SOAP is a lightweight protocol for exchanging structured information in a decentralized, distributed environment.

SOAP is an XML-based communication protocol and encoding format for inter-application communication.

SOAP is widely viewed as the backbone to a new generation of cross-platform cross-language distributed computing applications, termed Web Services.

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

* A required **Envelope** element that identifies the XML document as a SOAP message
* An optional **Header** element that contains header information
* A required **Body** element that contains call and response information
* An optional **Fault** element that provides information about errors that occurred while processing the message

**Skeleton SOAP Message**

<?xml version="1.0"?>

<soap:**Envelope** xmlns:soap="http://www.w3.org/2001/12/soap-envelope"

soap:encodingStyle="http://www.w3.org/2001/12/soap-encoding">

<soap:**Header**>

...

...

</soap:Header>

<soap:**Body**>

...

...

<soap:**Fault**>

...

...

</soap:Fault>

</soap:Body>

</soap:Envelope>

## The SOAP Fault Element

An error message from a SOAP message is carried inside a Fault element.

If a Fault element is present, it must appear as a child element of the Body element. A Fault element can only appear once in a SOAP message.

The SOAP Fault element has the following sub elements:

|  |  |
| --- | --- |
| **Sub Element** | **Description** |
| <faultcode> | A code for identifying the fault |
| <faultstring> | A human readable explanation of the fault |
| <faultactor> | Information about who caused the fault to happen |
| <detail> | Holds application specific error information related to the Body element |

**SOAP HTTP Binding**

A SOAP method is an HTTP request/response that complies with the SOAP encoding rules.

**HTTP + XML = SOAP**

A SOAP request could be an HTTP POST or an HTTP GET request.

The HTTP POST request specifies at least two HTTP headers: Content-Type and Content-Length.