CSCI 515, Autumn 2018
Assignment # 2

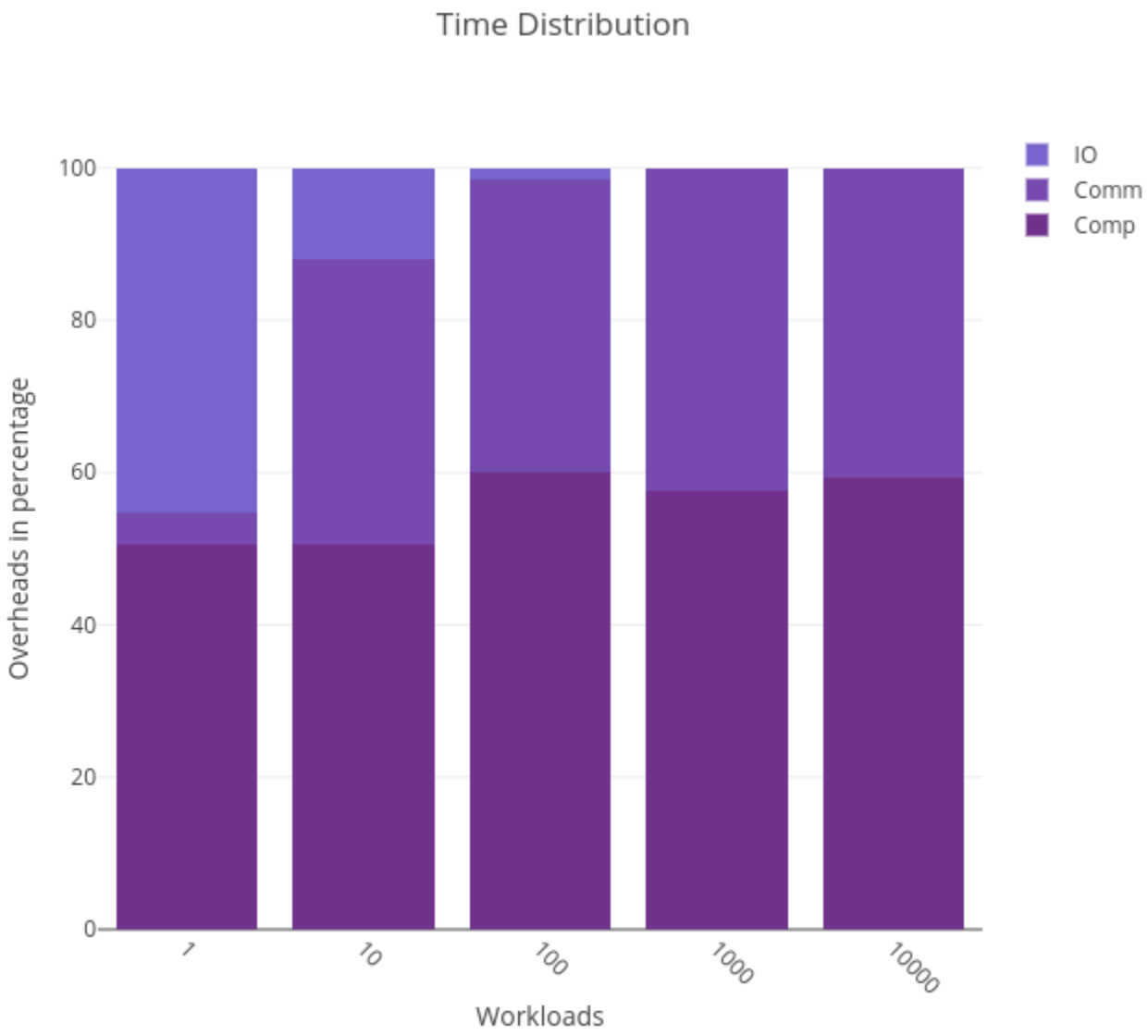
Brian Barragan-Cruz

December 15, 2018

For this experiment, we used the Western Washington University cluster, specifically machine node 0. This system has two sockets, twelve cores, four cache levels (2 of which are 32 KB and private, 1 of which is 256 KB and private, and the last is 15 MB and public). In addition, memory is 31 GB.

When executing the overlap_compute_comm.c program, the execution time greatly increases, as does the distribution of the time changes. The time it takes to perform I/O is independent of the workload, while the time to perform computation and communication increases with workload. Hence the percentage of I/O must decrease, mathematically speaking. In addition, computation seems to take about 50 percent of the total execution time through all workloads, while communication slowly increases to up to 45 percent.

Task	Functions or directives used
Step 2	MPI_Bcast()
Step 3	MPI_Type_vector(), MPI_Type_commit(), MPI_File_open(), MPI_File_set_view(), MPI_File_read_all(), MPI_File_close(), MPI_Type_free()
Step 4a	MPI_Isend()
Step 4b	MPI_Irecv()
Step 4c	#pragma omp parallel for reduction (+: sum)
Step 4d	MPI_Wait()
Step 4d-i	#pragma omp parallel for
Step 4d-ii	#pragma omp parallel for
Step 4e	MPI_Wait()


Time Distribution
IO
Comm
Comp
100
80
60
40
20
0
Overheads in percentage
1
10
100
1000
10000
Workloads