DP00AS69-3001 High Performance Computing: Programming Parallel Supercomputers

Sheet 1

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a) Code

Code is found in **comm-time-measurement.c** and run by **make** (timing.sh). Initially send one MPI_Send and MPI_Recv as a synchronization. After that a array is filled with random integers with relvant sizes and send the data in rank 0 to rank 1. Times are averaged and collected in a excel which from the data printed to the standard output.

b) Time for communication

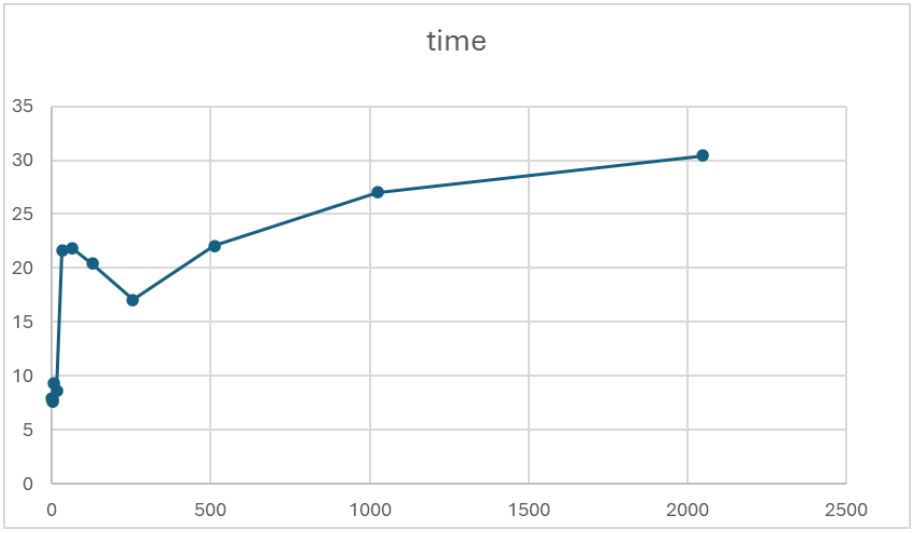

Fig. 1. Integer messages communication withing same node

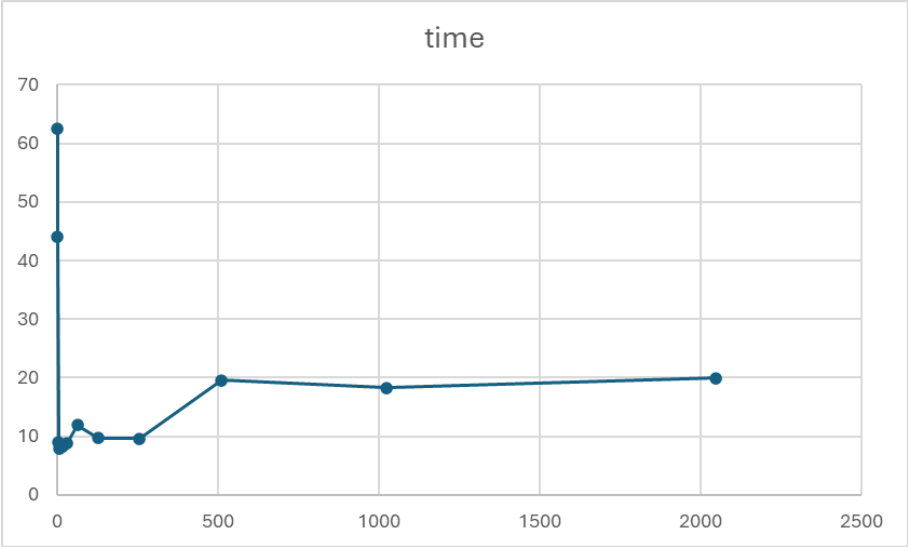

Fig. 2. Integer messages communication withing two nodes

c) Bandwidth of communication

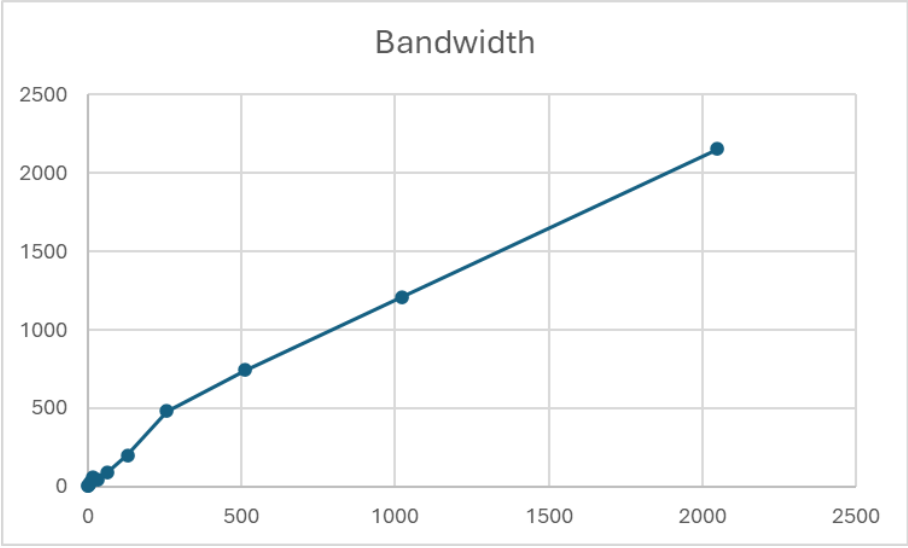

Fig. 3. Bandwidth bps withing same node

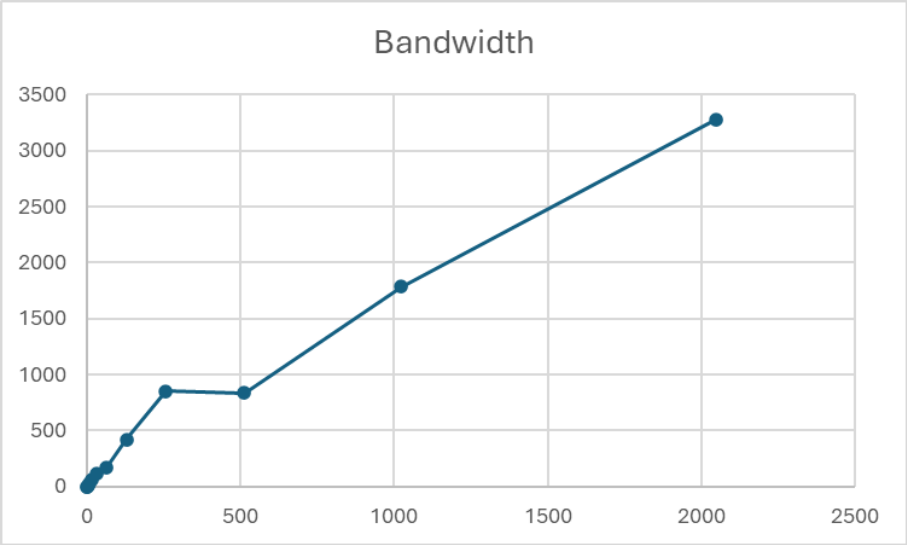

Fig. 4. Bandwidth bps withing two nodes

It is clear that having more communication within the same node congest the node and reduce the bandwidth. Bandwidth graphs are keep increasing and I could not send large amount of data with given time limit in the test queue to get it to something good.