

Video Processing (VPP) Sample

Overview

VPP Sample works with **Intel® Media Server Studio 2015 for Linux Server**.

It demonstrates how to use the **Media Server Studio – SDK** (hereinafter referred to as "**SDK**") API to create a simple console application that performs video processing of raw video sequences.

Features

VPP Sample supports the following video formats:

input (uncompressed)	YV12, NV12, YUY2, RGB4 (RGB 32-bit)
output (uncompressed)	NV12

Software and Hardware Requirements

- For general **SDK** requirements, please, see `<msdk_install-folder>/media_server_studio_sdk_release_notes.pdf`
- For the samples specific requirements, please, see `<install-folder>/Media Samples Guide.pdf`

Package Contents

VPP Sample package contains the following files:

`<install-folder>/sample_vpp`

<code>readme-vpp.pdf</code>	This file
<code>CMakeLists.txt</code>	CMake* configuration file
<code>include</code>	Header files for the sample
<code>src</code>	Source files for the sample

`<install-folder>/sample_vpp/include`

<code>sample_vpp_utils.h</code>	Header file for VPP sample utilities
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`<install-folder>/sample_vpp/src`

<code>sample_vpp.cpp</code>	Source file for the VPP sample
<code>sample_vpp_utils.cpp</code>	Source file for the VPP sample utilities

How to Build the Application

Use the *build.pl* script located at <install-folder>. For the details on how to build samples see <install-folder>/Media Samples Guide.pdf. Shortly, you may invoke the following commands to build the sample:

```
$ export MFX_HOME=/mediasdk/installation/folder
$ cd $MFX_HOME/samples
$ ./build.pl --cmake=intel64,make,release --clean
$ cd $MFX_HOME/samples/___cmake/intel64.make.release && make
```

Output will be placed in the following folder: <install-folder>/___cmake/intel64.make.release/___bin/release

Running the Software

Sample is buildable in a few variants depending on LibVA backends availability and support:

- sample_vpp_drm – sample variant to run on the system without Graphic Server installed (for example, X)
- sample_vpp_x11 – sample variant to run under X

The executable file *sample_vpp_*** (** - one of the supported backends) expects the following command-line arguments for proper function:

-i <InputYUVFile>	Input uncompressed video file name and path
-o <OutputYUVFile>	Output uncompressed video file name and path
-sw <Width>	Width of source input YUV image
-dw <Width>	Width of destination output YUV image
-sh <Height>	Height of input YUV image
-dh <Height>	Height of output YUV image
-scc <FourCC>	Source Input FourCC
-lib <Type>	Implementation of SDK (hw by default): hw = platform-specific (default) sw = software (should not be set since there is no software implementation on Linux platform)
-extapi	Use RunFrameVPPAsyncEx instead of RunFrameVPPAsync for PTIR (Premium Telecine Interlace Reverser) feature from SDK . For details please refer to media_server_studio_ptir_release_notes.pdf
-p guid	32-character hexadecimal guid for VPP plugin.
-dcc <FourCC>	Destination Output FourCC
-sf <FrameRate>	Frame Rate (frames/second) of input YUV image
-df <FrameRate>	Frame Rate (frames/second) of output YUV image
-nr <0,1>	0 = Disable Noise Reduction 1 = Enable Noise Reduction

-spic

Source Picture Structure:

- 0 = Interlaced top field first
- 1 = Progressive
- 2 = Interlaced bottom field first

-dpic

Destination Picture:

- 0 = Interlaced top field first
- 1 = Progressive
- 2 = Interlaced bottom field first

-va

Video Analysis (scene change detection):

- 0 = off
- 1 = on

-composite
<ParametersFile>

Composition of several input files in one output. The location of substreams on the primary stream is described in the parameter file. The syntax of the parameters file is:

primarystream=<video file name>

width=<input video width>

height=<input video height>

cropx=<input cropX (def: 0)>

copyy=<input cropY (def: 0)>

cropw=<input cropW (def: width)>

croph=<input cropH (def: height)>

framerate=<input frame rate (def: 30.0)>

fourcc=<format (FourCC) of input video (def: nv12.
support nv12|yuy2)>

picstruct=<picture structure of input video,

0 = interlaced top field first

2 = interlaced bottom field first

1 = progressive (default)>

dstx=<X coordinate of input video located in the output
(def: 0)>

dsty=<Y coordinate of input video located in the output
(def: 0)>

dstw=<width of input video located in the output (def:
width)>

dsth=<height of input video located in the output (def:
height)>

stream=<video file name>

width=<input video width>

...

The parameters file may contain one primary stream (which goes first) and up to 64 substreams.

Below are the examples of a command-line to execute **VPP Sample**:

```
$ sample_vpp_drm -sw 352 -sh 144 -scc yv12 -dw 320 -dh 240 -dcc nv12  
-nr 0 -i input.yv12 -o output.nv12
```

```
$ sample_vpp_drm -lib hw -scc nv12 -dcc nv12 -composite  
parameters.par -o out.yuv
```

The example of parameters.par:

primarystream=input_720x480.yuv

width=720

height=480

cropx=0

copy=0

cropw=720

croph=480

dstx=0

dsty=0

dstw=720

dsth=480

stream=input_480x320.yuv

width=480

height=320

cropx=0

copy=0

cropw=480

croph=320

dstx=100

dsty=100

dstw=320

dsth=240

Please, also pay attention on "Running the Software" section of <install-folder>/Media Samples Guide.pdf document where you will find important notes on backend specific usage (drm and x11).

Known Limitations

- Streams composition works only on the Intel® Xeon® processor E3-1200 v3 product family with hardware **SDK** library.
- Output cropping may be ignored in streams composition for now.

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