From phone call with Michael Ernst July 2010:

Year 5 requests match Year 4 with addition of:

Short term need for SE only information publishing.

Proceed with deployment of CREAM by the 4th quarter of 2010

**Year4 ATLAS to OSG Work Requests**

The purpose of this document is for ATLAS to provide concrete feedback to OSG with regard to expectations from OSG in year 4. We divide this up into particular areas, and a prioritized list of work items.

**Note:**

This is a living document. It will be reviewed roughly once every 3 months throughout year 4 to indicate what has been accomplished, missed, and record changes. We identify as accomplished by marking things in green, ongoing things in black, and missed in red. Red things turn green as they are completed.

We note additions by prefacing them with a date.

We note things that get dropped by prefacing them with a date, and changing to gray.

Global Issue:

Before addressing these points in detail there is one global issue we would like to raise. Looking at OSG as a coherent system we realize that OSG has no architect. Consequently there is no coherent development; ideas and “requirements” voiced by the VOs may be heterogeneous and ad-hoc, if not random. We feel that OSG could play an important and healthy role in the coordination of middleware component and services development as they are needed in the (US) ATLAS facilities. We feel OSG should step up and lead the effort of building a coherent and sustainable distributed computing infrastructure in the U.S. which is interoperable with similar infrastructure deployed in other regions - in particular in regions where the EGEE middleware (or its successor) is used to support LHC computing.

As to particular areas:

1. Architecture, reliability and scalability of the OSG gatekeeper
   1. OSG is still providing a fairly outdated GT2 based gatekeeper with a number of severe limitations. We encourage OSG to go for more diverse approach providing a small selection of gatekeepers based on more recent technology (e.g. as done by EGEE w/ the CREAM CE or the GT4/ web services-based one). This would help address other important restrictions currently observed as to e.g. “SubjectAltName” for certificates not being supported in the GT2 based CE. US ATLAS believes a CE based on web services and database technologies to maintain state (to actually make the CE stateless and scalable) rather than configuration files is the right way to go.

*<WBS 1.0.9.1; Livny; Status: The technology group has had several discussions about gatekeeper scalability. The result of this is that the Software Tools Group has prioritized the rollout of CREAM and/or GRAM5-based gatekeepers. Reporting on the progress on that will have to be with them.>*

* 1. CondorG:   Scalable Globus (or scalability without Globus), robustness and scalability on the gatekeeper. This point is very important in particular in the context of the US ATLAS pilot based workflow management system PanDA.

*<WBS 1.0.9.1; Livny; Status: Work is ongoing in this area>*

1. Storage management and storage management interfaces
   1. Scalable and reliable storage is our #1 risk at the moment.   For OSG this might mean really focusing on the srm+gridftp piece.   In dCache, this comes bundled with everything else.  With other backends (xrootd, hdfs, gpfs) then what we have is the combination of bestman (for srm) and globus (for gridftp).   It seems OSG should perhaps reduce their storage scope and focus on hardening those elements.

< WBS 1.1.3.4, 1.1.11.3-6; Levshina; Status: *We are concentrating on various issues:*

* *Including chimera into vdt-dcache release that should help site admin to migrate from pnfs, working on dcache transfer and storage probe to make them more scalable for big sites*
* *Working with Atlas T3 sites to come up with suitable  xrootd configuration as well as BeStMan-gateway*
* *Improving vdt installation and simplifying configuration process for storage packages*
* *Improving documentation for software releases*
* *Working on inclusion of xrootd transfer and storage probe in VDT*
* *Adding new tests for storage related software (e.g lcg-utils, fts-client)>*

1. Accounting and publishing
   1. With Gratia probes deployed on computing and storage elements directly reporting to the central accounting server there are concerns as to the scalability of this service. We recommend to implement a clear, hierarchical structure – as, for example, EGEE does where probes run on each resource and publish the information to a site aggregator.

*<ATLAS staff can implement with help from OSG, Fraser; Status:*

* *OSG is actively encouraging sites to set up their own Gratia collectors. Currently there are five sites that are now running their own Gratia collectors in addition to the central one at OSG. These are: OU, UCSD, Fermilab, UCSD, and Nebraska. There are several additional sites including the BNL T1 that are considering deploying separate Gratia collectors as well.*
* *FNAL has upgraded the hardware on its Gratia collectors. This new system, coupled with ongoing improvements to the Gratia system itself is capable of accommodating roughly 5 to 10 times more data than it is currently receiving.*
* *The OSG is also exploring strategies to bunch the data transfer records, since OSG does not need to collect data for each transfer separately. If implemented, this could reduce the number of records coming into the Gratia server by two orders of magnitude or more and free up additional overhead room on the existing systems.>*

1. Service and capacity monitoring
   1. Service availability and resource capacity (CPU and storage) monitoring and forwarding of results to WLCG. This must be highly reliable for obvious reasons and has been a struggle so far. The mechanism currently used to transfer data obtained from resources installed as part of the OSG facility is vulnerable and needs a lot of attention from developers, GOC and facility personnel.

*<WBS 1.2.1.2, 1.2.2.2 & 1.0.1.1.1; Quick, Fraser; Status:*

OSG Operations has worked with WLCG SAM Operations to improve the reliability of the RSV messaging by providing updates to the ActiveMQ messaging service at the GOC and CERN. This along with increased experience in running this transfer service and the increasing maturity of the RSV software have made the RSV record transfer to WLCG a reliable and stable service. *>*

1. End User facility support (Tier-3)
   1. According to the US ATLAS Tier-3 report there will be a sizable number of different Tier-3 sites coming up in the next ~12 months. The support model US ATLAS has in mind counts heavily on OSG support. Though there is an OSG liaison (Dan Fraser) chairing a working group it is not clear as of today what OSG’s contribution to operating Tier-3’s will be. Given the number of expected Tier-3 sites this could impose a significant scalability problem – not just technically but also organizationally (e.g. support staff at the GOC and middleware layer, cyber security and more).

*<WBS 1.0.2.2; Fraser; Status:*

*OSG has worked on a number of fronts to facilitate the new T3s that are planned to come online for Atlas:*

* *Tier-3 Documentation -- OSG has worked directly with the Atlas Tier-3 coordinators (Rik Yoshida, and Doug Benjamin) on the early stages of the Tier-3 documentation that will be used to guide new T3’s coming online and facilitated meetings with the Condor team to help get this jumpstarted. Additionally we have developed an entirely new set of extensive reference documents that the Atlas T3 coordinators are utilizing as they create a specific implementation for Atlas sites. This document is located at* [*https://twiki.grid.iu.edu/bin/view/Tier3/WebHome*](https://twiki.grid.iu.edu/bin/view/Tier3/WebHome)*. In writing this document we have expanded the normal range of OSG documentation to include Condor, as well as limited NFS, and networking capabilities, and the installation of the Xrootd file system (below).*
* *Xrootd – OSG has worked to integrate Xrootd into the VDT and also created packages so that it can be deployed with BeStMan. New reference documentation has been created for use by the Atlas Tier-3 coordinators that incorporate specific requests from the Atlas team (e.g. use of checksums and space tokens.)*
* *Atlas Deployment Infrastructure**– OSG has worked to provide the WLCG Client tools for use in the newly adopted Atlas deployment infrastructure. Additionally, we are working on Atlas specific changes in the VDT to accommodate the strict versioning required by Atlas. This is an ongoing effort.>*

1. Obtaining and managing certificates
   1. Obtaining, using and renewing certificates is currently awkward, even experienced users are struggling. US ATLAS facility staff has made several attempts over long periods of time (years) to improve procedures as they are currently implemented in DOE Grids. We consider these attempts as failed because those who are running the service are unresponsive to our requests. However, with the expected large user community having to do their data analysis on the grid improvements to these procedures and the usability of the authentication system in general needs urgently to be improved. To shield the user from the technical and procedural details other communities are using portals OSG, in collaboration with the VOs, may want to consider this option (PanDA could be such a portal).

*< WBS 1.0.9.1; Livny; Status:. OSG is actively working on the "Obtaining and managing certificates" items. We have already written a certificate application “wrapper" for OSG for the DOEgrids web GUI interface.*

1. Grid identity mapping
   1. Glexec is the proposed method to map the end user’s identity once her job is being executed on a compute server. This is a core/mandatory functionality that is already deployed in regions using the EGEE middleware. In OSG there is, according to our understanding, currently no method available that allows to centrally deploy the service using a OSG s/w deployment method. A rather manual method has to be used to install the package on each worker node, since OSG is using shared file systems for such installations which are not applicable in this case. This is a packaging and deployment issue that needs to be addressed.

*<STG#37; Roy; Status: VDT is working on it. An initial milestone has been shipped to ATLAS. We are awaiting feedback / comment on it. We continue work on refining it to both improve it and to meet other goals.>*

1. OSG middleware packaging and distribution
   1. Part of the OSG facilities program is OSG with the VDT serving as the integration and delivery point for core middleware components. Given there is, after several years, very limited (though very efficient) effort available it is not clear how this will scale in the future, especially when reality will hit with real data analysis requirements being better understood requiring us to react in a flexible and nimble way to necessary changes.

*<xx4; Roy; Status: So far this year, we've kept up with most of their requests--we've been keeping up with Xrootd, Bestman, and the FTS clients needs in particular. We're a bit behind on native package. I think we can say that we're mostly keeping up, and it's not clear we need any real changes.*

Submitted by Michael Ernst (July 12, 2009)