FC with RG – Near Memory

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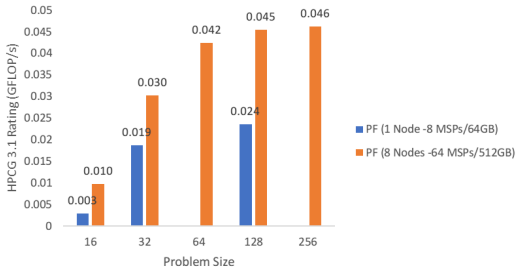
HPCG Project

Goals

- Complete a valid simulation run of the HPCG benchmark using emu-dev.
- Successfully port HPCG benchmark on the Lucata Pathfinder hardware.
- Optimize and debug the performance of HPCG benchmark on the Lucata Pathfinder for single-node/multi-node configuration.

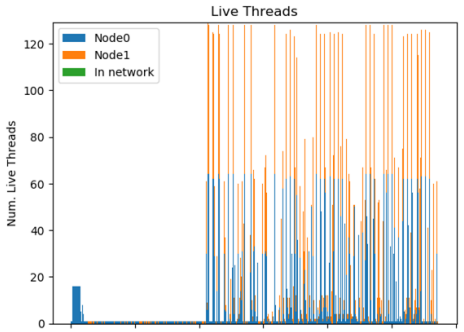
Benchmark Results

- VALID Results for HPCG 3.1 are obtained with different configurations
- HPCG ratings are lower than expected. The scaling between single-node and 8-node is unsatisfactory.



Profiling Results

- Generated profiling results from simulation runs with emusim-profile
- Parallelization is present but inconsistent, and setup is not currently parallelized



Lessons Learned and Next Steps

- Starting from the source code, find the implementation that are not suitable for the PF and replace them with optimized implementation
- Run and evaluate scalability in a multi-chassis configuration (with more nodes).

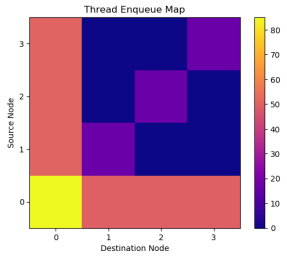
Micro-Bench Project

Goals

- Compare the performance of several functions on an x86 platform and the Pathfinder.
- Create a notebook to run these functions and compare the performance on an x86 platform and the Pathfinder.

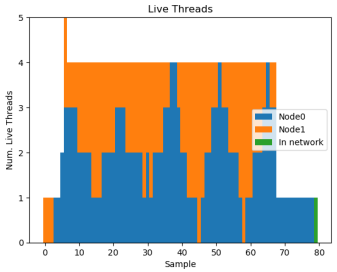
Notebook Progress

- Notebook now runs benchmarks for pointer chase, local stream, global stream, locks, and ping-pong.
- Profiling graphs are included for all the previously mentioned functions as well now.



Result Analysis

- Gathered results, benchmarks and profiling graphs, for the new functions.
- There is some anomalous behavior with threads when running emusim.



Lessons Learned and Next Steps

- Try to resolve x86 compilation issues to compare our current results and see what the Pathfinder excels in.