Defects=0, Enhancements=0 (Version Change Only)

Change Summary (Defects=9 Enhancements=1)

SCGCQ00860398 (DFCT) - PL: Fault 0x4300 During Discovery Error Recovery Testing (Parent Defect)

SCGCQ00872727 (DFCT) - During SATA FORMAT Operation, REQUEST SENSE Command is Not Failed with Expected Response Where DESC bit is Set As 1.

SCGCQ00865952 (CSET) - Intruder A0: MEDIUM ROTATION RATE is not updated in RIGID DISK GEOMETRY PAGE When MODE SENSE(10) is executed to SATA Drive

SCGCQ00877119 (CSET) - System Hangs after Adapter reset with heavy IO load

SCGCQ00882396 (CSET) - PL: Modifying drive LEDs to specific expander using MPI SEP Request fails

SCGCQ00883595 (CSET) - PL: The max speed of SATA drives is not limited to 3Gbps by SAS IO Unit Page 1

SCGCQ00884667 (CSET) - PL: Fix FPE state machine transition flaw which could cause long I/O latency

SCGCQ00887364 (CSET) - IOP: CLI Tool through doorbell not working when in fault state

SCGCQ00887365 (CSET) - (IOP) Various random PL firmware faults encountered when large number of IOs are in-flight and link resets are issued.

SCGCQ00884485 (CSET) - IOP: Add code to stop additional hardware upon adapter reset

Total Defects Resolved (9)

(SCGCQ00860398)	*Defect 1/9*
HEADLINE:	PL: Fault 0x4300 During Discovery Error Recovery Testing (Parent Defect)
DESC OF CHANGE:	The change was done in a child defect. After completing an SMP request for which no frame was received, check if there are any outstanding link layer interrupts indicating a bad SMP response, with matching port. If there is an outstanding interrupt, clear it.
TO REPRODUCE:	No reliable method is known for reproducing this issue.
ISSUE DESC:	A SAS core link layer interrupt occurred, indicating a bad SMP response had received. Just before that, the expander had been removed and the SMP request was completed. So the link layer interrupt resulted in SMP code being called again, but there was no SMP request outstanding for that port, so it lead to a 0x4300 fault.

(SCGCQ00872727)	*Defect 2/9*
HEADLINE:	During SATA FORMAT Operation, REQUEST SENSE Command is Not Failed with Expected Response Where DESC bit is Set As 1.
DESC OF CHANGE:	During SATA drive format operation a new check is added for REQUEST_SENSE command with DESC bit set to 1, which fails back the request.
TO REPRODUCE:	1) Attach SATA drive to Gen3 controller. 2)Now FORMAT the SATA drive and verfiy that drive is under format. 3)Now execute a REQUEST SENSE command with DESC=1 which also passes which seems to be incorrect.
ISSUE DESC:	While format is under way on a SATA drive, Issue a REQUEST_SENSE command with DESC bit set as 1. The expected responce is failure with ILLEGAL_REQUEST, but we are seeing command success.

(SCGCQ00865952 - Port of SCGCQ00864828)	*Defect 3/9*
HEADLINE:	Intruder A0: MEDIUM ROTATION RATE is not updated in RIGID DISK GEOMETRY PAGE When MODE SENSE(10) is executed to SATA Drive
DESC OF CHANGE:	Fixed a bug that was causing the medium rotation rate value to get overwritten when other mode pages were read after the identify device data was received.
TO REPRODUCE:	Send a SCSI Mode Sense (10) command with the page code set to all pages to a SATA drive.
ISSUE DESC:	When a SCSI Mode Sense (10) command with the page code set to all all pages is sent to a SATA drive, the medium rotation rate field in the rigid disk geometry page is not updated.

(SCGCQ00877119 - Port of SCGCQ00646625)	*Defect 4/9*
HEADLINE:	System Hangs after Adapter reset with heavy IO load
DESC OF CHANGE:	Bring all the SAS/SATA links down when we get the Adapter Reset. This should stop PCIe traffic quickly enough so that nothing is going on when the 10ms Adapter reset timer resets the chip.
TO REPRODUCE:	Issue Adapter reset to controller with heavy IO load
ISSUE DESC:	The adapter reset causes a reset of the card while PCIe traffic may be outstanding, resulting in a hang in one or more busses.

(SCGCQ00882396 - Port of SCGCQ00873288)	*Defect 5/9*
HEADLINE:	PL: Modifying drive LEDs to specific expander using MPI SEP Request fails
DESC OF CHANGE:	Added a new nuance to the protection code to activate it for a much more limited set of expanders. This prevents SAS Enclosure Page 0's SEPDeviceHandle from being unnecessarily blocked from the impacted expanders.
TO REPRODUCE:	Configure the controller's NVDATA to search for an I2C SEP to manage the direct attached drive's LEDs. Send an MPI SEP Request to this particular expander to change a drive's LEDs. This can be done through HII or the BIOS CU.
ISSUE DESC:	When attempting to modify drive LEDs to a specific expander using the MPI SEP Request, the request fails. The controller must be configured to search for an I2C SEP. This particular expander was configured in a manner that triggered code used to allow the I2C SEP to manage the drive's LEDs. This results in the SAS Enclosure Page 0's SEPDeviceHandle being blocked from updates.

(SCGCQ00883595 - Port of SCGCQ00553305)	*Defect 6/9*
HEADLINE:	PL: The max speed of SATA drives is not limited to 3Gbps by SAS IO Unit Page 1
DESC OF CHANGE:	Changed the Link Reset routine to limit the maximum SATA link rate when bit 14 of the ControlFlags for SAS IO Unit Page 1 is enabled.
TO REPRODUCE:	1) Attach a SATA drive directly to the controller. 2) Set Bit 14 the ControlFlags field of SAS IO Unit Page 1 using a Write Current. 3) Issue a Task Management (Target Reset) to the SATA drive.
ISSUE DESC:	Bit 14 in the ControlFlags field of SAS IO Unit Page 1 is not implemented.

(SCGCQ00884667 - Port of SCGCQ00884179)	*Defect 7/9*
HEADLINE:	PL: Fix FPE state machine transition flaw which could cause long I/O latency
DESC OF CHANGE:	Firmware would only transition into interleave state when there are more than N I/Os pended in PL. After transitioning from interleave to active state, start FPE and PL pended I/Os in that order.
TO REPRODUCE:	This was reproduced by using hyper v and select 10 or more VMs and open up their properties all at the same time.
ISSUE DESC:	Long I/O latency is observed when a large burst of non-auto I/Os is generated while other read/write I/Os are going on.

(SCGCQ00887364 - Port of SCGCQ00875758)	*Defect 8/9*
HEADLINE:	IOP: CLI Tool through doorbell not working when in fault state
DESC OF CHANGE:	Modified the code to clear outstanding interrupts when the fault state is entered. This will allow new interrupts to be processed while in the fault state.
TO REPRODUCE:	Cause firmware to fault, and attempt to send a CLI Tool request message through the doorbell handshake method.
ISSUE DESC:	Under some conditions, the doorbell will not accept a CLI Tool request message through the doorbell handshake method.

(SCGCQ00887365 - Port of SCGCQ00874061)	*Defect 9/9*
HEADLINE:	(IOP) Various random PL firmware faults encountered when large number of IOs are in-flight and link resets are issued.
DESC OF CHANGE:	Make sure that the free queue size is set up correctly, accounting for high priority queue size correctly as well.
TO REPRODUCE:	Setup a configuration with a high count of High prioirty queue credits. Perform periodic link resets on all links. Firmware eventually faults with various random faults.
ISSUE DESC:	In configurations which support a high count of High priority queue credits, the request FIFO size ends up getting incorrectly setup. This size is used to program the max queue index in Fast Path Engine hardware exception queue. Thus the exception queue goes out of bounds, thereby throwing random firmware faults.

Total Enhancements Implemented (1)

(SCGCQ00884485 - Port of SCGCQ00883655)	*Enhancement 1/1*
HEADLINE:	IOP: Add code to stop additional hardware upon adapter reset
NEW FUNCTIONALITY:	Added new code to stop additional hardware blocks upon the receipt of an adapter reset to minimize the chance of traffic being in flight on PCIe when the reset occurs.

Change Summary (Defects=5 Enhancements=1)

SCGCQ00859102 (CSET) - 9300-8i- SATA SSDs in Locked State Not Showing Up After Manually Loading Driver.

SCGCQ00873957 (CSET) - IOP: MCTP: Reinitalizing SLIR3-MCTP many times causes CmdStatus Busy to always be sent back in response

SCGCQ00873970 (CSET) - Manufacturing Page 9 configurations for number of Virtual functions set to 16 for Non-SRIOV firmware

SCGCQ00874473 (CSET) - PL: Supported VPD pages being sent out of order for SATA drives with Power Condition Page Support

SCGCQ00876030 (CSET) - sg_unmap command to a SATA drive was not working correctly for the Last Block.

SCGCQ00877433 (CSET) - Enable SIO/I2C Mux and add support for DA-SEP reset

Total Defects Resolved (5)

(SCGCQ00859102 - Port of SCGCQ00843668)	*Defect 1/5*
HEADLINE:	9300-8i- SATA SSDs in Locked State Not Showing Up After Manually Loading Driver.
DESC OF CHANGE:	Made a change so that the FPE cannot be transitioned to active state if the SATA drive is locked.
TO REPRODUCE:	Security lock the SATA drive. Then re-initialize the controller. Perform a target reset to the locked SATA drive. Now send IOs to it that are illegal for a locked drive. The IOs will be sent to the drive, and will be replied to with status other than SenseKey=0x05, AscAscq=0x7479 (Security conflict).
ISSUE DESC:	If a target reset is issued to a locked SATA drive, following SATA initialization, the fast path engine can be incorrectly transitioned to active state, leading to illegal IOs being sent to the locked drive.

(SCGCQ00873957 - Port of SCGCQ00864752)	*Defect 2/5*
HEADLINE:	IOP: MCTP: Reinitializing SLIR3-MCTP many times causes CmdStatus Busy to always be sent back in response
DESC OF CHANGE:	The code used to clean up the Packet Exception Firmware In Wrong State was not always being triggered, which caused the controller to run out of resources to handle MCTP requests.
TO REPRODUCE:	Reinitialize SLIR3-MCTP many times, preferably in a loop.
ISSUE DESC:	After running and reinitializing SLIR3-MCTP many times, the controller will eventually start sending back a response with CmdStatus Busy for every request. The controller must be configured to run in MCTP over I2C and in slave response mode (always acts as an I2C slave).

(SCGCQ00873970 - Port of SCGCQ00868952)	*Defect 3/5*
HEADLINE:	Manufacturing Page 9 configurations for number of Virtual functions set to 16 for Non-SRIOV firmware
DESC OF CHANGE:	Modified the NVDATA so non-SRIOV versions of FW will display 0 virtual functions.
TO REPRODUCE:	Read Manufacturing Page 9.
ISSUE DESC:	Manufacturing Page 9 reports 16 virtual function when non-SRIOV firmware is loaded. No virtual functions are supported in non-SRIOV firmware.

(SCGCQ00874473 - Port of SCGCQ00865796)	*Defect 4/5*
HEADLINE:	PL: Supported VPD pages being sent out of order for SATA drives with Power Condition Page Support
DESC OF CHANGE:	Modified the SATL code that handled the response to Inquiry for Page 0 such that the Power Condition page shows up in incrementing order.
TO REPRODUCE:	Send a SCSI Inquiry for VPD Page 0 (Supported Pages) is sent to a SATA drive that supports the Power Condition VPD Page (0x8A).
ISSUE DESC:	When a SCSI Inquiry for VPD Page 0 (Supported Pages) is sent to a SATA drive that supports the Power Condition VPD Page (0x8A), that page in the response is not in incrementing order, which is required per the SCSI Primary Command Spec.

(SCGCQ00876030 - Port of SCGCQ00869961)	*Defect 5/5*
HEADLINE:	sg_unmap command to a SATA drive was not working correctly for the Last Block.
DESC OF CHANGE:	For the sg_unmap command to a SATA drive, a condition was changed to allow the last block to be considered.
TO REPRODUCE:	1) sg_readcap /dev/sdc Read Capacity results: Last logical block address=117231407 (0x6fccf2f), Number of block=117231408 Logical block length=512 bytes Hence: Device size: 60022480896 bytes, 57241.9 MiB, 60.02 GB 2) Below sg_unmap works okay for (Number of Blocks -1): sg_unmap --lba=0 --num=117231407 /dev/sdc 3) Below sg_unmap is reporting an error for (Number of Blocks): sg_unmap --lba=0 --num=117231408 /dev/sdc
ISSUE DESC:	For the sg_unmap command to a SATA drive, SATL layer of the PL firmware was ignoring the last block.

Total Enhancements Implemented (1)

(SCGCQ00877433 - Port of SCGCQ00188416)	*Enhancement 1/1*
HEADLINE:	Enable SIO/I2C Mux and add support for DA-SEP reset
NEW FUNCTIONALITY:	Added the ability for fw to detect i2c or sio based on the BKPLN_MGMT_TYPE Gpio pin. Also added the ability to send a DA-SEP reset through virtual GPIOs

Change Summary (Defects=10 Enhancements=1)

SCGCQ00854562 (DFCT) - PL: SR-IOV: Add code to work around IO Accelerator HW issue

SCGCQ00867345 (DFCT) - PL: SATA hinting feature causes IO timeouts with Linux

SCGCQ00871463 (DFCT) - BUSY TIMEOUT PERIOD Field is incorrectly populated in Control Mode Page for SATA Drive

SCGCQ00874323 (DFCT) - Invader:Controller switches to Single Context when 'Dual Context FORCE_ON' bit is set in Manufacturing Page 30

SCGCQ00874387 (DFCT) - Fault 0x703 & 0x701 Observed while flasing the latest firmware version (09.250.03.00)

SCGCQ00837753 (CSET) - IOP: Firmware download request can cause firmware to become unresponsive

SCGCQ00837755 (CSET) - IOP: Fault 0x0701 seen on first boot of firmware flashed to a blank controller board

SCGCQ00870717 (CSET) - Gen-3 is not supporting SES Page 0x0A slot mapping mode fully

SCGCQ00871668 (CSET) - IOP: Vector Mismatch reported after full erase and flash of firmware and SAS Address

SCGCQ00873780 (CSET) - PL: A pointer needs to be reinitialized to prevent out of bound access

SCGCQ00867813 (ENHREQ) - Extend the Manufacturing Page 30 to support the new algorithm which decides dual context

Total Defects Resolved (10)

(SCGCQ00854562)	*Defect 1/10*
HEADLINE:	PL: SR-IOV: Add code to work around IO Accelerator HW issue
DESC OF CHANGE:	Added a hardware workaround to manually insert the VF_ID into the MPI request message. This workaround is compiled out of the firmware because there are no use cases where this code is used.
TO REPRODUCE:	Configure the IO Accelerator to use a certain IO path. Issue IOs from a virtual function to a drive, and the PL firmware will fault with a DMA error.
ISSUE DESC:	In certain usage models of the IO Accelerator hardware, the VF_ID may not be written to the MPI SCSI IO Request message by the hardware. This results in DMA errors and ultimately firmware faults. Note, this configuration is not used by IT firmware under any circumstance, and is thus not impacted by this issue.

(SCGCQ00867345)	*Defect 2/10*
HEADLINE:	PL: SATA hinting feature causes IO timeouts with Linux
DESC OF CHANGE:	Modified code to allow SATA Device Initialization if Discovery is pending a restart due to the SATA hinting feature. This will allow the IO to start to the drive. Also modified Discovery such that if it is waiting for a timer to restart and another request to run Discovery is received, Discovery can start sooner than originally requested.
TO REPRODUCE:	Using a Gen 2 or Gen 3 Avago expander based enclosure, connect a slow to spin up SATA drive along with a fast spin up SATA drive. Initialize the controller using the Linux driver and the driver will report IO timeouts in the logs.
ISSUE DESC:	When the SATA hinting feature detects a slow to spin up SATA drive, IOs from the host driver can be delayed sufficiently long enough to cause an IO timeout.

(SCGCQ00871463)	*Defect 3/10*
HEADLINE:	BUSY TIMEOUT PERIOD Field is incorrectly populated in Control Mode Page for SATA Drive
DESC OF CHANGE:	The BUSY TIMEOUT PERIOD Field is updated to the default value (0xFFFF) in the Control Mode Page for SATA Drive.
TO REPRODUCE:	Connect a SATA Drive to SAS3 controller. Now execute a Mode Sense (10) command for CONTROL MODE PAGE and verify the value of BUSY TIMEOUT PERIOD field in the response.
ISSUE DESC:	The BUSY TIMEOUT PERIOD Field is not being updated to the default value (0xFFFF) in the Control Mode Page for SATA Drive. So garbage value (0xFF) is being sent in reply to Mode Sense command.

(SCGCQ00874323)	*Defect 4/10*
HEADLINE:	Invader:Controller switches to Single Context when 'Dual Context FORCE_ON' bit is set in Manufacturing Page 30
DESC OF CHANGE:	Added a check to see if 'Dual Context FORCE_ON' bit is set in Manufacturing Page 30, if so then enable Dual context compulsorily, even though the new algorithm prefers single context. This also takes care to disable Dual context whenever 'Dual Context FORCE_OFF bit' is set in Manufacturing Page 30.
TO REPRODUCE:	1)Set 'Dual Context On' bit in Manufacturing Page 30 . 2)Connect the controller to a Non-EDFB expander 3)Verify for Context. Controller is in dual context. 4)Add a 6G drive to the expander . 5)Context switches from Dual context to Single context.
ISSUE DESC:	As part of the new algorithm to enable the dual context based on the EDFB bandwidth, a condition was missing to enable dual context compulsorily whenever 'Dual Context FORCE_ON' bit is set in Manufacturing Page 30.

(SCGCQ00874387)	*Defect 5/10*
HEADLINE:	Fault 0x703 & 0x701 Observed while flasing the latest firmware version (09.250.03.00)
DESC OF CHANGE:	Reverted the previous change in compilation options
TO REPRODUCE:	In DOS Mode, Flash the previous version of SAS3 IR firmware (09.250.02.00) and verify it. Now upgrade to latest SAS3 IR firmware (09.250.03.00) and observe that fault 0x703 is seen while resetting adapter operation.
ISSUE DESC:	A previous change in compilation options was having a side effect in IR build, with Fault-0x703 and 0x701

observed during firmware flash.

(SCGCQ00837753 - Port of SCGCQ00836356)	*Defect 6/10*
HEADLINE:	IOP: Firmware download request can cause firmware to become unresponsive
DESC OF CHANGE:	Added a piece of code to handle the error return status of a flash data write function. This will cause firmware to send an error response to the host indicating an issue was seen writing to the flash part.
TO REPRODUCE:	During a firmware download, when firmware is writing the image to the flash, cause a data miscompare between the desired data and what was actually written to flash (or read back after it was written). This will cause firmware to become stuck in an infinite loop.
ISSUE DESC:	If there is an error writing the firmware to flash, firmware can become unresponsive.

(SCGCQ00837755 - Port of SCGCQ00835379)	*Defect 7/10*
HEADLINE:	IOP: Fault 0x0701 seen on first boot of firmware flashed to a blank controller board
DESC OF CHANGE:	Changed a compilation option used to build the code which is used to write to the flash. This improves the compilation of the flash routines and resolves the issue.
TO REPRODUCE:	Flash IT firmware onto a blank flash on a controller evaluation board.
ISSUE DESC:	When flashing the firmware to a blank controller board, firmware would boot and immediately fault with code 0x0701.

(SCGCQ00870717 - Port of SCGCQ00855132)	*Defect 8/10*
HEADLINE:	Gen-3 is not supporting SES Page 0x0A slot mapping mode fully
DESC OF CHANGE:	- The reading of the generation code field is moved to after the SES Configuration Page is retrieved. - The enabling of slot mapping mode is moved under condition that it is entered when the SES Configuration Page is re read. - The buffer length passed to the SES Packet building function is corrected.
TO REPRODUCE:	1. Connect expander to Gen-3 Controller. 2. Modify the ManPage11->AddlFlags[3] bit from 0 to 1 to enable the slot mapping mode. 3. Make the expander firmware response to controller firmware with slot number 12-15 on PHY 4-7. 4. Connects HDDs to the Expander PHY 4-7; connects the HBA to the expander. 5. Power on the system, then press "CTL+C" to enter controller BIOS CU->SAS topology menu. 6. At this moment, user will see Slot12-15 in the SAS topology. Then move the selection bar to any disk, press "Enter" key to turn on the locate LED on Expander board. 7. User will see no any LEDs are blinking on the expander board.
ISSUE DESC:	In firmware, the Generation Code field of SES Configuration Page is stored locally when SES Configuration Page is read for the first time. This field is updated when the Enclosure Configuration has been modified in the Enclosure. The Generation Code field is then re read in the firmware; if the value is different, then firmware reads the SES Configuration Page again. The issue here is that the Generation Code is being read at the wrong place the first time - it is read even before the SES Configuration Page has been retrieved from the enclosure. So the local copy of Generation code has garbage value, because of which the SES Configuration Page is read again. Before it is read again, the current firmware is such that it tries to read the SES Page 0 to check if slot mapping mode is enabled. But the SES Page 0 has been overwritten by this time and the firmware reads garbage values and does not enable slot mapping mode. Also, a second issue that is observed is that in a function for building SES Packet, the length of the buffer passed to the function is greater than the actual size of the buffer. Due to which, PL faults with code 7200.

(SCGCQ00871668 - Port of SCGCQ00850743)	*Defect 9/10*
HEADLINE:	IOP: Vector Mismatch reported after full erase and flash of firmware and SAS Address
DESC OF CHANGE:	Made changes to the initialization of the Host Diagnostic Control Window Valid Sectors region. Since this area is controlled by the host system, an initial value was set at boot.
TO REPRODUCE:	1. Connect to the Host Bus Adapter Command Line Interface using Terra Term or similar tool. 2. Fully erase the Intruder Host Bus Adapter using a flashing tool (sas3flsh.exe). 3. Flash the firmware and the SAS Address using a flashing tool (sas3flsh.exe). 4. Reboot the Host System. 5. The Command Line Interface should report a Vector Mismatch in Region 4.
ISSUE DESC:	After fully erasing and flashing the firmware and the SAS Address onto the Intruder Host Bus Adapter and upon a reboot of the host system, the Intruder Command Line Interface reports a Vector Mismatch in Region 0004.

(SCGCQ00873780 - Port of SCGCQ00871248)	*Defect 10/10*
HEADLINE:	PL: A pointer needs to be reinitialized to prevent out of bound access
DESC OF CHANGE:	Reinitialize a pointer after use.
TO REPRODUCE:	N/A
ISSUE DESC:	A pointer needs to be reinitialized to prevent out of bound access.

Total Enhancements Implemented (1)

(SCGCQ00867813)	*Enhancement 1/1*
HEADLINE:	Extend the Manufacturing Page 30 to support the new algorithm which decides dual context
NEW FUNCTIONALITY:	The new parameters added and EDFBFlags field modified to support the new feature, where the selection of single or dual context mode is done based upon the drive's bandwidth in a topology. This feature will be able to configure each SAS Core TxDMA, with Single Context or Dual Context, based upon existing drive's EDFB bandwidth in the topology. After discovery of drives, a check of the eligible drive bandwidth in the topology will be calculated and compared with the dual context threshold bandwidth value programmed in the NVDATA fields. Based on the results, the TxDMAs will be either switched to Single Context or Dual Context mode.

Change Summary (Defects=4 Enhancements=42)

SCGCQ00852290 (DFCT) - (SATA Only) Signature FIS not validated for Expander attached SATA drives

SCGCQ00865100 (CSET) - PL: Fault d060 observed when running IOs with link_reset Task management command in a loop

SCGCQ00868948 (CSET) - PL: STANDBY_Z Bit Not Set in POWER CONDITION MODE PAGE When Mode Sense (10) is executed to NON EPC SATA Drive

SCGCQ00870712 (CSET) - Unknown PL log information is observed by Host driver while testing SAS link down/up by disabling SAS phy of Controller

SCGCQ00227735 (ENHREQ) - MPI 2.6 Add Atomic Request Descriptor capability

SCGCQ00259613 (ENHREQ) - MPI v2.6: Additional request and reply descriptor formats

SCGCQ00264755 (ENHREQ) - MPI 2.6: SOP Encapsulated request

SCGCQ00264759 (ENHREQ) - MPI 2.6: NVMe Encapsulated request

SCGCQ00294055 (ENHREQ) - MPI 2.6: add Escape Passthrough bit to IO Flags of SCSI IO Request & Target Assist Request

SCGCQ00294131 (ENHREQ) - MPI 2.6: update SGL chapter to include PCIe

SCGCQ00336383 (ENHREQ) - MPI 2.6: PCIe IO Unit Page 0 & 1 definitions

SCGCQ00345258 (ENHREQ) - MPI 2.6: add IO Unit Control Request

SCGCQ00345260 (ENHREQ) - MPI 2.6: add PCIe Event Data (Generic), PCIe Device Status Change Event, and PCIe Enumeration Event

SCGCQ00345266 (ENHREQ) - MPI 2.6: PCIe Topology Change List Event

SCGCQ00345270 (ENHREQ) - MPI 2.6: PCIe Switch Config Pages

SCGCQ00345271 (ENHREQ) - MPI 2.6: add PCIe Device Config Pages

SCGCQ00345272 (ENHREQ) - MPI 2.6: PCIe Link Config Pages

SCGCQ00353339 (ENHREQ) - Device Info field for PCIe devices

SCGCQ00357551 (ENHREQ) - MPI 2.6: add host page size to IOCInit Request and IOCFacts Reply

SCGCQ00360843 (ENHREQ) - MPI 2.6: add Port Request bit to IoFlags field of SCSI IO Request

SCGCQ00360952 (ENHREQ) - MPI 2.6: new family values for ProductID fields

SCGCQ00363600 (ENHREQ) - MPI 2.6: move all SAS IO Unit Page 4 functionality to IO Unit Page 11

SCGCQ00397136 (ENHREQ) - Modified address space bits

SCGCQ00397563 (ENHREQ) - MPI 2.6: Add PCIe IO Unit Page 4

SCGCQ00397568 (ENHREQ) - MPI 2.6: PCIe Device Page 2 reporting MDTS for NVMe devs

SCGCQ00397572 (ENHREQ) - MPI 2.6: Add board power fields to IO Unit Page 7

SCGCQ00397577 (ENHREQ) - MPI 2.6: Add support for SAS Persistent Connections

SCGCQ00398256 (ENHREQ) - MPI 2.6: Add NVMe SGL support

SCGCQ00432541 (ENHREQ) - MPI 2.6: Add NVMe SGL support to IEEE SGL

SCGCQ00464402 (ENHREQ) - MPI 2.6: System Interface Register Set update

SCGCQ00480292 (ENHREQ) - Remove _SATA_TRANSMIT_PORT_SELECT_SIGNAL in IO Unit Control Request

SCGCQ00496998 (ENHREQ) - MPI 2.6: shutdown operation for IO Unit Control Request

SCGCQ00564281 (ENHREQ) - MPI 2.6: Add supported link rates and widths for PCIe devices

SCGCQ00574070 (ENHREQ) - MPI 2.6: Add additional NVMe AccessStatus codes

SCGCQ00601869 (ENHREQ) - MPI 2.6: Add BootFlags field to Firmware Image Header

SCGCQ00619371 (ENHREQ) - MPI 2.6: Add new FLASH region types

SCGCQ00623271 (ENHREQ) - MPI 2.6: Added an additional signature value for the firmware image header

SCGCQ00664957 (ENHREQ) - MPI 2.6: additional AccessStatus values for PCIe Device Page 0

SCGCQ00680527 (ENHREQ) - MPI v2.6: Added Intruder / Cutlass device IDs for manufacturing pages

SCGCQ00776177 (ENHREQ) - MPI 2.6: Add device off flag to SCSI Enclosure Processor messages

SCGCQ00789600 (ENHREQ) - MPI 2.6: New Phy event codes added to Ventura

SCGCQ00813389 (ENHREQ) - MPI 2.6: Add capability to send FPDMA/NCQ commands via SATA

Passthrough

SCGCQ00817050 (ENHREQ) - New pliControlRequest to clear FPE bit in FPE flags of mid state table
SCGCQ00828497 (ENHREQ) - MPI 2.6: add PCI Device ID's
SCGCQ00831588 (ENHREQ) - MPI 2.6: methods to report Active Cable power problems
SCGCQ00850293 (ENHREQ) - Bandwidth based PL algorithm to set hardware with Single or Dual Context.

Total Defects Resolved (4)

(SCGCQ00852290)	*Defect 1/4*
HEADLINE:	(SATA Only) Signature FIS not validated for Expander attached SATA drives
DESC OF CHANGE:	Validation of signature field in initial FIS as received in Report Phy SATA SMP response was added and in case its an invalid or unsupported value the device was blocked and marked unsupported.
TO REPRODUCE:	Attach a SATA drive that sends an invalid or unsupported value in signature field of its initial FIS behind an expander. Observe that the drive gets added to host as SATA drive.
ISSUE DESC:	A SATA drive that sends an invalid or unsupported signature value in its initial FIS when attached to an expander gets added to the topology and reported to host as SATA device instead of being blocked as unsupported drive.

(SCGCQ00865100 - Port of SCGCQ00840603)	*Defect 2/4*
HEADLINE:	PL: Fault d060 observed when running IOs with link_reset Task management command in a loop
DESC OF CHANGE:	Added code to walk through the exceptionQ during pend list cleanup. If the I/O exist in both pend list and exceptionQ, firmware won't touch this I/O during pend list clean up. It will be handled when the exceptionQ handler is invoked.
TO REPRODUCE:	Run link reset TM test. Topology is: Controller (Quad 5) Gen 12 Enclosure (Quad 1) Gen 2 Enclosure – Gen1-Enclosure (Quad 2) Direct Attach
ISSUE DESC:	This fault is caused by a race condition between stopping FPE requestor and cleaning out FPE pend I/O list.

(SCGCQ00868948 - Port of SCGCQ00860528)	*Defect 3/4*
HEADLINE:	PL: STANDBY_Z Bit Not Set in POWER CONDITION MODE PAGE When Mode Sense (10) is executed to NON EPC SATA Drive
DESC OF CHANGE:	Standby_z bit will not get cleared if ATA count field will be other than specified in standby_z timer translation table.
TO REPRODUCE:	Execute Mode Sense (10) command for POWER CONDITION MODE PAGE to a non EPC drive and verify STANDBY_Z bit in the response.
ISSUE DESC:	Connect a SATA Drive to Intruder controller which has no support for EPC feature. Now execute a Mode Sense (10) command for POWER CONDITION MODE PAGE and verify that in response STANDBY_Z bit is not set. As per Table 95 of Section 10.1.10.3 of SAT3R04 for STANDBY_Z, the bit shall be returned as one when ATA IDENTIFY DEVICE data word 49, bit 13 is set to one. Verify in IDENTIFY DEVICE data for word 49, bit 13 which is set as one. Setup:- Intruder HBA ----> SATA Drives (Non EPC Drive)

(SCGCQ00870712 - Port of SCGCQ00868730)	*Defect 4/4*
HEADLINE:	Unknown PL log information is observed by Host driver while testing SAS link down/up by disabling SAS phy of Controller
DESC OF CHANGE:	The local variable which is causing the issue is initialized to 0 in the PL firmware.
TO REPRODUCE:	Perform SAS link down/up test by disabling SAS phy of Controller. To disable SAS phy to make a link down, use SAS IO Unit Page 1. This link down/up test is executed during the sequential read I/O operation. In this test, the host driver detects an unknown PL log information which is not defined in the manual and SEN.
ISSUE DESC:	The issue is occurring because a local variable used to store log information in a Tx context cleanup function has not been initialized while declaration. Under the particular test scenario, the variable is not being assigned a value, because of which garbage value is being propagated back to the host.

Total Enhancements Implemented (42)

(SCGCQ00227735)	*Enhancement 1/42*
HEADLINE:	MPI 2.6 Add Atomic Request Descriptor capability
NEW FUNCTIONALITY:	Added Atomic Request Descriptors capability. Atomic Request Descriptor are only 32-bits, and are added to the Reply Descriptor Post Queue by writing them to the new Atomic Request Descriptor Post register.

(SCGCQ00259613)	*Enhancement 2/42*
HEADLINE:	MPI v2.6: Additional request and reply descriptor formats
NEW FUNCTIONALITY:	Added new request and reply descriptor types for PCIe Encapsulated requests.

(SCGCQ00264755)	*Enhancement 3/42*
HEADLINE:	MPI 2.6: SOP Encapsulated request
NEW FUNCTIONALITY:	Added SOP Encapsulated request and reply

(SCGCQ00264759)	*Enhancement 4/42*
HEADLINE:	MPI 2.6: NVMe Encapsulated request
NEW FUNCTIONALITY:	Message to be able to send a NVMe-formatted request directly to the NVMe device without firmware manipulation.

(SCGCQ00294055)	*Enhancement 5/42*
HEADLINE:	MPI 2.6: add Escape Passthrough bit to IO Flags of SCSI IO Request & Target Assist Request
NEW FUNCTIONALITY:	Defined bit 13 of the IoFlags field of SCSI IO and TargetAssist Requests. Bit 13 Escape Passthrough – This bit affects the behavior of the Check and Regenerate EEDP Operation. See the description of the EEDPFlags field below for more information on EEDP operations. 0 = Regenerate all of the DIF fields, regardless of any escape sequence encountered. 1 = Escape passthrough mode. If a valid escape sequence is encountered, pass the existing DIF (including the Logical Block Guard) unchanged instead of generating new protection information.

(SCGCQ00294131)	*Enhancement 6/42*
HEADLINE:	MPI 2.6: update SGL chapter to include PCIe
NEW FUNCTIONALITY:	Updated SGL chapter to account for chaining to PCIe native SGL segments.

(SCGCQ00336383)	*Enhancement 7/42*
HEADLINE:	MPI 2.6: PCIe IO Unit Page 0 & 1 definitions
NEW FUNCTIONALITY:	Added PCIe IO Unit Page 0 & 1

(SCGCQ00345258)	*Enhancement 8/42*
HEADLINE:	MPI 2.6: add IO Unit Control Request
NEW FUNCTIONALITY:	Added IO Unit Control Request, which is compatible with the now obsolete SAS IO Unit Control Request.

(SCGCQ00345260)	*Enhancement 9/42*
HEADLINE:	MPI 2.6: add PCIe Event Data (Generic), PCIe Device Status Change Event, and PCIe Enumeration Event

NEW FUNCTIONALITY: Added general PCIe Event Data section, PCIe Device Status Change Event, and PCIe Enumeration Event.

(SCGCQ00345266) *Enhancement 10/42*

HEADLINE: MPI 2.6: PCIe Topology Change List Event

NEW FUNCTIONALITY: Added PCIe Topology Change List Event.

(SCGCQ00345270) *Enhancement 11/42*

HEADLINE: MPI 2.6: PCIe Switch Config Pages

NEW FUNCTIONALITY: Added PCIe Switch Configuration Pages 0 and 1.

(SCGCQ00345271) *Enhancement 12/42*

HEADLINE: MPI 2.6: add PCIe Device Config Pages

NEW FUNCTIONALITY: Added PCIe Device configuration pages 0 and 1.

(SCGCQ00345272) *Enhancement 13/42*

HEADLINE: MPI 2.6: PCIe Link Config Pages

NEW FUNCTIONALITY: Added structures and defines for PCIe Link event counter configuration.

(SCGCQ00353339) *Enhancement 14/42*

HEADLINE: Device Info field for PCIe devices

NEW FUNCTIONALITY: Defined device info bits in PCIe IO Unit Page 0 and 1 and PCIe Device Page 0.

(SCGCQ00357551) *Enhancement 15/42*

HEADLINE: MPI 2.6: add host page size to IOCInit Request and IOCFacts Reply

NEW FUNCTIONALITY: Added host page size fields to IOCInit Request and IOCFacts Reply so that the host informs the IOC of the host memory page size. This is needed for some scatter/gather types (and possibly other usages).

(SCGCQ00360843) *Enhancement 16/42*

HEADLINE: MPI 2.6: add Port Request bit to IoFlags field of SCSI IO Request

NEW FUNCTIONALITY: Added Port Request bit to IoFlags field of SCSI IO Request. This bit is for IOC use only.

Bit 10 Port Request (for IOC use only, host must treat as reserved)

(SCGCQ00360952) *Enhancement 17/42*

HEADLINE: MPI 2.6: new family values for ProductID fields

NEW FUNCTIONALITY: Added new family values for the ProductID field of IOCFacts reply and firmware image header.

(SCGCQ00363600) *Enhancement 18/42*

HEADLINE: MPI 2.6: move all SAS IO Unit Page 4 functionality to IO Unit Page 11

NEW FUNCTIONALITY: All the functionality in SAS IO Unit Page 4 has moved to IO Unit Page 11, as it now applies to SAS/SATA and PCIe targets. This includes PortEnable options and spinup control. SAS IO Unit Page 4 is now obsolete for MPI v2.6 and newer.

(SCGCQ00397136)	*Enhancement 19/42*
HEADLINE:	Modified address space bits
NEW FUNCTIONALITY:	Changes to address space bits (IOC use only).

(SCGCQ00397563)	*Enhancement 20/42*
HEADLINE:	MPI 2.6: Add PCIe IO Unit Page 4
NEW FUNCTIONALITY:	Added PCIe IO Unit Page 4 to report max num PRDT entries allowed by the host. This page may report other AHCI parameters in the future. Reserved PCIe IO Unit Page 2 to report SOP capabilities. Reserved PCIe IO Unit Page 3 to report NVMe capabilities.

(SCGCQ00397568)	*Enhancement 21/42*
HEADLINE:	MPI 2.6: PCIe Device Page 2 reporting MDTS for NVMe devs
NEW FUNCTIONALITY:	Added PCIe Device Page 2, reporting the maximum data transfer size for NVMe devices.

(SCGCQ00397572)	*Enhancement 22/42*
HEADLINE:	MPI 2.6: Add board power fields to IO Unit Page 7
NEW FUNCTIONALITY:	Added an IOCStatus code for insufficient power, which can be returned in the PortEnable Reply. Added BoardPowerRequirement and PCISlotPowerAllocation fields to IO Unit Page 7.

(SCGCQ00397577)	*Enhancement 23/42*
HEADLINE:	MPI 2.6: Add support for SAS Persistent Connections
NEW FUNCTIONALITY:	Add support for SAS persistent connections to IO Unit Control Request, SAS IO Unit Page 0, SAS IO Unit Page 1, and SAS Device Page 0.

(SCGCQ00398256)	*Enhancement 24/42*
HEADLINE:	MPI 2.6: Add NVMe SGL support
NEW FUNCTIONALITY:	Added Capabilities field to PCIe Device Page 2. First two bits indicated NVMe SGL support and SGL Bit Bucket support. Modified descriptions in section for NVMe Encapsulated Request to mention NVMe SGL and general cleanup.

(SCGCQ00432541)	*Enhancement 25/42*
HEADLINE:	MPI 2.6: Add NVMe SGL support to IEEE SGL
NEW FUNCTIONALITY:	Added support to IEEE Chain 64 for chaining to NVMe SGL.

(SCGCQ00464402)	*Enhancement 26/42*
HEADLINE:	MPI 2.6: System Interface Register Set update
NEW FUNCTIONALITY:	Added Scratchpad registers and added SBR Reload bit to HostDiagnostic register.

(SCGCQ00480292)	*Enhancement 27/42*
HEADLINE:	Remove _SATA_TRANSMIT_PORT_SELECT_SIGNAL in IO Unit Control Request
NEW FUNCTIONALITY:	Remove _SATA_TRANSMIT_PORT_SELECT_SIGNAL in IO Unit Control Request

(SCGCQ00496998)	*Enhancement 28/42*
HEADLINE:	MPI 2.6: shutdown operation for IO Unit Control Request
NEW FUNCTIONALITY:	Added shutdown operation for IO Unit Control Request.

(SCGCQ00564281)	*Enhancement 29/42*
HEADLINE:	MPI 2.6: Add supported link rates and widths for PCIe devices
NEW FUNCTIONALITY:	Added SupportedLinkRates and MaxPortWidth fields to PCIe Device Page 0

(SCGCQ00574070)	*Enhancement 30/42*
HEADLINE:	MPI 2.6: Add additional NVMe AccessStatus codes
NEW FUNCTIONALITY:	Added additional AccessStatus values for NVMe devices in PCIe Device Page 0.

(SCGCQ00601869)	*Enhancement 31/42*
HEADLINE:	MPI 2.6: Add BootFlags field to Firmware Image Header
NEW FUNCTIONALITY:	Added BootFlags field to Firmware Image Header at offset 0x60, replacing a reserved word.

(SCGCQ00619371)	*Enhancement 32/42*
HEADLINE:	MPI 2.6: Add new FLASH region types
NEW FUNCTIONALITY:	Added region type for Common Boot Block Backup.

(SCGCQ00623271)	*Enhancement 33/42*
HEADLINE:	MPI 2.6: Added an additional signature value for the firmware image header
NEW FUNCTIONALITY:	Added an additional signature value for the firmware image header.

(SCGCQ00664957)	*Enhancement 34/42*
HEADLINE:	MPI 2.6: additional AccessStatus values for PCIe Device Page 0
NEW FUNCTIONALITY:	Added these additional values: MEMORY_SPACE_ACCESS_FAILED 0x08 PCIe Memory Read/Write requests to the device failed. UNSUPPORTED_DEVICE 0x09 The IOC detected an unsupported device (such as an SOP device is attached, but SOP devices are not supported). MSIX_REQUIRED 0x0A The device does not support MSI-x interrupts.

(SCGCQ00680527)	*Enhancement 35/42*
HEADLINE:	MPI v2.6: Added Intruder / Cutlass device IDs for manufacturing pages
NEW FUNCTIONALITY:	Added Intruder / Cutlass device IDs for manufacturing configuration pages.

(SCGCQ00776177)	*Enhancement 36/42*

HEADLINE:	MPI 2.6: Add device off flag to SCSI Enclosure Processor messages
NEW FUNCTIONALITY:	Defined device off flag bit in SlotStatus field of SCSI Enclosure Processor messages (request and reply).

(SCGCQ00789600) *Enhancement 37/42*

HEADLINE:	MPI 2.6: New Phy event codes added to Ventura
NEW FUNCTIONALITY:	Added new defines to the header file for the new SAS Phy event codes.

(SCGCQ00813389) *Enhancement 38/42*

HEADLINE:	MPI 2.6: Add capability to send FPDMA/NCQ commands via SATA Passthrough
NEW FUNCTIONALITY:	Added FPDMA flag to PassthroughFlags field of SATA Passthrough Request.

(SCGCQ00817050) *Enhancement 39/42*

HEADLINE:	New pliControlRequest to clear FPE bit in FPE flags of mid state table
NEW FUNCTIONALITY:	A new pliControlRequest operation is added to clear the FPE bit in the FPE flags of mid state table. The mid has to satisfy the following conditions in order to be cleared - - The mid has to be IOP owned - The mid should not be valid in HW - The mid should not be aborted IO - The mid should not be in Cleanup in progress.

(SCGCQ00828497) *Enhancement 40/42*

HEADLINE:	MPI 2.6: add PCI Device ID's
NEW FUNCTIONALITY:	Added defines for the 3508 and 2516 chips. Header file change only.

(SCGCQ00831588) *Enhancement 41/42*

HEADLINE:	MPI 2.6: methods to report Active Cable power problems
NEW FUNCTIONALITY:	Added a new event to report when there is insufficient board power to power an active cable. Added a flag to IO Unit Page 7 that indicates insufficient board power to power an active cable.

(SCGCQ00850293) *Enhancement 42/42*

HEADLINE:	Bandwidth based PL algorithm to set hardware with Single or Dual Context.
NEW FUNCTIONALITY:	This feature configures the hardware, with Single Context or Dual Context, based on existing drives' bandwidth in the topology. After every discovery of drives, a new check of the eligible bandwidth will be performed and based on the results, the hardware will be either switched to Single Context or Dual Context.

Change Summary (Defects=7)

SCGCQ00847941 (DFCT) - Fixed issue where 19th entry of Self-Test Results Log Page was not showing during SAT translation.

SCGCQ00859080 (DFCT) - NVDump: SBR extraction creates incorrect SBR

SCGCQ00855252 (CSET) - Initialization with BMC using I2C and slave response mode failed after moving from Phase 4 to Phase 6

SCGCQ00856532 (CSET) - Intruder A0: Fault 0x5872 during I/T Switching

SCGCQ00856558 (CSET) - Intruder A0: Fault 0x6111 during I/T Switching

SCGCQ00856981 (CSET) - PL: IOs completed with good status when EEDP Check enabled and EEDP error injected with 4096 block size

SCGCQ00860153 (CSET) - Invader C0: PL Fault 0x5814 while handling Task Management during IO Timeout

Total Defects Resolved (7)

(SCGCQ00847941)	*Defect 1/7*
HEADLINE:	Fixed issue where 19th entry of Self-Test Results Log Page was not showing during SAT translation.
DESC OF CHANGE:	Made changes in SAT to show up to 19 entries of the Self-Test Results Log Page for SATA drives with Extension Commands support.
TO REPRODUCE:	1. Connect 1 SATA drive to HBA. 2. Send send diagnostic (Background extended self-test) cmd: sg_raw /dev/sdb 1d 20 00 00 00 00 -v 3. Send send diagnostic (Abort background self-test) cmd: sg_raw /dev/sdb 1d 80 00 00 00 00 -v 4. Send log sense cmd to verify the log page output with page code 10 value: sg_raw /dev/sdb 4d 00 50 00 00 00 00 ff ff 00 -r 512 -v 5. Repeat step 2-4 19 times. Expected Result: Entries from 1st -19th should get written in log page results. Actual Result: Entries from 1st -18th are getting cleared off & 19th entry is getting written as 1st entry.
ISSUE DESC:	Most SATA drives, with SATA Extension Commands support, store only 19 Logs entries of the Self-Test Results. When user requests the read on Self-Test Results Log Page, 19 entries were retrieved from the SATA drive's SMART page, but SAT firmware was only translating the 18 entries, omitting the 19th entry.

(SCGCQ00859080)	*Defect 2/7*
HEADLINE:	NVDump: SBR extraction creates incorrect SBR
DESC OF CHANGE:	Modified the file system call to open the output file as a binary file instead of a text file. This prevents the insertion of line feed characters.
TO REPRODUCE:	Use the NVDump utility to extract a SBR image file. The extracted SBR will contain bytes it should not, and the SBR will be longer than it ought to.
ISSUE DESC:	This applies to the NVDump utility only (no firmware change). When using the NVDump utility to generate a SBR binary image, certain circumstances can cause the binary file to have extra bytes inserted.

(SCGCQ00855252 - Port of SCGCQ00831952)	*Defect 3/7*
HEADLINE:	Initialization with BMC using I2C and slave response mode failed after moving from Phase 4 to Phase 6
DESC OF CHANGE:	Fix a few problems in code: - PEC inclusion in response packets - Counting of the received packets when VDM Buffer feature is not enabled (requires very small packet sizes to cause the problem) - Searching for an available location to store new received messages, but the previous received message generated an error
TO REPRODUCE:	Attempt to initialize a BMC with controller and drive information over IT firmware's MCTP interface with the firmware configured for I2C slave response mode.
ISSUE DESC:	The initialization with a BMC using I2C and slave response mode failed.

(SCGCQ00856532 - Port of SCGCQ00844812)	*Defect 4/7*
HEADLINE:	Intruder A0: Fault 0x5872 during I/T Switching
DESC OF CHANGE:	Upgrade Stop and Clean method to issue a firmware close connection request for the transport being cleaned up.
TO REPRODUCE:	Run I/T switching IO test to a setup consisting of multiple hosts with Inturder in I/T mode running IOs to each other and randomly disable/enable expander phys attached.
ISSUE DESC:	Firmware receives an Open Fail No Destination Threhold Count Exceeded interrupt with Destination ID of 0x0000 (INVALID)

(SCGCQ00856558 - Port of SCGCQ00852833)	*Defect 5/7*
HEADLINE:	Intruder A0: Fault 0x6111 during I/T Switching
DESC OF CHANGE:	Implement the full workaround.

TO REPRODUCE:	4 Intruders in 4 seperate hosts, each Intruder attached to a Cobra, which are cascaded to one another. Host A is using Core 0(Phy's 0-3), Host B is using Core 1(Phy's 9-11), Host C is using Core 2(Phy's 16-19) and Host D is using Core 0(Phy's 0-3). Each host has 16 Luns for a total of 48 Luns each Host can see. Smash is run on Each host so and run against each set of Luns. I have attached the logs and trace. Run Expander phy enable/disable script until faulted
ISSUE DESC:	5872 Workaround was partially implemented.

(SCGCQ00856981 - Port of SCGCQ00855669) *Defect 6/7*

HEADLINE:	PL: IOs completed with good status when EEDP Check enabled and EEDP error injected with 4096 block size
DESC OF CHANGE:	When FW detects EEDP error in RxCM hardware block, we need to set the non-auto bit for the mid before clearing the context. This would prevent RxFM from completing the I/O successfully upon receiving a good response frame
TO REPRODUCE:	Test setup: EEDP block size: 4096 EEDP Op: EEDP CHECK IO Size: 1 block Multicast DMA: D_H_D_D (any combination of D_H_*_*) EEDP error injected
ISSUE DESC:	This issue could happen with any EEDP block size where the last data frame contains only (wrong) DIF bytes followed by a good response frame. This is related to a known hw bug documented in SCGCQ00820317.

(SCGCQ00860153 - Port of SCGCQ00842366) *Defect 7/7*

HEADLINE:	Invader C0: PL Fault 0x5814 while handling Task Management during IO Timeout
DESC OF CHANGE:	PL Timeout handler will now check to see if an IO is in the IOA completor waiting to complete before decrementing the timer wheel for that bucket number. This prevents the overflow interrupt leading to the chain of actions leading to the fault.
TO REPRODUCE:	Run I/Os for 12+ hours with Timeouts enabled and PL eventually faults with 0x5814
ISSUE DESC:	When an IO times out right when it completes, the timer bucket for the IO gets decremented twice, once by PL and once again by IOA hardware while handling the completion. This results in an timer overflow error. While the timer overflow error is outstanding IOA hardware is stuck waiting to start a IO which doesn't get caught by an inbound Task Management since it only gets started after the overflow error is handled by PL and Task Management is already done with SAS Core cleanup. This results in 0x5814/0x5813 faults.