So You Want to...

Add High Definition (HD) Video Capability to a Media Server Application?

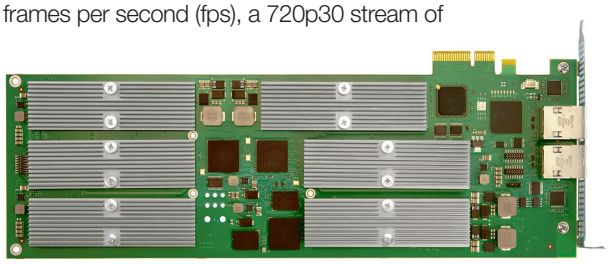
Discover the Benefits of the SharpMedia™ PCIE-8120

Artesyn Embedded Technologies' SharpMedia™ PCIE-8120 is an industry-leading PCI Express® (PCIe) media processing accelerator board. HD (or other) video streams can be redirected within an appliance to the SharpMedia PCIE-8120 and transcoding and conferencing can happen without making any use of existing processing resource. A single SharpMedia PCIE-8120 can handle up to six 4-party video conference bridges where each participant uses H.264 720p at 30fps. It can also handle resizing to and from 1080p. The SharpMedia PCIE-8120 is based on software programmable Digital Signal Processor technology so it is easily upgradeable as newer compression schemes emerge.

The SharpMedia PCIE-8120 supports the most common video compression schemes used in communications: H.263 (legacy) and MPEG-4 for CIF, and H.264 at resolutions up to 1080p. Once streams are decoded, the software also offers full scaling between resolutions and adaptation between frame rates, and the ability to mix streams and graphics together to create different layouts for output. Within the same software package, the SharpMedia PCIE-8120 also offers a full suite of voice processing capability including a wide range of voice codecs, tone detection, and voice conferencing functions. The SharpMedia PCIE-8120 is a full size PCIe board designed for use in both enterprise and NEBS appliances. Find out more at **www.artesyn.com**

Media servers come in many shapes and sizes; their role in a communications network is to offer a rich multimedia experience as part of a service application. Many servers are used to offer voice announcements, message recording and playback, and conferencing services. Increasingly, the desired multimedia experience includes video, and with high resolution user terminals and smart TVs growing in popularity, high definition video support is a key product requirement.

In order to facilitate communications to and between different video-enabled endpoints, a media server must be able to decode and encode compressed video streams using a variety of compression schemes. The problem with adding HD video to an existing processing array is one of processing complexity. For any given compression scheme, the processing complexity scales broadly with the number of pixels per second in the stream. Compared to an older communication channel using the Common Intermediate Format (CIF) resolution of 352 x 288 x 15 frames per second (fps), a 720p30 stream of 1280 x 720 x 30fps requires nearly 20 times more processing for both decode and encode, and a 1080p30 stream of 1920 x 1080 x 30fps is another two times worse.



POTENTIAL SOLUTIONS

Media streams tagged for analysis or for transcode are sent to specific media processing tasks. This could be:

- An additional HD video conferencing system linked to the media server
- An internal software solution, adding HD options to existing software
- An internal media processing accelerator offering hardware-accelerated video transcoding

Using an external HD conferencing device will be complex to manage, will take up additional rack space and power, and could be high cost. The service application would need to be able to manage both systems in parallel, potentially increasing complexity, management overhead, and OPEX costs. Upgrade paths to newer compression schemes like H.265 may be limited.

An internal software solution, for instance if the media server were using commercially available "Host Media Processing" software from suppliers like Dialogic, necessarily makes use of internal processing resources. When enabling HD video within this environment, the processing complexity soon takes a heavy toll on the processing resource available to the original application with the result that overall performance is degraded. This could hardly be viewed as adding functionality. The end result is that much more processing resource would be required. Therefore, the best solution is adding a hardware-assisted accelerator. This keeps the function internal to the media server AND avoids the loss of central processing resource that would otherwise be required to run a fully software solution. Ideally this would be able to take account of new video compression schemes as they emerge.

PCI EXPRESS®

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