Ricardo Goncalo (Royal Holloway)

RT2012 / IWORID2012

IEEE Real Time 2012 - I

- Nothing from:
  - A Hardware Tracker Finder (FTK) for the ATLAS Trigger C-Custom Jinlong Zhang
  - Centralized Configuration System for the ATLAS Trigger and DAQ Online Computing Farm C-Custom Liviu Valsan

- Accepted:
  - Evolution and performance of the ATLAS trigger system … A-ATLAS Talk Imma Riu, Brian Petersen
    - ?
  - A System for Monitoring and Tracking the LHC Beam Spot … C-Custom Accepted Rainer Bartoldus
    - Frank Winklmeier proposed by Rainer
  - Advanced visualization system for monitoring the ATLAS TDAQ network… C-Custom Talk Silvia Batraneanu
    - ?
  - Upgrade project and plans for the ATLAS detector and trigger A-ATLAS Talk Francesca Pastore
    - ? Francesca?
  - An upgraded ATLAS Central Trigger for 2014 LHC luminosities A-ATLAS Talk Taylor Childers
    - Is this A or C?
  - High-performance scalable information service for the ATLAS experiment C-Custom Poster Serguei Kolos
    - Serguei proposes to prepare Poster and get someone to show it
  - Applications of advanced data analysis and expert system technologies in… C-Custom Talk Andrei Kazarov
    - ?
  - ATLAS TDAQ: operation and evolution A-ATLAS Poster Wainer Vandelli, Giuseppe Avolio
    - ?
  - Experience with the custom-developed ATLAS trigger monitoring… A-ATLAS Poster Valeria Bartsch, Martin
    - ?
  - Design Studies for an Upgrade to the ATLAS Region of Interest Builder C-Custom Poster Bob Blair et al
    - ?

IEEE Real Time 2012 - II

- Merged:
  - Evolution and performance of electron and photon … A-ATLAS Alessandro Tricoli, Takanori Kono
  - The ATLAS hadronic tau trigger A-ATLAS Cristobal Cuenca, Mansoora
  - jets abstract A-ATLAS Mario Campanelli
  - Performance of the ATLAS Level-1 Calorimeter Trigger … A-ATLAS Talk Martin Wessels
  - The ATLAS Muon Trigger Performance in pp collisions at sqrt(s)=7 TeV Kunihiro Nagano
    - ?
    - From taus:
    - 1) Jacob Howard 2) Andres Tanasijczuk 3) Curtis Black 4) Elizabeth Ptacek 5) Aldo Saavedra 6) Andreas Reinsch
  - A topological processor for the future ATLAS Level-1 Calorimeter trigger C-Custom Eduard Simioni
  - Novel, highly-parallel software for the on-line storage … C-Custom Talk Wainer Vandelli, Tommaso Colombo
    - ?

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- Submitted:
  - The ATLAS hadronic tau trigger A-ATLAS Soshi Tsuno, Phillip Urquijo
  - An upgraded ATLAS Central Trigger for 2014 LHC lumi. C-Custom Taylor Childers

- To be submitted today (same as general TDAQ abstract for RealTime):
  - ATLAS TDAQ: operation and evolution

The ATLAS experiment at the Large Hadron Collider at CERN relies on acomplex and highly distributed Trigger and Data Acquisition (TDAQ)system to gather and select particle collision data obtained atunprecedented energy and rates. The TDAQ system is mostly made ofoff-the-shelf processing units organized in a farm of 2000 elements. In2011, the TDAQ system has been operated with an overall efficiency of 94%, while meeting evolving and demanding conditions.In the course of the proton-proton run the LHC peak luminosity saw a 4-fold increase, leading to a first-level trigger rate of 65 kHz andconsequently to beyond-design rates and bandwidth in all data-flowlevels, putting under stress the scalability and operational margins putin place in the system. The 2011 heavy ions run had completely oppositerequirements instead. Despite both the lower LHC luminosity andfirst-level trigger rate, the system had to deal with large processingtimes in the HLT farm due to the event complexity. This provided theoccasion to operate the system at limit of the installed computingpower, enabling the evaluation of the effectiveness of the currentinstallation and the validation of our operation modelling tools.Driven by the lessons learned from operation, the ATLAS TDAQ is nowlaunching an evolution project aiming at a system re-design. The goal isto preserve the current qualities, functionalities and performance whileboosting flexibility and scalability. In this paper we will report onthe achievements of the 2011 data-taking period, with particularemphasis on the robustness and key features of the ATLAS TDAQ system. Wewill as well discuss the limitations of the current system, as exposedby the past data-taking periods, and present the strategies that arebeing put in place to evade them in the system evolution.

Backup slides