

LHCb: Status and thoughts on ARM

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ARM resources on the Grid

Q: “To what extent can LHCb make use of ARM resources on the Grid?
How will this evolve?”

Main points:

1. Software Build & Test infrastructure supports ARM
2. Grid job submission - as managed by LHCbDIRAC
3. Monte Carlo simulation is the main use case on the Grid for LHCb

1 – Software Build & Test infrastructure

- Continuous Integration and Nightly Builds include ARM builds
 - for few specific software stacks
- Performance & Regression testing is being added in June

Thanks to CERN IT for providing the machines required for this work

2 – Status of Grid job submission

- LHCbDirac has been used to produce Monte Carlo test samples
 - Running single-core jobs on ARM resources in Glasgow
 - Inclusion of CERN resources to be done
- Feature request to add filtering improvements
 - Eg. “Give me data produced on ARM”, or “with a given GCC version”
 - To facilitate validation work

3 – Simulation campaigns that can use ARM

- Sim11^[*], incl the latest version of Gauss, has been built also on ARM
 - Still requires physics validation for Run 1-2-3 productions
 - Known issue: discrepancies in Calorimeter simulation
 - No personpower currently available to investigate
 - But: Sim11 is ready for Upgrade-II tracking productions
 - Where no Calorimeter simulation is required
 - Aim: switch to Sim11 for Run-3 productions by the end of the year
- Sim10 to be validated for ARM once Calorimeter issue has been addressed

[] Sim11: development version of the LHCb Simulation stack*

Summary

- Groundwork has been done
 - Build infrastructure and Grid job submission are largely ready
- Full physics validation remains to be done
 - But no personpower currently available for this work
- Creation of test-samples has been demonstrated
 - Thanks to Glasgow for provision resources
- But production use of ARM unlikely before end of 2024

Reference slide

- Gauss v60r0 tests in LHCbDirac, producing min bias and inclusive b
 - Setup ProdConf for LHCbDirac to Gauss Sim11 communication
 - Only a couple of hick-ups related to MT. Third trial is the charm!
- Three sets of productions submitted and verified M.Kreps, E. Muhammad

Name	ProcPass
dev01 (default)	Sim11a-dev01
devMT (multithreaded)	Sim11a-dev01-MT
devARM (on ARM)	Sim11a-dev01-ARM

ST and MT consistent everywhere
ARM inconsistent in Calorimeters
while consistent everywhere else

Next steps

- physics validation for MT → need help from PhWG
- understand differences for ARM → personpower needed

