SAMPLE

D3D Multi Encoder

1 Introduction

The purpose of this sample is to demonstrate how to build and execute multiple encoding sessions of D3D Surfaces using AMD Media Framework (AMF). Each of these encoding sessions is executed across all the available devices. This samples demonstrates applications such as Cloud Gaming, also called “Gaming on Demand”, in which the actual game is stored, executed and rendered on remote servers, and the video results are encoded and streamed to consumers computer over the Internet.

2 Using the sample

2.1 Location

`$<installDirectory>\samples\amf\D3DMultiEncoder\`

2.2 Contents

Package Contents

Folder:
`$<installDirectory>\samples\amf\D3DMultiEncoder\src\`

File name	Description
D3DMultiEncoder.cpp	Source file for D3D Multi Encoder application

Folder:
`$<installDirectory>\samples\amf\D3DMultiEncoder\build\windows\`

File name	Description
D3DMultiEncoderVs10.sln	Microsoft Visual Studio 10 solution file
D3DMultiEncoderVs10.vcxproj	Microsoft Visual Studio 10 project file
D3DMultiEncoderVs10.vcxproj.filters	Microsoft Visual Studio 10 project filter file
D3DMultiEncoderVs12.sln	Microsoft Visual Studio 12 project solution file
D3DMultiEncoderVs12.vcxproj	Microsoft Visual Studio 12 project file
D3DMultiEncoderVs12.vcxproj.filters	Microsoft Visual Studio 12 project filter file

Folder:
`$<installDirectory>\samples\amf\D3DMultiEncoder\docs\`

File name	Description
MediaSDK_AMF_D3DMultiEncoder.pdf	Sample documentation

2.3 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:
   - `$<installDirectory>\samples\amf\D3DMultiEncoder\build\windows\D3DMultiEncoderVs12.sln`
   - `$<installDirectory>\samples\amf\D3DMultiEncoder\build\windows\D3DMultiEncoderVs10.sln`
3. Build the sample:
   - Open the `D3DMultiEncoderVs10.sln` solution file with Microsoft Visual Studio 2010 Professional Edition or the `D3DMultiEncoderVs12.sln` solution file with Microsoft Visual Studio 2012 Professional Edition.
   - To build all the solutions, select `Build > Build Solution`.
   - The executable `D3DMultiEncoder.exe` is created in the following folders for 32-bit builds and 64-bit builds:
     `$<installDirectory>\samples\amf\D3DMultiEncoder\bin\x86\`
     `$<installDirectory>\samples\amf\D3DMultiEncoder\bin\x86_64\`
   - Depending on the build (i.e. 32-bit or 64-bit), the custom build step copies the appropriate `.dlls` file from the `$<installDirectory>\dll\amf\` folder into the relevant `\bin\` directory.

3 How to Run

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

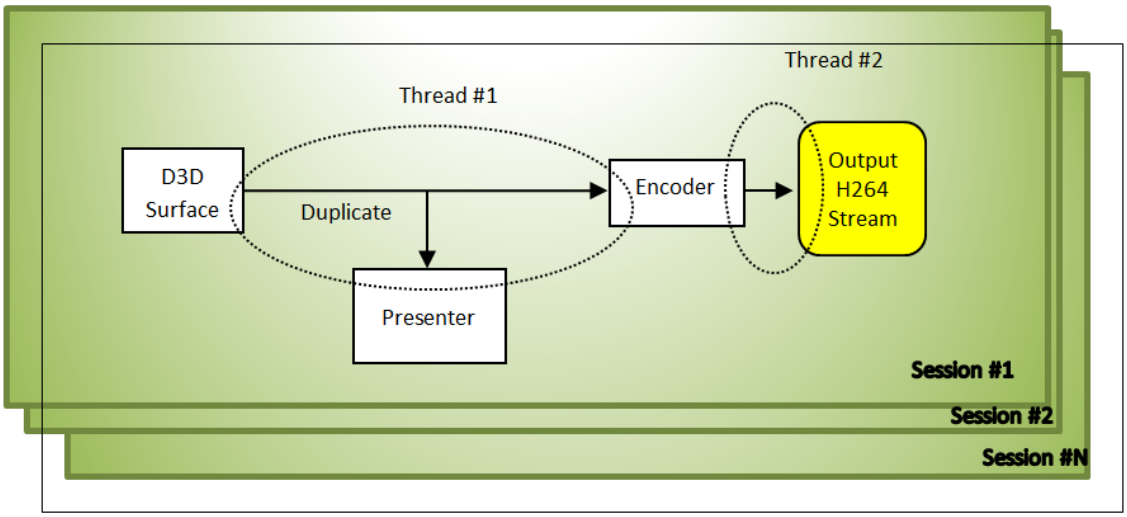
On the command prompt, change to the directory that contains the executable, and execute the following command:
`D3DMultiEncoder.exe <MemoryType> <NumberOfSessions> <PresentTheInput>`

MemoryType: Specify the buffer memory type, either `DX9` or `DX11`
NumberOfSessions: Specify the total number of sessions to be executed across all the available devices
PresentTheInput: Specify `1` to display the input D3D surfaces; `0` otherwise

The output H264 elementary stream, `output_<WidthxHeight>_<session#>.h264`, for each session will be generated after encoding completes.

4 Implementation Details

The sample implements the following D3D encode pipeline:



The data in the D3D encode pipeline flows through the following processing elements:

- AMF Surface: Create and fill surface with color
- Encoder: HW Accelerated (VCE) H.264 Video Encoder. Encodes the input content to generate compressed H.264 Elementary stream.

Parameter Name	Description	Value
`widthIn`	AMF Surface width to be created	1920 for *Even* numbered sessions 1280 for *Odd* numbered sessions
`heightIn`	AMF Surface height to be created	1080 for Even numbered sessions 720 for *Odd* numbered sessions
`frameRateIn`	Encoding Frame Rate	30
`bitRateIn`	Encoding Bitrate	10Mbps for *Even* numbered sessions 4Mbps for *Odd* numbered sessions
`rectSize`	AMF Surface rectangular size	50
`frameCount`	Num. of frames to encode	300

The sample prints the following performance parameters per session:

- Latency in ms
- Average encode time in ms / frame
- Average time in ms to write one encoded frame into file

5 Supported formats

The following file formats are supported:

- Video encoders supported: H.264
- Output file format: H.264 Compressed Elementary Stream

6 Known Limitations

The sample is currently supported on the following platforms:

- Windows 7 (DirectX 9)
- Windows 8.1 (DirectX 9 and DirectX 11.1)

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