

# Simple Video Capturing/Rendering (exoVideoSimple)



NDK 5.7/MPTK 2.4

Application Note, 12 December 2007

## Overview

ExoVideoSimple is a straightforward video input/output example application that supports any video input and output configuration (i.e. adapter, video mode) that is supported by the board and the underlying components (like the bsl, device drivers and TSSA components).

Showing all the capabilities of the video capturer and renderer is not within the scope of exoVideoSimple. Refer to exoVideo for this information.

This user manual describes version 0.1 of exoVideoSimple.

## Description

The TSSA component graph of exoVideoSimple is simple; it connects the video capturer with the video renderer. In addition to these TSSA components, exoVideoSimple also controls tmVdecAna and tmVencAna, the abstraction interface for respectively the analog video decoder and encoder chip.

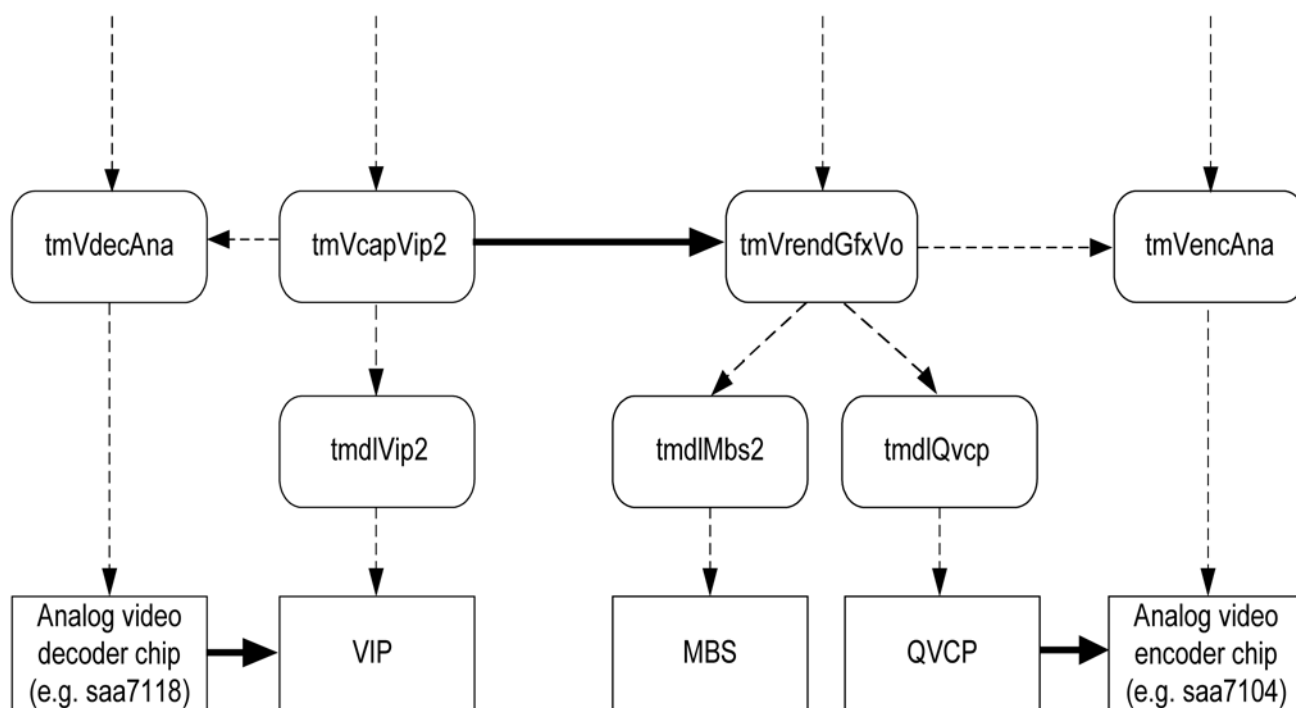


Figure 1: TSSA component graph for exoVideoSimple

exolVideoSimple supports the following:

- Easy usage. Simply run it without command line options. exolVideoSimple will present simple/straightforward options for the user to choose.
- Video input from the board or from the (VIP internal) test pattern generator.
- In case of a test pattern, exolVideoSimple will not use tmVdecAna. This allows users that do not have video input on their board (or do not have it up and running yet), to already start exploring video output.
- The CVBS and S-video input adapter.
- The PAL and NTSC video input mode.
- From NDK 5.3, the analog video encoder part of the bsl and thus the tmVencAna interface, have additional functions (see further in this document). exolVideoSimple supports any bsl that implement these additional functions, but also any bsl that does not.
- All the supported video output adapters.
- All the supported video output modes.
- Menu driven and command line driven user interface.
- Coarse sync.

### New tmVencAna functions

From NDK 5.3, tmVencAna supports the following new, optional functions:

Function	Description
tmVencAna_CheckSupportedStandard	This is a function to query the bsl whether the indicated video output configuration (the combination of adapter, color system and video mode) is supported.
tmVencAna_GetInterfaceSettings	This is a function to get the interface settings for the indicated video output configuration. These interface settings apply to the PNX1500/PNX1700 - analog video encoder interface and include the video output type and the video output format. They are being used to set the QVCP, such that the QVCP outputs the signal that is being expected by the analog video encoder for the given video output configuration.
tmVencAna_SetAdapterType	This is a function to set the adapter type. Adapter type replaces the encoding type. The latter is still there, but deprecated.
tmVencAna_GetAdapterType	This is a function to get the current adapter type. Adapter type replaces the encoding type. The latter is still there, but deprecated.
tmVencAna_GetSuppAdapterTypes	This is a function to get the set of supported adapter types. Adapter type replaces the encoding type. The latter is still there, but deprecated.

### Other BSL changes

From NDK 5.3, the following bsl changes apply:

- The BSL is responsible for setting the input and output router. Since exoVideoSimple supports both types of bsl, exoVideoSimple is still doing router settings. Any new bsl is also setting the router, but in such a way that it does not interfere with the possible router settings done by the application.

Possible BSL changes that are not related to exoVideoSimple are not mentioned here. Refer to the user BSL user manual.

## User interface

exoVideoSimple can be controlled from either a menu or command line.

### Using the initial menu

exoVideoSimple requires the user to first select the video input configuration (i.e. source, adapter and mode) and then the video output configuration (i.e. adapter and mode).

For a bsl that supports the new tmVencAna functions, exoVideoSimple only presents options that are actually supported by the board.

For a bsl that does not support the new tmVencAna functions, exoVideoSimple presents all possible video output adapters and modes. It is then the responsibility of the user to select a configuration that is supported by the board.

In the following example, the LCP-TMVDC-AVOUT board supports the new functions.

```

-= exoVideoSimple version 0.1 Build:0. System Info Reports:
  CPU is pnx1500/TM3260, rev 1 running at 270.00MHz with memory at 166.50MHz.
  Board is identified as MDS LCP1500 (ID 0x51136):
  DRAM_LO: 0xf0000000. DRAM_HI: 0xf4000000. C_LIMIT: 0xf3fc0000.
  Application built in TRACE mode.

```

```

Select the video source
  0 - Board input
  1 - Test pattern #0
  2 - Test pattern #1

```

**0**

```

Select the video input adapter
  0 - CVBS
  1 - S-video

```

**0**

```

Select the video input mode
  0 - ntsc
  1 - pal

```

**0**

```

Select the video output adapter
  0 - Cvbs
  1 - Y/C (Svideo)

```

**0**

Select the video output mode

- 0 - ntsc
- 1 - pal

**0**

In the following example, the LCP-TMVDC-DVI board supports the new functions:

```
-= exolVideoSimple version 0.1 Build:0. System Info Reports:
  CPU is pnx1500/TM3260, rev 1 running at 270.00MHz with memory at 166.50MHz.
  Board is identified as MDS LCP1500 (ID 0x51136):
  DRAM_LO: 0xf0000000. DRAM_HI: 0xf4000000. C_LIMIT: 0xf3fc0000.
  Application built in TRACE mode.
```

Select the video source

- 0 - Board input
- 1 - Test pattern #0
- 2 - Test pattern #1

**1**

Select the video input mode

- 0 - ntsc
- 1 - pal

**0**

Select the video output adapter

- 0 - DVI

**0**

Select the video output mode

- 0 - ntsc
- 1 - pal
- 2 - 640x480x60p
- 3 - 1024x768x60p
- 4 - 800x600x60p
- 5 - 720x480x60p
- 6 - 1920x1080x60i
- 7 - 1366x768x60p
- 8 - 1280x768x60p
- 9 - 720x576x50p
- 10 - 1280x720x60p
- 11 - 800x480x60p

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### ***Using the run time menu***

Once capturing/rendering has started, the user has the option to either exit or to print the number of dropped and/or repeated pictures in the capturer and/or renderer.

## The command line options

Command	Description
-noMenu	To switch off the menu
-testPattern <test pattern number>	The test pattern number. 0 is for board input (actual capturing), 1 is for test pattern #1 and 2 for test pattern #2. Default is 0.
-videoInAdapter <cvbs   yc>	The required video input adapter. Default is cvbs.
-videoInMode <video mode string>	The video input mode; the string as maintained by tmVideoMode, for example 'ntsc' or 'pal'. Default is 'ntsc'.
-videoOutAdapter <cvbs   yc   vga   scart   dvi   ext1   ypbpr>	The required video output adapter. Default is 'cvbs'.
-videoOutMode <video mode string>	The video output mode; the string as maintained by tmVideoMode, for example 'ntsc', 'pal' or '1024x768x60p'. Default is 'ntsc'.
-videoOutScalingMode <asIs   fullScreen>	If 'asIs', the renderer will not scale the incoming picture and will center it in the middle of the screen. If 'fullScreen', the renderer will scale the image to exactly match the size of the screen. Default is 'asIs'.
-deinterlaceMode <none   median   majority2   majority3   majority3enh   majority3dyn   majority3dynenh>	The deinterlace mode that will be applied by the video renderer. Default is 'none'.
-eddiLevel <off NMCLowNoiseSafe NmCLowNoiseNormal.....>	The eddi level that will be applied by the video renderer. Default is 'off'.

## Restrictions

ExolVideoSimple has the following restrictions:

- It only supports the cvbs and yc video input adapter.
 

At releasing this version of exolVideoSimple, the underlying components (hardware and software) did not support video input adapter other than cvbs and yc.
- It only support the pal and ntsc video input mode.
 

At releasing this version of exolVideoSimple, the underlying components (hardware and software) did not support video input modes other than pal and ntsc.
- ExolVideoSimple does not handle video input/output sync. If the video output is not locked to the input by hardware, drift is the consequence.
 

The video output adapters 'scart', 'ext1', 'ext2', 'lcd', 'hdmi\_rgb' and 'hdmi\_ycbcr' are not being tested since they are not supported by the supported reference board(s) at releasing this version of exolVideoSimple.
- ExolVideoSimple only supports tmVencAna tmUnit0, since this is the only unit number supported by the supported reference board(s) at releasing this version of exolVideoSimple.