



APM BIOS Update Guide

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Revision History

Date	Rev	Description
2016-02-19	1.0	Initial version

Introduction

This document outlines the details on how to update the SPI flash part on the APM Mustang and Merlin reference platforms from the default BIOS to AMI's Aptio V BIOS. This overview includes details on preparing the recovery media, preparing the USB key, configuring the platform to force a recovery, steps to boot the system, and the method to upgrade the BIOS flash image.

Requirements

In order for the SPI flash part to be updated, the following items are necessary:

1. Booting Linux system
2. SD card
3. Linux system with SD slot or USB SD card reader
4. USB key
5. Aptio V BIOS image to be updated
6. AMI's SSI Firmware Update Utility for UEFI Shell – SsiFlashAarch64.EFI

Preparation of SD Card

Preparation of SD card needs to be performed in Linux. The SD card will contain the Aptio V BIOS image that will be executed from memory and boot the system. The steps to prepare the SD card are the following:

1. Insert the SD card into the Linux development machine's SD card slot or use a USB SD card reader
2. Open a Linux terminal and execute the command "***sudo fdisk -l***".
 - a. This command will list the device descriptors as "***/dev/sda***", "***/dev/sdb***", "***/dev/sdc***", etc.
 - b. Identify the device descriptor of the SD card.

CAUTION: Ensure correct SD card device descriptor is used while flashing. Choosing a wrong device descriptor will corrupt the storage media.

3. Execute the ***dd*** command with the following syntax:
 - a. "***sudo dd if = [file path to input BIOS image] of = [device descriptor]***".
 - b. Assuming the file path of BIOS image is "***AMIROM_MEDIA.fd***" and the device descriptor of the SD card is "***/dev/sdc***", the DD command would be entered as "***sudo dd if = AMIROM_MEDIA.fd of = /dev/sdc***".
 - c. Note, the ***dd*** command will erase the entire media and writes the device with the new BIOS image.

Preparation of USB Key

The USB key can be prepared from either a Linux[®] or Microsoft[®] OS. The USB key needs to contain the flash utility and the Aptio V BIOS image that needs to be flashed. The steps to prepare the USB key are the following:

1. Insert the USB key into the development machine's USB port.
2. Copy the Aptio V BIOS image to the root of the USB key.
3. Copy the flash utility SsiFlashAarch64.EFI to the root of the USB key.

Configuration of Mustang or Merlin Reference Platform

The APM reference platform needs to be configured properly in order to start the recovery process. This method puts the Aptio V BIOS image from the SD card into memory and gives control to the BIOS. Perform the following steps for the specific board:

1. Power off the target APM reference board.
2. Configure the jumpers to force a SD boot:
 - a. For Mustang platform, short pins 11-12 and 17-18 on jumper header HDR9.
 - b. For Merlin platform, short pins 13 -14 and 19-20 of jumper header J19.
3. Insert the configured SD card into the SD slot.
4. Insert the configured USB key into a USB port.

Update the SPI Flash Part

To update the BIOS, perform the following steps:

1. Power on the Mustang or Merlin reference platform.
2. Enter BIOS setup by pressing ESC or DEL.
3. Traverse to “Save & Exit” menu and select the Boot Override device “UEFI: Built-in EFI Shell”:

```
Aptio Setup Utility - Copyright (C) 2016 American Megatrends, Inc.
Main Advanced Chipset Security Boot Save & Exit
=====
j Save Changes and Exit
d Discard Changes and Exit
d Save Changes and Reset
d Discard Changes and Reset
d
d Save Options
d Save Changes
d Discard Changes
d
d Restore Defaults
d Save as User Defaults
d Restore User Defaults
d
d Boot Override
d UEFI: Linux
d UEFI: hp v215b 1100, Partition 1
d UEFI: Built-in EFI Shell
d Launch EFI Shell from filesystem device
=====
Version 2.17.1254. Copyright (C) 2016 American Megatrends, Inc.
AB
```

4. From UEFI Shell prompt change to the root folder of the USB device.
5. Execute the command “*SsiFlashAarch64.EFI [file_name] /u*”.
6. Below is an example where a USB key is mapped to *fs0*: and the filename is AMIROM_MEDIA.fd:

```
UEFI Interactive Shell v2.0
EDK II
UEFI v2.40 (American Megatrends, 0x0005000B)
Mapping table
FS0: Alias(s):HD7a0b;BLK1:
      PciRoot(0xFF)/Pci(0x5,0x0)/USB(0x0,0x0)/HD(1,MBR,0xE221B5DC,0x40,0x1DC000)
BLK2: Alias(s):
      VenHw(8225ED30-6DFD-43A9-BF6B-5753358F2F70)
BLK0: Alias(s):
      PciRoot(0xFF)/Pci(0x5,0x0)/USB(0x0,0x0)

Press ESC in 1 seconds to skip startup.nsh or any other key to continue.
Shell> fs0:
FS0:\> SsiFlashAarch64.EFI AMIROM_MEDIA.fd /u
AMI SSI Firmware Update Utility v0.1.0
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Erasing BIOS ..... done!
Updating BIOS ..... done!
Verifying BIOS ..... done!
FS0:\>
```

7. Power off the Mustang or Merlin platform.
8. Remove the jumpers shorted in steps 2a or 2b specified in the ***Configuration of Mustang or Merlin Reference Platform*** section of this document.
9. Remove the SD card and USB key from the reference platform.
10. Power on the system and boot. It will boot from the Aptio V BIOS that is now present in the SPI flash part.