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Monitoring of the LHC computing activities during the first year of data taking

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Overview

The Worldwide LHC Computing Grid (WLCG) provides the Grid infrastructure used by the experiments of the Large Hadron Collider at CERN which this year started data taking. The computing and storage resources made available to the LHC community are heterogeneous and distributed over more than a hundred research centres. The scale of WLCG computing is unprecedented; the LHC Virtual Organisations (VOs) alone run 100,000 concurrent jobs and the ATLAS VO can sustain an integrated data transfer rate of 3GB/s. Reliable monitoring of the LHC computing activities and the quality of the distributed infrastructure is a prerequisite of the success of the LHC data processing.

Impact

The Experiment Dashboard system plays an important role in the computing operations of the LHC Virtual Organisations, in particular those of ATLAS and CMS, and is widely used by the LHC community. For example, the CMS VO's Dashboard server receives up to 5,000 unique visitors per month and serves more than 100,000 page impressions daily.

Description of the work

The Experiment Dashboard system was developed in order to address the monitoring needs of the LHC experiments. It covers data transfer and job processing and works transparently across the various middleware flavours used by the LHC VOs. This presentation will describe the experience of using the system during the first year of LHC data-taking, focusing on the Dashboard applications that monitor VO computing activities. Those applications that monitor the distributed infrastructure are the subject of a different presentation, "Experiment Dashboard providing generic functionality for monitoring of the distributed infrastructure". Though primarily the target user communities of the Experiment Dashboard are the LHC experiments, many of the Experiment Dashboard applications are generic and can be used outside the scope of the LHC. Special attention in this presentation will be given to generic applications such as job monitoring, and the common mechanism that can be used by VO-specific Workload Management Systems (WMS) for reporting monitoring data.

URL

http://dashboard.cern.ch

Conclusions

During the first year of the data taking the system coped well with growing load both in terms of the scale of the LHC computing activities and in terms of number of users. The Experiment Dashboard system became an essential component for the LHC computing operations. The variety of its applications covers the full range of the LHC computing activities. The system is being developed in a very close collaboration with the users. As a result, the Experiment Dashboard manages to respond well to the needs of the LHC experiments.

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