AN ADAPTIVE SERVICE REPLICATION FRAMEWORK FOR MANAGING DIFFERENT RESPONSIVENESS LEVELS

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Abstract

Service replication becomes the area of interest for many providers as it can be utilized to improve both performance and availability of their own services. With the increasing number of consumers, the providers are obligated to maintain the service responsiveness (i.e. Performance and availability) with respect to the signed Service Level Agreement (SLA) between the provider and consumers. In this paper, our previous adaptive replication framework is modified to provide different responsiveness levels to available consumers. The suggested framework is calculating a specific load threshold (i.e. The time needed to initiate the adaptive service replication process) according to the response time registered within the SLA contract through applying the linear regression model. Specifically, when the current load of the running service gets over the calculated threshold, the adaptive replication process will be initiated automatically to preserve the responsiveness level that the consumer demands. The paper basically describes two different scenarios to show how the suggested framework operates for individual consumers and organizations. Finally, the experimental results demonstrate that the proposed framework prohibits the violation of response time parameter in the SLA contract.

An Adaptive Replication Framework for Improving the QoS of Web Services

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Abstract

This paper presents an adaptive framework for managing dynamic replication of Web services in a distributed environment including the Service-Oriented Architecture (SOA) environment. The framework aims to improve the web services availability and to reduce the response time by supporting an automatic replication of the consumed web services according to environment changing conditions that might occur at the services provider side such as failure or increasing loading. For example, if one service or server fails, the framework replicates automatically the consumed service on another particular selected server based on some Service-Level Agreements (SLAs) including their performance and availability. Further, the framework balances the incoming requests using Round Robin a load-balancing algorithm. Moreover, the proposed framework is designed to predict the load of the involved candidate servers within the replication process through utilizing a statistical regression technique.

A Web Service-Based Framework for an Online 3D Model Viewer

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Abstract

Building Information Model (BIM) is an IT methodology to construct a facility virtually in details. The digital format representation is essential to facilitate information sharing and exchange among multiple contractors. Industry Foundation Classes (IFC) is utilized to embed the shared data in an XML standard structure to improve the interoperability among all interrelated participants within the facility construction process. Web Service (WS) is an XML component which encapsulates and transfers a business process and its contiguous data safely, concurrently, and less-cost among several sides through accessing the web. In this paper, a web servicebased framework is introduced to enhance the performance of IFC elements exchange and accessibility through the web. The framework employs multiple web service replicas in order to obtain a fast real-time 3D view. Each individual service replica retrieves a specific section of the IFCs information from the DB backend and draws its corresponding object. Experimental evaluation shows that the framework effectively enhances the time required to sketch the overall 3D view for the participant.

Privacy Protection Framework with Defined Policies for Service-Oriented Architecture

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ABSTRACT

Service-Oriented Architecture (SOA) is a computer systems design concept which aims to achieve reusability and inte-gration in a distributed environment through the use of autonomous, loosely coupled, interoperable abstractions known as services. In order to interoperate, communication between services is very important due to their autonomous nature. This communication provides services with their functional strengths, but also creates the opportunity for the loss of privacy. In this paper, a Privacy Protection Framework for Service-Oriented Architecture (PPFSOA) is described. In this framework, a Privacy Service (PS) is used in combination with privacy policies to create privacy contracts that out-line what can and cannot be done with a consumer's personally identifiable information (PII). The privacy policy con-sists of one-to-many privacy rules, with each rule created from a set of six privacy elements: collector, what, purpose, retention, recipient and trust. The PS acts as an intermediary between the service consumer and service provider, to es-tablish an unbiased contract before the two parties begin sending PII. It is shown how many Privacy Services work to-gether to form the privacy protection framework. An examination of what current approaches to protecting privacy in an SOA environment is also presented. Finally, the operations the PS must perform in order to fulfill its tasks are out-lined.

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