AMI Firmware Solutions Powered by Intel® Memory Resilience Technology

Predict memory failures before they occur

DIMM failures are one of the most common causes of server downtime, notorious for severely impacting system reliability, availability and serviceability (RAS). These failures can be caused by a wide range of sources beyond normal use, such as manufacturing defects or extreme environmental or operating conditions. While currently accepted techniques such as Error Correcting Code (ECC) and correctable errors threshold-based Predictive Failure Analysis (PFA) help overcome some correctable errors with DIMMs, they have cost, reliability, coverage and performance implications - and cannot help to overcome uncorrectable errors.

AMI Firmware Solutions
Powered by
Intel® Memory Resilience Technology

Intel® Memory Resilience Technology

As a more complete solution designed to predict DDR4 memory failure before they occur, Intel® Memory Resilience Technology features several innovative and original capabilities. It predicts micro-level failures in rows, columns

Features:

- Predicts micro-level DDR4 memory failures using pattern matching based on historical data

- Uses a low-overhead online learning method to improve its prediction accuracy and avoid interfering with critical compute tasks

- Generates estimated memory health and ranking score for proactive memory failure management

- Improves SLA by reducing failure rate through a proactive memory health evaluation

- Higher DIMM performance and reliability optimizes workload and VM migration decision-making to boost efficiency, flexibility and TCO

AMI Firmware Solutions Powered by Intel® Memory Resilience Technology

and cells through pattern matching based on historical data, using a low-overhead online learning method to improve its prediction accuracy and avoid interfering with critical compute tasks. This also enables Intel® Memory Resilience Technology to generate an estimated Memory Health and Ranking Score (MHRS) for proactive memory failure management.

Intel® Memory Resilience Technology, optimized for Intel Xeon Scalable platforms, is specifically designed to improve customers' data center uptime and total cost of operation (TCO) by predicting DDR4 memory failures. AMI's implementation of the Intel® Memory Resilience Technology solution comes in the form of an Aptio V UEFI eModule, which includes OEM IPMI command additions, as well as a MegaRAC® BMC Firmware Option Pack, which includes code to process the memory errors complemented by the DIMM Health Assessment Model (DHAM) from Intel. Both the eModule and Option Pack will receive periodic updates as Intel collects more data and improves their models and algorithms over time.

The Benefits of Intel® Memory Resilience Technology on UEFI and BMC Firmware from AMI

For data centers and cloud service providers, the benefits of adding Intel® Memory Resilience Technology support in Aptio V UEFI Firmware and MegaRAC BMC Firmware are clear and immediate. Data center service level agreements (SLA) are improved, proactive memory health evaluation reduces DIMM failure rates and enhances memory page offlining policy decisions, and most importantly, higher DIMM performance and reliability optimizes workload and VM migration decision-making to boost efficiency, flexibility and TCO.

Features:

- Improves DIMM toss policy which can reduce DIMM replacement costs

- Backed by world-class training and support from AMI

Intel® Memory Resilience Technology 2.0 Features:

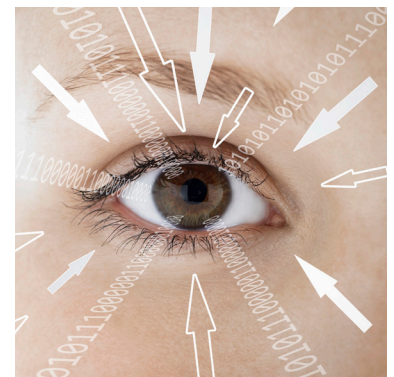- All memory errors, both Correctable

Requirements:

For Aptio V UEFI Firmware:

- Intel® Memory Resilience Technology eModule

For MegaRAC BMC Firmware:

- Intel® Memory Resilience Technology Option Pack

For more information please visit: ami.com/initiatives

AMI Firmware Solutions Powered by Intel® Memory Resilience Technology

Intel is a trademark of Intel Corporation or its subsidiaries.