



SOAP

simple object access protocol

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About the Tutorial

SOAP is an open-standard, XML-based messaging protocol for exchanging information among computers. This is a brief tutorial that introduces the readers to the fundamentals of SOAP before moving on to explain its various elements, encoding, and how SOAP is transported.

Audience

This tutorial has been prepared for beginners to help them understand the basics of SOAP and how to implement it in practice.

Prerequisites

As a reader of this tutorial, you should have a basic understanding of client/server environment, and knowledge of XML and XML namespace.

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1. SOAP – INTRODUCTION

SOAP is an acronym for Simple Object Access Protocol. It is an XML-based messaging protocol for exchanging information among computers. SOAP is an application of the XML specification.

Points to Note

- SOAP is a communication protocol designed to communicate via Internet.
- SOAP can extend HTTP for XML messaging.
- SOAP provides data transport for Web services.
- SOAP can exchange complete documents or call a remote procedure.
- SOAP can be used for broadcasting a message.
- SOAP is platform- and language-independent.
- SOAP is the XML way of defining what information is sent and how.
- SOAP enables client applications to easily connect to remote services and invoke remote methods.

Although SOAP can be used in a variety of messaging systems and can be delivered via a variety of transport protocols, the initial focus of SOAP is remote procedure calls transported via HTTP. Other frameworks including CORBA, DCOM, and Java RMI provide similar functionality to SOAP, but SOAP messages are written entirely in XML and are therefore uniquely platform- and language-independent.

2. SOAP – MESSAGES

A SOAP message is an ordinary XML document containing the following elements:

- **Envelope** : Defines the start and the end of the message. It is a mandatory element.
- **Header**: Contains any optional attributes of the message used in processing the message, either at an intermediary point or at the ultimate end-point. It is an optional element.
- **Body**: Contains the XML data comprising the message being sent. It is a mandatory element.
- **Fault**: An optional Fault element that provides information about errors that occur while processing the message.

All these elements are declared in the default namespace for the SOAP envelope:

<http://www.w3.org/2001/12/soap-envelope>

and the default namespace for SOAP encoding and data types is:

<http://www.w3.org/2001/12/soap-encoding>

NOTE: All these specifications are subject to change. So keep updating yourself with the latest specifications available on the W3 website.

SOAP Message Structure

The following block depicts the general structure of a SOAP message:

```
<?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:Header>
    ...
    ...
  </SOAP-ENV:Header>

  <SOAP-ENV:Body>
    ...
    ...
```

```
<SOAP-ENV:Fault>
```

```
...
```

```
...
```

```
</SOAP-ENV:Fault>
```

```
</SOAP-ENV:Body>
```

```
</SOAP_ENV:Envelope>
```

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