

ReleaseOrder ID:	SCGCQ00953460
Headline:	ReleaseCandidate Release: SAS3FW_Phase11.0 - 11.0
Release Version:	11.00.00.00
UCM Project:	SAS3FW_MASTER_DEV
Sub UCM Project:	SAS3FW_Phase11.0
UCM Stream:	SAS3FW_Phase11.0_Rel
Release Type:	ReleaseCandidate
State:	In_BST
Release Baseline:	SAS3FW_Phase11.0-2015-11-18-11.00.00.00_REL_1447914539@ ISAS_CTRL_FW
Release Date:	
Date Generated:	Nov 18, 2015

Release History

- [SCGCQ00947973](#) - Beta Release: SAS3FW_MASTER_DEV - 10.250.07.00 Fi
- [SCGCQ00940062](#) - Beta Release: SAS3FW_MASTER_DEV - 10.250.06.00 Fi
- [SCGCQ00930238](#) - Alpha Release: SAS3FW_MASTER_DEV - 10.250.05.00 F
- [SCGCQ00922714](#) - Alpha Release: SAS3FW_MASTER_DEV - 10.250.04.00 F
- [SCGCQ00915595](#) - Pre-Alpha Release: SAS3FW_MASTER_DEV - 10.250.03.
- [SCGCQ00909996](#) - Pre-Alpha Release: SAS3FW_MASTER_DEV - 10.250.02.
- [SCGCQ00904201](#) - Pre-Alpha Release: SAS3FW_MASTER_DEV - 10.250.01.

ReleaseOrder ID:	SCGCQ00947973 _Open In CQWeb
Headline:	Beta Release: SAS3FW_MASTER_DEV - 10.250.07.00 Fi
Release Version:	10.250.07.00
UCM Project:	SAS3FW_MASTER_DEV
Sub UCM Project:	SAS3FW_Phase11.0
UCM Stream:	SAS3FW_MASTER_Invdr_Rel
Release Type:	Beta
State:	In_Review
Release Baseline:	SAS3FW_MASTER_DEV-2015-11-09-10.250.07.00_REL_1447059153@ ISAS_CTRL_FW
Release Date:	09-NOV-15
Date Generated:	Nov 18, 2015

Defects Fixed (1):

- ID: SCGCQ00945560 (Port Of Defect SCGCQ00933048)
- Headline: SSD Marked Failed After Encountering 03/1100 Sense (Medium Error)
- Description Of Change: Added a workaround in PL firmware, which ignores the NCQ Tag and uses the LBA in the NCQ error log to determine which outstanding IO encountered the error. The workaround is only executed for a SATA drive attached to an EDFB enabled expander, and only if the error is Uncorrectable Error (translated to SCSI Medium Error).
- Issue Description: There's an Avago Gen3 expander hardware bug that can lead to PL applying the wrong sense data to IOs that are failed after a SATA NCQ error. In this NCQ error handling scenario, there's one IO that hit the error, and the others are so called "collateral aborts", meaning they did hit an error, but must be aborted anyway. PL uses the NCQ Tag value in the NCQ error log to determine which IO actually hit the error. The expander bug can cause the Tag to be incorrect. Ultimately, MegaRAID can end up failing a drive because of this issue. This can only happen if:
- EDFB (DataBolt) enabled Avago Gen3 expander
 - Certain SATA SSDS that do not send a DMA Setup FIS prior to indicating the error in a Set Device Bits FIS.
- Steps To Reproduce:
- Use MegaRAID controller
 - Use EDFB (DataBolt) enabled Avago Gen3 expander
 - Use certain SATA SSDS that do not send a DMA Setup FIS prior to indicating the error in a Set Device Bits FIS, attached to EDFB enabled expander.
 - Inject medium errors on the drive. Then read back the whole thing using small block sizes.

ReleaseOrder ID:	SCGCQ00940062 _Open In CQWeb
Headline:	Beta Release: SAS3FW_MASTER_DEV - 10.250.06.00 Fi
Release Version:	10.250.06.00
UCM Project:	SAS3FW_MASTER_DEV
Sub UCM Project:	SAS3FW_Phase11.0
UCM Stream:	SAS3FW_MASTER_Invdr_Rel
Release Type:	Beta
State:	In_Review
Release Baseline:	SAS3FW_MASTER_DEV-2015-10-27-10.250.06.00_REL_1445941264@ ISAS_CTRL_FW
Release Date:	28-OCT-15
Date Generated:	Nov 18, 2015

Defects Fixed (7):

- ID: SCGCQ00932707
- Headline: The locate was not working for a particular slot in the external enclosure
- Description Of Change: The correct phy index picked up based upon the enclosure index, so that the right slot mapping information is assigned.
- Issue Description: The locate functionality was not working for a particular slot in an external enclosure. This issue was due to the firmware picking up the wrong phy index, hence was not able to locate properly.
- Steps To Reproduce: Test the locate functionality for a particular slot number in the customer specific external enclosure.

- ID: SCGCQ00939065
- Headline: Coverity defects : Impossible comparison of variable with 2 different values at same time, and an unused value.
- Description Of Change: 1) Corrected such that, comparison of variable with 2 different values are at 2 different instances.
2) An unused value was removed.
- Issue Description: 1) Impossible comparison of variable with 2 different values at same time would never satisfy and so, the code within it would sometimes not execute
2) An unused value which was overwritten.
- Steps To Reproduce: NA

- ID: SCGCQ00939071
- Headline: Coverity defects : The function seem called twice and identical code in different branches.
- Description Of Change: 1) Removed second function pointer dereference.
2) New change will ensure that the identical code block executes always without if and else check.
- Issue Description: 1) Same function is called twice called twice consecutively.
2) Identical code in if and else branches. Looks like code in else block executes always.
- Steps To Reproduce: NA

ID: SCGCQ00939074
Headline: Coverity Defect :: Uninitialized scalar variable
Description Of Change: Scalar variable is initialized to zero.
Issue Description: One of the scalar variable is not initialized.
Steps To Reproduce: NA

ID: SCGCQ00939121
Headline: Coverity defect : Dead code due to wrong comparison
Description Of Change: Modified the check in such a way that dead code could run, if the condition was satisfied.
Issue Description: There was a dead code which would never execute due to a wrong comparison.
Steps To Reproduce: NA

ID: SCGCQ00939122
Headline: Coverity defects :: Constant Expression Result
Description Of Change: Changed the condition check for correct execution.
Issue Description: Constant Expression Result, condition check which will be always true.
Steps To Reproduce: NA

ID: SCGCQ00939156
Headline: Coverity defect : Dead code due to repeated comparison
Description Of Change: Removed the second occurrence.
Issue Description: There was a dead code which would never execute due to repeated comparison in if and else if.
Steps To Reproduce: NA

ReleaseOrder ID: SCGCQ00930238 [Open In CQWeb](#)
Headline: Alpha Release: SAS3FW_MASTER_DEV - 10.250.05.00 F
Release Version: 10.250.05.00
UCM Project: SAS3FW_MASTER_DEV
Sub UCM Project: SAS3FW_Phase11.0
UCM Stream: SAS3FW_MASTER_Invdr_Rel
Release Type: Alpha
State: In_Review
Release Baseline: SAS3FW_MASTER_DEV-2015-10-08-10.250.05.00_REL_1444295309@
\\SAS_CTRL_FW
Release Date: 27-OCT-15
Date Generated: Nov 18, 2015

Defects Fixed (3):

ID: SCGCQ00915201
Headline: PL SATL: SCSI ATA Passthrough Code Should Check For Correct CDB Length
Description Of Change: Added a check for this case, so that the controller will reply with illegal request/invalid field in CDB. Also added a loginfo value for this, and the other cases where a SCSI ATA passthrough command can be failed by controller firmware.
Issue Description: A SCSI ATA passthrough 12 command was being sent with a CDB length of 16. This caused PL firmware to treat the command as a passthrough 16, which has the fields at different offsets. This in turn caused the wrong command to be sent to the drive, which the drive aborted. It would be better for this case if the controller simply replied to the request with illegal request/invalid field in CDB.
Steps To Reproduce: Send a SCSI ATA passthrough 12 command with a CDB length of 16. Depending on how the ATA fields are set, the drive will likely abort the command, resulting in a sense key of 0x0B.

ID: SCGCQ00915737
Headline: SES command locate not working for IBM enclosure when slot number information source bit set which uses the SES page 0x0A mapping.
Description Of Change: The total length of the SES page 0x0A is increased to four bytes including the header size and also the page header offset initialized to the appropriate value. This fixes the issue of mapping the element index of the last ten slots as well.
Issue Description: The locate operation failed due to improper mapping of element index read from the SES page 0x0A to the MPI slot index. The first fourteen slots of the enclosure was mapped properly but the remaining ten slots were not mapped. Due to this the locate operation failed for last ten slots.
Steps To Reproduce: Test with the IBM enclosure which supports the SES page 0x0A element index mapping.

ID: SCGCQ00923283
Headline: SES command locate fails for first time after discovery when Slot number information source bit is set
Description Of Change: The SEP device mapped bit set appropriately after mapping all the elements to the respective slot index.
Issue Description: The first MPI request received for the locate was not working. This is because since the SES buffer size is limited, the two internal I/O requests generated to map the slot to element index. Thought it was mapped successfully this is marked as not mapped, hence the request completed before sending the locate command to the enclosure.
Steps To Reproduce: Test with any enclosure which supports the SES page 0x0A element index mapping.

ReleaseOrder ID: SCGCQ00922714 [Open In CQWeb](#)
Headline: Alpha Release: SAS3FW_MASTER_DEV - 10.250.04.00 F
Release Version: 10.250.04.00
UCM Project: SAS3FW_MASTER_DEV
Sub UCM Project: SAS3FW_Phase11.0
UCM Stream: SAS3FW_MASTER_Invdr_Rel
Release Type: Alpha
State: In_Review
Release Baseline: SAS3FW_MASTER_DEV-2015-09-23-10.250.04.00_REL_1443007373@
\\SAS_CTRL_FW
Release Date: 28-SEP-15
Date Generated: Nov 18, 2015

Defects Fixed (4):

ID: SCGCQ00897934
Headline: PL: SATL Translation of SCSI Write Buffer Modes 5 and 7 Incorrectly Sets FWFlags_NonAuto bit in HW Context
Description Of Change: Removed the code setting the FWFlags_NonAuto bit, and added code to set the auto mode to FALSE until the first DMA activate FIS is received (allowing firmware to get interrupted as desired).
Issue Description: The SATL code to translate SCSI write buffer modes 5 and 7 sets the FWFlags_NonAuto bit in the HW context. This bit is only supposed to be used during hardware cleanup for a TM. It should not be set in the SATL code
Steps To Reproduce: N/A

ID: SCGCQ00916303
Headline: Copyright information to changed to 2015 from 2014 for nvdata XML files.
Description Of Change: Copyright information changed from 2014 to 2015 for nvdata XML files.
Issue Description: copyright information section in xml files of nvdata is replicating year 2014 instead of 2015
Steps To Reproduce: no

ID:	SCGCQ00921934
Headline:	Disable SMR Drive Support by compiling out option.
Description Of Change:	Below are the changes to be performed to disable SMR feature support. 1) SMR Host Managed drive with signature=0xABCD would not be detected and expose itself with "Device Type"=0x14 in STD INQUIRY cmd data. 2) SMR Host Aware drive will still be detected as a regular SATA drive(that is how it is designed), but INQUIRY VPD PAGE-0xB1 will have new Zoned Field set to value as it was set before(Before it was Reserved field and will remain as Reserved when MSR support is disabled) 3) None of the ZAC commands will work on SMR/NonSMR drive. 4) New Zoned VPD page-0xB6 will not work on SMR/NonSMR drive.
Issue Description:	Disable SMR Drive Support by compiling out option. This change is performed as SMR feature will not be available in Ph-11 GCA. This feature will be enabled back when needed.
Steps To Reproduce:	NA

ID:	SCGCQ00910188 (Port Of Defect SCGCQ00888033)
Headline:	PL Fault 0x6002 When Sending SCSI Security Protocol Out Commands to SATA SSDs
Description Of Change:	Removed the code that was incorrectly setting the hardware flag. Once the DMA activate FIS is received, added code to automate the data transfer, but then interrupt firmware when the device to host FIS is received.
Issue Description:	When sending SCSI Security Protocol Out commands to SATA SSDs, a PL fault 0x6002 can result. When setting up the SCSI to ATA translation, PL firmware was incorrectly setting a hardware flag that should only be used during task management. This flag caused the data to not be sent out. The IO was then failed with underrun status. Later, a TM found the data still in TX hardware, causing the 0x6002 fault.
Steps To Reproduce:	Send SCSI Security Protocol Out commands to SATA drives.

ReleaseOrder ID:	SCGCQ00915595 Open In CQWeb
Headline:	Pre-Alpha Release: SAS3FW_MASTER_DEV - 10.250.03.
Release Version:	10.250.03.00
UCM Project:	SAS3FW_MASTER_DEV
Sub UCM Project:	SAS3FW_Phase11.0
UCM Stream:	SAS3FW_MASTER_Invdr_Rel
Release Type:	Pre-Alpha
State:	In_Review
Release Baseline:	SAS3FW_MASTER_DEV-2015-09-11-10.250.03.00_REL_1441962394@ SAS_CTRL_FW
Release Date:	23-SEP-15
Date Generated:	Nov 18, 2015

Defects Fixed (8):

ID:	SCGCQ00913162
Headline:	For NON SMR Drive, PAGE LENGTH field is incorrect in Supported VPD Pages - VPD page
Description Of Change:	Modified to update the PAGE LENGTH in the Supported VPD Pages according to the number of pages actually supported by the drive.
Issue Description:	PAGE LENGTH in the Supported VPD Pages was not properly updated with the number of pages supported.
Steps To Reproduce:	For NON SMR Drive, send INQUIRY command with VPD page code = 0x00 (Supported VPD Pages). Observe that PAGE LENGTH field shows 9 instead of 8.

ID:	SCGCQ00913178
Headline:	For NON SMR Drive, VPD INQUIRY Command is Not Failed with Expected Response When executed for Unsupported VPD Page
Description Of Change:	For NON SMR drives, added a check to fail the VPD INQUIRY Command for Zoned Block Device Page (0xB6).
Issue Description:	For NON SMR Drive, VPD INQUIRY Command was not failed when executed for Zoned Block Device Page (0xB6).
Steps To Reproduce:	Connect a NON SMR SATA drive to SAS3 controller. To this SATA drive execute a SCSI Inquiry with Page code as 0x00 which passes with data. Now execute a SCSI Inquiry with page code as 0xB1 which passes with data. Now execute a SCSI Inquiry with page code as 0xB6 which passes but the command has to be failed with "CHECK CONDITION status with the sense key set to ILLEGAL REQUEST and the additional sense code set to INVALID FIELD IN CDB"

ID:	SCGCQ00913198
Headline:	For SMR Drive, Zoned Block Device Characteristics VPD Page (0xB6) is not Updated in Supported VPD Pages - VPD page
Description Of Change:	In the Supported VPD Pages data, the array which holds all the supported pages was increased to hold the actual number of pages which could be supported.
Issue Description:	In the Supported VPD Pages data, the array which holds all the supported pages was smaller than the actual number of pages which could be supported.
Steps To Reproduce:	Connect a Host Aware SMR SATA drive to SAS3 controller. To this SATA drive execute a SCSI Inquiry with Page code as 0x00 which passes with data. Verify that the PAGE LENGTH is populated as 0xA but only 9 VPD pages are updated. SMR drive has new Zoned Block Device Characteristics Page (0xB6) support which is not updated in the list.

ID:	SCGCQ00914419
Headline:	For NON SMR Drive, VPD INQUIRY Command to Block Device Characteristics VPD Page (0xB1) is not working.
Description Of Change:	As part of SMR SATL, the new field in the Block Device Characteristics VPD Page (0xB1) will be fetched from ATA Supported Capabilities page only for SMR drives. Modified the SATL such that for Non SMR drives we will not read the ATA Supported capabilities page(0x03), but instead fill the VPD Page (0xB1) in the legacy way through STANDARD INQUIRY data.
Issue Description:	As part of SMR SATL, a new field in the Block Device Characteristics VPD Page (0xB1) has to be fetched from ATA Supported Capabilities page(0x03). But, some of the old SATA drives does not support the ATA Supported capabilities page(0x03). So, we were failing the INQUIRY VPD Page (0xB1) command for old SATA drives, which did not support the ATA Supported capabilities page(0x03).
Steps To Reproduce:	Connect a NON SMR SATA drive to SAS3 controller. To this SATA drive execute a SCSI Inquiry with Page code as 0x00 which passes with data. Now execute a SCSI Inquiry with page code as 0xB1 which fails to provide VPD data.

ID:	SCGCQ00887685 (Port Of Defect SCGCQ00885544)
Headline:	PL: Out of resource condition may cause IOs to be pended indefinitely
Description Of Change:	Modified the code in this error path by changing the order of certain operations to allow cleaning the drive completely.
Issue Description:	When sending SCSI SATA Passthrough IOs to multiple SATA drives, firmware may run out of resources necessary to issue the IOs to the drive. If the a resource allocation fails at a particular point in the process, firmware may not clean the drive up completely, leaving the drive in a state where IOs will be pended indefinitely, leading to the host timing the IOs out. A task management of the affected will successfully clear this state and the IOs will resume.
Steps To Reproduce:	On a topology with lots of SATA drives, send a large number of SCSI SATA Passthrough IOs to those drives, along with a mix of other SCSI IOs, such as Test Unit Ready and Inquiry. If the mix is correct, one or more drives will be left in a bad state and IOs for those drives will time out.

ID:	SCGCQ00888486 (Port Of Defect SCGCQ00860462)
Headline:	PL fault 0xD115 during internal testing
Description Of Change:	Before changing the ownership of the MID there was a check to see if MID is in the abort list of the Task Management, but there was no check to see if MID is already freed. Added additional check to see if MID is already freed and avoid the attempt to work on that MID.
Issue Description:	When the custom IOP called the Rx Interrupt handler late, and called it after a Task Management has already cleared the message frame and replied back to the IOP, we find the late Rx Interrupt handler to attempt a change in the Ownership of that MID. This change in the ownership would be unsuccessful and would cause a fault, as the MID is already freed. Before changing the ownership of the MID there was a check to see if MID is in the abort list of the Task Management, but there was no check to see if MID is already freed.
Steps To Reproduce:	In the custom environment setup with custom IOP, run the IOs and in parallel test by injecting errors.

ID:	SCGCQ00910603 (Port Of Defect SCGCQ00904470)
Headline:	PL: SAS Device Page 0 Entry Device Present for missing expander after Discovery Complete
Description Of Change:	Modified firmware source code such that when an expander is missing from the topology, the Device Present bit in the Flags attribute of SAS Device Page 0 will not be set.
Issue Description:	After pulling a cable connected between the HBA and the first expander, there is a small window of time after discovery is complete and before all devices are completely removed in which a customer can read SAS Device Page 0 and all expander entries will still be present. During this window, SAS Device Page 0 entries still show the expander's Device Present bit being set in the Flags attribute, which implies the expander is still present despite being removed.
Steps To Reproduce:	Connect a HBA to three cascaded expanders with SAS drives connected to each expander. Disconnect the cable between the HBA and the first expander. Read SAS Device Page 0.

ID:	SCGCQ00911372 (Port Of Defect SCGCQ00900221)
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Steps To Reproduce:

1. Using a single SCSI IO Request, write 8192 bytes of data (repeating 'acdbefghijklmnop' pattern) to disk, starting at LBA 0. The disk is formatted with 512 byte blocks and Type 2 Protection Information. The initial Ref Tag is set to 0 and the App Tag is set to 0x1234. The 'Increment Primary Reference Tag' option in EEDPFlags is set to 1, so each LBA should get a Ref Tag that is equal to the LBA number itself.
2. Using a single SCSI IO Request, overwrite LBA 4 with exactly the same data, but set the App Tag to 0x1235.
3. Using a single SCSI IO Request, read 8192 bytes of data starting at LBA 0, with Ref Tag set to 0 and App Tag set to 0x1234. This fails the reply message frame with EEDP_APP_TAG_ERROR, but EEDPDataOffset value was set to 0.

Description Of Change: New logic has been added during StartOfDay to look at Man Page 1 for valid VPD information. If all the VPD bytes are 0s, it will turn off VPD Capability. So that the PCIE Capabilities List doesnt show an ID=0x3 (thats for VPD) and the PCI SIG test will pass.

ReleaseOrder ID: SCGCQ00909996 [Open In CQWeb](#)

Headline: Pre-Alpha Release: SAS3FW_MASTER_DEV - 10.250.02.

Release Version: 10.250.02.00

UCM Project: SAS3FW_MASTER_DEV

Sub UCM Project: SAS3FW_Phase11.0

UCM Stream: SAS3FW_MASTER_Invdr_Rel

Release Type: Pre-Alpha

State: In_Review

Release Baseline: SAS3FW_MASTER_DEV-2015-09-01-10.250.02.00_REL_1441092010@
\\SAS_CTRL_FW

Release Date: 02-SEP-15

Date Generated: Nov 18, 2015

Steps To Reproduce:

- Connect SGPIO enclosure to the Controller.
- Connect drives to the Enclosure.
- Send SEP request to the last drive connected.
- The SEP request will fail since the Slot Number out of bounds check returns error.

Steps To Reproduce: Perform controller resets while running IO. Only reproduced with customer specific hardware.

Description Of Change: To modify the SES Page 0x0A handling such that the slot mapping is done with the PHY Index instead of the Dev Handle. This will ensure that the slot mapping values are available even if no device exists in the slot.

Description Of Change: As part of this SMR

- 1) Detection and support of SMR HA & HM ZAC drives.
- 2) SATL (ZBC->ZAC) support of new ZBC commands
- 3) Additional translation of some existing commands with Extensions for SMR.
- 3) Support of New log page for Zoned Block Device Characteristics.

ReleaseOrder ID: SCGCQ00904201 [Open In CQWeb](#)

Headline: Pre-Alpha Release: SAS3FW_MASTER_DEV - 10.250.01.

Release Version: 10.250.01.00

UCM Project: SAS3FW_MASTER_DEV

Sub UCM Project: SAS3FW_Phase11.0

UCM Stream: SAS3FW_MASTER_Invdr_Rel

Release Type: Pre-Alpha

State: In_Review

Release Baseline: SAS3FW_MASTER_DEV-2015-08-19-10.250.01.00_REL_1439973545@
|SAS_CTRL_FW

Release Date: 31-AUG-15

Date Generated: Nov 18, 2015

Description Of Change: Additional Bit fields have been added in Manufacturing Page 11 in order to provide Customer control over the handling of SAS Broadcast Primitives when the port is configured as Target.