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DØ Data Reprocessing with SAM-Grid

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Periodically an experiment will reprocess data taken previously to take advantage of advances in its reconstruction code and improved understanding of the detector. Within a period of ˜6 months the DØ experiment has reprocessed, on the grid, a large fraction (0.5fb-1) of the Run II data. This corresponds to some 1 billion events or 250TB of data and used raw data as input, requiring remote database access. This is the largest HEP grid activity and has been a great success. SAM (Sequential Access to Metadata) has been in operation at DØ since the start of Run II and provides the data-grid (also enabling remote analysis). Job submission and management is provided by JIM. Together they form the middleware SAM-Grid, used for this activity. This massive task led to extensive developments in SAM-Grid, in a joint effort between the core developers and those carrying out the reprocessing at the remote sites. The resources used, corresponding to some 3500 GHz equivalent, were shared and include LCG and OSG facilities. This activity, including the development of SAM-Grid and the operational tools and procedures developed will be presented. Lessons learnt from carrying out such a task on the grid will be discussed.

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