

ATLAS Tier-0 Scaling Test

Wednesday 15 February 2006 16:40 (20 minutes)

To validate its computing model, ATLAS, one of the four LHC experiments, conducted in Q4 of 2005 a Tier-0 scaling test. The Tier-0 is responsible for prompt reconstruction of the data coming from the event filter, and for the distribution of this data and the results of prompt reconstruction to the tier-1s. Handling the unprecedented data rates and volumes will pose a huge challenge on the computing infrastructure. In this paper we report on our experiences in an attempt to scale up to nominal operation over a period of two months.

Summary

ATLAS is a multi-purpose experiment at the LHC at CERN, which will start taking data in the second half of 2007.

To handle and process the unprecedented data rates expected at the LHC (e.g. at nominal operation, ATLAS will record about 10 PB of raw data per year) poses a huge challenge on the computing infrastructure.

The ATLAS Computing Model foresees a multi-tier hierarchical model to perform this task, with CERN hosting the Tier-0 centre and associated Tier-1, Tier-2, ... centres distributed around the world.

The role of the Tier-0 centre is to perform prompt reconstruction of the raw data coming from the trigger farm (i.e., the so-called Event Filter or level-3 trigger), and to distribute raw and reconstructed data to the associated Tier-1 centres. At the Tier-0 centre, raw data will arrive at a rate of 320 MB/s, data will have to be written to tape at a rate of 440 MB/s and to be distributed to the Tier-1 centres at about 1000 MB/s. About 3 MSI2k computing power will be needed to achieve this task.

In this paper we will report on the ATLAS Tier-0 scaling tests carried out in Q4 of 2005, whose goals were to evaluate the ATLAS Tier-0 work- and dataflow model, to test the infrastructure at CERN (CPU resources, mass storage, internal and outgoing bandwidths, etc.), and to perform Tier-0 operations up to their nominal rates.

Primary authors: NAIRZ, Armin (CERN); CAMERON, David (CERN); POULARD, Gilbert (CERN); GOOSSENS, Luc (CERN); BRANCO, Miguel (CERN)

Presenter: BRANCO, Miguel (CERN)

Session Classification: Distributed Event production and Processing

Track Classification: Distributed Event production and processing