

# Transcode with video quality improvement

## 1 Introduction

This sample demonstrates how to build the transcode pipeline using AMD's hardware-accelerated Media Foundation Transforms (MFTs). This sample also demonstrates how to use AMD's video quality filter to enhance the video quality in the transcode pipeline.

# 2 Using the sample

**2.1 Location** \$<installDirectory>\samples\mediaFoundation\transcodeVq\

# 2.2 Contents Package contents

Folder: \$<installDirectory>\samples\mediaFoundation\transcodeVq\src\

File name	Description
TranscodeVqMain.cpp	Transcode main
1 11	Contains transcode session class and functions for building transcode pipeline
TranscodeVqConfig.cpp	Contains functions for configuration parsing

#### Folder:

\$<installDirectory>\samples\mediaFoundation\transcodeVq\inc\

File name	Description
TranscodeVqApi.h	Header file for transcode API
TranscodeVqConfig.h	Header file which contains transcode configuration function definition
TranscodeVqSession.h	Header file for transcode session class

#### Folder:

\$<installDirectory>\samples\mediaFoundation\transcodeVq\config\

File name	Description
exampleConfig.cfg	Configuration file for encoder and video quality parameters

### Folder:

 $$< in stall Directory > \mbox{\codeVq\cdot docs} \\$ 

File name	Description
MediaSDK_MFT_transcodeVq.pdf	Sample documentation

#### Folder:

\$<installDirectory>\samples\mediaFoundation\transcodeVq\build\windows\

File name	Description		
transcodeVqVs10.sln	Visual Studio 10 solution file		
transcodeVqVs10.vcxproj	Visual Studio 10 project file		
transcodeVqVs10.vcxproj.filters	Visual Studio 10 project filter file		
transcodeVqVs12.sln	Visual Studio 12 project solution file		
transcodeVqVs12.vcxproj	Visual Studio 12 project file		
transcodeVqVs12.vcxproj.filters	Visual Studio 12 project filter file		

# 2.3 Parameters Encoder-specific configuration parameters

Parameter name	Default value	Supported range	Remarks
encGOPSize	20		Max number of frames in a GOP (0=auto)
encMeanBitrate	3000000		Bitrate of encoded video (bits per second)
encMaxBitrate	4000000		Maximum bitrate of encoded video (used only for VBR) in bits per second
encBufferSize	2000000		VBR buffer size
encNumBFrames	1	0 - 3	Specifies the number of B frames to be inserted
encCompressionStandard	77	For supported values, see http://msdn.microsoft.com/en-us/library/windows/desktop/dd318776(v=vs.85).aspx	Compression standard
encRateControlMethod	1	eAVEncCommonRate ControlMode_CBR = 0, eAVEncCommonRate ControlMode_Peak ConstrainedVBR = 1, eAVEncCommonRate ControlMode_Unco nstrainedVBR = 2, eAVEncCommonRate ControlMode_Qual ity = 3	For more details, see http://msdn.microsoft.com/en- us/library/windows/desktop/dd38877 2(v=vs.85).aspx
encLowLatencyMode	0	1 - True 0 - False	Specifies whether the output stream should be structured so that the encoded stream has a low decoding latency.

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Parameter name	Default value	Supported range	Remarks
encQualityVsSpeed		0 - Low quality faster encoding 100 - Higher quality, slower encoding	
encCommonQuality	50	0 - low quality 100 - highest quality	This parameter is used only when encRateControlMethod is set to eAVEncCommonRateControlMode Quality. in this mode the encoder selects the bit rate to match the quality settings.

# Video quality configuration parameters

Parameter name	Default value	Supported range	Remarks
vqEnableSteadyVideo	0	enables=1 / disables=0	Enables image stabilization
vqSteadyVideoStrength	1	min=0 max=3	Strength of image stabilization
vqSteadyVideoZoom	95	min=90 max=100	
vqSteadyVideoDelay	0	min=0 max=6	
vqDeinterlacing	0	AMF_EFFECT_DEINT ERLACING_AUTOMAT IC 0 AMF_EFFECT_DEINT ERLACING_WEAVE 1 AMF_EFFECT_DEINT ERLACING_BOBE 2 AMF_EFFECT_DEINT ERLACING_ADAPTIV E 3 AMF_EFFECT_DEINT ERLACING_MOTION_ADAPTIVE 4 AMF_EFFECT_DEINT ERLACING_VECTOR_ADAPTIVE 5	De-interlacing algorithm
vqDeinterlacingPullDownD etection	0	enables=1 / disables=0	
vqEnableEdgeEnhancement	0	enables=1 / disables=0	Edge enhancement
vqEdgeEnhacementStrength	50	min=1 max=100	Strength of edge enhancement
vqEnableDenoise	0	enables=1 / disables=0	Enable Denoise filter
vqDenoiseStrength	50	min=1 max=100	Denoise strength
vqEnableMosquitoNoise	0	enables=1 / disables=0	Enable Mosquito noise
vqMosquitoNoiseStrength	64	min=0 max=100	Mosquito noise removal strength
vqEnableDeblocking	0	enables=1 / disables=0	Enable de-blocking
vqDeblockingStrength	50	min=0 max=100	Strength of de-blocking

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Parameter name	Default value	Supported range	Remarks
vqEnableDynamicContrast	1	enables=1 / disables=0	Enables dynamic contrast
vqEnableColorVibrance	0	enables=1 / disables=0	Enables color vibrance
vqColorVibranceStrength	0	min=0 max=100	Strength of color vibrance filter
vqEnableSkintoneCorrecti on	0	enables=1 / disables=0	Enables skin tone correction
vqSkintoneCorrectionStre ngth	50	min=0 max=100	Skin tone correction strength
vqEnableBrighterWhites	0	enables=1 / disables=0	Enhances the whiter portion of the image
vqEnableGammaCorrection	0	enables=1 / disables=0	Gamma Correction filter
vqGammaCorrectionStrengt h	1000	min=500 max=2500	Gamma correction strength
vqBrightnessEffect	100	min=0 max=200	Brightness
vqContrastEffect	1000	min=0 max=2000	Contrast
vqSaturationEffect	1000	min=0 max=2000	Saturation
vqTintEffect	30000	min=0 max=60000	Tint effect
vqEnableFalseContourRedu ction	0	enables=1 / disables=0	Reduces the false contour
vqFalseContourReductionS trength	50	min=0 max=100	False contour reduction strength
vqDemoMode	0	disables=0	Applies VQ settings to only the vertical half of the video frame/image

### **Common configuration parameters**

Parameter name	Default value	Supported range	Remarks
useSWCodec	[~	Disable=0	Enables/Disables the use of software Encoder and Decoder. If set to 0, hardware-based codecs are used to encode and decode the stream; otherwise software-based codecs are used.

### 2.4 Compile

- 1. Ensure that the following tools and SDKs are present:
  - Microsoft Visual Studio 2010 or 2012
     If Windows Software Development Kit (SDK) is not installed, install it from http://msdn.microsoft.com/en-us/library/windows/desktop/hh852363.aspx.
- 2. Open one of the following solution files:

 $\sim \$  Samples  $\$  Transcode Vq \build \windows \transcode VqVs12.sln

 $\sim \$  Samples \ellow transcode Vq\build windows \transcode VqVs10.sln

3. Build the sample:

#### AMD Media SDK

- Open the transcodeVqVs10.sln solution file with Microsoft Visual Studio 2010 Professional Edition or the transcodeVqVs12.sln solution file with Microsoft Visual Studio 2012 Professional Edition.
- ☐ To build all the solutions, select Build > Build Solution.
- □ Select the project file in the Solutions Explorer.

  The executable transcodeVq.exe is created in the following folders for 32-bit builds and 64-bit builds:

\$<installDirectory>\samples\mediaFoundation\transcodeVq\bin\x86
\

 $<install Directory>\samples\media Foundation\transcode Vq\bin\x86$ 

Depending on the build (i.e. 32-bit or 64-bit), the post build step copies the appropriate Video Quality (VQ) MFT .dll file from the

\$<installDirectory>\dll\videoQualityMFT\windowsClassicDesktop\
folder into the relevant \bin\ directory.

### 3 Run

The sample can be executed on an AMD platform that includes the VCE and UVD hardware blocks.

On the command prompt, change to the directory that contains the executable, and execute the following command:

```
transcodeVq.exe -i <input.avi> -o <output.asf> -c <configfile> -1 <0, 1, or 2 >
```

-I enables the logging. Setting "0" means no logging. "1" generates the log at the API level. "2" generates logs at the transcoding session level.

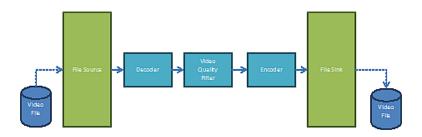
The \$<installDirectory>\inc\ErrorCodes.h file contains information about the error codes. You can also print the Microsoft error codes by using the getMicrosoftErrorCode() API, as shown in TranscodeVqMain.cpp. The Microsoft error codes can be understood from the Mferror.h file that Microsoft provides as part of its Windows kits.

The configuration file associated with this sample is located in the following folder: \$<installDirectory>\samples\mediaFoundation\transcodeVq\config\

Output.asf contains the H264 encoded stream with video quality improvements.

# 4 Implementation Details

The sample implements the following transcode pipeline:



**Note:** The Video Quality filter is supported on only the Southern Islands (SI) and later GPU families. If a different platform/family is used, then the output of the decoder is directly connected to the renderer, bypassing the Video Quality filter.

# 5 Supported formats

The following file formats are supported:

Input file/container formats: .avi, .mp4, .wmv

Video decoders supported: H264, MPEG4 part II, VC1

Output file/container format .asf

Video encoder supported: H264

### 6 Known limitations

The sample is currently supported on the following platforms:

- Windows 7 (DirectX 9)
- Windows 8/8.1 (DirectX 9 and DirectX 11)

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