Results

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| --- | --- | --- | --- | --- |
| **Paradigm** | **Number of Threads** | **Number of Workers** | **Size of Matrix** | **Time** |
| Sequential | 1 | N/A | 10 | 41 microseconds |
| Parallel | 12 | N/A | 10 | 7822 microseconds |
| OpenMP | 12 | N/A | 10 | 62 microseconds |
| MPI | 1 | 12 | 10 | 4501 microseconds |
| MPI/OpenMP | 12 | 12 | 10 | 692819 microseconds |
| MPI/OpenCL | 12 | 12 | 10 | 655465 microseconds |

# Summary

The parallel versions of the matrix multiplication program are slower. This is due to the nature of the programs. Some of them are networks such as in the case of the MPI versions. It takes more time to transmit the data across a network, which leads to performance overhead. In the case of the non-networked versions (i.e.: OpenMP and parallel), the overhead theoretically comes from the CPU scheduler needing to delegate threads to a specific task, which is less resource intensive than the program itself. This makes the sequential program the fastest version of the program.