Report Lab5\_mpi

Zewen Hua

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  |  | serial | pthread | openmp 8 | mpi |
| 100 | prod | 23.000000s | 15.000000s | 12.000000s  106.320000s | 10.000000s |
|  | cons | 23.200000s | 25.889999s | 12.000000s  113.790001s | 17.000000s |
|  | command | real0m23.280s user0m23.210s sys 0m0.005s | real0m15.022s user0m25.871s sys 0m0.023s | real0m3.727s  user0m28.734s  sys0m0.145s | real 0m8.578s  user 0m0.005s  sys 0m0.017s |
| 1000 | prod | 215.000000s | 139.000000s | 124.000000s  967.859985s | 121.000000s |
|  | cons | 215.199997s | 239.949997s | 124.000000s  975.329956s | 120.000000s |
|  | command | real3m35.259s user3m35.208s sys 0m0.010s | real 2m19.646s user 3m59.911s sys 0m0.051s | real0m30.657s  user4m4.301s  sys0m0.170s | real 1m16.531s  user 0m0.005s  sys 0m0.028s |
| 5000 | prod | 1104.000000s | 716.000000s | 628.000000s  5010.109863s | 587.000000s |
|  | cons | 1103.560000s | 1228.940063s | 628.000000s  5016.099609s | 653.000000s |
|  | command | real18m23.693s use18m23.558s sys 0m0.012s | real11m55.630s user20m28.849s sys 0m0.108s | real2m36.935s  user20m54.510s  sys0m0.206s | real 6m29.216s  user 0m0.032s  sys 0m0.066s |

This lab uses 4 remote nodes and each belongs to one threads ( 4 threads), so I choose previous data having the similar condition: serial, pthread (2 threads), openmp (8 threads)

From the “real” time, we can see that mpi this time is nearly one third of serial, not one fourth like the number of the thread. One reason may be the difference of these two producers’ duty.

But compare it to the openmp with 8 threads and we can see that the time is twice of it which is similar to the times of the thread number. It is reasonable. And to pthread, the time is half of that of pthread with 2 threads, which is reasonable, too.

And using the remote nodes actually give the promotion in performance.