TN009:

Harrier & BlueBird USB Products: Harrier USB SDK – Known issues with Media Foundation

Summary

This Technical Note describes issues found when using the Microsoft Media Foundation software API with the Harrier USB SDK and Harrier/BlueBird USB Video Class (UVC) compatible devices.

Overview

Active Silicon UVC compatible devices stream the images they receive from their input port (e.g. 3G-SDI, HD-VLC or camera) to their USB3 output port, from where they can be received by a host system.

UVC devices can be used with several standard APIs, including Microsoft Media Foundation or DirectShow.

The Harrier USB SDK provides an example that shows how to use Media Foundation with Active Silicon UVC compatible devices (e.g. BlueBird SDI Adapter, Harrier USB/HDMI Camera Interface Board). The example works on most Windows 10 machines, but some Media Foundation issues have been identified and are documented in this Technical Note.

Windows 7 Not Supported

The Media Foundation example only works under Windows 10 and does not work under Windows 7.

Media Foundation Source Reader Callback Not Occurring

Acquiring images at 60Hz does not work on some Windows 10 machines. This has been observed with only two Windows 10 laptops out of the several desktop and laptop machines tested so far and does not occur when the camera generates a 30Hz video stream.

The OnReadSample() callback of the Media Foundation source reader object used in the example does not occur at the expected 60Hz rate. Instead, the callback occurs seldomly and in random bursts.

The callback occurs more frequently as the CPU load of the machine increases, although some frames may still be missed.

There does not seem to need to be any correlation between the cause of increased CPU load and the Media Foundation application (antivirus running, other application or busy loop in the Harrier application all yield the same result).

It should be noted that this behavior is the same with Microsoft's stock example for Media Foundation (MFCaptureD3D).

Solution / Workaround

Investigation is ongoing to understand and resolve the issues with Media Foundation. However, it is possible this is an inherent problem with Media Foundation, so Active Silicon is planning on developing a DirectShow example as an alternative.

DirectShow, a multimedia framework and API produced by Microsoft, is an alternative to Media Foundation. Media Foundation is intended as a replacement for DirectShow, which is why it was selected for the Harrier USB SDK.

The BlueBird SDI Adapter has been successfully tested under Windows 7 and 10 with VideoLAN (VLC) - which is based on DirectShow.

None of the problems reported in this Technical Note have been seen with VLC and it is therefore suspected that the issues reported here are due to inherent problems within Media Foundation or in its usage in the Harrier USB SDK.

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