Open Science Grid (OSG) Operations and Systems Engineering (OSE) Services
Version 2
Open Science Grid Project
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OSG # 1030

OSE Services

The Operations and Systems Engineering (OSE) team is responsible for a suite of production and support services that form a key part of the overall OSG fabric of services. A listing of these services is provided below according to the associated Service Level Agreements defined for each service. Following this is a broader categorical description of these services and plans for future improvements.

Front Line Support -- 24x7 Response

- Grid Operations Center Service Desk

Information and Discovery Services -- Critical Priority (24x7 Response)

- BDII – Dynamic resource publishing and aggregation service
- MyOSG – Presentation services and information topology for the OSG community

Software Cache & Resource Availability/Health Monitoring -- High Priority

- ReSS – Dynamic Resource Selection Service for discovery and job dispatch
- Certificate Authority list Distribution and OSG Software Cache from which is it distributed.
- RSV– Resource availability monitoring and reporting the World Wide LHC Computing Grid as specified by MOU'd commitments.

Accounting, Ticket Tracking, Displays, Job Submission Systems .. -Normal Priority

Services Used by Multiple VOs:

- OIM – Registration database.
- OSG Display - high level summary display of jobs run and data movement across the OSG.
- Gratia – central accounting information repository.
- Ticketing Web Interface and Notification Services.
- WLCG Comparison Reports - Reports that enable the MOU'd commitments to be reported and checked.
- Integration BDII – Information services for the Integration Testbed.
- GOC FP Ticketing – Footprints ticketing infrastructure.
- Glide-In Factory – Dynamic Resource Allocation (Pilot based jobs).
- Metrics plots – user interface to accounting information and summary plots.

Standard IT Services:

- TWiki – collaborative workspace

- Document Repository – official document repository (including SOWs, Budgets etc)
- OSG Web Pages (www.opensciencegrid.org)

Services Used by Specific VOs:

(Level of service agreed upon by the VO and its users. These are services for OSG owned VOs.

- MIS VOMS – monitoring VO management service
- Engage VOMS – Engage VO management service
- Engage Matchmaker – Engage VO resource selector
- OSG VOMS – OSG VO management service.

Service Descriptions

Front line support to resource providers and VOs must be provided to ensure smooth operation of the OSG fabric of services. 24x7 telephone, email, and web support for critical services and security incidents is provided by the OSE team. Additional support services such as communication, troubleshooting and follow though to problem resolution are provided to ensure issues are resolved in a timely manner. This service is also offered as part of the Campus DHTC Infrastructure.

Discovery and information services are a crucial part of the DHTC pipeline that allow resource providers to dynamically publish detailed information about their sites that can be immediately used by the community to submit jobs and initiate data transfers. As critical components, certain discovery services are maintained in failover environments since even a short interruption demonstrably impacts data movement and computational throughput as jobs may not be matched to resources.

Software caches are maintained for the OSG community to download the latest versions of the VDT toolkit as well as the latest OSG configuration and security templates. Change management is strict for these repositories as defects can have system wide production repercussions.

At the center of most services is the **OSG Information Management (OIM) database** describing the OSG resources and it's participants. This is a registration service that collects administrative and semi-static technical data which is then used to define the topology of the OSG. It is used for both human contact information (phonebook) and automated operational services to determine what OSG resources should be published to the community.

The Resource and Service Validation (RSV) service allows us to produce near real time health status information for the OSG alerting the local administrators and Operations personnel of problems within the OSG resource community. We can also track downtime, create tickets based on health reporting, track historical health, and transfer information to the WLCG and funding agencies.

Dynamic resource allocation is a newer service currently being used by a few VOs to dynamically select and access DHTC resources. This type of service minimizes the need for VOs to directly interact with OSG resources.

Communication and Documentation services enable information sharing and community building. The ticketing system enables formal channels for tracking issues and resolutions as well as text alarms to directly alert OSG Operations, CMS and Atlas personnel when production problems are detected. Automated ticket synchronization across ticket systems of different support organizations has been pioneered by the OSE team and is included in these services.

Information and Security services allow definition of the OSG topology and active views of conditions on resources. Topology as defined in the original OSG Blueprint document is implemented to ensure all other services have access to a definitive listing of what resources and members are actively participating in the OSG. The security services allow for monitoring of patch levels and the ability to quickly alert participant of potential issues.

Each of the above listed services is essential if the DHTC community is to maintain the reliability needed to attract and sustain scientific research communities. In sum, they form a crucial part of the OSG fabric of services. Hosting these services means that VOs and Resource Providers do not need to each set up and maintain their own set of services. This is part of the economy of scale that OSG provides.

Over the next five years, state of the art DHTC Operations will be advanced on multiple fronts:

- OSE will host additional production quality services and continue to scale existing services to meet the steadily increasing demand of the stakeholders. It will also add new services such as a top-level BDII that will enable US CMS and US Atlas to access global WLCG site data locally. Continuous improvement of the reliability of existing services is also of high priority.
- In addition to providing more services, OSE will improve DHTC management capabilities that enable sites and VOs to collect and aggregate data they are interested in, not just for site monitoring, but also for detailed job monitoring. These services will provide real time feedback on how resources are responding to workloads. The goal is that problems and bottlenecks can be understood before they effect production.
- OSE will work with cloud researches at collaborating institutions to provide virtualized services to campus and regional grids. These services include monitoring, reporting, information, and communication services as needed by our partners.
- The current standalone communication systems (TWiki, DocDB, Web Portal) used for documentation and presentation will be merged into a single collaborative environment using advances in social networking technologies and

documentation environments to provide a single point of interaction for all collaborators.

- OSE is working to align it's service strategy with standard ITIL practices, this includes SLAs, the Continuous Service Improvement (CSI) model, configuration management, and change management procedures. This will continue the effort to improve the services that we offer to our community and improve the overall economy of scale.