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An Application of ETICS Co-Scheduling Mechanism to Interoperability and Compliance Validation of Grid Services

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Interoperability and compliance to standards are important quality attributes of software developed for Grid environments where many different parts of an interconnected system have to interact. Compliance to standard is one of the major factors in making sure that interoperating parts of a distributed system can actually interconnect and exchange information. Taking the case of the Grid environment (Foster and Kesselman, 2003), most of the projects that are developing software have not reached the maturity level of other communities yet and have difficulty to identify and adopt standards. Validating the compliance with standards often requires the design of custom test suites and a constant attention to any proposed change. Interoperability amongst middleware and application software developed in order to be used on Grid and other distributed environments is usually a very complex issue.

3. Impact

ETICS provides a single reference for software configuration information, which separate projects can use to validate basic interoperability assumption when developing the code. The co-scheduling mechanism has been developed in ETICS in order to automatically deploy and run distributed tests in different platforms. By co-scheduling it is understood the automation of the deployment of the different services and clients, the execution of the tests and the gathering of information such as test results, metrics, and logs. A typical scenario to be faced by the co-scheduling is composed of several services that interoperate among them, clients that contact the various services and tests that require servers and clients to be in place. This functionality has been applied for testing the interoperability between job submission engines (like CREAM) by using their conformance to the OGSA-BES recommendation. ETICS has therefore been adopted to perform this test automatically.

4. Conclusions / Future plans

We presented the co-scheduling mechanism used to execute complex distributed tests requiring the deployment of many interacting services on different physical nodes. A practical application to the interoperability testing of the CREAM-BES service has been presented. Additional work on this technology is being performed to expand its use to other types of tests, middleware, services and applications.

Provide a set of generic keywords that define your contribution (e.g. Data Management, Workflows, High Energy Physics)

Interoperability, Co-scheduling mechanism, Automatic Test

1. Short overview

Grid software projects require infrastructures in order to evaluate interoperability with other projects and compliance with predefined standards. Interoperability and compliance are quality attributes that are expected from all distributed projects.
ETICS is designed to automate the investigation of this kind of problems. It integrates well-established procedures, tools and resources in a coherent framework and adaptes them to the special needs of these projects.

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