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LSI SAS 9200-8e adapter firmware update

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1. Introduction

This document describes how to display and update the revision of the BIOS and firmware embedded in the LSI SAS 9200-8e adapters.

This update can be proceeded under EFI, from a Linux operating system or from a VMware ESXi installation.

LSI delivers on his web site the archive files containing the installers for each of the three environments mentioned above but the files containing the images of the new versions for BIOS and firmware update must be extracted from the archive of the Package "9200_8e_Package_Pxx_IT_Firmware_BIOS_for_MSDOS_Windows" (where xx is the number of the current version).

2. UEFI Procedure

2.1 Firmware and BIOS Update Tool

Updating the LSI SAS 9200-8e adapter BIOS and firmware can be realized using the EFI version of the `sas2flash` program (`sas2flash.efi`).

Two other files are needed:

- `mptsas2.rom`: the file containing the image of the BIOS new version,
- `9200-8e.bin`: the file containing the image of the firmware new version.

The three file can be brought from a USB stick.

2.2 Getting Firmware and BIOS current revision

From the EFI prompt, move to the device then to the directory containing the program and image files (*in our example, `fs0:` and `\LSI9200\P16`*), then run the command:

```
sas2flash.efi -listall
```

```
fs0:\LSI9200\P16> sas2flash.efi -listall
LSI Corporation SAS2 Flash Utility
Version 16.00.00.00 (2013.03.01)
Copyright (c) 2008-2013 LSI Corporation. All rights reserved

Adapter Selected is a LSI SAS: SAS2008(B2)

  Num  Ctlr          FW Ver    NUDATA    x86-BIOS    PCI Addr
-----
  0  SAS2008(B2)    07.00.00.00  07.00.00.02  07.11.00.00  00:04:00:00

Finished Processing Commands Successfully.
Exiting SAS2Flash.
```

The current version of firmware and BIOS and the adapter ID (Num) are displayed for each adapter in the system.

You can then identify the ID(s) of the controller(s) to be updated:

2.3 Updating Adapter BIOS

Run the `sas2flash.efi` program with the options for BIOS update (see 2.2 for the controller ID):

```
sas2flash.efi -c controller_ID -b BIOS_file_name
```

```
fs0:\LSI9200\VP16> sas2flash.efi -c 0 -b mptsas2.rom
LSI Corporation SAS2 Flash Utility
Version 16.00.00.00 (2013.03.01)
Copyright (c) 2008-2013 LSI Corporation. All rights reserved

Adapter Selected is a LSI SAS: SAS2008(B2)

Executing Operation: Flash BIOS Image

Validating BIOS Image...

BIOS Header Signature is Valid

BIOS Image has a Valid Checksum.

BIOS PCI Structure Signature Valid.

BIOS Image Compatible with the SAS Controller.

Attempting to Flash BIOS Image...

Verifying Download...

Flash BIOS Image Successful.

Updated BIOS Version in BIOS Page 3.

Finished Processing Commands Successfully.
Exiting SAS2Flash.
```

2.4 Updating Adapter Firmware

From the directory containing the update files, run the following command (see 2.2 for the controller ID):

```
sas2flash.efi -c controller_ID -f firmware_file_name
```

```

fs0:\LSI9200\P16> sas2flash.efi -c 0 -f 9200-8e.bin
LSI Corporation SAS2 Flash Utility
Version 16.00.00.00 (2013.03.01)
Copyright (c) 2008-2013 LSI Corporation. All rights reserved

Adapter Selected is a LSI SAS: SAS2008 (B2)

Executing Operation: Flash Firmware Image

Firmware Image has a Valid Checksum.
Firmware Version 16.00.00.00
Firmware Image compatible with Controller.

Valid NUDATA Image found.
NUDATA Version 10.00.00.00
Checking for a compatible NUData image...

NUDATA Device ID and Chip Revision match verified.
NUDATA Versions Compatible.
Valid Initialization Image verified.
Valid BootLoader Image verified.

Beginning Firmware Download...
Firmware Download Successful.

Verifying Download...

Firmware Flash Successful.

Resetting Adapter...
Adapter Successfully Reset.

Finished Processing Commands Successfully.
Exiting SAS2Flash.

```

2.5 Checking Firmware and BIOS updated revision

You can check that the new versions have been applied:

```

fs0:\LSI9200\P16> sas2flash.efi -listall
LSI Corporation SAS2 Flash Utility
Version 16.00.00.00 (2013.03.01)
Copyright (c) 2008-2013 LSI Corporation. All rights reserved

Adapter Selected is a LSI SAS: SAS2008 (B2)

```

Num	Ctlr	FW Ver	NUDATA	x86-BIOS	PCI Addr
0	SAS2008 (B2)	16.00.00.00	10.00.00.05	07.31.00.00	00:04:00:00

```

Finished Processing Commands Successfully.
Exiting SAS2Flash.

```

3. Linux Procedure

3.1 Firmware and BIOS Update Tool

Updating the LSI SAS 9200-8e adapter BIOS and firmware can be realized using the Linux version of the `sas2flash` program.

Two other files are needed:

- `mptsas2.rom`: the file containing the image of the BIOS new version,
- `9200-8e.bin`: the file containing the image of the firmware new version.

The `sas2flash` program doesn't need any installation: simply copy the three files in a directory on your system then run the program from there.

3.2 Getting Firmware and BIOS current revision

Move to the directory containing the program and image files and then run the command:

```
./sas2flash -listall
```

```
[root@turin4 LSI]# ./sas2flash -listall
LSI Corporation SAS2 Flash Utility
Version 16.00.00.00 (2013.03.01)
Copyright (c) 2008-2013 LSI Corporation. All rights reserved

      Adapter Selected is a LSI SAS: SAS2008(B2)

  Num   Ctlr          FW Ver      NVDATA      x86-BIOS      PCI Addr
  -----
  0  SAS2008(B2)    07.00.00.00  07.00.00.02  07.11.00.00  00:04:00:00

      Finished Processing Commands Successfully.
      Exiting SAS2Flash.
```

The current version of firmware and BIOS and the adapter ID (Num) are displayed for each adapter in the system.

You can then identify the ID(s) of the controller(s) to be updated.

3.3 Updating Adapter BIOS

From the directory containing the `sas2flash` program and the BIOS image file (see 3.1), run the following command with the options for BIOS update (see 3.2 for the controller ID):

```
./sas2flash -c controller_ID -b BIOS_file_name
```

```
[root@turin4 LSI]# ./sas2flash -c 0 -b mptsas2.rom
LSI Corporation SAS2 Flash Utility
Version 16.00.00.00 (2013.03.01)
Copyright (c) 2008-2013 LSI Corporation. All rights reserved

Adapter Selected is a LSI SAS: SAS2008(B2)

Executing Operation: Flash BIOS Image

Validating BIOS Image...

BIOS Header Signature is Valid

BIOS Image has a Valid Checksum.

BIOS PCI Structure Signature Valid.

BIOS Image Compatible with the SAS Controller.

Attempting to Flash BIOS Image...

Verifying Download...

Flash BIOS Image Successful.

Updated BIOS Version in BIOS Page 3.

Finished Processing Commands Successfully.
Exiting SAS2Flash.
```

3.4 Updating Adapter Firmware

From the directory containing the `sas2flash` program and the firmware image file (see 3.1), run the following command with the options for firmware update (see 3.2 for the *controller ID*):

```
./sas2flash -c controller_ID -f firmware_file_name
```



```

[root@turin4 LSI]# ./sas2flash -c 0 -f 9200-8e.bin
LSI Corporation SAS2 Flash Utility
Version 16.00.00.00 (2013.03.01)
Copyright (c) 2008-2013 LSI Corporation. All rights reserved

Adapter Selected is a LSI SAS: SAS2008(B2)

Executing Operation: Flash Firmware Image

Firmware Image has a Valid Checksum.
Firmware Version 16.00.00.00
Firmware Image compatible with Controller.

Valid NVDATA Image found.
NVDATA Version 10.00.00.00
Checking for a compatible NVData image...

NVDATA Device ID and Chip Revision match verified.
NVDATA Versions Compatible.
Valid Initialization Image verified.
Valid BootLoader Image verified.

Beginning Firmware Download...
Firmware Download Successful.

Verifying Download...

Firmware Flash Successful.

Resetting Adapter...
Adapter Successfully Reset.

Finished Processing Commands Successfully.
Exiting SAS2Flash.

```

3.5 Checking Firmware and BIOS updated revision

You can check that the new versions have been applied:

```

[root@turin4 LSI]# ./sas2flash -listall
LSI Corporation SAS2 Flash Utility
Version 16.00.00.00 (2013.03.01)
Copyright (c) 2008-2013 LSI Corporation. All rights reserved

Adapter Selected is a LSI SAS: SAS2008(B2)

```

Num	Ctlr	FW Ver	NVDATA	x86-BIOS	PCI Addr
0	SAS2008(B2)	16.00.00.00	10.00.00.05	07.31.00.00	00:04:00:00

```

Finished Processing Commands Successfully.
Exiting SAS2Flash.

```

4. VMware ESXi Procedure

4.1 Firmware and BIOS Update Tool

Updating the LSI SAS 9200-8e adapter BIOS and firmware can be realized using the `sas2flash` program for vmware.

Three files are needed:

- `vmware-esx-sas2flash.vib`: the file containing the `sas2flash` program for vmware,
- `mptsas2.rom`: the file containing the image of the BIOS new version,
- `9200-8e.bin`: the file containing the image of the firmware new version.

Connect to the vmware ESXi console then copy these three files in a directory.

In order to install the `sas2flash` program from the `vmware-esx-sas2flash.vib` file, run the following command (*in the example, the files have been copied to /tmp/LSI*):

```
esxcli software vib install
-v /tmp/LSI/vmware-esx-sas2flash.vib --force
```

```
/tmp/LSI # esxcli software vib install -v /tmp/LSI/vmware-esx-sas2flash.vib --force
Installation Result
  Message: Operation finished successfully.
  Reboot Required: false
  VIBs Installed: LSI_bootbank_vmware-esx-sas2flash_1.0-03
  VIBs Removed:
  VIBs Skipped:
```

The `sas2flash` program is now installed in the `/opt/lsi/bin` directory..

4.2 Getting Firmware and BIOS current revision

Run the following command:

```
/opt/lsi/bin/sas2flash -listall
```

```
/tmp/LSI # /opt/lsi/bin/sas2flash -listall
LSI Corporation SAS2 Flash Utility
Version 16.00.00.00 (2013.03.01)
Copyright (c) 2008-2013 LSI Corporation. All rights reserved

      Adapter Selected is a LSI SAS: SAS2008(B2)

  Num   Ctlr           FW Ver       NVDATA       x86-BIOS       PCI Addr
  -----
  0  SAS2008(B2)    07.00.00.00  07.00.00.02  07.11.00.00  00:04:00:00

      Finished Processing Commands Successfully.
      Exiting SAS2Flash.
```

The current version of firmware and BIOS and the adapter ID (Num) are displayed for each adapter in the system.

You can then identify the ID(s) of the controller(s) to be updated.

4.3 Updating Adapter Bios

From the directory containing the BIOS image file (see 4.1), run the following command with the options for BIOS update (see 4.2 for the controller ID):

```
/opt/lsi/bin/sas2flash -c controller_ID -b BIOS_file_name
```

```
/tmp/LSI # /opt/lsi/bin/sas2flash -c 0 -b mptsas2.rom
LSI Corporation SAS2 Flash Utility
Version 16.00.00.00 (2013.03.01)
Copyright (c) 2008-2013 LSI Corporation. All rights reserved

Adapter Selected is a LSI SAS: SAS2008(B2)

Executing Operation: Flash BIOS Image

Validating BIOS Image...

BIOS Header Signature is Valid

BIOS Image has a Valid Checksum.

BIOS PCI Structure Signature Valid.

BIOS Image Compatible with the SAS Controller.

Attempting to Flash BIOS Image...

Verifying Download...

Flash BIOS Image Successful.

Updated BIOS Version in BIOS Page 3.

Finished Processing Commands Successfully.
Exiting SAS2Flash.
```

4.4 Updating Adapter Firmware

From the directory containing the firmware image file (see 4.1), run the following command with the options for firmware update (see 4.2 for the controller ID):

```
/opt/lsi/bin/sas2flash -c controller_ID -f firmware_file_name
```

```

/tmp/LSI # /opt/lsi/bin/sas2flash -c 0 -f 9200-8e.bin
LSI Corporation SAS2 Flash Utility
Version 16.00.00.00 (2013.03.01)
Copyright (c) 2008-2013 LSI Corporation. All rights reserved

Adapter Selected is a LSI SAS: SAS2008(B2)

Executing Operation: Flash Firmware Image

Firmware Image has a Valid Checksum.
Firmware Version 16.00.00.00
Firmware Image compatible with Controller.

Valid NVDATA Image found.
NVDATA Version 10.00.00.00
Checking for a compatible NVData image...

NVDATA Device ID and Chip Revision match verified.
NVDATA Versions Compatible.
Valid Initialization Image verified.
Valid BootLoader Image verified.

Beginning Firmware Download...
Firmware Download Successful.

Verifying Download...

Firmware Flash Successful.

Resetting Adapter...
Adapter Successfully Reset.

Finished Processing Commands Successfully.
Exiting SAS2Flash.

```

4.5 Checking Firmware and BIOS updated revision

You can check that the new versions have been applied by running the command:

```
/opt/lsi/bin/sas2flash -listall
```

```

/tmp/LSI # /opt/lsi/bin/sas2flash -listall
LSI Corporation SAS2 Flash Utility
Version 16.00.00.00 (2013.03.01)
Copyright (c) 2008-2013 LSI Corporation. All rights reserved

Adapter Selected is a LSI SAS: SAS2008(B2)

```

Num	Ctlr	FW Ver	NVDATA	x86-BIOS	PCI Addr
0	SAS2008(B2)	16.00.00.00	10.00.00.05	07.31.00.00	00:04:00:00

```

Finished Processing Commands Successfully.
Exiting SAS2Flash.

```