intel® Technical Advisory

TA-769-2

5200 NE Elam Young Parkway
Hillsboro, OR 97124

May 27, 2005

Possibility of Data Loss if Bus Interface Unit (BIU) Claims DAC addresses in the range of the memory mapped registers (MMR) on Intel® RAID Controllers SRCU42E and SROMBU42E.

Products Affected

Product Name	Order Code	Description
SRCU42E	SRCU42E	Intel® RAID Controller SRCU42E
SROMBU42E (Integrated on the SE7520AF2)	SE7520AF2	Intel® Server Board SE7520AF2 non-hot plug boxed SKU – single pack (Requires RAID Activation key)
	BAF2HPBB	Intel® Server Board SE7520AF2 Hot Plug SKU - ten pack (Requires RAID Activation key)
	BAF2BB	Intel® Server Board SE7520AF2 non-Hot Plug SKU – ten pack (Requires RAID Activation key)
	SC5300AF2	Intel® Server Platform SE7520AF2 SKU (Requires RAID Activation key)
	SC5300AF2NA	Intel® Server Platform SE7520AF2 SKU (Requires RAID Activation key)

Description

Data loss can occur during RAID operations that involve certain system memory locations when the RAID controller's internal memory controller incorrectly responds to the RAID controller's I/O Processor (IOP) request to access these host memory locations. Please reference the "Bus Interface Unit (BIU) Claims DAC addresses in the range of the memory mapped registers (MMR)" errata in the April 2005 Intel® I/O Processor Specification Update for the Intel® I/O Processor 80332 (see errata #90).

The issue is that a data error can occur when the RAID Controller is installed in a system with larger than 4GB of system memory. This issue is manifested when the RAID Controller memory registers respond to a RAID controller IOP request to do a DMA access to or from the affected system memory locations, causing the data to be in contention between system memory and the RAID controller's internal memory registers. As these registers are critical to normal operations, data loss may occur.

This issue does not affect implementations of the Intel RAID controllers listed above when the affected RAID controllers have been updated with firmware version 514I or later or when the RAID controllers are used with server boards with 4GB or less of system memory installed.

Root Cause

The RAID Controller IOP Bus Interface Unit (BIU) incorrectly decodes and claims some Dual Address Cycle (DAC) addresses. Using DAC addresses in the xxxx_xxxx_FFFF_E000h to xxxx_xxxx_xxxx_FFFF_FFFFh range on the internal bus may cause an internal bus conflict that could result in the reception of undesired data and incorrect setting of error flags. For additional information see the April 2005 Specification Updates listed above.

Corrective Action / Resolution

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The RAID controller firmware version 514I has been modified to avoid using the DMA and DAC addresses in the address ranges listed above. These modifications implement the work around described in the April 2005 I/O Processor Specification Update and a regression test cycle for the updated firmware has been completed for each affected RAID controller. The firmware version that includes this work around is version 514I which is available for download on the Intel product support website at http://support.intel.com/support/motherboards/server/. Please browse to the software download link for each affected RAID controller.

Customers should download and install, at their earliest opportunity, the RAID controller firmware listed above.

Workarounds

To avoid this issue, Intel recommends that customers download and install the firmware version 514I or later, or limit/reduce system memory to 4GB or less in configurations that include one of the RAID controllers listed above. Customers with affected systems should not install or use memory configurations larger than 4GB of system memory with affected RAID controllers using firmware versions previous to firmware version 514I. Customers may wish to remove the affected system from service until the RAID controller firmware update that resolves the problem can be applied. Customers should always maintain a reliable and verified backup of all critical data.

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

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