

Updating the Gas Gauge Firmware for the LSISAS3108 Controller

Systems Engineering Note

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For a comprehensive list of changes to this document, see the [Revision History](#).

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Updating the Gas Gauge Firmware for the LSISAS3108 Controller

This document describes how to update the Gas Gauge firmware for the LSISAS3108 controller.

1 Identifying the Gas Gauge Firmware Part Number

Each CacheVault® product has a Gas Gauge Integrated Circuit (IC) that maintains an accurate record of the available charge on the SuperCap. Through ongoing long term testing, Avago determined that an update to the Gas Gauge firmware is needed to prevent a situation where the SuperCap status is prematurely declared as Fault. This update is recommended to be performed on the next available maintenance release for the CacheVault product.

NOTE The terms Gas Gauge part number and the Gas Gauge module version are used interchangeably in this document.

The Gas Gauge part number is represented as follows:

■ *70-ABCDE-YYZ*

Where:

- *ABCDE* represents the unique Gas Gauge firmware part number of the module.
- *YY* represents the revision number of the part number.
- *Z* is the minor revision.

NOTE The StorCLI utility displays only the last eight characters of the Gas Gauge part number.

Run the following StorCLI system show command to identify the Gas Gauge firmware part number on the module:

Command Syntax

```
StorCLI /c0/cv show all
```

Output

```
Controller = 0
Status = Success
Description = None
Cachevault_Info :
=====
-----
Property Value
-----
Type CVPM02
Temperature 25 C
State Optimal
-----
Date of Manufacture 21/08/2013
Serial Number 2653
Manufacture Name LSI
Device Name CVPM02
tmmFru N/A
tmmBatversionNo 0x0000
tmmSerialNo 0x1014
tmm Date of Manufacture 18/01/2012
GAS GAUGE FIRMWARE UPDATE PROCEDURE Rev A
```

```

    LSI Corporation Confidential
    6
    tmmPcbAssmNo L225436XXX
    tmmPCBversionNo 0x3033
    tmmBatPackAssmNo 49571-02A
    scapBatversionNo 0x0000
    scapSerialNo 0x0a5d
    scap Date of Manufacture 21/08/2013
    scapPcbAssmNo 1700134483
    scapPCBversionNo 0x2041
    scapBatPackAssmNo 49571-13A
    Module Version 25842-06
    
```

After identifying the Gas Gauge firmware part number, you need to verify if a Gas Gauge firmware update is required. If yes, identify the latest Gas Gauge firmware to be used and download it from the Avago website. You can also obtain it from an Avago Field Application Engineer.

2 Gas Gauge Firmware Part Number Selection Tables

For the LSISAS3108 controller modules, you must update both the Gas Gauge firmware and the module VPD data file simultaneously with the correct versions to avoid any discrepancies in the Cache Offload settings. To simplify this process, Avago provides a single ROM file that concatenates both the Gas Gauge firmware and the module VPD data file for the field upgrade process. Because of this requirement, the Gas Gauge firmware part number, which is used for the field upgrade is different from the original Gas Gauge firmware part number. The Gas Gauge selection matrix for different modules follow:

Table 1 Gas Gauge Selection Matrix – 9361/9380-Based 4GB CacheVault Module

ROC	Module	Possible Gas Gauge Firmware as Reported by the StorCLI utility	Is the Gas Gauge Firmware Update Required?	The Latest Gas Gauge Firmware used for the Update
LSISAS3108	CacheVaultModule-4GB (**_25444-**). Used with the 9361/9380 based Controllers	26071-01	Yes	70-26832-00
		6071-02A	Yes	70-26832-00
		6071-03A	Yes	70-26832-00
		6071-04A	No	Not Applicable

Table 2 Gas Gauge Selection Matrix – 9364-8i-Based 1GB TMM

ROC	Module	Possible Gas Gauge Firmware as Reported by the StorCLI Utility	Is the Gas Gauge Firmware Update Required?	The Latest Gas Gauge Firmware used for the Update
LSISAS3108	TMM – 1GB (**_25488-**). Used with the 9364-8i Controller	26536-01	Yes	70-26833-00
		26536-02	Yes	70-26833-00
		6536-03A	No	Not Applicable

Table 3 Gas Gauge Selection Matrix – 9364-8i-Based 2GB TMM

ROC	Module	Possible Gas Gauge Firmware as Reported by the StorCLI Utility	Is the Gas Gauge Firmware Update Required?	The Latest Gas Gauge Firmware used for the Update
LSISAS3108	TMM – 2GB (**-25488-**), Used with the 9364-8i Controller	26536-01	Yes	70-26834-00
		26536-02	Yes	70-26834-00
		6536-03A	No	Not Applicable

Table 4 Gas Gauge Selection Matrix – 9364-8i-Based 4GB TMM

ROC	Module	Possible Gas Gauge Firmware as Reported by the StorCLI Utility	Is the Gas Gauge Firmware Update Required?	The Latest Gas Gauge Firmware used for the Update
LSISAS3108	Nevis – 4GB (**-25494-**), Used with 9364-8i Controller	26535-01	Yes	70-26835-00
		26535-02	Yes	70-26835-00
		6535-03A	No	Not Applicable

3 Updating the Gas Gauge Firmware

You can use any of the following procedures to update the Gas Gauge firmware and the VPD parameters using the concatenated ROM file.

3.1 Procedure 1 – Updating the Gas Gauge Firmware and the VPD Parameters with the MR6.5 (package 35) or Later Using StorCLI v1.14.16 or Later (Recommended)

Benefits of using this procedure – The MegaRAID® firmware enhancements simplify the update process by automatically taking the necessary safety steps without user intervention.

1. Run the following StorCLI commands to verify the current firmware package version.

NOTE Specify the appropriate controller number. The commands in this procedure use controller 1 (c1).

- **Command Syntax for Linux®, FreeBSD®, and Solaris® operating systems** – `storcli64 /c1 show | grep Package`
 - **Command Syntax for the Windows® operating system** – `storcli64 /c1 show | findstr Package`
- Output Example:** FW Package Build = 24.5.0-0016

2. Run the following command to flash the new firmware package version (MR 6.5 package 24.6.0-0035 or later).

NOTE Use the `resetNow` option when you run the command. Make sure that the current FW version supports this option. If the reset fails, try running the command without the `resetNow` option and restart the system manually.

- `storcli64 /c1 download file=<4MB_package.rom> resetnow`

3. Run the following commands to verify the new firmware package version.
 - **Command Syntax for Linux, FreeBSD, and Solaris operating systems** – `storcli64 /c1 show | grep Package`
 - **Command Syntax for the Windows operating system** – `storcli64 /c1 show | findstr Package`
 - **Output Example:** FW Package Build = 24.6.0-0035
4. Run the following commands to verify the current Gas Gauge firmware version.
 - **Command Syntax for Linux, FreeBSD, and Solaris operating systems** – `storcli64 /c1/cv show all | grep "Module Version"`
 - **Command Syntax for the Windows operating system** – `storcli64 /c1/cv show all | findstr /C:"Module Version" (Windows)`
 - **Output Example:** Module Version 6071-03A

NOTE The module version varies based on the controller type.

5. Run the following command to flash the Gas Gauge firmware with the Gas Gauge firmware part number identified from [Section 2, Gas Gauge Firmware Part Number Selection Tables](#) (only if an update is required).
 - **Command Syntax** – `storcli64 /c1 download file=TFM_70-26832-00.rom fwtype=2`

NOTE Make sure you use the correct .rom file name for the controller type that is in use.

6. Run the following command to restart the system.
 - **Command Syntax** – `storcli64 /c1 restart`
7. Run the following commands to verify the updated firmware package version.
 - **Command Syntax for Linux, FreeBSD, and Solaris operating systems** – `storcli64 /c1 show | grep "Module Version"`
 - **Command Syntax for the Windows operating system** – `storcli64 /c1 show | findstr /C:"Module Version"`
 - **Output Example:** Module Version 26832-00

NOTE The module version varies based on the controller type.

NOTE Before the update starts, the MegaRAID firmware automatically changes the current write cache policy of the virtual drives from Write Back with BBU to Write Through. The MegaRAID firmware verifies the new image with the current image and updates the Gas Gauge firmware and the VPD parameters only if all of the version checks pass. After restarting the system, the MegaRAID firmware initiates a Learn Cycle and only if the Learn Cycle completes successfully, the write cache policy of the virtual drive is changed back to Write Back with BBU.

3.2 Procedure 2 – Updating the Gas Gauge Firmware and the VPD Parameters with the MR (package 35) Firmware Prior to MR6.5 Package Using StorCLI v1.14.16 or later

1. Identify the virtual drives whose write cache policy is Write Back with BBU and change them to Write Through manually.

NOTE Make sure to note the virtual drive numbers.

2. Run the following commands to verify the current Gas Gauge firmware version.

NOTE Specify the appropriate controller number. The commands in this procedure use controller 1 (c1).

- **Command Syntax for Linux, FreeBSD, and Solaris operating systems** – `storcli64 /c1/cv show all | grep "Module Version"`
- **Command Syntax for the Windows operating system** – `storcli64 /c1/cv show all | findstr /C:"Module Version" (Windows)`
- **Output Example:** `Module Version 6071-03A`

NOTE The module version varies based on the controller type.

3. Run the following command to flash the Gas Gauge firmware with the Gas Gauge firmware part number identified from [Section 2, Gas Gauge Firmware Part Number Selection Tables](#) (only if an update is required).

- **Command Syntax** – `storcli64 /c1 download file=TFM_70-26832-00.rom fwtype=2`

NOTE Make sure you use the correct .rom file name for the controller type that is in use.

4. Run the following command to restart the system.

- **Command Syntax** – `storcli64 /c1 restart`

5. Run the following commands to verify the if the Gas Gauge firmware is updated correctly.

- **Command Syntax for Linux, FreeBSD, and Solaris operating systems** – `storcli64 /c1 show | grep "Module Version"`
- **Command Syntax for the Windows operating system** – `storcli64 /c1 show | findstr /C:"Module Version"`
- **Output Example:** `Module Version 26832-00`

NOTE The module version varies based on the controller type.

6. Start a Supercap Learn Cycle manually.

7. After the Supercap Learn Cycle is complete, change the write cache policy of all of the virtual drives that you identified in Step 1 back to Write Back with BBU.

Limitations – You need to manually perform the following tasks:

- Change the current write cache policy of the virtual drives to Write Through.
- Update the Gas Gauge firmware.
- Initiate a Learn cycle.
- Change the cache policy back to Write Back after the Learn Cycle completes successfully.

3.3 Procedure 3 – Updating the Gas Gauge Firmware and the VPD Parameters with the MR6.5 (package 35) or Later Using StorCLI (any version)

1. Run the following StorCLI commands to verify the current firmware package version.

NOTE Specify the appropriate controller number. The commands in this procedure use controller 1 (c1).

- **Command Syntax for Linux, FreeBSD, and Solaris operating systems** – `storcli64 /c1 show | grep Package`
- **Command Syntax for the Windows operating system** – `storcli64 /c1 show | findstr Package`
- **Output Example:** FW Package Build = 24.5.0-0016

2. Run the following command to flash the new firmware package version (MR 6.5 package 24.6.0-0035 or later).

NOTE Use the `resetNow` option when you run the command. Make sure that the current FW version supports this option. If the reset fails, try running the command without the `resetNow` option and restart the system manually.

- `storcli64 /c1 download file=<4MB_package.rom> resetnow`

3. Run the following commands to verify the new firmware package version.

- **Command Syntax for Linux, FreeBSD, and Solaris operating systems** – `storcli64 /c1 show | grep Package`
- **Command Syntax for the Windows operating system** – `storcli64 /c1 show | findstr Package`
- **Output Example:** FW Package Build = 24.6.0-0035

4. Run the following commands to verify the current Gas Gauge firmware version.

- **Command Syntax for Linux, FreeBSD, and Solaris operating systems** – `storcli64 /c1/cv show all | grep "Module Version"`
- **Command Syntax for the Windows operating system** – `storcli64 /c1/cv show all | findstr /C:"Module Version" (Windows)`
- **Output Example:** Module Version 6071-03A

5. Run the following command to flash the Gas Gauge firmware with the Gas Gauge firmware part number identified from [Section 2, Gas Gauge Firmware Part Number Selection Tables](#) (if an update required).

- **Command Syntax** – `storcli64 /c1 download file=TFM_70-26832-00.rom`

NOTE Make sure you use the correct `.rom` file name for the controller type that is in use.

6. Run the following command to restart the system.

- **Command Syntax** – `storcli64 /c1 restart`

7. Run the following commands to verify the updated firmware package version.

- **Command Syntax for Linux, FreeBSD, and Solaris operating systems** – `storcli64 /c1 show | grep "Module Version"`
- **Command Syntax for the Windows operating system** – `storcli64 /c1 show | findstr /C:"Module Version"`
- **Output Example:** Module Version 26832-00

NOTE

Before the update starts, the MegaRAID firmware automatically changes the write cache policy of the virtual drives from Write Back with BBU to Write Through. The MegaRAID firmware verifies the new image with the current image and updates the Gas Gauge firmware and the VPD parameters only if all of the version checks pass. After restarting the system, the MegaRAID firmware initiates a Learn Cycle and only if the Learn Cycle completes successfully, the write cache policy of the virtual drive is changed back to Write Back with BBU.

Limitations – The following are the known limitations with this procedure:

- If you use this procedure, the StorCLI utility does not verify the Gas Gauge firmware. The StorCLI utility directly sends the GGVPD package to the MegaRAID firmware without verifying the version. The MegaRAID firmware verifies the file version and allows the update to happen only if the version check passes.
- If you use this procedure with the MegaRAID firmware earlier than MR 6.5 (package-35), only the Gas Gauge firmware is updated. The VPD parameters are not updated. However, neither the MegaRAID firmware nor the StorCLI utility show any error or notification about the VPD parameters not being updated.

4 Revision History

4.1 Version 1.0, April 2015

Initial document release.

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