NVMe Streamer for FPGA High-Speed Data Recording

NVMe (Non-Volatile Memory Express) has become the prominent choice for connecting SSD (Solid-State Drives) when read/write performance is key.

MLE releases NVMe Streamer, a Full Accelerator NVMe Host Controller subsystem integrated into Xilinx Zynq UltraScale+ MPSoC and RFSoC devices.

Application Use Cases

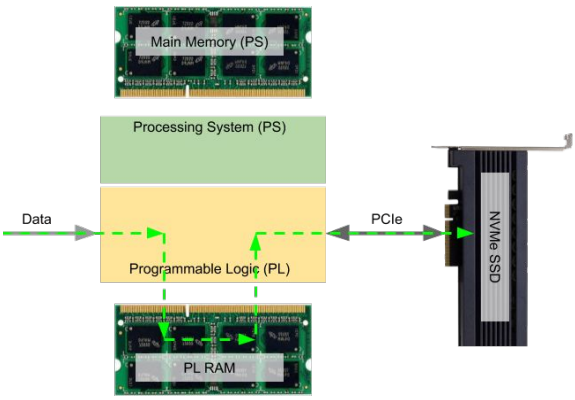
- Bring high-performance NVMe host connectivity to FPGAs
- High-speed analog and digital data acquisition systems
- Lossless and gapless recording, e.g. of sensor data
- Camera surveillance systems
- Automotive & Aerospace Datalogging
- Data streaming from SSDs
- Storage protocol offloading (NVMe/TCP)

Key Features

- Provides multiple NVMe host ports (i.e. PCIe Root Ports) for NVMe SSD connect
- "CPU-less" Full-Accelerator operation
- Fully integrated and tested NVMe Host Controller IP Core
- PCIe Enumeration, NVMe Initialization & Identify, NVMe Queue Management
- Control & Status interface for NVMe IO Commands and drive administration
- Compatible w/ PCIe Gen 1 (2.5 GT/s), Gen 2 (5 GT/s), Gen 3 (8 GT/s), Gen 4 (16 GT/s)
- Scalable to PCIe x1, x2, x4, x8

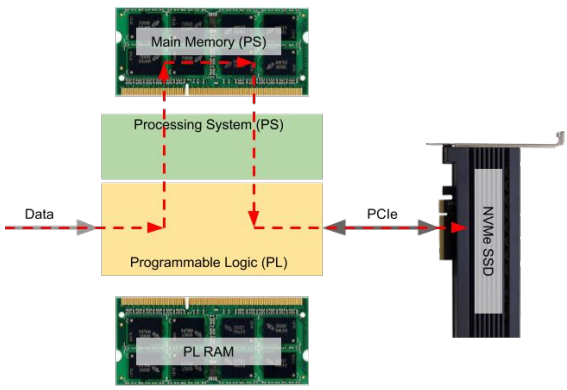
Accelerated NVMe Streamer

- Direct path between PL and SSD
- PL-RAM used as Stream Buffer (optional)



Non-Accelerated Mode

- Data flows through main memory adding latency and decreasing bandwidth



Deliverables

- As IP Core or customized FPGA subsystem
- Single-Project-Use Netlist (or equiv.)
- Multi-Project-Use Source Code
- Customized, integrated turnkey solutions
- Application-specific expert design services

Contact Information

- MLE USA: San Jose, CA
  +1-408-475-1490
  sales-web@MLEcorp.com
- MLE Europe: Neu-Ulm, GER
  +49-731-141149-0
  sales-web@MLEcorp.com

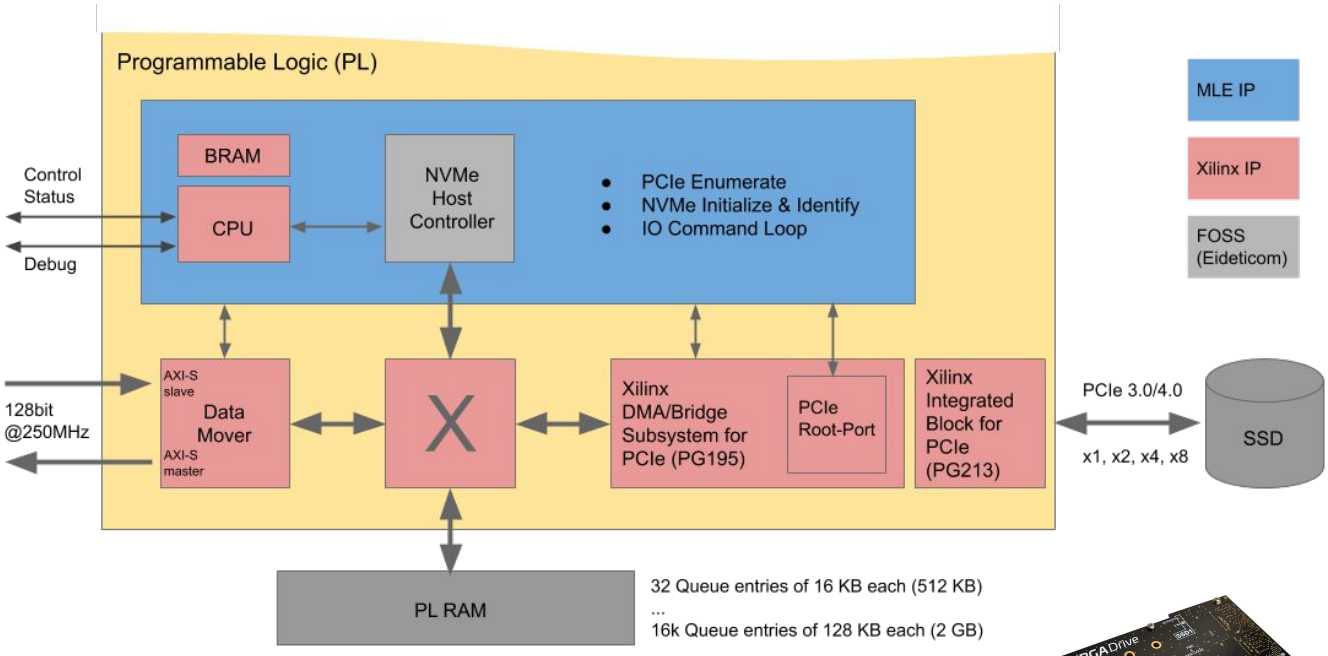
Rev 20.01c
(General Market Availability)

NVMe Streamer for FPGA High-Speed Data Recording

missing link electronics

XILINX ALLIANCE PROGRAM PREMIER MEMBER

System-Level Block Diagram for Xilinx UltraScale+ FPGAs

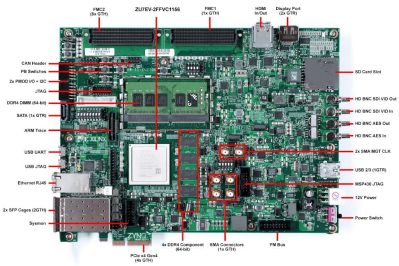


Free-of-charge Eval Reference Designs

- Single or dual m.2 NVMe SSD connectivity via FPGA Drive FMC from Opsero
- Less than 50k LUTs and 180 BRAM tiles

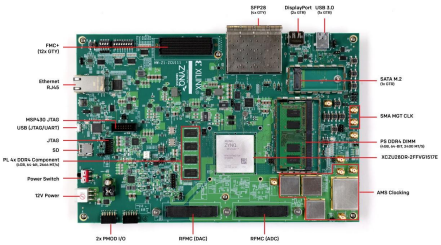
Xilinx ZU7EV MPSoC in ZCU106 DevKit

- Xilinx PCIe Gen 3 x4 Hard IP
- GTHv4 Transceivers
- PL-attached DDR4 RAM for Stream Buffering



Xilinx ZU28DR RFSoC on ZCU111 DevKit

- Xilinx PCIe Gen 3 / Gen 4 x4 Hard IP
- GTY Transceivers
- 4GB PL-attached DDR4 RAM for Stream Buffering



Missing Link Electronics (MLE)

We are a Silicon Valley based technology company with offices in Germany. We are partner to leading electronic device and solution providers and have been enabling key innovators in the automotive, industrial, test & measurement markets to build better Embedded Systems, faster.

Our mission is to develop and market technology solutions for Embedded Systems Realization via pre-validated IP and expert application support, and to combine off-the-shelf FPGA devices with Open-Source Software for dependable, configurable Embedded System platforms.

Our expertise is Domain-Specific Architectures I/O connectivity and acceleration of data communication protocols, additionally opening up FPGA technology for analog applications, and the integration and optimization of Open Source Linux and Android software stacks on modern extensible processing architectures.

www.missinglinkelectronics.com
+1-408-475-1490
+49-731-141149-0