



SAS-2 Controller Firmware Summary Release Notes IT & IR Release

Last updated: 1-12-2012

Note: Please see important info below about image names and multiple NVDATA for Thunderbolt and Mustang D1

This release contains firmware for SAS Gen-2 6G controllers. Liberator B0, Liberator B1, Liberator B2, Liberator B3, Liberator B4, Falcon B0, Falcon B1, Falcon B2, Spitfire B0, Meteor B0, Meteor B1, Thunderbolt A0, Thunderbolt B0, Thunderbolt C0, Thunderbolt C1, Thunderbolt D1, Mustang A0, Mustang B0, Mustang C0, Mustang C1 and Mustang D1 may be supported depending on the phase. Also depending on the phase, this release may include IT (Initiator/Target) builds and/or IR (Integrated RAID) builds.

The following images may be in this release:

- ROM533FX.BIN: IT Firmware image that already contains the default IT NVDATA for Falcon boards with 133MHz external oscillators. These boards run at 533Mhz. *Please see Note 2 below for a list of which Falcon boards require which image. Using the wrong image can cause the board to become unusable.*
- ROM533FRX.BIN: IR Firmware image that already contains the default IR NVDATA for Falcon boards with 133MHz external oscillators. These boards run at 533Mhz. *Please see Note 2 below for a list of which Falcon boards require which image. Using the wrong image can cause the board to become unusable.*
- ROM525FX.BIN: IT Firmware image that already contains the default IT NVDATA for Falcon boards WITHOUT 133MHz external oscillators. These boards run at 525Mhz. *Please see Note 2 below for a list of which Falcon boards require which image. Using the wrong image can cause the board to become unusable.*
- ROM525FRX.BIN: IR Firmware image that already contains the default IR NVDATA for Falcon boards WITHOUT 133MHz external oscillators. These boards run at 525Mhz. *Please see Note 2 below for a list of which Falcon boards require which image. Using the wrong image can cause the board to become unusable.*
- ROM52SFX.BIN: IT Firmware image that already contains the default IT NVDATA for Spitfire boards. These boards run at 525Mhz.
- ROM525SRX.BIN: IR Firmware image that already contains the default IR NVDATA for Spitfire boards. These boards run at 525Mhz.

- ROM800X.BIN: IT Firmware image that already contains the default IT NVDATA for the Liberator B0, B1, B2, B3 and B4 Evaluation Boards with a 133 MHz SysRefClock which runs at 800 MHz. *Using the wrong image can cause the board to become unusable.*
- ROM800RX.BIN: IR Firmware image that already contains the default IR NVDATA for the the Liberator B0, B1, B2, B3 and B4 Evaluation Boards with a 133 MHz SysRefClock which runs at 800 MHz. *Using the wrong image can cause the board to become unusable.*
- ROM667MX.BIN: IT Firmware image that already contains the default IT NVDATA for the Meteor A0 Evaluation Board which runs at 667 MHz
- ROM800MX.BIN: IT Firmware image that already contains the default IT NVDATA for the Meteor B0 and B1 Evaluation Board which runs at 800 MHz
- ROM800TX.BIN: IT Firmware image that already contains the default IT NVDATA for Thunderbolt A0 Evaluation Board which runs at 800 MHz
- ROM800TB.BIN: IT Firmware image that already contains the default IT NVDATA for Thunderbolt B0, C0 and C1 Boards which run at 800 MHz
- ROM800TD.BIN: IT Firmware image that already contains the default IT NVDATA for Thunderbolt B0, C0, C1 and D.1 Boards which run at 800 MHz. Please see note below about multiple NVDATA being present in this image.
- ROM800TRX.BIN: IR Firmware image that already contains the default IR NVDATA for Thunderbolt A0 Evaluation Board which runs at 800 MHz
- ROM800TBR.BIN: IR Firmware image that already contains the default IR NVDATA for Thunderbolt B0, C0 and C1 Evaluation Boards which run at 800 MHz
- ROM800TDR.BIN: IR Firmware image that already contains the default IR NVDATA for Thunderbolt B0, C0, C1 and D1 Evaluation Boards which run at 800 MHz. Please see note below about multiple NVDATA being present in this image.
- ROM800UX.BIN: IT Firmware image that already contains the default IT NVDATA for the Mustang A0 Evaluation Board which runs at 800 MHz
- ROM800UG.BIN: IT Firmware image that already contains the default IT NVDATA for the Mustang B0, C0 and C1 Evaluation Boards which run at 800 MHz
- ROM800UD.BIN: IT Firmware image that already contains the default IT NVDATA for the Mustang B0, C0, C1 and D1 Evaluation Boards which run at 800 MHz. Please see note below about multiple NVDATA being present in this image.
- ROM800URX.BIN: IR Firmware image that already contains the default IR NVDATA for Mustang A0 Evaluation Board which runs at 800 MHz
- ROM800UGR.BIN: IR Firmware image that already contains the default IR NVDATA for Mustang B0, C0 and C1 Evaluation Boards which run at 800 MHz
- ROM800UDR.BIN: IR Firmware image that already contains the default IR NVDATA for Mustang B0, C0, C1 and D1 Evaluation Boards which run at 800 MHz. Please see note below about multiple NVDATA being present in this image.

- 21IT_DL.fw: IT Firmware image that does not contain NVDATA
Falcon/Liberator/Meteor/Spitfire
- 21I_RDL.fw: IR Firmware image that does not contain NVDATA for
Falcon/Liberator/Meteor/Spitfire
- 22IT_DL.fw: IT Firmware image that does not contain NVDATA for
Thunderbolt/Mustang
- 22I_RDL.fw: IR Firmware image that does not contain NVDATA for
Thunderbolt/Mustang

Chip Number / Internal Chip Name / Raw Image

The following table lists the chip number, the internal chip code name, as well as which raw firmware image should be used when creating a rom image.

Chip Number	Chip Name	
LSISAS2004	Spitfire	21*.bin
LSISAS2008	Falcon	21*.bin
LSISAS2108	Liberator	21*.bin
LSISAS2116	Meteor	21*.bin
LSISAS2208	Thunderbolt	22*.bin
LSISAS2308	Mustang	22*.bin

Flashing: The SAS2 Flash Utility can be used to flash the ROM*.BIN on to the host adapter boards. The image to flash must have NVDATA present.

NVDATA: Board specific information is contained in NVDATA XML/XSD files. The SAS2 NVDATA Parser Tool can be used to create an NVDATA XML image and combine that image with a firmware image. Our releases contain sample XSD files that can be used to create XML files that can be modified to support a particular board. The pre-concatenated ROM*.BIN images included in this release are for LSI eval boards and are included for convenience. NVDATA for LSI production boards is included in the form of partial NVDATA XML files that can be used to create a full rom image using SAS2Parser. Contact the LSI FAE for NVDATA for customer boards.

Note 1: Liberator A0 is no longer supported. We will be removing support for pre-production versions of other silicon in the future as well.

Note 2: Some Falcon boards have an additional 133 MHz clock which allows the processor to run at 533MHz and use the ROM533.BIN images. Others do not have this additional clock and run at 525 MHz, requiring use of the ROM525*.BIN images. Using the wrong image can cause the board to become unusable, so if there is any question please contact LSI before flashing.*

Here is a list of Falcon boards that require the ROM533.BIN image. All other Falcon boards use the ROM525*.BIN image.*

Item Number	Revision	Description	Chip	
L3-25144-00	A	BOM-SAS2008 EVAL BOARD, FALCON	A0	ROM533*.BIN
L3-25144-00	B	BOM-SAS2008 EVAL BOARD, FALCON	A0	ROM533*.BIN
L3-25178-00	A	BOM - SAS9210-4I4E	A0	ROM533*.BIN
L3-25178-00	B	BOM - SAS9210-4I4E	A0	ROM533*.BIN
L3-25178-00	C	BOM - SAS9210-4I4E	A0	ROM533*.BIN
L3-25178-00	D	BOM - SAS9210-4I4E	A0	ROM533*.BIN
L3-25178-00	E	BOM - SAS9210-4I4E	A0	ROM533*.BIN

Note 3: If you have trouble updating the FW, it is recommended to erase the persistent config page regions in flash. The following procedure can be used. This procedure should not be necessary when upgrading FW or NVDATA versions. Downgrading versions is not supported, so this procedure must be used if you need to go back to previous versions. This procedure can also be used to force the firmware to re-write the SBR with the contents of Mfg. Page 2 from NVDATA. If the FW notices that the persistent config page region is blank, it will copy all config pages from NVDATA to the persistent region in flash. At this time it will also write Mfg. Page 2 to the SBR. The SBR contains HW settings.

```
sas2flash.exe -o -e 3           //erase persistent config region
sas2flash.exe -f rom*.bin       //flash new firmware
```

Note 4: Default XML files are no longer distributed. Only XSD files and an XSL file are distributed. The XML files can be generated by sas2parser using the new “-defaults” option. Version 00.13.00.00 or greater of sas2parser is required. Once the XML files have been generated, any board or customer specific values can be changed by editing the generated XML files. The sas2parser “-insert” option can then be used to insert/concatenate the NVDATA into the raw FW image (.fw). The XSD files can not be changed. For more info, see sas2_nvdata_dat\readme.doc in the release zip file.*

Note 5: If SAS2Flash displays an error indicating that you are flashing FW with the wrong device ID, and you are sure you are using the correct image, please update SAS2Flash to version 0.10.00.00 or greater.

Note 6: SAS2Flash May Not Flash New Phase 9 or Above Firmware

A recent change to the NVDATA for Gen-2 6G channel host adapter boards may prevent the new firmware from being flashed with SAS2Flash. The change was to change the NvdataProductId field in NVDATA from “Undefined” to the name of the board. When the change to NVDATA was made, it was not known that SAS2Flash checks this field and will not allow new firmware to be flashed if it does not match the previous version of this field. The solution to this problem was to remove this check from SAS2Flash. This change was put into SAS2Flash version 9.00.00.02 on Phase 9 as well as version 9.250.03.00 on Phase 10. Please have all customers upgrade to these versions or newer of SAS2Flash to prevent this problem.

Note 7: Thunderbolt and Mustang D1 Support Information

The size of the SBR (Serial Boot Rom) was increased in revision D1 of these devices to accommodate additional PCIe Gen-3/8G settings. This caused a change to Manufacturing Page 2 which requires a change to the NVDATA XSD files. This now requires two NVDATA files to be attached to the firmware image if support for revisions B0 up to D1 is required. There are now two XSD files and two NVDATA binaries for each firmware image. One XSD/NVDATA is for revision B0 through C1 and the other is for revision D1. SAS2Parser has always supported attaching multiple NVDATA to a

single firmware image. SAS2Flash version 12.250.01.00 or above is required to support flashing of images containing multiple NVDATA as well as D1 recognition. The eval board images listed above (containing a “D” in the name) are example images containing two NVDATA attached to one firmware binary. The NVDATA XSD files required for D1 support have “D0” in the name. If the customer’s application only requires support for B0-C1 or D1, then only a single NVDATA is required.

Here is an example of invoking SAS2Parser twice to create a rom image containing two NVDATA:

```
sas2parser.exe -insert sas2208evalD0.xml nvdata.xsl 22IT_DL.fw temp.bin
LSI Corporation SAS2 NVDATA Parser Tool
Version 08.00.01.00 (2010.12.02)
Copyright (c) 2008-2010 LSI Corporation. All rights reserved
```

NVDATA XSLT Version: 2.6
NVDATA binary successfully inserted into firmware image.

```
sas2parser.exe -insert sas2208eval.xml nvdata.xsl temp.bin rom800td.bin
LSI Corporation SAS2 NVDATA Parser Tool
Version 08.00.01.00 (2010.12.02)
Copyright (c) 2008-2010 LSI Corporation. All rights reserved
```

NVDATA XSLT Version: 2.6
Note: There is already 1 NVDATA extended image present in the file.
NVDATA binary successfully inserted into firmware image.