AM35x-OMAP35x-PSP 04.02.00.07 Release Notes

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Release Notes

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Introduction

This release notes document applies to version 04.02.00.07 of OMAP Linux PSP. It summarizes features supported, known issues and workarounds applicable to the supported platforms - AM3517EVM, OMAP3EVM (OMAP35x, AM/DM37x) and BEAGLE (OMAP35x & AM/DM37x).

Important

This release has undergone complete system test on AM37x EVM (with ES1.2) and AM3517EVM (with ES1.2). It has only been sanity tested on OMAP35x EVM and Beagle/ BeagleXM platforms.

Read This First

Upstream changes across components (x-loader, u-boot and Linux kernel) have an impact on the usage - as compared to the previous releases. Important changes are being highlighted here. More details (if necessary) are appropriately included in the User Guide.

Important

1. The NAND driver in Linux kernel now uses 1-bit hardware ECC. The x-loader and u-boot have been updated to use same ECC scheme.

    It is, therefore, mandatory to update the x-loader and u-boot when using the Linux kernel from this release. Filesystem residing on the NAND partition will need to be re-flashed as well.

    See detailed procedure in the User Guide

2. The serial console device has been renamed `ttyOn` (from `ttySn`).

    This impacts the `bootargs` passed to the kernel and console definition in the `/etc/inittab` of existing filesystems.

    See section **Using The Correct Console Device** in the User Guide

3. When using NFS location for root filesystem, the DHCP script included in the filesystem may need to be changed.

See section **Updating the DHCP Script** in the User Guide

4. List of parameters passed to create the JFFS2 image via `mkfs.jffs2` have changed.

See section **Creating JFFS2 File-system** in the User Guide

5. The steps for flashing the JFFS2 image to NAND from u-boot have changed.

See section **Flashing File-system from U-Boot** in the User Guide

The Linux kernel and U-Boot software in this release are based on the following open source repositories:

Component	Version	Base Repository	Base Tag (or commit id)
OMAP Linux Kernel	2.6.37(Linux kernel version)	The baseline was chosen from "pm" branch of [1]	2b3ea6aa16956e15f1ba8e7b70898aaacbec2237. History on "pm" branch gets rewritten and hence the commit may not be valid always.
U-Boot	2010.06	[2]	v2010.06

The File system is based on the Arago [3].

The codebase for X-loader, U-Boot and Linux kernel included in this release is also hosted at the following repositories:

Component	Repository (Branch)	Baseline Tag	Release Tag
Linux Kernel	[4] (OMAPPSP_04.02.00.07)	OMAPPSP_04.02.00.07_baseline	v2.6.37_OMAPPSP_04.02.00.07
U-boot	[5] (OMAPPSP_04.02.00.07)	v2010.06	v2010.06_OMAPPSP_04.02.00.07
X-Loader	[6] (OMAPPSP_04.02.00.07)	OMAPPSP_04.02.00.07_baseline	v1.51_OMAPPSP_04.02.00.07

For detailed information on the various software components included in the release and how to use them, please refer to the User's Guide.

The kernel and U-Boot have been compiled with CodeSourcery GNU Toolchain for ARM Processors 2009-q1-203 [7] based on GCC 4.3.3

Documentation

- The **User Guide** provides instructions on how to use this Linux PSP.
- The **Feature Performance Guide** provides performance benchmarks on select drivers included with the PSP package.

A copy of both these documents is also included in the `docs` folder inside the release package.

What's Supported

This Linux PSP includes support for AM3517 platform(AM3517EVM), OMAP35x platforms(OMAP3EVM, Beagle) and AM/DM37x platforms (OMAP3EVM, BEAGLEXM).

OMAP35x and AM/DM37x are binary compatible(same X-loader, U-boot, Kernel binaries can be used) - differences are handled through run time detection.

This Linux PSP supports the following components:

- U-Boot supporting NAND, MMC and NOR (only on AM3517)boot modes
- X-loader supporting NAND, MMC and NOR (only on AM3517) boot modes
- Linux Kernel and device drivers.
  - Audio (McBSP)
  - Video Display (V4L2 and Fbdev)
  - Video Capture (YUV and BT656 mode)

- Ethernet
- NAND
- NOR (on AM3517)
- MMC/SD/SDIO
- UART
- I2C
- TouchScreen
- SPI
- RTC
- WDT
- Keypad
- CAN - SocketCAN implementation (on AM3517)
- Power Management ICs (TPS65023 on AM3517, TPS65950 on OMAP35x, AM/DM37x)
- MUSB host supporting MSC, HID and USB Audio/Video
- MUSB gadget supporting File-storage and CDC/RNDIS
- MUSB OTG supporting HNP/SRP
- EHCI host supporting MSC, HID(via a HS hub) and USB Audio/Video
- Multi-OMAP build is supported (through omap2plus_defconfig)
- Audio and video examples.
- Pre-built binaries for X-loader, U-Boot, Linux kernel and filesystem.

Important

For OMAP35x, the U-boot pre-built binaries support Micron NAND part only. For older OMAP35x EVM with OneNAND parts, the u-boot binary needs to be re-built with OneNAND support. Please refer the Getting Started Guide for detailed instructions

For AM/DM37x, Rev.D Processor card (ES1.2) with Hynix memory part is supported. Older versions with Micron/Numonyx Memory part are not supported with this release

For AM3517, Rev.C processor card (ES1.2) with Rev.C baseboard and Rev.C Application board supported with this release

What's Not Supported

- Following features/modules are not supported:
  - U-boot (Unified binary supporting Nand/OneNand on OMAP35x platform)
  - AM/DM37x Processor card with Micron/Numonyx Memory
  - OMAP35x/AM-DM37x ISP-Resizer driver
  - Raw sensor format on parallel interface
  - IOMEM (USERPTR mode) type of buffers in V4L2 Capture
  - Default MPU rate configuration through bootargs using "mpurate="

Fixed in this Release

Issue Identifier	Issue headline	Description/Root-cause
SDOCM00064573	Audio capture gives overrun errors when tried using NFS	
SDOCM00066233	Audio loopback sometimes fails to resume after system comes out of suspend state	
SDOCM00065235	OMAP35x,AM3517,AM/DM37x:Nand driver build failure as module	Fixed indirectly with kernel migration
SDOCM00067982	OMAP35x/DM37x Audio Module removal failure	Fixed indirectly with kernel migration
SDOCM00067906	<RTC>Modular build is not supported	Fixed indirectly with kernel migration
SDOCM00068154	Module Unload fails for Input devices(keypad and touchscreen)	Fixed indirectly with kernel migration
SDOCM00069809	Some time kernel Crash (hang) is observed	Fixed indirectly with kernel migration
SDOCM00076796	Unified u-boot for AM37x, AM35x and Netra	Now we have single tag supporting all Cortex-A8 family of devices
SDOCM00080381	Kernel crash happens on running v4l2 display tests using the bootargs mentioned in the v4l2 display driver user guide on AM37x	Allocate exact or more memory than the resolution configured using S_FMT ioctl.
SDOCM00080451	AM37x/Am3517: Unable to erase and mount the MTD devices which has bad blocks in it	The issues was with empty partition, if you try to flash the jffs2 filesystem from u-boot and then mount it works.

Fixed in this Release - OMAP35x

Issue Identifier	Issue headline	Description/Root-cause
SDOCM00062661	pm: high cpu usage after 'failed' suspend	Fixed indirectly with kernel migration
SDOCM00067978	With mpurate=125 some power domains domains don't enter OFF state during suspend	With kernel migration support for "mpurate" is not available. User can change the mpu rate using user space governor.
NA	Following message is seen during boot-up:dpll3_m2_clk rate change failed: -22	Fixed indirectly with kernel migration
SDOCM00080431	Capture: On running the media controller sample application, the display is split into two and flickers.	Bug in driver, the SDOFST was getting configured wrongly
SDOCM00080449	AM37x: Touchscreen driver removal prints warnings on the console	NA
NA	OMAP3ISP: Modular build is not supported	None
NA	TBD	Always enable debugfs

Fixed in this Release - AM/DM37x

Issue Identifier	Issue headline	Description/Root-cause
SDOCM00066228	Video Display: With enable_off_mode and Sleep_while_idle flag enabled, display goes off on every console timeout	With latest ES1.2 silicon, this behavior is not observed.
SDOCM00067652	Suspend/resume doesn't succeed for 37x when off mode is enabled.	Fixed indirectly with migration to newer kernel version
NA	Following message is seen during boot-up:dpll3_m2_clk rate change failed: -22	Fixed indirectly with kernel migration
SDOCM00080431	Capture: On running the media controller sample application, the display is split into two and flickers.	Bug in driver, the SDOFST was getting configured wrongly
SDOCM00080449	AM37x: Touchscreen driver removal prints warnings on the console	NA
NA	OMAP3ISP: Modular build is not supported	None
NA	TBD	Always enable debugfs

Fixed in this Release - AM3517

Issue Identifier	Issue headline	Description/Root-cause
SDOCM00066290	Video Capture: Quality issues due to reverse A-Law table work-around in application	Hardware EVM issue: Fixed with latest Rev.C version of Application board.
SDOCM00067898	<Video Display>On suspend system hangs if the display output is on TV out.	Added timeout for wait loop in USB code. Actually this is cross dependency with MUSB.
SDOCM00068154	<AM3517 TSC>Modular build is not supported	Fixed indirectly with kernel migration
SDOCM00080441	AM3517:Ethernet modular build failed	Exported all required symbols for the emac modules

New in this Release

- Following are the new features supported:

  - 1, 4 and 8 bit SW BCH ECC support for NAND Flash (also changed default ECC scheme to 1-bit HW ECC)
  - Media-Controller interface for OMAP3 ISP-Camera subsystem
  - Parallel Sensor interface in YUV mode (on OMAP35x, AM/DM37x)
  - NOR Flash support (on AM3517)
  - Run time PM support

Known Issues

Issue Identifier	Issue headline	Known Workaround(s)
SDOCM00034288	Video Display: Mirroring of RGB888 images fails	Hardware issue
SDOCM00034465	Video Display: switching back and forth between ntsc and pal standard results into display corruption.	Avoid disabling display when output is on TV.
SDOCM00053357	Video Display: Flicker and color corruption observed on TV Display	None
SDOCM00053359	Video Display: Sharpness is reduced when image is up-scaled.	Hardware behavior: Fine tuning the scaling coeff. may give better result
SDOCM00053361	Video Display: Directing any of the pipeline to TV cuts image on top left corner by few pixels.	None
SDOCM00053362	Video Display: Frame rate may fall below 60Hz when rotation enabled for V4L2 driver under heavy system load.	Requires custom fine tuning of application
SDOCM00059300	Video Display: Suspend/Resume is not supported when any of output is on TV (VENC).	Avoid suspend/resume when output is on TV. This issue is related to SDOCM00034465, where Venc goes out of order after multiple on-off sequence.
SDOCM00069806	Video Display: GFX FIFO underflow observed when using DSS with higher resolution + VRFB rotation	This is completely depend on system bandwidth, and need to be tuned for given use-case
SDOCM00034492	Video Capture: Interlacing artifacts observed in video sample loopback application when displayed on LCD	None
SDOCM00055541	MUSB: Rx throughput is low when CPUIDLE is enabled	none
SDOCM00053644	MUSB: OPT failure for MUSB as A-devcie	Use custom patch as per details in IR
SDOCM00053934	MUSB: RNDIS: Pings fail beyond packet size of 64000 bytes	none
SDOCM00034419	MUSB: CDC/RNDIS: Device frame work and NDIS 6.0 failures are observed during DTM test execution	none
SDOCM00062599	MUSB: RNDIS: NFS retry observed when RNDIS module is inserted	Use built-in CDC/RNDIS driver untill issue gets fixed in Arago filesystem.
SDOCM00067894	EHCI: Device detected as full speed after system resume if it was connected before initiating suspend	SMSC3320 PHY interoperability issue (OMAP35x errata 3.1.1.193)
SDOCM00080067	EHCI: EHCI module doesn't work after resume from suspend with off mode	none
SDOCM00080233	Warning Message: I2C module soft reset failure during kernel boot	No operational impact.
SDOCM00080235	WARN_ON (slow path) kernel dump is getting dumped on console on very first suspend	No operational impact/side-effect.
NA	Warning message from gpmc driver for interrupt API's "Trying to install interrupt handler for IRQ"	None. Neither interrupts are completely supported in kernel GPMC driver, nor driver uses it. This part of implementation is still under development and should not have any operation impact or side effects.

SDOCM00080727	AM37x & AM35x: Performance degradation is observed with 04.02.00.07 release on various devices	NA

Known Issues - OMAP35x

Issue Identifier	Issue headline	Known Workaround(s)
SDOCM00053374	Video Capture: Video quality issues observed with video test patterns	None
SDOCM00067557	<OMAP3 ISP> Suspend/Resume is not supported	This is the first time we are supporting Media-Controller framework, this feature will be supported as a patch on top of 04.02.00.07.
SDOCM00053360	Video Display: On some EVMs that have a Micron Nand part, display quality is bad.	None
SDOCM00080236	The new 4/8 bit nand ecc schema is not supported on Beagle	None.

Known Issues - AM/DM37x

Issue Identifier	Issue headline	Known Workaround(s)
SDOCM00065919	System freezes on Watch-Dog Timer triggers	None
SDOCM00067557	<OMAP3 ISP> Suspend/Resume is not supported	This is the first time we are supporting Media-Controller framework, this feature will be supported as a patch on top of 04.02.00.07.
SDOCM00080068	MUSB: File copy from one stcik to another fails in DMA.	none
SDOCM00076795	AM37x: EHCI instability: Device connect shows "cable is bad" error	none
SDOCM00070023	AM/DM37x: (Hynix part): Iperf fails in RNDIS mode	none
NA	On ES1.0 revision of Si, ethernet from Linux is not working	This is HW issue: with >=ES1.1 Si the DSS data pins are muxed with sys_boot pins and sys_boot5 is used as eth_reset which results into this behavior. User must disable CONFIG_OMAP_MUX option to get ethernet working on ES1.0

Known Issues - AM3517

Issue Identifier	Issue headline	Known Workaround(s)
SDOCM00067097	RTC periodic interrupt is not supported	None
SDOCM00067556	TSC: Wake-up event is not working.	None.
SDOCM00065165	MUSB: SRP from device is not detected by host	Start session from host side where mini-A plug is inserted.
SDOCM00080237	<AM3517>Slowpath warning for missing iva hwmod entry	None; No operational impact/side-effect.
SDOCM00080603	AM35x: MUSB: FileStorage Gadget: Reset message seen during write operations	None

Installation and Usage

Please look for detailed installation and usage instructions in the User's Guide

Upgrade and Compatibility Information

To upgrade to new PSP release, simply delete the old release and extract the new release in its place.

Dependencies

None.

Device Support

This release supports the Texas Instruments AM3517(on AM3517EVM) and OMAP35x, AM/DM37x (on OMAP3EVM Rev.G, BEAGLE and BEAGLEXM) platforms.

Only Sanity testing has been carried out on OMAP35x EVMs (with both ES2.1 & ES3.1 Si), Beagle and BeagleXM.

Validation Information

Please note that system test has been done using Linux Functional Test Bench (LFTB) available at Arago [8] label **LFTB_02.00.00.04_int** for validating the release. Documentation on using LFTB is included in the LFTB repository itself.

Technical Support and Product Updates

For further information or to report any problems, contact http://e2e.ti.com or http://support.ti.com.

OMAP Linux Mailing List: http://vger.kernel.org/vger-lists.html#linux-omap

References

[1]   http://git.kernel.org/?p=linux/kernel/git/tmlind/linux-omap-2.6.git;a=shortlog;h=refs/heads/pm

[2]   http://git.denx.de/?p=u-boot.git;a=summary

[3]   http://arago-project.org/

[4]   http://arago-project.org/git/projects/?p=linux-omap3.git;a=summary

[5]   http://arago-project.org/git/projects/?p=u-boot-omap3.git;a=summary

[6]   http://arago-project.org/git/projects/?p=x-load-omap3.git;a=summary

[7]   http://www.codesourcery.com/sgpp/lite/arm/portal/release858

[8]   http://arago-project.org/git/projects/?p=test-automation/target-code/psp/lftb.git;a=summary

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