PRESS RELEASE

EXTOLL introduces the HPC network chip TOURMALET™

Mannheim XX.7.2015. EXTOLL GmbH introduces its novel network chip and PCIe Board TOURMALET 100G. This high-performance network ASIC integrates the network interface controller function as well as the network switching functionality in a single chip solution enabling direct networks without external switches. Superior performance of 850ns MPI latency, 8.5 GB/s MPI bandwidth and a message rate in excess of 70 million messages per second could already be shown.

TOURMALET 100G incorporates the complete EXTOLL network technology in a single-chip solution. The EXTOLL network is a direct network, i.e. no external switches are required. The chip supports 6+1 links, where the 7th link can be used for break-out functionalities, i.e. attaching I/O, storage, additional accelerators, etc. while at the same time leaving the network topology of the compute network untouched. The network links of Tourmalet 100G run at 100Gb/s physical speed and the ASIC features a PCIe Gen3 x16 interface to connect to CPUs or Accelerators.

The chip yields outstanding performance data. In HPC applications, latency (time required for a signal to travel from one node to another), message rate (number of messages per second that can be processed) and bandwidth (amount of data per second that can be transferred) are decisive measures. In first measurements, TOURMALET 100G already showed 0.85µs MPI latency, more than 70 million MPI messages per node from its potential of well above 100 million MPI messages per second and 8.5 GB/s MPI bandwidth.

Additionally, TOURMALET 100G also provides a host of extra features. Examples are the PCI root port mode which allows for hostless connection of PCIe Accelerators to the network: TOURMALET 100G can directly boot and control co-procesors like Intel® Xeon Phi™ "Knights Corner" (KNC) or GPU accelerator cards. TOURMALET 100G also supports Global GPU Address Space (GGAS) technology and features a sophisticated switch and networking layer.

EXTOLL GmbH has developed a complete ecosystem for its network consisting of PCI Express plug-in cards, link connectors, electrical network cables, active optical cables, software stack and management software. MPI as the de-facto standard for HPC is of course supported, and MPI applications can be run without the need to modify the source code.

EXTOLL GmbH showcased TOURMALET 100G for the first time at the International Supercomputing (ISC) fair at Frankfurt in July 2015 also showing its superior performance with various live-demos. The hostless-feature is strikingly demonstrated by EXTOLL's novel 2-phase immersion cooling system GreenICE™ with super-dense electronics: 32 nodes formed by TOURMALET 100G and Intel Xeon Phi "Knights Corner" (KNC) yield 38.4 TFLOPS peak DP-floating point performance within a 19" x 9U chassis.

"EXTOLL's network technology is a disruptive innovation in the field of HPC interconnect." – says Prof. Lippert from Juelich Super Computing Centre – "High performance, support of hostless nodes together with GreenICE makes it a promising candidate for future Exascale Supercomputers."

EXTOLL's GreenICE is used for part of the booster nodes of the DEEP-project (Dynamical Exascale Entry Platform), funded by the European Commission through the FP7 program under grant agreement no. 287530. In the follow-up project DEEP-ER, EXTOLL's TOURMALET will be used for the booster interconnect network.

About EXTOLL GmbH:
EXTOLL GmbH is a Mannheim, Germany, based privately held company dedicated to high-performance computing (HPC). Its core product is an HPC networking solution including completely in-house designed ASICs, PCIe Boards, cabling solutions and software stack. Additionally, EXTOLL GmbH provides extremely efficient and dense 2-phase immersion cooling solutions.

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