Domenico Giordano (CERN)

WLCG HEP-SCORE Deployment Task Force

Meeting on 1 Feb 2023 (teleconference)

Notes

Indico event page: https://indico.cern.ch/event/1209411/

Welcome, note-taking, notes from the previous meeting, matters arising

The minutes from the previous meeting are approved. Thanks to Gonzalo (CERN) for preparing them. Thanks to Michel and Randy for contributing to the minutes of this meeting.

LHCb Workload status (Andrea Valassi)

For details see attached slides.

Sim is the largest CPU consumer (90%) in LHCb. A new container has been created, named lhcb-sim-run3, very similar to the previous version (named lhcb-gen-sim-2021). This new container uses the LHCb software version in production for LHCb (latest SIM10 software stack). This container supports only x86. It could be used for HEPscore23, but would not cover ARM.

Nevertheless new containers are coming in a couple of weeks, following two major improvements included by Andrea and the LHCb software team.

1) Building a version that supports ARM and x86. Needs external software stack LCG102b instead of LCG101. Tested by Andrea, will allow us to use the identical configuration for x86 and ARM. This version is still not suitable for production as it has not been validated for physics but performance is already good for benchmarking. To be noticed that the equivalence bit by bit with the x86 results cannot be guaranteed by construction.

   By including this version for x86/arm will make obsolete the previous one just produced.

2) The second improvement is very important. It builds upon a remark from V. Innocente after the profiling of the workloads done for the HEPscore Workshop (Sept 2022). A patch is under preparation to include in the Geant4 10.6 version used by LHCb the improved class G4LogicalBorderSurface from Geant4 10.7. This affects mainly the RICH

sub-dectector simulation. The patch is byte-to-byte identical and provides a **2x** improvement in performance. This patch should be included into production soon (~2 weeks). The performance of the benchmark workload will completely change with respect to the version just created (lhcb-sim-run3), making it obsolete and not representative of the future LHCb simulation jobs in production.

Therefore the plan is not to put in production lhcb-sim-run3, but a container that will include the two improvements.

Question from Michel: will LHCb meet the Feb 14 deadline?
Andrea: Being these improvements a high priority of LHCb, he thinks the deadline can be met. The new software needs to be validated, installed in CVMS to then trigger the handover to the Benchmarking WG that will put it into a container, and validate the container.

Domenico comments that, due to all these improvements unforeseen in December, a short delay of LHCb should be taken into consideration by the TF and possibly allowed. In case of delay, the contingency time between Feb 14 and the end of Feb could be used to release and validate the container. In fact the plan is to start the wide site validation of HS23 around March 1. Moreover, all the other workloads are being validated already, and the remaining time can be dedicated to LHCb. A HEPscore23 capable of running on x86/ARM and including the newest improvements of all the workloads is in our reach.

Action: suggested that Andrea provides the TF with a preliminary update by email in 1 week time.

HEPscore status (Domenico Giordano)

For details see attached slides.

2 new workloads available: Alice and Belle2, both cover x86 and aarch64 ("MA"). Ready to be added to the HEPscore benchmark

- B2 aarch64 is not used in production, but compatible in results with the production version. Validated on CERN servers with 100 measurements. Spread : 1%
- Load of ALICE workload goes above 1 as expected - wider scatter in measurements (3%). Failures can happen if running not as root, and reaching the configured ulimit. That will be addressed by documenting the

need to run as root or to increase the ulimit. Working to add a warning message to HEPscore.

New HEPscore23_beta prepared, including all workloads but LHCb. Validation in progress at CERN, including an ARM server. Once done, it will be advertised to other sites. The LHCb inclusion to this beta depends on the availability of the new container. Would like to avoid 2 betas so may delay the announcement of the beta by a few days.

Any other business

Next meeting 15 Feb 2023

Annex: Attendance

Present:

Giuseppe Andronico (INFN)
Domenico Giordano (CERN - chair)
Michel Jouvin (IJCLab)
Gonzalo Menendez Borge (CERN)
Stefano Piano (INFN Trieste)
Matthias Schnepf (KIT)
Oxana Smirnova (U Lund)
Randall Sobie (U Victoria)
Andrea Valassi (CERN)
Yan Xiaofei (IHEP)

Apologies:

Helge Meinhard (CERN)