SOAP vs. REST

-By Siwareddy

SOAP	REST
Simple Object Access Protocol	Representational state transfer
SOAP is an official standard as it is protocol.	REST is an architectural style but no official standards. REST works on principles like Resources, Messages, Representations, Stateless
SOAP API used Web Services Description language (WSDL) for describing the functionalities being offered by web services. It uses service interfaces to expose its functionality	REST API expose as URI to identify the resources on the server. GET http://www.mycompany.com/employees GET http://www.mycompany.com/employess/1 PUT http://www.mycompany.com/employess/1
SOAP can only work with XML format	REST permits different data format such as Plain text, HTML, XML, JSON, etc. But the most preferred format for transferring data is JSON
SOAP can not work make use of REST	REST can make use of SOAP
SOAP requires more network bandwidth because it send lot of other information along with the actual message	REST requires less network bandwidth as most of the time, clients request for JSON which light weight and it contains only server response
Sample SOAP Request: --- POST /Quotation HTTP/1.0 Host: www.xyz.org Content-Type: text/xml; charset = utf-8 Content-Length: nnn <?xml version = "1.0"?> <SOAP-ENV:Envelope xmlns:SOAP-ENV = "http://www.w3.org/2001/12/soap-envelope" SOAP-ENV:encodingStyle = "http://www.w3.org/2001/12/soap-encoding"> <SOAP-ENV:Bodyxmlns:m = "http://www.xyz.org/quotations"> <m:GetQuotation> <m:QuotationsName>MiscroSoft</m:QuotationsName></m:GetQuotation> </SOAP-ENV:Body> </SOAP-ENV:Envelope>	Sample REST API request: GET https://www.mycompany.com/emoplyees
HTTP/1.0 200 OK Content-Type: text/xml; charset = utf-8 Content-Length: nnn <?xml version = "1.0"?> <SOAP-ENV:Envelope xmlns:SOAP-ENV = "http://www.w3.org/2001/12/soap-envelope"	{ "Employees" : [{ "userId":"siva1", "jobTitleName":"Developer", "company" :"mycompany1" }, {

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SOAP-ENV:encodingStyle =
"http://www.w3.org/2001/12/soap-encoding">
 	
<SOAP-ENV:Bodyxmlns:m =
"http://www.xyz.org/quotation">
<m:GetQuotationResponse>
<m:Quotation>Here is the quotation</m:Quotation>
</m:GetQuotationResponse>
</SOAP-ENV:Body>
</SOAP-ENV:Envelope>
	"userId":"siva2",
	"jobTitleName":"Developer",
	"company" :"mycompany1"
	},
	{
	"userId":"siva3",
	"jobTitleName":"Developer",
	"company" :"mycompany1"
	}
	]
	}

RESTful web services are good choice in below use cases

- Stateless
- Bandwidth is greater constraint
- Requests different formats are responses like JSON, HTML, plain text, file uploads etc..
- Caching
- Ease of implementation

Disadvantages: Stateless, Security

SOAP is preferred in below use cases:

- Security
- Stateful operations

Disadvantages:

- Tight coupling between the client and server because of the WSDL file. Any modification of WSDL file has impact on all the client which connected through the web service
- Message size

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Sample WSDL file:

```
<definitions name="math" xmlns="http://schemas.xmlsoap.org/wsdl/"
xmlns:soap="http://schemas.xmlsoap.org/wsdl/soap/"
xmlns:http="http://schemas.xmlsoap.org/wsdl/http/"
xmlns:xs="http://www.w3.org/2001/XMLSchema"
xmlns:math="http://example.org/math"
targetNamespace="http://example.org/math">

<types>
<xs:schematargetNamespace="http://example.org/math"
elementFormDefault="qualified">

<xs:element name="add">
<xs:complexType>
<xs:sequence>
<xs:element name="x" type="xs:double"/>
<xs:element name="y" type="xs:double"/>
</xs:sequence>
</xs:complexType>
</xs:element>

<xs:element name="answer">
<xs:complexType>
<xs:sequence>
<xs:element name="result" type="xs:double"/>
</xs:sequence>
</xs:complexType>
</xs:element>

</xs:schema>
</types>

<message name="addMessage">
<part name="parameters" element="math:add"/>
</message>
<message name="resultMessage">
<part name="response" element="math:answer"/>
</message>

<portType name="WsMath">
<operation name="sum">
<input message="math:addMessage"/>
<output message="math:resultMessage"/>
</operation>
</portType>

<binding name="MathSoapHttpBinding" type="math:WsMath">
<soap:binding style="document"
                    transport="http://schemas.xmlsoap.org/soap/http"/>
<operation name="sum">
<soap:operationsoapAction="http://example.org/math/#sum"/>
<input>
```

```
<soap:body use="literal"/>
</input>
<output>
<soap:body use="literal"/>
</output>
</operation>
</binding>

<service name="MathService">
<port name="MathEndpoint" binding="math:MathSoapHttpBinding">
<soap:address location="math"/>
</port>
</service>

</definitions>
```