EPiGRAM

Exascale ProGRAmming Models

Use Case of Tools in EPiGRAM

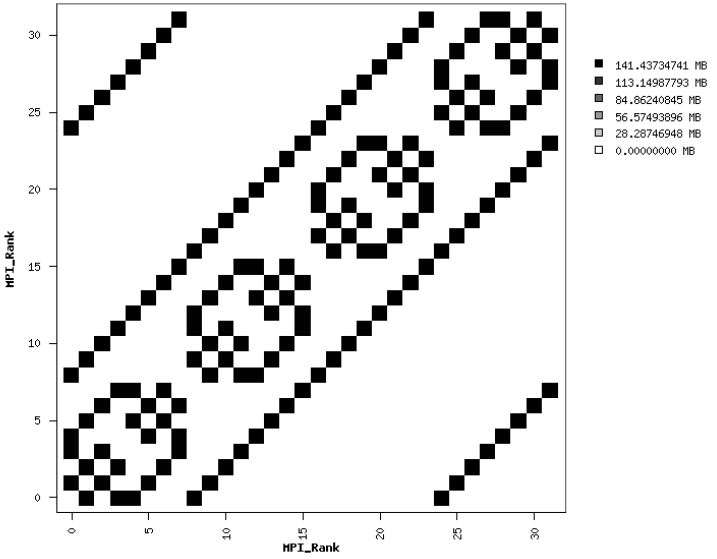
Stefano Markidis
KTH Royal Institute of Technology

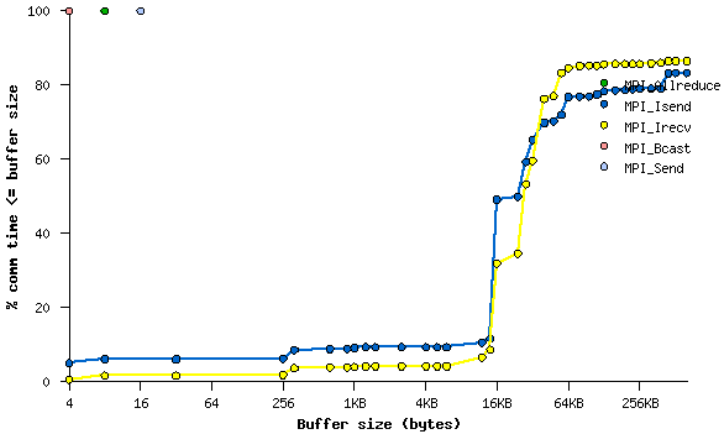
Tools in EPiGRAM

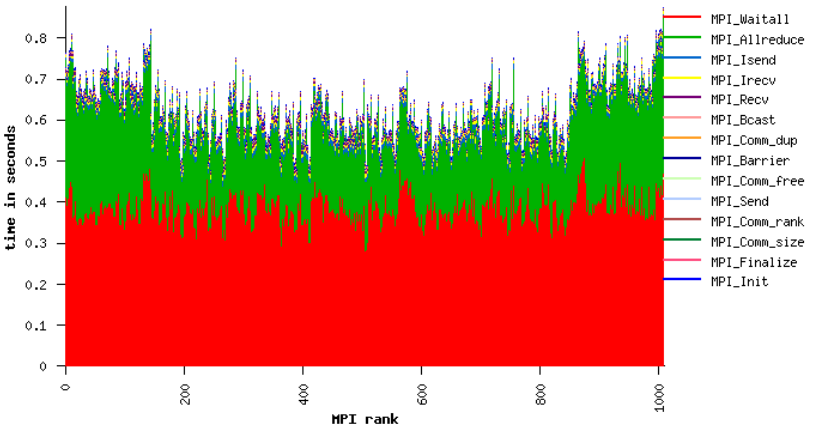
- We investigate the communication kernel characteristics of two (initially) MPI-based codes - Nek5000 and iPIC3D.
- Two kinds of tools in use at the moment:
  - MPI Profiler:
    - Understand communication patterns, message sizes, data flow.
  - Simulator for parallel algorithms:
    - Extrapolate communication kernel performance of EPiGRAM codes to very large number of processes from traces .
    - Investigate sensitivity of applications on latency and bandwidth.
    - Investigate potential of application to overlap communication and computation.

Integrated Performance Monitoring (IPM)

- MP-Centric Profiling tool.
- Low overhead.
- Easy to use and it provides just what we need at the moment.
- Focus on understanding existing communication kernels.

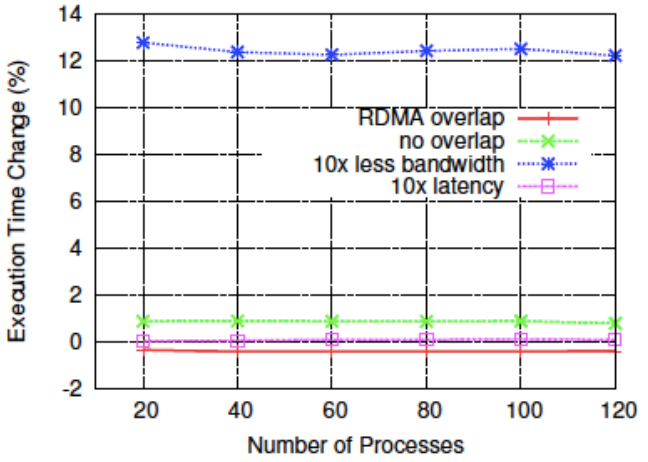






LogGOPSim simulator

- Parallel algorithm/ MPI application simulator, developed by T.Hoefler and T.Schneider.
- MP-centric simulator.
- Focus on extrapolation of performance of the two codes at extreme scales.
- Study sensitivity of our communication kernels to a change in network parameters.
- Study the potential of overlapping communication and computation.



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http://epigram-project.eu