



This Technical Advisory describes an issue which may or may not affect the customer's product

# Intel Technical Advisory

TA-1084-1

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## Intel® RAID Products Supporting the SSD Cache Feature With a Multiple Cache Volume Configuration May Experience Data Loss After Changing the Cache Volume Configuration.

### Products Affected

The following Intel® RAID products supporting the SSD cache feature with the SSD cache enablement key installed are affected by this issue:

Product – Activation Key	Product – Activation Key	Product – Activation Key
RS2BL080 – AXXRPFKSSD	RS25DB080– AXXRPFKSSD2	RMT3PB080– AXXRPFKSSD2
RS2BL040– AXXRPFKSSD	RS25SB008– AXXRPFKSSD2	RS3DC080– AXXRPFKSSD2
RS2PI008– AXXRPFKSSD	RS25NB008– AXXRPFKSSD2	RS3DC040– AXXRPFKSSD2
RS2WG160– AXXRPFKSSD	RMS25CB080– AXXRPFKSSD2	RS3MC044– AXXRPFKSSD2
RS2SG240– AXXRPFKSSD	RMS25CB040– AXXRPFKSSD2	RS3SC008– AXXRPFKSSD2
RS2VB080– AXXRPFKSSD	RMT3CB080– AXXRPFKSSD2	RMS3CC080– AXXRPFKSSD2
RS2VB040– AXXRPFKSSD	RMS25PB080– AXXRPFKSSD2	RMS3CC040– AXXRPFKSSD2
RS25AB080– AXXRPFKSSD2	RMS25PB040– AXXRPFKSSD2	

### Description/Root Cause

These products can utilize the SSD cache upgrade key in order to enable the use of one or more SSDs as a large write back cache pool for the RAID controller. This can significantly improve the performance of many server applications by buffering write data through the SSD Cache volumes while waiting for the hard drive RAID volumes to handle data reads and writes.

An issue may occur if SSD cache is configured to have multiple SSD cache volumes assigned to support multiple RAID volumes, and the user deletes one or more of the SSD cache volumes leaving other SSD cache volumes intact and still assigned to support a RAID volume. In this case incorrect data could be read from the remaining cache volume(s) resulting in data loss or a possible system hang.

If the SSD cache drive group capacity is greater than 512GB, RAID firmware only creates a single 512GB SSD cache window, and does not take into account the end location of the cache volumes located within cache drive group. This is because RAID firmware does not store the start address

of the SSD cache window or the end addresses of any cache volumes inside the SSD cache metadata.

This issue does not impact users with a single SSD cache volume or users with no SSD cache volumes configured.

### Steps to Reproduce Issue:

1. Create an SSD cache virtual drive "A" of a size less than 512GB and assign it to RAID Volume "1".
2. Create a second SSD cache virtual drive "B" that pushes total available (combined) SSD Cache volume capacity (A + B) above 512GB, and assign it to RAID Volume "2".
3. Delete the first SSD cache virtual drive ("A" above), but leave SSD cache virtual drive "B" online
4. Reboot (or trigger an Online Controller Reset (OCR))

Result: Host read requests following the above reboot (or OCR) to RAID virtual drive "2" that is cached by the non-deleted SSD cache volume "B" may be completed with incorrect read data, RAID firmware may crash (before/after above incorrect data is given back for the read request), and the OS may react in unpredictable ways.

### Corrective Action / Resolution

- Customers using a single SSD cache volume assigned to support a RAID volume are not affected by this issue.
- Customers using multiple SSD cache volumes assigned to support multiple RAID volumes should follow recommendations below:
  1. Do not change the SSD cache volume configuration until a firmware update is available to resolve this issue (no problem exists as long as the configuration does not change).
  2. If the SSD cache volume configuration needs to change, all of the SSD Cache volumes must be deleted (and recreated if desired) to avoid this issue; however, the RAID volumes do not need to be deleted or modified.

A RAID controller firmware update that resolves this issue for the controllers listed above will be released in June 2015.

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

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