DRA7xx GLSDK 6.10.00.02 Release Notes

Generic Linux Software Development Kit (GLSDK) 6.10.00.02 for DRA7xx

September 19, 2014

This is the GA 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

Generic Linux Software Development Kit (GLSDK) 6.10.00.02 for DRA7xx
- Documentation
- Components
- What's New
- Installation and Usage
- Host Support
- Dependencies
- Device Support
- Validation Information
- Upgrade and Compatibility Information
- Known Issues and Limitations
  - Known Issues
    - ALSA
    - CLOCK
    - DSS
    - Ethernet
    - SYSTEM
    - USB
    - VIP/VPE
    - Bluetooth/WLAN
    - DSS/OMAPDRM
    - Graphics
    - Multimedia
  - Limitations
- Issues closed since GLSDK v6.10.00.01
  - Kernel and Uboot
  - Ethernet
  - VIP/VPE
    - DSS/OMAPDRM
    - POWER
    - Graphics
  - Multimedia
  - Yocto
- Appendix
- Versioning
- Technical Support and Product Updates
- Download the Latest GLSDK

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 6.10.00.02 release package for DRA74x/DRA75x includes the following components:

- U-boot support (2013.04)
  - Boot from: SD card, eMMC (FAT load), QSPI.
  - tftp, dhcp

- Linux kernel 3.12.25
  - 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)
  - 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 encoder
  - 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
  - AAC audio codec (ARM based, open-source)
  - Software Defined Radio (with demo demodulator)
  - DSP-side DCE interface for custom codec integration
- Graphics
  - 2D graphics acceleration (BLTsville)
  - 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.

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 v6.10.00.01:

- U-boot
  - Support for early boot of IPU
  - System Boot Optimization (QSPI only)
    - QSPI dma support in uboot
- Yocto
  - Migrated to Yocto 1.5 (dora branch)
  - New meta-glsdk layer for glsdk specific recipes (http://arago-project.org/git/projects/?p=meta-glsdk.git;a=shortlog;h=refs/heads/dora)
- Kernel
  - WiLink 8 (WLAN) support
  - RemoteProc
    - Support for LateAttach in kernel
  - Audio
    - Audio Playback and record with multichannel support
  - UART : DMA mode support - refer to GLSDK-6.10.00.02-Post-release-page for UART-DMA support patches
  - USB
    - USB DRD (Dual role device) support.
    - USB peripheral (NCM Gadget) support.
  - VIP driver
    - Simultaneous capture from both slices
    - Resource cleanup and error recovery
  - VPE driver
    - Support for sequential Top / Bottom interlaced buffer format (decoded by IVA-HD).
    - N frame De-interlacing

        - Multi instance transaction latency improvement
    - PM/CLOCK
        - AVS (Adaptive voltage scaling) class 0 support
        - ABB (Adaptive Body Bias) support - Verification scope restricted to Software flow check
        - RTC - Realtime clock support
- Graphics
    - 2D graphics acceleration (BLTsville)
- Multimedia
    - Video encoder sample test application
    - Trick play support in video decoder validated
    - Gstreamer
        - Support for video encode plugin for the following use case - capture->encode->store

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

Known Issues and Limitations

This section contains the snapshot of Known Issues and Limitations at the time of making the release.
Information regarding any further updates - defects, enhancements and/or fixes will be made available via DRA7xx GLSDK 6.10.00.02 Post-release Updates page.

Known Issues

Kernel and Uboot

- Linux kernel in this GLSDK release does not boot on a HS (High-Secure) device.

ALSA

- OMAPS00313818 Alsa: arecord at 192000Hz records for more than the time duration specified
- OMAPS00313823 Alsa: Underruns during audio play back
- OMAPS00313825 Alsa: Overruns during audio recording
- OMAPS00313721 Audio Playback SR>=48000Hz : aplay: pcm_write:1939: write error: Input/output error

CLOCK

- OMAPS00313805 DRA7xx/Vayu: RTC: Alarm does not ring at pre-set time
- OMAPS00313759 Vayu/DRA7xx: WDT: Watch dog timer reset fails to reset the system on some EVMs

DSS

- OMAPS00308145: DRA7xx: DSS: Long duration video and graphics tests in a loop results in random kernel crashes due to page faults
- OMAPS00308147: Display flicker seen on HDMI display
- OMAPS00301898: Image is cropped when framebuffer size is bigger than display mode when using omapdrm API
- OMAPS00304365: DRA7xx: Some HD monitors do not work when non-standard timing is selected.
- OMAPS00310516: DRA7xx: Kernel: DSS: HDMI: modetest not listing all the modes for some hdmi monitors.
- OMAPS00310487: DRA7xx: DSS: HDMI: PLL GO bit not set causing failure to set mode
- OMAPS00310462: DRA7xx: DSS: Kernel WARN_ON() at __omap_irq_unregister() seen while executing dss testcases
- OMAPS00310451: DRA7xx: DSS: omap_crtc_error_irq() reported HDMI sync-lost occasionally while running some display related tests.
- OMAPS00311715: DRA7xx: DRM/DSS: omap_irq_error_handler() reported OCP errors seen during GStreamer video playback
- OMAPS00312993: DRA7xx: DSS: omap_crtc_error_irq() reported LCD sync-lost error while running some viddec3 test cases.

Ethernet

- OMAPS00313924: Ethernet : long duration robustness test cases fail due to I2C controller timeout due to which board becomes unresponsive(no ethernet failures reported though)

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: USB-3.0: USB 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

VIP/VPE

- OMAPS00308510: Kernel: VPE: Artifacts in some frames while deinterlacing specific 720x240i uyvy image
- OMAPS00313377: Running 2 instances of 1080i video playback causes kernel crash
- OMAPS00313719: K3.12: Bluetooth is not functional without running additional commands
- OMAPS00313810: VPE: first byte of 2lines differ across multiple runs

Bluetooth/WLAN

- OMAPS00313719: K3.12: Bluetooth is not functional without running additional commands

Please refer http://processors.wiki.ti.com/index.php/DRA7xx_GLSDK_Software_Developers_Guide#Enabling_Bluetooth_and_Wilink for the workaround.

DSS/OMAPDRM

- OMAPS00310515: DRA7xx: DSS: Multimedia iterative tests stops after sometime due to dispc_mgr issue
- OMAPS00310464: DRA7xx: K3.12: DSS: viddec3 dual display tests don't work (no video on HDMI) after running DSS tests
- OMAPS00310457: K3.12: DSS: Kernel backtrace (related to dispc_mgr_go) seen occasionally while executing long duration wayland tests
- OMAPS00308644: DRA7xx: Kernel: Stress test: Kernel crash on J6 while running VIDDEC3 usecase due to dispc related issue.
- OMAPS00308301: Wayland: Stress Test: Kernel crash during Wayland stress test after ~40 hours of continous testing due to dispc_mgr_go

Graphics

- OMAPS00308513: Graphics/DRM: Usability - kmscube application on HDMI shows tearing artifacts in specific screen area
- OMAPS00310491: K3.12: SGX: SGX Kernel module crash when Weston is killed while client applications are running
- OMAPS00313358: K3.12: SGX KM: PVR Kernel module crashes when GST playback in abruptly stopped
- OMAPS00313576: K3.12: SGX/DRM: GLBenchmark test for offscreen test leads to kernel crash
- OMAPS00308070: SGX: Functionality: Killing Weston simple-egl and subsurface applications leads to SGX HW recovery
  - This does not result in a system hang or a system reboot.
  - Weston continues to run without crashing. Other weston clients can be launched

Multimedia

- OMAPS00312579: Video Shakiness observed during trick play
- OMAPS00313449: MultiInstance playback (MPEG4 + H264) with trickplay hangs
- OMAPS00313144: Trickplay in a loop gets stuck

Limitations

- DRA74x/DRA75x EVM Rev.G is not supported
- X11 has been deprecated and is not supported.
- FBDEV support has been deprecated - use DRM instead. fbdev over DRM has not been verified

- VIP driver does not support in-line CSC and scaling.
- NAND/NOR FS support is not available.
- HDMI audio is not supported.
- SATA functionality has not been validated
- Display using DPI->FPDLINK->LCD interface is not supported
- Conflict between HDMI and I2C2 requires that HDMI be disabled when VIP or FPDLink display are used.
- On DRA7xx EVMs of Rev D or earlier, HDMI error logs appear continuously on the console when HDMI is not connected. It is recommend to use Rev E board or later, or keep the HDMI connected.
- Support for JAMR3 board is limited to Software Defined Radio.
- DVFS supports only MPU frequency and voltage changes
- MPU OPP_HIGH is not supported
- Thermal Management is not supported

Issues closed since GLSDK v6.10.00.01

Kernel and Uboot

- OMAPS00310452 Kernel 3.12: DRM: Error mapping buffer

Ethernet

- OMAPS00310762 Ethernet : bombarding the network interface with packets when the interface is down causes network failure
- OMAPS00308493 Ethernet: after multiple times of interface up/down during fast ping traffic from PC, eth-interface does not work
- OMAPS00310567 Ethernet : default vlan tag is not removed on egress - causes inter-op issues with vlan unaware system

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

- OMAPS00310515: DRA7xx: DSS: Multimedia iterative tests stops after sometime due to dispc_mgr issue
- OMAPS00310464: DRA7xx: K3.12: DSS: viddec3 dual display tests don't work (no video on HDMI) after running DSS tests
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- OMAPS00308301: Wayland: Stress Test: Kernel crash during Wayland stress test after ~40 hours of continous testing due to dispc_mgr_go

POWER

- OMAPS00309900 DRA7XX: KERNEL + U-BOOT: AVS regulator workaround for silicons without efused voltages

Graphics

- OMAPS00311322 SGX: OpenGLES driver assert with non-power-of-two textures for half-float pixel formats
- OMAPS00312585 bltsville crashes while running a batching usecases.
- OMAPS00311961 Wayland: Functionality - Nightly tests fail with PVRPMapKMem error

Multimedia

- OMAPS00311049 gst-vpe: Frames are curropted when running gst-launch interlaced content with debug prints

Yocto

- OMAPS00308591 Yocto: Openssl build failure on certain machines

Appendix

There are some fixes which did not make it to the 6.10.00.02 release. But there are patches available for the corresponding defects. The patches can be cherry-picked from the omapzoom repository and can be applied on top of 6.10.00.02 release (kernel). These would be reviewed and merged into p-ti-glsdk-3.12.y branch of the kernel repository. The updates will be available via DRA7xx GLSDK 6.10.00.02 Post-release Updates page.

Versioning

This is GA release based on kernel version 3.12(GLSDK 6.10.00.02) for DRA7xx ES 1.0 and ES 1.1.

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.
E2E Linux Forum - http://e2e.ti.com/support/embedded/f/354.aspx] can be used for discussing the Linux GLSDK development.

Download the Latest GLSDK

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

GLSDK releases can be downloaded from http://downloads.ti.com/infotainment/esd/jacinto6/glsdk/

The current version is 6.10.00.02.

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Links

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