



Enabling Grids for E-science

# Preview Testbed

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*EGEE06 conference*

[www.eu-egee.org](http://www.eu-egee.org)



- **Testbed where JRA1 developers can expose early versions of middleware to users to get early feedback on the matching with the requirements**
- **Not a system intended to bypass the integration and certification process**
- **Activity not foreseen in the EGEE II proposal, so no official resources have been devoted to this**
  - Partners involved in JRA1 asked to provide support (hardware and manpower) for this activity without compromising their commitments
  - Now CESNET (Prague), INFN (CNAF & Padova), RAL are participating in this testbed
  - Good News: We have had confirmation that NIKHEF (FOM) and HIP (Helsinki Institute of Physics) will participate to PTB.

- **Software components planned to be exposed in the preview testbed**
  - CREAM
  - New (3.1) WMS (including ICE, supporting job submissions to CREAM based CE)
  - Job Provenance
  - G-PBOX
  - R-GMA
  - Glexec on WN

- **Sites**

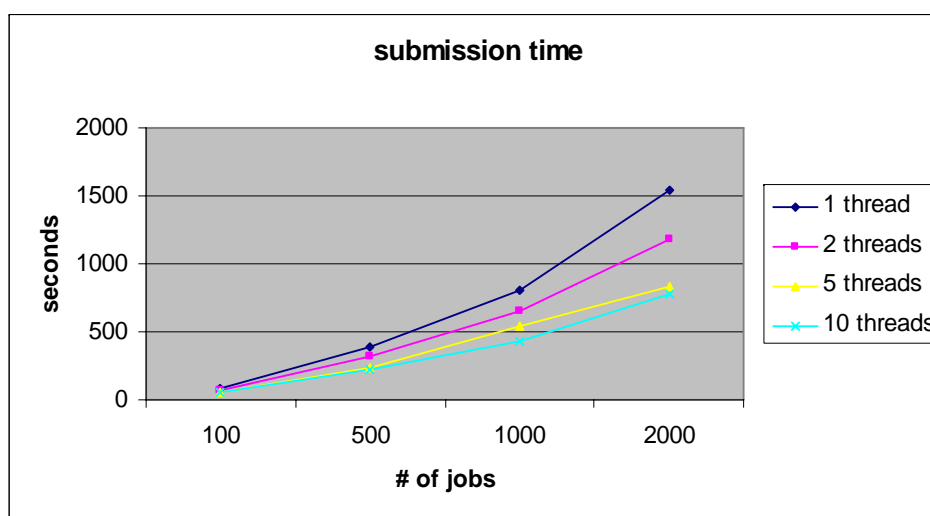
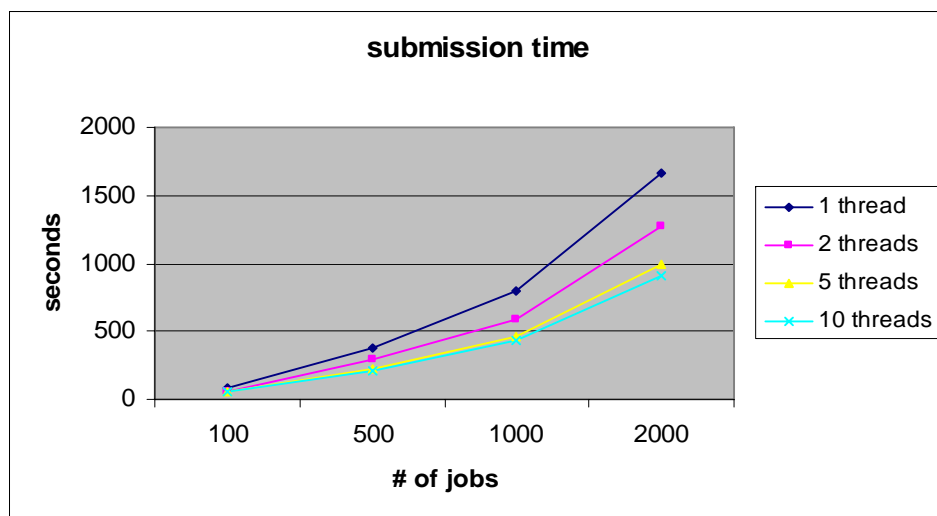
- INFN Padova
  - 1 CREAM CE machine + 6 WNs
  - Both LSF and Torque installed
  - Software installed
    - *Even if installation delayed because of some perturbations due to attempted adoption of new VDT*
- Prague
  - Installation of CREAM is in progress
- INFN CNAF
  - CREAM UI
    - *Not installed yet, because of the 3.1 build issues*
- NIKHEF (FOM)
  - Four new machines ordered and Installed on private firewalled network segment.
  - Outside access provided for CREAM installation.
  - Local experts will setup/support glxexec on CE and WN.
- HIP (Helsinki Institute of Physics)
  - Four machines will be made available (approx 1.4 Ghz AMD)
  - Outside access provided.
  - Can be gLite CE or CREAM.

- **Documentation**

- CREAM User's guide and CREAM JDL specification available in the CREAM web site (<http://www.pd.infn.it/cream/field.php>)
- CREAM Preview testbed user's guide available as well

- **Performed stress tests (by developers)**
  - Submissions of an increasing number of jobs
    - Submissions of 100 jobs from 1, 2, 5, 10 threads
    - Submissions of 500 jobs from 1, 2, 5, 10 threads
    - Submissions of 1000 jobs from 1, 2, 5, 10 threads
    - Submissions of 2000 jobs from 1, 2, 5, 10 threads
  - Measured values
    - The number of failed jobs (taking into account the reported failure reasons)
    - For each job, the time took to submit the job to the CREAM based CE (i.e. the time needed to get back the CREAM-jobid)
    - For each job, the “schedule time”, i.e. the time needed to actual submit the job to the LRMS, since when it has been received by CREAM
  - Tests done for both LSF and Torque
  - Tests done using a UI in Padova, since the official one at CNAF is not ready yet

- Some test results: submission time in 2 tests



- ... more details in the CREAM web site (<http://grid.pd.infn.it/cream/field.php>)
- under test results

	100 jobs	500 jobs	1000 jobs	2000 jobs
<b>1 thread</b>	0/100 (LSF) 0/100 (Torque)	0/500 (LSF) 0/500 (Torque)	6/1000 (LSF) 11/1000 (Torque)	23/2000 (LSF) 32/2000 (Torque)
<b>2 thread</b>	0/100 (LSF) 0/100 (Torque)	0/500 (LSF) 0/500 (Torque)	7/1000 (LSF) 4/1000 (Torque)	26/2000 (LSF) 38/2000 (Torque)
<b>5 threads</b>	0/100 (LSF) 3/100 (Torque)	0/500 (LSF) 1/500 (Torque)	7/1000 (LSF) 5/1000 (Torque)	22/2000 (LSF) 29/2000 (Torque)
<b>10 threads</b>	0/100 (LSF) 1/100 (Torque)	0/500 (LSF) 0/500 (Torque)	2/1000 (LSF) 8/1000 (Torque)	24/2000 (LSF) 22/2000 (Torque)

- **Basically all failures because of AuthN problems in gridftp while transferring sandbox**
  - Not fully understood yet the reasons

- **When the UI is ready at CNAF, we are basically open to expose CREAM “direct” job submissions to interested users**
- **Users can test first of all the functionality provided by CREAM**
  - Job submissions, Proxy delegation, Job cancellation, Job status monitoring, Job listing, Job suspension and resume, Job proxy renewal. Job purging for completed jobs, Disabling/enabling of job submissions (when a certain condition is met and when these operations are forced by the administrator)
- **Users are also invited to do performance measurements**
  - Relevant values
    - The time took to submit the job to the CREAM based CE
      - *Represented by the time needed to get back the CREAM-jobid.*
    - The time needed to actual submit the job to the LRMS, since when it has been received by CREAM
  - Since for the Glite (Condor based) CE a direct submission is not straightforward, comparisons between the CREAM based CE and the Glite CE is not easy for this direct submission scenario



- **Testbed configuration**
  - WMS, BDII, UI @ INFN-CNAF
  - CREAM CE @ INFN-PADOVA, Prague and HIP, FOM (?)
  - Glite CE @ INFN-CNAF, Prague and HIP, FOM (?)
- **Installation of the WMS services perturbed and delayed**
  - Because of the attempted adoption of new VDT
  - Because Glite 3.1 build system “definition” far from being ideal wrt testing purposes
    - Mix of branch and release tags
- **We are now converging**
  - Recent decisions of having a branch for GLite 3.1 with old VDT and latest (i.e. blessed by users) release tags for the various subsystems
  - New tags have been produced
  - Now we should be ready to proceed with installation in the Preview testbed
  - We (developers) will perform some initial tests and then the testbed will be opened to interested users

- **Test first if everything work as expected**
  - Job submissions tests (simple sequential jobs, MPICH jobs and interactive jobs), job cancellation, job status monitoring, job output retrieval, proxy renewal, job perusal
  - Tests already done on a more controlled (and smaller) environment
- **Performance and stress tests focusing on the functionality involving ICE and CREAM, so comparing submissions to CREAM based CEs (via the ICE component) with submissions to Glite (Condor based) CEs (via the JC, LM, Condor components)**
  - Submissions of an increasing number of jobs to a Glite WMS, making them match only CREAM based CEs (Scenario 1)
  - Then same test, but making the jobs match only Glite (Condor based) CEs (Scenario 2).
  - Values to be measured
    - The number of failed jobs (taking into account the reported failure reasons)
    - For each job the time took by ICE (in Scenario 1) / JC + LM + Condor (in Scenario 2) to actual submit the jobs to the CREAM (in Scenario 1) / Condor based (in Scenario 2) CEs.
    - For each job, the time took by the system to actual detect the job status changes
- **More details in the ICE&CREAM Preview Testbed User's guide**

- **JP installed at skurut1.cesnet.cz, together with the 3.1RC LB.**
- **3.1 LB is required due the support of data export to JP**
  - However, it is 100% compatible with 3.0 clients at the wire level
- **If necessary due to performance reasons, more resources to setup multiple JP index servers (the primary endpoints for user queries) can be provided**
- **Tests already performed by developers**
  - Basic functionality verified according to the JP Test Plan.
  - Participation in the First Provenance Challenge, (<http://twiki.ipaw.info/bin/view/Challenge/CESNET>)
    - Good smoke test opportunity
- **Ready to be used by internal users**
  - Needed to setup the WMS first
  - In order to use the service, one has redirect his jobs to LB at skurut1, i.e. specifying `LBAddress = "skurut1.cesnet.cz:9000"` in JDL.
  - JP User Guide and JP Test Plan available at <http://egee.cesnet.cz/en/JRA1/index.html>
- **The service is new in gLite, providing rather low-level interface only**
- **Developers expect feedback on its design and suggestion on extensions that will be evaluated and considered in design of more user-friendly interfaces.**

- Registry, MON and Glue archiver installed at [rgma16.pp.rl.ac.uk](http://rgma16.pp.rl.ac.uk)
- Developers will deploy new code on the preview system as and when they have new functionality to offer
- The idea is also to test RGMA as information system (instead of BDII)



## PROBLEM STATEMENT

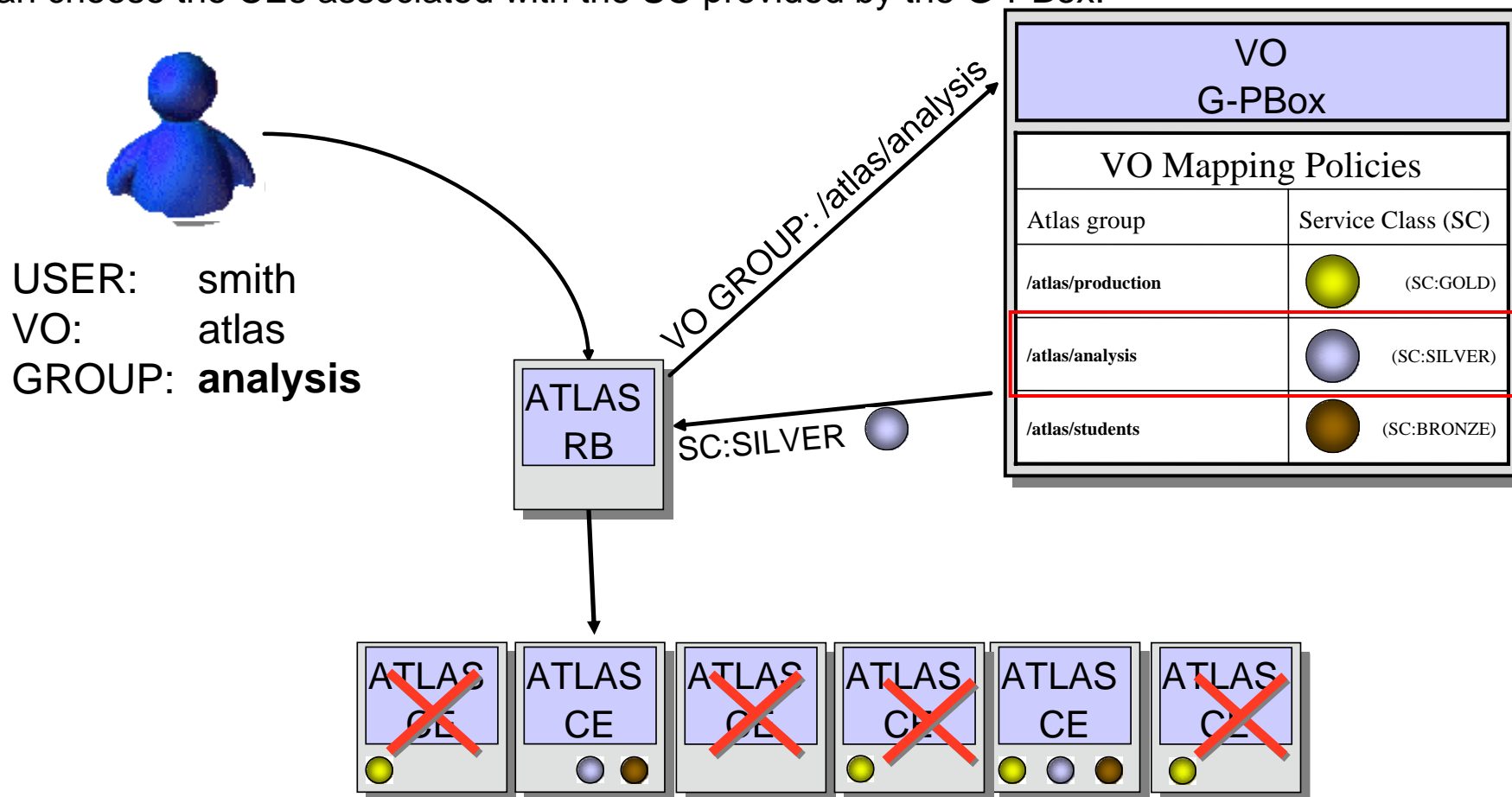
Intra-VO fair sharing: enabling VO's to differentiate the access and usage of computing resources within its users.

## OUR PROPOSAL

- In each site, a VO has a certain share (i.e., utilization target) agreed with the site for computing resources
- We divide the utilization target in three abstracted sub-shares:
  - GOLD >> SILVER >> BRONZE
- We enable the VO to assign VOMS groups/roles to the different sub-shares
- We call GOLD, SILVER, BRONZE as Service Classes published by the resources providers (so each Service Class characterizes a specific level of quality of service of the resource )

VO G-PBox helps the VO Resource Broker (RB) to choose right CEs based on Service Classes (SC) policies.

The RB asks to the G-PBox what is the SC for the group which user belongs to. Then the RB can choose the CEs associated with the SC provided by the G-PBox.



G-PBox helps CE to choose the right unix group for the submission to the LRMS.

G-PBox helps CE to choose the right unix group for the submission to the LRMS. CE asks to G-PBox what is the unix group for the VO group which user belongs to. G-PBox scans its policies:

“VO group <-> SC“ mapping policies  
 “SC <-> Unix Group” mapping policies  
 and returns a matching Unix group.

Then CE can submit to the LRMS with the Unix group provided by the G-PBox.

