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Kalray to Demonstrate NVMeOF Direct SSD Demo With SK Hynix at Flash Memory Summit

Kalray is Building a Complete Set of NVMeOF Solutions Together with SK Hynix

Santa Clara, California, – August 8, 2016 – Kalray, a leading provider of acceleration solutions for data centers, will demonstrate a complete NVMeOF (Non-Volatile Memory express over Fabrics) chain from compute node to remote NVMe SSDs with SK Hynix, a leading manufacturer of DRAM, flash memory and SSDs, at the Flash Memory Summit. The remote storage system will be built around 13 SKHMS M.2 PCIe Carriers integrating 4 SKHMS PE3110 SSDs each and 6 Kalray smartNIC KONIC-80 equipped with Kalray's MPPA2®-256 "Bostan" High Speed I/O Processor. The Flash Memory Summit is taking place at the Santa Clara Convention Center, in Santa Clara, Calif., from August 8-11. SK Hynix and Kalray will be exhibiting respectively at booth #107 and #908.

Data center storage is going through a major disruption with the massive introduction of SSDs, which have much lower latency than HDDs. SSD usage is putting tremendous pressure on the system to drastically decrease the latency in the transport of data, as well as in the controller itself. The NVMe protocol has been developed to take advantage of the random access property of SSDs and is already well established. The second step is to introduce, before the end of the year, innovative solutions based on the NVMeOF protocol, which carries NVMe commands and data over Ethernet using RDMA protocol (Remote Direct Memory Access) such as RoCEv2 (RDMA over Converged Ethernet).

"We have ported the RoCEv2 protocol from our partner 6WIND on our SmartNIC, the KONIC80, recently introduced in the market, which makes it, with the addition of the NVMe Direct capability already available, an ideal solution for remote low latency SSD storage," said Eric Baissus, Kalray's CEO.

"This demonstration is a major step toward the goal of introducing NVMeOF solutions as soon as possible by demonstrating a full NVMeOF chain from initiator down to SSD going through Ethernet with the active collaboration of two major players in this market," said Vice President SooHwan Choi, Head of the NAND Product Planning Office at SK Hynix.

SK Hynix's 1TB NVMe enterprise SSD is based on its own 2nd generation 3D NAND Flash and in-house controller. This cutting-edge 3D NAND based NVMe SSD supports PCIe Gen 3x4 lanes, providing higher bandwidth and lower latency to process data far quicker than

SATA SSDs. Presented in a M.2 form factor, the product is ideal for open cloud servers and in compliance with OCS (Open Cloud Server) v2.1. In addition, since most of the datacenter servers presented lately by OCP (Open Compute Project) have installed PCIe NVMe SSDs, the importance of NVMe SSDs in the market is expected to increase gradually. The SSD operates at 1700MB/s with 750MB/s of sequential read/write and runs a random read/write at 160,000 IOPS and 30,000 IOPS.

Kalray's unique industry solutions deliver these SmartNIC storage functions at sub-30W power consumption, while having the capability to simultaneously implement any type of processing required in storage applications, such as logical volume management, deduplication, encryption, compression and erasure coding – all in standard C/C++ software.

The company is planning to introduce a complete family of NVMeOF storage solutions including a SmartNIC with NVMe Direct capability but also an integrated low cost NVMe SSD controller capable of 3.2 MIOPS @ 4Kb data at 10µs latency, by the end of the year. These unique solutions can be found installed in data centers as early as Q1, 2017.

The solutions are all powered by Kalray's MPPA2®-256 "Bostan" High Speed I/O Processor, which has a powerful architecture by connecting high speed I/O interfaces such as 2 x 40GbE and 2 x 8-lanes PCIe Gen3 directly to a large matrix of 256 computing cores, 16 system cores, 16 master cores all C/C++ programmable and 128 crypto co-processors.

About Kalray
Kalray Inc., is a fabless semiconductor company and pioneer in many-core processor solutions. Its innovative MPPA® architecture uniquely delivers high-speed I/O processing, enabling real-time acceleration for cloud applications in security, networking and storage. For more information, visit http://www.kalrayinc.com

About SK Hynix
SK Hynix Inc., headquartered in Korea, is the world's top tier semiconductor supplier offering Dynamic Random Access Memory chips (DRAM), Flash memory chips (NAND Flash) and CMOS Image Sensors (CIS) for a wide range of customers globally. The company's shares are traded on the Korean Exchange and the Global Depository shares are listed on the Luxemburg Stock Exchange. Further information about SK Hynix is available at www.skhynix.com.

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