

ReleaseOrder ID:	SCGCQ01049276
Headline:	GCA Release: SAS3FW_Phase12.0 - 12.00.00.00 Firmw
Release Version:	12.00.00.00
UCM Project:	SAS3FW_MASTER_DEV
Sub UCM Project:	SAS3FW_Phase12.0
UCM Stream:	SAS3FW_Phase12.0_Rel
Release Type:	GCA
State:	Test_Complete
Release Baseline:	SAS3FW_Phase12.0-2016-03-16-12.00.00.00_REL_1458125685@ ISAS_CTRL_FW
Release Date:	01-APR-16
Date Generated:	Apr 13, 2016

## Release History

- SCGCQ01030693 - Beta Release: SAS3FW\_Phase12.0 - 11.250.07.00 Fir
- SCGCQ01023303 - Alpha Release: SAS3FW\_MASTER\_DEV - 11.250.06.00 F
- SCGCQ01015148 - Alpha Release: SAS3FW\_MASTER\_DEV - 11.250.05.00 F
- SCGCQ01006463 - Pre-Alpha Release: SAS3FW\_MASTER\_DEV - 11.250.04.
- SCGCQ01001481 - Pre-Alpha Release: SAS3FW\_MASTER\_DEV - 11.250.03.
- SCGCQ01000213 - Pre-Alpha Release: SAS3FW\_MASTER\_DEV - 11.250.02.
- SCGCQ00995282 - Pre-Alpha Release: SAS3FW\_MASTER\_DEV - 11.250.01.

ReleaseOrder ID:	SCGCQ01030693 <a href="#">Open In CQWeb</a>
Headline:	Beta Release: SAS3FW_Phase12.0 - 11.250.07.00 Fir
Release Version:	11.250.07.00
UCM Project:	SAS3FW_MASTER_DEV
Sub UCM Project:	SAS3FW_Phase12.0
UCM Stream:	SAS3FW_Phase12.0_Rel
Release Type:	Beta
State:	In_Review
Release Baseline:	SAS3FW_Phase12.0-2016-02-16-11.250.07.00_REL_1455624722@ ISAS_CTRL_FW
Release Date:	23-FEB-16
Date Generated:	Apr 13, 2016

### Defects Fixed (4):

ID: SCGCQ01024544

Headline: PL: Enhancing the fix for defect SCGCQ00998155, RAID creation failing with SATA drives.

Description Of Change: This new fix enhances the old fix for SCGCQ00998155.  
As mentioned in issue description, matching fields which creating the issue marked as invalid so that it will skip the non required checks.

Issue Description: RAID creation fails with SATA drives with fault. While executing some commands on SATA drive, temporary message frames are created internally to perform this and upon completion of SATA command a check is performed to see frame is in Task management abort list. For one particular SATA command, temporary message frame is treated as valid message frame due to some fields matching required valves this leads to fault in firmware.

Steps To Reproduce: - Flash the Fury 3008 with the latest Phase12 IR FW, BIOS and UEFI under test.  
- Connect 4 SATA (enclosure attached) ) drives to the controller.  
- Launch UEFI HII application and try to create RAID1 with two SATA drives.

ID: SCGCQ01025868

Headline: PL:265D fault observed when "iop show cfg all" executed from UART with BIOS flashed

Description Of Change: We were incorrectly using the address of elapse time for passing it to function instead of actual pointer for calculating time.

Issue Description: When iop show cfg all is issued , while reading SAS IO Unit page 16 causes 265D fault.

Steps To Reproduce: Type iop show cfg all from UART to reproduce.

ID: SCGCQ01026943

Headline: Coverity defect: Logically dead code

Description Of Change: Removed the logically dead code

Issue Description: Logically dead code in SATA Initialization path

Steps To Reproduce: NA

ID: SCGCQ01019763 (Port Of Defect SCGCQ01019438)

Headline: IOP: MCTP: Bad CRC calculation for some Packet Exception Busy Retry responses

Description Of Change: Correct the an off-by-one error in the code that generates the CRC for a Packet Exception Busy Retry when an I2C Read comes in but the request has not been completed to generate a response.

Issue Description: Some Packet Exception Busy Retry responses have a bad CRC value in the CRC field. This only impacts MCTP over I2C when in slave response mode, SCSI IOs out to drives, and drives that were removed.

Steps To Reproduce: Configure the controller to operate as an I2C slave (slave response mode) for MCTP.

Send a command over MCTP that will cause a SCSI IO to go out to the drive, and remove the drive before the SCSI IO can be processed. Then try obtain the response through an I2C Read. A Packet Exception Busy Retry response is sent from the controller with the CRC field set to an incorrect value.

ReleaseOrder ID:	SCGCQ01023303 <a href="#">Open In CQWeb</a>
Headline:	Alpha Release: SAS3FW_MASTER_DEV - 11.250.06.00 F
Release Version:	11.250.06.00
UCM Project:	SAS3FW_MASTER_DEV
Sub UCM Project:	SAS3FW_Phase12.0
UCM Stream:	SAS3FW_MASTER_Invdr_Rel
Release Type:	Alpha
State:	In_Review
Release Baseline:	SAS3FW_MASTER_DEV-2016-02-02-11.250.06.00_REL_1454397781@ ISAS_CTRL_FW
Release Date:	04-FEB-16
Date Generated:	Apr 13, 2016

### Defects Fixed (3):

ID: SCGCQ00943216

<b>Headline:</b> Need to expose pure SEP devices through the inventory command
<b>Description Of Change:</b> Pure SEP devices are not included in the inventory command response.
<b>Issue Description:</b> Through the MCTP Inventory command any pure SEP devices (i.e. not marked as an SSP Target) are not exposed to the management controller.
<b>Steps To Reproduce:</b> Send the inventory command from the management controller to the controller and have a backplane with a pure SEP device attached to the controller.
<b>ID:</b> SCGCQ00999741
<b>Headline:</b> (Sata Only) Spun down SATA drive showed up as non NCQ drive after initialization.
<b>Description Of Change:</b> A check was added in completion handler of read log command during SATA initialization to fail the SATA initialization in case the command fails so that the initialization can be tried again.
<b>Issue Description:</b> First command send to a spun down SATA drive results into timeout. In a recent change to support SMR SATA drives, read log command is being sent instead of identify device. In the function handling the completion of read log command status of command is not being checked and SATA initialization is allowed to continue even if the command fails or times out. Some SATA drives after the timeout of first command instead of failing send all zero as data of next command which is identify device command this results in drives being set as non NCQ.
<b>Steps To Reproduce:</b> Connect a SATA drive to controller Spun down the drive by issuing a Start Stop SCSI command to stop the drive. Reset the controller and observe the spun down SATA drive comes up as non NCQ drive after initialization.
<b>ID:</b> SCGCQ01022368
<b>Headline:</b> PL: I/O timeout while running both auto and non-auto I/Os.
<b>Description Of Change:</b> Firmware uses a different mechanism to determine if the async event fifo is empty.
<b>Issue Description:</b> I/O timeout could occur when running read/write I/Os (auto) and non-read/write I/Os through FPE, especially when the non-read/write I/Os are single threaded.
<b>Steps To Reproduce:</b> Run fast path read/write I/Os in the background. Then issue non-auto I/Os to drives single-threadedly.

**ReleaseOrder ID:** **SCGCQ01015148** [\\_Open In CQWeb](#)

**Headline:** **Alpha Release: SAS3FW\_MASTER\_DEV - 11.250.05.00 F**

**Release Version:** **11.250.05.00**

**UCM Project:** **SAS3FW\_MASTER\_DEV**

**Sub UCM Project:** **SAS3FW\_Phase12.0**

**UCM Stream:** **SAS3FW\_MASTER\_Invdr\_Rel**

**Release Type:** **Alpha**

**State:** **Superseded**

**Release Baseline:** **SAS3FW\_MASTER\_DEV-2016-01-20-11.250.05.00\_REL\_1453281215@  
ISAS\_CTRL\_FW**

**Release Date:** **20-JAN-16**

**Date Generated:** **Apr 13, 2016**

Defects Fixed (2):

<b>ID:</b> SCGCQ00926931
<b>Headline:</b>
<b>Description Of Change:</b>
<b>Issue Description:</b>
<b>Steps To Reproduce:</b>
<b>ID:</b> SCGCQ01009227 (Port Of Defect SCGCQ00934341)
<b>Headline:</b> PL: Unexpected Open Reject (Protocol Not supported) is observed from target mode
<b>Description Of Change:</b> Target mode firmware is to clear new initiator interrupt first before sending out open reject (retry).
<b>Issue Description:</b> Target mode controller sometimes would mistakenly return Open Reject (Protocol not supported) for open requests.
<b>Steps To Reproduce:</b> Two I/T controllers connects to each other. Break the link repeatedly.

**ReleaseOrder ID:** **SCGCQ01006463** [\\_Open In CQWeb](#)

**Headline:** **Pre-Alpha Release: SAS3FW\_MASTER\_DEV - 11.250.04.**

**Release Version:** **11.250.04.00**

**UCM Project:** **SAS3FW\_MASTER\_DEV**

**Sub UCM Project:** **SAS3FW\_Phase12.0**

**UCM Stream:** **SAS3FW\_MASTER\_Invdr\_Rel**

**Release Type:** **Pre-Alpha**

**State:** **Superseded**

**Release Baseline:** **SAS3FW\_MASTER\_DEV-2016-01-11-11.250.04.00\_REL\_1452528798@  
ISAS\_CTRL\_FW**

**Release Date:** **22-JAN-16**

**Date Generated:** **Apr 13, 2016**

Defects Fixed (2):

<b>ID:</b> SCGCQ00998155
<b>Headline:</b> PL: SAS3 PHASE12 RAID creation failing with SATA drives.
<b>Description Of Change:</b> Checking status directly from register, instead of checking it from local variable.
<b>Issue Description:</b> Raid creation is failed when tried to create a RAID using SATA drives.
<b>Steps To Reproduce:</b> - Flash the Fury 3008 with the latest Phase12 IR FW, BIOS and UEFI under test. - Connect 4 SATA (enclosure attached) ) drives to the controller. - Launch UEFI HII application and try to create RAID1 with two SATA drives.
<b>ID:</b> SCGCQ01004143
<b>Headline:</b> PL: Pointer access to a variable type could cause fault in IOPs using PLI_CTRL_REQ_SET_SINGLE_DUAL_CONTEXT_TXDMA
<b>Description Of Change:</b> Modified the new debug print to just print the value.
<b>Issue Description:</b> A new debug print was trying to access the address of variable type and causing core exception in IOPs that use PLI_CTRL_REQ_SET_SINGLE_DUAL_CONTEXT_TXDMA.
<b>Steps To Reproduce:</b> IOPs that send PLI Control request for PLI_CTRL_REQ_SET_SINGLE_DUAL_CONTEXT_TXDMA would face the problem.

Enhancements Implemented (3):

<b>ID:</b> SCGCQ01000193
<b>Headline:</b> Return EEDP/DIF error data of the first error frame detected by the hardware during READ in the MPI Reply error message frame
<b>Description Of Change:</b> As part of this new enhancement, the EEDP/DIF Error data of the first error frame detected by the hardware for the READ commands will be returned in the MPI Reply error message frame. The new set of EEDP/DIF error values returned are the hardware observed Application Tag, Reference Tag and the Guard value during READ. Check the latest MPI specification on the new fields added in the MPI Reply error message frame pertaining to EEDP.
<b>ID:</b> SCGCQ01000709
<b>Headline:</b> To support non-contiguous slot numbers defined in Manufacturing page 7.
<b>Description Of Change:</b> This feature supports the configuration of the non-contiguous slot numbers in Manufacturing page 7.

ID: SCGCQ00927976 (Port Of EnhancementRequest SCGCQ00927749)

Headline: IOP/PL: Use 128 byte reply message size

Description Of Change: Due to restrictions in certain host drivers, firmware is only allowed to use 128 byte reply message frames. This change will implement the changes in the IOP, along with some issues in the PL to ensure the correct actions are taken.

ReleaseOrder ID: SCGCQ01001481 [Open In CQWeb](#)

Headline: Pre-Alpha Release: SAS3FW\_MASTER\_DEV - 11.250.03.

Release Version: 11.250.03.00

UCM Project: SAS3FW\_MASTER\_DEV

Sub UCM Project: SAS3FW\_Phase12.0

UCM Stream: SAS3FW\_MASTER\_Invdr\_Rel

Release Type: Pre-Alpha

State: Superseded

Release Baseline: SAS3FW\_MASTER\_DEV-2015-12-30-11.250.03.00\_REL\_1451485151@  
\\SAS\_CTRL\_FW

Release Date: 31-DEC-15

Date Generated: Apr 13, 2016

Defects Fixed (2):

ID: SCGCQ01001465

Headline: Invader: Latency observed during controller diag reset operations or during controller boot

Description Of Change: The redundant and unintended variable declaration was removed, thus allowing original discovery flow to execute and port enable.

Issue Description: There was a variable in the recent discovery feature which was declared twice unintentionally and got unchecked during a merge.  
Due to this, a condition check was failing and caused port enable to be delayed, until port enable timer times out.

Steps To Reproduce: Flash the SAS3 controller with latest release. Now connect two enclosure with mix of SAS/SATA Drives. Perform diag reset and verify that controller reset takes longer time.

ID: SCGCQ00999910 (Port Of Defect SCGCQ00897639)

Headline: PL: SSD drop by SAS3008 during the hotplug test.

Description Of Change: Added a extra check to ensure that the code path will execute only when a Gen1 expander is connected.

Issue Description: With an unsupported EDFB expander configuration from the customer, IOC firmware hits a case in firmware code path which mainly intended for handling a particular case when a Gen1 Expander is connected. If the Firmware hits this case, IOC will send a phy operation link reset to connected SSD drive after every discovery.

Steps To Reproduce: This issue currently reproducing with hotplug test with below configuration.  
1..Enable EDFB in both HBA and Cobra expander.  
2..Set G4 with SSC and G4 without SSC to 0 for all phy in Cobra, that means the max physical link rate is limited to 6G.

Enhancements Implemented (9):

ID: SCGCQ00686666

Headline: MPI 2.6: Extend Task Management - Target Reset Method to include PCIe devices

Description Of Change: Added bits to control whether a hot reset or protocol level reset is performed when a Target Reset is done to a PCIe device.

ID: SCGCQ00827088

Headline: MPI 2.6: BootDeviceSelect and Host Boot changes for Ventura

Description Of Change: Updated text in MPI 2.6 rev F and update doc. Added defines to mpi2.h.

ID: SCGCQ00852827

Headline: MPI 2.6: SRIOV support for PCIe devices

Description Of Change: Added IOCCapabilities bit to indicate PCIe SRIOV support and added three new fields in IOCFacts reply message to include SGE modifier fields.

ID: SCGCQ00852831

Headline: MPI 2.6: Update Flash Signature.

Description Of Change: Updated MPI2.6 spec and added defines to MPI header files.

ID: SCGCQ00872169

Headline: MPI 2.6: add new feature to control NVMe SGL format

Description Of Change: Added ConfigurationFlags field to IOC Init message along with definition of bit to enable/disable NVMe SGL format. Added control operations to enable and disable SGL format for a specific NVMe device. Added bit in PCI device page 2 to indicate current configuration.

ID: SCGCQ00884740

Headline: MPI 2.6: Additional PCIe Enumeration Event EnumerationStatus bit

Description Of Change: Added define for new enumeration status bit to indicate there are more devices than resources.

ID: SCGCQ00988360

Headline: MPI 2.5: Add additional EEDP Error Reporting capability to SCSI IO Reply

Description Of Change: Modified SCSI IO Reply to include new field.

ID: SCGCQ00996127

Headline: MPI 2.5: Modify "SAS IO Unit Page 4" to add a new field "SATAHintingTimeout"

Description Of Change: Added new field to SAS IO Unit page 4.

ID: SCGCQ00996678

Headline: PL: Discovery due to non responding SATA drive is now timed to last for the amount of seconds configured in NVDATA

Description Of Change: If there are any SATA devices which do not respond with InitialFIS, then discovery will keep restarting for SATA HINTING. But now, PL firmware will timeout after 'X' seconds configured in the SAS IO UNIT PAGE 4 and complete the discovery. The drive(s) which never responded with InitialFIS within timeout period would not show up as discovered device(s). This avoids never ending discovery restarts by PL for such non responding drives in the topology.

ReleaseOrder ID: SCGCQ01000213 [Open In CQWeb](#)

Headline: Pre-Alpha Release: SAS3FW\_MASTER\_DEV - 11.250.02.

Release Version: 11.250.02.00

UCM Project: SAS3FW\_MASTER\_DEV

Sub UCM Project: SAS3FW\_Phase12.0

UCM Stream: SAS3FW\_MASTER\_Invdr\_Rel

Release Type: Pre-Alpha

State: Superseded

Defects Fixed (6):

ID: SCGCQ00994396

Headline: To properly handle the case of configuring the specific server backplanes of type direct attached SEP and In-band SEP

Description Of Change: The specific server backplanes of type Inband SEP or direct attached SEP where the issue is observed is configured properly.

Issue Description: The specific direct attached SEP and In-band SEP server backplanes were not configured properly which results in drop of SEP device.

Steps To Reproduce: Connect the Invader controller to the specific server backplane of Inband SEP. Since this is not configured of its type during discovery process, the SES diagnostic command fails on repeated retries.

ID: SCGCQ00930637 (Port Of Defect SCGCQ00928401)

Headline: PL: 265D fault when injecting errors into the data stream from a SATA drive

Description Of Change: Added a check for when the variable is assigned a NULL value. If NULL, then the variable will not be accessed and firmware will continue on.

Issue Description: A SATA error is received while trying to obtain the message ID (MID) in the Rx Context Manager. When this occurs, the MID cannot be validated resulting in a variable being assigned a NULL value. Firmware later attempts to access this variable which results in this Fault.

Steps To Reproduce: Run stress to a topology consisting of SATA drives. While stress is running to the topology, inject errors into the data stream from SATA drives.

ID: SCGCQ00991692 (Port Of Defect SCGCQ00976691)

Headline: Diagnostic command fails with the specific server backplane expander

Description Of Change: The specific server backplane expander where the issue is observed is configured to Internal expander.

Issue Description: The SES diagnostic command fails for repeated retries.

Steps To Reproduce: Connect the Invader controller to the specific server backplane with internal expander. Since this is not configured as internal expander during discovery process the SES diagnostic command fails on repeated retries.

ID: SCGCQ00991711 (Port Of Defect SCGCQ00926285)

Headline: Some of the drives under external enclosure are marked as direct attached.

Description Of Change: The condition check modified to customer specific internal expander, so that only those expanders will be marked internal.

Issue Description: Some of the drives under the external enclosure was listed as direct attach. The issue was with the condition check of the SMP response specific to particular customer internal expander which marks the enclosure as Internal, entered for the external enclosure as well.

Steps To Reproduce: Connect the external enclosure populated with drives on all slots.

ID: SCGCQ00991716 (Port Of Defect SCGCQ00907921)

Headline: Port Status Yellow LED GPIO not working

Description Of Change: There was a mask in firmware used to switch between different behaviors for the Yellow LED. This mask was fixed.

Issue Description: The standard Port Status Yellow LED GPIO fails to properly turn on and off with link changes. Param1 for the corresponding GPIO in Manufacturing Page 6 is set to 0.

Steps To Reproduce: Configure Manufacturing Page 6 in the NVDATA to have a GPIO configured for the Port Status Yellow LED GPIO, and set Param1 to 0. Configure Param3 to monitor the link status of specific PHYs.

Send a Port Enable to the controller. Push and pull cables and drives connected to the PHYs being monitored by the GPIO through Param3. Note the failure to properly change the LED ON/OFF, which is tied to the configured GPIO.

ID: SCGCQ00991772 (Port Of Defect SCGCQ00720114)

Headline: pl timestamp print fills ring buffer

Description Of Change: Modified the firmware to not add a time stamp print to the ring buffer by default and created a CLI to set the frequency of adding a print. Setting the value to 0 means no print, 1 is 2 second interval, 2 is 1 second interval and 3 is every timer tick. The higher the number the more frequency

Issue Description: The PL timer function adds a time stamp print to the ring buffer everytime it is called. This is useful for a very limited number of cases. Typically it just fills the ring buffer and pushes out useful information.

Steps To Reproduce: NA

Enhancements Implemented (2):

ID: SCGCQ00979804

Headline: PL:Remove the supported code of the now obsolete MPI2\_SASIOUNIT1\_CONTROL\_CLEAR\_AFFILIATION.

Description Of Change: Since MPI2\_SASIOUNIT1\_CONTROL\_CLEAR\_AFFILIATION is obsolete in MPI2.5, PL code should not be using this and remove the code related to CCA for SATA drives

ID: SCGCQ00964283 (Port Of EnhancementRequest SCGCQ00954684)

Headline: PL: Add awareness for Avago's Cub expander

Description Of Change: Added functionality where our firmware will now recognize Avago's new Cub expander. Once recognized, firmware will be configured to enable DataBolt.

ReleaseOrder ID:

SCGCQ00995282\_Open In CQWeb

Headline:

Pre-Alpha Release: SAS3FW\_MASTER\_DEV - 11.250.01.

Release Version:

11.250.01.00

UCM Project:

SAS3FW\_MASTER\_DEV

Sub UCM Project:

SAS3FW\_Phase12.0

UCM Stream:

SAS3FW\_MASTER\_Invdr\_Rel

Release Type:

Pre-Alpha

State:

Superseded

Release Baseline:

SAS3FW\_MASTER\_DEV-2015-12-15-11.250.01.00\_REL\_1450176470@ISAS\_CTRL\_FW

Release Date:

16-DEC-15

Date Generated:

Apr 13, 2016

Defects Fixed (10):

ID: SCGCQ00953463

Headline: PL: Fault 0xD102 while executing Write Buffer SCSI Command to SATA Drives

Description Of Change: Remove the temporary message frames from the abort list of task management, before the task management completion state. This avoids the attempt to reply for the temporary message frames.

Issue Description: Write Buffer SCSI Command can have a ALLOCATION LENGTH mentioned in the CDB, but through sg3\_utils application or similar the data length can be provided with lesser size than the size in ALLOCATION LENGTH of CDB. So the the SGL allocated by the host application will be based on the smaller data length size provided. Hardware will get interrupted for the smaller SGL address during DMA, causing task management to be initiated to clear the message frame. Temporary message frames are created internally to perform the SATL, and was added in task management abort list and never removed. PL tries to fail and reply the temporary message frame and faults.

Steps To Reproduce: Fire the below command from sg3\_utils to a SATA drive:  
sg\_raw /dev/sgX 3b 02 00 00 00 00 00 02 00 00 -infile=512\_Hex s 511 -v

ID: SCGCQ00941520 (Port Of Defect SCGCQ00934325)

Headline: IOP: Faulting for correctable L2 parity errors

Description Of Change: Change the code to count up to 100 correctable L2 errors, and only after meeting that condition fault.

**Issue Description:** The controller is unnecessarily faulting for correctable L2 parity errors. The controller shouldn't fault on the first correctable error, but should fault after a relatively large number. Faulting after 100 correctable errors was the recommended number as so few occur in even a year of a large set of controllers, but 100 will clearly catch a problem on a specific controller.

**Steps To Reproduce:** Generate a correctable L2 parity error. The controller faults on the first correctable L2 parity fault.

ID: SCGCQ00941521 (Port Of Defect SCGCQ00934337)

### Headline: PL: Initiator/Target moved can generate two Target Add Events

**Description Of Change:** There is a check missing when sending Target Add events up to the host. It does not check if the device had a target remove previously sent. Since the device was no longer missing, the standard checks to prevent this situation were passed.

**Issue Description:** There is a timing window where an initiator/target on the topology can be moved, and the controller sends a SAS Initiator Device Change for Initiator Missing event, and then a SAS Topology Change for Target Missing. Right before this the device comes back so the target is no longer missing, but the missing events must be sent to properly clean up the initiator side. A SAS Topology Target Add is incorrectly sent before the host sends a SAS IO Unit Control Remove Device operation. Then upon processing the remove another Target Add is sent back up.

**Steps To Reproduce:** Connect the controller in target mode to an initiator/target with a long chain of enclosures between them with dual path between the controller and first enclosure. Also put the initiator/target in dual path to its immediate enclosure. Put many drives in the enclosures.

Run IOs to the drives and initiator/target and from the initiator/target.

Remove one path of the controller to the first enclosure and connect it directly to the initiator/target. The Initiator missing event was sent, but not the Target missing event.

ID: SCGCQ00948045 (Port Of Defect SCGCQ00942005)

**Headline:** Add a NVDATA option to enable or disable the Enhancement - Bandwidth based PL algorithm to set hardware with Single or Dual Context.

**Description Of Change:** Added a new NVDATA option to enable or disable the Enhancement - Bandwidth based PL algorithm to set hardware with Single or Dual Context (SCGCQ00850293). The new NVDATA bit would be 0 by default for other IOPs that would not leverage the IT stack NVDATA, so by default the older PL Algorithm would be enabled which enables Dual Context if an Expander is attached.

In IT stack, the new NVDATA bit will be set to 1 and will enable the new Enhancement - Bandwidth based PL algorithm to set hardware with Single or Dual Context.

**Issue Description:** As part of an earlier Enhancement - "Bandwidth based PL algorithm to set hardware with Single or Dual Context (SCGCQ00850293)", there were many new NVDATA values added in IT IOP stack. Since, other IOPs would be using their own NVDATA, the new values would be 0 for PL and cause the Sas Core to always be set to Single Context for all transports. This could cause performance issues in Non-IT IOP stack.

**Steps To Reproduce:** Flash a Non-IT IOP and observe that always Single context is enabled. This could cause performance issues in Non-IT IOP stack.

**ID:** SCGCQ00955068 (Port Of Defect SCGCQ00915308)

**Headline:** PL: Initiator/target moved can result in Initiator missing event but no corresponding Target missing event

**Description Of Change:** There was a check in sending the target missing event that was failing because the location of the initiator/target changed. This check was nuanced to only care about that if the device is only a target.

**Issue Description:** There is a timing window where an initiator/target on the topology can be moved, and the controller sends a SAS Initiator Device Change for Initiator Missing event, and then a SAS Topology Change for PHY Changed. This is a mismatch in the behavior since both the initiator and target have the same device handle. Both an Initiator Missing and a Target Missing event should be sent.

**Steps To Reproduce:** Connect the controller in target mode to an initiator/target with a long chain of enclosures between them with dual path between the controller and first enclosure. Also put the initiator/target in dual path to its immediate enclosure. Put many drives in the enclosures.

Run IOs to the drives and initiator/target and from the initiator/target.

Remove one path of the controller to the first enclosure and connect it directly to the initiator/target. The Initiator missing event was sent, but not the Target missing event.

**ID:** SCGCQ00955069 (Port Of Defect SCGCQ00916929)

## Headline: IOP: MCTP: Seeing extra byte in second I2C packet of a message

**Description Of Change:** One location in the code had the size of the packet length include the I2C address byte.

**Issue Description:** There is an extra garbage byte at the end of a second I2C packet in a message. This primarily impacts the standard I2C mode (controller is allowed to act as both an I2C master and slave), where controller controls the size of the packet.

**Steps To Reproduce:** Send a request that generates multi-packet responses in the standard I2C mode (not slave response mode).

ID: SCGCQ00955099 (Port Of Defect SCGCQ00934930)

**Headline:** PL: PL code is not supposed to use division

**Description Of Change:** Modified to make division of 64 bit values using a mathematical way, instead of direct division.

**Issue Description:** PL code was using 64 bit division. This could cause PL Library to be not linked properly in other IOP builds.

### Steps To Reproduce: Build Non-IT Stack IOP with the PL Library

ID: SCGCQ00955132 (Port Of Defect SCGCQ00872141)

**Headline:** PL: Firmware does not fill in SAS IO Unit Page 16 Timestamp field correctly

**Description Of Change:** Code has been added to use IOCInit Timestamp field to populate SAS IO Unit Page 16 and SAS Phy Counter Event Timestamp fields.

**Issue Description:** It is found that FW does not use the IOCInit Timestamp field to fill in the SAS IO Unit Page 16 and SAS Phy Counter Event Timestamp fields.

**Steps To Reproduce:** NA

ID: SCGCQ00955133 (Port Of Defect SCGCQ00927500)

## Headline: IOP: False Reply Parity Error Firmware Workaround

**Description Of Change:** When the false reply parity error occurs, clear out the interrupt and return. If it was a real parity error, then the error would either be seen upstream or downstream as well, and another parity error would be generated.

**Issue Description:** In the IOP a false reply parity error is being generated, which results in a 0x1500 fault.

**Steps To Reproduce:** Run in hostboot with specialized drivers and run IOs. Some controllers never see the issue, while others see the issue in a highly consistent manner.

ID: SCGCQ00966698 (Port Of Defect SCGCQ00929810)

**Headline:** IOP: Differentiate between L2 correctable and uncorrectable faults

**Description Of Change:** The L2 error interrupt handling code now differentiates between correctable (0x26B6 fault) and uncorrectable (0x26B4) L2 errors. Additional information is also logged in the ring buffer on the off chance it is available.

**Issue Description:** Differentiate between L2 correctable and uncorrectable faults. They share the same fault code (0x26B4), which makes distinguishing between them almost impossible without a register dump.

**Steps To Reproduce:** Generate an L2 error.