

DRAFT INTERNATIONAL STANDARD

ISO/DIS 15000-1

ISO/TC 154

Secretariat: SAC

Voting begins on:
2020-04-16

Voting terminates on:
2020-07-09

Electronic business eXtensible Markup Language (ebXML) —

Part 1: Messaging service core specification

ICS: 35.040.50

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Published in Switzerland

Contents

Contents	iii
Table of Figures	viii
Foreword.....	ix
Introduction.....	xi
1. Scope.....	1
2. Normative References.....	1
3. Terms and Definitions	3
4. Relevant Messaging Concepts	7
4.1. Web Services and Their Role in an eBusiness Messaging Framework	7
4.2. Caveats and Assumptions.....	7
4.3. XML Notation.....	8
4.4. Namespace Prefixes	9
4.5. Example Domains	9
5. Messaging Model.....	10
5.1. Model Components	10
5.1.1. Components of the Model.....	10
5.1.2. Messaging Roles	11
5.1.3. Abstract Messaging Operations.....	12
5.2. Message Exchange Patterns	12
5.2.1. Rationale	12
5.2.2. General Definition	12
5.2.3. MEP Bindings	13
5.2.4. Relationship to SOAP MEPs.....	14
5.2.5. The One-Way/Push MEP	15
5.2.6. The One-Way/Pull MEP	16
5.2.7. The Two-Way/Sync MEP	17
5.2.8. Other Transport-Channel-Bound MEPs	18
6. Message Pulling and Partitioning.....	20
6.1. Objectives	20
6.2. Supporting Message Pulling.....	20
6.3. Combining Pulling with Security and Reliability	22
6.4. Message Partition Channels	23
6.4.1. Concept and Purpose	23
6.4.2. Some Use Cases.....	25
6.4.3. Definition and Usage Requirements	26
7. Processing Modes	28
7.1. General	28

ISO/DIS 5000-1:2020(E)

7.2. Messaging Service Processing Model.....	28
7.3. Processing Mode Features	30
7.4. Default Features for Processing Mode	31
8. Message Packaging.....	33
8.1. Message Envelope and Message Parts	33
8.1.1. MIME Structure and SOAP Profile	33
8.1.2. MIME and XML Considerations	36
8.1.3. ebXML SOAP Envelope Extension	37
8.1.3.1. General	37
8.1.4. ebMS Header.....	38
8.1.5. Payload Containers	39
8.2. The eb:Messaging Container Element	40
8.2.1. General.....	40
8.2.2. eb:Messaging Element Specification	40
8.2.3. eb:Messaging/eb:UserMessage	41
8.2.3.1. General.....	41
8.2.4. eb:Messaging/eb:SignalMessage	48
8.2.4.1. General.....	48
8.2.5. Message Unit Bundling	48
8.3. Examples of ebMS Messages (Informative).....	49
8.3.2. UserMessage Example.....	49
8.3.3. PullRequest Message Example	51
8.3.4. Error Message Example	51
8.3.5. Receipt Message Example	52
8.3.6. "Bundled" Message Example.....	52
9. Error Handling.....	55
9.1. General.....	55
9.2. Packaging of ebMS Errors	55
9.2.1. eb:Error Element.....	55
9.2.2. eb:Error/@origin	55
9.2.3. eb:Error/@category	55
9.2.4. eb:Error/@errorCode	56
9.2.5. eb:Error/@severity	56
9.2.6. eb:Error/@refToMessageInError.....	56
9.2.7. eb:Error/@shortDescription	56
9.2.8. eb:Error/Description	56
9.2.9. eb:Error/ErrorDetail.....	56
9.3. ebMS Error Message	56
9.4. Extensibility of the Error Element	57

9.4.1. Adding new ebMS Errors	57
9.5. Generating ebMS Errors	57
9.6. Error Reporting.....	57
9.7. Standard ebMS Errors.....	58
9.7.1. General.....	58
9.7.2. ebMS Processing Errors	58
9.7.3. Security Processing Errors	59
9.7.4. Reliable Messaging Errors.....	60
10. Security Module	61
10.1. General	61
10.2. Security Element	61
10.3. Signing Messages	62
10.4. Signing SOAP with Attachments Messages	62
10.5. Encrypting Messages	62
10.6. Encrypting SOAP with Attachments Messages	62
10.7. Signing and Encrypting Messages	62
10.8. Security Token Authentication	63
10.9. Security Policy Errors	63
10.10. Secured Message Examples (Informative).....	63
10.10.1. Digitally Signed and Encrypted ebXML Message	63
10.10.2. Digitally Signed and Encrypted ebXML SOAP with Attachments Message	65
10.10.3. Digitally Signed Receipt Signal Message	68
10.11. Message Authorization	69
10.12. Securing the PullRequest Signal	70
10.12.1. Authentication	70
10.12.2. Authorization	71
10.12.3. Preventing Replay Attacks	71
10.13. Countermeasure Technologies.....	71
10.13.1. Persistent Digital Signature.....	71
10.13.2. Persistent Signed Receipt.....	71
10.13.3. Non-Persistent Authentication.....	71
10.13.4. Non-Persistent Integrity	72
10.13.5. Persistent Confidentiality	72
10.13.6. Non-Persistent Confidentiality.....	72
10.13.7. Persistent Authorization	72
10.13.8. Non-Persistent Authorization	72
10.14. Security Considerations	72
11. Reliable Messaging Module	74
11.1. The Reliable Messaging Model	74

ISO/DIS 5000-1:2020(E)

11.1.1. Message Processing.....	74
11.1.2. The Reliable Messaging Processor in the MSH.....	74
11.2. Reliable Delivery of ebMS Messages	77
11.2.1. General.....	77
11.2.2. Reliability Contracts for the RMP	77
11.2.3. Reliability Contracts for the MSH	78
11.2.4. Reliability for Signal Messages	79
11.2.5. Handling of Delivery Failures	79
11.3. Reliability of ebMS MEPs	80
11.3.1. General.....	80
11.3.2. Reliability of the One-Way/Push MEP	80
11.3.3. Reliability of the One-Way/Pull MEP.....	81
11.3.4. Reliability of the Two-Way/Sync MEP	83
11.3.5. Reliability of Other Transport-Channel-Bound MEPs.....	85
APPENDIX A. The ebXML SOAP Extension Element Schema (Informative)	86
APPENDIX B. Reliable Messaging Bindings (Informative)	90
B.1. WS-Reliability Binding.....	90
B.1.1. Operations and Contracts Binding.....	90
B.1.2. Complement to the Reliability of the One-Way/Push MEP	90
B.1.3. Complement to the Reliability of the One-Way/Pull MEP	91
B.1.4. Complement to the Reliability of the Two-Way/Sync MEP	92
B.2. WS-ReliableMessaging Binding.....	93
B.3. Operations and Contracts Binding	93
B.3.1. Complement to the Reliability of the One-Way/Push MEP	94
B.3.2. Complement to the Reliability of the One-Way/Pull MEP	95
B.3.3. Complement to the Reliability of the Two-Way/Sync MEP	96
APPENDIX C. SOAP Format and Bindings (Normative).....	97
C.1. General.....	97
C.2. Using SwA with SOAP-1.1	97
C.3. Using SwA with SOAP-1.2.....	98
C.4. SMTP Binding.....	99
APPENDIX D. Processing Modes (Normative).....	101
D.1. Objectives and Usage.....	101
D.2. Model for Processing Modes	102
D.2.1. General.....	102
D.2.2. Notation.....	103
D.3. Processing Mode Parameters	104
D.3.1. General.....	104
D.3.2. General P-Mode Parameters	104

D.3.3. PMode[1].Protocol.....	105
D.3.4. PMode[1].BusinessInfo	105
D.3.5. PMode[1].ErrorHandling.....	105
D.3.6. PMode[1].Reliability	106
D.3.7. PMode[1].Security	107
APPENDIX E. P-Mode Values and ebMS MEP Bindings (Normative).....	109
E.1. General	109
E.2. P-Mode Values and the One-Way/Push MEP	109
E.3. P-Mode Values and the One-Way/Pull MEP	110
E.4. P-Mode Values and the Two-Way/Sync MEP	111
APPENDIX F. Compatibility Mapping to ebMS 2.0 (Informative)	112
F.1. Objectives and Approach.....	112
F.2. Compatibility Mapping Rules	112
F.2.1. General.....	112
F.2.2. (CM1) Header Mapping Rules	113
F.2.3. Rule CM2-a: Mapping Attachments	113
F.2.4. (CM3) Reliability Mapping Rules.....	113
F.2.4.1. General	113
F.2.5. (CM4) MEP Mapping Rules	115
F.2.5.1. General	115
F.2.6. (CM5) Signal Mapping Rules.....	116
F.2.7. (CM6) Processing Mode Mapping Rules	118
APPENDIX G. Conformance (Informative)	119
APPENDIX H. Document Origin (Informative)	120
Bibliography	121

Table of Figures

Figure 1: Entities of the Messaging Model and Their Interactions 15
Figure 2: One-Way/Push MEP 19
Figure 3: One-Way/Pull MEP 20
Figure 4: Two-Way/Sync MEP 21
Figure 5: One-Way/Pull with Message Partition Channels 26
Figure 6: Message Partition Channel Use Cases 27
Figure 7: Component Relationships 30
Figure 8: User Message Structure 34
Figure 9: Signal Message Structure 35
Figure 10: Sending an ebMS Message Reliably 70
Figure 11: Sending an ebMS MEP Response Message Reliably 71
Figure 12: Reliable One-Way/Push MEP 75
Figure 13: Reliable One-Way/Pull MEP 76
Figure 14: Reliable Two-Way/Sync MEP 77
Figure 15: P-Mode Structure for Two-Way/Push and Pull MEP 94

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

This document was prepared by the OASIS ebXML Messaging Services Committee, originally as "OASIS ebXML Messaging Services Version 3.0", as described in 120It was subsequently submitted to ISO/TC 154, Processes, data elements and documents in commerce, industry and administration.

This second ISO edition cancels and replaces the first ISO edition, ISO 15000-2:2004, which has been technically revised, and ISO 15000-1:2004, which covered another ebXML specification that is not re-submitted.

The main changes compared to the previous edition of ISO 15000 are as follows:

- The original ISO 15000-2 (2004) specification for ebXML Messaging (ebMS) has been updated and refactored into multiple parts, including this part, the "Core" specification for ebMS, resubmitted to become ISO 15000-1 (2019).
- A separate "AS4 Profile of ebMS 3.0 Version 1.0" is submitted separately to ISO/TC 154. It provides a select limited profile of the ebMS3 specification sufficient for Web Services business-to-business messaging applications over the HTTP transport protocol, and is to become a new ISO 15000-2 (2019).
- This document defines the basic (and some optional) features necessary for reliable electronic messaging and the transactional interactions that support such messaging.
- This document noted the availability of several newer methodologies, represented by normative references and non-normative bibliographic references included here, that were not available as of the 2004 version.

ISO/DIS 5000-1:2020(E)

A list of all parts in the ISO 15000 series can be found on the ISO website.

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Introduction

This document describes a communication-protocol neutral method for exchanging electronic business messages. It defines specific enveloping constructs supporting reliable, secure delivery of business information. Furthermore, the specification defines a flexible enveloping technique, permitting messages to contain payloads of any format type. This versatility ensures that legacy electronic business systems employing traditional syntaxes (i.e. UN/EDIFACT, ASC X12, or HL7) can leverage the advantages of the ebXML infrastructure along with users of emerging technologies.

The prime objective of the ebXML Messaging Service (ebMS) is to facilitate the exchange of electronic business messages within an XML framework that leverages common Internet standards, without making any assumption on the integration and consumption model these messages will follow on the back-end. These messages may be consumed in different ways that are out of scope of this document: they may bind to a legacy application, to a service, be queued, enter a message workflow process, be expected by an already-running business process, be batched for delayed processing, be routed over an Enterprise Service Bus before reaching their consumer application, or be dispatched based on header data or payload data, etc.

It is becoming critical for broad adoption among all partners – large or small - of a supply-chain, to handle differences in message flow capacity, intermittent connectivity, lack of static IP addresses or firewall restrictions. Such new capabilities played an important role in the motivation that led to ebMS 3.0, along with the need to integrate and profile the emerging SOAP-based QoS-supporting standards. The message header profiling that provided, in ebMS 2.0, a standard business-level header, has also been extended to better address the diversity of back-end binding models, as well as the emerging trend in business activity monitoring, the eBusiness side of which a message handler should be able to support.

The ebXML messaging framework is not a restrictive one: business messages, identified as the 'payloads' of ebXML messages, are not limited to XML documents. Traditional EDI formats may also be transported by ebMS. These payloads can take any digital form—XML, ASC X12, HL7, AIAG E5, database tables, binary image files, etc. Multiple payloads, possibly of different MIME types, can be transported in a single ebMS message. An objective of ebXML Messaging protocol is to be capable of being carried over any available transfer protocol. This version of the specification provides bindings to HTTP and SMTP, but other protocols to which SOAP may bind can also be used. The choice of an XML framework rather reflects confidence in a growing XML-based Web infrastructure and development tools infrastructure, the components of which can be leveraged and reused by developers.

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Electronic business eXtensible Markup Language (ebXML) — Part 1: Messaging service core specification

1. Scope

This document describes the ISO/IEC 15000 ebXML Messaging Services Version 3.0 Core Specification, which is part 1 of the ISO/IEC 15000 series of International Standards. The specification provides a communication-protocol neutral method for exchanging electronic business messages. It defines specific enveloping constructs supporting reliable, secure delivery of business information. Furthermore, the specification defines a flexible enveloping technique, permitting messages to contain payloads of any format type.

It specifies each of the following:

- Messaging Model
- Message Pulling and Partitioning
- Processing Modes
- Message Packaging
- Error Handling
- Security Module
- Reliable Messaging Module

This document is applicable to all types of organizations (e.g. commercial enterprises, government agencies, not-for-profit organizations) that exchange documents or data electronically using messaging.

2. Normative References

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

INTERNET ASSIGNED NAMES AUTHORITY (IANA). *MIME Media Types*, Available from <http://www.iana.org/assignments/media-types/>.

INTERNET ENGINEERING TASK FORCE (IETF). RFC 2045. *Multipurpose Internet Mail Extensions (MIME) Part One: Format of Internet Message Bodies*, 1996. Edited by N Freed, et al. Available from <http://www.ietf.org/rfc/rfc2045.txt>.

INTERNET ENGINEERING TASK FORCE (IETF). RFC 2279. *UTF-8, a transformation format of ISO 10646*, 1998. Edited by F. Yergeau. Available from <http://www.ietf.org/rfc/rfc2279.txt>.

INTERNET ENGINEERING TASK FORCE (IETF). RFC 2387. *The MIME Multipart/Related Content-type*, 1998. Edited by E. Levinson, Available from <http://www.ietf.org/rfc/rfc2387.txt>.

INTERNET ENGINEERING TASK FORCE (IETF). RFC 2392. *Content-ID and Message-ID Uniform Resource Locators*, 1998. Edited by E. Levinson. Available from <http://www.ietf.org/rfc/rfc2392.txt>.

INTERNET ENGINEERING TASK FORCE (IETF). RFC 2396. *Content-ID and Message-ID Uniform Resource Locators*, 1998. Edited by T. Berners-Lee, et al. Available from <http://www.ietf.org/rfc/rfc2396.txt>.

INTERNET ENGINEERING TASK FORCE (IETF). RFC 2616. *Hypertext Transfer Protocol -- HTTP/1.1*, 1999. Edited by R. Fielding, et al. Available from <http://www.ietf.org/rfc/rfc2616.txt>.