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Experience of running the Suite @ PIC

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Port d'Informació Científica (PIC)

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IFAE Institut de Física d'Altes Energies

GOBIERNO DE ESPAÑA MINISTERIO DE CIENCIA E INNOVACIÓN

Ciemat Centro de Investigaciones Energéticas, Medioambientales y Tecnológicas

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Introduction

- **PIC** is a scientific-technological center located in the UAB maintained through a collaboration between IFAE and CIEMAT
- PIC is a data node of the **Spanish Supercomputing Network** (RES, https://www.res.es/en)
- It is the Spanish **WLCG Tier-1 center** (Atlas, CMS and LHCb), ¼ of the Spanish ATLAS Tier-2 and a Tier-3 ATLAS data analysis facility
- We support several other experiments: T2K, MAGIC, CTA, DUNE, LIGO/VIRGO, PAU, EUCLID, VIP, among others...

CPU: 132 kHS06
Disk: 15.0 PB
Tape: 57.9 PB

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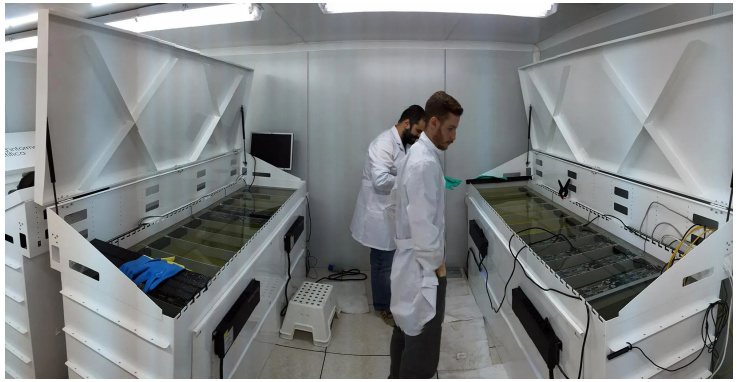
Model and servers

- We run the benchmarks for the Task Force measurement campaign
- 3 model of CPUs/servers. PIC WorkerNodes
  - OS CentOs 7
  - Intel Xeon E5-2640 v3 @ 2.60 GHz, 32 cores (HT), 2 GB RAM/core
  - Intel Xeon E5-2680 v4 @ 2.40 GHz, 56 cores (HT), 2 GB RAM/core
  - AMD EPYC 7452, 128 cores (HT), 2 GB RAM/core
- Intel Xeon servers are WNs running in immersion cooling system



- First AMD WNs at PIC

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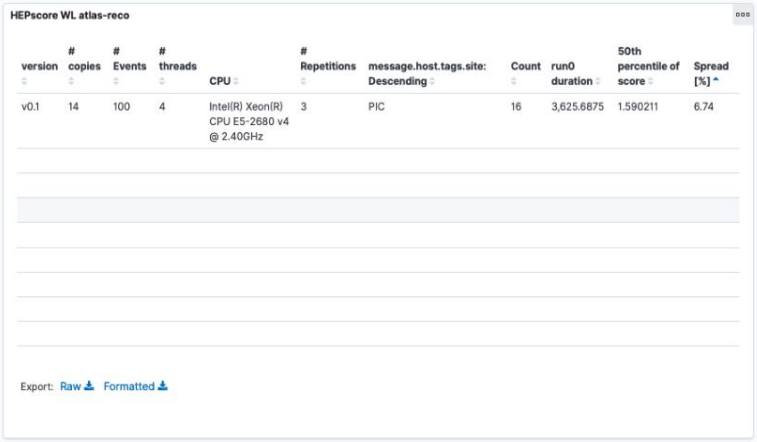
Experience of running the Suite

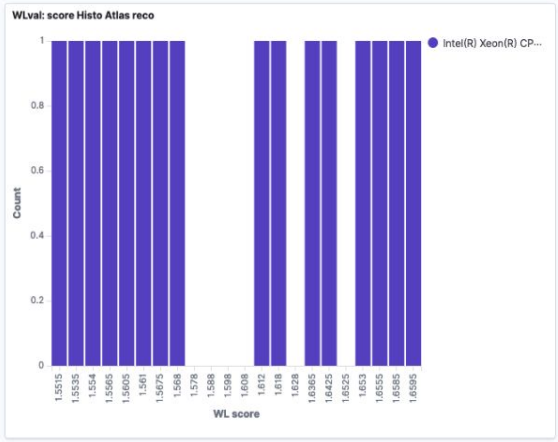
- We were very comfortable with the new container solution to run the benchmarks
  - A webpage with all the benchmarks and scripts clearly documented would be of great help
- The WNs were completed drained and removed from the HTCondor pool
- Each script was run 16 times
  - publish=false and then submitting the results

- **db12, hs06-32 and hs06-64:** run without no relevant issues
- **SPEC2017:** we do not have the license

Experience of running the Suite

- **HEPscore:**
  - First issues with python and cryptography version easily and fast solved
  - OOM errors in AMD EPYC machines. Juno bench uses more than 2 GB of memory per process. Solved by increasing swap
  - Issues with Alice gen-sim and Atlas-reco specially for Intel E5-2680 v4 machine: the spread was around 7%. Cms-reco bench not affected

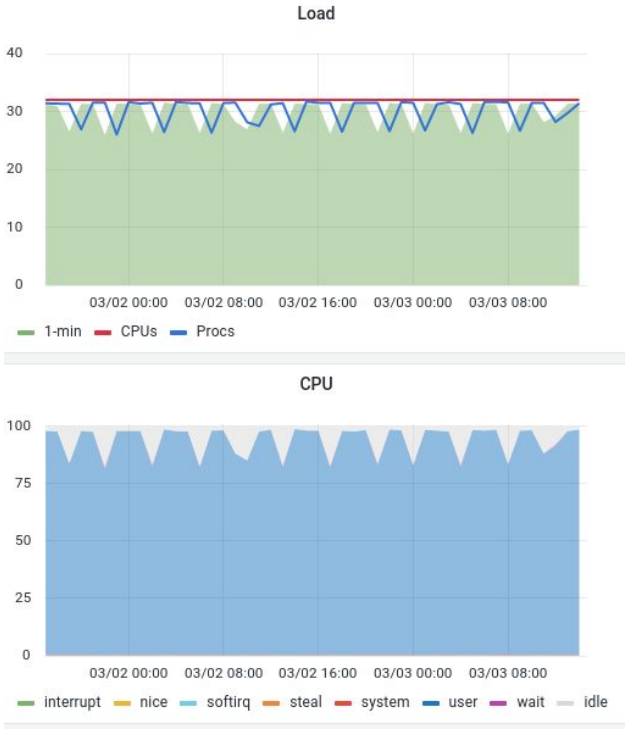




Atlas-reco results for E5-2680v4

Experience of running the Suite

- We monitored the load of the WNs during the measurement camping with our Graphite/Grafana Monitoring Service
  - Collectd is running in all our servers and sending the information to the graphite server
  - Grafana is used to build the graphs and dashboards form the graphite data
- Examples:

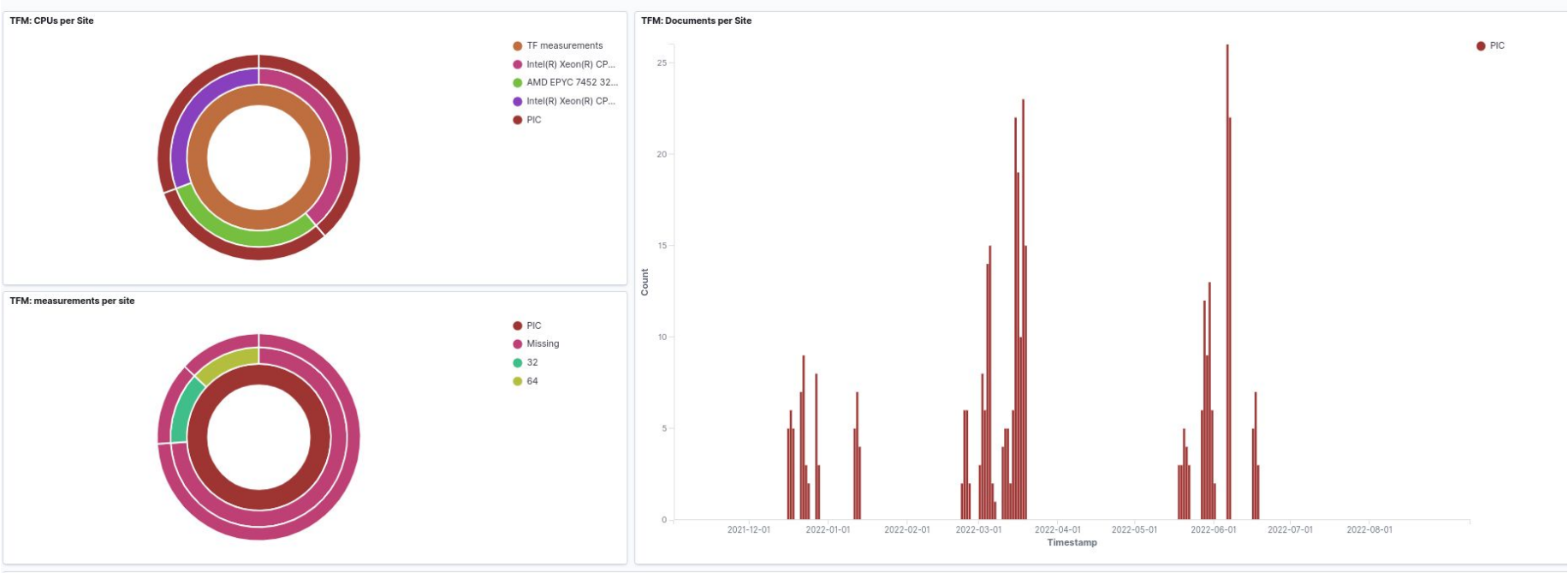


Memory consumption during belle2 run (AMD EPYC 7452)

CPU load and usage during hs06 64 bits run (E5-2640 v3)

Experience of running the Suite

- Collecting the data in a central DB is a great improvement
- Kibana is a great tool to monitor and filter the results
- At the beginning, I had access problems related to my account (CERN account and edugain account)



Dashboard filtering the results for PIC

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Concluding remarks

- We run the benchmarks in PIC WNs: Intel Xeon E5v3 and v4 architectures and more modern AMD EPYC 7452 machines
- We consider a great improvement to run the benchmarks using containers and collecting the data in a DB to be visualized in the kibana dashboard
- We found some issues but all were solved with the support of Domenico and Gonzalo
- Special thanks to Domenico and Gonzalo for all the support!

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Thank you!

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