CrossGrid testbed status

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Main focus on interactive and parallel applications
First Prototype of the CrossGrid Testbed


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CrossGrid Workpackages

- WP1 – CrossGrid Application Development
  1.1 - Interactive simulation and visualization of a biomedical system
  1.2 - Flooding crisis team support
  1.3 - Distributed data analysis in HEP
  1.4 - Weather forecasting and air pollution modeling

- WP2 – Grid Application Programming Environment

- WP3 – New Grid Services and Tools

- WP4 – International Testbed Organization

- WP5 – Project Management
Software Integration and Releases

Setup | First testbed | Evolution: Prototype 0 | Support Prototype 1

- **Basic middleware**
- **Integration of CrossGrid software**
- **Test and validation**
- **Deployment**

Validation TB

Dev TB

- **Test and validation**
- **Deployment**

Prototypes - 1st release

Production prototypes

**CrossGrid Integration Team**

- WP2 + WP4 people
- WP3 + WP4 people
- WP1 + WP4 people

**CORE WP4 I Team**

Basic middleware EDG 1.4.3 Globus 2

- Development tools
  - MPI verification
  - Benchmarking
  - Performance prediction
  - Monitoring
- **Middleware**
  - RAS, Portal, Migrating Desktop
  - Parallel Interactive Scheduler
  - Monitoring
  - Data Access Optimization
- Application Prototypes

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DataGrid WP6, Heidelberg, 25th September 2003
WP2 tools

- MARMOT – Tool for MPI app debugging
  - 1st dev release ready, C & Fortran, MPI 1.2
  - N+1 nodes (debugging server)

- Performance prediction / evaluation tools
  - Use application kernels

- GridBench – benchmarking
WP3 services

- Application Portal
- Migrating Desktop and RAS
- Resource management (MPI apps)
- Santa-G
  - Info from external sensors into R-GMA (tcpdump, snort)
- Optimization of data access
Modified RB and MPI jobs

• JDL:
  
  Executable=...
  JobType= mpi  mpich-p4  mpich-g2
  NumCPU=16

• MPI jobs:
  
  – In cluster (mpich-p4)
    • on EDG 1.4 middleware – testing stage

  – Across clusters (mpich-g2)
    • Main CrossGrid goal – alpha stage
    • No private clusters

  – Across clusters (PACX-MPI)
    • Private clusters
Modified RB and MPI jobs

- **Modified RB:**
  - matchmaking (CPU resources, MPICH env)
  - script generation
  - .rsl generation

- **Mpich-p4 jobsubmission:**
  - in test and validation stage

- **Mpich-g2 jobsubmission:**
  - in alpha stage
  - avoid deadlocks and failing clusters blocking the whole job
• Application Portal
  • Specific application oriented GUI
  • Only basic GUI functionality (html, php)
  • Usage: system without java eg. internet cafe, airport
  • Thin client

• Migrating desktop
  • More sophisticated user friendly Java based GUI
  • Whole environment for grid user
  • Possibility of working with many grids at once
  • Integration of many Crossgrid tools
  • Local and grid application support
  • Local and grid file management
Application Portal

The CrossGrid Application Portal

Welcome user! Options | Logout

Grid Utilities
- Home
- User session
- Grid benchmarks
- Grid monitoring
- File transfer
- Grid resources

Applications
- Biomedical
- Floods
- Particle Physics
- Meteorology

Application Tools
- MPI verification
- G-PF

This is the main page of the CrossGrid Application Portal. This portal provides a front end to Grid applications in general, but is specifically aimed at the four applications developed in the context of the CrossGrid project:

- PreTreatment Planning in Vascular Interventional and Surgical Procedures
- Support System for Flood Prevention and Protection
- Distributed Data Analysis in High Energy Physics
- Weather Forecast and Air Pollution Modelling

CrossGrid is supported by the IST Programme of the European Commission.
Migrating Desktop
Integration and Release

Clear integration procedure:

- Code into CVS
- Tests in ad-hoc development TB
- Code autobuilds
- Software announced in Iteam list
- Installation in DevTB
- Request test to test & validation group (LIP)
- Tests conducted in T&V TB
- Package gets approved, announced to Iteam
- Release tagged, installation in ProdTB
Integration and release

- Integration procedure took place for
  - Modified RB
  - Santa-G

- WP4 technical work to do:
  - Nodes – services relationship
  - Security updates for EDG 1.4 (RH 6.2)

- Coding guides
- Quality control group
Integration and Release

Comments:

- Site profiles in CVS (*)
- Common LCFG profiles (*)
  - `#include "../common/ng_source/***.h"
- Developer Workstation
  - DW = UI + Building Environment

- LCFG server amalgamation
  - LCFG + LCFGng
  - UML LCFGng servers
Partners in the CrossGrid Testbed

17 partners in 9 countries

Geant network

Based on EDG/Globus middleware
Testbeds

- Production TB – EDG 1.4.12
  - RB, II, MyProxy, RC, VO server at LIP
  - Monitoring (Mapcenter and hostchecking)

- Test & Validation TB – EDG 1.4.12
  - LIP & Demokritos
  - Modified RB at LIP

- Development TB – EDG 1.4.12
  - Modified RB at Valencia, II at Crakow

- Development TB – EDG 2.0
  - LIP + FZK
  - RB, RGMA at LIP
Support infrastructure

Helpdesk

http://cg1.ific.uv.es/hlpdesk/

- In collaboration with DataGrid
- Question-Answer Mechanism: "tickets"
- Interaction levels:
  - User
  - Supporter
  - Administrator
- Based on OneOrZero v1.4
  - a GPL web based helpdesk system based on PHP, MySQL, Javascript
Support infrastructure

Software repository

http://gridportal.fzk.de

- Customized GNU Savannah
  - Projects with
    - Mailinglists/forums
    - Bugtrackers
    - CVS access
    - Webpages
- CVS repository (viewcvs)
- RPM repository
- EDG repository mirror
Support infrastructure

Software repository

http://gridportal.fzk.de

- Current usage:
  - ca. 70 web-visits/day
  - 1.100.000 code-lines
  - 51.000 doc-lines
  - 18 packages autobuilding
Support infrastructure

Autobuild

- EDG autobuild (Yannick Patois)
- Mild patching to make it more customizable
- RH 6.2 & 7.3
Support infrastructure

Mapcenter

http://mapcenter.lip.pt

Site checking

http://www.lip.pt/computing/cg-services/site-check

- Daily checks
- On demand checks
Support infrastructure

Site checking

- Using globus-job-run
- Port checking
- MDS info checking
- PBS configuration
- Gsiftp tests
- CA certs and CRLs checks
- VO config checks
- Etc
• Participation in the GriDis testbed
  – GGF and CERN summer schools
  – Several demos
Plans

• Move to EDG 2.x
  – Applications already under Autobuild RH 7.3
  – Evaluation sites running
  – Several months timeframe (stability ;-)  

• Network QoS

• Extension to new sites (cgext VO)

• Security!

• Next middleware steps?
Conclusions

- **CrossGrid testbed is operative**
  - Regular tests and use, including direct MPI execution

- **Evolution**
  - Testing and validation for:
    - Applications (WP1)
    - Programming environment (WP2)
    - New services & tools (WP3)
  - Emphasis on interoperability with DataGrid

- Extension of GRID across Europe
- Advice to follow GT3 while need to follow LCG…
Questions?

Thanks for your attention!