SPEC's High-Performance Benchmark Suite, SPEC HPC

Rudi Eigenmann

Purdue University

Indiana, USA

SPEC High-Performance Group www.spec.org/hpg

- Founded in 1994

- Mission: To establish, maintain, and endorse a suite of benchmarks that are representative of real-world high-performance computing applications.

- SPEC/HPG includes members from both industry and academia.

- Benchmark products, SPEC OMP (OMPM2001, OMPL2001),

  SPEC HPC2002 new release at SC 2002,

  replaces SPEChpc96

  first results have just been released generated!

SPEC HPC2002

Includes three (suites of) codes

- SPECseis, used in the search for oil and gas
- SPECchem, used in chemical and pharmaceutical industries (gamess)
- SPECenv, weather forecast application (WRF)

All codes include several data sets and are available in a serial and a parallel variant (MPI, OpenMP, hybrid execution is possible).

SPEC HPC Benchmarks: What's Really New?

- SPEC HPC2002 has been developed with the involvement of most major computer manufacturers → we have broad support

- As a result, the portability of the benchmarks has improved drastically

  - running SPEC HPC2002 is "easy" …

  - … but still hard enough that a machine with a good environment wins!

Where is SPEC HPC Relative to Other Benchmarks

There are many metrics, each one has its purpose

Raw machine performance: Tflops

Kernel benchmarks: Linpack

Compact Applications: NAS benchmarks

Largest public applications: SPEC HPC

User-specific applications: Custom benchmarks