

A dynamic reconfiguration model of web services in service-oriented architecture

ABSTRACT

Service-Oriented Architecture (SOA) makes it possible to build distributed systems with web services that can be looked up, published and bound on the execution time across the boundary of an organisation over the Internet. By using standard interfaces and message-exchanging protocols, developers are able to reuse existing web services and integrate these individual services. Nevertheless, SOA must be able to provide a way to cope with dynamic changes that may occur in the system requirements and the environment in which the system operates. The means is known as dynamic reconfiguration that allows web services binding happens at runtime by matching the functional as well as Quality of Service (QoS) requirements to ensure dependable SOA systems. In the paper, we introduce a dynamic reconfiguration of web services model (DREWS) using middleware-based approach. The model intended to handle functional and QoS requirements during dynamic reconfiguration process and to provide an explicit mechanism during pre-, in-, and post-adaptation stages. A self-adaptive tool is developed based on the model to support the dynamic reconfiguration process that allows minimum human intervention.

Keyword: Dynamic reconfiguration; Middleware-based; Service-oriented architecture; Web service