



AMD FirePro™ Graphics for SDI Workflows

Delivering low-latency, high-bandwidth solutions for HD broadcast, 4K and beyond

Key Features and Benefits:

- Real-time video capture and output directly to and from GPU memory of uncompressed 4K Deep Color video
- Optimized pipeline for frame-based devices such as frame grabbers, video switchers, HD-SDI capture, and CameraLink devices
- Dual Copy Engines – ultra-fast parallel and concurrent data transfer speeds
- Flexible architecture supports leading video I/O partners
- Combine an AMD FirePro W-Series graphics card with an AJA Kona 3G or a Blackmagic DeckLink for the ultimate broadcast video processing solution
- Ideal solution for video, film, broadcast, and new media markets supporting Linux 64-bit and Windows 64-bit operating systems

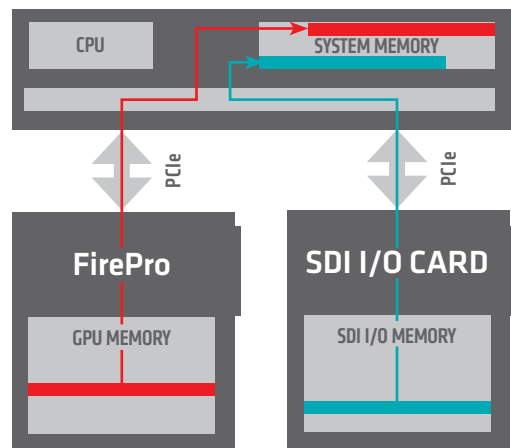
In today's demanding media environment, creative professionals rely on powerful workstation solutions that offer outstanding graphics and computational performance to get high definition (HD) and ultra-high definition (UHD) video into the system for image processing on the GPU, and to play out the results as close to real-time as possible. Until recently, there was no method of transferring video directly between the GPU and the SDI I/O card, and a two-step copy approach had to be applied instead, which created unwanted system latency.

DirectGMA and AMD FirePro™ professional graphics

In order to address this problem, AMD worked closely with industry partners to develop DirectGMA, a technology that can reduce latency in live/on-air broadcast graphics workflows and provides the necessary system bandwidth for demanding 4K and 5K digital cinema applications.

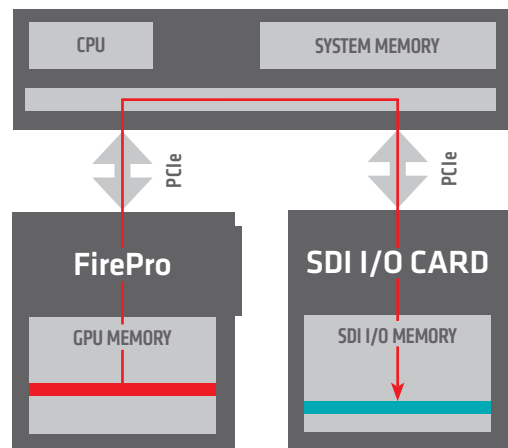
Traditional two-step copy approach

Total transfer time: 36.4 ms



Approach with AMD FirePro™ and DirectGMA

Total transfer time: 28 ms







Example: 4K RGBA Frame = 4096x2160x4 = 33.74 MB

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DirectGMA includes two main components that allow faster data connections between two devices. The first component is AMD's implementation of PCI-Express 'peer-to-peer' transfers, allowing direct transfers between an off-the-shelf SDI I/O card and a supported AMD FirePro™ graphics card. The second component is to make the necessary software infrastructure visible to developers, both on the driver and SDK level. This allows the SDI card to communicate with the AMD FirePro GPU and transmit the data directly to graphics memory over the PCI-Express bus, thus bypassing system memory. By exposing graphics memory to any device, the need for two-step copies are eliminated, reducing latency and improving overall performance.

DirectGMA is supported with the following current-generation AMD FirePro graphics cards:

AMD FIREPRO GRAPHICS CARD	CPU MEMORY	MEMORY BANDWIDTH (GB/S)	SINGLE PRECISION (GFLOPS)	DIRECT GMA	GENLOCK
AMD FirePro™ W9100 	16 GB GDDR5	320	5240	YES	YES
AMD FirePro™ W8100 	8GB GDDR5	320	4200	YES	YES
AMD FirePro™ W7100 	8GB GDDR5	TBA	TBA	YES	YES
AMD FirePro™ W5100 	4GB GDDR5	96	1430	YES	NO

Leading hardware vendors already support AMD's DirectGMA technology, including:

AJA Video Systems
 Deltacast
 Blackmagic Design
 Bluefish444
 Datapath

If you would like more technical details or access to the DirectGMA SDK, feel free to contact us at:
FirePro.Developers@amd.com