Ways to Connect to OSG

Tuesday, Wrap-Up
Lauren Michael, CHTC
Overview

• Types of OSG submit points

• OSG Virtual Organizations
  (members of OSG consortium)

• Other OSG submit points
  ▪ OSG Connect
  ▪ OSG Connect Client
  ▪ OSG via XSEDE
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HTC Submit Point

learn.chtc.wisc.edu

Submit Server

HTCondor Pool
(or other Cluster)
OSG Submit Point: Direct

OSG entry point specific to VO

Submit Server

HTCondor Pool (or other Cluster)

OSG (>120 sites)
OSG Submit Point: Flock to Overlay

Submit Server

Submit Server

OSG entry point

specific to VO

OSG

HTCondor Pool
(or other Cluster)

OSG

 (>120 sites)
OSG Submit Point: Flock to Overlay

Submit Server

Submit entry point

HTCondor Pool
(or other Cluster)

OSG
(>120 sites)

osg-learn.chtc.wisc.edu

specific to VO

OSG User School 2017
OSG School Submit (1yr access)

Submit Server

learn.chtc.wisc.edu

HTCondor Pool
(or other Cluster)

OSG
 (>120 sites)

Submit Server

osg-learn.chtc.wisc.edu

OSG entry point

UW VO

OSG User School 2017
At UW-Madison’s CHTC

Submit Server

HTCondor Pool
(or other Cluster)

OSG entry point

UW VO

OSG
(>120 sites)
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Accessing an OSG Submit Point – 3 Ways

1. Local Virtual Organization (VO)
   - campus, national lab, or research organization that is part of the OSG consortium (OSG School through the “GLOW” VO)

2. OSG Connect
   - an OSG VO and submit server for academics no local VO
     - OSG Connect Client
       - software that allows users to remotely submit to OSG Connect from a home cluster

3. XSEDE
   - collection of HPC clusters available to U.S. academics via allocations of compute hours
Access Methods: Local VO

Submit Server

OSG entry point

Submit Server

HTCondor Pool

OSG

(>120 sites)
Other Access Methods:

Dispatch to Submit Server

Submit Server

OSG Entry Point

OSG (>120 sites)

XSEDE

Submit Server

OSGConnect

HTCondor Pool
(or other type of Cluster)
<table>
<thead>
<tr>
<th></th>
<th>Local VO</th>
<th>OSG Connect</th>
<th>Connect Client</th>
<th>XSEDE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Available to</td>
<td>users with a campus/org VO</td>
<td>affiliates of U.S. research orgs</td>
<td>users of cluster with Connect Client</td>
<td>users with XSEDE allocation</td>
</tr>
<tr>
<td>Cost</td>
<td>very unlikely</td>
<td>FREE</td>
<td>very unlikely</td>
<td>FREE (but need allocation)</td>
</tr>
<tr>
<td>Limit on CPU hrs</td>
<td>unlikely</td>
<td>NO</td>
<td>NO</td>
<td>YES (per allocation)</td>
</tr>
<tr>
<td>Local Help</td>
<td>very likely (local staff)</td>
<td>unlikely</td>
<td>likely (cluster staff)</td>
<td>possibly* (Campus Champion)</td>
</tr>
<tr>
<td>Online Guides</td>
<td>likely</td>
<td>YES</td>
<td>YES</td>
<td>limited</td>
</tr>
<tr>
<td>Submit Point Type</td>
<td>submit server (or direct OSG entry server)</td>
<td>direct OSG entry server</td>
<td>cluster submit node to OSG entry server</td>
<td>submit node to OSG entry server</td>
</tr>
</tbody>
</table>

*not all XSEDE Campus Champions will have experience with HTC or OSG*
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Virtual Organization (VO)

- institution or research project that is part of the OSG consortium
- accounts and access determined by local VO administrators
- most offer user support or specialized interfaces for their specific setup and population of users

How do I determine whether my institution is/has a VO?
User/Host Certificate
OSG provides services to issue user and host certificates for your resources. Link

OSG Operations
OSG Operations / Grid Operations Center at Indiana University provides operations service to the OSG. Link

2013 OSG User School
The 2013 OSG User School was held at the University of Wisconsin-Madison, June 24-27, 2013. The OSG provided a four-day training program that focused on hands-on activities and direct interactions with OSG staff and local STEM researchers who use large-scale computation.
What we do

The OSG provides common service and support for resource providers and scientific institutions using a distributed fabric of high throughput computational services. The OSG does not own resources but provides software and services to users and resource providers alike to enable the opportunistic usage and sharing of resources. The OSG is jointly funded by the Department of Energy and the National Science Foundation.

The Open Science Grid (OSG) supports science such as:

• High Energy Physics: CMS and ATLAS
• Nanoscience: NANOHUB
• Structural Biology: SBGrid
• Community VO (multiple sciences): Engage

What OSG is for

The OSG is primarily used as a high-throughput grid where scientific problems are solved by breaking them down into a very large number of individual jobs that can run independently. The most successful opportunistic applications run on the OSG share the following characteristics:

• The application is a Linux application for the x86 or x64 architecture.
• The application is single- or multi-threaded but does not require message passing.
• The application has a small runtime between 1 and 24 hours.
• The application can handle being unexpectedly killed and restarted.
• The application is built from software that does not require contact to licensing servers.
• The scientific problem can be described as a workflow consisting of jobs of such kind.
• The scientific problem requires running a very large number of small jobs rather than a few large jobs.

More about OSG

Please see https://twiki.opensciencegrid.org/ for more information regarding the OSG.

Please see Documentation for more details regarding available documentation.
The OSG Consortium builds and operates the OSG. Consortium members contribute effort and resources to the common infrastructure, with the goal of giving scientists from many fields access to shared resources worldwide.

Please see List of Virtual Organizations.

The Council governs the consortium ensuring that the OSG benefits the scientific mission of its stakeholders.
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The Executive Team manages the OSG project, which is organized into technical team areas.

The OSG is made up of Member Organizations who register with the OSG Operations Center and works with many Partner Organizations.

**Virtual Organization**

A Virtual Organization (VO) is a set of groups or individuals defined by some common cyber-infrastructure need. This can be a scientific experiment, a university campus or a distributed research effort. A VO represents all its members and their common needs in a grid environment. A VO also includes the group’s

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If you don’t know what VO you belong to or should belong to, please contact the **Grid Operations Center** for help.

Many VOs in the OSG address the specific requirements of their users with their own user support that provides more in-depth help than the OSG does. Additionally some VOs provide dedicated resources to the OSG that provide preferred access to their members. Some VOs provide a problem specific user interface to their members.

The OSG assumes that each user is preferably supported by their membership VO. Each VO is expected to register with the OSG and provide support for their members. OSG support is maintained through a VO representative for each VO rather than a member of a VO.

The OSG welcomes researchers that are not associated with a VO! They are welcome to join the OSG or Engage VO. The OSG VO is inviting all users who don’t need support running their application on the OSG. The Engage VO provides strong support for scientists who wish to bring their applications to the grid but who are unfamiliar with grid technologies.

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Using OSG through a VO

1. Determine whether there is a local VO for your institution/organization.

2. Get an account
   Contact the administrators to get an account on their glidein server (or submit node tied to a glidein server).

3. Submit jobs
   Follow site-specific guides and/or submit jobs as you have been at the OSG School.
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3. XSEDE
   - collection of HPC clusters available to U.S. academics via allocations of compute hours
• Essentially, a VO available to those without a *Local* VO
• Free for affiliates/partners of U.S. research institutions
• Submit from **OSG Connect server** or use **Connect Client** on another cluster (e.g. Clemson)
• Online guides, software support, and contact info
Details and hands-on exercises on Thursday morning!
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• **XSEDE:**
  a consortium of HPC clusters and other computational services available to academics in the U.S.

• free accounts, but you must request an XSEDE allocation of compute hours

• limited online guides specific to OSG-XSEDE, but similar to submission via osg-ss-glidein-submit
1. Sign up for an XSEDE account.

2. Request an OSG allocation via the XSEDE User Portal to request a startup (or long-term) allocation of compute hours for OSG.

3. Follow XSEDE’s guides for connecting to and using the XSEDE submit server.

4. Submit jobs as you have been at the school, making sure to indicate your XSEDE project name (allocation code).
Welcome to the XSEDE User Portal (XUP), the home on the web for XSEDE users! The XUP provides XSEDE users access to view and manage their accounts and allocations, as well as find information about and access the XSEDE services and resources.

Here's a few of the things you can do without even logging in:

- See XSEDE resource and service status
- View user news and upcoming events
- Find and register for training classes

Log in or create an account to get started!
Overview

An XSEDE allocation provides access to computing, visualization, and/or storage resources as well as extended support services at XSEDE service provider (SP) sites. An allocation is allotted to a researcher who serves as the principal investigator (PI) of an approved project. An account is the specific method through which an individual (or community, in the case of science gateways) logs in to a resource to utilize the allocation.

- **Computational Resources**: XSEDE SPs offer a variety of high-performance computing (HPC) and high-throughput computing systems for allocation. Computing platforms include clusters, scalable-parallel systems, and shared-memory systems with various CPU, memory, communication, and storage configurations. It is important that the platform you choose is a good match for your computational plans.

- **Visualization Resources**: SPs provide a variety of visualization resources and software services to the XSEDE user community. These systems provide a powerful way to interact with and analyze data at any scale. For complete information on available visualization resources, visit XSEDE Visualization.

- **Storage Resources**: Several XSEDE SPs host storage platforms providing services such as data management, data collections hosting, and large-scale persistent storage. XSEDE will provide storage allocations both in support of compute/visualization usage and storage independent of these.
Below are links to each resource's user guide. Each guide provides information and instructions on system access, computing environment and running jobs specific to that resource. Resources are listed alphabetically within each resource type: High Performance Computing, High Throughput Computing, Visualization, Storage systems, Special Purpose systems, Testbeds and Software.

XSEDE is committed to providing quality, useful documentation to its users. Please feel free to leave your suggestions and comments at the bottom of each user guide.

High Performance Computing
- Blacklight (PSC)
- Darter (NICS) **New!!**
- Gordon (SDSC)
- Gordon ION (SDSC)
- Keeneland (Georgia Tech) **offline Dec., 2014**
- Mason (IU)
- Lonestar (TACC) **offline Dec., 2014**
- Stampede (TACC)
- SuperMIC (LSU) **coming June, 2014**
- Tretyak (TACC)

High Throughput Computing
- Open Science Grid

Software Guides
- Job Management with GRAM5

Scientific Visualization
- Maverick (TACC) **New!!**
- Nautilus (NICS)

Storage Systems
- Data Supercell (PSC)
- HPSS (NICS)
- Data Oasis (SDSC)
- Ranch (TACC)
- XSEDE Wide File System (XSEDE)

Special Purpose Systems
- Quarry (IU Gateway Web Services Hosting System)

Testbeds
- FutureGrid (distributed)
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Questions?

• Feel free to contact me:  
  – lmichael@wisc.edu

• Next: Evaluate today!

• More on Thursday:  
  – Learn more about OSG Connect and supported software