Open Science Grid

Key Project Drivers - FY10

Ruth Pordes, June 15th 2009

The top 10: Key Goals for FY10

Top 5:

- Support for LHC user running, support for Tier-1, Tier-2s and focus on Tier-3s.
- Support software, analyses, and data management for LIGO based on requests.
- Easier and more usable incremental upgrades of software for “any” reason – security, faults, functionality.
- Support for other OSG stakeholders requests and increased number of non-physics and campus beneficiaries in OSG.
- Timely and appropriate security and operational response to problems, as well as records of expectations, including SLAs and Policy, across the board.

Next 5:

- Continued improved technical and operational support for data storage use, access and policies.
- Wider adoption of Pilot based workload management, progress in transparency between campus & wide area resources, policies for improved usability & efficiency.
- Articulation and implementation of Security authorization, identification & policy.
- Success of OSG Satellites for moving the infrastructure forward
- Better understanding of role of (separately) MPI, Virtual Machines and Cloud resources and policies in the OSG environment.

Internal Items needing to be Addressed

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- Put things in your program of work that you think need doing without regard to the effort available. I would also prefer any holes you are worried about get included in the area plans rather than left to chance later.
- Meet responsibilities as part of Management of an effective project – update WBS, make reports, attend Area Coordinator meetings etc as expected.
- Area Metrics.
- Documentation.
- Integration of Training.
- Communication and Publishing.
- Planning for the Future of OSG.

Additional Info

LIGO

Application needs:

- Full support of E@H and Inspiral Analysis across the majority of OSG sites.
- Support for data movement and placement on OSG sites for LIGO applications.
- Evaluation of another LIGO science application on the OSG.

Middleware needs:

- Support for native packaging and source distributions.
- Strengthen connections to Condor and Pegasus in OSG support.
- Integration of and support for LIGO security infrastructure.

Service needs:

Critical?	
Y	Security monitoring, incident response, notification and mitigation
Y	Accounting -Integration of Einstein@home accounting with OSG accounting reports
Y	Integration and system validation of new and updated middleware.
Y	Ticket Handling
Y	Effective Grid-wide job execution of E@H and Inspiral Analysis
Y	Reporting of trends in usage, reliability, job state, job monitoring

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WLCG

- US ATLAS and US CMS will be taking data from October 2009.
  - We must be communicative, responsive and flexible to needs on the ground – Tier-2, Tier-3 and Tier-1.
- WLCG will continue operations
  - We must continue to work closely with the US ATLAS and US CMS management to understand, react sensibly to and contribute to WLCG requirements and decisions.

US ATLAS and US CMS resource increase

From WLCG MOU.

(says updates to US CMS T2 numbers will be made after initial data taking.)

Summary of US ATLAS Tier2s	**2009**	**2010**	**%Increase**
CPU (kSI2K, HEP-SPEC06)	6,369 - 25,476	30,724	20%
Disk (Tbytes)	2,467	3,067	25%
Summary of US CMS Tier2s			
CPU(kSI2K, HEP-SPEC06)	7,700 - 31,000	54,000	76%
Disk (Tbytes)	2,520	3.990	58%
ATLAS BNL Tier-1			
CPU(kSI2K, HEP-SPEC06)	7,337- 29,348	51,060	74%
Disk (Tbytes)	5,822	11,637	100%
Tape (Tbytes)	3,277	6,286	92%
CMS FNAL Tier-1			
CPU(kSI2K, HEP-SPEC06)	5,100 – 20,400	44,400	117%
Disk (Tbytes)	2,600	4,100	57%
Tape (Tbytes)	7,100	11,000	55%

From review..

Continued Challenges:

- Scientific productivity argument could be presented in a more compelling manner.
- Can't rely on interaction with VOs to effectively represent what's happening in end user community.
- Didn't tell OSG's excellent story in a cohesive way.

Accomplishments:

- OSG is a very critical piece of the infrastructure for the LHC and potentially important for LIGO.
- This initiative has significant potential value for other large-scale science endeavors.
- Clear that model for incorporating new HW resources can be successful – i.e. enabled CDF resources for D0 re-processing.

Futures Planning – proposed & *status*

Phase 1 by June 30, 2009 – *delayed by a few weeks*

- Gather and document requirements & expectations from major stakeholders for 2010 to 2015
- Solicit guidance from OSG Council on key directions for future

Phase 2 by Aug 2009 Face-to-Face Council Mtg – *2-4 page plan overall – not Each*

- 2-page plan for each OSG work area (or functional unit)
- List/abstract of satellite proposals

Phase 3 by Dec 2009

- Analysis => outline for proposal
- Document Architecture
- Identify particpating senior personnel (and institutions)

Phase 4 at March 2010 All Hands Meeting

- Endorsement of proposal by stakeholders
- OSG Future proposal to NSF/DOE by March 30, 2010

WLCG MOU Goals - OSG support for LHC Tier-2s continues

- http://lcg.web.cern.ch/LCG/planning/planning.html
- provision of managed disk storage providing permanent and/or temporary data storage for files and databases;
- provision of access to the stored data by other centres of the WLCG
- operation of an end-user analysis facility
- provision of other services, e.g. simulation, according to agreed Experiment requirements;
- ensure network bandwidth and services for data exchange with Tier1 Centres, as part of an overall plan agreed between the Experiments and the Tier1 Centres concerned.
- All storage and computational services shall be "grid enabled" according to standards agreed between the LHC Experiments and the regional centres.

Service	***Maximum delay in responding to operational problems***		***Average availability measured on an annual basis***
	Prime time	***Other periods***	
End-user analysis facility	2 hours	72 hours	95%
Other services	12 hours	72 hours	95%

WLCG MOU - OSG provides a Grid Operations Center

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Annex^3.4. Grid Operations Services

- This section lists services required for the operation and management of the grid for LHC computing. This section reflects the current (September 2005) state of experience with operating grids for high energy physics. It will be refined as experience is gained.

- ***Grid Operations Centres*** – Responsible for maintaining configuration databases, operating the monitoring infrastructure, pro-active fault and performance monitoring, provision of accounting information, and other services that may be agreed. Each Grid Operations Centre shall be responsible for providing a defined sub-set of services, agreed by the WLCG Collaboration. Some of these services may be limited to a specific region or period (e.g. prime shift support in the country where the centre is located). Centres may share responsibility for operations as agreed from time to time by the WLCG Collaboration.

- ***User Support*** for grid and computing service operations:
  - First level (end-user) helpdesks are assumed to be provided by LHC Experiments and/or national or regional centres, and are not covered by this MoU.
  - ***Grid Call Centres*** – Provide second level support for grid-related problems, including pro-active problem management. These centres would normally support only service staff from other centres and expert users. Each call centre shall be responsible for the support of a defined set of users and regional centres and shall provide coverage during specific hours.

WLCG Operations Centers in the US

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Indiana University iGOC	
Scope of the service	Open Science Grid Operations Centre
Period during which the centre operates as the primary monitoring centre	24 □ 7 □ 52

BNL, Fermilab	
Scope of the service	US-ATLAS and US-CMS Virtual Organisation Support Centre respectively
Period during which the centre operates as the primary monitoring centre	24 □ 7 □ 52

US LHC Service Needs

Critical		Interface to WLCG?
Y	Security monitoring, incident response, notification and mitigation	Collaboration with EGEE, WLCG
Y	Accounting - CPU, Storage & Efficiencies	Yes
Y	GOC BDII Information System with accurate information published by all OSG sites that support US CMS VO.	Reliability publish accurate information to WLCG BDII
Y	US ATLAS specific accounting reports	No
Y	Reliability and Availability monitoring	Yes
Y	Integration and system validation of new and updated middleware.	Test interoperation of new releases with EGEE
N	User/VO monitoring and validation using the RSV infrastructure	Perhaps
Y	Ticket Handling	Bi-directional:US LHC <-> OSG <-> GGUS, including alarms.
Y	SRM V2.2 Storage at Tier-2s	Track WLCG deployments.
Y	CE interface to meet experiment throughput needs	
Y	Reporting of trends in usage, reliability, job state, job monitoring.	
Y	Grid wide Information system accessible to ATLAS applications.	No
N	Troubleshooting and user support, especially support from centralized expert group for use of storage on OSG sites	
Y	SRM V2.2 Storage at Tier-2s	Track WLCG deployments.
Y	CE interface to meet CMS throughput needs based on GlideinWMS workload management.	
Y	Reporting of trends in usage, reliability, job state, job monitoring. Site level dashboard of usage, job state, efficiencies and errors across US CMS OSG sites.	

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Run II Needs

- Continued support for opportunistic use of OSG resources for simulation needs.
- Maintain deployed middleware and services compatible with existing experiment software.
- Throughput
  - DZero : 5 M events/week
  - CDF: 5 M events/week?

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STAR

- Support for xrootd on OSG sites.
- Support for VMs and use of Commercial Clouds.