Cremona: An Architecture and Library for Creation and Monitoring of WS-Agreements

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ABSTRACT

Using services across domain boundaries, be they organizations or self-managing components of large distributed systems, requires the setup of an agreement between the parties involved, defining the terms of the service including interfaces, security and Quality of Service (QoS) properties. In an on-demand environment in which services are contracted on a short notice, the establishment of an agreement as well as the setup of agreement-fulfilling and monitoring systems of the parties involved must be spontaneous and, partially, automated. WS-Agreement is a standardization effort being conducted in the Global Grid Forum defining a simple agreement establishment protocol, an XML-representation of agreements and agreement templates as well as a runtime agreement monitoring interface, based on the WSRF set of standards.

WS-Agreement standardizes the interaction between the organizational domains. In addition, providers require an infrastructure to manage agreement templates, implement the interfaces, check availability of service capacity and expose agreement states at runtime. Also, agreement requesters need infrastructure to read templates, fill in templates to create suitable agreements, and monitor agreement state at runtime. Cremona (Creation and Monitoring of Agreements) proposes an architecture for the WS-Agreement-implementing middleware. In addition, the Cremona Java Library implements the WS-Agreement interfaces, provides management functionality for agreement templates and instances, and defines abstractions of service-providing systems that can be implemented in a domain-specific environment.