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The ZEUS Grid-Toolkit - an experiment independent layer to access Grid services

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The HERA luminosity upgrade and enhancements of the detector have led to considerably increased demands on computing resources for the ZEUS experiment. In order to meet these higher requirements, the ZEUS computing model has been extended to support computations in the Grid environment.

We show how to use the Grid services in the production system of a real experiment and point out the main issues, which must be addressed in order to use the Grid resources routinely and efficiently. We present the ZEUS Grid-toolkit designed as an additional layer between the Grid and experiment specific software. It provides a general interface for job management and data handling, which makes our application software independent of the actual Grid middleware software version. Different Grid middleware implementations as LCG or Grid2003 may be used simultaneously and smooth migration is possible as new middleware implementations appear (gLite). The job efficiency is significantly improved by introducing fault tolerant methods. The toolkit uses extensible Perl classes for job management and implements additional features like dynamic creation of job description, automatic job resubmission and validation of the job results.

The toolkit has been successfully used in the integrated ZEUS Monte Carlo production system for more than a year.

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