

Grid in a Grid

Deployment of a gLite Grid inside Grid'5000

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Grid'5000 Spring School – April 2011

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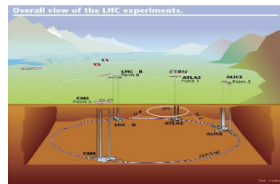
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Introduction

gLite

- ▶ Middleware stack for Grid Computing
- ▶ Developed and used by the EGI production grid
e.g for CERN LHC experiments
330 sites, 200000 CPUs
- ▶ Provides a complete & complex set of services for production grids



Introduction

Improving and testing gLite

- ▶ Difficult to improve :
 - ▶ No large scale test infrastructure
 - ▶ Cannot test on real infrastructure
risk of breaking it, low reproducibility, waste of resources

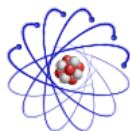
Goal of this challenge : deploy the gLite middleware on Grid'5000

- ▶ First step towards experiments on the middleware itself

Introduction

Scientific Linux

- ▶ Based on RedHat Enterprise Linux (RHEL)
- ▶ Version used in that experiment : Scientific Linux 5.5 (Boron)
- ▶ Kadeploy3 used for deployment on Grid'5000



Scientific Linux

Introduction : gDeploy Script

Goal

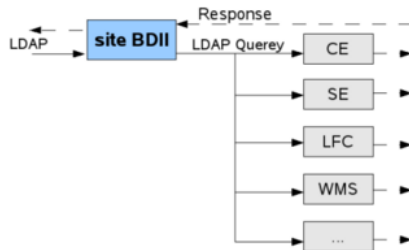
- ▶ Deploy a gLite site
- ▶ composed of :
 - ▶ a BDII element
 - ▶ a Batch scheduler
 - ▶ a Computing element
 - ▶ Workers nodes

Script

- ▶ Written in ruby, leverages the G5K API and *net-ssh-multi*
- ▶ available on <http://sbadia.github.com/gdeploy/>

Information Service – gLite BDII

- ▶ Information Service is a BDII (Berkley Database Information Index), OpenLDAP Server
- ▶ BDII provide information about the grid resources and their status

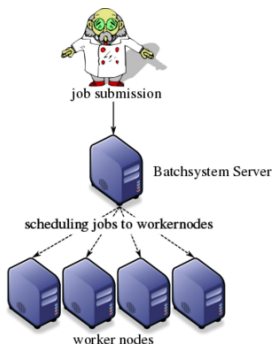


gLite Middleware

gLite Batch

- ▶ Batch scheduler
- ▶ Queue manager

= Torque server + Maui scheduler

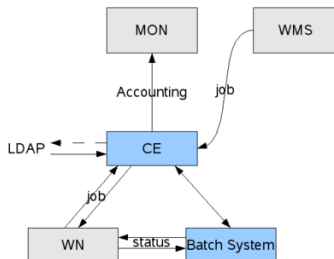


gLite Middleware

Computing Element

- ▶ Store information about workers nodes
- ▶ Interface with cluster (WN)

Cream computing element (torque client, mysql, tomcat)



Worker nodes

- ▶ Cluster on Scientific Linux 5.5
- ▶ Belong to a Virtual Organisation



Demo

- ▶ Reserve nodes and deploy Scientific Linux (using Grid'5000 API)
- ▶ Launch gdeploy script
- ▶ Test your gLite site

Conclusion

Next steps

Future work for gLite on Grid'5000

TODO

- ▶ Generic SL image that works on all clusters
- ▶ Storage : SE, LFC
- ▶ WMS and UI
- ▶ Multi-VO, inter-VO communications

Sources - Links

- ▶ <http://glite.web.cern.ch/glite/>
- ▶ <http://en.wikipedia.org/wiki/GLite>
- ▶ <http://www.sysadmin.hep.ac.uk/>

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