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DIRAC Optimized Workload Management

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The LHCb DIRAC Workload and Data Management System employs advanced optimization techniques in order to dynamically allocate resources. The paradigms realized by DIRAC, such as late binding through the Pilot Agent approach, have proven to be highly successful. For example, this has allowed the principles of workload management to be applied not only at the time of user job submission to the Grid but also to optimize the use of computing resources once jobs have been acquired. Along with the central application of job priorities, DIRAC minimizes the system response time for high priority tasks. This paper will describe the recent developments to support Monte Carlo simulation, data processing and distributed user analysis in a consistent way across disparate compute resources including individual PCs, local batch systems, and the Worldwide LHC Computing Grid. The Grid environment is inherently unpredictable and whilst short-term studies have proven to deliver high job efficiencies, the system performance over an extended period of time will be considered here in order to convey the experience gained so far.

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