

Open Science Grid

Bringing the power of the Grid to scientific research

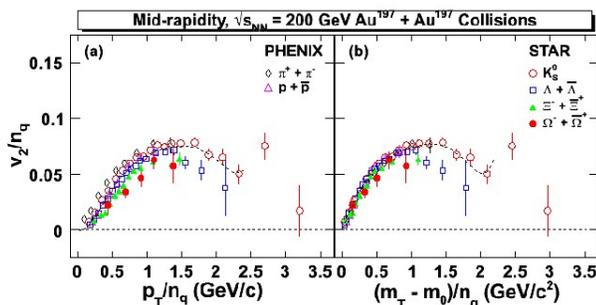


Open Science Grid

The Open Science Grid is a distributed computing infrastructure for scientific research. Researchers use the OSG infrastructure and software stack to harness computing and storage resources located around the world. Scientists from many fields, including astrophysics, bioinformatics, computer science, medical imaging, nanotechnology and physics, use the OSG today to advance their research.



MonALISA map showing status of OSG sites



The STAR nuclear physics experiment has processed data transferred from U.S. to China using the OSG software stack. Displayed are preliminary results from this data on elliptic flow of matter created under conditions mimicking the Big Bang. (Image courtesy Yan Lu)

OSG sites provide computing and storage resources for grid users, a common infrastructure and a reference software stack to access these resources. The OSG integrates resources from more than 50 sites in the United States and around the world. OSG members work actively with a host of partners, including grid and network organizations and international, national, regional and campus grids, to create a grid infrastructure that spans the globe.

OSG Members contribute to and benefit from a uniform shared computing environment. The OSG software stack is based on the Virtual Data Toolkit (VDT), which provides a binary distribution of core grid technologies for more than 15 operating systems. The OSG adds configuration and utilities to the VDT software foundation, and user communities install their applications on the resources made accessible by the OSG software stack.



OSG Consortium meeting, University of Washington, August 2006

The OSG Consortium welcomes new members, partners and collaborators. If you are interested in a collaboration with the potential to share resources, applications, middleware and ideas, please contact us.

Open Science Grid
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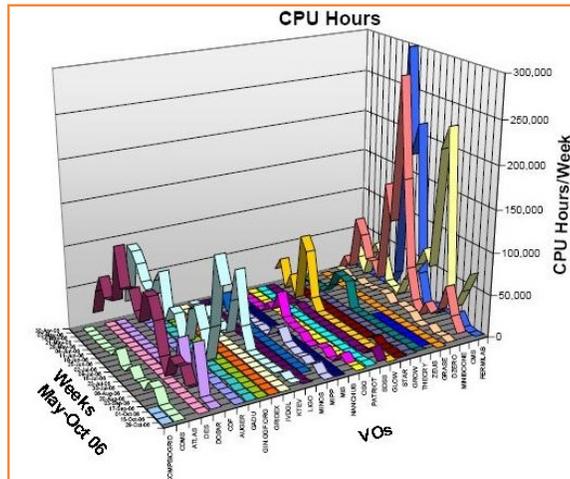


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OSG around the Globe



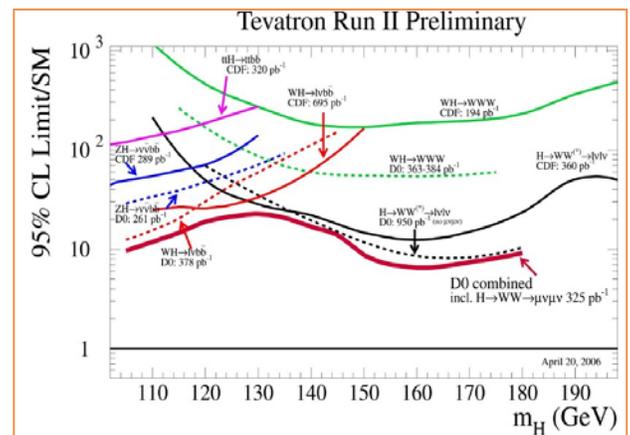
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The Open Science Grid computing infrastructure has been operating since July 2005 and is being used by almost thirty scientific collaborations. From April to October 2006, over seven million CPU hours were used by OSG applications, including a peak usage of 300,000 CPU hours in one week.

Gateway to China

The DZero high-energy physics experiment, now running at Fermilab, studies the interactions of protons and antiprotons. With the help of OSG, DZero's grid-enhanced distributed data handling system, SAM-Grid, is moving the experiment's Monte Carlo simulation processing to remote grid sites. A SAM-Grid gateway has been deployed and is operational at the University of Science and Technology of China (USTC). DZero is working with USTC to bring their site into the OSG.



Standard Model Higgs Limits from the Tevatron experiments (Image courtesy D0)

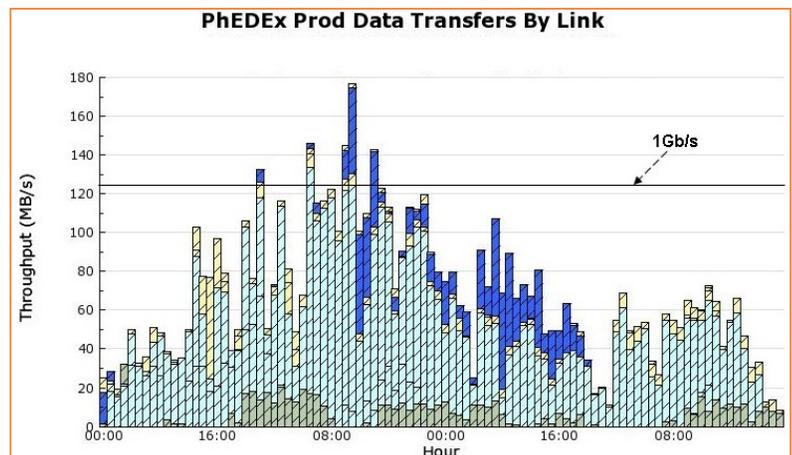
Interoperability

OSG information services GIP (OSG-GIP) aggregates static and dynamic resource information for use with LDAP-based information systems. This has enabled interoperability between the OSG and the Worldwide LHC Computing Grid. Information from OSG-GIP is based on the Grid Laboratory Uniform Environment (GLUE) Schema, an abstract modeling schema

Transatlantic Data Transfer with Worldwide LHC Computing Grid

Standard-based OSG storage elements interoperate with many other grids. OSG works with production and research networks to enable efficient data transfers within OSG and between OSG and other grids worldwide.

The CMS high-energy physics experiment, which will begin operating at CERN in 2007, uses the OSG for its U.S. grid infrastructure. In October 2006, the experiment sustained a data transfer rate of more than one gigabit per second for one hour between Fermilab's computing center in Illinois, and the DESY center in Germany.



PhEDEx data transfer management system histogram. PhEDEx couples resources from LCG, OSG and NorduGrid. (Image Courtesy Fermilab)