Contribution ID: **113**   Type: **Oral Presentation**

The LHCb HLT2 storage system: a 40 GB/s system made from commercial off-the-shelf components and open-source software

Thursday 4 August 2022 11:20 (20 minutes)

The LHCb (Large Hadron Collider beauty) experiment is designed to study differences between particles and anti-particles as well as very rare decays in the charm and beauty sector at the LHC. With the major upgrade done in view of Run 3, the detector will read-out all events at the full LHC frequency of 40 MHz, the online system will be subjected to a considerably increased data rate, reaching a peak of ˜40 Tb/s. The second stage of the two stage-filtering consists of more than 10000 multithreaded processes which simultaneously write output files at an aggregated band-width of 100 Gb/s. At the same time a small amount of file-moving processes will read files from the same storage to copy them over to tape-storage. This whole mechanism must run reliably over months and be able to cope with significant fluctuations. Moreover, for cost reasons, it must be built from cost-efficient off-the-shelf components. In this paper we describe LHCb's solution to this challenge, we show the design, present reasons for the design choices, the configuration and tuning of the adopted software solution and we present performance figures.

Minioral

Yes

IEEE Member

No

Are you a student?

Yes

Author: Mr CIFRA, Pierfrancesco (Nikhef National institute for subatomic physics (NL))

Co-authors: NEUFELD, Niko (CERN);   SBORZACCHI, Francesco (INFN e Laboratori Nazionali di Frascati (IT));   HEMMER, Frederic (CERN)

Presenter: Mr CIFRA, Pierfrancesco (Nikhef National institute for subatomic physics (NL))

Session Classification: Architectures, Intelligent Signal Processing & Simulation

Track Classification: Real Time System Architectures and Intelligent Signal Processing