DRA7xx GLSDK 7.00.00.04 Release Notes

Generic Linux Software Development Kit (GLSDK) 7.00.00.04 for DRA7xx

February 27, 2015

This is the EA release of the Generic Linux Software Development Kit (GLSDK) for the DRA7xx platform. This GLSDK Software release gives developers the ability to evaluate the hardware and software capabilities of the DRA7xx platform.

This document is divided into the following sections:

Contents

Documentation

- Latest up to the minute information and updates may be found on the Texas Instruments Processors Wiki (http://processors.wiki.ti.com/index.php/Main_Page).
- The *Quick Start Guide (http://downloads.ti.com/infotainment/esd/jacinto6/glsdk/latest/exports/DRA7xx_EVM_Quick_Start_Guide.pdf)* contains information on how to set up your EVM for an out of box demo showcase as well as for software development. It is located in the *docs/* folder in the GLSDK along with other documentation.
- The *Software Developer's Guide (http://processors.wiki.ti.com/index.php/DRA7xx_GLSDK_Software_Developers_Guide)* contains information on how to start developing software on the DRA7xx and is located in the *docs/* folder in the GLSDK along with other documentation.

Components

The Linux GLSDK 7.00.00.04 release package for DRA75x/DRA72x includes the following components:

- U-boot support (2014.07)
  - Boot from: SD card, eMMC (FAT load), QSPI.
  - tftp, dhcp
- Linux kernel 3.14.31
  - FS Media: SD card, eMMC, NFS

    - USB Host: Isochronous A/V, HID, MSC
    - USB 3.0 Host: MSC
    - USB Peripheral: NCM Gadget
    - UART, I2C, QSPI, Ethernet
    - VIP (V4L2, DMABUF)
    - OV1063x, TVP5158 and FPD3 serdes drivers (i2c client, v4l2 subdev)
    - VPE (V4L2 M2M, DMABUF)
    - DSS (LCD, HDMI)
    - Audio playback and capture
    - WiLink 8 (WLAN/BT)
    - MPU DVFS, AVS Class 0, ABB
    - RTC
- Multimedia
    - H.264, MPEG2, MPEG4 & VC1 decoders @ 1080p60
    - MJPEG decoder
    - H.264, MPEG4 encoders
    - Gstreamer plugin for video decode acceleration
    - Gstreamer plugin for video encode acceleration
    - Gstreamer plugin for video processing acceleration (using VPE)
    - Gstreamer plugin for KMS display sink
    - Gstreamer plugin for Wayland sink
    - Gstreamer plugin for video capture (using VIP)
    - AAC audio codec (ARM based, open-source)
    - DSP-side DCE interface for custom codec integration
- Graphics
    - 3D graphics acceleration (OpenGL ES 2.0)
    - Wayland, with Weston compositor, multiple display support
- Frameworks
    - BIOS (IPU2, SMP-only)
    - DCE (IPU2)
    - IPC 3.x
    - OMAPDRM
- Demo applications
    - Single camera capture -> display demo using native VIP & DSS drivers
    - Dual-decode demo with one display on HDMI and other on LCD (VIDDEC3 interface)
    - Dual-decode demo on single display (Wayland) through Gstreamer
    - Dual-decode demo on two displays (Wayland) through Gstreamer
    - Video capture and encode demo through Gstreamer
    - Video capture and display pass through demo through Gstreamer

The Software Build of Materials is deprecated, please look at the repo manifest file and yocto layers for details.

What's New

Changes from GLSDK v6.10.00.02:

- DRA72x support
- Major component version upgrades
    - U-Boot : 2013.04 => 2014.07
    - Kernel : 3.12.25 => 3.14.31
    - GStreamer : 0.10 => 1.2.3
    - Wayland : 1.3.0 => 1.6.0
    - Yocto : 1.5 (dora) => 1.6 (daisy)
    - Wilink: R8.4 => R8.5
- U-boot
    - Support for early boot of IPU
    - System Boot Optimization (QSPI only)
        - QSPI Quad mode support in uboot
        - QSPI dma support in uboot
    - DFU Support.
- Kernel
    - Support for LateAttach in IPC
    - UART : DMA mode support
    - USB
        - USB DRD (Dual role device) support
        - USB peripheral (NCM Gadget) support
    - SATA
        - Support for Gen-I/II/III SATA devices
        - Port Multiplier support
    - VIP driver
        - Support for NV12 capture
    - VPE driver

    - Bug fixes for multi instance instability
    - RGB565 and alpha channel support
  - Camera driver
    - Device tree based generic ser/des driver for LVDS camera
    - Expose the gpios and remote i2c clients via i2c bus
  - PM/CLOCK
- DVFS
  - Dynamic detection/update of OPPs for MPU based on efuses
- MMC/SD/EMMC
  - DRA72x: UHS(SDR104) and HS200 mode support is enabled.
- Graphics
  - OpenGLES demos from Imagination PowerVR(tm) SDK
  - Profiling/tracing tools for SGX
- Multimedia
  - Support for MPEG4 encoder
  - Support for capture -> encode GST pipeline using direct VIP NV12 capture avoiding VPE based color space conversion

Installation and Usage

The *Software Developer's Guide (http://processors.wiki.ti.com/index.php/DRA7xx_GLSDK_Software_Developers_Guide)* contains information on how to start developing software on the DRA7xx and is located in the *docs/* folder in the GLSDK along with other documentation.

Host Support

This release supports Ubuntu 12.04 LTS (http://www.ubuntu.com) as your development host.

Dependencies

The GLSDK requires the Linaro toolchain, more information is there in the *Software Developer's Guide (http://processors.wiki.ti.com/index.php/{{{sdk_platform}}}_GLSDK_Software_Developers_Guide)*

Device Support

This GLSDK release supports the DRA7xx EVM and has been validated on the following boards:

- DRA75x Rev-H EVM
  - JAMR3 Apps board
  - 10" OSD LCD display
  - PG 2.0 Silicon
- DRA75x Rev-G EVM
  - JAMR3 Apps board
  - 10" LG LCD display
- DRA72x Rev-B EVM

The DRA72x Rev-B EVM is not compatible with Vision application card. Therefore, the vision OVcamera and LVDS cameras cannot be used as is. The baseboard needs modification to support these use cases.

Validation Information

Please get in touch with your TI contact for validation information / test report.

Upgrade and Compatibility Information

This is the first GLSDK early adopter release on 3.14 kernel and 2014.07 u-boot

Known Issues and Limitations

This section contains the snapshot of Known Issues and Limitations at the time of making the release.

Known Issues

Kernel and Uboot

- OMAPS00316544: UART-boot mode is not working J6/J6Eco platform, unable to load u-boot image with YMODEM on u-boot version 2014.07.

ALSA

- OMAPS00318754: J6/J6Eco: Alsa: arecord at 192000Hz records for more than the time duration specified or sometimes failed
- OMAPS00318755: J6 RevG: Alsa: amixer switch toggle failed during playback going on in background
- OMAPS00319187: J6/J6Eco: Alsa: Underruns during audio play back
- OMAPS00319188: J6/J6Eco: Alsa: Overruns during audio recording
- OMAPS00319189: J6/J6 Eco: Audio Playback SR>=48000Hz : aplay: pcm_write:1939: write error: Input/output error

I2C

- OMAPS00316736: J6 Eco/ J6 Rev G: I2C: EEPROM read/write test failed during intergration check.

QSPI

- OMAPS00318674: J6-RevG: QSPI: Stress QSPI read/write operation casues CRC failure

MMC/SD/EMMC

- OMAPS00319095: DRA72X: MMC/EMMC: Integrity check fails sometimes on a file copied from one partition to the other
- OMAPS00319410: DRA7xx: MMC/SD: UHS mode is not enabled on DRA75x (silicon errata: i803)

OMAPDSS/OMAPDRM

- OMAPS00319207: J6: K3.14: DSS/DRM: omap_irq_error_handler() reported OCP errors seen during GStreamer video playback
- OMAPS00319206: J6: K3.14: LCD/DSS/DRM: omap_crtc_error_irq() reported LCD sync-lost error while running some viddec3 test cases.
- OMAPS00318764: J6: K3.14: omapdrm: Gstreamer1.2 playbin plays the stream out of order with kmssink
- OMAPS00317778: J6: K3.14: DMM/Tiler: Kernel crash - could not pin/swap
- OMAPS00316999: J6: K3.14: OMAPDRM: Kernel crash while running dual display tests using viddec3test
- OMAPS00319231: J6/J6Eco: K3.x: HDMI/OMAPDSS: Some HDMI monitors are not detected by DRA7xx EVM h/w
- OMAPS00319260: J6/J6Eco: K3.x: HDMI/DSS: modetest not listing all the modes for some hdmi monitors.

Ethernet

- OMAPS00319096: DRA7xx(J6/J6Eco) : ethernet : reliability issues/link failure with gigabit mode of operation(on some boards)
- OMAPS00319406: DRA7xx : ethernet : 10Mbps mode does not work

SYSTEM

- OMAPS00310738 Executing "reboot" command from terminal prompt causes system/boot hang
- OMAPS00313360: DRA7xx: kernel-idle-thread: Crash observed in arch_cpu_idle() while running long-hour Wayland testcase

USB

- OMAPS00305092: The Superspeed port (USB1 port) in host mode, bus reset(with usb3.0 flash/hdd drive)is observed when high quality usb3.0 connector is not used. It is strongly recommended that EVM design guidelines are followed and high quality usb3.0 connector/cables are used to prevent this issue
- OMAPS00318710: USB: DWC3: warning occurs when the usb camera is removed while capturing the usb video.
- OMAPS00318321: The specific usb mouse (PIXART mouse) gets disconnected automatically every 60 seconds if the mouse is not used by application. The issue is not occur if the mouse used by application
- OMAPS00319489: The superspeed port (USB1 port) in OTG/DRD mode, the USB-2.0 devices works but USB3.0 devices doesn't work.
- OMAPS00317927: The highspeed port (USB2 port) in OTG/DRD mode, switching from "host" to "device" takes more than 2 seconds.

VIP/VPE

- OMAPS00319090: J6eco: Kernel: VIP: gst1.2 v4l2src capture results in kernel crash
- OMAPS00319292: J6eco: Kernel: VIP: Cannot capture in NV12 format
- OMAPS00308510: Kernel: VPE: Artifacts in some frames while deinterlacing specific 720x240i uyvy image
- OMAPS00319299: Kernel: VIP: Fail to capture multi channel video from TVP5158

Graphics

- OMAPS00319130: SGX: SGX Kernel module crash when Weston is killed while client applications are running
- OMAPS00319349: SGX/DRM: GLBenchmark test for offscreen test leads to kernel crash
- OMAPS00319131: SGX: Functionality: SGX HW recovery observed during termination of EGL based Wayland clients such as simple-egl / gst-wayland

Multimedia

- OMAPS00312579: Video Shakiness observed during trick play
- OMAPS00313144: Trickplay in a loop gets stuck
- OMAPS00318998: Videos on waylandsink doesnot respond to mouse events
- OMAPS00318997: Delay in capture
- OMAPS00318996: Playbin skips a lot of frames of certain streams in waylandsink
- OMAPS00318994: Playbin doesnot pick vpe plugin for interlaced streams
- OMAPS00318770: Vpe deinterlacing with waylandsink results in distorted video
- OMAPS00319211: J6: multimedia: Stability issue with Dual Decode-Dual Display tests
- OMAPS00319388: DRA7xx: multimedia: Video encode test with videnc2 fail on one stream

Limitations

- VIP - Driver does not support in-line CSC and scaling
- VIP - Driver does not support portB capture, so only one camera capture(vin1a or vin2a) is supported on J6eco
- VIP - LVDS cameras on J6eco not supported
- VIP - Driver does not support capture from portB by default
- Display - FPDLink display interface is not supported
- Display - HDMI is not supported with Rev-D and earlier versions of DRA75x EVM
- Power/Thermal - DVFS supports only MPU frequency and voltage changes
- Power/Thermal - On a few DRA72x samples dynamic detection MPU OPPs doesnt work due to wrong efuse values. Only OPP_NOM is enabled in such cases
- WiLink - Wilink and bluetooth are not functional on J6Eco
- Graphics - GC320 is not supported
- Early Boot and Late Attach has only been verified with IPU2 and in two stage SD boot mode
- Security - Linux kernel in this GLSDK release does not boot on a HS (High-Secure) device
- System - NAND/NOR FS support is not available
- EVM - Support for JAMR3 board is limited to Software Defined Radio
- Audio - HDMI audio is not supported

Issues closed since GLSDK v6.10.00.02

Kernel and Uboot

- OMAPS00310452 Kernel 3.12: DRM: Error mapping buffer

VIP/VPE

- OMAPS00308216 DRA7xx: kernel: VIP: Cannot capture video from LVDS cam6
- OMAPS00310245 Kernel: VIP: Boot crash when LVDS camera nodes are added
- OMAPS00312633 Kernel: VIP: Fails to capture video if failed once
- OMAPS00312952 VIP: LVDS cam6: Video artifacts in capture, random green pixels
- OMAPS00313113 VIP: Multi instance capture fails when capturing from slices of the same instance

DSS/OMAPDRM

- OMAPS00308145: DRA7xx: DSS: Long duration video and graphics tests in a loop results in random kernel crashes due to page faults
- OMAPS00310487: DRA7xx: DSS: HDMI: PLL GO bit not set causing failure to set mode

Graphics

- OMAPS00308513: Graphics/DRM: Usability - kmscube application on HDMI shows tearing artifacts in specific screen area
- OMAPS00318757: Memory leaks with GEM handles in the long run tests

Multimedia

- OMAPS00313449: MultiInstance playback (MPEG4 + H264) with trickplay hangs

Yocto

- OMAPS00308591 Yocto: Openssl build failure on certain machines

Versioning

This is EA release based on kernel version 3.14 (GLSDK 7.00.00.04) for DRA75x ES 1.0/ES 1.1 and DRA72x.

Technical Support and Product Updates

Latest up to the minute information and updates may be found on the http://processors.wiki.ti.com/index.php/Category:GLSDK.
Please contact your FAE or CPM for any support requests on GLSDK

Download the Latest GLSDK

The latest GLSDK is available for download from http://downloads.ti.com/infotainment/esd/jacinto6/glsdk/latest/index_FDS.html

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The current version is 7.00.00.04.

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