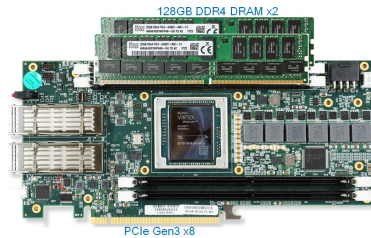


Wolley Demonstrates Table-Less SCM (Storage Class Memory) Controller at FMS2019

A 256GB Persistent Memory System using Wolley's Table-Less SCM Controller Achieves Top Performance



San Jose, California – Aug. 6, 2019 – Wolley Inc., (“Wolley”), a San Jose CA startup since 2016, today demonstrated its 256GB SCM (Storage Class Memory) controller platform in FPGA at FMS2019 Santa Clara, CA. In the last two years, Wolley has developed a patented Table-Less SCM controller architecture not seen in any of the existing controllers. In addition to removing the need of the address indirection table, it removes the need of backup energy cap, and takes care of the difficult synchronization issue by design. Implemented in FPGA, using DRAM to emulate SCM, this SCM controller demo platform has shown a promising performance comparable to Intel’s 3D XPoint Optane.

In 2015, Intel and Micron announced the 3D Xpoint technology which bolstered SCM's feasibility and practicality. *“Storage Class Memory (SCM) holds great promise to be similar to DRAM in speed and interface, while analogous to NAND in density and non-volatility”*, says Dr. Bernard Shung, President of Wolley Inc.

To realize its potential, SCM requires fundamentally different controller architecture from that of NAND for two important reasons. First, a firmware-based NAND controller, although more flexible and adaptive for wear leveling algorithms and device management, is too slow for SCM media. Second, a table based NAND controller does not scale, as the table size may increase from ~0.1% to ~6.4% of memory capacity in order to support 64-byte memory access mode for applications such as NVDIMM.

Wolley is convinced that a Table-Less architecture offers better performance, simpler design, and better cost advantage. Wolley’s Table-Less SCM Controller platform in FPGA has a PCIe-Gen3 x8 host interface @ 125MHz, 256GB emulated SCM capacity using two 128GB DRAM DIMMs, with inserted delay in FPGA to compensate for the SCM latency. With 64-byte memory mode, the FPGA achieved 16.4M/10.2M random Read/Write IOPs. With 4KB-byte block mode, it achieved 770K/700K random Read/Write IOPs. This FPGA platform is able to recover from SPOR events robustly with a recovery time of 1-2 seconds. With ASIC, the performance mentioned above can be significantly improved.

Wolley is actively seeking partners to jointly develop and commercialize the Table-Less SCM controller in ASIC with SCM vendors. Wolley has a solid track record of developing ECC and non-volatile device management. For more information on evaluating the SCM controller platform, or collaborating with Wolley for developing SCM controller ASIC, please contact info@wolleytech.com.

About Wolley Inc.

[Wolley Inc.](#), established in 2016, is a SCM controller ASIC technology company with headquarters in San Jose CA and R&D team in Hsinchu Taiwan. Wolley also offers its controller IP licensing and SoC integration services to selected partners. Wolley was founded by Dr. Bernard Shung and Dr. Hsie-Chia Chang. Dr. Shung is a veteran technologist and executive in non-volatile memory device management and high speed communication. He served as GM of New Business Development at Mediatek, SVP of Engineering at SK Hynix and Link-a-media Devices. Dr. Hsie-Chia Chang is Professor at National Chiao-Tung Univ. in Taiwan, specializes in ECC algorithm and signal processing.

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