HS06+ Benchmark Update
WLCG GDB 2015-01-14

Manfred Alef (KIT), Michele Michelotto (INFN-PD)
Collection of benchmark candidates:

- SPEC CPUv6 (designated successor of CPU2006):
  - Waiting, no final release date announced

- Open source benchmark candidate:
  - Geant4
    (https://indico.cern.ch/event/272778/contribution/2/material/slides/1.pdf)
    - Investigation in progress, HEPiX Benchmarking Working Group is involved

- Quick benchmark:
  - Python script provided by Philippe Charpentier (LHCb)
    - Average runtime: ~ 1 minute
Open question – mandatory compiler flags:

- Scaling of HS06 – as well as the new benchmark – with real applications depends on compiler and optimization flags:
  - General optimization level
  - Target optimization

- Rumors about unsatisfying scaling of HS06 mostly caused by arbitrary optimization flags, e.g.
  - Extra target optimization flag: 3dnow
  - Other compiler than gcc (Intel, Pathscale, ...)

Mandatory compiler and flags (HS06):

```
gcc -O2 -pthread -fPIC -m32
```

- Waiting for proposal of new compiler flags by the Architects Forum
Assessment tools:

➔ Collection of representative HEP/WLCG applications (candidates are welcome)

➔ Can experiments provide statistics of the performance of jobs which run on a given host?
Testing quick benchmarking tool:

- Python script (LHCb) run as regular batch jobs in GridKa farm to estimate the performance of the assigned job slot
  - Total number of jobs: ~ 8,500
  - Performance summary:
    - HS06 of executing host: 8.05 … 13.74 HS06 per job slot
    - LHCb scores: 2.05 … 11.92 scores per job
    - LHCb scores / HS06: 0.16 … 0.93 (median: 0.77) (strongly depending on system load)
- It’s a Python script – no compilation, no optimization: scaling with real HEP applications depends on compiler flags!
Benchmarking Working Group

Current list of volunteers:

- Manfred Alef, Michele Michelotto (chairmen)
- VO representatives:
  - Alice: Peter Hristov, Costin Grigoras
  - Atlas: Alessandro Di Salvo, Franco Brasolin
  - CMS: Gabriele Benelli, Samir Cury
  - LHCb: Ben Couturier
- Other:
  - Martin Bly
  - Ian Gable
  - Fotis Georgatos
  - Andrew McNab
  - Liviu Valsan
  - Romain Wartel
Benchmarking Working Group

Contact:

➔ manfred.alef@kit.edu
➔ michele.michelotto@pd.infn.it

Mailing list:

➔ hepix-cpu-benchmark@cern.ch