JRA1 Technical Status

John White, Helsinki Institute of Physics.
EGEE JRA1 Deputy Middleware Manager.

www.eu-egee.org

Information Society

Contents

- Integration-Build System.
- Integration-Configuration.
- Testing.
- Information Systems.
- GLUE.
- VOMS/VOMS-Admin.
- Data Management.
- Workload Management.
- gLite 1.5
- gLite 3.0.
- Time-lines.
- Bug-fixing.
- Consolidation.

Integration-Build System

Integration and nightly build as usual.

- 224 modules, build in “n” to “m” hours.
- Work underway to port to ia64 architecture.

Integration issues.

- Under-estimation of the manpower required.
- Perform tasks that were not foreseen at the beginning.
- Activities such as Windows or ia64 integration delayed.
- Enforcing proper QA methodologies in the development cycle.
  - Most of the code is inherited from previous projects.
  - Did not comply with our conventions, lacked unit tests, used custom configuration methods.
  - Modifying is challenged by very short delivery deadlines and demanding functional requirements.

Integration-Build System

Integration and nightly build as usual.

- 224 modules, build in "n" to "m" hours.
- Work underway to port to ia64 architecture.

Integration issues.

- Under-estimation of the manpower required.
- Perform tasks that were not foreseen at the beginning.
- Activities such as Windows or ia64 integration delayed.
- Enforcing proper QA methodologies in the development cycle.
  - Most of the code is inherited from previous projects.
  - Did not comply with our conventions, lacked unit tests, used custom configuration methods.
  - Modifying is challenged by very short delivery deadlines and demanding functional requirements.

Build system now spun off into the **ETICS** project.

Integration-Build System

Integration and nightly build as usual.

- 224 modules, build in "n" to "m" hours.
- Work underway to port to ia64 architecture.

Integration issues.

- Under-estimation of the manpower required.
- Perform tasks that were not foreseen at the beginning.
- Activities such as Windows or ia64 integration delayed.
- Enforcing proper QA methodologies in the development cycle.
  - Most of the code is inherited from previous projects.
  - Did not comply with our conventions, lacked unit tests, used custom configuration methods.
  - Modifying is challenged by very short delivery deadlines and demanding functional requirements.

Build system now spun off into the **ETICS** project.

- **Started on Jan 20th 2006.**
- **Will provide a single build system for gLite software.**

Integration-Configuration

- Deployment Modules implemented high-level gLite node types (WMS, CE, R-GMA Server, VOMS Server, FTS, etc).
  - An XML configuration file with all required parameters.
  - A configuration script that configures and starts the node.
- ITeam has proposed an advanced software configuration system
  - Based on a common schema repository.
  - Uses a configuration web service to deploy middleware across grid environments.
  - A prototype of the service has been developed.
- Configuration Issues.
  - Parallel work on configuration of LCG middleware by SA1.
  - Two configuration methods to be composed into one.
  - Some duplication of efforts and conflicting procedures.

Integration-Configuration

- Deployment Modules implemented high-level gLite node types (WMS, CE, R-GMA Server, VOMS Server, FTS, etc).
  - An XML configuration file with all required parameters.
  - A configuration script that configures and starts the node.
- ITeam has proposed an advanced software configuration system
  - Based on a common schema repository.
  - Uses a configuration web service to deploy middleware across grid environments.
  - A prototype of the service has been developed.
- Configuration Issues.
  - Parallel work on configuration of LCG middleware by SA1.
  - Two configuration methods to be composed into one.
  - Some duplication of efforts and conflicting procedures.
- **In response to site managers survey (80 responses).**
- **The YAIM configurator is the preferred solution.**

Integration-Configuration

- Deployment Modules implemented high-level gLite node types (WMS, CE, R-GMA Server, VOMS Server, FTS, etc).
  - An XML configuration file with all required parameters.
  - A configuration script that configures and starts the node.
- ITeam has proposed an advanced software configuration system
  - Based on a common schema repository.
  - Uses a configuration web service to deploy middleware across grid environments.
  - A prototype of the service has been developed.
- Configuration Issues.
  - Parallel work on configuration of LCG middleware by SA1.
  - Two configuration methods to be composed into one.
  - Some duplication of efforts and conflicting procedures.
- **In response to site managers survey (80 responses).**
- **The YAIM configurator is the preferred solution.**
- **Now handled by SA3.**

Testing

- Three well-defined areas:
- **Testbed infrastructure**: procedures for installation, configuration and maintenance.
  - Dedicated testbed: CERN, Imperial College, Hannover.
  - Installation of self-consistent RPM sets, weekly phone meeting.
- **Test development**: functional, regression and scalability tests.
  - Followed the TestManager suite.
- **Testing of release candidates** from the integration team.
  - Every single bug fix individually tested before a release.
  - For gLite 3.0 much fast-track testing of critical components.
- **Testing Issues**
  - Lack of resources to perform all the planned activities.
  - Testing overlapped SA1 certification and pre-production.
  - Temporary measures not sustainable. Addressed by merge of SA1 and JRA1 teams.

Testing

- Three well-defined areas:
- **Testbed infrastructure**: procedures for installation, configuration and maintenance.
  - Dedicated testbed: CERN, Imperial College, Hannover.
  - Installation of self-consistent RPM sets, weekly phone meeting.
- **Test development**: functional, regression and scalability tests.
  - Followed the TestManager suite.
- **Testing of release candidates** from the integration team.
  - Every single bug fix individually tested before a release.
  - For gLite 3.0 much fast-track testing of critical components.
- **Testing Issues**
  - Lack of resources to perform all the planned activities.
  - Testing overlapped SA1 certification and pre-production.
  - Temporary measures not sustainable. Addressed by merge of SA1 and JRA1 teams.
- **Certification, gLite 3.0 on, now handled by SA3.**

Information Systems

- **R-GMA** deployed on SA1 and on PPS in gLite 3.0.
  - No demand to move from basic servlet technologies to WSDL.
- "New" (LCG 2.7.0) API, supports multiple Virtual Databases, authorization, very large result sets.
  - The APIs have been designed for Java, C++, C and Python.
- Complete set of tests. API tests, system tests, resilience tests.
- **R-GMA Issues**
  - Firewalls blocking R-GMA communication.
    - R-GMA uses three message queues.
    - Monitor sites in the registry for firewall settings.
- **Service Discovery** component APIs in C (C++) and Java.
  - Uses information system "plugins". R-GMA, BDII and File.
  - APIs provided. Used by services and by end users.
- **APEL** accounting system uses R-GMA, deployed by SA1.

Information Systems Contd.

BDII in gLite 3.0

- Works alongside R-GMA.
- Currently being integrated into ETICS.
- Can represent data in the GLUE format.

GLUE

- The merge between LCG and gLite releases into gLite 3.0 implied the adoption of latest GLUE Schema spec and info providers implementation.
- New features of GLUE Schema 1.2 are used at the site level for every service coming from LCG.
- gLite CE and gLite WMS will support new GLUE Schema 1.2 features in gLite 3.1.
- Evolution of GLUE Schema and relation to CIM will be discussed on Friday.

Information Systems-Future Work

- R-GMA new design for firewalls and slow connections.
- Planned to make the move to WSDL-defined web services,
  - Will wait until we see a clear benefit.
- Introduce registry and schema replication and provide proxy services so that a client only needs to know its local MON box.
- Will introduce code to support authZ on multiple physical databases.
  - Start with Oracle, later support multiple virtual databases.
  - Fine grained authorization VDB-based mechanism to be added.
- Align R-GMA with standards in GGF's INFOD-WG.
- Investigate SLP and others to address the bootstrapping problem for R-GMA and the relation with service discovery.
- Plans for DGAS and APEL to work more effectively together.
- Most APEL maintenance work taken over by SA1.
  - JRA1-UK will continue to advise on use of R-GMA.

VOMS

VOMS in gLite 3.0 (1.6.16-6)

- CERN VOMS servers run gLite 3.0 VOMS, March 15th.
- Made available for the PPS in:
  `http://lxb2042.cern.ch/gLite/APT/PPS/rhel30/`
- VOs not hosted on the CERN servers which keep their registration data on lcg-registrar.cern.ch to move to VOMS
- gLite 3.0 experience shows:
  - Developers/testers/deployers to have regular meetings.
  - Coordinate the bug comprehension/fixing.

Issues:

- Rapid testing/fixing for gLite 3.0.
- **There are still bugs that need close follow-up**.

VOMS-Admin

VOMS-Admin in gLite 3.0 (1.2.16)

- CNAF now handles first-line support of VOMS-Admin
- Eötvös Loránd University still in team.
- gLite 3.0 experience shows:
  - VOMS-Admin needs work for heavy loads.

Issues:

- Rapid testing/fixing for gLite 3.0.
- **There are still bugs that need close follow-up**.

VOMRS

- Only the CERN VOMS Servers run VOMRS.
- Automatically checks each new user registration with CERN's Human Resource database.
- The VOMRS uses the interfaces provided by VOMS Admin.

Site Access Control/Proxy

- **LCAS/LCMAPS**.
  - Provided in gLite 3.0.
- Site proxy - or however it will be called...
  - Dynamic Connectivity Service (DCS).
  - Ongoing story, no component yet.
  - Will dynamically configure firewalls for allowing outside connectivity.
  - Is this acceptable by site admins?
- **glexec**
  - A site controlled component with setuid capability.
  - Provided in gLite 3.0.

Data Management

gLite 3.0 release, some changes/additions:

- gLite I/O and Fireman replaced by GFAL/LFC respectively.
  - These (DPM/LFC) will also migrate to ETICS build system.
- gLite FTS in gLite 3.0.
- LCG GFAL for POSIX interface to local and mass storage.
- Support for Fireman, gLite I/O, AMGA, Hydra. (Biomed)

Issues:

- Interface EDS to GFAL rather than gLite I/O?
- Interface the DICOM server with DPM instead of dCache.
  - Jean-Philippe and Daniel have started discussing feasiblity.
- Decide at what level coherent file-level ACLs are required.
  - Decide how to do this.
- SRMv2 has to be supported by all the relevant components.
  - SRMv1 will be deployed first with version 2 added later.
  - SRMv1 & 2 must both be supported.

WMS LB in gLite 3.0. Current/future work includes:

- Scaling up job submission chain to handle 10^6 jobs per day.
- "short deadline" jobs as requested by the BioMed comm.
- "Bulk" matchmaking for groups of similar jobs (DAG nodes).
- Configuration of WMS services for High Availability / server balancing with a single entry point.
- Support and enforcement of priorities based on VOMS groups/roles, re-ordering of jobs in the WMS Task Queue.
- Support for resubmission of DAG nodes, and general streamlining of DAG handling.
- CE services and CE information accessible from user space.
- Transfer of matchmaking information to the CE for mapping to batch system options.
- Ability to provide local Input Sandbox caches.

WMS LB in gLite 3.0. Current/future work includes:

- Scaling up job submission chain to handle 10^6 jobs per day.
- "short deadline" jobs as requested by the BioMed comm.
- "Bulk" matchmaking for groups of similar jobs (DAG nodes).
- Configuration of WMS services for High Availability / server balancing with a single entry point.
- Support and enforcement of priorities based on VOMS groups/roles, re-ordering of jobs in the WMS Task Queue.
- Support for resubmission of DAG nodes, and general streamlining of DAG handling.
- CE services and CE information accessible from user space.
- Transfer of matchmaking information to the CE for mapping to batch system options.
- Ability to provide local Input Sandbox caches.

(Most) Above issues addressed by new CE webservice following specifications of DJRA1.1 and DJRA1.2 (CREAM).

WMS Contd.

Issues.

- With the fast development processes lately.
- No time for code reviews.
- Has a wide impact on deployed code.
- "cleaning" the code after long periods of development and bug-fixing is constantly deferred.
- TCG should provide detailed prioritization and planning for the above items and more.

Other

- Several components (VOMS, CEMon, BLAH, standalone LB) in VDT toolkit for OSG.
- VOMS and CEMon were already released.
- Standing requests to adopt the LB service in other contexts.
- New Job Provenance service should be integrated more closely with WMS and UI and deployed.

WMS Contd.

Use WMS Proxy Renewal to provide a generic service.

- A generic DB based renewal service would not fit the gLite 3.1 timescale.
- DB-based renewal daemon will be fit with the FTS agent framework.
- WMS renewal code to be exported into a shared library.
- Packaged as a separate RPM to reduce (!) dependencies.

Release gLite 1.5

Integration Build from Nov 30th, 2005.

- New for gLite 1.5 (over 1.4).
  - AMGA (DM)
  - (Proxy) Delegation (DM)
  - Hydra (DM)
  - GP-Box (WMS)
  - Job Provenance (WMS)
  - Encrypted Storage (Sec)

Release gLite 1.5

Integration Build from Nov 30th, 2005.

- New for gLite 1.5 (over 1.4).
  - AMGA (DM)
  - (Proxy) Delegation (DM)
  - Hydra (DM)
  - GP-Box (WMS)
  - Job Provenance (WMS)
  - Encrypted Storage (Sec)

Final deliverable for EGEE.

Basis for EGEE-II gLite 3.0

Release gLite 1.5

Integration Build from Nov 30th, 2005.

- New for gLite 1.5 (over 1.4).
  - AMGA (DM)
  - (Proxy) Delegation (DM)
  - Hydra (DM)
  - GP-Box (WMS)
  - Job Provenance (WMS)
  - Encrypted Storage (Sec)

Final deliverable for EGEE.

Basis for EGEE-II gLite 3.0

Outlined in DJRA1.6

`https://edms.cern.ch/document/689499/1`

Release gLite 3.0

A mixture of LCG 2.7.0 and EGEE gLite.

- LCG 2.7.0 plus:

  gLite

  - FTS/FTA
  - gLite VOMS/VOMS-Admin
  - gLite WMS/LB
  - gLite CE
  - gLite UI

- Being installed on PPS as of week of March 13^{th}.

Time-Lines

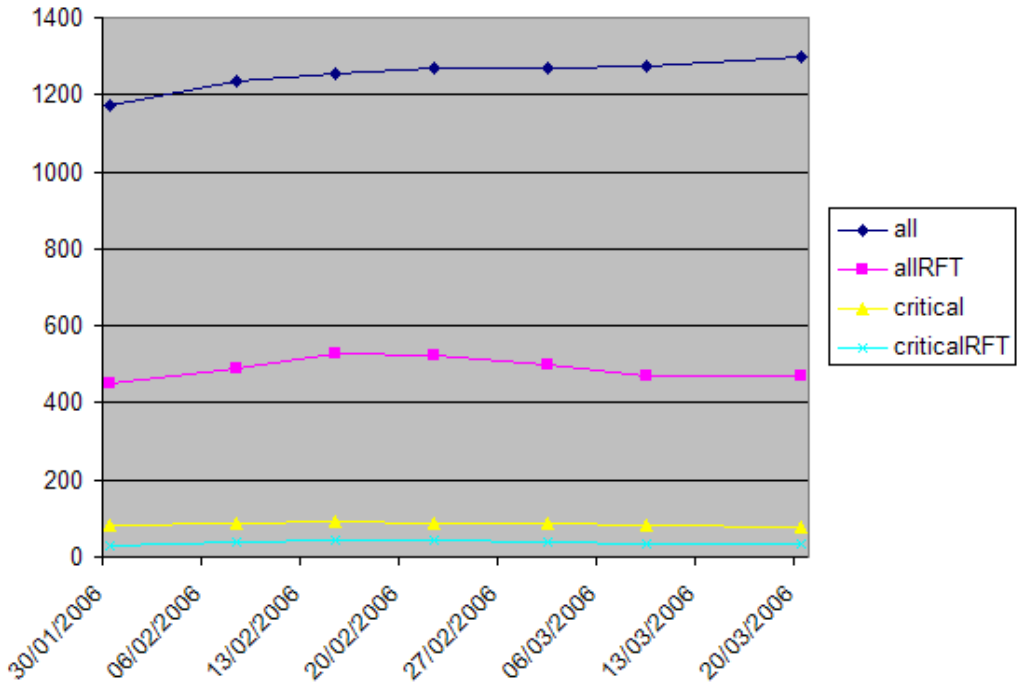
- gLite 3.0 now on the PPS. Open to applications on the 20th.
  - Usable, still some problems, testing ongoing.
- gLite 3.1 should be released to the Production Service in **September 2006**.
- **Once components are on the PPS they can be evaluated (case-by-case) and see how much (and when) work is needed for the next release (gLite 3.1).**

July and August	PPS runs	Holidays!
June	PPS deployment	Experience
May	Certification	Experience
April	Integration	ETICS/YAIM

- Integrated RC must be available end of April.
- $\longrightarrow$ Functionality must be frozen end of March.
- **Fixes can be introduced at any time following problems found in the integration/certification/pre-production cycles.**

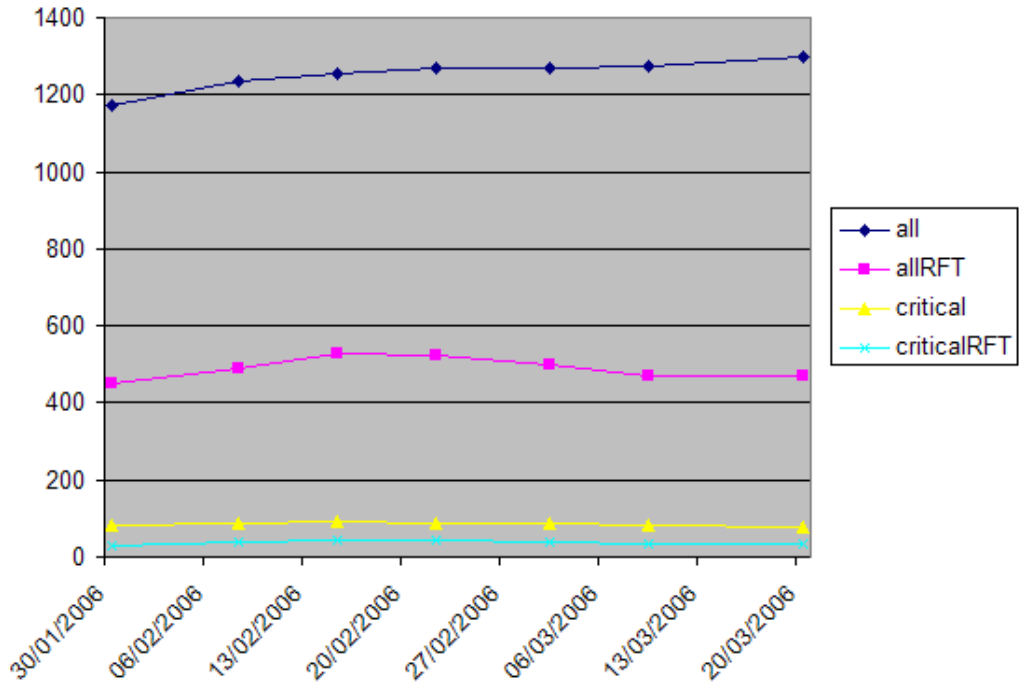
Bug-fixing

- Total bugs and critical bugs in "Ready to Test" state.
- More categories with "LCG" components. eg BDII DPM etc.
- Recently, gLite 3.0 to PPS provoked much action.
- gLite bugs since Jan 2006:



Bug-fixing

- Total bugs and critical bugs in "Ready to Test" state.
- More categories with "LCG" components. eg BDII DPM etc.
- Recently, gLite 3.0 to PPS provoked much action.
- gLite bugs since Jan 2006:



Given staffing, bug-fixing runs at a constant rate.

Consolidation

Main focus of this meeting:

- Client usage and requirements.
- Information systems.
- JRA1 in EGEE-II.
  - Integration, Testing, Deployment.
- Pilot jobs.
- Job Priorities.
- Security and ACLs in Data Management.
- Match-Making.
- Encrypted Data.