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# OMAP3x Digital Video Software Development Kit (DVSDK) 3.01.00.10 Release Notes

Release Notes - May 24, 2010

Refer online version of [release notes](#) for latest updates.

## Introduction

This Linux DVSDK Software release for OMAP3525 and OMAP3530 platforms gives developers the ability to evaluate the hardware and software capabilities on OMAP35x DVEVM platform and to begin development using the DSP and video accelerators available on OMAP35x.

This is an OMAP3x DVSDK v3.01 **beta** release. This release contains defect fixes for the DVSDK demos, enhancements in DMAI and updates to the Multi-media Framework Package. This release also contains the Mega Codec Server, which has the MP3 decoder and AAC Encoder integrated.

## Device Support

This release supports the Texas Instruments OMAP3530 and OMAP3525 SoC as well as the OMAP35x Evaluation Module (EVM)

## Host Support

This release supports installation and development on the following host platforms

- Linux Redhat 4 workstations
- Ubuntu 9.10

## Features Supported

This DVSDK release includes support for OMAP3x platforms with the following features:

- Alignment with Linux Platform Support Package (PSP) GIT release 03.00.01.06
- XDM 1.0 Codecs from TI.
  - ◆ Audio: AAC LC/HE Decoder, AAC LC/HE Encoder, MP3 Decoder
  - ◆ Image: JPEG Encoder/Decoder
  - ◆ Speech: G.711 Encoder/Decoder
  - ◆ Video: H.264 BP Encoder/Decoder, MPEG4 SP Encoder/Decoder, MPEG2 Decoder
  - ◆ De-interlacer - Converts the YUV422 interlaced frames to YUV422 progressive frames
- Digital Video Test Bench: Test bench for evaluating various codecs configurations and Linux PSP.
- The MFP package, DSP Link, DVTB and codec servers are built with Linux PSP GIT release v3.00.01
- DVSDK Decode Demos
  - ◆ Standard definition decode and display
  - ◆ Display on on-board LCD or external monitor over DVI interface
  - ◆ On-board keypad based input interface
- DVSDK Encode Demos
  - ◆ Real time standard definition capture and encode with preview
  - ◆ Support for both interface as well as command line encode demos
  - ◆ Integrated the de-interlacer to reduce the capture artifacts
- DMAI Examples for file based decode and file based encode
- DSP Codec Servers
  - ◆ TI proprietary TSPA single codec server
  - ◆ TI proprietary Non-TSPA Mega codec server

## What's not Supported

- Touchscreen interface for the DVSDK demos
- Simultaneous Encode-Decode DVSDK demos
- ARM side de-interlacing not integrated with the DVSDK encode demos

## Change Log

### Change since DVSDK 3.01.00.06

- Support for DSP Mega Codec Server
- Updated the DSP side video and image codecs to the latest version for defect fixes
- Added support for audio encode in the command line encode demos
- ARM side de-interlacer support added to the DMAI
- MFP package updated to 2.25.02 GA release
- DVSDK demos and DMAI updated for defect fixes
- Added sample application in DMAI for de-interlacing use case
- Updated the DVTB to 4.20.05 which contains defect fixes
- Updated the DSP Link to 1.65.00.02 EA
- LPM is fixed for working with DSP Link 1.65.00.02
- Linux PSP SDK updated from v3.00.00.05 to v3.00.01.06

### Change since DVSDK 3.01.00.03

- Added support for de-interlacer in the encode demos
- Added support for G.711 speech encode in the encode demos as well as G.711 speech decode in the decode demos
- Included support for double buffering in the DMAI
- DSPLink module updated from version 1.64.00.04 to 1.65.00.01

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- Linux PSP SDK updated from v3.00.00.03 to v3.00.00.05
- Codec Engine, Framework Components, Linux Utils, XDAIS and XDC tools versions are updated
- Defect Fixes

### DVSDK Package Contents

The DVSDK installer contains the following components as part of its package.

Component	Version	Description
biosutils	1.02.02	BIOS Utilities
ceutils	1.06	RTSC Package Wizards
cg_xml	2.12.00	CG XML Utilities
dsplink_linux	1.65.00.02	Foundation software for the inter-processor communication across the GPP-DSP boundary
edma3_ild	01.11.00.03	EDMA low level driver
linuxutils	2.25.02.08	Contiguous memory allocator for Linux
framework_components	2.25.01.05	Framework Components is a collection of framework-independent utility libraries which other software frameworks can build upon.
local_power_manager_linux	1.24.02.09	Local Power Manager to control the DSP power on/off
codec_engine	2.25.02.11	The Codec Engine provides a framework for creating and interacting with multimedia codecs
dvsdk_demos	3.01.00.13	Demo applications that illustrate usage of Linux drivers and codecs
dmai	2.05.00.12	DaVinci Multimedia Application Interface
dvtb	4.20.05	Digital Video Test Bench (DVTB) is an interactive application for evaluating codec performance
xdais	6.25.02.11	XDAIS
kernel_binaries	NA	Pre-built Dynamically Loadable Kernel Modules for DVSDK demos
linuxlibs	3.01	Target prebuilt libraries for host side SDK build
bios	5.41.00.06	DSP BIOS - Required for DSP side executables
xdctools	3.16.01.27	Tools for XDC package and build

It is necessary to install the codec server to perform the OMAP3X DVSDK build. The following codec servers are available as part of this release.

Component	Version	Description
cs1omap3530	1.01.00	TI proprietary TSPA Codec Server
ms1omap3530	1.00.00	TI proprietary Non-TSPA Mega Codec Server

The DVSDK depends on the following components.

Component	Version	Description
AM35x-OMAP35x-PSP-SDK	3.00.01.06	Linux Platform Support Package.
TI_CGT_C6000	6.1.12	TI C6x CodeGen tools.

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Code sourcery tool chain	arm-2009q1-203	OMAP3 Linux toolchain
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### Codec Version Details

Codecs	Version
AAC HE Decoder	1.30.02.000
MPEG4 SP Decoder	02.01.00
H264 BP Decoder	2.01.007
MPEG2 MP Decoder	02.00.02
JPEG Decoder	02.00.01
MPEG4 SP Encoder	02.04.00
H264 BP Encoder	2.01.013
JPEG Encoder	02.01.01
G711 Encoder	1.12.00.000
G711 Decoder	1.12.00.000
Deinterlacer (I2P)	1.00.00.07

In addition to the above codecs, the following two codecs are part of the mega combo server

Codecs	Version
AAC LC/HE Encoder	1.20.005
MP3 Decoder	01.31.01.001

### Documentation

- The [OMAP3x DVSDK Getting Started Guide](#) provides information on hardware and software setup, executing the out of the box demos, working with the DVSDK and some additional procedures for working with the OMAP3x EVM
- The component related documentation is available under the docs folder of each component

### Upgrade and Compatibility Information

- The OMAP3530 DVSDK release is independently installable. No upgrade instructions are available with this release
- This release is validated on OMAP3x RevG EVM boards with OMAP3530 ES3.1 silicon processor board containing Micron Memory as well as DM3730 ES1.0 silicon Rev C processor card containing Hynix memory
- The PSP GIT release 03.00.01.06 requires a patch update to work with Samsung OneNAND memory as well with DM3730 ES1.0 silicon processor card containing Micron memory
- The OMAP3x Gstreamer application (downloadable from [gstreamer.ti.com](http://gstreamer.ti.com)) requires a re-compilation with this DVSDK release to execute properly

### Installation and Usage

- Please follow the [OMAP3530 DVSDK Getting Started Guide](#) for detailed installation and usage instructions

## Dependencies

- The only known dependencies at this time are Code Composer Studio 3.3, a compatible emulator, and the OMAP35xx CCS 3.3 Chip Support Package. You can access the CSP externally via the Update Advisor site [here](#). These are needed for initial (or recovery) flashing of the bootloader (UBL) and U-Boot. As long as these components remain functional, CCS 3.3 is not required.
- If you are using an SDI emulator please check the [SDK link](#) for the latest drivers to enable CCS setup.
- mkfs.jffs2 utility is required to build a new NAND image, this may be downloaded [here](#)

## Known Issues

- SDOCM00068455 : DM3730: Kernel crashes when memory hole is used.
- SDOCM00065773 : In order to enable run time switch from LCD to DVI, it is required to specify "omapfb.mode=dvi:720x480MR-16@60" in the bootargs. If the default display is LCD with the above setting in the bootargs the frame buffer does not allocate memory equivalent to 720x480(colorformat\_bytesperpixel). It allocates only 720x438x(colorformat\_bytesperpixel)
- SDOCM00065749 : OMAP3530: udev error messages are thrown during boot sometimes
- SDOCM00041241 : SVIDEO: There are video quality issue on TV with SVIDEO interface
- SDOCM00041259 : DVTB: Control-C causes stack-trace to be dumped on to terminal in case of DVTB decode.
- SDOCM00050734 : While using DVTB application for video playback, video stream display becomes faster at the end of the stream
- SDOCM00053887 : Specific stream issue: Issue with playing Video (Mpeg2) and Audio (Mp3) together. When streams from the container are extracted and use these as elementary streams with both Decode Demo and DVTB and if video and audio are played out, then the audio thread will not exit in both the cases
- SDOCM00056334 : Static IP is getting overwritten by DHCP call in initialization script for NFS. This is a known issue. If static IP needs to be used, then the initialization script needs to be modified to comment the dhcp server initiation.
- SDOCM00057319 : A mild click is heard at the end of the audio playback.
- SDOCM00055964 : A mild beep is heard at the beginning of audio playback.
- SDOCM00059851 : Video decode demo hangs the target if control-c is pressed. The board needs to be reset
- SDOCM00060835 : System will not boot if no value is specified in the mem= kernel bootargs option
- SDOCM00052712 : DVTB does not remove spurious data from the non standard MP3 streams.DVTB does not remove remove these bytes and gives it to codec for processing. It can cause codec to fail with extended error.
- SDOCM00056242 : MMC Detection: OMAP fails to detect 8-bit MMC cards.
- SDOCM00060903 : System hangs when playing an AVI clip from an SD card using GStreamer. This is observed on ES2.1 EVM and not on ES3.1 EVM. Errors reported on the console such as "mmcblk0: retrying using single block read". This is due to a silicon defect in ES2.1 which was subsequently fixed in OMPA3 silicon version ES3.1
- SDOCM00062098 : Mem copies in CMEM space takes 10x more than memory copies of Os allocated memory.Performing a memory copy of a CMEM allocated buffer takes 10 times more than a memory copy of malloc'ed pointers. While a 2MB copy in CMEM space takes 220ms, it's OS allocated buffer counterpart takes only 25ms.
- SDOCM00056814 : Video decode demo hangs in stress: Behaviour observed in ES2.1 EVM The video decode demo fails (hangs) in stress after running 1055 iterations with error message "Error: Failed to create loader thread" for OMAP EVM 2.1. The same behaviour is not observed in OMPA EVM 3.1(with memory hole configuration) even after running 2850 iterations
- SDOCM00056890 : Video/Image decode using DVTB application fails in stress: Behaviour observed in ES2.1 EVM The DVTB video decode and display fails in stress for OMPA EVM 2.1 after some 1150 iteration. It throws the error message "Thread\_create: Cannot allocate memory" and "Segmentation fault". The same behaviour is not observed in OMPA EVM 3.1(with memory hole configuration) even after running 3000 iterations.

## Limitations

- During capture operation, resizing of the input video is supported only up to 640x480. Resizing a Standard Definition input video to resolution less than CIF results in poor quality.
- If the user runs the Out of the Box encode demo when no input is connected, there will not be any error message on the display but user is prompted about the lack of input connection on the UART console.
- The maximum sample rate supported by the ALSA Audio driver included in the PSP release is 48KHz.
- A maximum of 16M memory can only be provided for double buffering when rotation is enabled.
- The path for audio capture for speech encode is not set by default in the ALSA driver. We can set this value using the amixer utility. Steps for [enabling Audio Capture for Speech encode](#) are mentioned in the [OMAP35x DVEVM Getting Started Guide](#).
- The Mpeg4 encode and H264 Decode combinations fails. This is due to the codec server as per [DDRALGHEAP#What are the limitations of the OMAP35x Codec Server.3F](#). The DDRALGHEAP needs to be increased.
- In NAND Filesystem(JFFS2 Filesystem) the video stops after 40-50 seconds while audio plays on. Once audio has finished both the drivers close and restart. Reason why you see this is since the streams present in JFFS2 are truncated so that the size of the file could be adjusted to fit jffs2 without disturbing the quality. These streams are of 40-50 seconds duration only. The original streams size (present in NFS filesystem) were about 76MB per stream so we could not package it in JFFS2.
- DMAI: In case of application using the DMAI capture module, there is a limitation to use only the buffers that were initialized during DMAI capture module creation, for capturing the input video frames.
- The interface application currently allocates memory from the CMEM, though it is not used. This results in failure of execution of unloadmodules.sh while the interface application is running. In order to ensure proper execution of unloadmodules.sh, the interface application needs to be exited or killed.

## Defects Fixed

- SDOCM00057184 : OSD flicker observed when switching between decode demo and third party demo menu buttons in main menu screen
- SDOCM00068778 : keypad hide, inc and dec keys does not work for speech in DVSDK demos.
- SDOCM00068715 : Decode Demo and DVTB give Page allocation failure some time. Refer GSG bootargs section for enabling boot time allocation of memory for V4L2 driver buffers.
- SDOCM00068636 : Encode codec combo demo application does not throw error.
- SDOCM00068579 : Codec Server Documentation Issues
- SDOCM00062168 : Flicker is seen on main menu screen
- SDOCM00057149 : SDMA performance is not enough to perform framecopies of VGA video @30FPS
- SDOCM00056674 : Slight noise while resuming from pause
- SDOCM00066901 : Decode demo: Video Decode demo fails when display is selected as s-video
- SDOCM00068688 : Video decode demo application start with flicker
- SDOCM00060627 : Demo: Audio repeats the last word while doing the repeated pause and play
- SDOCM00057374 : Low power Audio only demo displays error messages before running.

## Special Notes

- The decode demo does not resize D1 decoded images to VGA before displaying it on the on-board LCD. It performs cropping at the edges.
- The out-of-the-box, pre-built DVSDK decode demo does not support decode of MPEG2 MP video and JPEG image streams. To evaluate these decoders, use either the Digital Video Test Bench (DVTB) or the Davinci Multimedia Application Interface (DMAI). Please refer to the user guides of these modules for more information.
- The default video output display is the on-board LCD.
- The TSPA download of the DVSDK codec server does not contain MP3 decoder, but the productized version of this decoder is available. If interested, kindly download the codec from the DVSDK 3.01 download page or contact the DVSDK support mailing list for more information. Refer [http://processors.wiki.ti.com/index.php?title=How\\_to\\_Integrate\\_new\\_codecs\\_into\\_DVSDK](http://processors.wiki.ti.com/index.php?title=How_to_Integrate_new_codecs_into_DVSDK) to integrate the MP3 Codecs with the existing Codec Combos. Alternatively, you could download the Non-TSPA Mega combo server available in the DVSDK release page. This has

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the MP3 decoder and the AAC LC/HE encoder integrated.

- While using DVTB to test different codecs with various parameter configurations, it is important to change the loadmodules.sh to allocate the CMEM pools as per the configuration used. However, for most test cases, the loadmodules.sh provided with the DVSDK will work.
- In order to experience the demos and examples that comes with OMAP3530 DVSDK, please refer to the OMAP3530 DVSDK Getting Started Guide.
- The mkfs.jffs2 may be downloaded from <http://sources.redhat.com/jffs2/>.

### Technical Support and Product Updates

Please register your EVM serial number as instructed on the printed Read Me 1st Card in order to download the updated software release as soon as it becomes available.

- For questions and support on the OMAP3530 DVSDK, please e-mail support@ti.com or post your questions at <http://e2e.ti.com>
- Please be sure to read the Digital Video Software Development Kit (DVSDK) release notes, printed documentation and Getting Started Guide for general information.
- Check for OMAP3530 software updates at [www.ti.com/omapsoftwareupdates](http://www.ti.com/omapsoftwareupdates). This site provides the latest software and device support. To access this site, you must register your EVM first.
- A developer wiki site is available at [http://processors.wiki.ti.com/index.php/Main\\_Page](http://processors.wiki.ti.com/index.php/Main_Page). For information on OMAP35x, search for OMAP35x in the google toolbar embedded in the page. User contributions are encouraged.
- Refer to the above mentioned developer wiki site for the latest updates to the DVSDK release documents and more up to date information on the known issues and limitations with a particular DVSDK release