



Contribution ID: 501

Type: oral presentation

ATLAS Production System in ATLAS Data Challenge 2

Monday, September 27, 2004 2:40 PM (20 minutes)

In order to validate the Offline Computing Model and the complete software suite, ATLAS is running a series of Data Challenges (DC). The main goals of DC1 (July 2002 to April 2003) were the preparation and the deployment of the software required for the production of large event samples, and the production of those samples as a worldwide distributed activity.

DC2 (May 2004 until October 2004) is divided into three phases: (i) Monte Carlo data are produced using GEANT4 on three different Grids, LCG, Grid3 and NorduGrid; (ii) simulate the first pass reconstruction of data expected in 2007, also called Tier0 exercise, using the MC sample; and (iii) test the Distributed Analysis model.

A new automated data production system has been developed for DC2. The major design objectives are minimal human involvement, maximal robustness, and interoperability with several grid flavors and legacy systems. A central component of the production system is the production database holding information about all jobs. Multiple instances of a 'supervisor' component pick up unprocessed jobs from this database, distribute them to 'executor' processes, and verify them after execution. The 'executor' components interface to a particular grid or legacy flavour. The job distribution model is a combination of push and pull. A data management system keeps track of all produced data and allows for file transfers.

The basic elements of the production system are described. Experience with the use of the system in world-wide DC2 production of ten million events will be presented. We also present how the three Grid flavors are operated and monitored. Finally we discuss the first attempts on using the Distributed Analysis system.

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Session Classification: Distributed Computing Systems and Experiences

Track Classification: Track 5 - Distributed Computing Systems and Experiences