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Mannava, Vishnuvardhan; Ramesh, T.

An adaptive design pattern for invocation of synchronous and asynchronous web services in autonomic computing systems.

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Summary: Asynchronous invocations are needed in the context of distributed object frameworks to prevent clients from blocking during remote invocations. Popular Web Service frameworks offer only synchronous invocations (over HTTP). When a client with asynchronous invocation of Web Service is not supported, client developers have to build asynchronous invocations on top of the synchronous invocation facility. But this is tedious, error-prone, and might result in different remote invocation styles used within the same application. Current autonomic computing application uses synchronous Web Service to manage their resources. In this paper we propose autonomic system by using Design Patterns for Web Service, which is amalgamation of fire and forget, chain of responsibility and Case based reasoning Design Patterns. The system will provide synchronous and asynchronous paradigm based on demand of client. By using our proposed Adaptive Design Pattern for invocation of Web Services previous Web Service systems will update their resources based on client request. Our proposed system satisfies the properties of autonomic system. The pattern is described using a java-like notation for the classes and interfaces. A simple UML class and Sequence diagrams are depicted.

Keywords: web services; synchronous invocation; asynchronous invocations; web service composition; design pattern; autonomic system; service oriented architecture (SOA); web services and web service description language (WSDL)
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