Raising PRIME on Various Architectures: A Foray into the Intricacies of Using MPI

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Background

- RINSE
- PRIME
- SSFNET
- Trusted ILLIAC
- rinse
- x-Campus tests

Goals

- Get PRIME working on the Trusted ILLIAC
- Get PRIME working on rinse
- Get PRIME working between multiple heterogeneous computers
- Run timing tests on various systems to determine how well problems scale with size and computing power

Research Plan

- Raise PRIME on a variety of systems in order to ensure a diverse testbed
- Use this testbed in conjunction with an improved testharness to determine scaling behavior

Research Results

- Got PRIME working on the Trusted ILLIAC
- Got PRIME working on rinse
- Got PRIME working between multiple heterogeneous computers (namely, the Trusted ILLIAC, rinse, and a laptop)
- Ran timing tests on various systems

Fundamental Questions/Challenges

- What does MPI require in order to use shared/distributed memory in a variety of computing environments?
- Can doubling the amount of processors halve the run time?
- Biggest hurdle was actually pointing to an incorrect compiler.