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Production of simulated events for the BaBar experiment by using LCG

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The BaBar experiment has been taking data since 1999. In 2001 the computing group started to evaluate the possibility to evolve toward a distributed computing model in a Grid environment. In 2003, a new computing model, described in other talks, was implemented, and ROOT I/O is now being used as the Event Store. We implemented a system, based onthe LHC Computing Grid (LCG) tools, to submit full-scale MonteCarlo simulation jobs in this new BaBar computing model framework. More specifically, the resources of the LCG implementation in Italy, grid.it, are used as computing elements (CE) and Worker Nodes (WN). A Resource Broker (RB) specific for the Babar computing needs was installed. Other BaBar requirements, such as the installation and usage of an object-oriented (Objectivity) Database to read detector conditions and calibration constants, were accomodated by using non-gridified hardware in a subset of grid.it sites. The BaBar simulation software was packed and installation on Grid elements was centrally managed with LCG tools. Sites were geographically mapped to Objectivity databases, and conditions were read by the WN either locally or remotely. An LCG User Interface (UI) has been used to submit simulation tests by using standard JDL commands. The ROOT I/O output files were retrieved from the WN and stored in the closest Storage Element (SE). Standard BaBar simulation production tools were then installed on the UI and configured such that the resulting simulated events can be merged and shipped to SLAC, like in the standard BaBar simulation production setup. Final validation of the system is being completed. This gridified approach results in the production of simulated events on geographically distributed resources with a large throughput and minimal, centralized system maintenance.

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