Open Science Grid

How to use it,
How to contribute to it,
How to collaborate with it.

Open Science Grid

Using the OSG

1. Obtain a Grid Certificate.
Users and administrators on the OSG need a personal grid (X509) certificate.
Getting one will take a couple of days, but it is essential for maintaining security across the Grid. Any computer on the OSG will also need a host certificate.

OSG provides an interface to request and obtain these certificates from the DOEGrids certificate authority, but many other certificate authorities are accepted by the OSG infrastructure.

Request a certificate at https://pki1.doegrids.org/.

- use "OSG" as your affiliation.
- select your appropriate Virtual Organization, or select "OSG" as the default.

2. Register with a Virtual Organization.
To use the OSG you will need to be registered with a VO. A list of VOs is at http://www.opensciencegrid.org/VO_List.

3. Install the Client Software
OSG provides a software stack for installation on systems that will submit grid jobs and for farms which will run grid jobs. Also included is software to manage data storage on sites accessible from the grid.

OSG uses the PACMAN packaging and distribution system.

- Instructions on how to install the OSG Client Software are available from the web.
  https://twiki.grid.iu.edu/twiki/bin/view/ReleaseDocumentation/ClientInstallationGuide
  The first thing installed is the Virtual Data Toolkit, which has installation instructions at
  http://vdt.cs.wisc.edu/releases/1.6.1/installation.html.

Running a Job on the OSG

Now you are able to test running a job on the OSG. For information on how to do this using Condor-G, the supported remote submission interface on OSG, see
https://twiki.grid.iu.edu/twiki/bin/view/Documentation/CondorScriptSamples.

The Grid Users Guide gives you more information on accessing and using OSG resources.
https://twiki.grid.iu.edu/twiki/bin/view/Documentation/GridUsersGuide

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Contributing to the Open Science Grid

- You may install the freely-available OSG software onto your computing and storage resources.
- Instructions on how to install and enable a compute cluster so it is accessible from the OSG infrastructure are at https://twiki.grid.iu.edu/twiki/bin/view/ReleaseDocumentation/CEInstallGuide.
- Storage systems are interfaced to the OSG through the Storage Resource Manager(SRM) interface. Two implementations of the server side software are available for use:
  - The Disk Resource Manager: available as an option with the default VDT install.
  - dCache: http://vdt.cs.wisc.edu/components/dcache.html.
- You may register the resource, together with its administrators and security contacts.
- You maintain operational control over contributed resources and enforce your own usage policies.

Collaborating with the Open Science Grid

- Provide access to your resources.
- Use the infrastructure for your research.
- Provide software needed by the stakeholders.
- Help with training and documentation activities.
- Participate in security, troubleshooting, or other OSG activity areas.

Help and More Information

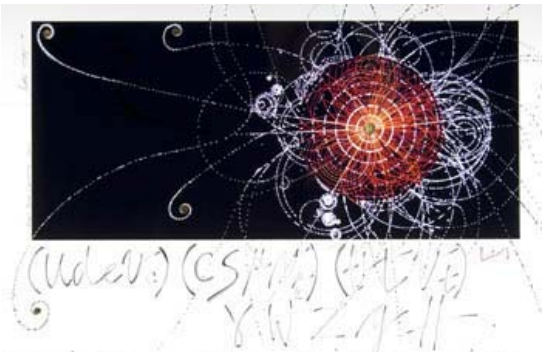
- Help is always available from the Grid Operations Center (GOC), goc@opensciencegrid.org.
- For OSG documentation, see https://twiki.grid.iu.edu/twiki/bin/view/Documentation/.
- Grid schools, organized by OSG and its partners, provide hands-on education for new and existing users, site administrators and application developers who are interested in learning to use the grid in more powerful ways.

Demo: CMS Analysis on the Grid

Feel the thrill of discovery as you use software and simulated data from the CMS high energy physics experiment to find the elusive particle, the Higgs boson!

The experiment data is placed onto the remote sites by a separate data distribution system. This is because the ultimate size of the datasets will be of the order of more than 100 TeraBytes. Once the data is available, jobs are dispatched to multiple sites and the resulting histograms and other output data are gathered back to the users submitting laptop for display.

This demonstration uses CRAB, a Python program, to create and submit the CMS analysis jobs into a grid environment.



Artist's visualization of a Higgs Boson collision.
Created for Niels Bohr Institute by artist-in-residence Mette Høst.

This demonstration of the CMS Remote Analysis Builder (CRAB) is available for CMS users at https://twiki.grid.iu.edu/twiki/bin/view/Education/CmsHiggsDemo.