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TO: Distribution
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SUBJECT: Conduant Amazon Controller Card SDK 9.2 Upgrade (Mark5B+) with Debian Etch

This document describes how to upgrade your Mark5B+ Amazon Controller card and FPDP2 daughter board to the latest firmware with support for using greater than 2TB disks on Mark5's with a Debian Etch OS distribution.

Conduants SDK 9.3 utilities are not supported by the GCC version on Debian Etch. Therefore the required firmware that allows support for greater than 2TB HDD and 16TB disk modules, to be fully utilized, is to be added to the SDK9.2 installed on your Mark5.

Pre-install Steps

For Mark5B+'s with Debian Etch, download the following files from the Haystack website Mark5 Downloads page <http://www.haystack.edu/tech/vlbi/mark5/downloads.html>.

1. Under Streamstor SDK, Version 9.2 firmware download the Amazon Firmware
 - a. 5bplus_etch_ss92_firmware.tgz
2. Download the Mark5 Application Package and the Release Notes
 - a. mark5_3.0.1-i386.deb

Extract the firmware from 5bplus_etch_ss92_firmware.tgz using
`tar -zxvf 5bplus_etch_ss92_firmware.tgz`
the files and you will see are:

ssamazon_16037.xfb
G4FP_PAR32_01008.xfb

Firmware Upgrade

As root (su -) set the following environment variables:

```
export SS='/usr/local/src/streamstor/linux'  
export STREAMSTOR_BIB_PATH='/usr/local/src/streamstor/linux/bib'
```

copy the firmware to the directory where the firmware is located:

```
cp *.xfb /usr/local/src/streamstor/linux/bib/
```

Make sure you have a disk module installed in bank A and keyed before executing the following ssflash command.

The queries have been highlighted in **blue** and with the proper response in **red** and the output in black.

```
../lib/gcc_v3/util/./ssflash
```

It will display:

```
SSFlash Version# 2.63
```

```
-----
```

Operation:

1. Flash a single file.
2. Flash using PCI the files in the .ssf file.
3. Verify a .ssf file, don't flash anything.
4. Quit

Enter choice: **1**

Enter flash update filename (*.xfb) or q to quit: **ssamazon_16037.xfb**

```
-----
```

Flash over which data path:

1. PCI
2. Ethernet
3. Quit

Enter choice (1,2 or 3): **1**

Enter card index (1,2,...) or q to quit: **1**

```
***** Initial Versions *****
```

```
SDK Version      : 9.02
BoardType       : AMAZON-VP
Serial Number    : 2519
API Version      : 11.25
API Datecode    : Nov 11 2011
Firmware Version : 15.45
Firmware Datecode : May 28 2009
Monitor Version  : 12.17
XBAR Version     : 2.028
```

Daughter Board Information:

```
Serial Number    : 2603
PCB Version      : 3.00
PCB Type         : FPDP2
PCBSubType       : M1 Term
FPGAConfig       : FPDP2
FPGAConfigVersion : 1.06
DB_PCB_Type      : 1
DB_FPGA_Type     : 1
```

WARNING: Updating StreamStor firmware may require rebuilding user applications with updated StreamStor libraries.

Enter 'y' to start flashing, any other character to quit: **y**

Flashing file ssamazon_16037.xfb.
Please wait...
File: ssamazon_16037.xfb
successfully flashed!

Getting final version numbers ...

***** Final Versions *****

SDK Version : 9.02
BoardType : AMAZON-VP
Serial Number : 2519
API Version : 11.25
API Datecode : Nov 11 2011
Firmware Version : 16.37
Firmware Datecode : May 13 2013
Monitor Version : 12.17
XBAR Version : 2.028

Daughter Board Information:

Serial Number : 2603
PCB Version : 3.00
PCB Type : FPD2
PCBSubType : M1 Term
FPGAConfig : FPD2
FPGAConfigVersion : 1.06
DB_PCB_Type : 1
DB_FPGA_Type : 1

=====
mark5-672:/usr/local/src/streamstor/linux/bib# ../lib/gcc_v3/util/./ssflash

SSFlash Version# 2.63

Operation:

1. Flash a single file.
2. Flash using PCI the files in the .ssf file.
3. Verify a .ssf file, don't flash anything.
4. Quit

Enter choice: **1**

Enter flash update filename (*.xfb) or q to quit: **G4FP_PAR32_01008.xfb**

Flash over which data path:

1. PCI
2. Ethernet
3. Quit

Enter choice (1,2 or 3): **1**

Enter card index (1,2,...) or q to quit: **1**

***** Initial Versions *****

SDK Version : 9.02
BoardType : AMAZON-VP
Serial Number : 2519
API Version : 11.25
API Datecode : Nov 11 2011
Firmware Version : 16.37
Firmware Datecode : May 13 2013
Monitor Version : 12.17
XBAR Version : 2.028

Daughter Board Information:

Serial Number : 2603
PCB Version : 3.00
PCB Type : FPD2
PCBSubType : M1 Term
FPGAConfig : FPD2
FPGAConfigVersion : 1.06
DB_PCB_Type : 1
DB_FPGA_Type : 1

WARNING: Updating StreamStor firmware may require rebuilding user applications with updated StreamStor libraries.

Enter 'y' to start flashing, any other character to quit: **y**

Flashing file G4FP_PAR32_01008.xfb.

Please wait...

File: G4FP_PAR32_01008.xfb
successfully flashed!

Getting final version numbers ...

***** Final Versions *****

SDK Version : 9.02
BoardType : AMAZON-VP

Serial Number : 2519
API Version : 11.25
API Datecode : Nov 11 2011
Firmware Version : 16.37
Firmware Datecode : May 13 2013
Monitor Version : 12.17
XBAR Version : 2.028

Daughter Board Information:

Serial Number : 2603
PCB Version : 3.00
PCB Type : FPD2
PCBSubType : M1 Term
FPGAConfig : FPD2
FPGAConfigVersion : 1.08
DB_PCB_Type : 1
DB_FPGA_Type : 1

After updating the firmware please reboot the system and operations should not see any differences on disk modules up to 16TB in length and containing 2TB or less HDDs.

If you would like to use disk modules > 16TB, e.g. a module created all 3 TB HDDs for a 24 TB modules, remember to reset=erase the module before using it.

Mark5 Application Upgrade

To install the new Mark5 application, as root, execute from the directory you downloaded the Mark5 version 3.0.1 deb package:

```
dpkg -i mark5-3.0.1-i386.deb
```

The new Mark5 application has been installed. Please refer to the new command set (v1.13) for updates to support both > 1024 scans and new features.

To enable greater than 1024 scans on your system the reset=erase command can be used, or the standalone utility SSErase with the “-u l”, option to enable 64k scan support. For the new usage options for SSErase, please use SSErase -h.

NOTE: While the correlators are going thru the upgrade process to support larger than 16TB disk modules it is initially recommended that the disk modules are erased with the old 1024 maximum number of scans. To erase the disk module that you are shipping to a correlator, until notified to revert to the standard reset=erase command, issue:

```
reset=erase : s
```