

intel® Technical Advisory

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Intel NetStructure® MPCBL0001 – Potential issue of board shutting down under heavy memory load.

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Products Affected	Product Code	TA Number
Intel NetStructure® MPCBL0001 High-Performance Single Board Computer	MPCBL0001F04	C55360-015 (or prior)
	MPCBL0001N04	C13354-014 (or prior)

Description:

Intel has observed that under very rare and specific memory overload conditions, MPCBL0001 boards are susceptible to shutting down. This tends to occur when:

- 1) Initiating a "Reboot" command under Linux environment while simultaneously executing heavy read/write operations on the memory.
- OR
- 2) Running a specific memory stress test application that incorporates instructions which write directly to the memory, bypassing the processor's cache memory.

Test cases have confirmed that if any of the above conditions exist, the board may unexpectedly shut down.

The conditions described above are not typical usage models and Intel has not observed a shutdown in a normal operating environment.

Workaround:

If a shutdown occurs, the board will transition to the M1 state (standby or hot swap state) and an event will be logged in the Chassis Management Module's system event log (SEL). The board can be powered up again by issuing the following command from Intel's MPCMM0001 CMM: `cmmset -l bladex -d powerstate -v poweron`, where x = slot number.

Customers are advised to upgrade the MPCBL0001 IPMC Firmware to version 1.13 or above and to upgrade the BIOS to the latest revision. All the latest BIOS and IPMC Firmware version are available for download from the following website: <http://www.intel.com/design/telecom/products/cbp/atca/9590/tools.htm>

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Root Cause:

- 1) Extraordinary memory stress testing can consume a significant amount of memory bandwidth and cause the 1.25 V memory termination rail (VTT_DDR voltage rail) to dip slightly below the minimum threshold for several microseconds. As a result, the ALL_PWRGD (ALL PoWeR Good) signal in the MPCBL0001's CPLD (Complex Programmable Logic Device) goes inactive.
- 2) When the ALL_PWRGD signal goes inactive, the board will shut down/power off.

Corrective Action / Resolution

Though this is categorized as a rare sighting, Intel plans to change the capacitor values of C285, C286, C287, C160, C104, and C73 on the VTT_DDR voltage rail. (The VTT_DDR voltage rail is used for memory bus termination). The changes are:

- 1) C285, C286 and C287 changed from 10 μ F to 47 μ F
- 2) C73, C104 and C160 changed from 270 μ F to 820 μ F

These capacitors are used to maintain VTT_DDR voltage at a constant level when the memory is under stress and during extensive read/write operations that bypass the processor's cache memory.

The above change will be applied to future boards with TA # C55360-016 (or above) for MPCBL0001F04 and TA # C13354-015 (or above) for MPCBL0001N04.

If an old MPCBL0001 board exhibits the shutdown problem, the board can be returned for repair using the standard warranty process.

Please contact your Field Representative or submit questions through QuAD/Intel Premier Support if further information/clarification is needed.

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