

Grid3

The Particle Physics Data Grid (PPDG) project, in cooperation with the NSF funded iVDGL and GriPhyN projects, and the U.S. CMS and U.S. ATLAS Software and Computing projects have deployed a first shared Grid environment, Grid3, across U.S. Laboratories and Universities to run applications from the participating experiments and computer science groups. The Condor and Globus computer science teams, central participants in the grid projects, provide the core middleware for this grid environment that is packaged and distributed as the VDT.

Grid3 is used by ATLAS and CMS for their “data challenges,” in preparation for the experiments’ start of data taking in 2007, as well as numerous other applications including: LIGO gravity wave search, SDSS galaxy cluster detection, BTeV proton-antiproton simulation, SnB biomolecular analysis, GADU/Gnare genome analysis, and Computer Science experiments testing resource planning and data movement.

By late 2003, Grid3 consisted of 26 sites providing over 2500 processors. A project team of more than 30 people part time constructed and deployed Grid3 over a span of about 4 months and operations and usage has continued as a production environment for the science teams involved. The iVDGL Grid Operations Center at Indiana University provides a focal point for day-to-day operations support as well as running some central servers for information and monitoring services and virtual organization management. The ESnet PKI service provides digital identity certificates for the people and the resources participating in Grid3. Virtual Organization Management services are provided using the EDG/DataTAG Virtual Organization Management Software (VOMS) for central registration of user information. Job Submission and Management services are provided through the use of Condor-G using the GRAM protocol. Condor-G manages the submission of the jobs, the Globus Gatekeeper submits the jobs to the local Compute Element batch queue, the Condor GridMonitor manages the load on the local head node, and all components cooperate to manage retries, report errors and monitor the job submissions. Data Movement services are provided through the use of GridFTP. The MonALISA system was used as the core monitoring system. It was extended for Grid3 to collect and present information based on each VO. This allowed accounting for usage of resources by each VO on each Grid2003 site.

Many participants in Grid3 are founding members of the Open Science Grid Consortium and are planning an evolution of the Grid3 environment (especially the addition of the SRM interface to storage services) to become the first version of Open Science Grid in the spring of 2005.

URL’s:

Grid3 – www.ivdgl.org/grid3

PPDG – www.ppdg.net

iVDGL – www.ivdgl.org

GriPhyN – www.griphyn.org