OTTO VON GUERICKE UNIVERSITÄT MAGDEBURG

Parallel Computing and I/O

Performance modeling of one-sided and two-sided MPI-3 communication

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The MPI 3.0 standard introduced numerous changes to its remote memory access interface. This interface offers support for one sided communication. In this thesis, the performance of MPI-3 RMA is compared to the performance of the more traditional point to-point communication with MPI. This comparison is conducted on a stencil-based application for the calculation of partial differential equations using either the Gauss-Seidel method or Jacobi's method, involving three versions of said application that communicate through different means. These versions consist of a point-to-point version and two RMA versions, one that uses shared memory and one that does not. Results indicate that neither approach to communication is clearly favored. Therefore, the better performing communication form has to be determined on a case-by-case approach for any given application.