

HEP Workloads: update

D. Giordano (CERN/IT)

WLCG HEPscore task force

19 Oct 2022

3 scenarios for HEPscore2x

1. **Current:** use the workloads agreed during the workshop
 - HEPscore2x just runs on x86. None of the composing benchmark run on aarch64
 - BUT: new workloads are already available (see 2)
2. **Reasonable:** HEPscore2x just runs on x86, some composing workloads run also on aarch64
 - It's the current case, with the updated CMS and Atlas WLs
3. **Desirable (IMHO):** HEPscore2x runs on x86 and aarch64
 - The composing workloads are all built for x86 and aarch64
 - Achievable if Alice, LHCb and Belle2 are also provided for aarch64
 - Software of the Experiments in /cvmfs can become soon available also for aarch64

Risk of scenarios 1 and 2

- ❑ Expectation from sites: to use HEPscore to compare diverse types of hardware
 - Today comparisons x86 vs aarch64 nodes in HEP can be done **only** with HS06, or running **ad-hoc** workloads from few experiments
 - **Implication: long tail of adoption of HS06. HS06 will remain for some (long?) time**

- ❑ Having the HEP-workloads capable to run on aarch64 means that HEPscore could be used for future procurements of ARM nodes
 - *Need to understand the timing for this to happen. Is it only possible for the LHC experiments or also for Belle2?*

To be considered

- ❑ Delays/timescale in other areas could enable a time window for the x86/aarch64 containers
 - Accounting tool readiness, Workloads preparation, year of effective adoption of HEPscore2x
- ❑ Workloads
 - **Alice digi-reco** still under preparation
 - The aarch64 build could happen contextually with the other fixes
 - **Atlas gen_sherpa** has a serious **bug** in the reported score
 - To be fixed, and re-assessed the correlation matrix
 - Meanwhile Atlas gen_sherpa multi-arch is available, and based on an updated Athena version
- ❑ The x86/aarch64 build procedure has been streamlined, and can cover also power if a runner is available
 - **Several workloads have been built in just few days**

Build-hepwl	Build-multiarch-hepwl	Publish_oras	Test-singularity-image	Announce	Openmr
build-aarch64	build-multiarch-hepwl	publish_oras_aarch64	test-sing-img-aarch64	announce	openMr
build-x86_64		publish_oras_x86	test-sing-img-x86		

Status of the different workloads

- ❑ The update of the versions to x86/aarch64 is going in parallel to the planned work on the x86-only workloads
- Good quick progress

	A	B	C	D	E
1	WL	Workshop Version	Fix the Workshop Version	New Version available that supports ARM	Validation: Measurement Resolution / Stability
2	Alice digi-reco	Missing	Validation	Could be done	still overcommits resources
3	Atlas gen sherpa	Bug found in time report	T.b.d.	Validation	just started
4	Atlas recoMT			T.b.d	
5	LHCb gen-sim 2021			??	
6	CMS gen-sim Run3			Validation	ok
7	CMS Reco Run3			Validation	ok
8	Belle2			??	
9					
10	Atlas simMT			Validation	ok
11	CMS Digi Run3			Validation	ok
12					
13	Legend				
14	Ok				
15	In progress				
16	Blocker				
17	Not started yet				
18					

Reference machine

- ❑ Side note: the selection and “calibration” of the reference machine give us some time
 - Proposal: Intel IceLake 6326
 - It is the newest intel model at CERN, expect long lifetime in the data centre
 - Enough time ahead to ask to maintain a set of servers also after decommissioning (in 5 years or so)
 - Need to run all workloads composing HEPscore on the reference machine to define the reference value

