Benchmarking Conclusions

Manfred Alef

Forschungszentrum Karlsruhe
Institute for Scientific Computing
Hermann-von-Helmholtz-Platz 1
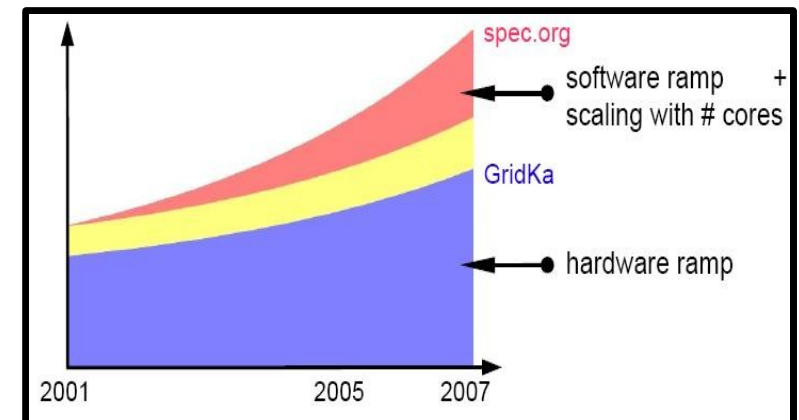D-76344 Eggenstein-Leopoldshafen

http://www.fzk.de, http://www.gridka.de

firstname.*lastname*@iwr.fzk.de

MB on March 20:
"CPU Benchmarks, Accounting, and Procurements at GridKa":

➔ At present, GridKa runs SPEC CPU2000 in the real environment:

- SL (3 or 4)

- gcc 3.4.x -O3 -funroll-loops -march

- 1 copy of the benchmark per CPU core running simultaneously

➔ Scaling factor: 1.25

MB on March 20:
"CPU Benchmarks, Accounting, and Procurements at GridKa":

➔ Proposal:

> ➔ The CPU benchmark version SPEC CPU2000 has been retired in February 2007 and replaced by the CPU2006 suite.
>
> ➔ GridKa suggests to re-calculate CPU requirements in the MOUs using SPEC CPU2006.
>
> ➔ Provide a "cookbook" how to use the benchmark (e.g. the annex used for procurements at GridKa and CERN).
>
> ➔ Details: benchmarking working group.

MB on March 20:
"CPU Benchmarks, Accounting, and Procurements at GridKa":

➔ Short term solution: see the
"Proposal for an interim CPU capacity metric for WLCG"
by Les Robertson, Helge Meinhard, and me:

- Methology of GridKa

- Compiler flags specified by Architects Forum
(-O2 -pthread -fPIC)

- Scaling factor: 1.5

MB on March 20:
"CPU Benchmarks, Accounting, and Procurements at GridKa":

➔ How to get the right numbers?

HOWTO, benchmark script, config files:
http://hepix.caspur.it/processors/

Remarks:

➔ Is the SPECint_rate metric more appropriate than SPECint?

- SPEC CINT2000:
  no, because the numbers differ by a factor of around 80.

- SPEC CINT2006:
  the difference is around 1% only.

Remarks:

➔   Power consumption:

        •   Talks and diskussions to the last HEPiX conferences.

Remarks:

➔ "The compiler flags used will be specified from time to time by the Architects Forum ..."

Remarks:

➜ Repeating comment by Jeff Templon (MB March 20):

"The VOs should move to recent compilers in order to better use the hardware that the sites provide..."

- gcc 3.4.x → 4.x.x: + 5...10%

- gcc → Intel or PGI compilers: + 10...20%

- Static linking:
  + 7% (Intel, x86_64) ... +30% (Opteron, i386)

HEPiX Talks and Web Page:

➔ Talks presented to the last HEPiX' (since SLAC 2005)

➔ HEPiX CPU technology tracking pages:
http://hepix.caspur.it/processors/