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EMI Execution Service implementation in ARC

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Description of the Work

One of the main problems with various implementation of Grid Computing Elements is lack of portability. Most implementations were using proprietary interfaces. Some efforts to accommodate common standards did happen in a future most notable being adoption of OGF standards

OGSA-BES and JSDL. Still generic standards found to be too generic and required significant number of modifications and additions to make implementations suitable for production environment. That finally rendered existing implementations non-interoperable.

EMI started an effort to produce Execution Service specification suitable for production. It was inspired by existing implementations and covers most of merged functionality. ARC is one of Grid Middlewares adopting EMI ES interface in its A-REX service. During implementation few issues were identified and fixed in EMI ES specifications. Also due to wide functionality covered by EMI ES A-REX's functionality was also expanded hence making it more flexible and powerful. Specifically more fine-grained identity delegation, state reporting and data staging control were implemented.

In parallel to EMI ES interface implementation on service side corresponding functionality was added to ARC client utilities.

Conclusions

The implementation of new EMI ES interface in ARC shows promising results as in some fields it covers even broader functionality than was available before. But final conclusions can be drawn only after further interoperability tests between different implementations.

Impact

The new interface implementation will be available in next EMI release together with corresponding client side implementation. Main purpose of this implementation is to test interface for its interoperability and suitability for production purposes. This interface may be enabled in A-REX service in parallel to existing production interfaces. So evaluation can be performed even in real infrastructure transparently to ordinary usage.

Overview (For the conference guide)

Recent development of EMI Execution Service interface (EMI ES) specifications produced rich production-ready definition. To prove its usability and to test its completeness and interoperability capabilities it is important to provide few implementations.This paper represents the implementation of the EMI ES interface in the Advanced Resource Connector's Computing Element (ARC CE) service (A-REX) and client.

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