# OSG / XSEDE Preliminary Technical Plan

## Introduction

This document describes a technical plan to start deploying OSG as an XSEDE service provider; the basic plan is to present a set of OSG resources as a single virtual resource for inclusion into XSEDE as a resource provider. The base interface for this resource abstraction is a dedicated interactive login host which will present XSEDE users with a user experience similar to the traditional XSEDE resources. The login host, related technologies, and features of the complete system, are described below.

The plan, agreement on the plan, and implementation are constrained by the following dates:

**Dec 4th, 2011** XSEDE allocation committee (xRAC) meeting in San Diego. OSG representatives will be at the meeting and present a high level overview of the virtual OSG resource described in this document.

**Dec 15th, 2011** Allocation request submission opens up. A user guide for OSG based on this plan needs to be available on the XSEDE so that users can see what is available and if the resource matches their computational requirements. Submission closes Jan 15th, 2012.

**Mar 15 th, 2012** Systems has been implemented and tested in “friendly user” mode.

**April 1st, 2012** Awarded allocations begin. The infrastructure needs to be fully implemented and tested.

## Plan

1. **OSG will provide a dedicated interactive login host for job management.** A login host is the expected interface to a resource in the XSEDE infrastructure. In the OSG case, the login host would not only be for users’ workload management, but the host would also be the aggregation point for OSG resources, and handle accounting for both XSEDE and OSG. The machine should preferably be hosted at the GOC. For ease of reference later, we call this this the OSG-XSEDE Submit host.
2. **The OSG-XSEDE Submit host will be integrated with the XSEDE allocation database for user logins from the XSEDE portal.** XSEDE provides a software package, AMIE, which sends packages with information about new allocations, and users added to and removed from existing allocations. These packages will be translated to user creation / disabling commands and updates to the local grid-mapfile. Logins from the portal are done using GSI-SSH using automatically generated certificates loaded when a user logs in to the portal.
3. **AMIE will be used to send usage records to the XSEDE central database.** An AMIE probe will be running on the OSG-XSEDE Submit host and collect usage information about jobs. All jobs submitted will be required to have a valid XSEDE allocation to charge the usage to. Usage records will be summarized to not overwhelm the central database with single job records.
4. **The OSG-XSEDE Submit host will be a GlideinWMS Frontend.** This is a well proven setup almost exactly what many VOs are running today. The frontend will be configured to submit glideins with a pilot certificate which will be a member of the OSG VO (see below).
5. **Priority controls between XSEDE users will be provided by Condor.** The GlideinWMS / Condor setup will provide priority functionality out of the box, adjustable by the login host administrators. However, we expect that most of the time we will not have to modify priorities at this level as Condor’s default fair share will adjust priorities automatically and prevent many unwanted behaviors such as starvation.
6. **There will be no central priority controls, neither between XSEDE and other VOs, nor between the XSEDE pilot and other OSG VO users.** We hope that solution such as OSG-CE could be used for priority controls in the future, but in order to be able to meet the deadlines listed above, we cannot make the initial implementation of the OSG / XSEDE integration depend on the OSG-CE effort.
7. **The credential used on OSG will be a single pilot certificate used for submitting glideins**. This certificate will be a member of the OSG VO, and mapped to a special XSEDE group. This implies that XSEDE users will be able to run on most sites which already accepts the OSG VO. Some sites, for example sites which cannot run glideins, or sites requiring glexec will be excluded.
8. **We will neither have a XSEDE VO, nor a VOMS.** We believe that there is no major reason for maintaining a full VO at this point. There is no credential requirement to use the glideins, except for glexec sites and to do data staging. The latter should still work for jobs wanting to use pull/push against the login node as the grid-mapfile is maintained to contain the users’ XSEDE certificates.
9. **The OSG-XSEDE Submit host will be running the Gratia BatchPilot probe.** Gratia will be populated with user level records on which XSEDE user run what jobs on the glideins. Note that Gratia will have to provide a field for the allocation identifier (aka account id), so if a user have more than one XSEDE allocation, we will be able to distinguish between them when querying Gratia.
10. **XSEDE CAs needs to be re-added to the OSG CA distribution.** The XSEDE CAs will have to be re-added to the OSG CA distribution. The CAs were removed in 2008 as they were not used by any OSG VOs at that point. For access to XSEDE services, such as data transfers, the XSEDE CAs should be included again in the default OSG CA distribution. The list of XSEDE CAs can be found at <http://security.teragrid.org/TG-CAs.html>. We would probably need to add at least NCSA, SDSC, PSC, Purdue and TACC.
11. **No shared storage will be provided.** This is an important point for existing XSEDE users, and has to be made clear in the resource documentation in the XSEDE portal. We do expect to have to provide extra storage on the OSG-XSEDE Submit host which can be used for inputs / outputs during workload executions.
12. **Flocking will be allowed for power users who want to use their already existing infrastructure.** Such users can use their local infrastructure to flock to the OSG-XSEDE Submit host. They will have to deploy the Gratia BatchPilot probe and potentially a custom probe for forwarding usage information to the official login host, so that the usage data can be summarized and forwarded to the XSEDE central database.