



# OSG Area Coordinators

Network Monitoring Update: **May 25 2016**

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# Overview of Today's Meeting

- I want to do something a little different for today's AC meeting.
- Given that we just finished our planning retreat and that we have identified some important directions for OSG networking I have created a document outlining plans for year-5 AND the possible implications (to be discussed) for other areas in OSG.
- See the following Google doc (which you should have edit capability on):

<https://docs.google.com/document/d/1FzmXZinO4Pb8NAfd5SWUzaAFYOL23dt66hQsDmaP-WI/edit?usp=sharing>

# Networking Area Goals Year 5

1. **Maintain / update the OSG networking services / documentation.**
2. **Reach out to non-WLCG OSG sites; Integrate those interested:**
  - Advertise that OSG is ready to help sites with networking issues via:
    - OSG web pages
    - Targeted email (Cyberinfrastructure list, perfSONAR user list, etc)
    - Via interactions with sites at conferences and meetings.
  - Encourage as many NSF CC\*xxx sites as possible to integrate their perfSONAR instances into OSG networking; OSG will provide them a mesh-configuration and gather their data.
  - Provide Soichi's standalone mesh-configuration tool for use by campuses and VOs.
3. **OSG will create a network alerting service to find “obvious” network problems**
  - This will involve the creation of a suitable analysis pipeline such that perfSONAR data can be analyzed on a timescale of every 1-2 hours.
  - Obvious problems include significant decrease in bandwidth between a source and destination or continuing significant packet loss along a path or correlated with a specific site.
  - Actual alerts will be issued by GOC staff based upon alarms they receive.
4. **Enable automated alerting (email, SMS) on well identified alarms.**
  - This is a “reach” goal for the year but I think it should be feasible
  - Requires accurate, synchronized mapping of sites to contacts
  - Tunable pattern of alerts (e.g., 1 alert, wait 1 day and alert if problem continues, then every 3 days until fixed)

# Manpower and Resources

- Many of the goals for OSG networking will require help from other areas in OSG; primarily in **Technology, Operations, Campus Grids** and **Software**.
- For each area I will discuss our current draft estimate of the **type** of work needed. The actual amount of effort will require discussion and negotiation with each area coordinator.

# Technology Area Collaboration

- The primary help required here is in **identifying suitable technologies** and **creating prototypes** for the following items:
  - **Network Data Analysis Pipeline:** Technical design of infrastructure to regularly (on a 1-2 hour cadence) analyze OSG bandwidth and packet-loss data to **alarm** on “obvious” problems along specific paths or associate with specific sites. This likely involves the implementation of a suitable time-series database, a message queue to feed it data and an analysis framework to evaluate the data for problems.
  - **Automated Alerting System:** Technical design of infrastructure to act on suitably chosen alarms by emailing the relevant contact. System should allow fine-grained control of when to alert. Suggested system is **Check\_MK**. Will also need the ability to map sites (and/or perfSONAR instances) to specific email contacts which are regularly updated. Likely will need to involve Operations in this effort.

# Operations Area Collaboration

- Much of the OSG networking effort is becoming “operational”. We will need to work with Operations in the following areas
- **A recruitment campaign:** We have long planned on actively recruiting sites to participate in OSG networking but have not moved beyond the WLCG sites. We need to work with Operations on actively soliciting new participants outside WLCG (in conjunction with Campus Grids/User Support)
- **Initial alerting of sites based upon MaDDash and alarming results:** Until we have a reliable automated alerting system in place we will need to utilize GOC/Operations personnel to issue alerts based upon easily identified network issues. This will require some additional training and the development of a set of guidelines about when and how to alert.
- **Creation and maintenance of site/perfSONAR contact emails for alerting purposes:** As we move toward alerting on network problems we need to ensure we have the right mapping between perfSONAR instances, sites and contact emails. We need to identify a procedure (with Technology) to produce and maintain a list of contacts that can be used when problems are found.
- **Testing and operation of automated alerting system:** Once Technology/Networking have prototyped an automated alerting system, it needs to be migrated into production. It should replace most of the work previously done manually.
- **Triage of initial network tickets:** We will be advertising that OSG is open to supporting tickets for networking issues. The first point of contact should be a ticket opened in OIM and we need to be ready to handle network related tickets well. This should include:
  - Training in perfSONAR and OSG network resources to better respond to tickets
  - Identification of appropriate procedures when network issues are suspected
- **Support for integrating new OSG sites into the OSG networking infrastructure:** As we recruit new (particularly non-WLCG) sites, we have to have a check-list for what is needed to integrate them into OSG networking. This is primarily the following:
  - Documentation for how to properly install and configure perfSONAR
  - Enabling the use of the mesh-configuration from OSG
  - Enabling OSG to have access to the perfSONAR measurement archives at the site
  - Providing (and updating) relevant contact information

# Campus Grids / User Support

- As we try to expand OSG networking beyond WLCG sites we will need the involvement of the Campus Grids / User Support area in the following:
- **Advertising OSG Networking:** During year-5 we are targeting the inclusion of 15-30 (or more) new non-WLCG sites to participate in OSG networking. Participate primarily means that perfSONAR instances at those sites take advantage of our OSG mesh-config to define (some of) their tests and that OSG collects and alerts on their networking metrics. To do this, we would like Campus Grids / User Support to inform sites about OSG networking and to actively recruit their participation. This may additionally include pointers to OSG networking documentation in any instructions sent to sites.

# Software Area Collaboration

- For the software area we will need help in making software identified available to Operations and to end sites as follows:
  - **Packaging and testing of standalone Mesh-Configuration GUI:** Soichi has developed a standalone version of the perfSONAR mesh-configuration utility which allows campuses and VOs to organize and manage their perfSONAR instances. This needs packaging and testing such that it can be provided to OSG users.
  - **Software needed for Operations:** Not sure if this is required but as we develop, prototype and deploy software for OSG networking we may need some support from the Software area.



# Milestones (Draft)

- The corresponding **milestones** from the above goals for year-5:
- Continued support and maintenance of existing services --- Ongoing
  - Must have data lifecycle management process defined and tested for our network datastore --- November 1, 2016
  - Identification of suitable long-term data storage for OSG Networking data --- December 1, 2016
- Outreach to non-WLCG Sites for Networking --- May 30, 2017
  - Creation of initial OSG web pages informing sites of OSG services in networking --- July 30, 2016
  - Initial release of Soichi's standalone mesh-configuration utility packaged and available --- September 30, 2016
  - Definition of support process for integrating new sites and triaging tickets in OSG production --- September 15, 2016
  - Recruiting of 5 new sites for OSG networking -- August 31, 2016
  - Additional 5 sites integrated into OSG networking --- October 31, 2016
  - Additional 5 sites integrated into OSG networking --- April 1, 2017
- Creation of OSG alarming and alerting system --- November 1, 2016
  - Need technical design of suitable analysis system based upon existing time-series technologies and proposed data and analysis workflows --- August 31, 2016
  - Initial implementation running on OSG network data --- September 30, 2016
  - Web interface to alarms available --- October 15, 2016
  - GOC operations monitoring alarms and alerting when problems warrant it --- October 31, 2016
- Automating Alerting for OSG Network issues --- May 30, 2017
  - Identify suitable open source software infrastructure to provide automated alerting based upon time-series analysis of OSG data --- October 1, 2016
  - Implement prototype of system --- November 1, 2016
  - Define and enable process to import site contact information for each perfSONAR instance that is in OSG --- November 1, 2016
  - Verify prototype effectiveness and switch to "production" --- December 1, 2016
  - Ongoing tuning and monitoring of automated alerting --- May 30, 2017

# Questions or Comments?

## Negotiations ??

### Thanks!

# URLs of Relevance

- OSG Network Datastore Documents
  - Operations [https://docs.google.com/document/d/11144BSO-88M0cLMMjKcKMIE-Q5s2IX-w3IYI-0Pn\\_08/edit#](https://docs.google.com/document/d/11144BSO-88M0cLMMjKcKMIE-Q5s2IX-w3IYI-0Pn_08/edit#)
  - SLA <https://twiki.grid.iu.edu/bin/view/Operations/PSServiceLevelAgreement>
- Network Documentation  
<https://www.opensciencegrid.org/bin/view/Documentation/NetworkingInOSG>
- perfSONAR adoption tracking: [http://grid-monitoring.cern.ch/perfsonar\\_coverage.txt](http://grid-monitoring.cern.ch/perfsonar_coverage.txt)
- Deployment documentation for both OSG and WLCG hosted in OSG (migrated from CERN)  
<https://twiki.opensciencegrid.org/bin/view/Documentation/DeployperfSONAR>
- ATLAS Analytics: <http://cl-analytics.mwt2.org:5601/>
- Mesh-config in OSG <https://oim.grid.iu.edu/oim/meshconfig>
- Beta Mesh-config: <https://ps-test.sca.iu.edu/meshconfig/>
- MadAlert: <http://madalert.aglt2.org/madalert/diff.html>
- perfSONAR homepage: <http://www.perfsonar.net/>