

SOAP for (and by) dummies

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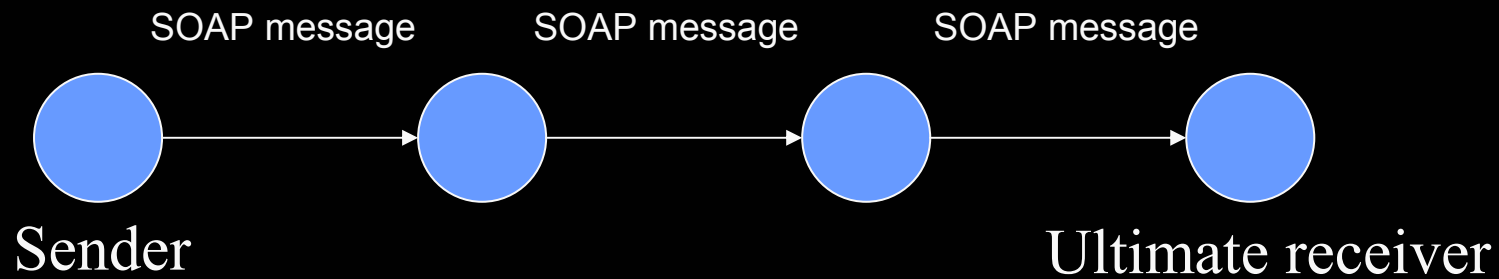
W3C Context

- Part of the XML Protocol activity
 - XML Protocol Working Group
- SOAP 1.2, a three-part document:
 - Part 0: Primer
 - Part 1: Messaging framework
 - Part 2: Adjuncts

Objectives of SOAP

- SOAP
 - Exchanging structured and typed information between peers in a decentralized, distributed environment
 - Stateless one-way message exchange paradigm

Implicit architecture: sequence of SOAP processors



Soap Message : overall structure

- Envelope = Header + Body

```
<env:Envelope xmlns:env="http://www.w3.org/2001/12/soap-envelope">
  <env:Header>
    ...
  </env:Header>
  <env:Body>
    ...
  </env:Body>
</env:Envelope>
```

SOAP Header

- Optional section of the envelope
 - Represent some aspects pertaining to the overall processing of the body of the SOAP message
 - Anticipate the participation of SOAP processing nodes along a message's path from a sender to an ultimate receiver
- Made of Header Blocks
 - Logical groupings of data
 - Defined in their own namespaces
 - E.g.: who sent the message, when; what is the purpose of the message, etc.

SOAP Processing Model

- 'actor' attribute (anyURI)
 - Present in the header element
 - Role played by the intended target of that header
 - Standardized actor roles: “none”, “next”, “anonymous” (default, when no actor role is specified)

- Example:

```
<env:Header>  
    <app:oneBlock  
        env:actor="http://www.miamm.org/Log">  
    </app:oneBlock>  
</env:Header>
```

SOAP Processing Model (cont.)

- 'mustUnderstand' attribute
 - “true” if the targeted processor must process the block according to the specification of that block (or generate a fault)

- Example:

```
<env:Header>
  <app:oneBlock
    env:actor="http://www.miamm.org/Log"
    env:mustUnderstand="true">
  </app:oneBlock>
</env:Header>
```


SOAP Body

- Mandatory element of the Envelope
 - Intended for exchange of information between the initial SOAP sender and the ultimate SOAP receiver
 - *Must* be processed by the ultimate recipient
 - Container of SOAP specific faults
 - No actor specification:
 - Always targeted at the SOAP processor that assumes the “anonymous” actor role

Encapsulation of Remote Procedure Calls

- Information needed for RPCs
 - Target of the procedure or method (intended recipient, i.e. “anonymous” role)
 - Procedure or method name
 - Optional procedure or method signature
 - Parameters to the procedure or method
- Rem: SOAP does not provide any interface definition language (IDL) either formal or informal

RPC in SOAP

- RPC

```
<env:Body>
```

```
  <mia mm:parseSentence
```

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

```
      xmlns:mia mm="http://www.mia mm.org">
```

```
        <mia mm:sentence>I would like some songs by the  
        Beatles</mia mm:sentence>
```

```
      </mia mm:parseSentence>
```

```
</env:Body>
```

- encodingStyle: cf. part 2 section 4

Response to an RPC in SOAP

- RPC response

```
<env:Body>
  <miamm:parseSentenceResponse
    env:encodingStyle="http://www.w3.org/2001/12/soap-encoding"
    xmlns:miamm="http://www.miamm.org">
    <miamm:tree>
      <miamm:node miamm:type="S">
        ...
      </miamm:node>
    </miamm:sentence>
  </miamm:parseSentence>
</env:Body>
```

Relating a call and a response

- Made in an application specific way in the header
 - E.g.

```
<env:Header>
```

```
  <miamm:transaction
```

```
    env:actor="http://www.miamm.org/Log"
```

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

```
    env:mustUnderstand="true">
```

```
      MIAMM12345654321
```

```
  </miamm:transaction>
```

```
</env:Header>
```

Fault scenario

- A pre-defined model for handling faults

```
<env:Body>
  <env:Fault>
    <faultcode>env:Receiver</faultcode>
    <faultstring>Bla bla bla</faultstring>
    <detail>
      <mia:m:errorCode
        xmlns:mia:m="http://www.mia.m.org">
        xxxx
      </mia:m:errorCode>
    </detail>
  </env:Fault>
</env:Body>
```

References

- Mitra, Nilo (Eds), 2001. SOAP Version 1.2 Part 0: Primer (<http://www.w3.org/TR/soap12-part0/>)