

Key-Value-Store (KVS) Accelerator for Data Center Storage Xilinx, Fidus Systems and MLE have partnered to address the growing needs in High-Performance Computing and Data Centers to explore “unconventional” data-flow oriented FPGA-based system architecture for acceleration, hyperconvergence, object storage and in-memory compute. The outcome of this is ZU19SN - a high-capacity, hyperconverged, networked storage node with a Zynq UltraScale+ ZU19EG MPSoC.

## Key Features

- Xilinx ZU19EP with dual NVMe m.2 SSDs and QSFP28 for dual 10/25/50/100 GigE.
- Quad-Core ARM A53 w/ Xilinx PetaLinux.
- Modular implementation in HDL and C/C++ for Vivado HLS. Supports Xilinx HLx and SDx design flows.
- Integrated System-on-Chip solution for Zynq Ultrascale+, or as PCIe-connected companion FPGA.
- Software-defined complete & customizable sub-system based on Xilinx IP cores for out-of-order memory controller, TCP/UDP/IP stack, hash table, DDR3/DDR4 DRAM, NVMe/SATA/SAS SSD and/or HDD interfaces.

## Core Benefits

- FPGA-based Key-Value load/store processing for data center server CPUs.
- “Full Accelerator” in programmable logic for line-rate TCP/IP and Memcached processing.
- Scalable performance to deliver processing speeds at 10, 25, 40, or 100 GigE line rates.
- Total Server Power reduction via heterogeneous computing architecture.

## ZU19SN Zynq UltraScale+ MPSoC Evaluation System

- Targeted to Xilinx ZU9EP, Quad-Core ARM A53 runs Xilinx PetaLinux.
- SFP+ for 10GigE via Twinax or Fibre.
- Supports Vivado 2016.3, or newer, design flow with High-Level Synthesis design option.



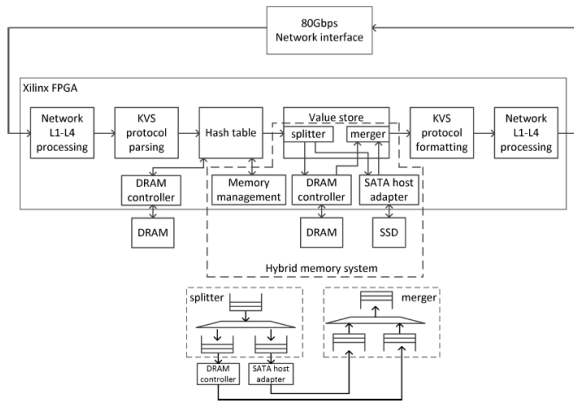
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## System Architecture



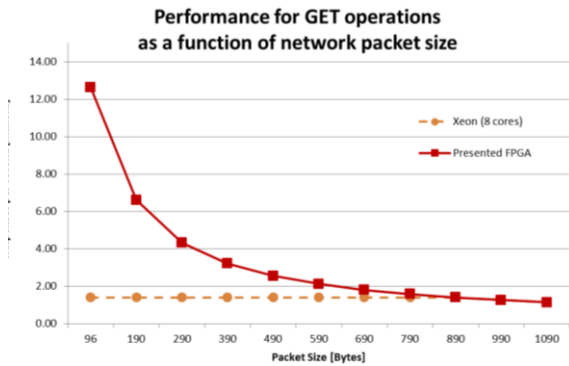
## License Models and Availability

- IP core for FPGA
- Customized Turn-Key solution
- Application-specific R&D services

## High Performance at Low Power

Many million responses per second (RPS) at over 200k RPS per Watt:

- 13M RPS at 35 Watts board-level, measured at 10 GigE
- 100M RPS, extrapolated for 100 GigE.



[Blott et al.: "Scaling out to a Single-Node 80Gbps Memcached Server with 40Terabytes of Memory", Hot Storage 2015]

## Xilinx is

You may know Xilinx because they invented the FPGA. Or maybe you know them because they turned the semiconductor world upside down and created the fabless model. With over 3500 patents and more than 60 industry firsts, Xilinx continues to pioneer new programmable technology putting our customers first. Today Xilinx's portfolio combines All Programmable devices in the categories of FPGAs, SoCs, and 3DICs, as well as All Programming models, including software-defined development environments. Xilinx products are enabling smart, connected, and differentiated applications driven by 5G Wireless, Embedded Vision, Industrial IoT, and Cloud Computing.

## Missing Link Electronics is

We are a Silicon Valley based technology company with offices in Germany. We are partner of 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 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.