i.MX6 SDCARD Secondary Boot Demo

6/12/2015
Biyong Sun
SDCARD Secondary Boot

Reserved For MBR (optional)

Reserved for Secondary Image Table (optional)

Program Image (Starting From IVT)

Media Partitions

0x00000000
PERSIST_SECONDARY_BOOT

0x000000200
20D_8044 SRC General Purpose Register 10 (SRC_GPR10)
32 R/W

uboot command:

mw 20d8044 0x40000000
to turn on secondary boot

Where:

- tag: used as indication of valid secondary image table. Must be 0x00112233.
- firstSectorNumber is the first 512B sector number of the secondary image.

Table 8-7. Persistent Bits

<table>
<thead>
<tr>
<th>Bit Name</th>
<th>Bit Location</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>PERSIST_SECONDARY_BOOT</td>
<td>SRC_GPR10[30]</td>
<td>This bit identifies which image must be used - primary and secondary. Used only for boot modes that support redundant boot.</td>
</tr>
</tbody>
</table>

Table 8-21. Secondary Image Table Format

Reserved (chipNum)
Reserved (driveType)
tag
firstSectorNumber
Reserved (sectorCount)
Files for Secondary Boot Image

1kheader_mx6q.bin:
1024 Bytes header contains **Secondary Image Table** at **0x200**

`u-boot-imx6qsabresd_sd_3.10.53.imx`
uboot release 3.10.53  367616 Bytes (718x512 or 0x2CEx512)

`u-boot-imx6qsabresd_sd_3.14.28.imx`
uboot release 3.14.28  367616 Bytes (718x512 or 0x2CEx512)
How to create the image

- Use hex editor to modify the 1kheader_mx6q.bin tag and firstSectorNumber
- Use cat command to merge the 1kheader_mx6q.bin, the primary uboot and the secondary uboot together

```bash
cat 1kheader_mx6q.bin u-boot-imx6qsabresd_sd_3.10.53.imx u-boot-imx6qsabresd_sd_3.14.28.imx > i.MX6Q-secondary_boot_demo.sdcard
```

**Note:** The cat command is in **ONE** line.
Create SDCARD

```
dd if= i.MX6Q-secondary_boot_demo.sdcard of=/dev/sdc bs=512 skip=1 seek=1
```
How to demo

- Power on to boot the primary uboot in 3.10.53 release
  Print out “U-Boot 2014.04 (Jan 05 2015 - 14:54:36)”
- Stop in the uboot
- Turn the **PERSIST_SECONDARY_BOOT**
  uboot command: mw 20d8044 0x40000000
- Type reset in uboot
- The secondary uboot in 3.14.28 release is booting
Demo Screenshot

U-Boot 2014.04 (Jan 05 2015 - 14:54:36)
CPU: Freescale i.MX6Q rev1.2 at 792 MHz
CPU: Temperature 32 C, calibration data: 0x58e4f07d
Reset cause: POR
Board: MX6-SabreSD
I2C: ready
DRAM: 1 GiB
MMC: FSL_SDHC: 0, FSL_SDHC: 1, FSL_SDHC: 2
*** Warning - bad CRC, using default environment

No panel detected: default to Hannstar-XGA
Display: Hannstar-XGA (1024x768)
In: serial
Out: serial
Err: serial
Found PFUZE100 deviceid=10, rev=11
mmc1 is current device
Net: FEC [PRIME]
Normal Boot
Hit any key to stop autoboot: 0
=> mw 20d8044 0x40000000
=> reset
resetting ...

CPU: Freescale i.MX6Q rev1.2 at 792 MHz
CPU: Temperature 32 C, calibration data: 0x58e4f07d
Reset cause: WDOG
Board: MX6-SabreSD
I2C: ready
List

|-- 1kheader_mx6q.bin
|-- 1kheader_mx6sx.bin
|-- i.MX6Q-secondary_boot_demo.sdcard
|-- i.MX6SX-secondary_boot_demo.sdcard
|-- readme.txt
|-- i.MX6 SDCARD Secondary Boot Demo.pptx
|-- u-boot-imx6qsabresd_sd_3.10.53.imx
|-- u-boot-imx6qsabresd_sd_3.14.28.imx
|-- u-boot-imx6sxsabresd_sd_3.10.53.imx
|-- u-boot-imx6sxsabresd_sd_3.14.28.imx