AJA KONA, Io Products & Adobe's Mercury Engine

12/2011

Adobe's Mercury Engine

Adobe's release of Adobe Premier Pro 5.x includes accelerated timeline and effects performance through the use of a GPU effects engine known as the Mercury Engine. Utilizing approved graphics cards, end users benefit from the fast interaction these cards provide.

By working in close partnership with Adobe, AJA has made dramatic changes to its plug-ins in CS 5.5 resulting in increased Mercury Engine performance when using AJA I/O devices like KONA and Io Express.

To get the most from your interaction with AJA products, you will want to keep the following in mind:

Playback Resolution

Adobe Premiere Pro defaults to a 'Playback Resolution' of 1/2 for sequences. This setting can be found in the fly out window on the program monitor in Premiere Pro. The resolution is actually ½ in each dimension, which means playback is being done at ¼ of the actual resolution of the timeline. Because AJA KONA customers are typically connecting to very high quality and high resolution devices, AJA assumes that full resolution results are what most of our customers require. This being the case, AJA has always recommended users set their sequences in Premiere Pro to a 'Playback Resolution' setting of 'Full' when working with AJA hardware.

This full resolution setting will affect the performance of the Mercury Engine, as it will be required, in most cases to do 4 times the processing. KONA users can use the lower 'Playback Resolution' settings to yield higher frame rates, but the penalty is quality.

Because it matters

AJA
VIDEO SYSTEMS

AJA KONA, Io Products & Adobe's Mercury Engine

The "Quality" Setting

AJA has recently added a 'Quality' setting as part of the 'Playback Settings' menu within Premiere Pro. To access this setting, use the fly-out menu of the Program Monitor, and select 'Playback Settings'. In the Playback Settings, there is a drop down menu titled 'Quality' which defaults to 'Medium'. Premiere Pro's native sequences normally use the 'low' setting during playback, and use the 'high' setting for scrubbing.

AJA users have the choice to control the balance between performance and quality. The 'Medium' setting, which is the default for AJA sequences, will provide better quality rendering during Playback than native Premiere Pro sequences, but at a frame rate penalty.

AJA users have the option to reduce the quality to 'low' or 'draft' which may yield a higher frame rate, and prevent them from dropping frames, but with a reduction in the video quality.

AJA's new "Aggressive Cache"

For situations where only a frame or two is dropped during playback, AJA has introduced a new 'Aggressive Cache' feature. This feature defaults to 'off' but when turned on, it reserves a larger part of the computer's RAM, and creates an additional buffer of rendered frames during playback. This can help to avoid the occasional dropped frame, regardless of its source. If your disk is slightly too slow, or if the Mercury engine is overloaded , or even if a motherboard resource is saturated, this additional buffer can help to alleviate the problem.

However, because it builds this safety buffer during playback, the activation of this feature will result in a slight reduction in responsiveness when starting/stopping playback as well as during scrubbing.

This feature is useful in situations where performance is only marginally degraded, resulting in the occasional dropped frame that prevents a real time layoff to tape, for example. It is not designed to be used all the time, or for alleviating major performance issues.

Because it matters

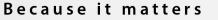# AJA KONA, Io Products & Adobe's Mercury Engine

12/2011

Suggested steps for better overall system performance with Adobe Premiere Pro 5.x

Because of the number of variables involved, it is impossible to predict exactly what performance an end user will see with the Mercury Engine. It is affected by their Graphics Card, CPU, RAM size, frame rate, resolution, file type, codec, number of streams, number and type of effects, and application settings such as those discussed above.

For the most part, AJA expects end users to see around 4 streams of full raster 1920x1080 at 29.97fps interlaced, with 3-5 effects applied per timeline segment, without dropping frames. All of the following items will increase the ability of the Mercury Engine to deliver even more real time performance:

- Reduce the Playback Resolution.
- Reduce the 'Quality' setting.
- Progressive Timelines - Interlaced frames are much harder to render than progressive frames
- Lower resolutions – thin raster formats like DVCProHD, HDV, or AVCHD will perform better than their full raster counterparts.
- Less compressed sources – codecs like h.264 and AVC-Intra take considerably more system resources to decode than uncompressed or lightly compressed video.
- Lower frame rates
- Better GPU's – The higher-end Quadro cards have more RAM and more processing power than lower-end alternatives.
- More system RAM
- Faster storage
- Faster CPU

In some cases, such as using a fully loaded system with 12 cores, 24GB of RAM, and a Quadro 6000 graphics card; and working with thin raster formats, using 24p timelines, and the fastest application settings; users might see more than 20 real time streams with an equal number of effects on a given timeline segment.

Because it matters

AJA
VIDEO SYSTEMS

Performance is dramatically affected by many variables, but ultimately, users should see excellent performance with their Adobe Premiere Pro systems when using a Mercury Engine recommended GPU in conjunction with an AJA KONA or Io card. There are many controls in place to help optimize their experience.

Latest AJA Drivers and Plug Ins

The Adobe CS 5.x user will want to ensure that they are using the latest drivers and AJA CS plug-ins for their applicable hardware.

Please visit:

http://www.aja.com/support/index.php

Because it matters