Brunel timing with various libm libraries (2012/11/29)

In November an issue was reported with the GLIBC libm library deployed on SLC5 in glibc-2.5-81.el5_8.7: it was reported as much slower that the previous version installed on SLC5 (glibc-2.5-65.el5_7.1). A quick analysis of the impact of libm on Brunel was performed, and this opportunity was taken to try the intel libm library.

Test setup

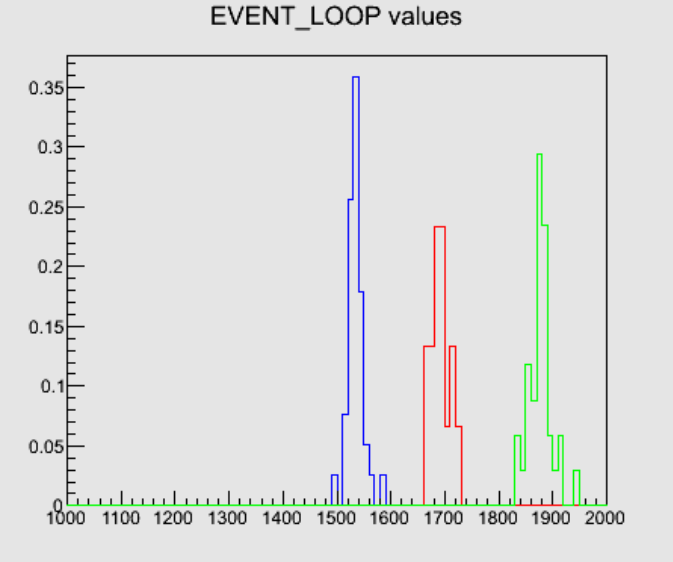
The analysis was performed preloading the libm libraries with LD_PRELOAD, and run a test job (30 times...) based on the configuration for Reco14 with Briunel v44r0 The option file used PrConfig_v1r1/options/Brunel/PRTEST-COLLISION12-1000.py. The runs were done on volhcb34, a machine dedicated to performance test, with all software installed locally, and the results pushed to LHCb PR with cmtconfigs:

- x86_64-slc5-gcc46-opt-intellibm
- x86_64-slc5-gcc46-opt-libmglibc2.5.65
- x86_64-slc5-gcc46-opt-libmglibc2.5.81

Results

Event though 1000 events were requested in the file, only 828 were processed the rest being lumi events, leading to the following histogram for the total event loop time (in s), iwith:

- in blue: the runs with Intel libimf.so
- in red: the runs with current glibc libm
- in green: the runs with the new version of libm



The statistics are:

Intel Libm from XE 2013

- AVERAGE: 1534.92
- STDEV: 14.47
- STDEV %: 0.94

- ENTRIES": 39

libm glibc 2.5.65

- AVERAGE: 1690.88
- STDEV: 17.02
- STDEV %: 1.01
- ENTRIES: 30

libm glibc

- AVERAGE: 1878.09
- STDEV: 21.94
- STDEV %: 1.17
- ENTRIES: 34

Conclusion

We can see a definite negative impact (in te order of 10%) on the new version of the libm library from glibc, this needs further investigation. Using the libm library from Intel would lead to significant gains but some more investigations have to be done regarding the precision of the results.

Appendix

The algorithms most affected by the change of libm are the followoing:

- RichOfflineGPIDLLIt1
- RichOfflineGPIDLLIt0
- MuonIDAlg
- CreateOfflinePhotons
- PatSeeding
- TrackMonitor
- RiCKResLong
- TrackAddLikelihood
- SinglePhotonRec
- EcalClust
- RiCKResLongTight
- CreateOfflineTracks
- CreateOfflinePixels
- CaloDigitFilter
- RichHotPixels
- PatForward
- RichOfflineBckEstIt1
- OTTrackMonitor
- RiCKResForward
- ITTrackMonitor

This topic: LHCb > BrunelLibmComparison
Topic revision: r1 - 2012-11-29 - BenjaminCouturier