Intel Technical Advisory

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Virtual Drive Expansion May Cause Physical Drives to be Marked Dead on the Intel® Modular Server System MFSYS25

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Products Affected
All revisions of the Intel® Storage Controller AXXSCM3S and the Intel® Modular Server System MFSYS25 with P2.07 Software Stack (CMM GUI version 9431) or earlier loaded.

Description
Expanding the capacity of a Virtual Drive within a Storage Pool by a size greater than the cumulative free unallocated space available after that Virtual Drive's position in the Storage Pool, will cause some or all of the Physical Drives to be marked Dead. This will result in all Virtual Drives within the Storage Pool going Critical or Offline and becoming unavailable. Once this occurs, the Virtual Drives and the data in them are NOT recoverable. Physical Drives can be recovered by deleting the Storage Pool, creating a new one, and creating new Virtual Drives.

Example:
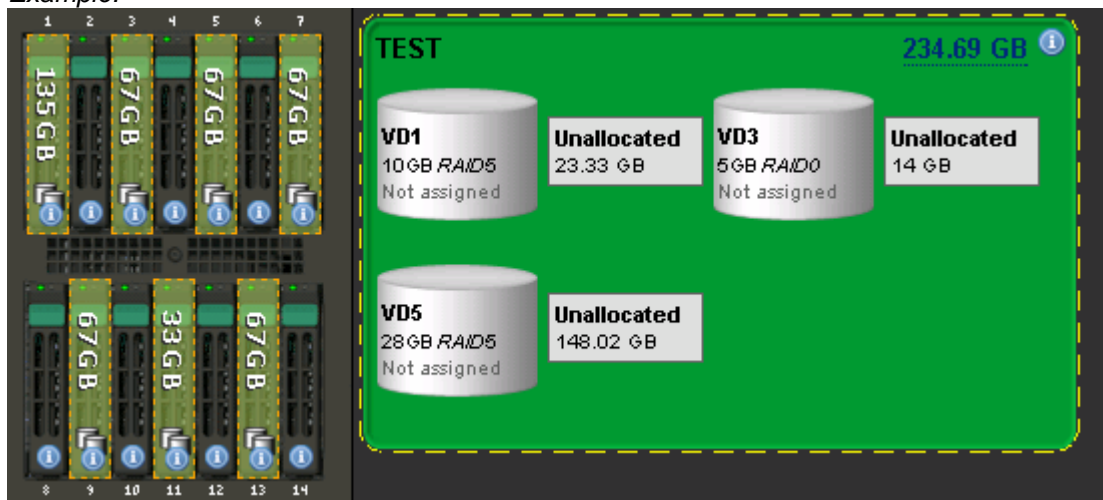
In the configuration shown above, there is 185.35GB (23.33 + 14 + 148.02) of 'total unallocated space' in the entire storage pool. However, there exists only 162.02GB (14 + 148.02) of cumulative unallocated space **after** VD3's position in the Storage Pool. In this state, expanding the RAID0 Virtual Drive (VD3) by 170GB would result in this error condition. This is because there isn't 170GB of cumulative unallocated space remaining in the storage pool after this Virtual Drive's position in the Storage Pool (there is only 162.02GB (14 + 148.02) of cumulative unallocated space available after the Virtual Drive). Current software for the storage subsystem would allow this operation to proceed since there exists more than 170GB of total unallocated storage space within the entire Storage Pool. However, during the expansion of VD3, all Physical Drives in the storage pool would be marked as "Dead" and all virtual drives in the pool would be placed "Offline". The Storage Pool and all Virtual Drives within the storage pool would become unavailable and would NOT be recoverable.

Note that it is unusual to have a Storage Pool configuration where unallocated space appears prior to or between Virtual Drives within a Storage Pool. These blocks of unallocated space between Virtual Drives only occur when a previously created Virtual Drive is deleted and not replaced with a new Virtual Drive.

Root Cause
When a Virtual Drive is expanded to include more space than the cumulative unallocated space available after its position in the Storage Pool, the Virtual Drive's expanded capacity is inaccurately calculated resulting in errors in how the data is rewritten to the Physical Drives. This causes the Physical Drives to be marked 'dead' which causes the Virtual Drives to be marked 'offline'.

Corrective Action / Resolution
Revision P 2.2.3 software for the Intel® Modular Server System MFSYS25 contains new firmware which corrects this issue. This software release is available for download from Intel's support website and is planned to be cut into factory production mid-June.

Please contact your Intel Sales Representative if you require more specific information about this issue.

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