	date	name
0% (0%)	0% (0%)	Nov 17 10:15	backup_sqlldb1 (snapvault, acs)
1% (0%)	0% (0%)	Nov 17 10:00	hourly.0

What It Means To You

All the systems in a SnapMirror/SnapVault cascade must be running Data ONTAP 7.3.2+ or ONTAP 8 7-mode for ACS to work. Reverting to or running a release earlier than 7.3.2 will disable this feature. Users of both Volume SnapMirror and SnapVault will benefit from ACS. For example:

- a. SnapManager for SQL on FAS1 quiesces all SQL databases for a nightly backup at 11 PM.
- b. All the SQL volumes are then Volume SnapMirrored to FAS2 at 11:05 based on the hourly SnapMirror schedule set for 5 minutes past every hour.
- c. The SnapMirror updates take nearly two hour to complete, so at 1:15 AM, FAS2 is scheduled to SnapVault all the SQL volumes to FAS3.
Prior to ONTAP 7.3.2, SnapVault would use the newest available snapshot (1:05 AM) rather than the one at 11:05 PM. This means the SnapVaulted data is crash-consistent rather than application-consistent.

Essentially, ACS tagging gives SnapVault the ability to use a 'named' snapshot. Another benefit of ACS tagging is it excludes these snapshots from Snapshot autodelete until the SnapVault destination sends a signal to remove the soft-lock. Additionally, if your retention policy for SnapVault is set to 1 snapshot, the ACS snapshot will not be counted as that snapshot. This ensures you keep your baseline snapshot and can use the ACS snapshot for performing incremental backups.

Warning: Protection Manager for Operations Manager/DFM does NOT yet support the ACS suffix. To use ACS functionality, the SnapVault relationships will have to be outside of Protection Manager.

More Information

Knowledge Base article KB55344 <https://now.netapp.com/Knowledgebase/solutionarea.asp?id=kb55344>
Data ONTAP Online Protection Backup and Recovery Guide: Preserving a Snapshot copy
<https://now.netapp.com/NOW/knowledge/docs/ontap/rel733/html/ontap/onlinebk/frameset.html>

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