



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

# Intel Technical Advisory

TA-1055-1

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## Intel® RAID Maintenance Free Backup Unit (RMFBU) Charge Level Threshold Update to Resolve a Failure to Complete a Relearn issue and Extend the Usable Life of the Unit.

### Products Affected

The following Intel® Controllers that ship with a RAID Maintenance Free Backup Unit (RMFBU) or Intel® RAID modules or Intel® RAID Controllers that support an AXXRMFBU2, AXXRMFBU3, and AXXRMFBU4 RAID Maintenance Free Backup Unit as an accessory are affected by this issue:

RS25AB080	RS25SB008	
RMS25CB080	RMS25CB040	RMST3CB080
RMS25PB080	RMS25PB040	RMST3PB080
RS25ZB040	RS25ZB080LX	
RS3DC080	RSDC040	

### Description

Intel has observed that on a small percentage of units that the threshold for charge on the gas gauge subassembly within the RAID Maintenance Free Backup Unit (RMFBU) may not provide enough margin to accurately judge the health of the Super Capacitors. This can result in a failure of the RMFBU to complete a learn cycle. A modification to the gas gauge charge level thresholds will resolve this issue and may also improve the usable life of the Super Capacitor.

### Root Cause

The firmware that supports the RMFBU gas gauge circuitry includes threshold settings that control the charge level of the Super Capacitors. The firmware will increase charge voltage as the Super Capacitors wear in order to maintain a sufficient charge level to support a cache offload in the event of a power outage. To measure the health and wear of the Super Capacitors, the RMFBU gas gauge firmware initiates a learn cycle during which time its capability to hold a charge is measured. Based on information obtained from the learn cycle, the firmware will select the proper set of charge level thresholds. Intel has determined that improvements are needed to these charge level thresholds to allow a learn cycle to complete when one or more electrical components of the gas gauge circuitry are operating close to their marginal limit. Investigation of learn cycle threshold behavior has identified opportunities to improve the usable life span of the Super Capacitors.

### Corrective Action / Resolution

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Charge level thresholds have been improved as described in the table below:

	<b>Improvement</b>	<b>Solution</b>
<b>1</b>	Eliminate the condition where a known good Super Capacitors will be declared as “Bad” prematurely when gas gauge bumps the charge voltage to next level as the Super Capacitors age.	Update FAULT Configuration register in the gas gauge to disable assertion of FAULT for a legitimate charge bump.
<b>2</b>	Eliminate reporting of Super Capacitors failures when a learn cycle fails to complete successfully due to component tolerances.	Update taper voltage setting stored in the gas gauge to take into account of the worst case component tolerances.
<b>3</b>	Address the condition where the gas gauge device does not appropriately increase the charge voltage required to complete a cache offload successfully as the Super Capacitors age.	Incorporate latest firmware from gas gauge manufacturer that fixes this issue.
<b>4</b>	Adjust the gas gauge parameters to assure reliable product performance over the life of the Super Capacitors.	Update cache offload related parameters stored in the gas gauge. Update cache offload power, time, and min voltage settings.

Changes to the charge level thresholds can be applied to an RMFBU by booting the system into EFI and running the gas gauge FW update utility. Instructions for applying this update are provided in the release notes for this update which is available on the Intel support website at <http://www.intel.com/support>. The update is currently available for the following products:

Raid Product	Release Package	Availability date
RAID Modules RMS25PB080, RMS25PB040, RMT3PB080, RMS25CB080, RMS25CB040, or RMT3CB080 that have an AXXRMFBU2 attached	FWUPD_0016.Zip	May 1, 2014
RAID controllers RS25AB080 and RS25SB080 that ship with an RMFBU and the RMFBU is attached	RS25AB080_RS25SB008_TMMB_FWUPD_0016.zip	May 1, 2014
RAID Controller RS25ZB040 or an RS25ZB080LX with an AXXRMFBU3 attached	TBD	Estimated availability date is May 15, 2014
RAIC Controller RS3DC080 or RS3DC040 with an AXXRMFBU4 attached	TBD	Estimated availability date is May 15, 2014

An update to this Technical Advisory with additional schedule and availability information will be posted on or before May 15<sup>th</sup> 2014.

Intel will implement these changes in the factory as soon as possible; this factory change notification will be made via the standard Intel Product Change Notification (PCN) process.

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

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