



## Active Silicon supports real-time GPU processing

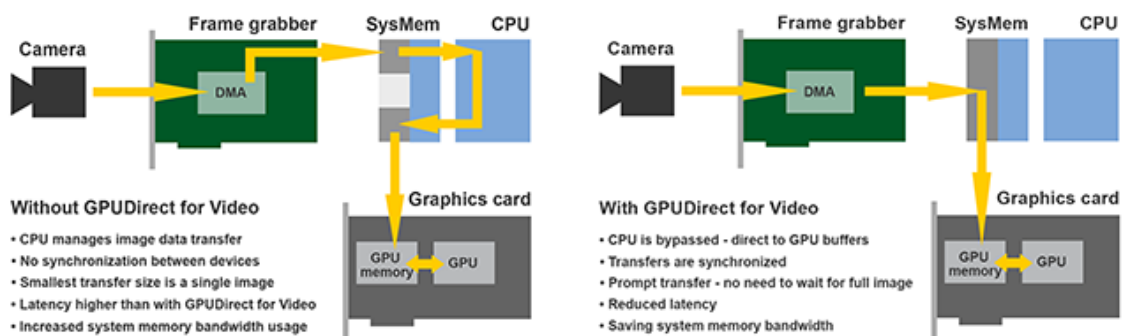
Modern GPUs are extremely efficient at processing images and graphics, since they are optimized for processing large blocks of data in parallel. For everyone using Camera Link or CoaXPress acquisition systems the use of APIs such as **DirectGMA** by **AMD** or **GPUDirect for Video** by **NVIDIA** provides optimal data transfer.

Active Silicon supports both **DirectGMA** and **GPUDirect for Video** by providing a well-documented API and SDK sample code for easy integration with our frame grabbers. How it all works and the advantages are outlined below.

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### GPU processing with NVIDIA's GPUDirect for Video

Under Windows, the **GPUDirect for Video** API allows data to be transferred from the acquisition card directly into GPU memory buffers **without any CPU interaction**. These GPU buffers may be in the PC's system memory as shown in the figure below, but are managed by the GPU. Data is processed and/or transferred from these buffers by the lightning-fast DMA engine of the GPU.



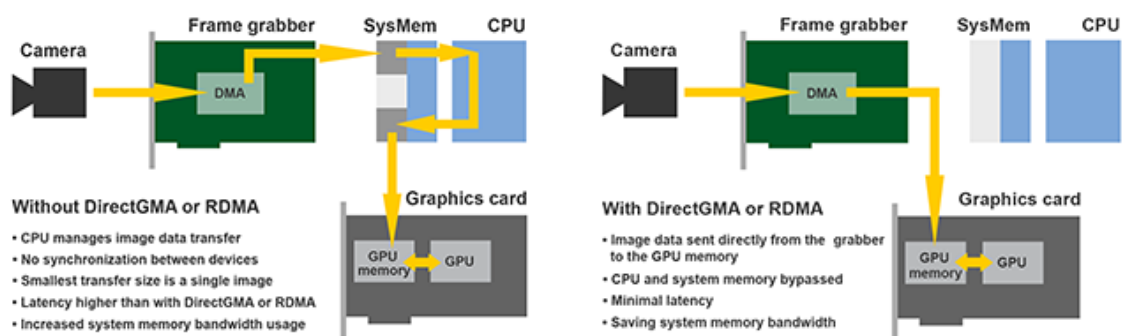
Advantages:

- CPU is bypassed through direct transfer to GPU buffers
- Significant performance improvements
- Transfers are synchronized
- Latency reduced
- Saving system memory bandwidth

Under **Linux**, the equivalent technology is **NVIDIA's GPUDirect RDMA**. The function is similar to AMD's DirectGMA outlined below.

## GPU processing with AMD's DirectGMA

**DirectGMA** (Direct Graphics Memory Access) is AMD's proprietary method and API for low latency peer-to-peer data transfers between PCI Express devices. Part of the GPU memory is made accessible to other devices on the bus, such as **Active Silicon's acquisition cards**. This allows the frame grabber to DMA image data directly into GPU memory.



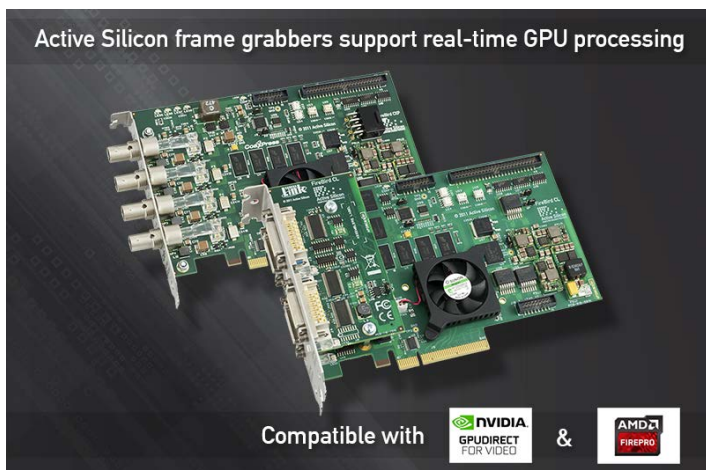
### Advantages:

- CPU and system memory bypassed
- Significant performance improvements
- Transfers are synchronized
- Minimal latency
- Saving system memory bandwidth

## Easy integration with Active Silicon frame grabber

**Active Silicon's well documented API and SDK sample code** allows for easy integration of GPU processing on standard computer hardware. See our **GPU-solutions webpage** to understand the

processes involved when running under Windows or Linux OS. You will also find information on **setup requirements** for both APIs to help on how best to get started.



All Active Silicon **FireBird and Phoenix frame grabbers** are compatible with GPUDirect for Video and DirectGMA.

**Active Silicon's SDK includes a comprehensive suite of C++ examples** for GPUDirect for Video and DirectGMA with full source code. Our API supports CUDA, OpenCL, OpenGL and DirectX and is consistent across operating systems and hardware platforms allowing easy migration. **And with Active Silicon's RISC based ActiveDMA technology, our frame grabbers work virtually latency free.**

**Any questions? Please contact us!**

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