



OMX Components

Version 05.02.00.46

Release Notes

Oct 09, 2012

OMX components are generic component abstracts the IP features and capable of encompassing multi-channel video capture, frame processing, video compositing & Display. These SW components efficiently chains/programs the features internally while exposing the customer friendly OMX APIs.

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TABLE OF CONTENTS

1	New In the Release.....	3
2	Issues addressed in this release.....	3
3	Interface change.....	6
4	Building OMX applications.....	7
5	Cleaning OMX applications.....	7
6	Component Version.....	7
7	Release Contents	8
8	Known Issue.....	10
9	Limitation	10

1 New In the Release

- A. SD display enabled in decode_display example. Also Display example can show color bars on SD/ HDMI displays.
- B. Decode_mosaic example has been modified to provide 4 720p or 3 1080p H264 decode and display in 2x2 mosaic layout.
- C. Interlace capture (1080i60) is supported in capture_encode example.
- D. For 1080i60, DEI has been activated to do de-interlacing in capture_encode example.
- E. Run time cropping feature in SC5 (INDTXWB) scalar is supported. Decode_display example can demonstrate cropping feature.
- F. NF (Noise Filter) can be instantiated, decode_display example uses NF for color conversion for SD display.

2 Issues addressed in this release

Release Label: DEV_OMX_05_02_00_46

Release package: omx_05_02_00_46.tar.gz

Following IRs are addressed in omx 05.02.00.46 release.

SDOCM00096450	SD Display not functional on DM8168
SDOCM00096130	dsp can not allocate buffers from SR2
SDOCM00083407	Quality of encoded stream is not good (blocky) using Capture encode IL Client
SDOCM00096282	OMX display example will hang for -d 2 option and OMX user guide update required
SDOCM00096331	encode example does not exit for some use cases.

Following IRs are addressed in omx 05.02.00.42 release.

SDOCM00096066	OMX VDEC component sets incorrect size for viddec3InArgs and viddec3OutArgs params
SDOCM00095981	OMX VDEC fails for MJPEG as outArgs structure is incorrectly defined

Following IRs are addressed in omx 05.02.00.41 release.

SDOCM00078726	HDVPSS Documentation: Usage and limitations of few indices should be explicit
SDOCM00079768	Version no returned during getparam is not correct

SDOCM00080875	Unwanted header files are present in the OMX package.
SDOCM00080902	White black screen comes before Matrix GUI stars.
SDOCM00081092	OMX component does not throw error if set the chroma format to 420SP for VFDC input and Scaler output.
SDOCM00081149	(Child) Video artifacts are coming for decode and display the file having resolution less than 1920x1080.
SDOCM00081700	DEI : De-interlacer component selects default(1920) frame pitch
SDOCM00081752	Color format error in decode_test.c and incorrect error handling in OMX
SDOCM00082625	M3 error/hang when creating multiple instances of decoder
SDOCM00083105	Centaurus - Proc loading of VPSS binary hangs when catalog daughter card is absent
SDOCM00083420	VFCC: Capture quality is not good. Created o/p file having artifacts.
SDOCM00083513	Not able to capture 720p using VFCC individual component.
SDOCM00085260	Frame buffer address is wrong in file memsegdef_dm81xxbm_512M.c
SDOCM00093105	Encoder parameters settings does not take effect in capture_encode example
SDOCM00093346	Memory Map Hole needs to be 4MByte aligned at beginning and end.
SDOCM00093949	OMX VPFC NF component is created with a different inDataFormat to that expected by HDVPSS driver
SDOCM00094045	IVA Scheduler de-registration would not reduce the ivaload.
SDOCM00094128	decode_mosaic example not functional with graphics ON
SDOCM00094545	Not able to set maxPicRatio ratecontrol parameters in omx encoder
SDOCM00094575	Need Cropping Bux Fixed in SDK5.04.00.11 for DM8168
SDOCM00077320	[HDVPSS] Default setting of the components is not documented.

Following IRs are addressed in omx 05.02.00.40 release.

SDOCM00076648	[HDVPSS]Inline Scalar of VFCC is not functional when used with Del dual-out setting
SDOCM00079848	[HDVPSS] VC usecase (no codecs) with Del i/p in 422UYVY format fails for idle state trans with OMX_ErrorInsufficientResources
SDOCM00079869	[HDVPSS] SCWB: Artifacts seen for scaling to un-conventional sizes: 426x240->428x720
SDOCM00079870	VENC:In index OMX_TI_IndexConfigSliceSettings eSliceMode is always set to default

SDOCM00081182	Bad parameter error is coming for encoder use case, profile used BP/ MP /HP and level 4.1.
SDOCM00083411	Need to update the document for limitation for Scalar component (doesn't support more than 1/8 scaling).
SDOCM00083412	Display is not coming for DEC->SC->(720p60)VFDC scenario.
SDOCM00083501	VFCC: Output for capture and dump is not proper for interlaced input.
SDOCM00083591	Updation required in the title bar for the OMX User Guide pdf window
SDOCM00083714	Cropping is not working for scalar component
SDOCM00083820	EOS propagation does not work as expected
SDOCM00084271	H264 encoding parameter is not matching with encoded file
SDOCM00084894	Not able decode video and returned codec error 0x1421(derived from Gstreamer)
SDOCM00084896	Interlaced output not correctly displayed
SDOCM00085494	Scalar OMX component hangs with Width not a multiple of 16. Driver has only restrictions for Pitch and not for width.
SDOCM00085909	OMX userguide and release notes needs update
SDOCM00086050	Decoder: - Green strip is coming on the top for decode and dump. Individual component.
SDOCM00086169	Documentation: Details and Procedure are not mentioned for decode mosaic display IL client demo.
SDOCM00086170	Need to update the help for decode mosaic display IL client demo.
SDOCM00086449	Bit rate is not matching for encoded stream using mpeg4 encoder OMX IL Client.
SDOCM00087060	Mpeg2 Decode -> SC->Display, display is jerky (quality degradation).
SDOCM00091133	Quality issue with capture scalar display chain.
SDOCM00091138	Chains are not working for Mpeg2 decode -> SC->Display. Target hangs.
SDOCM00091176	IL Client decode display is not working properly for mpeg2. Display is not proper.
SDOCM00091205	Dei-scaler is not working when linked after the decoder
SDOCM00091213	VC-1 decoder version in SDK 5.04 is old

SDOCM00091354	Video encoded output is corrupted.Quality issue.
SDOCM00091395	OMX VC1 decoder returns error for all frames of these WMV files, English.wmv and German.wmv
SDOCM00091432	IL Client: For specific scenario target hangs while encode h263/mpeg4.
SDOCM00091500	Add support for interlaced field capture and DEI hw deinterlacer support to EZSDK
SDOCM00091955	IL client skips the frames if frame rate is set to 30 for Capture encode.
SDOCM00092013	OMX - Unable to create more that 3 Video Encode components in the latest SDK

Note2: This is an engineering quality release on which minimal developer testing has been carried out. System test and static code analysis are in progress. These will be addressed in the subsequent releases. Also, there could be some changes to the Configuration/Param structures in the APIs.

3 Interface change

In order to resolve the interlace capture issue, a parameter (highlighted below) is added in a configurable structure in omx_vfcc.h file.

```
typedef struct OMX_PARAM_VFCC_HWPORT_PROPERTIES
{
    OMX_U32 nSize;
    OMX_VERSIONTYPE nVersion;
    OMX_U32 nPortIndex;
    OMX_VIDEO_CAPTURE_HWPORT_CAPT_MODE eCaptMode;
    OMX_VIDEO_CAPTURE_HWPORT_VIF_MODE eVifMode;
    OMX_COLOR_FORMATTYPE eInColorFormat;
    OMX_VIDEO_CAPTURE_SCANTYPE eScanType;
    OMX_U32 nMaxWidth;
    OMX_U32 nMaxHeight;
    OMX_U32 nMaxChnlsPerHwPort;
    OMX_BOOL bFieldMerged;
} OMX_PARAM_VFCC_HWPORT_PROPERTIES;
```

This structure is used to configure Capture component, and applications need to be modified to provide above field. Valid values are OMX_TRUE and OMX_FALSE. Default value is OMX_FALSE.

4 Building OMX applications

To build and run following guidelines are to be followed.

- § OMX example applications require domx and other component libraries to be pre-built. To pre-build the libraries, make components command can be used.
- § Make omx will build omx examples. (please refer user guide for detailed description of examples)
- § DUAL core Linux Ubuntu10.04 LTS PC with 2 GB RAM is recommended.
- § DM816x/DM814x Base EVM and EIO card.

5 Cleaning OMX applications

Make clean would clean the all apps and rebuilt component libraries.

6 Component Version

This release is built and verified with following components and version.

CG Tools – M3	4.9.2
DSP codegen tools	7.3.1
SYS/BIOS	6.33.05.46
IPC	1.24.03.32
XDC	3.23.03.53
Code Sourcery	2009Q1-203
Linux kernel	2.6.37
Linux/PSP (DM816x)	04.04.00.01
Linux/PSP (DM814x)	04.04.00.01
SysLink	02.20.00.14
DSS (HDVPSS) Drivers	01.00.01.37
Codec Engine – lite	3.22.01.06
Linux Utils (MFP)	3.22.00.02
Framework Components – lite	3.22.01.07
OSAL (MFP)	1.21.01.09
XDAIS (MFP)	7.22.00.03
HDVICP API	01.00.00.19
HDVICP2 H.264 Dec	02.00.00.07
HDVICP2 H.264 Enc	02.00.02.02
HDVICP2 MPEG2 Dec	01.00.05.00
AAC-LC Dec	1.41.00.00
MP3 Dec	1.41.00.00
MPEG4 Encoder	1.00.00.05
MPEG4 Decoder	1.00.04.00
VC1 decoder	1.00.00.06
AAC-LC Enc	1.00.01.00
UIA	1.01.01.14
EDMA3 LLD	2.11.05.02

7 Release Contents

The release includes the following components

- § Audio Decode component (ADEC) is a generic component capable of decoding AAC-LC and MP3 (in this release) encoded streams. It supports one input and one output port.
- § Video Decode component (VDEC) is a generic component capable of decoding h264 (in this release) encoded streams. It supports one input and one output port.

Features supported

- 1. Supports progressive / interlace content decoding
 - 2. Supports up to 1080p decoding.
- § Video Encode component (VENC) is a generic component capable of encoding video sequence into h264 (in this release) format. It supports one input and one output port.

Features supported

- 1. Supports progressive content encoding
 - 2. Supports up to 1080p Encoding.
- § Video Frame Display component (VFDC) is a generic component capable of encompassing video composition and display.

Features supported

- 1. Input formats: 422 interleaved in YCbYCr
 - 2. Other Features:
 - Supports progressive/interlaced displays
 - Supports 1080P@60FPS progressive display on HD1 & HD2
 - Supports display of 422 interleaved in YCbYCr format on HD1 and HD2
- § Video Frame Capture Component (VFCC) is capable of single/multiple channel video capture, receives inputs through VIP ports.

Features Supported

- 1. Input formats: BT656 8 bit Muxed, 16-bit BT1120 1Ch Non-Muxed.
 - 2. Output formats: YUV422 YCbYCr, YUV420SP

§ Control Components (CTRL)

The CTRL component is a control component that has no omx input/output ports. This is not a data processing component. The job of the CTRL is to configure & start the control functionalities such as external video decoder (TVP, SIL etc) and display controller configurations on the DM816x.

q The following CTRL components are released in the package

CTRL- TVP (External Video Decoder):

This component supports the configuration & control of external video decoders such as TVP 5158 (muxed capture), TVP 7002 (non muxed 1080i60 capture), SIL 9135 (non muxed 1080P60 capture).

CTRL- DC (Display Controller):

This component supports the Display controller configuration for various display paths in side the DM816x display controller HW

§ Video Frame Processing Component (VFPC)

The VFPC components are generic components has both input and output OMX ports. Various memory to memory operations such as noise filtering, scaling, deinterlacing etc operations are performed by this component. VFPC has the capability to generate single or multiple outputs. VFPC is an active component and the data processing thread wakes up due to either data availability at the input side or due to the periodic wake ups. On getting callbacks from the driver, the component de-queue all the buffers from the driver and frees the input buffers. Also, either on data notification or periodically the component provides the next set of buffers to the driver for processing

q The following VFPC components are released in the package

VFPC-Scalar (SC):

This component can be used for Resize operations e.g, in a playback scenario.

Features supported

1. Input formats: YUV420 semi-planar / 422 interleaved in YCbYCr
2. Output formats: 422 interleaved in YCbYCr
3. Support dynamic resolution change on both input and output side

VFPC-Noise Filter (NF)

This component can be used for Noise filter operations on a captured video.

Features supported

1. Input formats: 422 interleaved in YCbYCr (Non tiled)
2. Output formats: YUV420 semi-planar (tiled/non-tiled memory)

VFPC-DEI Dual Out HQ/MQ

This component can be used for Deinterlacing operations on a captured video.

Features supported

1. Input formats: YUV420 semi-planar/422 interleaved in YCbYCr
2. Output formats:
 - a. 422 interleaved in YCbYCr
 - b. YUV420 semi-planar / 422 interleaved in YCbYCr
3. Support dynamic resolution change on output side

1. Example IL clients to create, configure, connect and test .

§ In addition to this release notes, the package includes the following documentation

1. OpenMax_UserGuide.pdf

8 Known Issue

SDOCM00085444	Elementary stream parsers supplied with OMX examples fail to parse certain streams resulting in incorrect frame-chunking
SDOCM00081683	[ANDROID] Improper use of OMX_BUFFERFLAG_CODECCONFIG flag doesn't cause OMX.TI.DUCATI.VIDDEC to signal an error on the ARM si
SDOCM00080014	SendCommand needs to be sequentially done for all components, ie, one component at a time
SDOCM00095949	MJPEG Parser is not available in SDK package, so MJPEG decode example does not decode mjpeg stream.

9 Limitation

1. SCWB component width/height/pitch should be multiple of 16.
2. NF component due to HW limitations requires width/height/pitch to be multiple of 32.
3. SD display width has to be 720 for DM8168 PG1.1. It is not an issue in DM8148.

