CPU Benchmarks

Parallel Session Summary

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Greetings to Alberto currently flying to Italy !

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Hebden Bridge, UK

Current status

- Benchmarks run manually on-demand
  - As part of the validation test runs at every release
  - Independently by developers (EM, field, geometry)
- Timing monitoring regularly performed by STT on “large-N” system test runs
  - But cannot be considered as real benchmarks

Candidate Benchmarks - 1

- Geometry
  - Pure tracking: honeycomb calorimeter
  - Field: NTST - 3 setups with/without EM
    - Requires further tuning for looping particles control
  - Possible new benchmarks
    - For navigation on phantoms/regular geometries
    - For “realistic” geometry setups (CMS GDML full description)
- Electro-magnetic Physics
  - TestEm3 (sampling calorimeter, 2 setups)
  - TestEm9 (crystal calorimeter)
  - More to add !
    - Low energy benchmarks ?
    - Waiting input from EM coordinators

Candidate Benchmarks - 2

- Hadronic calorimeters benchmarks
  - Copper-Scintillator (simplified CMS HCAL)
  - 3 different configurations (p-/e-, with/without field)
  - Different physics lists
- Consider creating specific benchmarks for hadronic physics models
  - Switch off EM interactions / bias ?
  - Waiting for input from hadronic coordinators

CVS versioning

- Introduce bechmarks in existing CVS module “benchmarks”
  - Structure it according to categories:
    - geometry, electromagnetic, hadronic, calorimeters
  - Identify macros to be used
  - Provide and document easy way for accessing timing information

Policy for benchmarks - 1

- Frequency for running benchmarks
  - Regularly after every reference tag
  - Allow running specific benchmarks at any time on request
- Automation & comparisons
  - Automation of process for running the benchmarks
  - Automatic generation of comparison figures
  - Scripts to be provided by the BT
    - If BT = STT, see last slide !
- Selection of system/platforms
  - SLC4, 64 bits architecture
  - Static optimised libraries

Policy for benchmarks - 2

- Adopt dedicated system
  - Benchmarks, data and libraries built and available locally
  - Controlled system upgrades
- Reduced CPU load
  - Benchmarks to be run in single-user mode
  - Limited network exposure
    - No AFS installed on the reference system
- Update of reference measurements & bookkeeping
  - At every controlled system upgrade
  - At every necessary update/extension of the benchmark test
  - Provide timing comparisons spreadsheet at every reference tag & publish it on the web

Short term plans

(immediately after this workshop)

1. Create structure in CVS and add benchmarks already shaped and tuned
2. Start process for providing necessary system resources
3. Identify and shape further tests candidate for benchmarks
4. Seek for man power

Objective:

Have first setup functional for the next December release

Resources

- STT (System Testing Team) could …
  - Participate in setting up the required infrastructure
  - Take care of the automation and bookkeeping process
- But …

NEEDS MAN POWER !