

Press Release First ever Streaming demonstrated between PXIe Digitizers and GPUs

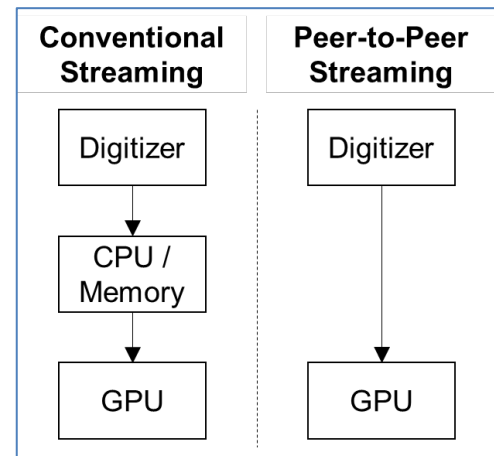
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Teledyne SP Devices Demonstrates First Peer-to-Peer Streaming between PXIe Digitizers and GPUs

Sustains 1 GHz Analysis Bandwidth, Reducing Latency in Real-Time Processing and Machine Learning Applications

Makuhari Messe (Chiba, Japan); Wednesday, March 15, 2023 – Teledyne SP Devices, a business unit of Teledyne Technologies Incorporated (NYSE: TDY), today at Defence and Security Equipment International (DSEI) Japan, demonstrated the industry’s first implementation of peer-to-peer streaming between commercial-off-the-shelf (COTS) digitizers and graphics processing units (GPUs) in PXIe Systems. The demonstration employed Teledyne SP Devices ADQ7 PXIe Digitizers and RADX Technologies, Inc. (RADX) Catalyst PXIe GPUs that are based on NVIDIA Quadro GPUs.

Peer-to-Peer streaming uses Direct Memory Access (DMA) between the Digitizer and the GPU directly over the PCIe Bus without having the data pass through the Peripheral Component Interconnect Express Extensions for Instrumentation (PXIe) system’s CPU or memory subsystem. This technique enhances bandwidth per channel, while simultaneously reducing latency and minimizing the overhead incurred by the PXIe System’s CPU and Memory subsystems. The net benefit of peer-to-peer streaming is significantly improved real-time signal processing performance and system scalability, which is essential for advanced multi-channel and ultra wide-band applications like Test & Measurement (T&M) and Electronic Warfare (EW) Applications. These applications also benefit from Machine learning, where the connection to a GPU is important.



In conventional streaming, samples flow from the digitizer through the CPU/Memory subsystem, which consumes system resources, increases latency and reduces scalability. In peer-to-peer streaming, samples flow directly from the digitizer to the GPU’s memory via Direct Memory Access, bypassing the CPU/Memory subsystem and thereby freeing system resources, decreasing latency and improving scalability. Peer-to-peer streaming ultimately results up to 50% greater bandwidth per channel, which is important in ultra-wideband, multi-channel applications.

“Peer-to-peer streaming to GPUs is an essential capability that Teledyne SP Devices has long supported in its PCIe digitizer products, said Paul McCormack, Teledyne SP Devices Product & Marketing Manager. “With the advent of the RADX Catalyst PXIe GPUs, we can now add this important capability to our PXIe product portfolio as well, which is essential for many aerospace, defense, automotive and other long-life-cycle test and measurement and electronic warfare applications.”

At DSEI Japan, Teledyne SP Devices demonstrated an ADQ7 2-CH, 14-bit, PXIe digitizer that is continuously sending 5 Gigasamples per second via peer-to-peer streaming to an adjacent RADX Catalyst PXIe GPU that employs an NVIDIA Quadro T600 and is continuously performing 1 Megasample Fast Fourier Transforms (FFTs) on the incoming stream. The PXIe system employed in the demonstration included an NI PXIe-1095 chassis and an NI PXIe-8881 embedded controller running Ubuntu Linux 20.04. The demonstration shows that the peer to peer processing already available for PCIe applications, like computers and servers, is available for more industrial applications requiring PXIe interfaces.

“Teledyne SP Devices continues to demonstrate industry leadership with its support for peer-to-peer streaming between their PXIe digitizers and RADX PXIe GPUs,” said Ross Q. Smith, RADX Co-Founder and CEO.

“With peer-to-peer streaming between PXIe digitizers and GPUs, PXIe test system integrators can now, for the first time, conduct ultra-wide-band, low-latency, real-time signal analysis and machine learning in the PXIe systems right where the data is acquired, and at price points and precision levels previously unachievable solely with FPGAs or CPUs”

Visit <https://www.spdevices.com/products/hardware#14-bit-digitizers> - to find out more about Teledyne SP Devices 14-bit and other digitizers.

Visit www.radxtech.com/catalyst-gpu - to find out more about RADX Catalyst GPUs and other RADX high performance COTS PXIe modules.

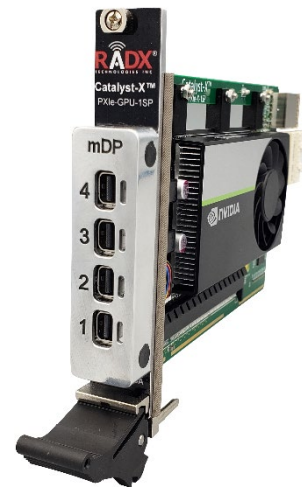
About RADX - RADX Technologies, Inc., is a US-based, small business that develops COTS, cost-effective, High Performance Computing (HPC) hardware and software products that enable advanced signal processing, data acquisition, and ML/DL inference applications in PXIe/CPCIe platforms for T&M and EW markets. RADX products include the (patent-pending) Catalyst and Trifecta Families of PXIe/CPCIe Modules and Transform-X Software Examples. RADX is an NI Alliance Silver Partner and RADX BAA / TAA compliant products are available on GSA via TestMart. For more info, please visit www.radxtech.com or email info@radxtech.com.

About Teledyne SP Devices - Teledyne SP Devices designs and manufactures world-leading modular data acquisition and signal generation instruments. The company’s products utilize patented calibration logic, the latest data converters, and state-of-the-art FPGA technology resulting in an unrivaled combination of high sampling rate and resolution.

Products are available with a range of application-specific features and embedded, real-time signal processing. This helps our customers to overcome performance bottlenecks, shortens time-to-market, and provides system-level advantages within a wide range of application areas. SP Devices’ products are deployed across a wide variety of industries, including analytical instruments, remote sensing, scientific instrumentation, medical imaging, and more.



Teledyne SP Devices ADQ7 PXIe Digitizer



RADX Catalyst-GPU PXIe GPU with NVIDIA Quadro T600

As part of the instrumentation segment of Teledyne Technologies, SP Devices provides broad technology access, engineering excellence, and critical know-how with a strong position as a world-leading and long-term supplier of high-performance instrumentation and system-level solutions.

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