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Title: A performance model of MPI collective communications for parallel computing on switch-enabled Ethernet-based computational clusters

Abstract: The talk presents a performance model of collective communications for MPI platforms on a switched Ethernet network. The model is based on empirical findings from observation of collective communication operations over a wide range of message sizes. The model reflects a significant and non-deterministic increase in the execution time of many-to-one communication for medium-sized messages, persistently observed for different parallel platforms and MPI implementations and not reflected in traditional communication performance models. It is demonstrated that the use of the model can significantly improve the performance of parallel applications, intensively using many-to-one communications.

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Research interests: Algorithms, models and tools for high performance heterogeneous computing