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Disk to Disk network transfers at 100 Gb/s using a handful of servers

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For the Super Computing 2011 conference in Seattle, Washington, a 100 Gb/s connection was established between the California Institute of Technology conference booth and the University of Victoria.

A small team performed disk to disk data transfers between the two sites nearing 100 Gb/s, using only a small set of properly

configured transfer servers equipped with SSD drives. The circuit was established over the BCnet, CANARIE and SCinet (the SuperComputing conference network) using network equipment dedicated to the demonstration. The end-sites' setups involved a mix of 10GE and 40GE technologies. Three servers were equipped with PCIe v3, with a theoretical throughput per network interface of 40Gb/s.

We examine the design of the circuit and the work necessary to establish it. The technical hardware design of each end system is described. We discuss the transfer tools, disk configurations, and monitoring tools used in the test with particular emphasis on disk to disk throughput.

We review the final test results in addition to discussing the practical problems encountered and overcome during the demonstration.

Finally, we evaluate the performance obtained, both with regard to the 100Gb/s WAN circuit as well as end-system and LAN setups, and discuss potential application as a high-rate data access system, and/or caching front-end to a large conventional storage system.

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