Title: Performance Analysis of Non-Volatile Memory Express Over Fabrics (NVMeoF) Using Infiniband and Ethernet

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Abstract: With the increase in complexity of scientific computer codes, the way in which data is transferred and stored on the high-performance computers (HPC) needs to become more dynamic. Non-volatile memory express over fabrics (NVMeoF) allows for this flexibility. While past storage structures have included static storage over the network for each server node, NVMeoF allows access to all storage media over various network types such as Infiniband, RDMA (Remote Direct Memory Access) over Converged Ethernet (RoCE) and TCP. Thus, providing us with the capability of dynamically allocating storage pools that are specially designed for running jobs on a subset of worker nodes. This project's primary objective is to analyze the performance of NVMeoF over various high-speed networks such as Infiniband, RoCE and TCP. We analyzed the data throughput and input/output operations per second (IOPS) of NVMeoF with each network type using the IO benchmarking tool FIO. We compared these results with the same test to local NVMe storage as a baseline.