BDX Technical Committee
Addressing Mechanism
or
"how do I find where to send my documents?"

Mike Edwards – IBM
March 2011
Agenda

- Recap: System Architecture
- Sending and Receiving Documents - Scenario
- Service Metadata & Metadata Publishing
System Architecture
Basic elements of the system

"4 corner" model
Sending and Receiving Documents - Scenario
Important Points

• Each step involves exchange of document such as an Order
  - *One-Way* process between Sender and Recipient
• Each participant can be both a *Sender* and a *Recipient*
  - depends on nature of exchange taking place
• Each participant is identified by *Participant ID*
  - must be known in order to send messages
• Each document has a *Document Type*
  - defined by the business process
What is a Participant ID?

- Participant ID
  - identifier that uniquely identifies a particular participant
    - participant may be a whole organization
    - participant may be a department of a larger organization
  - multiple forms of Participant ID are allowed for
    - vary by country
    - vary by registration owner
  - so, need to know the Participant ID **and** the Participant Identifier Scheme
  - e.g. Universal Business Identifier scheme

"0010:57980000000001"
Business Services

- Each business offers services
  - one service for each document type with a given business process
  - same document type may be used in multiple processes
    - => multiple services that accept that document type
  - each service has a unique endpoint
  - each service is a Web service endpoint
  - services hosted by the business itself OR by a service provider

- To send document to business for particular business process
  - need to find address of relevant service endpoint
How to find Service Endpoints?

- Obtain **Service Metadata**
  - for target business and document type
  - Service Metadata = XML document with lists of service endpoints
  - 1 endpoint for each business process

- Where is the Service Metadata?
  => made available by **Service Metadata Publisher**

- Available via a REST **get** operation
  - at address which derives from Business ID and Document Type:

    http://<recipientID>.<schemeID>.<SML domain>/<recipientID>/services/<documentType>
Service Metadata XML

<smp:ServiceInformation>
  <smp:ServiceActivationDate>xs:dateTime</smp:ServiceActivationDate>?
  <smp:ServiceExpirationDate>xs:dateTime</smp:ServiceExpirationDate>?
  <smp:CertificateUID>xs:string</smp:CertificateUID>
  <smp:ServiceDescription>xs:string</smp:ServiceDescription>
  <smp:TechnicalContactUrl>xs:anyURI</smp:TechnicalContactUrl>
  <smp:TechnicalInformationUrl>xs:anyURI</smp:TechnicalInformationUrl>?
  <smp:DocumentIdentifier scheme="xs:anyURI"/>
  <smp:ProcessList>
    <smp:Process>+</smp:Process>
    <smp:ProcessIdentifier scheme="xs:anyURI"/>
    <smp:ServiceEndpointList>
      <smp:Endpoint transportProfile="xs:anyURI">+</smp:Endpoint>
      <wsa:EndpointReference />
      <smp:Extension>xs:any</smp:Extension>?
      <smp:Endpoint>
        </smp:Endpoint>
      </smp:ServiceEndpointList>
      <smp:Extension>xs:any</smp:Extension>?
      <smp:Process>
      </smp:Process>
      </smp:ProcessList>
  <smp:BusinessIdentifier scheme="xs:anyURI">xs:string</smp:BusinessIdentifier>
  <smp:ServiceGroupReference href="xs:anyURI"/>
  <smp:Extension>xs:any</smp:Extension>?
  <smp:Extension>xs:any</smp:Extension>?
</smp:ServiceInformation>
Two layer model

- Service Metadata Locator vs Service Metadata Publisher

- minimizes centralized infrastructure
  - only operations which change business service addresses require SML activity

- open framework that allows easy addition of new metadata publishers
Sender steps...

Sender

Create URL from Recipient business ID

Service Metadata Publisher

Request Service Metadata for Recipient

Recipient

Return Service Metadata for Recipient

Create Business Document

Send Business Document to Service Endpoint for Process

Recipient

Process Business Document
Service Metadata interface

- Designed as a Facade
  - layer on top of a variety of different implementations
  - concentrate on essential information only
  - contrast with UDDI

- Security & Trust
  - returned Metadata records are signed by SMP
  - assures that record (& the endpoints identified) is valid
CEN/BII Simple Procurement

1. **Customer Endpoints**
   - Submit Order
   - Accept Order
   - Submit Invoice
   - Invoice Dispute
   - Correct with Credit

2. **Goods Supplied**
   - Supplier Endpoints
   - Payment completed
Service Metadata & Metadata Publishing
Publishing Service Metadata for a Participant

DNS servers

Add DNS record for participant metadata

Service Metadata Locator server

Add new participant

Service Metadata Publisher

Register new business services

Host for Business Services

Domain address lookup

Get service addresses for a participant

Sender

Send documents
Metadata Publishing basics

- Each participant ID gets a unique URL for its Metadata
  - http://<recipientID>.<schemeID>.<SML domain>

- URL resolves to address of Metadata Publisher server
  - via DNS lookup

- Metadata publisher hosts Metadata for participant ID at a predefined URL
  - /<recipientID>/services/<documentType>

- One Metadata Publisher can host metadata of many, many participant IDs
Service Metadata Locator

- Server which manages updates to the Metadata address lookups
  - coordinates Create/Update/Delete operations on DNS records
  - updates are relatively infrequent compared with address lookups

- Each Metadata Publisher must register its address with the Metadata Locator service
  - Web service interface

- Metadata Locator has Web services to Create / Update / Delete / Migrate address records for participant IDs
Service Metadata Locator: Security

- SML interfaces for creating / updating records are secured
  - only registered SMP's with valid certificates can use the interfaces
Updating Participant ID information

- New business registers
  - Create Business Metadata

- Location of Business metadata changes
  - Update Business Identifier
  - Create new DNS record for Business
  - Update DNS record for Business
  - Delete DNS record for Business

- Business deregisters
  - Delete Business Identifier
  - Delete DNS record for Business
Changing SMP information

- Service Metadata Publisher is registered with the System
- Location of SMP server changes
- Service Metadata Publisher is deregistered
- Create SMP metadata
- Update SMP metadata
- Delete Business Identifier
Summary

- Service Metadata is the key to getting business documents to the right recipients
- Service Metadata is hosted by Service Metadata Publishers
- Finding the Service Metadata is based on regular DNS lookups
- Updates are handled via the Service Metadata Locator service
Questions
???