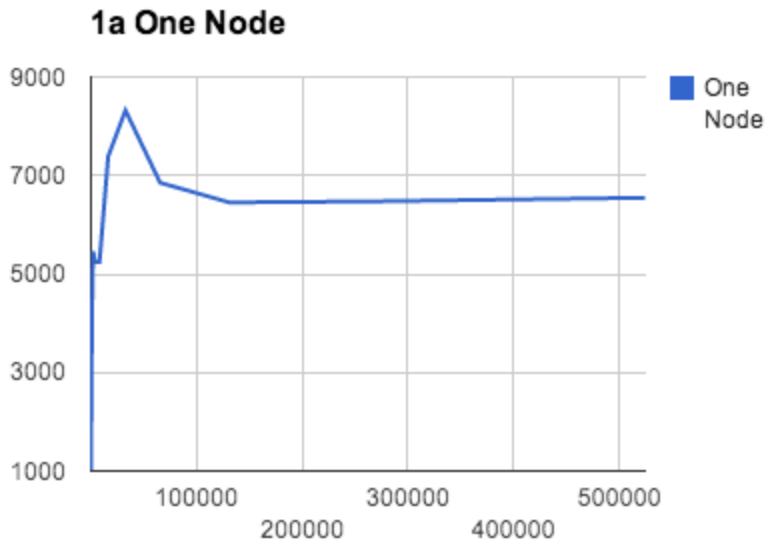
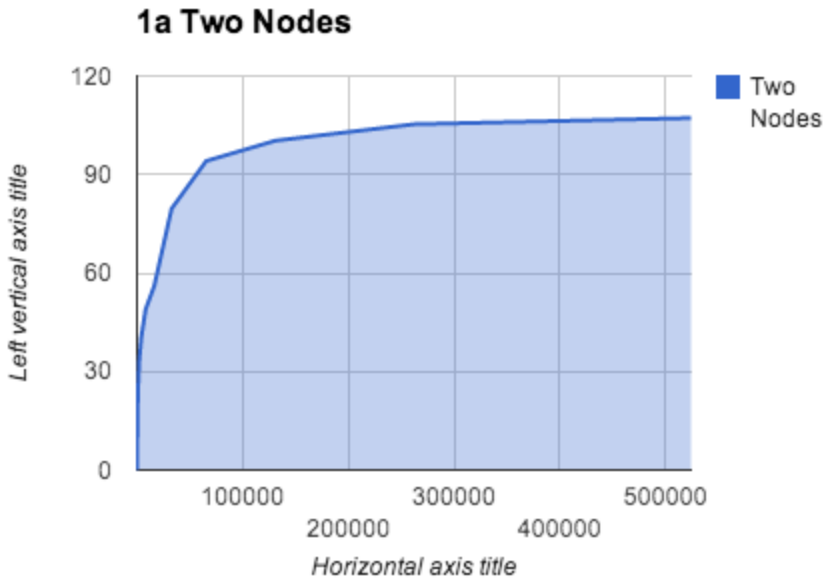
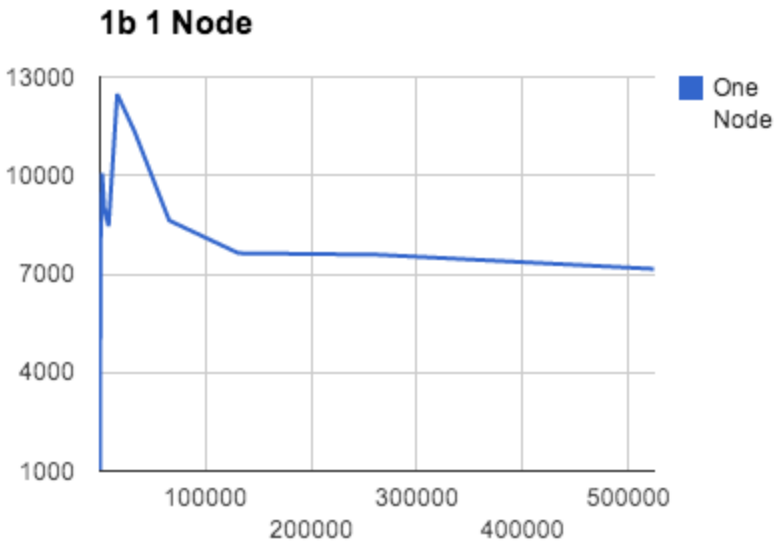
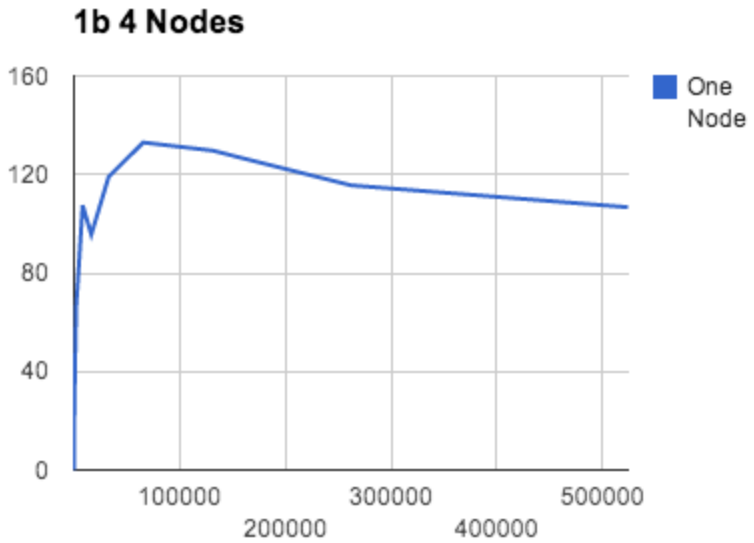
John King
9054-74221



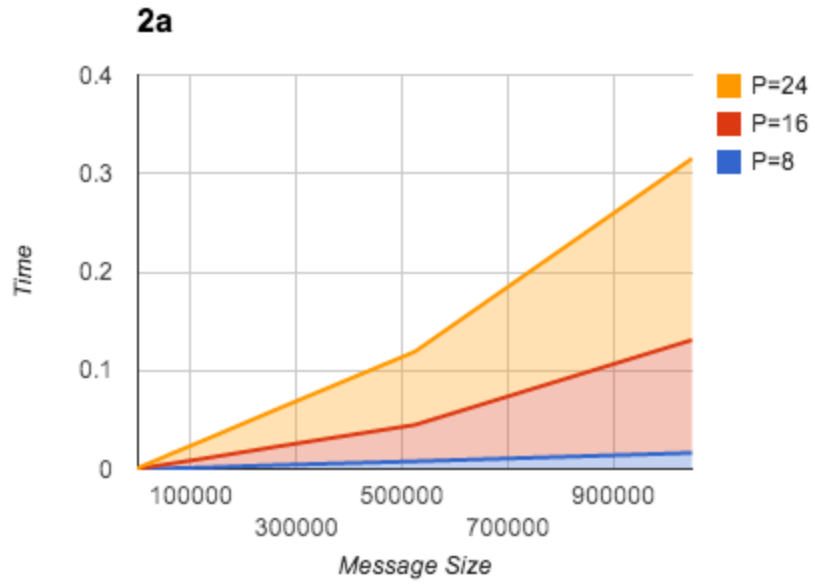


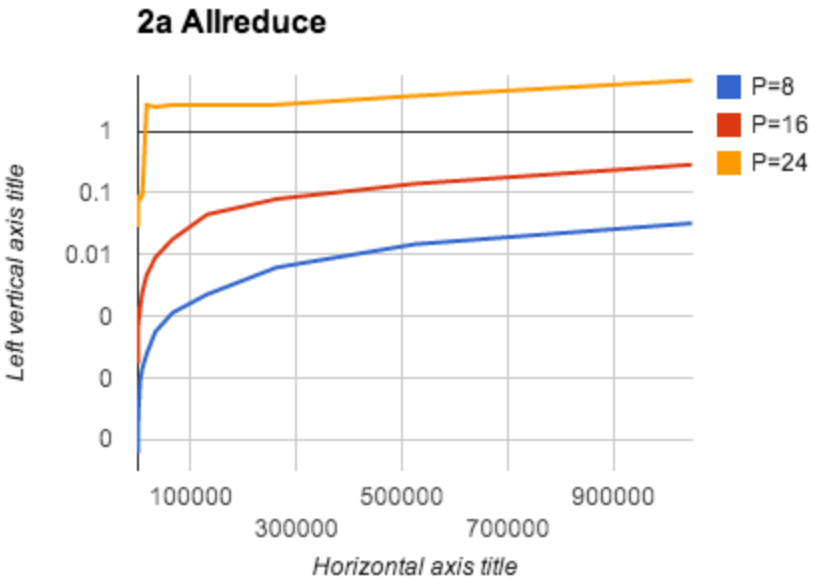
It is obviously faster to message pass between threads on the same node than it is to pass between different nodes.



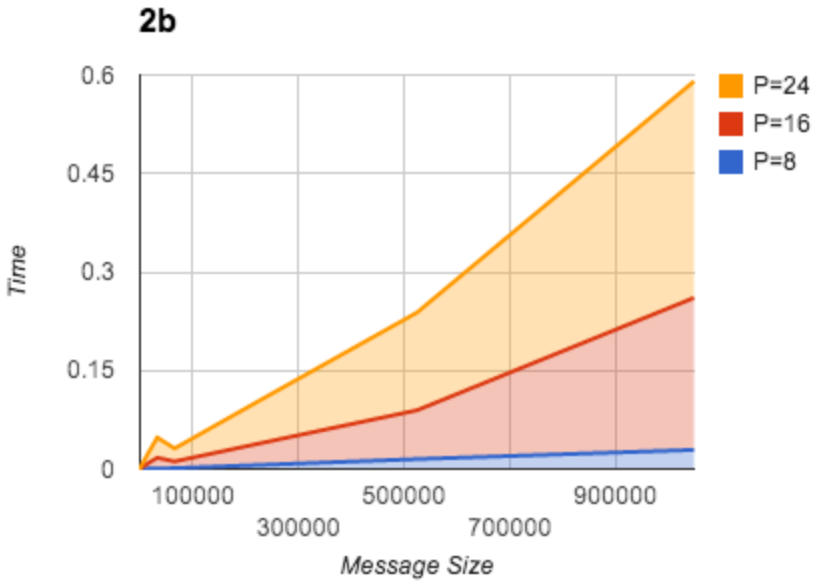


It does have higher bandwidth with two nodes sending messages but it definitely isn't twice as much. This is because the network probably isn't perfect but moreso because of the overhead involved with the extra message passing.

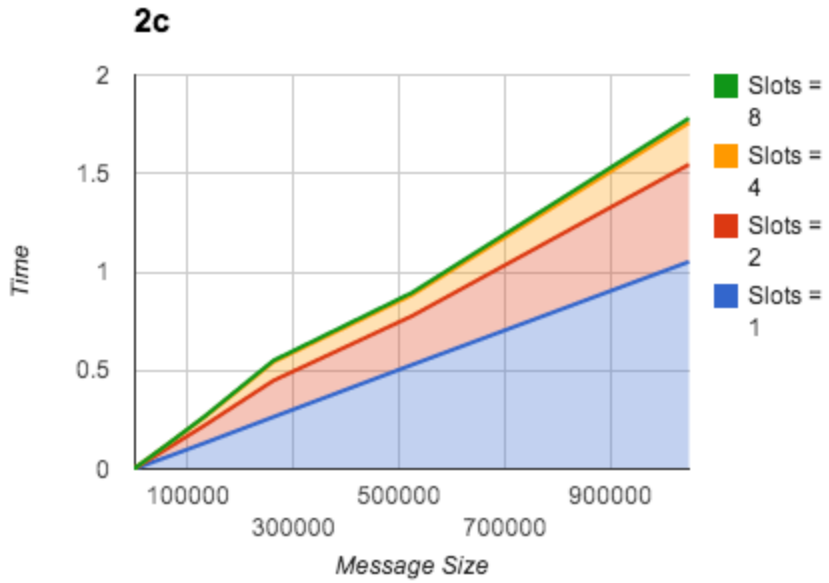




I had to use a log scale for this one as p=24 was much larger than the others. It is faster to use reduce as it doesn't send the final answer to all the threads.



It is faster to use all reduce than reduce and broadcast as MPI probably does some internal optimization when it knows your intention from the start.



Time increase seems pretty linear. It is faster with fewer slots because the computation load is less on each node.