Introduction to the GridWay Metascheduler

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Initiative for Globus in Europe
1. What is GridWay?
2. A Global Vision
3. Initiative for Globus in Europe
4. The GridWay Project
What is GridWay?

• The GridWay metascheduler enables large-scale, reliable and efficient sharing of computing resources over different grid middleware, providing a single point of access for them.

• GridWay provides a LRM-like CLI for submitting, monitoring, synchronizing and controlling jobs.

• GridWay implements the OGF standard DRMAA API, assuring compatibility of applications with LRM systems that implement the standard.

• GridWay provides BES- and GRAM-compliant interfaces, enabling the submission and monitoring of jobs through a standard interface.
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A Global Vision

Global Architecture of a Computational Grid

- GridWay
- DSA Group

- GridWay
- Initiative for Globus in Europe

- DRMAA
- Results

- Applications
  - Standard API (OGF DRMAA)
  - Command Line Interface

- GridMeta-Scheduler
  - open source
  - job execution management
  - resource brokering

- GridMiddleware
  - Globus services
  - Standard interfaces
  - end-to-end (e.g. TCP/IP)

- Infrastructure
  - highly dynamic & heterogeneous
  - high fault rate

- Applications
  - .C, .java

- GridWay
  - $>
  - CLI
A Global Vision

GridWay Core

Job Pool Host Pool

Transfer Manager

Execution Manager

Information Manager

Request Manager

Dispatcher

Scheduler

Local Interfaces

Remote Interfaces

Job Submission
Job Monitoring
Job Control
Job Migration

Resource Discovery
Resource Monitoring

File Transfer Services

Execution Services

Information Services

GridFTP

GASS

SCP

GRAM

CREAM

BES

SSH

MDS2

MDS4

BDII

Files

DRMAA library

CLI

Job Preparation
Job Termination
Job Migration

GridWay Core

BES

GRAM

Job Submission
Job Monitoring
Job Control
Job Migration

Resource Discovery
Resource Monitoring
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• The IGE project is a EU FP7 project to coordinate European Globus activities.

• Main objectives:
  – Support the European computing infrastructures and their users
  – Provide a central point of contact in Europe for Globus
  – Strengthen the influence of European developers and users on the development of Globus

• IGE serves as a comprehensive service provider for the European e-infrastructures regarding the development, customization, provisioning, support, and maintenance of components of the Globus Toolkit.
Initiative for Globus in Europe

Work Plan

Management and Overall Quality Assurance (WP1)

Community Involvement, Dissemination, and Training (WP2)

International Collaboration and Standardization (WP3)

Software Adaptation (WP4)

Infrastructure Support (WP5)

Test and Maintenance (WP6)
IGE Testbed

• GridWay instance provided by:
  – Universidad Complutense de Madrid (UCM), Spain

• Globus 5 resources provided by:
  – Technische Universität Dortmund (TUDO), Germany
  – Poznan Supercomputing and Networking Center (PSNC), Poland
  – Leibniz-Rechenzentrum, Bayerische Akademie der Wissenschaften (BADW-LRZ), Germany
  – Universitatea Technica Cluj-Napoca (UTCN), Romania
  – Stichting voor Fundamenteel Onderzoek der Materie – Institute for Subatomic Physics (FOM-NIKHEF), Netherlands
  – University of Edinburgh – Edinburgh Parallel Computing Centre (UEDIN-EPCC), United Kingdom

• Other resources:
  – University of Southampton (SOTON), United Kingdom
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The GridWay Project

Some Projects and Infrastructures

- IRISGrid
- Politecnico di Torino
- CABGrid (Astrobiology Center)
- C2VO (Universidad de Castilla La Mancha)
- ESAC Grid (European Space Agency)
- CRO-GRID (Croatia)
- Sun Microsystems Solution Center World Grid
- EGEE Infrastructure
- BeinGRID Project
- GridX1 (Canadian Grid for HEP applications)
- Universidade do Porto
- Madras Institute of Technology
- National Center for High-Performance Computing

Some Application Porting Areas

- Life-Sciences
- Aerospace
- Fusion Physics
- Computational Chemistry
The GridWay Project

Development Process

• **Community** – Open Source Project. Globus Development Philosophy

• **Development Infrastructure:**
  • Mailing Lists (thanks to Globus Project!)
  • Bugzilla (dev.gridway.org)
  • Readmine
  • SVN

• **You are very welcome to contribute:**
  • Reporting Bugs (gridway-user@globus.org)
  • Making feature requests for the next GridWay release (gridway-user@globus.org)
  • Contributing your own developments (bug fixes, new features, documentation)

• **Detailed Roadmap:**
  • http://dev.gridway.org/projects/gridway/roadmap
Useful Links

- **The GridWay Project**: http://gridway.org/
- **GridWay Development**: http://dev.gridway.org/
- **Documentation**: http://gridway.org/doku.php?id=documentation
- **Support**: http://gridway.org/doku.php?id=support
  - User discussion: gridway-user@globus.org
  - Announcements: gridway-announce@globus.org
- **The IGE Project**: http://www.ige-project.eu/
Thank you for your attention!