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Pico Computing Scores Technology Triple Play with Micron Hybrid Memory Cube, Next-generation Xilinx FPGAs, and OpenCL

Pico Computing's Trifecta™ workstation integrates three breakthrough technologies in a small footprint high-performance computing package

Seattle, WA - November 17, 2014 - Pico Computing , the technology leader in FPGA-based acceleration, today announced the first-time convergence of three groundbreaking technologies to bring unprecedented system performance and bandwidth to a compact supercomputing workstation, complete with the ability to implement designs on the platform using OpenCL™, a-C like programming language.

Pico Computing's Trifecta™ is a high-performance, low-power turnkey workstation solution that even software developers without knowledge of hardware description languages can use to dramatically speed up their applications. Not only does Trifecta accelerate applications spanning packet inspection to bioinformatics to image and video processing, it also accelerates the technology adoption curve by providing a complete system solution that encompasses and advances game-changing technologies including Micron's Hybrid Memory Cube (HMC), Xilinx's 20 nm UltraScale™ family of all programmable devices, and the open standard hardware programming language, OpenCL. Further enabled by Pico Computing's HMC Controller IP and FPGA programming and management framework, the entire solution fits on a single PCI Express card housed within an air-cooled, small-footprint desktop computer.

Highlights of the technologies integrated within Pico Computing's Trifecta platform include the following:

Hybrid Memory Cube (HMC)
The HMC provides tremendous benefits to memory-bound applications-particularly those that require high bandwidth and fast random access. HMC devices operate up to 15 times faster than DDR3 and consume up to 70% less energy while delivering bi-directional bandwidth of up to 240GB/s when used in conjunction with Xilinx's high performance UltraScale GTH transceivers.

HMC Controller IP
Pico Computing's HMC Controller IP has been specially tuned to operate with Xilinx UltraScale devices to deliver the industry's first and only 15G HMC solution. The solution implements the full HMC specification, but is also highly parameterized to yield truly optimized system configurations to meet exacting design objectives. The number of HMC links addressed, the number and width of internal ports, clock speeds, power, performance, area, and other details can be "dialed in" to yield precisely the performance required. "Through our partnership with Pico Computing, we are pleased to enable a solution for application developers that offers the highest memory throughput in an FPGA design achievable only with UltraScale devices," said Tamara Schmitz, director of technical marketing for power and memory at Xilinx.

Pico Computing Framework
Implementation of the HMC controller and programming of the FPGAs is made easy by virtue of Pico Computing's framework-a Linux-based run-time environment that provides the essential link between the application running on a host computer and the hardware algorithm, or firmware, implemented in the FPGA(s), and automates the FPGA programming overhead.

Xilinx UltraScale FPGAs
Xilinx UltraScale devices support the full HMC bandwidth and offer up to 120 transceivers, ideal for bandwidth-intensive HMC applications. The Trifecta platform leverages the industry's only shipping 20nm FPGAs, along with a validated HMC IP core, to bring 15Gb/s HMC designs to market now.

OpenCL
In contrast to traditional FPGA design flows, OpenCL enables significantly faster time to market by facilitating a higher level of design abstraction that also realizes end designs with enhanced performance and greater power efficiency. Software developers can now easily create highly parallelized, computationally-intensive applications on the Trifecta platform to yield truly optimized systems, versus the limited performance provided by generic, general purpose hardware. By transferring the program execution to dedicated programmable hardware-and leveraging the HMC to break through the memory wall-applications running on the Trifecta platform can realize dramatically improved performance.

The combination of breakthrough memory technology, next-generation programmable logic, and a standard parallel programing language will not only accelerate developer adoption, but transform application acceleration across a wide range of application domains.

The Trifecta platform will be available in beta version in first quarter, 2015.

About Pico Computing
Pico Computing is the technology leader in high-performance computing. Our modular, highly scalable HPC and embedded systems solve the biggest of the big data computing challenges-from the edge to the data center to the desktop. Whether targeted to PCI Express-based HPC or standalone embedded applications, Pico Computing's massively-scalable architecture, built upon Field Programmable Gate Array (FPGA) technologies, brings orders-of-magnitude performance gains, greatly reduced energy costs, the industry's smallest form factors, and simplified application design. To learn more about Pico Computing, visit www.picocomputing.com.

About Xilinx
Xilinx is the world's leading provider of All Programmable FPGAs, SoCs and 3D ICs. These industry- leading devices are coupled with a next-generation design environment and IP to serve a broad range of customer needs, from programmable logic to programmable systems integration. For more information, visit www.xilinx.com.

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