Distributed Systems - Project 1
Distributed Matrix Multiplication

Firstname Lastname (login name)

November 1, 2016

1 Plots and Graphs

1.1 N=1152 (1 Core per Machine)

This is some analysis of the graph seen in table 1.
This is some analysis of the figure 1

1.2 N=1152 (4 Cores per Machine)

This is some analysis of the graph seen in table 2.
This is some analysis of the figure 2

1.3 N=1440 (1 Core per Machine)

This is some analysis of the graph seen in table 3.
This is some analysis of the figure 3

1.4 N=1440 (4 Cores per Machine)

This is some analysis of the graph seen in table 4.
This is some analysis of the figure 4

1.5 N=2304 (1 Core per Machine)

This is some analysis of the graph seen in table 5.
This is some analysis of the figure 5

Workers	Initialisation (s)	Sending (s)	Computing (s)	Total Time (s)	Speedup
1	0.101	0.077	10.215	10.393	1.000
2	0.475	1.004	4.602	6.082	1.709
4	1.200	1.784	2.770	5.754	1.806
6	1.650	1.934	1.981	5.565	1.868
12	3.540	3.007	1.168	7.716	1.347
16	4.714	3.406	0.829	8.948	1.161

Table 1: N=1152 (1 Core per Machine)

N=1152 (1 Cores per Machine)
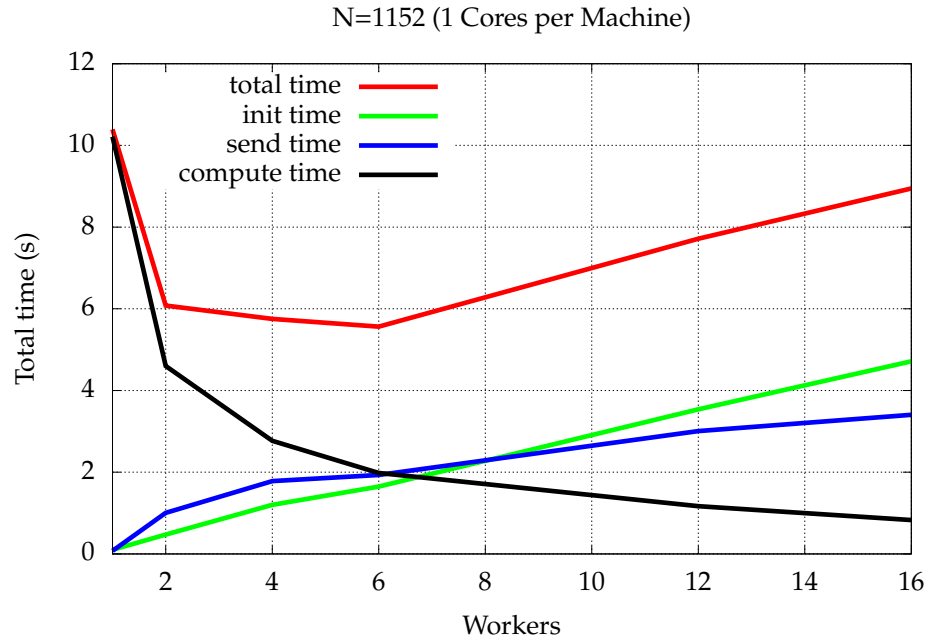
Figure 1: N=1152 (1 Core per Machine)

Workers	Initialisation (s)	Sending (s)	Computing (s)	Total Time (s)	Speedup
1	0.101	0.077	10.215	10.393	1.000
2	0.475	1.069	1.715	3.259	3.189
4	1.237	1.919	0.870	4.026	2.582
6	1.620	2.170	0.738	4.528	2.295
12	3.462	3.470	0.559	7.491	1.387
16	4.579	3.970	0.577	9.127	1.139

Table 2: N=1152 (4 Cores per Machine)

Workers	Initialisation (s)	Sending (s)	Computing (s)	Total Time (s)	Speedup
1	0.091	0.082	15.037	15.210	1.000
2	0.461	1.518	10.428	12.408	1.226
4	1.188	2.760	5.384	9.332	1.630
6	1.647	3.047	4.007	8.701	1.748
12	3.538	4.610	2.145	10.294	1.478
16	4.710	5.258	1.676	11.644	1.306

Table 3: N=1440 (1 Core per Machine)

N=1152 (4 Cores per Machine)
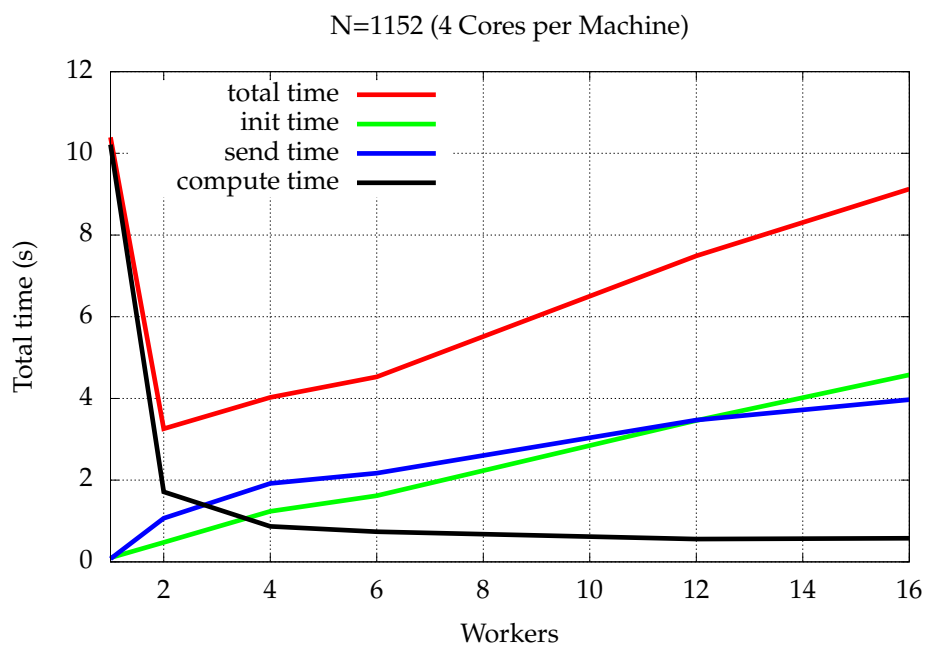

Figure 2: N=1152 (4 Cores per Machine)

N=1440 (1 Cores per Machine)
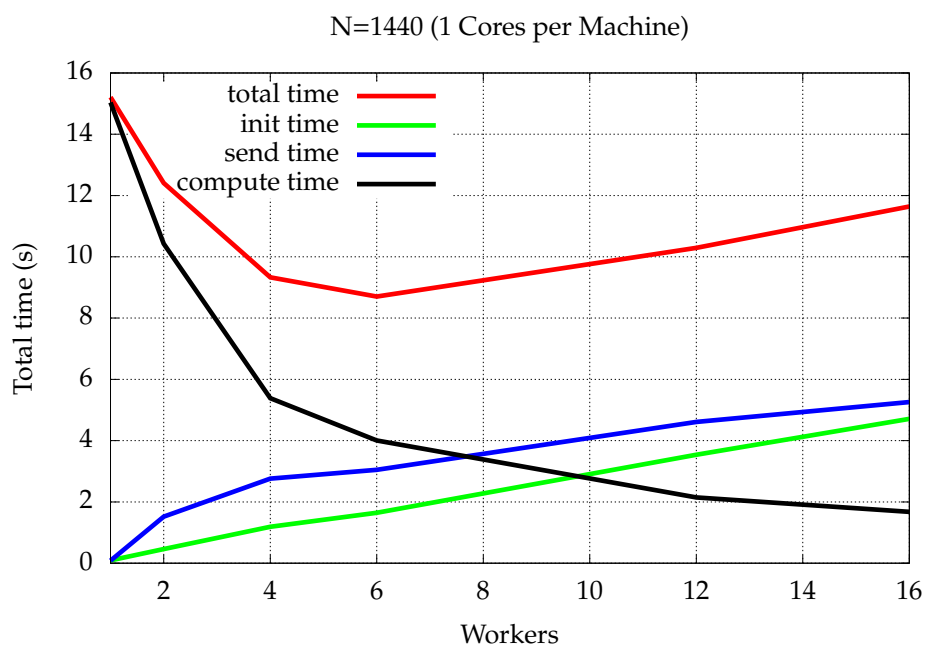
Figure 3: N=1440 (1 Core per Machine)

Workers	Initialisation (s)	Sending (s)	Computing (s)	Total Time (s)	Speedup
1	0.091	0.082	15.037	15.210	1.000
2	0.444	1.654	3.104	5.202	2.924
4	1.148	3.069	1.690	5.907	2.575
6	1.580	3.441	1.231	6.251	2.433
12	3.458	5.227	0.939	9.625	1.580
16	4.572	5.989	0.998	11.558	1.316

Table 4: N=1440 (4 Cores per Machine)

N=1440 (4 Cores per Machine)
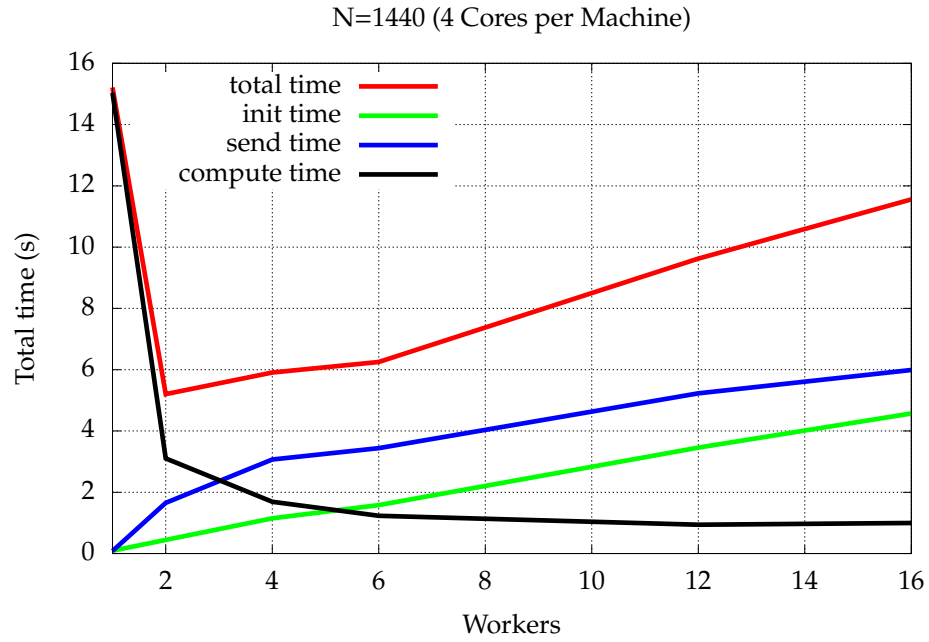
Figure 4: N=1440 (4 Cores per Machine)

Workers	Initialisation (s)	Sending (s)	Computing (s)	Total Time (s)	Speedup
1	0.089	0.120	37.201	37.410	1.000
2	0.462	3.808	49.733	54.002	0.693
4	1.196	6.987	23.219	31.403	1.191
6	1.637	7.722	14.872	24.231	1.544
12	3.524	11.897	7.972	23.394	1.599
16	4.716	13.537	7.700	25.952	1.441

Table 5: N=2304 (1 Core per Machine)

N=2304 (1 Cores per Machine)
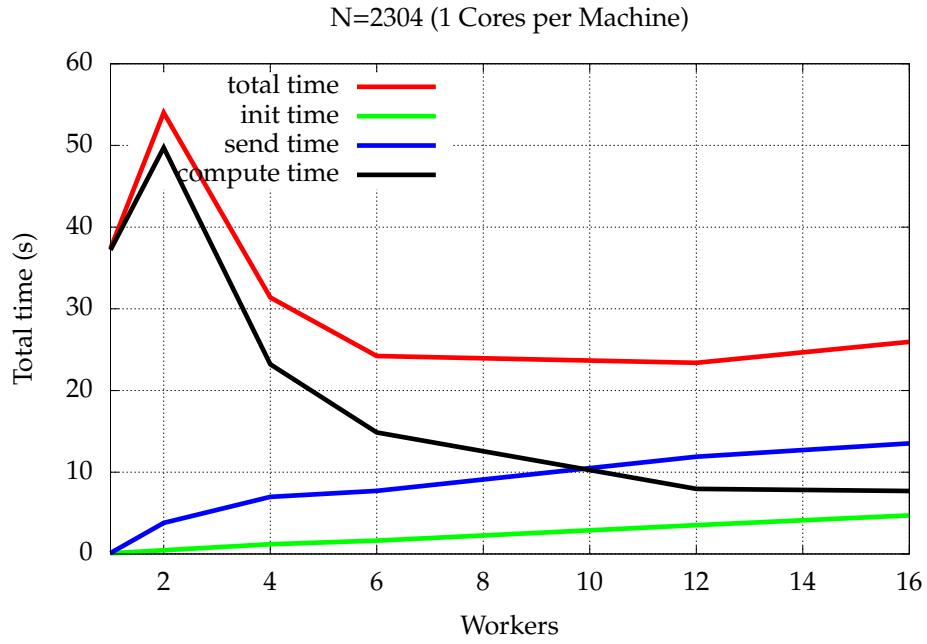
Figure 5: N=2304 (1 Core per Machine)

Workers	Initialisation (s)	Sending (s)	Computing (s)	Total Time (s)	Speedup
1	0.089	0.120	37.201	37.410	1.000
2	0.437	4.054	13.519	18.010	2.077
4	1.159	8.168	7.209	16.535	2.262
6	1.600	9.145	4.545	15.290	2.447
12	3.414	13.694	2.434	19.542	1.914
16	4.572	15.485	2.398	22.455	1.666

Table 6: N=2304 (4 Cores per Machine)

1.6 N=2304 (4 Cores per Machine)

This is some analysis of the graph seen in table 6.
    This is some analysis of the figure 6

1.7 N=3600 (1 Core per Machine)

This is some analysis of the graph seen in table 7.
    This is some analysis of the figure 7

1.8 N=3600 (4 Cores per Machine)

This is some analysis of the graph seen in table 8.
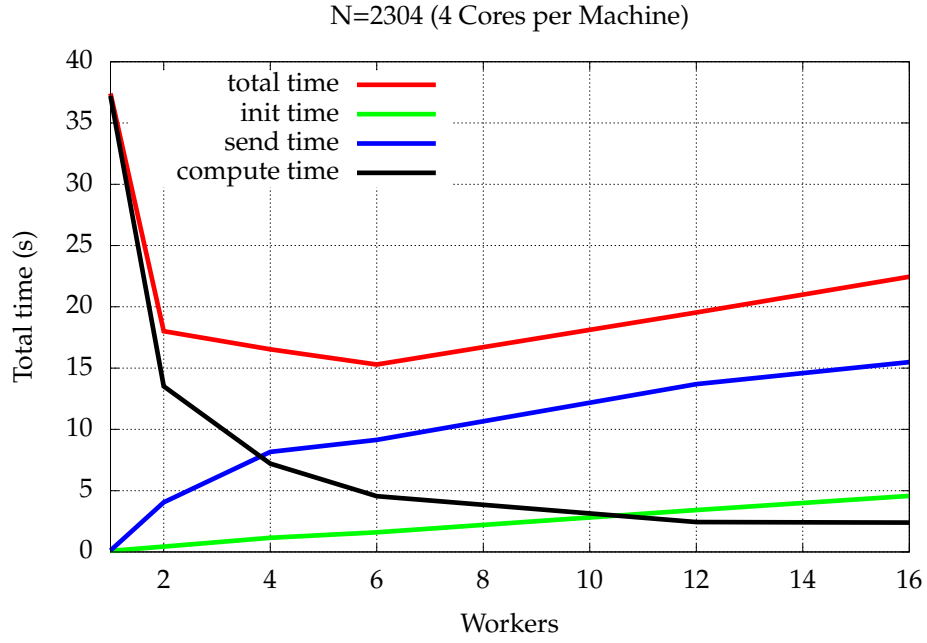   This is some analysis of the figure 8

N=2304 (4 Cores per Machine)

Figure 6: N=2304 (4 Cores per Machine)

Workers	Initialisation (s)	Sending (s)	Computing (s)	Total Time (s)	Speedup
1	0.088	0.209	105.527	105.825	1.000
2	0.464	9.354	178.157	187.974	0.563
4	1.383	19.595	97.786	118.764	0.891
6	2.384	22.063	73.040	97.487	1.086
12	3.565	29.001	30.404	62.970	1.681
16	4.762	34.354	23.932	63.048	1.678

Table 7: N=3600 (1 Core per Machine)

Workers	Initialisation (s)	Sending (s)	Computing (s)	Total Time (s)	Speedup
1	0.088	0.209	105.527	105.825	1.000
2	0.449	9.802	43.199	53.450	1.980
4	1.166	19.597	21.504	42.267	2.504
6	1.609	22.541	17.473	41.623	2.542
12	3.467	34.204	8.026	45.696	2.316
16	4.580	38.830	6.289	49.699	2.129

Table 8: N=3600 (4 Cores per Machine)

N=3600 (1 Cores per Machine)
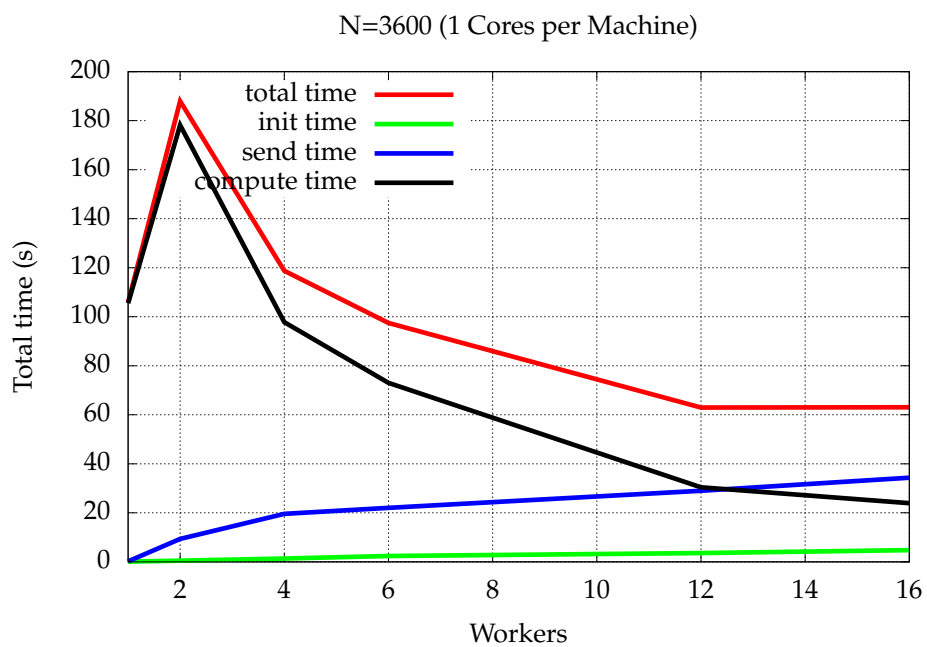

Figure 7: N=3600 (1 Core per Machine)

N=3600 (4 Cores per Machine)
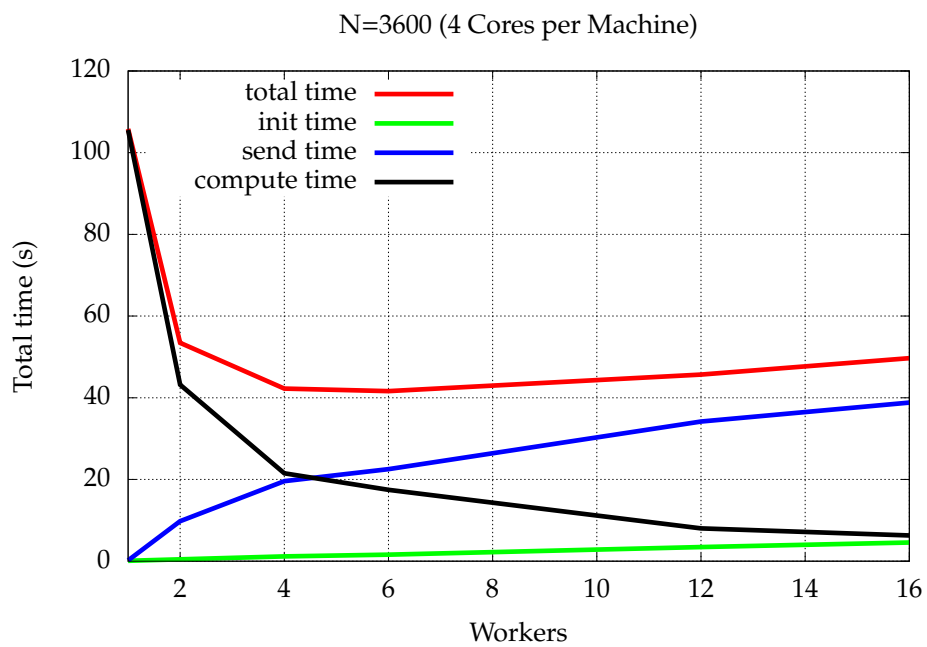
Figure 8: N=3600 (4 Cores per Machine)

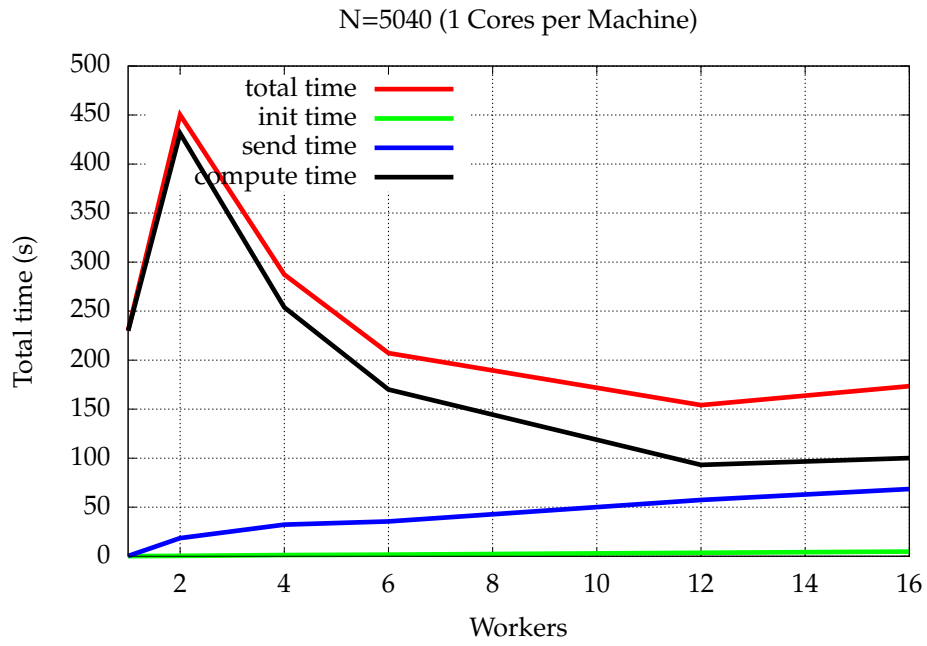| Workers	Initialisation (s)	Sending (s)	Computing (s)	Total Time (s)	Speedup
1	0.088	0.328	229.890	230.307	1.000
2	0.471	18.482	431.266	450.218	0.512
4	1.217	32.252	253.870	287.339	0.802
6	1.652	35.474	170.050	207.176	1.112
12	3.550	57.468	93.148	154.166	1.494
16	4.775	68.518	100.203	173.496	1.327

Table 9: N=5040 (1 Core per Machine)

Figure 9: N=5040 (1 Core per Machine)

1.9 N=5040 (1 Core per Machine)

This is some analysis of the graph seen in table 9.
This is some analysis of the figure 9

1.10 N=5040 (4 Cores per Machine)

This is some analysis of the graph seen in table 10.
This is some analysis of the figure 10

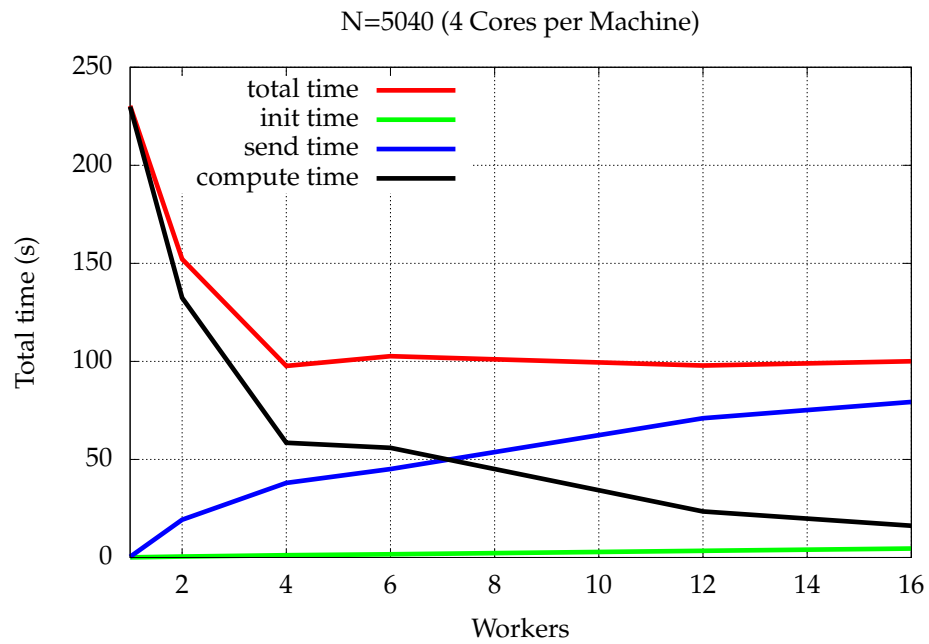| Workers	Initialisation (s)	Sending (s)	Computing (s)	Total Time (s)	Speedup
1	0.088	0.328	229.890	230.307	1.000
2	0.450	19.253	132.463	152.165	1.514
4	1.179	38.011	58.530	97.720	2.357
6	1.614	45.094	55.936	102.644	2.244
12	3.434	70.993	23.459	97.887	2.353
16	4.585	79.316	16.166	100.068	2.302

Table 10: N=5040 (4 Cores per Machine)

Figure 10: N=5040 (4 Cores per Machine)