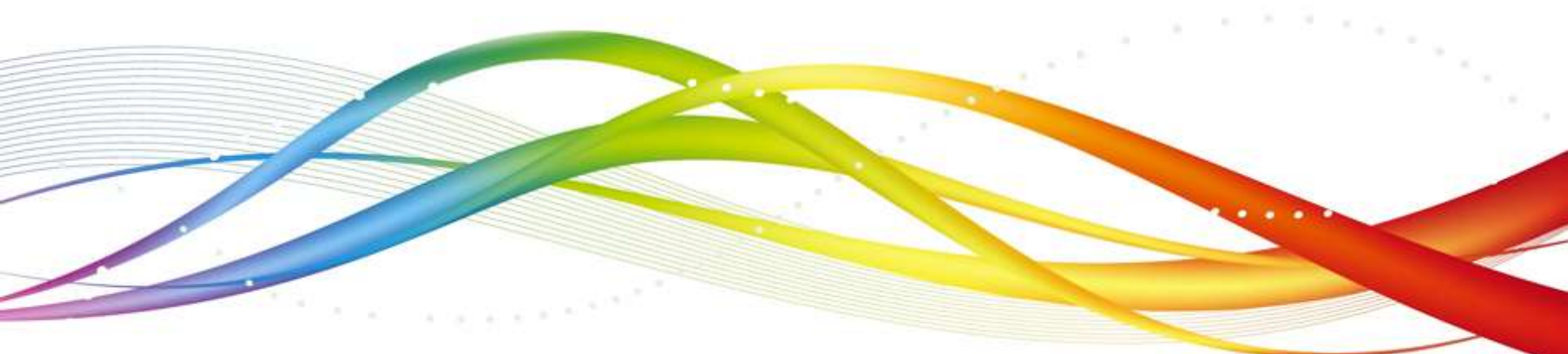




**SOAP**



# Introduction

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- SOAP stands for ***Simple Object Access Protocol***
- SOAP is a lightweight XML based messaging Protocol
- Used to encode the information in Web Service Request and Response messages before sending them over a network
- It also specifies what parts of the messages should be read by whom and how to react in case the content is not understood
- SOAP messages are independent of any operating System or protocol and may be transported using a variety of Internet protocols

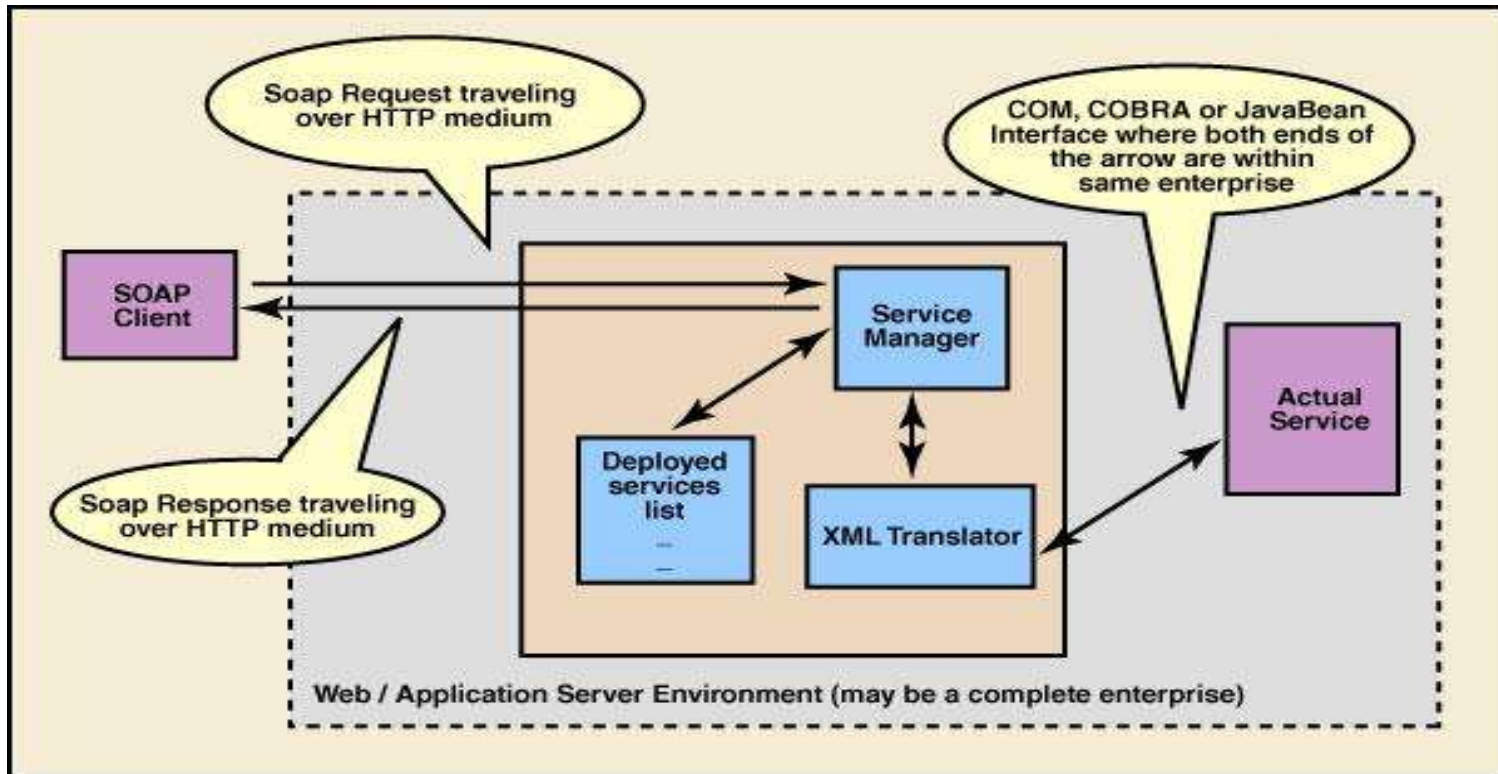
# What SOAP covers

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SOAP covers the following four main areas :

- A message format for one-way communication describing how a message can be packed into an XML document
- A description of how a SOAP message should be transported through the Web (using HTTP) or e-mail (using SMTP)
- A set of rules that must be followed when processing a SOAP message and a simple classification of the entities involved in that processing
- A set of conventions on how to turn an RPC call into a SOAP message and back and how to implement the RPC style of interaction

# SOAP architecture



# SOAP Architecture (Contd.).

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SOAP communication Architecture can be broadly classified as

- 1. SOAP client**
- 2. SOAP server**
- 3. Actual service**

- A SOAP client is a SOAP aware machine and is capable of generating and sending SOAP requests to a SOAP server over HTTP
- A SOAP request is a type of SOAP message
- Usually, there are only two types of SOAP messages: SOAP request and SOAP response.

# SOAP Architecture (Contd.).

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- A SOAP request is the message that a SOAP client sends to a SOAP server and a SOAP response is the return message that the SOAP server sends back to the SOAP client in response.
- A SOAP server is also a SOAP aware machine and has the capability to accept requests from SOAP clients and author appropriate responses. These encoded responses go back to the requesting SOAP client.
- Inside the SOAP server there are three entities:
  1. Service manager
  2. Deployed services list
  3. XML translator

# SOAP Architecture (Contd.).

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- The service manager is responsible for managing services against requests . The service manager will read name of the SOAP service that the SOAP client wants to invoke and check whether the required service actually resides on this SOAP server.
- For this, it will consult the deployed services list, which is actually a list of all services that the SOAP server hosts. If yes, the service manager will pass on the SOAP request to the XML translator.
- The XML translator is then responsible for converting the XML structure of the SOAP request to that of the programming language, that the programmer has used to implement the actual service.

# SOAP Architecture (Contd.).

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- It is also responsible for converting the response from the actual service back to the XML Structure of the SOAP response
- The box labeled actual service in the figure, is the location where actual service resides.
- The service implementation, for example, may be in the form of COM components or Java Bean components.
- The XML translator is responsible for translating XML structures into proper method invocation calls.



# SOAP Architecture (Contd.).

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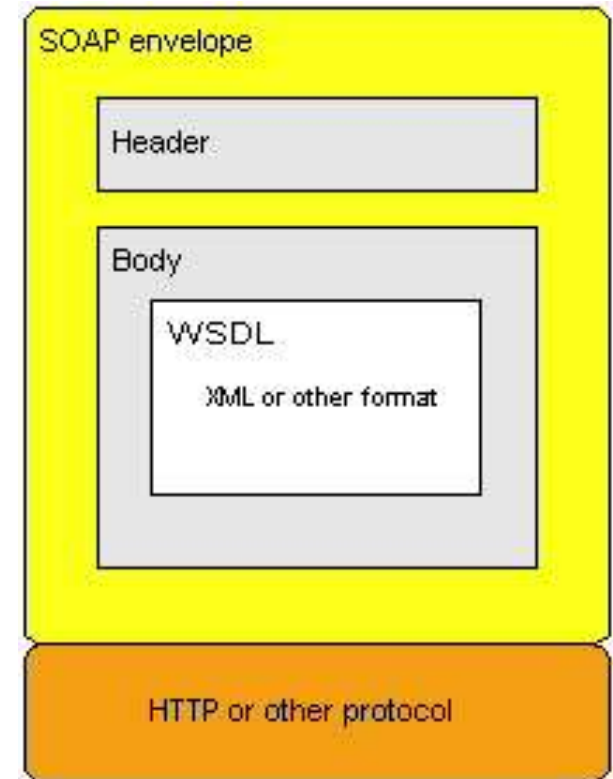
- When the XML translator invokes some method of actual service implementation, the method will perform its job and return the resulting information back to the XML translator.
- Have a look at the arrow in the figure, which connects XML translator to the actual service.
- Both ends of this arrow are within the same enterprise, which means that the same organization has the control over interfaces at both ends of communication.
- Compare this to the arrow between SOAP client and SOAP server, which crosses the boundary of an enterprise.
- This is exactly the purpose of SOAP.

# Structure of Basic SOAP Message

SOAP provides the envelope for sending Web Services messages over the Intranet/Internet. It is part of the set of standards specified by the W3C

The SOAP envelope contains two parts

1. An optional header providing information on authentication, encoding of data, or how a recipient of a SOAP message should process the message
2. The body that contains the message. These messages can be defined using the WSDL specification



# The Basic Structure of SOAP (Contd.).

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A SOAP message:

- May or may not contain an XML declaration
- Must have a root element, and in SOAP, it's the Envelope element
- Envelope may contain an optional Header element and must contain a Body element
- Header element must be the immediate child of the Envelope element and precedes the Body element
- Body element contains the actual application data being exchanged between applications in XML format

# QUIZ 1

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## **1. Which of the following are true about SOAP?**

- a. SOAP is platform independent
- b. SOAP is language independent
- c. SOAP is based on XML
- d. SOAP is a format for sending messages
- e. All of the above

## **2. Which of the following is a messaging protocol?**

- a. UDDI
- b. SOAP
- c. WSDL
- d. None of the above

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**3. Which one of the following statement is true related to A SOAP message :**

- a. An envelope contains a header element and a body element and both are optional.
- b. An envelope contains a header element and a body element and both are mandatory.
- c. An envelope may contain an optional body element and must contain a header element.
- d. An Envelope may contain an optional Header element and must contain a Body element.



**Thank You**

