SEMI North America
XML Messaging with E128

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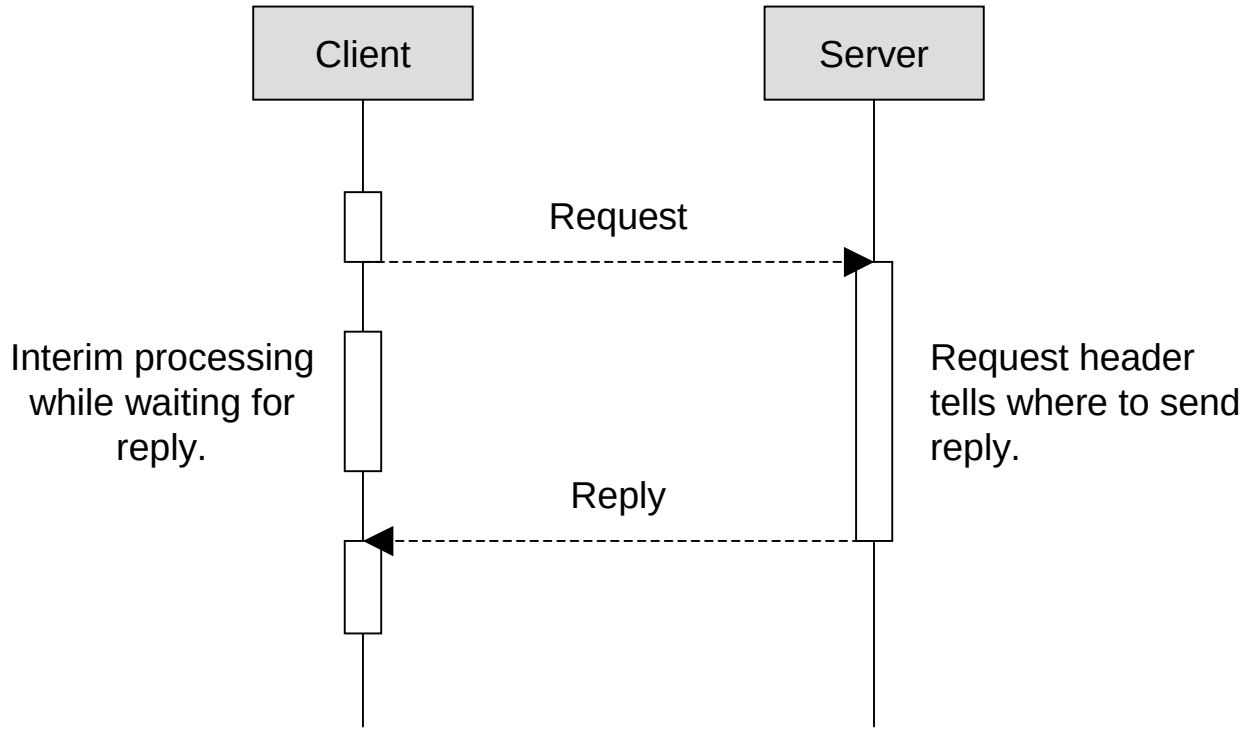
XML Messaging Objective

- Define a SEMI standard for XML asynchronous messaging using header elements in standard Simple Object Access Protocol (SOAP) envelopes
  - Provide means for correlation of separate one-way messages (e.g., Request-Reply)
  - Enable binding to a variety of message transports (including HTTP and Message Oriented Middleware)
  - Support a variety of messaging conversations between client and server participants
  - Allow non-blocking requests that allow clients to perform other tasks while waiting for reply or data messages to be returned.

Request-Reply Use Case (Asynchronous)



Messaging Header Elements (SOAP Header)

- "**From**" – sender identification (URI)
- "**To**" – receiver identification (URI)
- "**MessageType**" – identifies the role of the message in a conversation (Request, Reply, Data)
- "**CorrelationId**" – associates separate messages into a single conversation
- "**Action**" – functionality being requested/performed
- "**ReplyExpected**" – optional, indicates whether the client prefers to receive a reply message

Messaging Body Elements (SOAP Body)

- Body elements are intended to be interpreted by the client and server processes that act on the message content.
- “EventIndex” – identifies this data message's position in relation to a sequence of two or more data messages resulting from the original request. If it does not exist, it is equivalent to a EventIndex element with Position=1 and Total=1
- “SOAP Faults” – relay error info back to the client in reply message. Borrows SOAP Fault format and meaning only; does not imply SOAP HTTP binding.

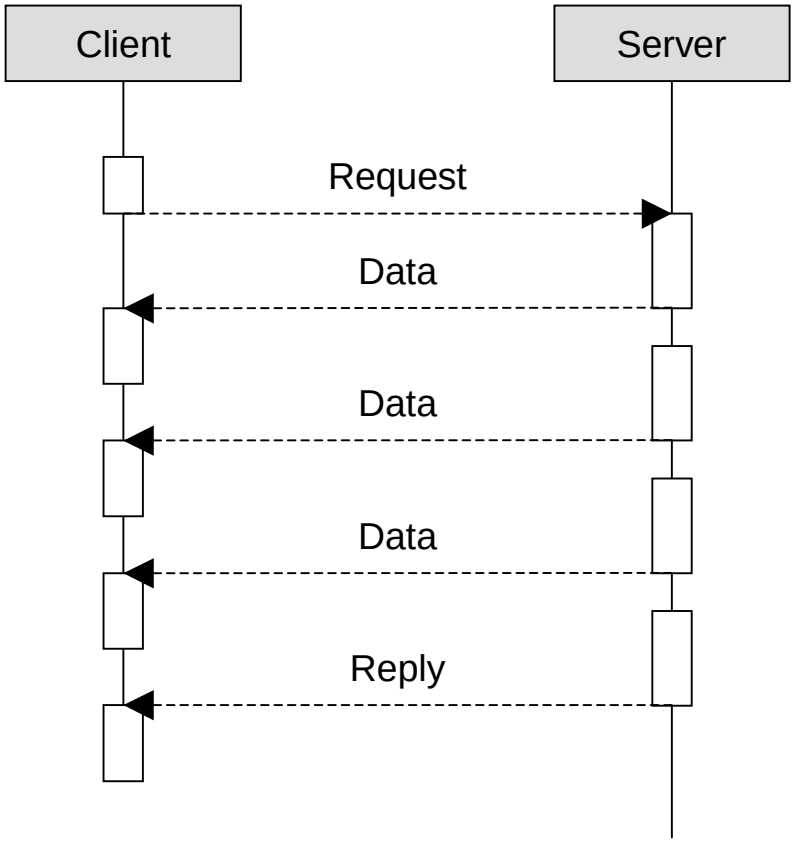
Request Example

```
<?xml version="1.0" encoding="UTF-8"?>
<SOAP:Envelope>
  <SOAP:Header>
    <sxm:MessageHeader>
      <sxm:From>EqHost</sxm:From>
      <sxm:To>EQ99</sxm:To>
      <sxm:MessageType>REQUEST</sxm:MessageType>
      <sxm:CorrelationId>7</sxm:CorrelationId>
      <sxm:Action>dataRequest</sxm:Action>
      <sxm:ReplyExpected>true</sxm:ReplyExpected>
    </sxm:MessageHeader>
  </SOAP:Header>
  <SOAP:Body>
    <sxm:data>
      <DATAID type="ASC">420</DATAID>
    </sxm:data>
  </SOAP:Body>
</SOAP:Envelope>
```

Reply Example

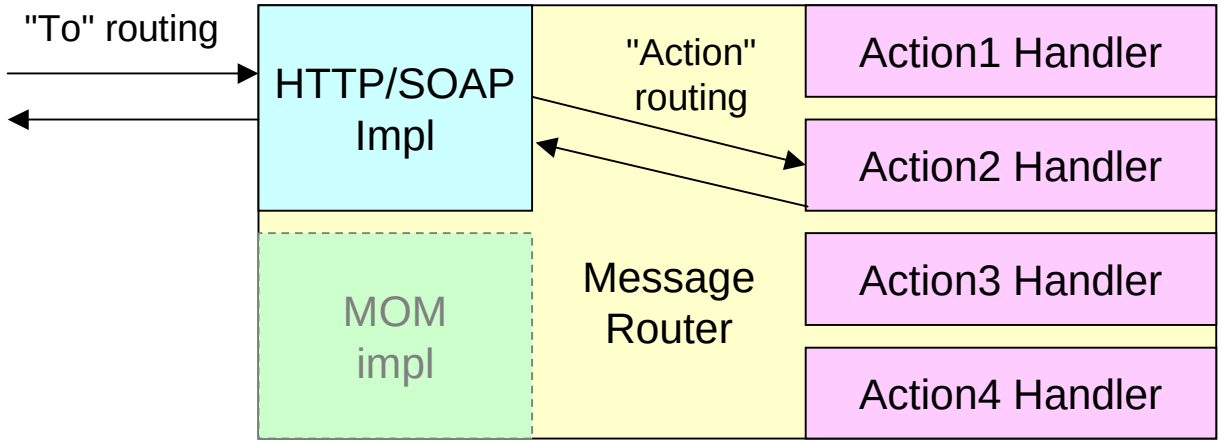
```
<?xml version="1.0" encoding="UTF-8"?>
<SOAP:Envelope>
  <SOAP:Header>
    <sxm:MessageHeader>
      <sxm:From>EQ99</sxm:From>
      <sxm:To>EqHost</sxm:To>
      <sxm:MessageType>REPLY</sxm:MessageType>
      <sxm:CorrelationId>7</sxm:CorrelationId>
      <sxm:Action>dataRequest</sxm:Action>
    </sxm:MessageHeader>
  </SOAP:Header>
  <SOAP:Body>
    <sxm:data>
      <DATAID type="ASC">420</DATAID>
      <CEID type="ASC">GAS</CEID>
      <DATASETS type="LIST">
      </DATASETS>
    </sxm:data>
  </SOAP:Body>
</SOAP:Envelope>
```

Request-Reply with Leading Data



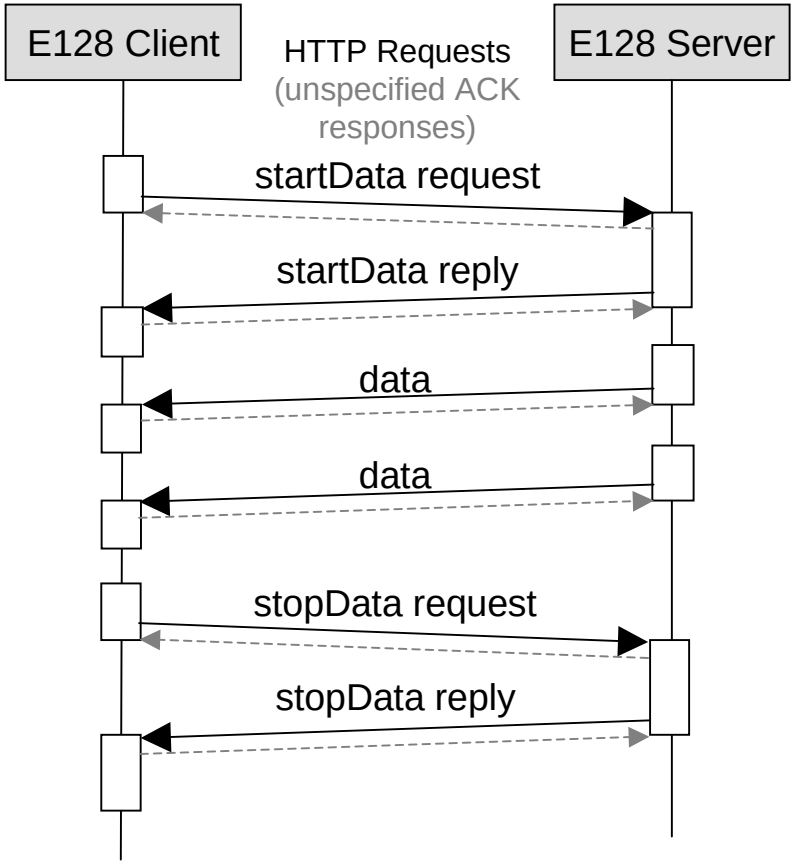
Architecture Considerations

- Separation of transport details from application code promotes future scalability or changes in transport technology.
- New transports can be substituted or added without impacting application code.



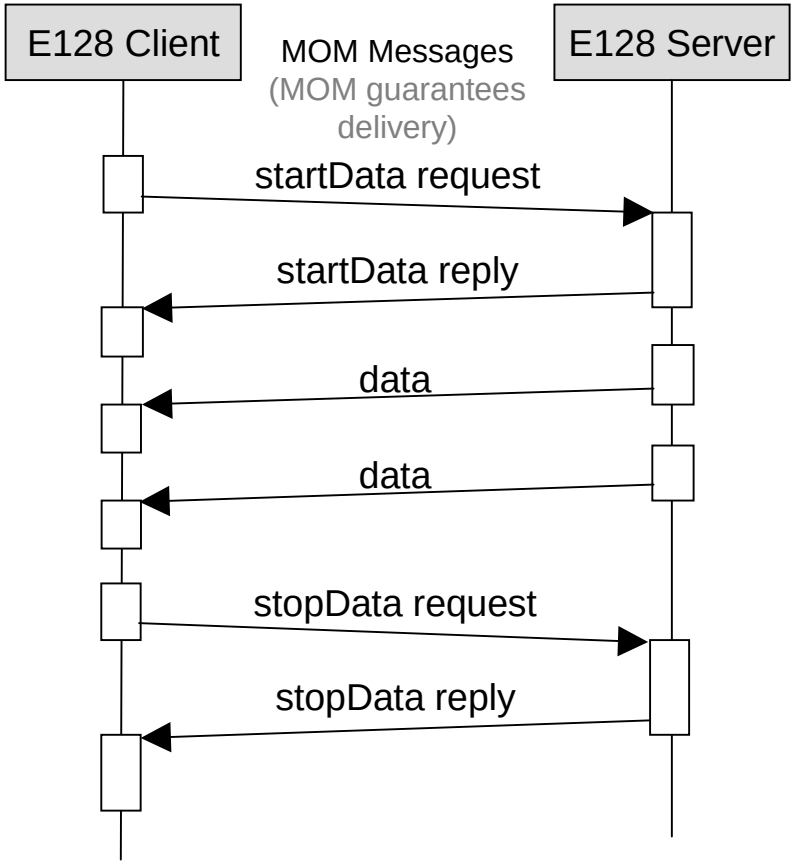
Example HTTP Interaction

- Async over HTTP requires each message to be a one-way request with unspecified ACK response.
- Both endpoints act as HTTP servers, listening on a port.
- Non-blocking requests allow for scalability in concurrent environments.



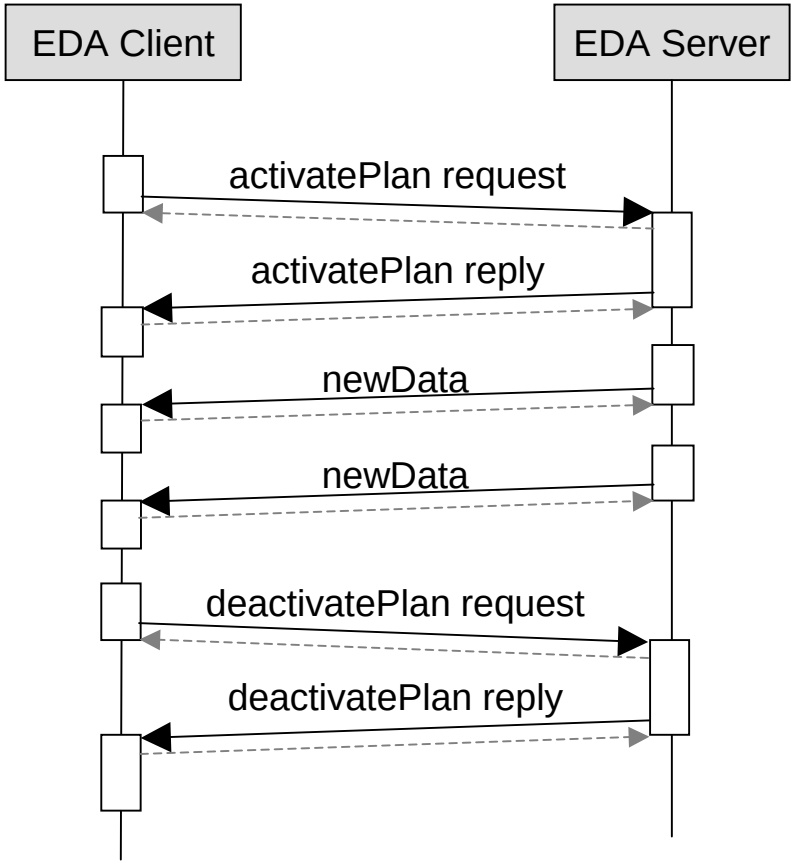
Example MOM Interaction

- When used with Message-Oriented Middleware (MQseries, Tibco, JMS, etc.), the provider handles all delivery and persistence details.
- Apps can leverage scalability features of MOM providers without additional logic in the app code.



Example EDA Interaction

- EDA requests could be modeled independently or considered as part of an E128 conversation.



E128 Status

- Status
  - Ballot reviewed and approved as Provisional Specification in March 2003
  - Work on provisional deficiencies needed in 2003-2004
    - SOAP 1.2 Upgrade
    - XML Namespace Alignment
    - Publish/Subscribe Event Messages
    - WSDL Conventions
    - Non-XML Attachments to Messages