OASIS BDXR
(Business Document Exchange) Technical Committee

May 13, 2021

https://www.oasis-open.org/committees/bdxr
Agenda

1. Overview of the Four-corner Model
   - Todd Albers, Federal Reserve Bank of Minneapolis and the Business Payment Coalition

2. Exchange Header Envelope (XHE)
   - Kenneth Bengtsson, Efact and chair of the OASIS BDXR and OASIS UBL TCs

3. Service Metadata Publisher (SMP) version 2.0
   - Erlend Klakegg Bergheim, The Norwegian Agency for Public and Financial Management (DFO) and Peppol

4. AS4 Interoperability Profile for Four-corner Networks
   - Sander Fieten, Chasquis Consulting and chair of the OASIS ebXML Messaging Services TC
Overview of the Four-corner Model

Todd Albers
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Two and Three Corner Connection Models

Two – Corner Model

I need to send an invoice
Billing System
Participant Corner 1

Message Transport Infrastructure

Accounts Payable System
I have received an invoice
Participant Corner 2

No Network Effect

Three – Corner Model

I need to send an invoice
Billing
Participant Corner 1

Network Provider
Network
Corner 2

Accounts Payable
I have received an invoice
Participant Corner 3

Limited Network Effect
What is a Four-Corner Model

I need to send an invoice

Billing System

Participant

Corner 1

Access Point

Corner 2

Step 1

Step 2

BDXL

OASIS Service
Metadata Location Service

SMP

OASIS Service
Metadata Publisher Service

Access Point Service Provider

Access Point

Corner 3

Access Point Service Provider

Corner 4

Accounts Payable System

Participant

Message Transport Infrastructure

Extensive Network Effect
# Actors in the Four-Corner Model

<table>
<thead>
<tr>
<th>Role</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Participant</td>
<td>Entity that uses the network to either send (Corner 1) or receive (Corner 4) business documents</td>
</tr>
<tr>
<td>Access Point Service Provider</td>
<td>Gateway services (Corner 2 &amp; Corner 3) for Participants to exchange business documents</td>
</tr>
<tr>
<td>Service Metadata Location Service</td>
<td>Registration of the participant and their SMP</td>
</tr>
<tr>
<td>Service Metadata Publishing Service</td>
<td>Registration of the participants Access Point and their capabilities</td>
</tr>
<tr>
<td>Message Transport Infrastructure</td>
<td>Is the <em>message transport protocol</em> and <em>envelope</em> used by Corner 2 Access Point to securely transmit the message to Corner 3 Access Point</td>
</tr>
</tbody>
</table>
Benefits with the Four-Corner Model

- Standardized interconnections deliver documents and messages through an open network over the internet
- Allows multiple types of documents and messages
- A delivery mechanism only; no documents or messages are stored
- Does not disrupt existing relationships between supplier/buyer and providers
Implementations of the Four-Corner Models

- OpenPeppol
- European e-Invoice Service Provider Association (EESPA) – Electronic Invoice Network (EIN)
- Business Payments Coalition e-Invoice Exchange Framework
- Global Interoperability Framework (GIF)
- e-CODEX
Exchange Header Envelope (XHE)

Kenneth Bengtsson
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Exchange Header Envelope (XHE)

- Jointly developed by the UN/CEFACT and the OASIS BDXR TC to replace the OASIS BDE and the UN/CEFACT SBDH with a unified standard for message headers and envelopes.

- Sits in between the transport layer and the business document to facilitate message routing and processing.
Key features

- Standardizes “header information” such as party identification, business processing and routing information
- Modelled using the UN/CEFACT Core Components Technical Specification (CCTS) version 2.01 to provide a format already familiar to most implementers
- Ensures integrity and confidentiality of business documents when routed through networks, including over “multiple hops” or Access Points
- Enables end-to-end encryption, both between corners 2 and 3 or between corners 1 and 4
- Enables bundling of multiple business documents in a single message exchange
- Mapping provided for existing BDE and SBDH users for easy migration
When used as a header, the XHE is placed inside the business document itself:

```xml
<?xml version="1.0" encoding="UTF-8"?>
<order:orderMessage xmlns:order="urn:gs1:ecom:order:xsd:3" xmlns:xhe="http://docs.oasis-open.org/bdxr/ns/XHE/1/ExchangeHeaderEnvelope"
 xmlns:xha="http://docs.oasis-open.org/bdxr/ns/XHE/1/AggregateComponents" xmlns:xhb="http://docs.oasis-open.org/bdxr/ns/XHE/1/BasicComponents"
 xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">
  <xhe:XHE>
    <xhb:XHEVersionID>1.0</xhb:XHEVersionID>
    <xha:Header>
      <xhb:ID>100002</xhb:ID>
      <xhb:CreationDateTime>2021-01-10T12:00:01.000-05:00</xhb:CreationDateTime>
      <xha:BusinessScope/>
    </xha:Header>
    <xha:FromParty/>
    <xha:ToParty/>
    <xha:Header>
      <xha:Payloads/>
    </xha:Header>
    <order/>
  </xhe:XHE>
</order:orderMessage>
```
When used as an envelope, business documents are placed within the XHE structure:
XHE Payload
Additional information:

- **XHE 1.0 OASIS Standard:**
  - [https://docs.oasis-open.org/bdxr/xhe/v1.0/xhe-v1.0-oasis.html](https://docs.oasis-open.org/bdxr/xhe/v1.0/xhe-v1.0-oasis.html)
  - *Note: Only the OASIS publication contains XML Schemas*

- **XHE 1.0 UN/CEFACT Technical Specification:**
  - [https://unece.org/trade/uncefact/XHE](https://unece.org/trade/uncefact/XHE)

- **XHE 1.0 Migration and Implementation Guide**
  - [https://docs.oasis-open.org/bdxr/xhe-migration/v1.0/cn01/xhe-migration-v1.0-cn01.html](https://docs.oasis-open.org/bdxr/xhe-migration/v1.0/cn01/xhe-migration-v1.0-cn01.html)
  - Contains example XHE instances as well as complete mapping to SBDH and BDE
Service Metadata Publishing (SMP) Version 2.0

Erlend Klakegg Bergheim

Senior Advisor
The Norwegian Agency for Public and Financial Management (DFØ)
Introduction

- SMP is used to provide service metadata of recipients in a 4-corner network
- Facilitates discovery of recipient capabilities
- May be combined with BDXL to support distributed service metadata discovery
Centralized SMP

1. Sender → SMP
2. SMP → Recipient
Distributed SMP
What’s new?

- Changed to use CCTS for syntax (aligning with UBL, XHE)
- Support for multiple certificates
- Extensions «everywhere»
- Updated model
CCTS

- Syntax has support for more context out of the box
  - E.g. «ParticipantID» contains e.g. attributes «schemeID», «schemeName», «schemeAgencyID», «schemaURI» and more without the need for standardisation for the special use cases
  - Aligns tooling with popular standards like UBL
- Adds future flexibility
Support for multiple certificates

- Provide multiple certificates or allocate certificates for different usages
Support for multiple certificates

- Provide multiple certificates or allocate certificates for different usages
Extensions «everywhere»

- Result of using OASIS Business Document Naming and Design Rules Version (BDNDR) 1.0
Updated model

- No revolution, however:
  - Fixing SMP redirect
  - Process information in ServiceGroup
SMP with redirect

- Allows for further distributed usage
- Enables federation of networks
SMP with redirect

- Allows for further distributed usage
- Enables federation of networks
SMP with redirect

1. Sender → Main SMP
2.  
3. Additional SMP → Recipient
Ready for use

- Version 2.0 is finalized
- Identifier «oasis-bdxr-smp-2» for use in BDXL
- May be moved out of root context when used with BDXL
AS4 Interoperability Profile for Four-Corner Networks

Sander Fieten
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Context

Participant «Corner 1»

Service Metadata Locator

Service Metadata Publisher

Access Point

Service Provider «Corner 2»

AS4

Service Provider «Corner 3»

Participant «Corner 4»
Context

Participant «Corner 1»

Service Provider «Corner 2»

Access Point

AS4 Gateway

Busdoc Processing

Service Metadata Locator

Service Metadata Publisher

Participant «Corner 4»

Access Point

AS4 Gateway

Busdoc Processing

Service Provider «Corner 3»
Goal of the profile

AS4 Standard + SMP Standard = Interop profile = P-Modes

Does not specify a network’s trust model
Target audience

- Network governance bodies
- Access Point Service and Solution Providers
P-Mode parameter profiling

- Signing and encryption
- Reception awareness and non-repudiation of receipt
- Static and dynamic values
Response Messages

1: Send AS4 User Message with bus doc
2: Contains the EndpointParticipantIdentifier ebMS message property
3: Process bus doc
4: AS4 Receipt
5: Using the value from the EndpointParticipantIdentifier of received User Message
6: Create Response Message
7: Lookup endpoint for Response Message
8: Endpoint metadata
9: Configure P-Mode
10: Send AS4 User Message with Response Message
11: AS4 Receipt
Response Messages
**Busdoc packaging with XHE**

Diagram showing the structure of a message with attachments in MIME multipart format, including SOAP Envelope, SOAP Header with ebMS header and details, Signature, Corner 2 Certificate, SOAP Body, and MIME part with Bus. Doc. Additionally, there is a section labeled XHE with a header and details about the sender and receiver.
Questions?
Thank you!

- For more information:
  - Today’s presentations will be made available here (look under “Expository Work Produced by the TC”)

- For submitting comments and requirements to the TC and to subscribe to TC announcements and public reviews:
  - Send a blank email to bdxr-comment-subscribe@lists.oasis-open.org and confirm your subscription by replying to the confirmation email
  - Submit your comments to: bdxr-comment@lists.oasis-open.org (must be subscribed before sending)