SAMPLE

Desktop Capture using VCE DEM

1 Introduction

This sample demonstrates how to use AMD's Video Coding Engine (VCE) Direct Encode Mode (DEM) for capturing video and audio data from display, encoding the video to an H264 file' and encoding the audio to an LPCM file. The sample also provides an option to capture the display to a multiplexed MPEG-2 Transport Stream containing both video and audio data, or to capture video and audio elementary streams.

2 Using the sample

2.1 Location

`$<installDirectory>\samples\dem\screenCapture\`

2.2 Contents

Package Contents

Folder:
`$<installDirectory>\samples\dem\screenCapture\inc\`

File name	Description
`ScreenCaptureEncApi.h`	Header file for screen capture encoding APIs
`ScreenCaptureEncConfig.h`	Header file for screen capture encoding reading and parsing configuration file

Folder:
`$<installDirectory>\samples\dem\screenCapture\src\`

File name	Description
`ScreenCaptureEncApi.cpp`	Source file for screen capture encoding APIs
`ScreenCaptureEncConfig.cpp`	Source file for screen capture encoding reading and parsing configuration file
`ScreenCaptureEncMain.cpp`	Source file for screen capture encoding application

Folder:
`$<installDirectory>\samples\dem\screenCapture\build\windows\`

File name	Description
`screenCaptureVs10.sln`	Visual Studio 10 solution file for the sample application
`screenCaptureVs10.vcxproj`	Visual Studio 10 project file for the sample application
`screenCaptureVs10.vcxproj.filters`	Visual Studio 10 project filter file for the sample application

File name	Description
screenCaptureVs12.sln	Visual Studio 12 solution file for the sample application
screenCaptureVs12.vcxproj	Visual Studio 12 project file for the sample application
screenCaptureVs12.vcxproj.filters	Visual Studio 12 project filter file for the sample application

Folder:
$<*installDirectory*>\samples\dem\screenCapture\config\

File name	Description
exampleConfig.cfg	Configuration file and other settings for the DEM encoder

Folder:
$<*installDirectory*>\samples\dem\screenCapture\docs\

File name	Description
MediaSDK_DEM_screenCapture.pdf	Sample documentation

2.3 Parameters

Configuration parameters

A sample configuration file is provided in the following directory:
$<*installDirectory*>\samples\dem\screenCapture\config\

You must modify only the following configuration parameters.

Encoder create parameters:

Parameter name	Default value	Supported range	Remarks
encUsage	1-Generic	1 - Generic, 2 - Wireless, 4 - LowLatency	Select the usage mode
encOutputType	1–AV_TS	1-AV_TS 2-AV_ES 3-V_TS 4-V_ES	Select output type
encProfile	66–Constrained Baseline Profile	66- Constrained Baseline Profile 77-Main Profile 100-High Profile	Select H.264 encoding profile
framesToEncode	100		Number of frames to encode

Encoder configuration parameters:

Parameter name	Default value	Supported range	Remarks
encRateControlMethod	0-Peak Constrained VBR	0-Peak Constrained VBR 1-Latency constrained VBR 2-CBR	Select rate control method, configured only in the generic usage mode.
encInloopDeblockFilter	1-Enable	0-Disable 1-Enable	Option to enable In-loop de-blocking filter, configured only in the generic usage mode.
encBitrate	5000000		Target bitrate (bits/s)
encPeakBitrate	10000000		Target peak bitrate (bits/sec); it should be more than or equal to encBitrate
encIDRPeriod	150	0 - 6000	IDR period, value 0 turns IDR off, configured in all usage modes
encSkippedPicPeriod	0	0 – 7	Number of skipped frames. 0 means no skip, 1 means skip every second frame, 2 means skip every two of three frames etc., configured in all usage modes
encSlicesPerFrame	1		Number of slices per frame, configured in Generic and Low latency usage modes
encIntraRefreshMBPerSlot	68		Number of intra-refresh macro-blocks per slot, configured in all usage modes
encInitVBVbufferFullness	100	0 - 100	Initial VBV buffer fullness, configured in generic usage mode
encVBVbufferSize	312500		VBV buffer size in bytes, configured in generic usage mode
encMinQP	22	0 - 51	Minimum QP value, configured in Generic usage mode

encMaxQP	51	0 - 51	Maximum QP value, configure in Generic usage mode

Display configuration parameters:

Parameter name	Default value	Supported range	Remarks
displayWidth	1280	As supported by the monitor or display	Select width of the display or monitor
displayHeight	720	As supported by the monitor or display	Select height of the display or monitor

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 two solution files:
   - `<installDirectory>\samples\dem\screenCapture\build\windows\screenCaptureVs12.sln`
   - `<installDirectory>\samples\dem\screenCapture\build\windows\screenCaptureVs10.sln`
3. Build the sample:
   - Open the `screenCaptureVs10.sln` solution file with Microsoft Visual Studio 2010 Professional Edition and the `screenCaptureVs12.sln` solution file with Microsoft Visual Studio 2012 Professional Edition.
   - To build all solutions, select `Build > Build Solution`.
   - In Solutions Explorer, select the project file.
     The executable `screenCapture.exe` is created in the following folder for 32-bit builds:
     `<installDirectory>\samples\dem\screenCapture\bin\x86\`

     The executable `screenCapture.exe` is created in the following folder for 64-bit builds:
     `<installDirectory>\samples\dem\screenCapture\bin\x86_64\`

3 How to Run

The sample can be executed on an AMD platform that includes the VCE hardware block.

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

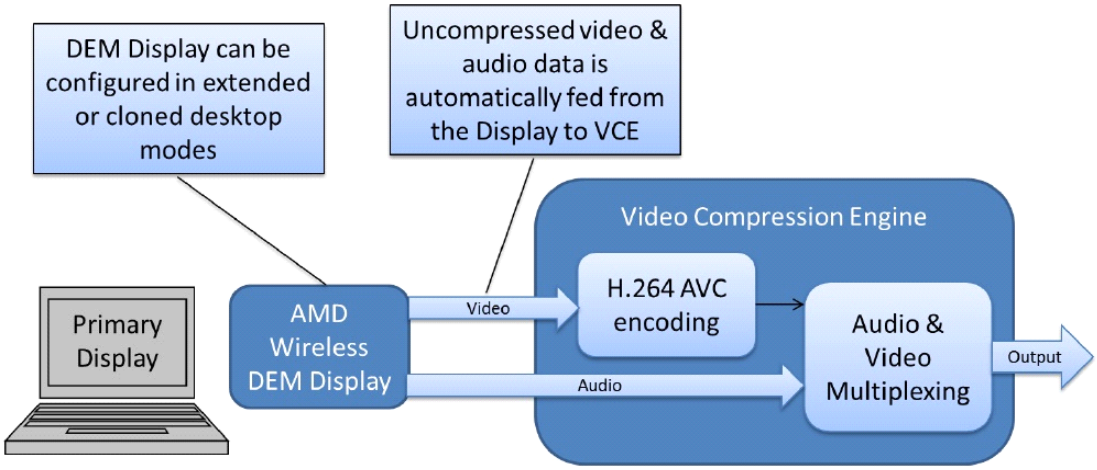
```
screenCapture.exe -o <output> -c <configFile> -l <0, 1, or 2>
```

-l enables the logging. Setting "0" means no logging. "1" generates the log at the API level. "2" generates logs at the encoding level.

The `$<installDirectory>\inc\ErrorCodes.h` file contains information about the error codes.

4 Implementation Details

The sample uses the following execution flow:



5 Supported formats

The following file formats are supported:

- Output file/container format .ts, .h264, .lpcm
- Video encoder supported: H264

6 Known limitations

The sample is currently supported on the following platforms:

- Windows 7: 32- and 64-bit
- Windows 8/8.1: 32- and 64-bit

The sample currently supports the following output resolutions:

- 1920x1080
- 1280x720
- 720x480
- 640x480

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