

More about SOAP

Skeleton SOAP Message

```
<?xml version="1.0"?>

<soap:Envelope
xmlns:soap="http://www.w3.org/2003/05/soap-envelope/"
soap:encodingStyle="http://www.w3.org/2003/05/soap-encoding">

  <soap:Header>
    ...
  </soap:Header>

  <soap:Body>
    ...
    <soap:Fault>
      ...
    </soap:Fault>
  </soap:Body>

</soap:Envelope>
```

Example

The SOAP header

The SOAP <Header> is an optional subelement of the SOAP envelope. It is used to pass application-related information that is to be processed by SOAP nodes along the message path.

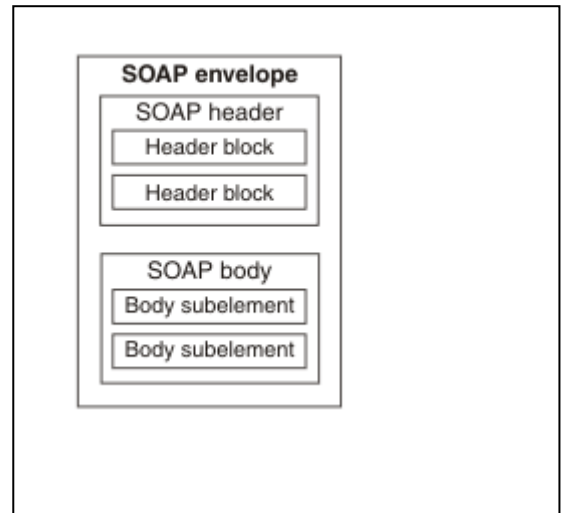
SOAP Header in SOAP 1.1

SOAP 1.1 Header attributes are : **mustUnderstand**, **actor**, **encodingStyle**

- **mustUnderstand** : soap:mustUnderstand="0|1", The SOAP mustUnderstand attribute can be used to indicate whether a header entry is mandatory or optional for the recipient to process. Example is given below.

```
<soap:Envelope
xmlns:soap="http://www.w3.org/2001/12/soap-envelope"
soap:encodingStyle="http://www.w3.org/2001/12/soap-encoding">

  <soap:Header>
    <m:Trans xmlns:m="http://www.w3schools.com/transaction/"
      soap:mustUnderstand="1">234
    </m:Trans>
  </soap:Header>
  ...
  ...
</soap:Envelope>
```



- **actor** : soap:actor="URI", Who should process message. The SOAP actor attribute is used to address the Header element to a specific endpoint. Example is given below.

```
?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>
    <m:Trans xmlns:m="http://www.w3schools.com/transaction/"
      soap:actor="http://www.w3schools.com/appml/">234
    </m:Trans>
  </soap:Header>
  ...
  ...
</soap:Envelope>
```

- **encodingStyle** : soap:encodingStyle="URI", The encodingStyle attribute is used to define the data types used in the document.

SOAP Header in SOAP 1.2 : mustUnderstand, role , relay

- **mustUnderstand** : soap:mustUnderstand="true|false", The SOAP mustUnderstand attribute can be used to indicate whether a header entry is mandatory or optional for the recipient to process. Example is given below.
- **role** : It is similar to actor (SOAP 1.1). The SOAP 1.2 specification defines three standard roles in addition to those which are defined by the application:

http://www.w3.org/2003/05/soap-envelope/none

None of the SOAP nodes on the message path should process the header block directly. Header blocks with this role can be used to carry data that is required for processing of other SOAP header blocks.

http://www.w3.org/2003/05/soap-envelope/next

All SOAP nodes on the message path are expected to examine the header block (provided that the header has not been removed by a node earlier in the message path).

http://www.w3.org/2003/05/soap-envelope/ultimateReceiver

Only the ultimate receiver node is expected to examine the header block.

- **relay** : relay="true|false", This attribute, like mustUnderstand, is a boolean value. If it is set to true, it indicates that the SOAP header block must not be processed by any node that is targeted by the header block, but must only be passed on to the next targeted node.

Error Handling with SOAP Faults

SOAP errors are handled using a specialized envelope known as a Fault Envelope. Example is given below.

```
<?xml version='1.0' encoding='UTF-8'?>
<SOAP-ENV:Envelope xmlns:SOAP-ENV="http://schemas.xmlsoap.org/soap/envelope/" xmlns:
xsi="http://www.w3.org/1999/XMLSchema-instance" xmlns:xsd="http://www.w3.org/1999/
/XMLSchema">
  <SOAP-ENV:Body>
    <SOAP-ENV:Fault>
      <faultcode>SOAP-ENV:Server</faultcode>
      <faultstring>Test Fault</faultstring>
      <faultactor>/soap/servlet/rpcrouter</faultactor>
      <detail>
        <stackTrace>[SOAPException: faultCode=SOAP-ENV:Server; msg=Test Fault]
          at StockQuantity.getQty(StockQuantity.java:21)
          at java.lang.reflect.Method.invoke(Native Method)
          at org.apache.soap.server.RPCRouter.invoke(RPCRouter.java:146)
          ...
          at org.apache.tomcat.util.ThreadPool$ControlRunnable.run(
            ThreadPool.java:501)
          at java.lang.Thread.run(Thread.java:498)
        </stackTrace>
      </detail>
    </SOAP-ENV:Fault>
  </SOAP-ENV:Body>
</SOAP-ENV:Envelope>
```

Another small example

```
<?xml version='1.0' encoding='UTF-8'?>
<soapenv:Envelope xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/">
  <soapenv:Body>
    <soapenv:Fault>
      <faultcode>soapenv:Client</faultcode>
      <faultstring>org.apache.axis2.databinding.ADBException: Unexpected
subelement DeploymentDocuments
      </faultstring>
      <detail/>
    </soapenv:Fault>
  </soapenv:Body>
</soapenv:Envelope>
```

SOAP 1.1

In SOAP 1.1, the SOAP <Fault> element contains the following elements:

<faultcode>

The <faultcode> element is a mandatory element in the <Fault> element. It provides information about the fault in a form that can be processed by software. SOAP defines a small set of SOAP fault codes covering basic SOAP faults, and this set can be extended by applications.

<faultstring>

The <faultstring> element is a mandatory element in the <Fault> element. It provides information about the fault in a form intended for a human reader.

<faultactor>

The <faultactor> element contains the URI of the SOAP node that generated the fault. A SOAP node that is not the ultimate SOAP receiver must include the <faultactor> element when it creates a fault. An ultimate SOAP receiver is not obliged to include this element, but may do so.

<detail>

The <detail> element carries application-specific error information related to the <Body> element. It must be present if the contents of the <Body> element were not successfully processed. It must not be used to carry information about error information belonging to header entries. Detailed error information belonging to header entries must be carried in header entries.

SOAP 1.2

In SOAP 1.2, the SOAP <Fault> element contains the following elements:

<Code>

The <Code> element is a mandatory element in the <Fault> element. It provides information about the fault in a form that can be processed by software. It contains a <Value> element and an optional <Subcode> element.

<Reason>

The <Reason> element is a mandatory element in the <Fault> element. The <Reason> element contains one or more <Text> elements, each of which contains information about the fault in a different native language.

<Node>

The <Node> element contains the URI of the SOAP node that generated the fault. A SOAP node that is not the ultimate SOAP receiver must include the <Node> element when it creates a fault. An ultimate SOAP receiver is not obliged to include this element, but may do so.

<Role>

The <Role> element contains a URI that identifies the role in which the node was operating at the point the fault occurred.

<Detail>

The <Detail> element is an optional element, which contains application-specific error information related to the SOAP fault codes describing the fault. The presence of the <Detail> element has no significance regarding which parts of the faulty SOAP message were processed.

Sample SOAP Request

```
<?xml version="1.0"?>

<soap:Envelope
xmlns:soap="http://www.w3.org/2003/05/soap-envelope/"
soap:encodingStyle="http://www.w3.org/2003/05/soap-encoding">

  <soap:Body>
    <m:GetPrice xmlns:m="http://www.w3schools.com/prices">
      <m:Item>Apples</m:Item>
    </m:GetPrice>
  </soap:Body>

</soap:Envelope>
```

The example above requests the price of apples. Note that the m:GetPrice and the Item elements above are application-specific elements. They are not a part of the SOAP namespace.

Sample SOAP Response

```
<?xml version="1.0"?>

<soap:Envelope
xmlns:soap="http://www.w3.org/2003/05/soap-envelope/"
soap:encodingStyle="http://www.w3.org/2003/05/soap-encoding">

  <soap:Body>
    <m:GetPriceResponse xmlns:m="http://www.w3schools.com/prices">
      <m:Price>1.90</m:Price>
    </m:GetPriceResponse>
  </soap:Body>

</soap:Envelope>
```