Grid in a Grid

Deployment of a gLite Grid inside Grid’5000

Sébastien Badia – Lucas Nussbaum

LORIA - INRIA Nancy – Grand-Est

Grid’5000 Spring School – April 2011
Table of contents

Introduction
  gLite
  Scientific Linux
  gDeploy Script

gLite Middleware
  Information Service
  Batch
  Computing Element
  Workers Nodes

Demo
  Deploy Scientific Linux

Conclusion
  Next Steps
  Sources
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
Improving and testing gLite

- Difficult to improve:
  - No large scale test infrastructure
  - Cannot test on real infrastructure
    risk of breaking it, low reproductibility, 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
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/
gLite Middleware

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

Successfully deployed gLite automatically on Grid’5000!

Next steps

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

Sources - Links

- http://glite.web.cern.ch/glite/
- http://www.sysadmin.hep.ac.uk/
Grid in a Grid
Deployment of a gLite Grid inside Grid’5000

Sébastien Badia – Lucas Nussbaum

LORIA - INRIA Nancy – Grand-Est

Grid’5000 Spring School – April 2011