OASIS ebXML Messaging Services 3.x Feature Preview

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Abstract:

This document discusses proposals that the OASIS ebXML Messaging Services Technical committee are considering for inclusion in the next major release of the ebXML Message Service Specification.

Status:

This document is not updated on a fixed schedule. For more information, please contact the editor(s). Comments should be submitted to the ebXML Messaging TC by sending an email to the committee mailing list (if you are a member), or by using the “send a comment” feature on the TC web page (http://www.oasis-open.org/committees/comments/form.php?wg_abbrev=ebxml-msg).

Table of Contents

Introduction

A large topic of discussion amongst the members of the ebXML Messaging Services TC for over a year has been version 3.x of the specification. The decision to extend the discussion for such a long period of time was made so that we could allow other complimentary specifications such as SOAP 1.2, WSRM and WSS to mature to the point where we could consider integrating these technologies into the specification. It was also useful to allow a number of version 2.0 implementations to be developed and thoroughly tested to identify any issues or changes that may be required, especially in the area of interoperability.

In this paper, we've separated proposed features for version 3.x into distinct categories: complimentary technology integration, changes to existing functionality and new features.

The purpose of this paper is to promote discussion and stimulate interest in the 3.x specification development process. Comments, contributions and feature prioritization suggestions are invited from any and all interested parties, whether or not they have formal representation as part of the OASIS development process, although participation in the TC is encouraged. Any contributions should in the first instance be submitted to the discussion lists detailed earlier or via one of the contributors or officers of the TC as described on the TC's web site.

The focus of the ebXML Message Service has been, and continues to be, for an industrial-strength business-to-business messaging specification built upon a collection of best-of-breed standards and recommendations produced by other OASIS TC's and external organizations.

1 Complimentary Technology Integration

This section details proposals for the integration of functionality and specifications with the current version of the ebXML Message Service Specification to provide new or more interoperable functions.

A primary goal for this integration is to increase the modularity and componentization of the specification, to make it easier to update the specification as additional web service based components are defined and developed. These web services components may either replace existing functionality in whole or in part, such as WS-Reliability, or may offer completely new functionality that can be added to the ebXML Message Service Specification.

1.1 SOAP 1.2 Integration

Reason / Objective

[SOAP 1.2] is the revised and approved W3C Recommendation for the SOAP (formerly known as Simple Object Access Protocol) protocol that formed the basis of both current and previous versions of the ebXML Messaging Services Specification. This is the first version of SOAP to be a full W3C Recommendation, and one of the stated goals of ebXML and desires of OASIS TCs is to base work on existing standards and recommendations.

Allow the SOAP body to contain "payload" or ""business" data, to remove the need for secondary MIME parts (attachments) to be processed. This should improve processing for simple messages.

Concerns, Implications and issues

1. Not backward compatible with existing versions.
2. No agreed and published definition for handling attachments - Investigate and apply the same constructs as used for SOAP 1.1 with Attachments Note. (Ed. SOAP 1.2 working draft published 24 September 2002 http://www.w3.org/TR/soap12-af/ - no more recent work).
3. An alternative to using an attachment feature is to include business documents and supporting files as individual base4Binary elements of the SOAP body. These may be optimized for transmission by a SOAP processor that implements the Message Transmission Optimization Mechanism (MTOM; see [SOAP 1.2]). A benefit of this, besides being based completely on approved standards, is that MIME headers such as Content-Type that could not formerly be protected become XML attributes, and can therefore be included in signatures and/or encrypted.
4. Distinction of "payload" data from message service information - either using namespace qualification or move all message service information to the header. (Moving message service information to the header may be part of the modularization process and this may be an added reason/benefit.)
5. Payloads may be carried in 2 different parts of the complete message. This may cause process consistency issues.

1.2 OASIS Web Services Reliability

Reason / Objective

Reuse of existing specifications is a stated objective of ebXML, and use of WS-Reliability [WSRM] when completed reduces the specific functionality required to be defined by the ebXML Message Service. It may also promote greater interoperability and make the software development process easier, as this function may be either part of a standard "toolkit" or reused across multiple delivery methods, not just for an ebXML Message Service Handler.

Concerns, Implications and issues

1. Not backward-compatible with existing versions.
2. Requires understanding of a completely independent specification to implement the feature.
3. Release schedules for WS-Reliability are known but may slip.
4. Does WS-Reliability meet all the requirements of the ebXML Message Service?
5. Does WS-Reliability conflict with any existing requirements?

1.3 OASIS Web Services Security

Reason / Objective

As part of the drive to reuse new and approved standards and recommendations for web services, the use of Web Services Security [WSS] definitions are seen as very beneficial, as security is an area that requires specific knowledge and experience to define and implement successfully. Also the security features of the existing specification were never viewed as complete or sufficient to address all the security required for a complete B2B messaging infrastructure. Using standard WS-Security features should aid in the development and deployment of ebXML, as they will become part of the standard “toolkit” of web services components, increasing the likelihood of interoperability and ubiquity of deployments and operation.

Security features we may wish to add include support for SAML (Security Assertion Markup Language) tokens.

Concerns, Implications and issues

1. Not backward-compatible with existing versions.
2. Requires understanding of a completely independent specification to implement the feature.

1.4 WSDL

Reason / Objective

The existing ebXML Message Service specification does not contain any WSDL (Web Service Definition Language) definition of the ebXML Message Service interface. Several approaches have been made requesting this definition, as it gives a machine-processable definition. (*Note: Due to the stability of the WSDL specification, tools to automate the construction of an interface defined in WSDL are becoming available, which will help the development and exploitation of web services.*)

Actions

1. Investigate which version of WSDL to comply with and the viability of a definition.
2. Publish binding/definition as a) an integral part of the specification, b) a normative appendix or c) a separate document.

1.5 WS-I Basic Profile Alignment

Reason / Objective

The Web Services Interoperability Basic Profile is a well-known collection of web service definitions that have been profiled and restricted to produce interoperable systems. As this profile is designed to encourage interoperability, it is seen as a worthwhile exercise to investigate any potential exploitation of this work and the possibility of building a set of extensions to the WS-I Basic Profile.

Actions

1. Investigate and describe what extensions to WS-I Basic Profile would be required for the ebXML Message Service Specification.
2. Evaluate after previous step if this is a useful item for other people to use.
3. If a definition of the extension or modification is created, it will be non-normative, and will either be an appendix to the specification or a separate definition document.
4. Investigate whether WS-I Basic Security Profile (BSP, an extension to the WS-I Basic Profile) covers use cases that are relevant to the ebXML Message Service, and if so, consider aligning with this profile as well, for the reasons given above.
5. Investigate the level of compatibility between the current attachment mechanism in ebMS, and the on-coming WS-I Attachment Profile.
6. Consider aligning with the WS-I Attachment Profile.

2 Changes to Existing MSH Functionality

This section contains a collection of changes to the existing Message Service that will by their very nature produce more incompatibilities, but the benefits of each are described. They are in no particular order, as yet have no priority, and may or may not be included in the next version.

2.1 Message Manifest

Reason / Objective

Placement of the Manifest in the SOAP header, rather than the SOAP body, is suggested for two main reasons. The first is to allow the body to be used for the message payload component without requiring any extra namespace qualification, etc. It would make processing the payload as simple as possible, as it would be encapsulated as the SOAP body. The second is to bring all of the message service elements into one place and allow for the modularization described in later sections.

Concerns, Implications and issues

1. Potentially allows an empty SOAP body; SOAP 1.1 required a SOAP body but was not clear if it must contain data.
2. Not backward-compatible with existing versions.
3. The WS-I Basic Profile may restrict the contents of the SOAP Body to a single top level element, which would restrict the inclusion of multiple namespace qualified payload documents.

2.2 Digital Signature

Reason / Objective

The existing specification has reference to using digital signatures for both header and message security. This work was performed when the XML Digital Signature Specification **[XMLDsig]** was very new and had not been proven as much as the development team would have liked. As a result of both this and recent interoperability testing, revisiting this section is seen as a very important item to ensure that the transforms and canonical form definitions are conformant to the current recommendations and support the usage now required. New usage has been identified to allow part of the header to be signed or possibly only the SOAP body, if this contains the payload, which was not in the scope of previous versions.

Concerns, Implications and issues

1. May not be backward-compatible with existing versions.
2. Different types of signatures may be possible, which will require definition.
3. Multiple signatures may be carried, and these use cases will require interoperability testing.

2.3 Synchronous Reply

Reason / Objective

The existing specification has been found to lack a sufficiently rigorous definition of the "`SyncReply`" functionality and appropriate use cases and restrictions to produce interoperable Message Service Handler implementations. This work item is mainly to improve the definition and the exact usage of this function.

2.4 Large Attachments

Reason / Objective

In the existing specification, no consideration is given to large messages. The specification avoids as much as possible defining any rules on the payload handling, just describing it as a related MIME part of the complete transported message envelope. This implies that all payload handling is a bi-part agreement, which is not seen as useful to encourage interoperable solutions. This is one of the least defined requirements, and has the following list of ideas and suggestions for further consideration:

- Allow the data to be split across many messages (chunking)
- Compress the payload and possibly describe its compression as part of the manifest.
- Separately transported or referenced payload - this is possible in the current version, but may not be seen as useful for this situation.

2.5 Reliable Messaging Failure Conditions and Recovery

Reason / Objective

The existing specification does not provide sufficient information about all the possible reliable messaging failure states to ensure that recovery is completely defined, so that a guaranteed interoperable system can be built from the specification. The requirement is to adequately define all known conditions and their recovery by extending the section to include them.

Concerns, Implications and issues

1. This could be superseded by the WS-Reliability TC specification.
2. Could introduce backward-compatibility issues.

2.6 Conversational Semantics and BPSS Alignment

Reason / Objective

The existing specification only expresses conversation state and semantics in terms of the 4 elements, `Action`, `Service`, `CPAID` and `ConversationID`. This was based on the requirements established at the early stages of the ebXML project, it is now felt to be time to revisit these elements given the progress in Business process specification, Collaboration Partner Profile / Agreement and similar work. The main issue has been identifying both where in a conversation a message relates to and how to identify the correct business process conversation. This has become evident when trying to integrate through the CPP/A to an underlying repository as the same element name has become reused for slightly different purposes, which has lead to misunderstanding.

Concerns, Implications and issues

1. May also require OASIS ebXML CPP/A alignment.

Actions

1. Fully define the problem and issue.
2. Work with the relevant TC's to co-ordinate a solution - this may require changes across at least 3 specifications.

2.7 Multi-Hop Processing and Signature Handling

Reason / Objective

Discussion has taken place on the usefulness of a multi-hop process being explicitly defined as part of the Message Service Specification. A specific issue has been raised about multiple signatures being possible or required when a message passes through one or more intermediaries. In the current specification, no method for handling these multiple signatures is rigorously defined, resulting in potential interoperability concerns.

Concerns, Implications and issues

1. Is a multi-hop process still required?
2. Is the effort required to define a sufficient signature handling process justified?

3 New MSH Features

This section describes new and substantially different features that are proposed for inclusion in the next version. They are organized in an approximate priority order, but this is open for discussion and review.

3.1 ebXML Messaging Header Modularity

Reason / Objective

Both prior to and during the development of SOAP 1.2, an extensive discussion was held, and proposals were made to reorganize the Message Service header elements info functional groups or modules. As stated previously in this document, this promotes the use of other web service standards to increase or replace existing functionality.

3.2 Payload Services

A proposal has been made that relates to modularization, to create a group of functions that act only on the payload component of the message. The current version allows this functionality, but they must be handled outside of the Message Service Handler, and are supported only through bi-party agreement. These services have been grouped in into two sections: one for those services that must be implemented by all Message Service Handlers, and those that are optional.

3.2.1 Required Services

None of the proposed payload services would be required at this time.

3.2.2 Optional / Arbitrary Services

3.2.2.1 Compression

Reason / Objective

As payloads may be of any arbitrary type and size, a feature to compress and/or to describe the compression used is seen as a useful service.

The ability to describe the type of compression used on a payload would be useful even if the MSH can not provide a compression service itself, so that a receiving MSH could use this information to dispatch the payload to a special process if required.

Concerns, Implications and issues

1. Which compression type(s) should be supported?
2. Should compression be payload type dependent?
3. How should the compression type be expressed?

3.2.2.2 Encryption

Reason / Objective

As payloads may require encryption separately from the headers, a distinct payload encryption service and method of describing the encryption used would be a useful.

The ability to describe the type of encryption used on a payload would be useful even if the MSH can not provide an encryption service itself, so that a receiving MSH could use this information to dispatch the payload to a special process if required.

Concerns, Implications and issues

1. Which encryption type(s) should be supported?
2. Should encryption be payload type dependent?
3. How should encryption type be expressed?

3.3 Query Version and Supported Functions

Reason / Objective

The current specification describes no way for a Message Service Handler to define which version or services it is capable of processing. Currently the only defined way of describing this is via a CPP, but this may not be appropriate in all cases, especially if only the Message Service is being used. Without a CPA, it is only possible for both parties to establish their respective MSH capabilities by communicating them prior to trading. The suggestions made so far are either for an MSH to return a complete set of services available when request by an external source, i.e. a mini CPP that only details message service related information. Or a query response mechanism could be defined, wherein one MSH can interrogate another as to the services it can support as and when required, i.e. when a message requires reliability, the sending MSH queries the receiving MSH for its reliable messaging abilities. Both of these possibilities have advantages and disadvantages, and are open for discussion.

Concerns, Implications and issues

1. Security implication of implementing this service.
2. Could be useful if integrated in to the CPP/A discovery and negotiation phase.

3.4 Default – Basic CPA

Reason / Objective

The definition of a default or basic CPA has been a long-standing suggestion, as this would produce a known set of parameters and configuration that would be useful during the initial establishment of relationships between trading partners. It could also be used as part of a CPP/A negotiation, as it would define the minimum settings required to achieve a successful message exchange.

3.5 Language Neutral / Abstract Message Service API

Reason / Objective

This is a long-standing suggestion/requirement that has been prevented for several reasons. First, the effort required to produce the definition of the API has never been made available. The second major reason has been the inability to define exactly what it should cover and how it is to be presented. Several options were originally proposed, including IDL type definition or a JSR derived Java abstract interface like JAXM or JAXP with suitable supporting documentation.

Concerns, Implications and issues

1. Resources and effort required.
2. Is there an industry desire/need for this definition?
3. What is to be described?
4. How is the interface to be described (notation)?

3.6 MSH Clustering

Reason / Objective

A potential requirement exists for the Message Service Specification to support a cluster of MSHs natively. This is a relatively new request, but may be required for large or high-volume message handling infrastructures. More work is needed to define what is required and if it is really in the scope of the specification to address this, or if the specification should not place any restrictions on this, to prevent it from being a vendor-defined extension.

Concerns, Implications and issues

1. Is this a supported requirement?
2. Is this in scope or should the underlying OS/hardware/SOA platforms provide the clustering?

3.7 Minimum Implementation Guidelines

Reason / Objective

The specification is now defined in a large document, and information detailing exactly what and how the minimum implementation of the specification requires is not easily identified without thoroughly reading the document. A simple guide to the minimum implementation may be desired, and may be especially useful if more web service specifications are used, as it could provide a simple reference to the exact parts of those specifications required for the minimum implementation to be compliant with the Message Service specification.

Concerns, Implications and issues

1. Effort to develop this document.
2. What exactly is its audience?

3.8 Introduction Document (Primer)

Reason / Objective

Due to the necessarily detailed description given in the specification, a simple introduction or primer could be a very useful document to aid in the understanding of the specification and its goals.

Concerns, Implications and issues

1. Effort to develop this document.
2. Could this be better written as part of an overall ebXML architecture?

4 References

4.1 Normative

[RFC2119]	S. Bradner, *Key words for use in RFCs to Indicate Requirement Levels*, http://www.ietf.org/rfc/rfc2119.txt, IETF RFC 2119, March 1997.
[SOAP 1.2]	http://www.w3.org/2000/xp/Group/
[WSRM]	**Web Services Reliable Messaging Technical Committee** http://www.oasis-open.org/committees/tc_home.php?wg_abbrev=wsrm
[WSS]	**Web Services Security Technical Committee** http://www.oasis-open.org/committees/tc_home.php?wg_abbrev=wss
[XMLDsig]	http://www.w3.org/Signature/

Appendix A. Notices

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