

RN 4 06 00 02

Release Notes for release 4.06.00.02

Introduction

This release includes the Linux graphics drivers for the SGX530 family of chipsets AM35x/37xx, AM335x, 387x(TI814x)/389x(TI816x) The Graphics SDK contains documentation, demo programs and tools.

Installation and Usage

Please look for detailed installation and usage instructions at below link-

http://processors.wiki.ti.com/index.php/Graphics_SDK_Quick_installation_and_user_guide

Features in this release

- **NEW** - Based on the IMG Linux 1.7 DDK latest RC Release (1.7 RC867897)
 - **NEW** - PowerVR SDK 2.10.863987.
 - **NEW** - Support for AM335x SK board (sanity tested).
 - **NEW** - EGLIMAGE command line option introduced for supporting eglimage extension(selectable during make install of graphics SDK. By default this is zero(not enabled). Bufferclass texture streaming extension is enabled by default).
 - **NEW** - Xorg sources tarball with patches available under targetfs/xorg_source folder of graphics SDK release.
 - **NEW** - Pixmap unit test application packaged under GFX_Linux_SDK/ti-components/pixmap_2_triangles_test folder of the Graphics SDK release. This can be used to run when graphics SDK is built with FBDEV=no command line option.It generates a raw image output file that can be viewed with image viewers that support viewing raw image files.
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Pre-requisites

Kernel(Linux PSP) versions supported or used for validation

Please note that this release has been tested only on AM devices. No testing has been done on the DM parts. More details below-

- 2.6.37 kernel release on 389x platform
 - Linux PSP Release : TI81XX-LINUX-PSP-04.04.00.01
 - Not tested.
 - Due to a known issue in the Linux-PSP, disable the SII9022a driver using menuconfig

```
Device Drivers -> Graphics support->
                  < > SII9022a HDMI Transmitter>
```

- 2.6.37 kernel on 387x platform.
 - Linux PSP Release : TI81XX-LINUX-PSP-04.04.00.01
 - Only Sanity tested.
 - 2.6.37 kernel on AM35xx/AM37xx platforms
 - Linux PSP Release : 04.02.00.07.
 - Sanity tested.
 - Display drivers with DSS2 support ie, CONFIG_OMAP2_DSS=y
-

- 3.2 kernel on AM335x platform - <http://arago-project.org/git/projects/linux-am33x.git>
 - Complete testing with release/tag v3.2_AM335xPSP_04.06.00.07 on 15x15 Beta EVMs.
 - Sanity testing on AM335x SK Board with commit id - 91cdc6fbc271e01e231dcf0e9403448aa19433fb.

Toolchain

- Arago Dynamic toolchain based on GCC 4.5.3 for all devices (supplied with AMSDK releases).

Filesystem

- Filesystem from SDK package

On 387x and 389x, fbdev module is dependent on the VPSS and Syslink modules. The required versions are listed below. Please refer to Linux-PSP User Guide for details on how to build and install the fbdev module.

HDVPSS Release

- HDVPSS_01_00_01_37

What is supported

Khronos API support

- OpenGL ES 1.1
- OpenGL ES 2.0
- OpenVG 1.1 (Using CPU for majority of the tasks)
- EGL
- Limited 2D acceleration via PVR2D API

Window Systems

The following Window Systems are supported, on Linux:

- Null Window System (with Pixmap support)
- X11 support(DRI/DRM Xorg driver)

Buffer Swap modes

The following modes of buffer swapping are supported,

- Front (1 buffer), Flip (chained buffers)

Selection of these modes is done via entries in /etc/powervr.ini. Please refer to <http://processors.wiki.ti.com/index.php/SGXDbg#WindowSystem>

Extensions

- IMG proprietary Bufferclass texture streaming enabled by default.
- eglimage is supported & can be enabled by passing EGLIMAGE=1 during make install.

What is not supported

- Power Management features are not fully validated. Active power management support available on OMAP35x/37x platforms only.
 - Kernel (for OMAP35x/AM35x/37xx) configured without DSS2 framework support will not work with the current display class driver.
 - PIXMAP - Fbdev dependancy removal is not supported in FLIP buffer swapping mode.
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- X11 window system has been validated with the Xorg file system available as part of the graphics SDK installation(targetfs/XSGX folder). The Xorg server version that has been used/validated as part of this graphics SDK release is 1.9.0 and it has been validated with enlightenment window manager only.
 - Xorg DRI driver supports full screen mode with vsync synchronization without VRFB only on OMAP35xx/AM35xx/37xx devices. Also the Xorg DRI driver supports Vsync synchronization in full screen mode only on all devices.
 - v3dfx is available on github(<https://github.com/prabindh/v3dfx-base/wiki>). Hence it will not be packaged as part of graphics SDK releases.
 - Debug build is meant for debug/testing purposes only & should not be used for measuring performance. Also it has memory tracking & lot of prints enabled. Due to which some complex demos may not run. In such cases use release builds. Also Debug build should be used only when one cannot get the graphics drivers working & needs to understand more about the failure. Otherwise its advised to run all the apps/tests with release build only.
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Additional Packages

Demonstration packages for Texture streaming extension are available at the below link,

- [OpenGL_Texture_Streaming_-_bc-cat_User_Guide](#)

Benchmarking packages for SGX functionalities and APIs are available at,

- <https://gforge.ti.com/gf/project/gleslayer/>
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Debugging SGX driver related issues

For debugging issues with SGX driver and frequently asked questions, please go through

<http://processors.wiki.ti.com/index.php/SGXDbg>

Fixed in this Release

- [SDOCM00092599] Update pvr_drv.so as part of target install.
 - [SDOCM00092603] Segmentation fault with OpenGL ES2.0 apps using bufferclass driver.
 - [SDOCM00092605] Support for compilation of graphics SDK against 3.3.4 Linux kernel for AM35xx/37xx devices.
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Limitations/ Known Issues

- [SDOCM00061522] FrontEGL mode of swapping buffers may show artifacts (ex, lines at the top), when operating with DVI output.
 - [SDOCM00061276] Texturing via glTexImage2D will result in CPU utilisation depending on size of texture. Using OpenVG will result in CPU utilisation depending on complexity of Vector Graphics operations.
 - [SDOCM00085674] Lock related warnings seen with 2.6.37 kernel (Linux PSP 04.02.00.07) on OMAP35x/AM35xx/37xx platforms. Please refer to sgxdbg page - http://processors.wiki.ti.com/index.php/SGXDbg#Lock_related_warnings_seen_on_OMAP35x.2FAM35x.2F37xx_with_2.6.37_kernel for more details.
 - [SDOCM00085671] Some openVG test applications and demos may lead to kernel lockup. This behaviour is highly random.
 - [SDOCM00063807] All SDK demos should be exited by pressing 'q'. Ctrl-C can result in unknown behaviour after the closure.
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- [SDOCM00068272],[SDOCM00068322] Blue line on top of DVI display for PolyBump demo, thin line on top for sgx_render_flip_test demo

Contents

The folders in the installed package contain binaries for several family of devices containing the SGX530 core. Brief description of these folders is below.

Graphics SDK folder contents

	Folder Name	Description	Used by
2	gfx_dbg_es3.x / gfx_rel_es3.x	Debug/Release binaries for platforms having SGX core revision 1.2.1	(AM35xx) How to check?
3	gfx_dbg_es5.x / gfx_rel_es5.x	Debug/Release binaries for platforms having SGX core revision 1.2.5	(AM37xx) How to check?
4	gfx_dbg_es6.x / gfx_rel_es6.x	Debug/Release binaries for 38xx(387x,389x) devices (SGX core revision 1.2.5)	38xx How to check?
4	gfx_dbg_es8.x / gfx_rel_es8.x	Debug/Release binaries for 335x devices (SGX core revision 1.2.5)	AM335x EVM
5	GFX_Linux_KM	Source for Graphics Kernel Modules	Contains kernel dependent code, changes depending on Linux kernel used
6	GFX_Linux_SDK	Demos, Training courses, PVR Tools, classes and header files	Used for building new applications (Available only in the SDK package, not in the BIN package)
7	include	Contains updated header file for GL extensions, specifically the buffer class streaming extension	Useful for video texturing applications involving bufferclass driver
8	tools	Contains devmem2, and other packages	Useful for running/debugging/benchmarking of Graphics SDK

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