Snapshot

Purpose:

Configure a snapshot.

Product Affect:

SA-4551S, SA-6651S, SA-6651E, SA-8850S, SS-4551E, SS-4552E, SS-6651E, SS-6652E, SS-4501E, SS-4501R, SS-4502E, SS-4502R, SS-6601E, SS-6601R, SS-6602E, SS-6602R, SS-6603E, SS-6603R, SS-8801E, SS-8801R, SS-8802E, SS-8802R

Procedure:

1. Check the firmware version and memory size
2. How snapshot works
3. Step by step procedure

a. Check the firmware version and memory size

- Firmware version

  Version: **1.42A** and above. (Sx-455xx, Sx-665xx, SA-8850S)

  Version: **2.17A** and above. (SS-450xx, SS-660xx, SS-880xx)

- Memory size must be **2GB**.

b. Overview

Snapshot allows you to create instantaneous data images of a volume at designated points in time. Unlike traditional data copy, which takes hours or even days for data replication, depending on the size of the volume, the snapshot function can create a copy of a volume of any size within seconds. Below are describing how snapshot work.

Snapshot Volume Pair and Copy-On-Write Operations

Before creating snapshots for a working volume, another volume (secondary volume) is needed to be associated with the working volume (primary volume) to form a snapshot volume pair. You can use JBOD disks, logical disks, or volumes as primary or secondary volumes. After a snapshot is created, the write commands to the primary volume will invoke “copy-on- write” (COW) operation, which copies the old data from the primary volume to the secondary volume before updating the primary volume with the new data. The COW operation preserves the data, and the primary volume can still be accessed.

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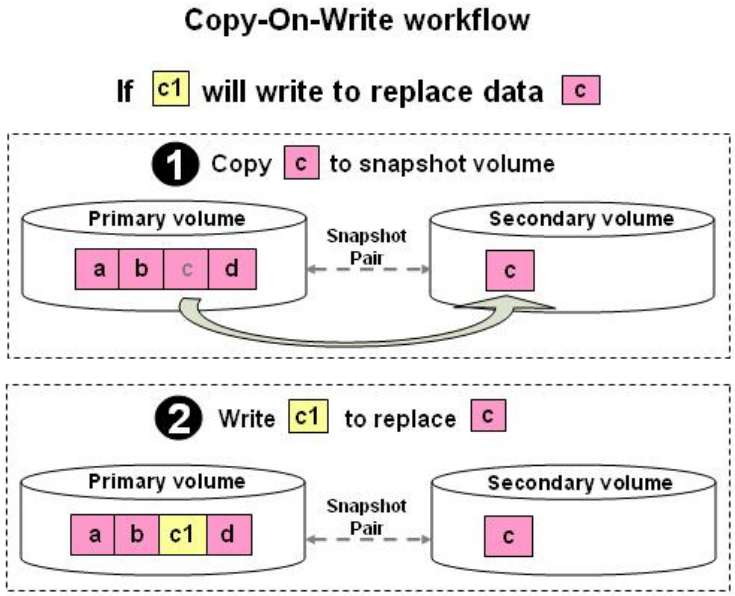

Secondary Volume and Lookup Table

A snapshot volume is a virtualized entity, which leverages the data and space both on the primary and secondary volume. When an I/O command reads the snapshot volume, it retrieves the data either from the primary volume if the data is not updated or from the secondary

volume if the data has been changed. And writes to a snapshot volume will be also stored in the secondary volume. A lookup table is maintained in the secondary volume for the RAID controller to know where the differential data is stored. Because the secondary volume stores only the differential data, you can choose a secondary volume of capacity less than the primary volume. However, to ensure minimum operations, the capacity of the secondary volume has to be at least 10 percent of the primary volume. A user-configurable overflow alert can notify you when the secondary volume has been filled up with the differential data over capacity threshold.

Spare COW Volume

When running out of the space of a secondary volume and there are spare COW volumes, the copied data of COW operations will be automatically redirected to an unused spare COW volume for the primary volume. The spare COW volume serves as a buffer to accommodate written data of size larger than planned and allows you to expand size of the secondary volume later.

Online Volume Expansion

The capacity of primary volume, secondary volume, and spare COW volume can be expanded without interfering

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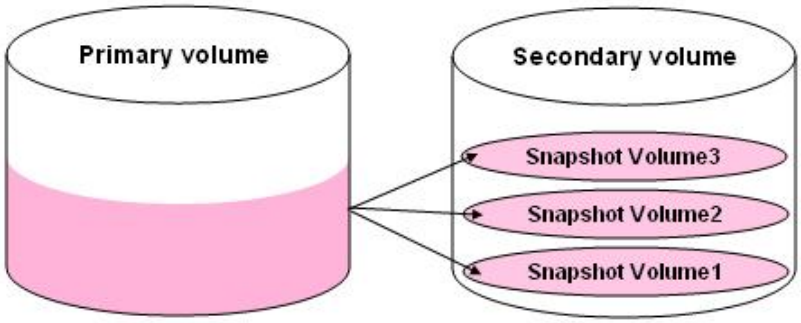
with the operations of the snapshot volumes. After the capacity expansion operation is done for a volume or a logical disk, the new capacity can be automatically recognized and utilized by the snapshot functions. You may use this feature to allocate limited space for secondary volume and expand the secondary volumes later when more hard disks are available.

Multiple Concurrent Snapshots

A primary volume can have multiple snapshots at the same time. The old data of snapshots at different points in time shares single secondary volume and spare COW volume



Restoring by Snapshots

Users can online restore a primary volume to one of its snapshot volumes. After the restore, the contents of the primary volume immediately become the current image of data of the selected snapshot volume, and the primary volume is accessible. A backward synchronization task is
started in the background to copy data of segments from the secondary volume and spare COW volume to overwrite the differential data on the primary volume. During the restoring, the I/O access to the primary volume and the other snapshot volumes can still be processed normally, but only after the restoring is done, new snapshots can be created again.

c. Step by step procedure

Creating the Snapshot volume

Step1. In menu [RAID management]>[Snapshot Volumes], click **Add** to add a new snapshot volume pair.

Step2. Specify the primary volume ID **(PVID)** and secondary volume ID **(SVID)**.

Step3. Click **back** to back main menu and press create to **Create** snapshot volume.

Step4. Select the snapshot volume and click **Modify** to configure the percentage of **Overflow Alert** option.

Expanding the capacity of snapshot volume pairs

Step1. Click **Expand** and specify the capacity (MB).

Create Spare COW volumes

Step1. Click **S.COW** to create spare COW volume for specific snapshot pair.

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Note

- The maximum number of snapshot volumes per primary volume is 32.
- The total maximum number of snapshot volumes is 512.
- The maximum capacity of primary/secondary/spare COW volume is 16TB.
- One spare COW volume can be used by one primary volume at a time. The maximum number of spare COW volumes is 128.
- Too many snapshot volumes would cause performance impact to the primary volume.

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