

Data and Computational Grid decoupling in STAR – An Analysis Scenario using SRM Technology

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This paper describes the integration of Storage Resource Management (SRM) technology into the grid-based analysis computing framework of the STAR experiment at RHIC. Users in STAR submit jobs on the grid using the STAR Unified Meta-Scheduler (SUMS) which in turn makes best use of condor-G to send jobs to remote sites. However, the result of each job may be sufficiently large that existing solutions to transfer data back to the initiator site have not proven reliable enough in a user analysis mode or would lock the computing resource (batch slot) while the transfer is in effect. Using existing SRM technology, tailored for optimized and reliable transfer, is the best natural approach for STAR, which is already relying on such technology for massive (bulk) data transfer. When jobs complete the output files are returned to the local site by a 2-step transfer utilizing a Disk Resource Manager (DRM) service running at each site. The first transfer is a local transfer from the worker node (WN) where the job is executed to a DRM cache local to the node, the second transfer is from the WN local DRM cache to the initiator site DRM. The advantages of this method include SRM management of transfers to prevent gatekeeper overload, release of the remote worker node after initiating the second transfer (delegation) so that the computation and data transfer can proceed concurrently, and seamless mass storage access as needed by using a Hierarchical Resource Manager (HRM) to access HPSS.

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