

Infrastructure of the ALICE Grid computing setup in Norway

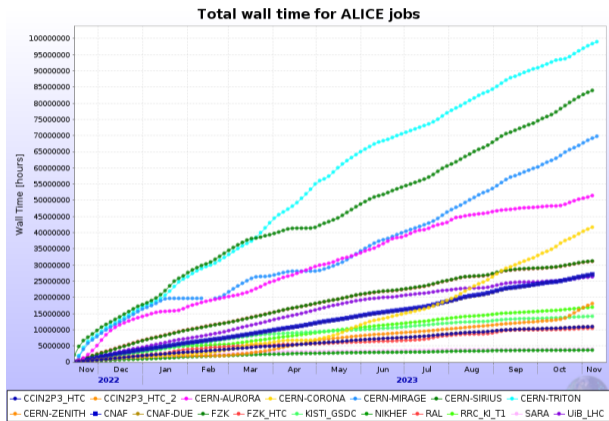
- Tier-1 hardware is part of the Norwegian Research and Education Cloud (NREC)
- All instances running AlmaLinux 8
- Storage: Ceph cluster, integrated into Neic NT1 dCache
- Tape resources at UiB LHC, tape clients in NREC interface to dCache



Current resources:

- 44 compute servers, hosting compute workers and dCache pool instances
- 320 worker instances with 16 CPUs providing 45 MCPUh/a, ~ 60 kHS06
- 50 Dell disk server nodes, total 7.8 PiB raw, 7.8 PB raw disk, 5.4 PB usable space
- 4 PB tape storage

Computing instances



- stable operation, high efficiency
(but not not all used efficiently by ALICE)
- ~ 60 kHS06 from July 22 on, still need to run Hepscore 23
- Slurm cluster, the rest is handled by ALICE JAlien
- All software from CVMFS
- Almalinux 8
- UiB has a place among the big contributors of ALICE computing

Storage

- One big Ceph storage, has been upgraded to 7.8 PiB raw disk in summer 22
- Hosted close to the infrastructure compute servers in NREC
- 20 dCache pool nodes with 240 TiB volumes
- All pool instances have been upgraded to Almalinux 8 in Nov 2022
- We had an IPv6 routing problem @ UiB - solved in spring, the workaround can be removed from the pool nodes
- No changes in the tape library, IBM Spectrum Protect 8.1, Endit cd4d306c (Dec 30 2022)
- tape storage going to be upgraded in 2024 and new capacity will be added

Status and Plans

- Research Council of Norway finally approved the NorLHC2 infrastructure application of ATLAS and ALICE in Oct 2022
- We can fulfill pledges until 2027 with one investment in 2025
- For 2024 we are planning tape upgrade
- Long term future after 2027 not yet clear
- Network bandwidth is a bottleneck now, we are working on upgrading the LHC link