



This Action Alert describes an issue which affects product functionality, reliability or safety

Intel Action Alert

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5200 NE Elam Young Parkway
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Data Inconsistencies may Occur during Online Capacity Expansion and RAID Level Migration under Heavy I/O when using Intel® SAS/SATA Hardware RAID Controllers

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Products Affected

SRCSAS18E
SRCSAS144E
SROMBSAS18E
SRCSASJV
SRCSASRB
SRCATAWB

Description

Intel has identified an issue with the controllers listed above may experience a data inconsistencies under heavy I/O during Online Capacity Expansion (OCE) and RAID Level Migration (RLM).

Investigation shows that the inconsistencies are narrowed to specific instances that occur only when the RAID controller cache is in use (Write Back enabled or Read Ahead enabled) and there are queued I/Os at the completion of a RLM or OCE operation.

Root Cause

During a reconstruction (OCE or RLM), RAID firmware facilitates online data access to a reconstructing Virtual Disk (VD) by internally maintaining two VDs – one represents the portion of capacity that has yet to be constructed (“original VD”), while the other represents the data area that has completed data reorganization/reconstruction (“ghost VD”). When a host request is received during a reconstruction, RAID Firmware determines which of these two internal VDs to which the request belongs, and assigns the request to either the original or the ghost VD.

The problem may occur if the reconstructing cycle happens to be the final cycle, the reconstruction completes and the removal of the ghost VD occurs; when RAID firmware processes the queued requests that were assigned to the ghost VD at that point no longer exists. The inconsistency occurs because the cache buffers utilized in processing these requests will be assigned to the ghost VD, creating potential cache aliases to the original VD; if there is a mix of read and write commands, data in these cache line aliases may become stale relative to data updated on the disk for the write commands.

This issue will be addressed with a RAID controller firmware update.

Corrective Action / Resolution

This issue will be addressed with a firmware update posted to the RAID controller's software download section of support.intel.com. Intel will implement the updated firmware in the factory upon completion of the firmware test process. Customers should regularly make a verified backup of essential data and carefully follow below work-around.

Recommended Customer Action

With the Intel RAID Controllers SRCSAS18E, SRCSAS144E and SROMBSAS18E, please upgrade the RAID Firmware to v1.12.130-0418 or later; with the Intel RAID Controller SRCSASJV, please upgrade the RAID Firmware to v1.12.132-0420 or later; both firmwares are available for download at <http://support.intel.com>.

With the Intel RAID Controllers SRCSASRB and SRCSATAWB, please change the configuration of the VD to Write-Through, Direct I/O and No Read Ahead prior to starting a reconstruction operation. Users can return to their original configuration once the reconstruction has completed.

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

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