Intel® Media Software Development Kit for Linux* Servers
Video Processing (VPP) Sample

Overview

The **Intel® Media Software Development Kit for Linux* Servers (Intel® Media SDK) Video Processing (VPP) Sample** demonstrates how to use the Intel® Media SDK API to create a simple console application that performs video processing for raw video sequences.

Features

The Intel® Media SDK 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 Intel® Media SDK requirements, please, see `<install-folder>/mediasdk_release_notes.pdf`
- For the samples specific requirements, please, see `<install-folder>/doc/MediaSDK Sample Guide.pdf`

Package Contents

The Intel® Media SDK VPP Sample package contains the following files:

<install-folder>/samples/sample_vpp	
`readme-vpp.pdf`	This file
`CMakeLists.txt`	CMake* configuration file
`include`	Header files for the sample
`src`	Source files for the sample

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

<install-folder>/samples/sample_vpp/src	
`sample_vpp.cpp`	Source file for the VPP sample

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sample_vpp_utils.cpp	Source file for the VPP sample utilities

How to Build the Application

Use the *build.pl* script located at <install-folder>/samples. For the details on how to build samples see <install-folder>/doc/MediaSDK Sample 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>/samples/__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
-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

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-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 streams is described in the parameter file. The syntax of the parameters file is: stream=<video file name> width=<input video width> height=<input video height> cropx=<input cropX (def: 0)> cropy=<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|rgb4)> 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> AlphaEnable=<None zero value enables global alpha blending for this input stream.> Alpha=< Alpha value for this stream in [0..255] range. 0 – transparent, 255 – opaque.>

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LumaKeyEnable=<None zero value enables luma keying for the input stream. Luma keying is used to mark some of the areas of the frame with specified luma values as transparent. It may be used for closed captioning, for example.>

LumaKeyMin=<Minimum value of luma key, inclusive. Pixels whose luma values fit in this range are rendered transparent.>

LumaKeyMax=< Maximum value of luma key, inclusive. Pixels whose luma values fit in this range are rendered transparent.>>

Below are the examples of a command-line to execute the Intel® Media SDK 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:
stream=input_720x480.yuv
width=720
height=480
cropx=0
cropy=0
cropw=720
croph=480
dstx=0
dsty=0
dstw=720
dsth=480

stream=input_480x320.yuv
width=480
height=320
cropx=0
cropy=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>/doc/MediaSDK Sample Guide.pdf` document where you will find important notes on backend specific usage (drm and x11).

Known Limitations

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- Composition is supported only on Intel® 4th Generation Core and Xeon® E3-1200 v3 with Intel HD Graphics.
- Output cropping may be ignored in streams composition for now.

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