Outline

• Work Package 3 Final Status

• Achievements

• Work Package 3 Goals and Benefits

• WP3.1 Grid Infrastructure Monitoring

• WP3.2 Grid Infrastructure Configuration

• WP3.3 Grid Benchmarking and Tests

• WP3.3 Grid Management and Virtual Organizations
Work Package 3 Status

• The g-Eclipse Operator perspective is there. Consists of:
  – GLUE Information View
  – Batch View
  – Queue Configuration Framework
  – Benchmarking Framework
  – SLA Framework
  – Service Availability Monitoring and Testing Framework

• Based on reviewers recommendations effort was reduced for the last reporting period.

• During last reporting period effort was put on:
  – AWS integration to GLUE Information View.
  – Testing and Benchmarking Framework (GridBench port to g-Eclipse).
  – SLA and Negotiation framework.
  – Code hardening and preparation of final user and developer documentation.
Achievements - Users

- **Current users** of the g-Eclipse Operator Perspective:
  - EGEE Grid site administrators at UCY
  - EGEE Grid site administrators at University of Nicosia
  - EGEE Grid site administrators at RUR

- Steven Childs (*Deputy Grid Manager of Grid-Ireland*) comment:
  - “It's the **best free tool** around for managing PBS systems by a **long way**!”

- BAE about g-Eclipse Operator Perspective:
  - “The operator perspective would be **interesting**, because they do not have existing tools that can help them manage heterogeneous Grid installations”.
WP 3 Goals and Benefits

• **Goals**
  - Provide a simple and intuitive abstraction for the following Grid interactions:
    - Browse Grid Resources and Services (WP3.1)
    - Configure Local Grid Site (WP3.2)
    - Benchmark and Test Grid Resources (WP3.3)
    - Manage membership to the Grid (WP3.4)

• **Benefits**
  - **Simplify** the daily activities of the Grid site operator (transition from CLI to GUI).
  - **Reduce** Grid site mis-configuration.
  - **Graphical View** of the Grid Site state.
  - **Bundle** daily used Grid operator tools in a single GUI application.
  - **Improve** productivity.
Work Package 3 Tasks

- **WP3.1**
  - Infrastructure Monitoring Plug-in.
  - Grid Information Cache.
  - Service Availability Monitoring.

- **WP3.2**
  - Local Queue Management.
  - Site / VO Resource Management.
  - Local Job Management.

- **WP3.3**
  - Service Availability Testing.
  - Service Performance Testing.

- **WP3.4**
  - Editor to enable the management of Service Level Agreements (SLA).
  - Support the management of Virtual Organisation.
### WP3 Planned / Reported Effort

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Grid Information Cache

- Proved that Information Cache is independent from the underlying architecture by providing support for the Amazon Web Services (AWS).

- AWS integration to the Information Cache was given highest priority.
Grid Benchmarking

- Due to lack of resources this tool was given the lowest priority.

- For the last reporting period effort was put into developing storage, reporting and graphing functionality of benchmark data.
  - Use of existing libraries for storing results and graphing.

- In parallel with above code hardening and completion of user and developer documentation.
Grid Benchmarking (2)

- Benchmark output stored in a local database (Eclipse Derby).

- Local database import / export functionality.

- Benchmark View used to generate SQL queries for retrieving Benchmark output from the database.

- Query results displayed in:
  - Tabular Form
  - Graph Form
• Benchmarked **5 randomly selected** Grid sites belonging to the EGEE infrastructure.

• Two types of Benchmarks submitted:
  - **FLOPS**: For measuring floating point operations per second.
  - **Bonnie**: For measuring the performance of Unix file system operations.

• Benchmarks and resources were defined using the Operator Job wizard.

• The **Operator Job Framework** was used for execution and monitoring of Benchmarks.

• Benchmark results were stored into an **Apache Derby** database integrated to Eclipse.
Live Demo
Service Availability Monitoring

- A framework to test physical Grid resources and investigate cause of failure.
- Provision of a 3rd simple test
  - Port Scanner
- Code maintenance and hardening.
- Completion of user and developer documentation.
Site Management

- **The Batch UI Framework**
  - Support for the Portable Batch System (PBS)
  - Start / Stop / Drain queues.
  - Hold / Un-hold / Move Jobs

- **Integration of the GRIA web service into a multi-page editor with web views.**
  - Re-use of GRIA functionality.

- **Queue Configuration**
  - MPE for editing queue configuration files (QDL).
  - Wizard for applying QDL files to Batch services.

- **Scalability improvements, code maintenance and documentation.**
Service Availability Testing

- A tool to **test the availability, compliance and performance** of services with user requirements.

- Development of the Operator Jobs Framework. Utilized by:
  - Service Testing
  - Benchmarking
  - Application Deployment

**Service Tests**

- Defined through a **wizard**.
- Execute the tests and monitor their progress.
- Store results.
- **Extension points** provided to add new tests to the framework.

**Exemplary Tests provided:**
1. Certificate Lifetime test
2. g-Lite middleware version test.
3. Service Availability Monitoring (SAM)
SLA Framework

- SLA framework integration to g-Eclipse.

- Enables the negotiation of Service Level Agreements (SLA) between service providers and service consumers.

- Development of a middleware and SLA schema independent SLA framework.

- Two plug-ins are part of the g-Eclipse core and provide the SLA framework extensibility.

- Two additional plug-ins integrate the NextGrid SLA schema to the SLA editor.

- Completion of user and developer documentation.
SLA Framework (2)

- A wizard aimed at service providers to create Service Level Templates (SLT).
- A multi-page form editor for defining SLT’s parameters.
- A wizard aimed at consumers for creating SLA queries.
WP3 Future

- Near Future (started):
  - Extension of Site Management for the SunGridEngine Batch Service
    - BSc thesis
  - Extension of the Benchmark Framework
    - MSc thesis

- Long-Term Future:
  - Extension of Site Management for LSF Batch Service (Requires access to an LSF Batch Service).

- Integration of other Batch systems will increase visibility and lifetime of the framework.

- Standardized UI processes (independent of middleware) are important!!!
  - Reduce learning curve also for Grid site operators.
Operator Perspective and it’s components are essential part of the g-Eclipse Ecosystem !!!