

AN AGENT-BASED DYNAMIC WEB SERVICE DISCOVERY FRAMEWORK WITH QOS SUPPORT

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Abstract

Web services are about the integration of applications via the Web. Hereby, the programming effort should be minimized through the reuse of standardized components and interfaces. One of the fundamental pillars of the Web service vision is a brokerage system that enables services to be published to a searchable repository and later retrieved by potential users. One of the subtasks in a service-oriented architecture is service discovery. Service discovery, the identification of existing Web Services that can be used by new Web applications, is one of the most critical problems deterring Web Service (WS) technology. Current solution is based on UDDI catalogue browsing that supports only primitive matching mechanisms and provides no control over the quality of registered services. Quality of Service (QoS) is becoming an important criterion for selection of the best available service. Currently the problem is twofold. The Universal Description, Discovery and Integration (UDDI) registries do not have the ability to publish the QoS information, and the authenticity of the advertised QoS information available elsewhere may be questionable. We aim to refine the discovery process through designing a new framework that enhances retrieval algorithms by combining syntactic and semantic matching of services with QoS. We propose a model of QoS-based Web services discovery that combines an augmented UDDI registry to publish the QoS information and a reputation manager to assign reputation scores to the services based on customer feedback of their performance. The Certifier verifies the QoS claims from the Web service suppliers. A discovery agent facilitates QoS-based service discovery using the reputation scores in a service matching, ranking and selection algorithm. The novelty of our model lies in its simplicity and in its coordination of the above mentioned components. The Proposed framework should give Web services consumers some confidence about the quality of services of the discovered Web services.

Keywords: Web Services discovery, Quality of Services (QoS), Web Service Broker, Service Registry, UDDI, WSDL, SOAP, tModel, Ranking