



## SCS Engineering Release Notice

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*GCA Release Version 19.00.00.00 - SAS2FW\_Phase19 (SCGCQ00649040)*

*(SCGCQ00649040) - GCA Release Version 19.00.00.00 - SAS2FW Phase19*

*(SCGCQ00642213) - Phase19 Beta Release Version 18.250.04.00 - SAS2FW Phase19*

*(SCGCQ00631772) - Phase19 Beta Release Version 18.250.03.00 - SAS2FW Phase19*

*(SCGCQ00614638) - Phase19 Alpha Release Version 18.250.02.00 - SAS2FW Phase19*

*(SCGCQ00602046) - Phase19 Pre-Alpha Release Version 18.250.01.00 - SAS2FW Phase19*

*(SCGCQ00594703) - Phase19 Pre-Alpha Release Version 18.250.00.00 - SAS2FW Phase19*



## SCS Engineering Release Notice

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*GCA Release Version 19.00.00.00 - SAS2FW\_Phase19 (SCGCQ00649040)*

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



## SCS Engineering Release Notice

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*Phase19 Beta Release Version 18.250.04.00 - SAS2FW\_Phase19 (SCGCQ00642213)*

### **Change Summary ( Defects=4)**

SCGCQ00620461 (CSET) - Controller unresponsive due to infinite loop

SCGCQ00621883 (CSET) - IOP: Shrinking code size causes memory to be labeled as having an error

SCGCQ00632433 (CSET) - DMAGroup Performance Issue

SCGCQ00641950 (CSET) - when Phase 18 IR FW boot a RAID volume (such as raid 10), 2308 bootup hangs at OROM "Initializing.." and fault 8803 has seen



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Phase19 Beta Release Version 18.250.04.00 - SAS2FW\_Phase19 (SCGCQ00642213)

## Total Defects Resolved (4)

### (SCGCQ00620461 - Port of SCGCQ00612800)

Defect 1/4

**HEADLINE:** Controller unresponsive due to infinite loop  
**DESC OF CHANGE:** Changed code to prevent infinite loop that caused the hang.  
**TO REPRODUCE:** The error was recreated by running a system with > 100 SATA SSD drives and by doing FW Downloads to the enclosures.  
**ISSUE DESC:** Controller becomes unresponsive while running IOs

### (SCGCQ00621883 - Port of SCGCQ00595362)

Defect 2/4

**HEADLINE:** IOP: Shrinking code size causes memory to be labeled as having an error  
**DESC OF CHANGE:** Modified the POST memory test algorithm to not exclude memory used by the firmware image in the valid bit array. If the firmware shrinks in size, the memory that was formerly occupied by the firmware image will be marked as not having an error and can be used.  
**TO REPRODUCE:** Flash a larger firmware image on the controller and allow the controller to boot with that firmware. Perform a simple firmware download to upgrade this firmware image to a new smaller image.  
**ISSUE DESC:** If the firmware code size shrinks to a large enough degree and a controller was originally flashed with larger code, when the new smaller firmware image is flashed, sections of memory that were freed up by the smaller firmware image are now considered to have an error and is not used in the dynamic memory allocation.

### (SCGCQ00632433 - Port of SCGCQ00614494)

Defect 3/4

**HEADLINE:** DMAGroup Performance Issue  
**DESC OF CHANGE:** Implemented the fix which will disable PoolTxDma for any TxDMA which is assigned to a group other than Group 0.  
**TO REPRODUCE:** Run the controller firmware in the customer test environment.  
**ISSUE DESC:** Customer was seeing a performance issue due to incorrect settings for TxDMA for DMA groups.

### (SCGCQ00641950 - Port of SCGCQ00592317)

Defect 4/4

**HEADLINE:** when Phase 18 IR FW boot a RAID volume (such as raid 10), 2308 bootup hangs at OROM "Initializing.." and fault 8803 has seen  
**DESC OF CHANGE:** Changed the allocation of memory for configuration during device discovery.  
**TO REPRODUCE:** Concatenate customer's NVDATA with high host credit values with raw FW. Fault 0x8803 fault has occurred upon reboot after creating RAID volume.  
**ISSUE DESC:** Concatenate customer's NVDATA with high host credit values with raw FW. Fault 0x8803 fault has occurred upon reboot after creating RAID volume.



## SCS Engineering Release Notice

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*Phase19 Beta Release Version 18.250.03.00 - SAS2FW\_Phase19 (SCGCQ00631772)*

### **Change Summary ( Defects=1)**

SCGCQ00615518 (DFCT) - Report Luns Command to a SATA drive fails with CheckCondition/Invalid Field in CDB when Allocation length set to Zero



## SCS Engineering Release Notice

Phase19 Beta Release Version 18.250.03.00 - SAS2FW\_Phase19 (SCGCQ00631772)

### Total Defects Resolved (1)

(SCGCQ00615518)		Defect 1/1
<b>HEADLINE:</b>	Report Luns Command to a SATA drive fails with CheckCondition/Invalid Field in CDB when Allocation length set to Zero	
<b>DESC OF CHANGE:</b>	The controller firmware will now complete the report lun command successfully with no data transfer if the allocation length is set to zero.	
<b>TO REPRODUCE:</b>	Send report lun to the controller firmware with allocation length set to zero.	
<b>ISSUE DESC:</b>	The controller firmware was behaving according to SPC3. If the allocation length for report lun is less than 16 bytes, it would fail the command with invalid field in CDB. SPC4 does not have the 16 byte requirement for report lun allocation length.	



## SCS Engineering Release Notice

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*Phase19 Alpha Release Version 18.250.02.00 - SAS2FW\_Phase19 (SCGCQ00614638)*

### **Change Summary ( Defects=1)**

SCGCQ00605804 (CSET) - PL: Read Log Ext command timeout.



## SCS Engineering Release Notice

Phase19 Alpha Release Version 18.250.02.00 - SAS2FW\_Phase19 (SCGCQ00614638)

### Total Defects Resolved (1)

(SCGCQ00605804 - Port of SCGCQ00342412)		Defect 1/1
<b>HEADLINE:</b>	PL: Read Log Ext command timeout.	
<b>DESC OF CHANGE:</b>	During NCQ error handling, prior to issuing Read Log Ext command to the concerned SATA device, the CurrentMid in the SATA table for the device is updated and the hardware context area corresponding to the CurrentMid is setup for mid validity.	
<b>TO REPRODUCE:</b>	Attach controller to an expander. Attach NCQ capable SATA drives to the expander. Run IOs to the SATA drives and perform error injection so that the affected drive(s) sends out Set Device Bits FIS with error. Observe in the SAS trace that sometimes even after data has been received for the Read Log Ext command, controller issues task management to reset the drive(s).	
<b>ISSUE DESC:</b>	Read Log Ext command times out resulting in SATA device getting reset.	





## SCS Engineering Release Notice

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*Phase19 Pre-Alpha Release Version 18.250.01.00 - SAS2FW\_Phase19 (SCGCQ00602046)*

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### **Change Summary ( Defects=3 Enhancements=4)**

SCGCQ00496168 (CSET) - (DDR3) CKE and Reset clamping circuit can cause DDR errors at initialization time

SCGCQ00599997 (CSET) - Raid Accelerator IOs can hang if the stream of IOs suddenly stops

SCGCQ00600001 (CSET) - An invalid frame sent during a PIO-mode SATA passthrough command results in resetting the drive

SCGCQ00557625 (ENHREQ) - Print SES page data length and PL SES Diag page buffer size to ring buffer

SCGCQ00569175 (ENHREQ) - MPI 2.0: Add product-specific Flag bit to Clean Tool

SCGCQ00574358 (ENHREQ) - MPI2: Allow UEFI and BIOS to be Enabled/Disabled individually

SCGCQ00504068 (CSET) - Extend FLASH Erase Timeout for Future chips



# SCS Engineering Release Notice

Phase19 Pre-Alpha Release Version 18.250.01.00 - SAS2FW\_Phase19 (SCGCQ00602046)

## Total Defects Resolved (3)

(SCGCQ00496168 - Port of SCGCQ00496140) Defect 1/3

**HEADLINE:** (DDR3) CKE and Reset clamping circuit can cause DDR errors at initialization time

**DESC OF CHANGE:** The library will manually toggle the M\_RST\_N for slightly greater than 200us when the memory is not in self refresh. The reset gets the DRAM devices into the correct state and ready for initialization.

**TO REPRODUCE:** To reproduce the issue, use customer specific board design with new DRAM devices and attempt initialization. A majority of boards will fail initialization or the initial attempts to utilize the memory. Other board designs may exhibit the issue if upgraded to a later DRAM device.

**ISSUE DESC:** Failures are sometimes observed during a cold boot DDR3 initialization. These failures are due to contention in the board CKE clamping logic. These errors have only been observed using DRAM devices that have not yet completed qualification.

(SCGCQ00599997 - Port of SCGCQ00503412) Defect 2/3

**HEADLINE:** Raid Accelerator IOs can hang if the stream of IOs suddenly stops

**DESC OF CHANGE:** If more than 5 IOs complete on one completion interrupt and no further IOs are started, the code will now complete any IOs that remain after completing the first 5 IOs.

**TO REPRODUCE:** Run heavy Raid Accelerator IO, suddenly stop sending new IOs and monitor for all IOs to complete. If the timing window is hit, there will be a burst of completions followed by nothing where one or more outstanding IOs will not complete (as long as new IOs are not started).

**ISSUE DESC:** When a stream of Raid Accelerator IOs suddenly stops, there is a chance that a few of the IOs will never be completed back to the host. This only happens if more than 5 IOs all complete at the same time with no further IOs being started or completed.

(SCGCQ00600001 - Port of SCGCQ00598882) Defect 3/3

**HEADLINE:** An invalid frame sent during a PIO-mode SATA passthrough command results in resetting the drive

**DESC OF CHANGE:** Added code to detect invalid frame received while waiting for PIO setup FIS during SATA passthrough translation. When this happens, the command is failed rather than resetting the drive.

**TO REPRODUCE:** Using a drive that sends a SET DEVICE BITS FIS before PIO SETUP when no NCQ error is pending, issue a READ LOG EXT command using an ATA passthrough CDB. Observe that the drive is reset by the controller.

**ISSUE DESC:** When an invalid frame is sent prior to the PIO SETUP FIS while processing a SATA passthrough or ATA passthrough command, the drive is reset. Some SATA drives have been observed to send an unexpected SET DEVICE BITS command while processing a READ LOG EXT command with no NCQ error pending.



# SCS Engineering Release Notice

Phase19 Pre-Alpha Release Version 18.250.01.00 - SAS2FW\_Phase19 (SCGCQ00602046)

## Total Enhancements Implemented (4)

(SCGCQ00557625) Enhancement 1/4

**HEADLINE:** Print SES page data length and PL SES Diag page buffer size to ring buffer  
**NEW FUNCTIONALITY:** This ER adds ring buffer debug print to dump the SES req length, current SES diag buffer size, OpCode/PageCode and SkipCount while building a SES request.

(SCGCQ00569175) Enhancement 2/4

**HEADLINE:** MPI 2.0: Add product-specific Flag bit to Clean Tool  
**NEW FUNCTIONALITY:** For the Clean Tool, reserved bit 26 of the Flags field for product specific use.

(SCGCQ00574358) Enhancement 3/4

**HEADLINE:** MPI2: Allow UEFI and BIOS to be Enabled/Disabled individually  
**NEW FUNCTIONALITY:** Defined additional bits in the BiosOptions field of BIOS Page 1 to allow for finer control of X86 BIOS and UEFI BSD.

(SCGCQ00504068 - Port of SCGCQ00504060) Enhancement 4/4

**HEADLINE:** Extend FLASH Erase Timeout for Future chips  
**NEW FUNCTIONALITY:** Added code to read the CFI max single sector erase timeout value and use it.



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*Phase19 Pre-Alpha Release Version 18.250.00.00 - SAS2FW\_Phase19 (SCGCQ00594703)*

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### **Change Summary ( Defects=2 Enhancements=5)**

SCGCQ00556982 (CSET) - PL: Phy Reordering for direct attached phys could fail to report some devices

SCGCQ00572422 (CSET) - PL: The max speed of SATA drives is not limited to 3Gbps by SAS IO Unit

Page 1

SCGCQ00228558 (ENHREQ) - PL: New commands useful for debugging

SCGCQ00465302 (ENHREQ) - SATL: Indicate support for the ATA Device Server Password security protocol

SCGCQ00523879 (ENHREQ) - Identify physical location of a target device

SCGCQ00566306 (ENHREQ) - Add type BIOS for HashImageType.

SCGCQ00574365 (ENHREQ) - Channel NVDATA: Enable HII for SAS2 Channel HBAs in NVDATA



## SCS Engineering Release Notice

Phase19 Pre-Alpha Release Version 18.250.00.00 - SAS2FW\_Phase19 (SCGCQ00594703)

### Total Defects Resolved (2)

#### (SCGCQ00556982 - Port of SCGCQ00556357)

Defect 1/2

**HEADLINE:** PL: Phy Reordering for direct attached phys could fail to report some devices

**DESC OF CHANGE:** Modified code to use the correct index into the port array to avoid using an invalid value.

**TO REPRODUCE:** Connect four drives directly to the lower four phys on the controller and some expander attached drives to the upper four phys. Enable the phy remapping feature and boot to the operating system. Swap the connectors on the controller, moving the direct attached drives to the upper phys and the expander attachment to the lower phys. Load the driver and observe some of the directly attached drives are not reported.

**ISSUE DESC:** In some circumstances, it could be possible for firmware to fail to report some devices to the host when the slot reordering feature is enabled.

#### (SCGCQ00572422 - Port of SCGCQ00553305)

Defect 2/2

**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.



# SCS Engineering Release Notice

Phase19 Pre-Alpha Release Version 18.250.00.00 - SAS2FW\_Phase19 (SCGCQ00594703)

## Total Enhancements Implemented (5)

(SCGCQ00228558) Enhancement 1/5

**HEADLINE:** PL: New commands useful for debugging  
**NEW FUNCTIONALITY:** New UART commands have been added to the controller UART interface for debugging problems in the field.

(SCGCQ00465302) Enhancement 2/5

**HEADLINE:** SATL: Indicate support for the ATA Device Server Password security protocol  
**NEW FUNCTIONALITY:** When the Supported Security Protocol List is requested from a SATA drive using a SECURITY PROTOCOL IN command with Security Protocol value of 0 and Security Protocol Specific value of 0:  
  
If the device supports the ATA Trusted Computing Group feature set and the ATA Security feature set, append security protocol code 0xEF to the list returned by the device.  
  
If the device does not support the TCG feature set but does support the Security feature set, fabricate a list containing security protocol codes 0 and 0xEF.  
  
If the device supports neither the TCG feature set nor the Security feature set, fabricate a list containing security protocol code 0 only.

(SCGCQ00523879) Enhancement 3/5

**HEADLINE:** Identify physical location of a target device  
**NEW FUNCTIONALITY:** Added ConnectorName and EnclosureLevel fields to SAS Device Page 0 to help with identifying the physical location of a target device.

(SCGCQ00566306) Enhancement 4/5

**HEADLINE:** Add type BIOS for HashImageType.  
**NEW FUNCTIONALITY:** Added value of BIOS image for HashImageType in the Encrypted Hash Extended Image.

(SCGCQ00574365) Enhancement 5/5

**HEADLINE:** Channel NVDATA: Enable HII for SAS2 Channel HBAs in NVDATA  
**NEW FUNCTIONALITY:** Enable HII for SAS2 Channel HBAs in NVDATA