SAMPLE

Simple Decoder

1 Introduction

The purpose of this sample is to demonstrate how to build and execute a simple video decoder using the AMD Media Framework (AMF) APIs. The sample decodes an H.264 elementary stream and generates NV12 frames.

2 Using the sample

2.1 Location

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

2.2 Contents

Package Contents

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

File name	Description
`SimpleDecoder.cpp`	Source file for H264 Decoder application

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

File name	Description
`SimpleDecoderVs10.sln`	Microsoft Visual Studio 10 solution file
`SimpleDecoderVs10.vcxproj`	Microsoft Visual Studio 10 project file
`SimpleDecoderVs10.vcxproj.filters`	Microsoft Visual Studio 10 project filter file
`SimpleDecoderVs12.sln`	Microsoft Visual Studio 12 project solution file
`SimpleDecoderVs12.vcxproj`	Microsoft Visual Studio 12 project file
`SimpleDecoderVs12.vcxproj.filters`	Microsoft Visual Studio 12 project filter file

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

File name	Description
`MediaSDK_AMF_simpleDecoder.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:
   - `$<installDirectory>\samples\amf\simpleDecoder\build\windows\SimpleDecoderVs12.sln`
   - `$<installDirectory>\samples\amf\simpleDecoder\build\windows\SimpleDecoderVs10.sln`
3. Build the sample:
   - Open the `SimpleDecoderVs10.sln` solution file with Microsoft Visual Studio 2010 Professional Edition or the `SimpleDecoderVs12.sln` solution file with Microsoft Visual Studio 2012 Professional Edition.
   - To build all the solutions, select `Build > Build Solution`.
   - The executable `simpleDecoder.exe` is created in the following folders for 32-bit builds and 64-bit builds:
     `$<installDirectory>\samples\amf\simpleDecoder\bin\x86\`
     `$<installDirectory>\samples\amf\simpleDecoder\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 UVD hardware block.

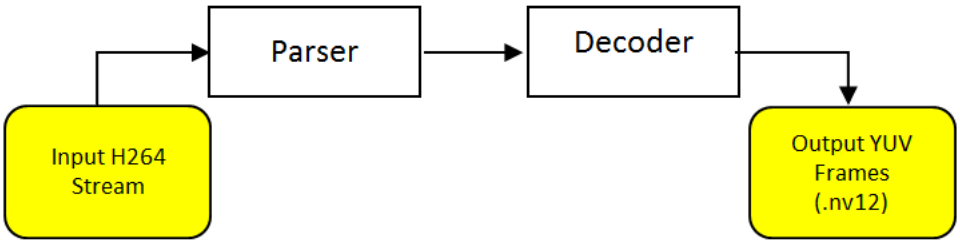
On the command prompt, change to the directory that contains the executable, and execute the following command:
`simpleDecoder.exe <InputFile> <BufferMemoryType> <WriteOutputToFile>`

InputFile: Specify the H.264 elementary stream filename or path
BufferMemoryType: Specify the buffer memory type, either `DX9` or `DX11`
WriteOutputToFile: Specify *true* if the output must be written to a file; *false* otherwise

The output file, `output_<width>x<height>.nv12`, is generated once decoding completes.

4 Implementation Details

The sample implements the following decode pipeline:



The Data in the Decode Pipeline flows through the following processing elements:

- Parser: H.264 Elementary stream data is first read by the parser which finds the SPS & PPS, finds NALU unit, and populate data structures which are fed to the H.264 Decoder.
- Decoder: Hardware-accelerated (UVD) H.264 Video Decoder. Decodes the input content to generate NV12 frames.

The sample prints the following performance parameters:

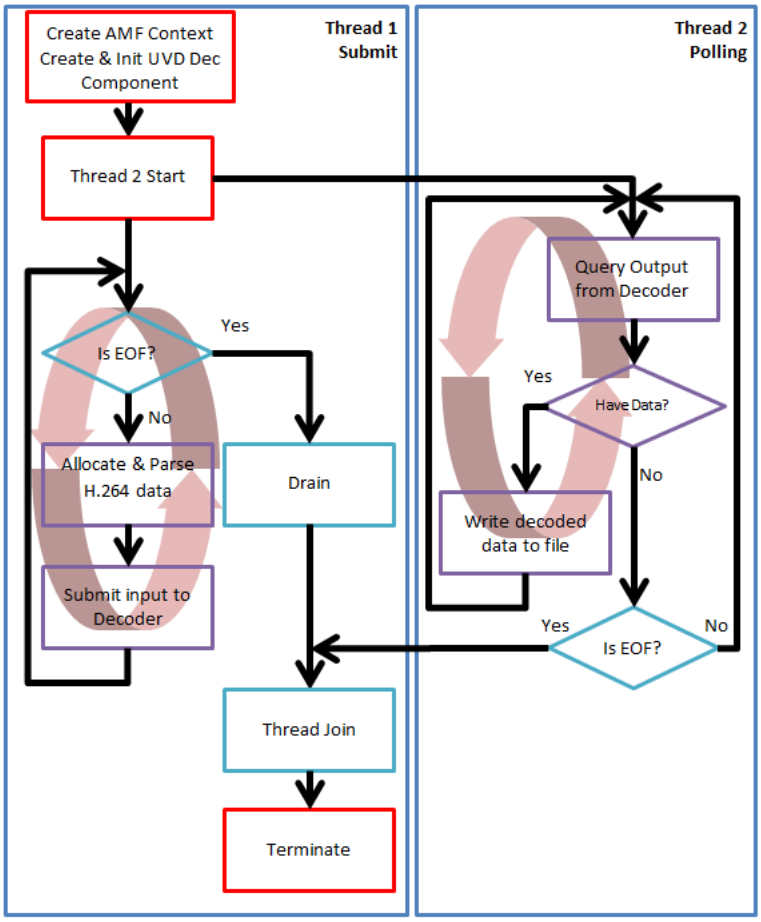
- Latency in ms
- Average decode time in ms / frame

If file write is enabled, it also displays the following details:

- Average time in ms to convert one DX buffer to HOST
- Average time in ms to write one decoded frame into file

The decoder capability can be obtained by executing the CapabilityManager application.

The sample is constructed using native AMF APIs executing over two threads, as shown in the following figure.



5 Supported formats

The following file formats are supported:

- Input file/container formats: Elementary H264 Stream
- Video decoders supported: H.264
- Output file/container format: Decoded YUV frames (.nv12)

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)

Contact

Advanced Micro Devices, Inc.
One AMD Place
P.O. Box 3453
Sunnyvale, CA, 94088-3453
Phone: +1.408.749.4000

For AMD Accelerated Parallel Processing:

URL: developer.amd.com/appsdk
Developing: developer.amd.com/
Forum: developer.amd.com/openclforum