

Benchmarking MPI Cluster in the Cloud:

Assignment 1

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Cluster Settings:

1. Linux cluster of Maximum: 4 nodes.
2. Intel's Nehalem processor: 3.066 GHz.
3. RAM size: 4 GB.

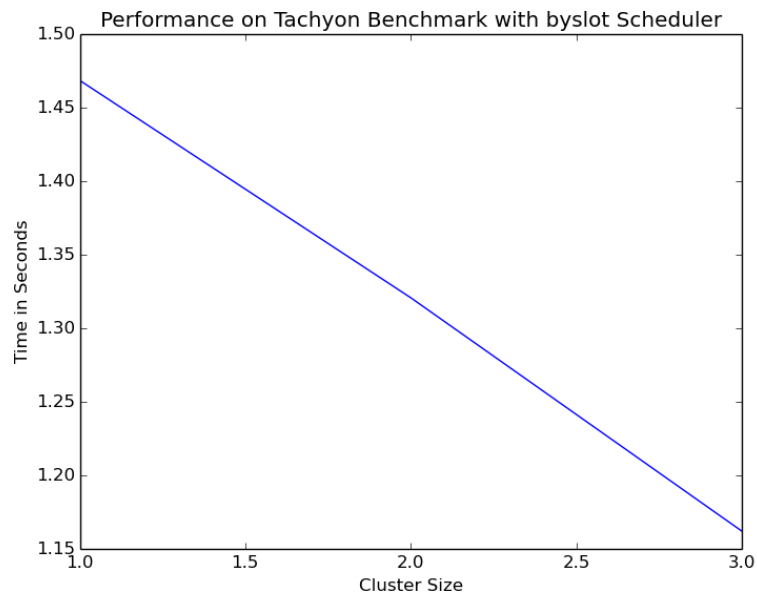
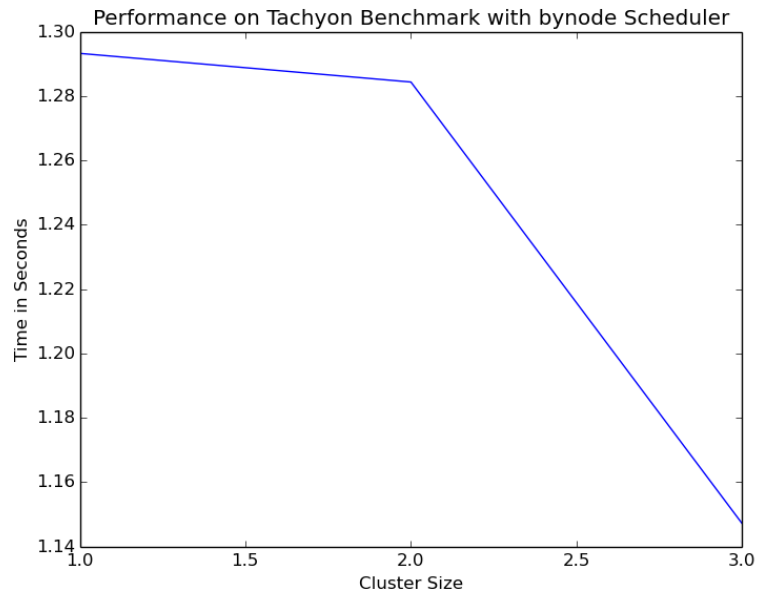
Contributions:

1. **Rajiv Shanmugam Madeswaran:** Setting up the MPI cluster, Coding main file (assign1.py) by importing functions from HPCC and Tachyon, Incorporated Graph Logic in HPCC and Tachyon python files.
2. **Ravi Teja Kosaraju:** Done Coding for Tachyon benchmark (tachyon.py), calculated N and NB values using HPL calculator.
3. **Navya Somepalli:** Done HPCC benchmark coding (hpcc.py), checking and validating testcases for the written code.

Setup:

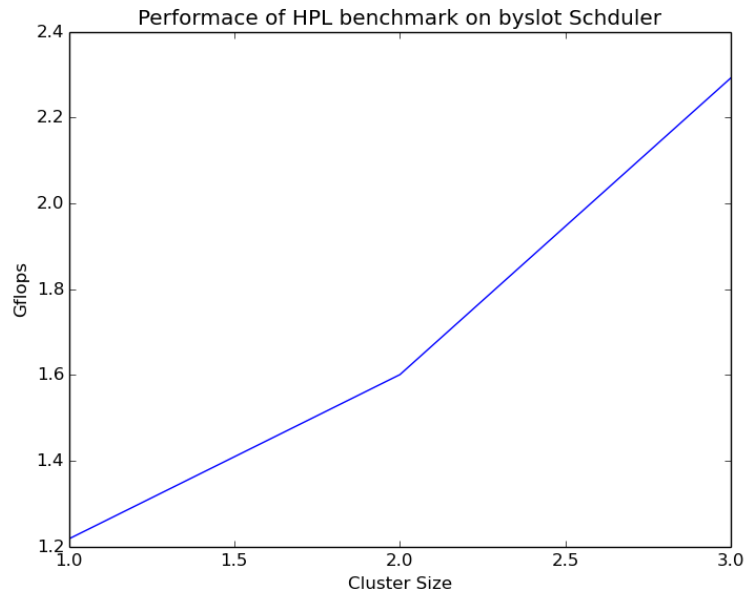
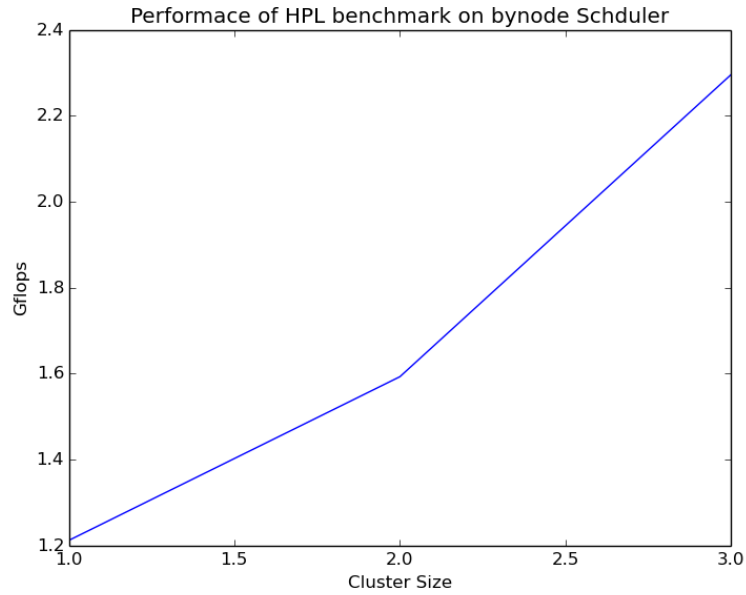
1. There are totally 4 VM's, where one is used as master and the rest of the three nodes are slaves.
2. I have created NFS shared folder in the master and it is mounted by slaves automatically when booted up [Check /etc/fstab].
3. All the Benchmarks are compiled and it needs all the executable before the assignment is ran.
4. Run the submitted python program in the shared folder, else you need to copy the benchmark executables manually.

Performance Graph for Tachyon:

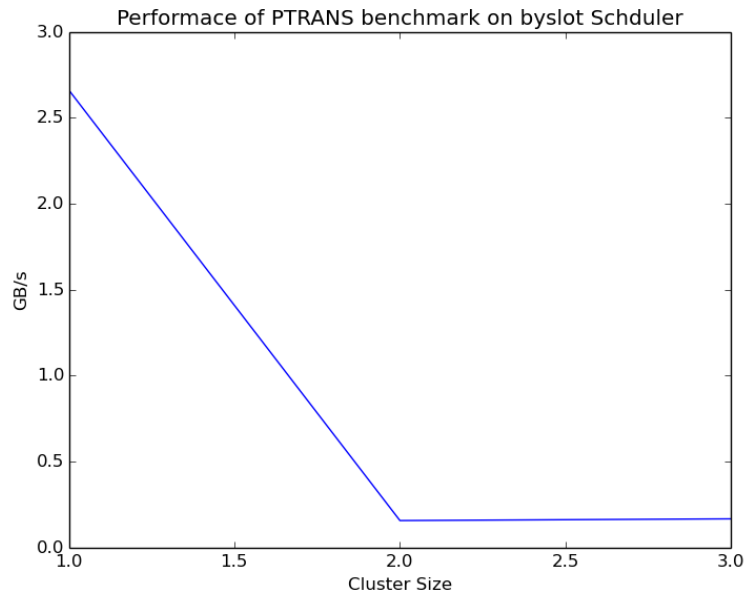
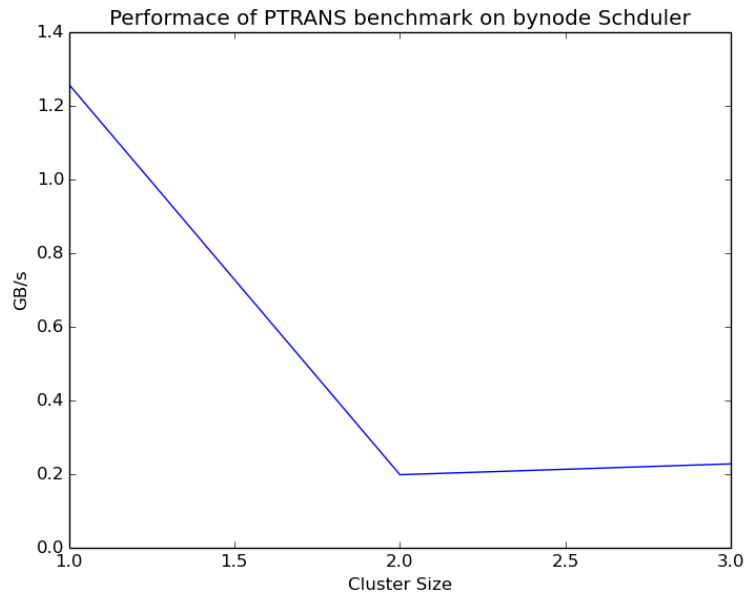


The above two graphs for Tachyon shows decrease in the tracing time as the cluster size gets increased. In which Byslot run of the Tachyon have steady decrease in the time for the cluster size of 1, 2 & 3.

Performance Graph for HPCC:



The above two graphs for HPL shows steady increase in Gflops as the cluster size increases. There is no significant difference in the performance by the change of the scheduler.



The above two graph is for PTRANS shows similar decrease in GB/s irrespective of the scheduler and increase in cluster size.