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# Performance of an operating High Energy Physics Data grid, D0SAR-grid

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The D0 experiment at Fermilab's Tevatron will record several petabytes of data over the next five years in pursuing the goals of understanding nature and searching for the origin of mass. Computing resources required to analyze these data far exceed the capabilities of any one institution. Moreover, the widely scattered geographical distribution of collaborators poses further serious difficulties for optimal use of human and computing resources. These difficulties will be exacerbated in future high energy physics experiments, like those at the LHC. The computing grid has long been recognized as a solution to these problems. This technology is being made a more immediate reality to end users by developing a fully realized grid in the D0 Southern Analysis Region (D0SAR).
D0SAR consists of eleven universities in the Southern US, Brazil, Mexico and India. The centerpiece of D0SAR is a data and resource hub, a Regional Analysis Center (RAC). Each D0SAR member institution constructs an Institutional Analysis Center (IAC), which acts as a gateway to the grid for users within that institution.
These IACs combine dedicated rack-mounted servers and personal desktop computers into a local physics analysis cluster. D0SAR has been working on establishing an operational regional grid, D0SAR-Grid, using all available resources within it and a home-grown local task manager, McFarm.
In this talk, we will describe the architecture of the D0SAR-Grid implementation, the use and functionality of the grid, and the experiences of operating the grid for simulation, reprocessing and analysis of data from a currently running HEP experiment.

**Authors:** ABBOTT, B. (University of Oklahoma); QUINN, B. (The University of Mississippi); MEYER, D. (University of Texas at Arlington); GREGORES, E. (Universidade Estadual Paulista, Brazil); KIM, H. (University of Texas at Arlington); SEVERINI, H. (University of Oklahoma); SNOW, J. (Langston University); YU, J. (UNIVERSITY OF TEXAS AT ARLINGTON); SOSEBEE, M. (University of Texas at Arlington); MONDAL, N. (Tata Institute of Fundamental Research, India); BARINGER, P. (University of Kansas); SKUBIC, P. (University of Oklahoma); NOVAES, S. (Universidade Estadual Paulista, Brazil); BOLTON, T. (Kansas State University); GREENWOOD, Z. (Louisiana Tech. University)

**Presenter:** QUINN, B. (The University of Mississippi)

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