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ICSC Centro Nazionale di Ricerca in HPC, Big Data and Quantum Computing

Validation of event reconstruction code on ARM Spoke 2 use case

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ICSC Italian Research Center on High-Performance Computing, Big Data and Quantum Computing
Missione 4 • Istruzione e Ricerca

People involved in this use case

Participating Institutions

- Leader: INFN (Francesco Noferini, Daniele Spiga, Tommaso Boccali, Lucio Anderlini, Concezio Bozzi)
- Participants: INFN, UNIBO
- Experiments: ALICE (F. Noferini), CMS (D. Spiga, T. Boccali), ATLAS (L. Rinaldi, L. Carminati), LHCb (L. Anderlini, M. Veltri)

KPI

KPIs

KPI ID	Description	Acceptance threshold
KPI2.2.5.1	Software validation on ARM in the full GRID chain	50% (2/4 LHC experiments)
KPI2.2.5.2	Presentation at conferences	>=2
KPI2.2.5.3	Technical notes (in experiments and ICSC)	>=2

- **First period (tentatively month 13-22 - aligned with MS8): procure and configure ARM machines in order to provide access to the experiment software and storage via a production infrastructure; select and document workflows to be benchmarked from the most representatives; prepare a validation strategy agreed with the experiments.**
- Second Period (tentatively month 23-36 - aligned with MS10): test and validate the selected workflows (most probably from data reconstruction and simulation); validate the submission infrastructure and perform O(1 week) exclusive tests as needed by the validation strategy. Report the results to the experiments and in the ICSC documentation; disseminate the results at topical conferences.

Status

No particular news with respect the previous week

- CMS, ATLAS
  - **Running in production mode**
- ALICE
  - **Still under debugging some issues with the latest software release with data reco jobs**

MS8:

- Report to be prepared in one month from now (?)
- We foresaw to prepare a document describing the strategy for the validation

Plan for conferences

As announced we had an internal discussion about abstract submission to conferences:

- CCR workshop (Palau, 20-24 May)

- Congresso SIF (Bologna, 9-13 September)
  - Abstract submission deadline →30th April -> we are preparing an abstract
- CHEP (19-24 October)
  - In touch with CNAF people to see if we can contribute with materials in a general talk (farming)

backup

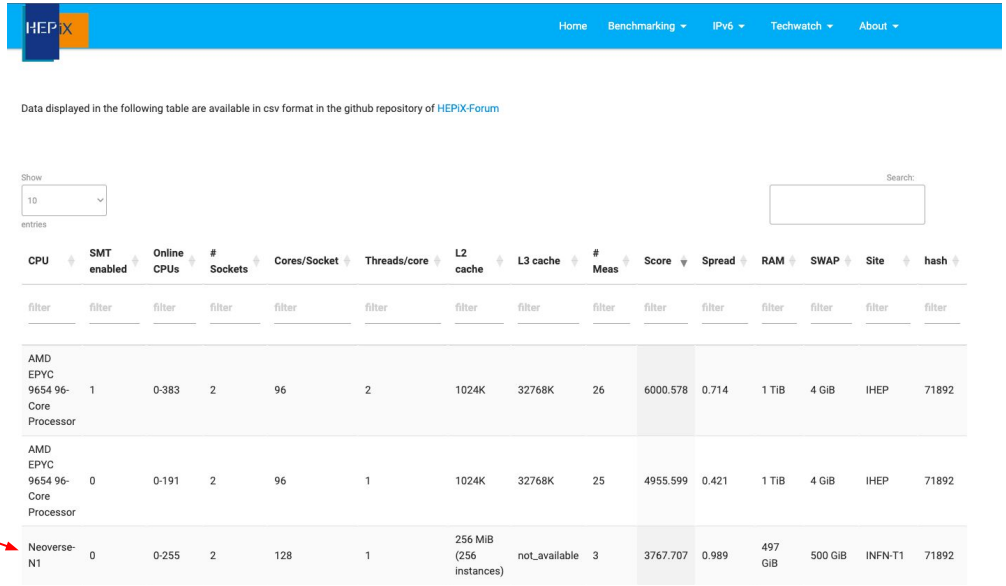
Current resources at CNAF

There are 2 ARM nodes (one already available)

- 256 cores
- 512 GB ram

Current setting (still work in progress)

- Cvmfs available
- Network: access to external network
- Gpfs client -> not available for ARM
- Condor -> not yet available



CPU	SMT enabled	Online CPUs	# Sockets	Cores/Socket	Threads/core	L2 cache	L3 cache	# Meas	Score	Spread	RAM	SWAP	Site	hash
AMD EPYC 9654 96-Core Processor	1	0-383	2	96	2	1024K	32768K	26	6000.578	0.714	1 TiB	4 GiB	IHEP	71892
AMD EPYC 9654 96-Core Processor	0	0-191	2	96	1	1024K	32768K	25	4955.599	0.421	1 TiB	4 GiB	IHEP	71892
Neoverse-N1	0	0-255	2	128	1	256 MiB (256 instances)	not_available	3	3767.707	0.989	497 GiB	500 GiB	INFN-T1	71892

It is in third position in the Hepscore23 DB

Opening access request was announced at the last CNAF Cdg

Some experiments already got access and start to play with it.

Milestones

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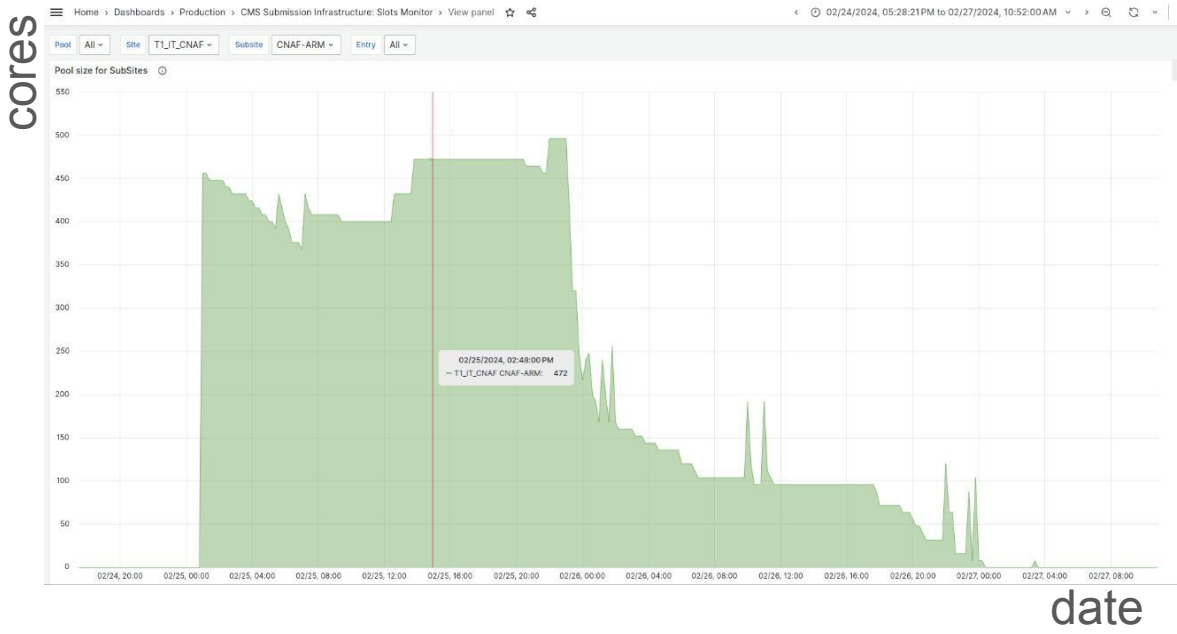
CMS

GRID

- All issues spotted in the previous reports **fixed** (xrootd access working fine after a fine tuning).
- In the last weeks technical validation of grace node was completed
  - → **ARM GRID instance declared as ready**

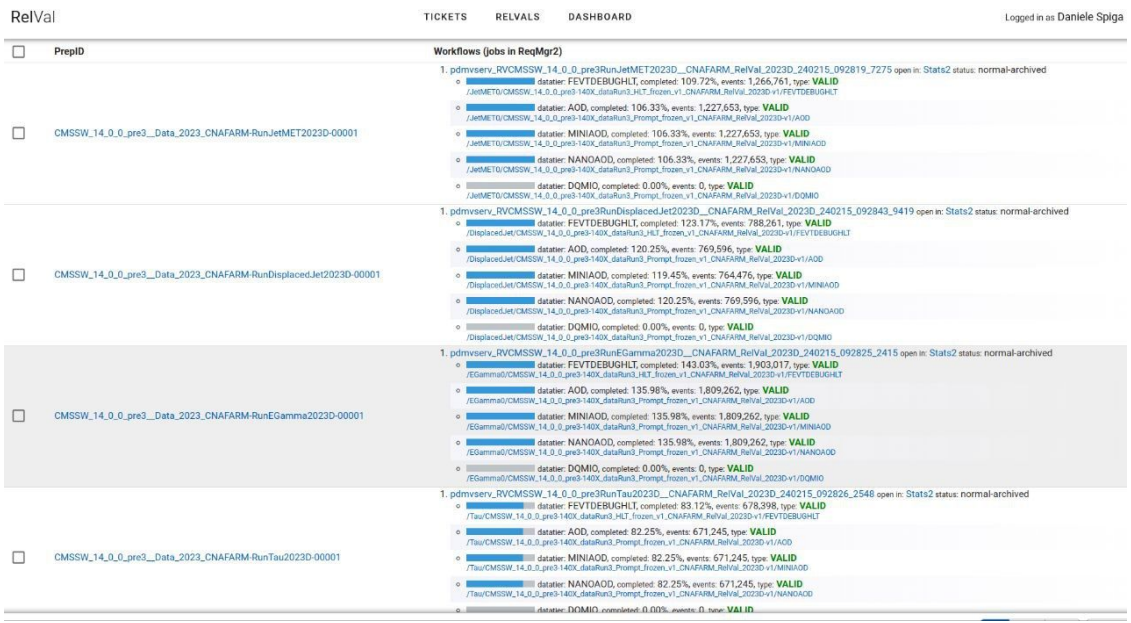


Up to ~500 cores used by concurrent jobs

CMS

GRID

- All issues spotted in the previous reports **fixed** (xrootd access working fine after a fine tuning).
- In the last weeks technical validation of grace node was completed
  - → **ARM GRID instance declared as ready**
- **Ready to start a full validation (it will be done centrally)**

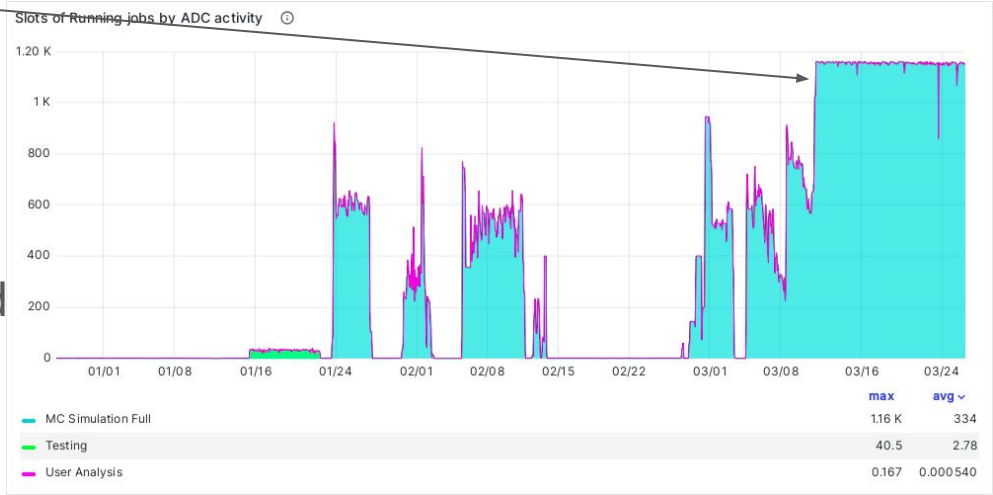


Some official release validation workflows already running on the outputs of CMS jobs@ARM-CNAF

ATLAS

GRID

- In the last week reached a plateau with 8-core full-simulation
  - **12.6 kHS23 (at plateau) →~10% of ATLAS pledge at CNAF**
- no major issues



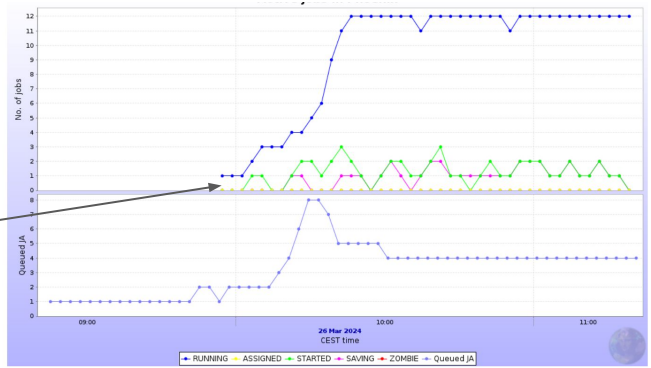
From previous report

- software ARM available on cmvfs
- Using container from cvmfs
- Full detector simulation -> validated
- NN training -> in setup

ALICE

GRID

- Issues under investigation:
  - **Software issue under investigation** (not reproducible at Glasgow) →ALICE MC expert is looking into that (interactive access requested)
  - ALICE queue was blocked due to a wrong path of one script (pilot job) → fixed this morning



Workflow release validation

- **Setting of data reconstruction jobs → work in progress (queue unblocked this morning, we need to wait to finish the backlog of MC jobs)**