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# Distributed Computing in ATLAS

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The LHC machine has just started operations. Very soon, Petabytes of data from the ATLAS detector will need to be processed, distributed worldwide, re-processed and finally analyzed. This data-intensive physics analysis chain relies on a fabric of computer centers on three different sub-grids: the Open Science Grid, the LHC Computing Grid and the Nordugrid Data Facility–all part of the Worldwide LHC Computing Grid (wLCG). This fabric is arranged in a hierarchy of computing centers form Tier0 to Tier3. The role of the Tier-0 center is to perform prompt reconstruction of the raw data coming from the on-line data acquisition system, and to distribute raw and reconstructed data to the associated Tier-1 centers. The Tier1 centers mainly do raw data reprocessing after updated software releases and calibration constants are ready. The Tier2 centers have two major roles: simulation and physics analysis. This talk will describe the software components of the ATLAS data chain and the flow of data from the Tier0 center at CERN to the distributed Tier1, Tier2 and Tier3 centers.
There are five major components which will be discussed. The ATLAS Distributed Data Management system, that is responsible for all data movement and registration in ATLAS. The Storage Resource Management system for dealing with heterogeneous local storage systems. The PanDA pilot based system used to run managed production for both simulated data and real data re-processing. The detailed monitoring system (ARDA dashboard monitoring system) which allows us to debug problems. Finally, the systems which allow distributed physics analysis called GANGA and pAthena.

**Authors:** KLIMENTOV, Alexei (BNL); BARBERIS, Dario (CERN); BOS, Kors (NIKHEF/CERN); LAMANNA, Massimo (CERN); JIM, Shank (Boston University)

**Presenter:** NEGRI, Guido (Unknown)

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