

RN 4 04 00 02

Release Notes for release 4.04.00.02

Introduction

This release includes the Linux graphics drivers for the SGX530 family of chipsets - 387x/389x/OMAP35x/AM35x/37xx and Preliminary support for SGX540 -Panda board . 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

- Implemented wait for vsync functionality using the vsync register callback mechanism provided by VPSS driver. This is the only change compared to previous Graphics SDK release 04.04.00.01. Please refer to the release notes from previous release for the complete feature list.
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Pre-requisites

Kernel(Linux PSP) versions used for validation

- 2.6.37 kernel release on 389x platform
 - TI816x(389x) Linux-PSP release 04.00.00.12
 - 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.
 - TI814x(387x) Linux-PSP Release 04.01.00.05.
- 2.6.37 kernel on OMAP3 platforms
 - AM35x Linux PSP Release 04.02.00.07.
 - Display drivers with DSS2 support ie, CONFIG_OMAP2_DSS=y
- 2.6.35 kernel on Panda board (SGX540 support)
 - Linux PSP Release 05.00.00.01(Engineering drop - <http://arago-project.org/git/projects/linux-am45x.git>)
Release Tag -v2.6.35_AM45xPSP_05.00.00.01.

Toolchain

- CodeSourcery 2009q1 toolchain for SGX530 platforms : OMAP35x/AM35x/37xx/387x/389x platforms.
- CodeSourcery 2010q1-202 toolchain for SGX540 : Panda board.

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_28

Syslink Release

- 02_00_00_78
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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

- BufferClass extension support is enabled. All other entries can be queried using standard EGL APIs.
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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 1.7.5 and it has been validated with enlightenment window manager only (downloaded/used from Narcissus angstrom distribution in April).
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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

- [SDOCM00082981] : Implement wait for vsync functionality using the VPSS provided vsync register callback mechanism.
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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.
 - 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.
 - [SDOCM00063852] bc_example.ko is not installed as it is not supported, but default rc.pvr from IMG will refer to this. Please use updated bufferclass_ti driver.
 - [SDOCM00063807] All SDK demos should be exited by pressing 'q'. Ctrl-C can result in unknown behaviour after the closure.
 - [SDOCM00063803] OGLESShadowTechniques demo will hang and reboot is required.
 - [SDOCM00068272],[SDOCM00068322] Blue line on top of DVI display for PolyBump demo, thin line on top for sgx_render_flip_test demo
 - [SDOCM00079480] Kernel lockup observed with OGLES2SkyBox2 demo in flip mode on OMAP35x (with SGX 530 core 1.0.3 only). Works fine on OMAP35x(with SGX 530 core 1.2.1) and all other platforms.
 - [SDOCM00082511] Graphics SDK - Xorg driver not supported on OMAP35x EVM with SGX Core 1.0.3. Also some applications lead to Hardware recovery errors on SGX core 1.0.3. However these work fine on all other platforms with other SGX cores.
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Contents

The folders in the installed package contain binaries for several family of devices containing the SGX530 and SGX540 core. Brief description of these folders is below.

Graphics SDK folder contents

	Folder Name	Description	Used by
1	gfx_dbg_es2.x / gfx_rel_es2.x	Debug/Release binaries for platforms having SGX core revision 1.0.3	(OMAP35x ES version 2.0) How to check?
2	gfx_dbg_es3.x / gfx_rel_es3.x	Debug/Release binaries for platforms having SGX core revision 1.2.1	(OMAP35x ES version 3.1) 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/DM37xx) 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)	38xxHow to check?
4	gfx_dbg_es7.x / gfx_rel_es7.x	Debug/Release binaries for platforms with SGX 540 core revision 1.2.0	Panda board
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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