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Next Generation HEP Networks at Supercomputing 2012

Monday 14 October 2013 15:00 (45 minutes)

We review the demonstration of next generation high performance 100 Gbps networks for HEP that took place at the Supercomputing 2012 (SC12) conference in Salt Lake City. Three 100 Gbps circuits were established from the California Institute of Technology, the University of Victoria and the University of Michigan to the conference show floor. We were able to to efficiently utilize these circuits using limited set of hardware surpassing previous records established at SC11. Highlights include a record overall disk to disk rate using the three links of 187 Gbps, a unidirectional transfer between storage systems in Victoria and Salt Lake on one link of 96 Gbps, an 80 Gbps transfer from Caltech to a single server with two 40GE interfaces at Salt Lake with nearly 100% use of the servers' interfaces at both ends, and a transfer using Remote Data Memory Access (RDMA) over Ethernet between Pasadena and Salt Lake that sustained 75 Gbps with a CPU load on the servers of only 5%. A total of 3.8 Petabytes was transferred over the three days of the conference exhibit, including 2 Petabytes on the last day. Three different storage setup were used during the demonstration: an conventional disk Lustre system, 2U rack servers containing solid state disks and systems containing PCI Express 3.0 Solid State storage cards.

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