

REST Vs SOAP

Web Service

Technologies

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Abstract

The web service composition involves various web services from similar or different services developed from existing or new ones and brought together to create a new web composition that reduces duplication of services. The Web service is important to support management of large quantities of Web service components. These two communication technologies SOAP and REST with their differences is brought about by the considerable network traffic and a rising number of mobile computing devices increasing the service demand. Simple Object Access Protocol (SOAP) is a messaging protocol specification for exchanging structured information or data in implementation of web services on a network. Representation State Transfer (REST) as a design pattern is an Application Program Interface that conforms to the constraints of REST architecture and allows interaction with web services and of which any web service designed on the principals of REST is called RESTful. The advantages based on the differences between these two technologies are taken into consideration.

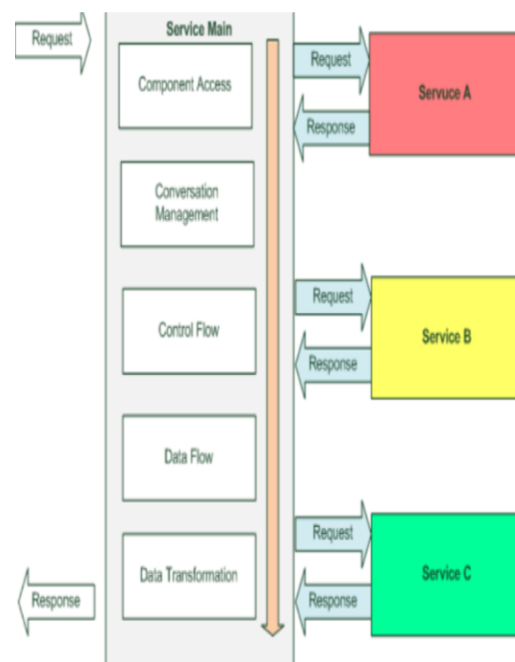
I. Introduction

Web services are increasingly used as a standard way to exchange information among applications and the communication between applications is based on SOAP and REST principle. These two technologies have reduced the problem of compatibility and

security problems that were faced in the start of web services. To overcome the challenges of SOAP communications that causes network traffic, processing delays and higher latency these limitations are overcome by the advantages considered when using a RESTful architecture as a better alternative than using SOAP. REST is specifically designed for working with components, files or objects on a particular hardware device. RESTful web service uses the normal http methods of GET, POST, PUT and DELETE for working with the required components.

The goal of this paper is to make a survey of the advantages between SOAP and RESTful web services while giving an overview of the advantages of SOAP as a protocol verses REST as a design architectural style with guideline principals known for RESTful web services.

Web Service Composition



II. SOAP

The differences in technologies here is that SOAP is a protocol and REST is not. SOAP is designed as a standardized protocol with rules to follow and REST is an architectural style with principles used as a guideline. SOAP is designed as functional driven and the data is available for services e.g. GET user, while REST approach is data driven where data is available as a resource. SOAP API is by default stateless but it is possible to make it stateful, while REST is stateless no server side sessions really occur. SOAP API cannot be cached, while the REST API can be cached. SOAP has web service security with ssl support and is built in asset compliance for quality and durability while REST uses https and ssl. On the part of performance SOAP requires more bandwidth while REST requires a few resources which make it powerful. Message format for SOAP is an application with xml specification using xml messaging protocol exchanging information among computers while REST can take several formats like plain text, html, xml, Jason etc. The transfer protocol SOAP uses the http, smtp, udp etc. while REST only works on HTTP. SOAP is most recommended for enterprise application, high security applications, financial services payment gateways, telecommunications etc. and REST is for public apis for web services, mobile services and social networks.

III. When do you use REST?

When you have limited resources and bandwidth then you should automatically use REST. Since SOAP has big content and

consumes a great bandwidth then REST should be used when the network bandwidth is a constraint. When you have limited resources and bandwidth then you should automatically use REST. For reasons of statelessness then you should use REST when there is no need to maintain the state of information from one request to another but when you need information flow from one request to flow to another then SOAP is suitable for that purpose. When there is need for API to be cached to reduce the number of times the requests are made to a web server that is when a client needs to request for the same information, REST is the proper solution. When there is need of coding REST coding and implementation is far easier than SOAP if there is quick solution for a web service. Challenges of REST is that there is lack of security, REST does not give any security like SOAP and it is only appropriate for public available URLs. REST does not have a confidentiality mechanism to be used for web services. REST has lack of state.

IV. When do you use SOAP?

SOAP can be used when there is a need for asynchronous processing and subsequent invocation where the client needs a guaranteed level of reliability and security for example the version SOAP 1.2 meets high security. SOAP can be used when there is a need of formal communication between the client and the server SOAP gives the rigid specifications for this type of interaction. In case of online purchasing

site where users enter in the cart before a payment, the web service that does the final payment will require only the item name, unit price, and quantity in such a case it's better to use SOAP protocol. When a request needs to be in a stateful form SOAP provides a web service structure to support such requirements. Challenges of SOAP is that one change in the wsdl file will cause an impact in the whole impact on the client application. The issues concerning size because of using a lot of bandwidth could be a big issue.

V. RESTful Web Service Composition Advantages

REST allows a client to interact and access secured resources under dynamic security, which in turn reduces the costs for system change. REST allows expansion of RESTful and servicing capability of the system, as well as provides composition that helps locate collaborative operation. REST allows linking of resources. REST is capable of offering various users services that are good for context-based data solving. One primary requirement of REST will be that it is explicitly paired with BPEL, this allows component structure to become part of the language. REST allows description of the adjustment which is capable of supporting the service, the service's components and dynamic environment management. REST reduces the pain of bottle-neck efficiency, or vital point of failure. REST is able to separate the type and quality of each evaluation method for web service and process. There is also dynamic adjusting of ontology. There is increased web service

component, which has privacy protection capability for both service consumer and service provider. There is automatic format change and also provides services to web service composition domain. There is special focus on data exchange and data transformation among linked web services. REST provides automated web services and also selects web service with quality of service. REST is based on hyper-graph theory with management and protection of personal data. Distributed calculation format uses TAO-Tree (Timed AND-OR Tree) to lay down the map for providing composite services. REST provides pre-composed web services that answer user's needs by using ontology. REST explains WS-BPEL process with standardized language that provides quality of service. The editing service (CASP) method manages quality of service relationship while it is remaining concerned with all services.

VI Conclusion

Web service composition technologies include improving quality of web service communications provided by the differences and advantages of SOAP and REST principals which is more increasingly important and efficient for the management of large quantities of web services components that are using REST for RESTful web services. Thus because of the increase in the rising number of mobile computing devices that causes network traffic and latency while using SOAP as a more secure principle of communication on

the web has also according to the growing needs of services due to the increased demand of services on the global network meant web communication is based on both SOAP and REST principals.

References

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