



Web Services ReliableMessaging Policy Assertion (WS-RM Policy)

Working Draft 05, January 31, 2006

Document identifier:

wsrmp-1.1-spec-wd-05

Location:

Editors:

Gilbert Pilz, BEA <gilbert.pilz@bea.com>

Anish Karmarkar, Oracle <Anish.Karmarkar@oracle.com>

Ümit Yalçinalp, SAP <umit.yalcinalp@sap.com>

Doug Davis, IBM <dug@us.ibm.com>

Contributors:

TBD

Abstract:

This specification describes a domain-specific policy assertion for WS-ReliableMessaging [WS-RM] that can be specified within a policy alternative as defined in WS-Policy Framework [WS-Policy].

By using the XML [XML], SOAP [SOAP 1.1], [SOAP 1.2] and WSDL [WSDL 1.1] extensibility models, the WS* specifications are designed to be composed with each other to provide a rich Web services environment. This by itself does not provide a negotiation solution for Web services. This is a building block that is used in conjunction with other Web service and application-specific protocols to accommodate a wide variety of policy exchange models.

Status:

This document is a work in progress and will be updated to reflect issues as they are resolved by the Web Services Reliable Exchange (WS-RX) Technical Committee.

Table of Contents

28		
29	1 Introduction.....	3
30	1.1 Goals and Requirements.....	3
31	1.1.1 Requirements.....	3
32	1.2 Notational Conventions.....	3
33	1.3 Namespace.....	3
34	1.4 Compliance.....	4
35	2 RM Policy Assertions.....	5
36	2.1 Assertion Model	5
37	2.2 Inbound Messages.....	5
38	2.3 Outbound Messages.....	6
39	2.4 Assertion Attachment.....	6
40	2.5 Assertion Example.....	6
41	3 Security Considerations.....	8
42	4 References.....	9
43	4.1 Normative.....	9
44	4.2 Non Normative.....	9
45	A. Acknowledgments.....	10
46	B. XML Schema.....	11
47	C. Revision History.....	13
48	D. Notices.....	15

1 Introduction

This specification defines a domain-specific policy assertion for reliable messaging for use with WS-Policy [WS-Policy] and WS-ReliableMessaging [WS-RM].

1.1 Goals and Requirements

1.1.1 Requirements

1.2 Notational Conventions

The keywords "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT", "SHOULD", "SHOULD NOT", "RECOMMENDED", "MAY", and "OPTIONAL" in this document are to be interpreted as described in RFC 2119 [KEYWORDS].

This specification uses the following syntax to define normative outlines for messages:

- The syntax appears as an XML instance, but values in italics indicate data types instead of values.
- Characters are appended to elements and attributes to indicate cardinality:
 - "?" (0 or 1)
 - "*" (0 or more)
 - "+" (1 or more)
- The character "|" is used to indicate a choice between alternatives.
- The characters "[" and "]" are used to indicate that contained items are to be treated as a group with respect to cardinality or choice.
- An ellipsis (i.e. "...") indicates a point of extensibility that allows other child, or attribute, content. Additional children and/or attributes MAY be added at the indicated extension points but MUST NOT contradict the semantics of the parent and/or owner, respectively. If an extension is not recognized it SHOULD be ignored.
- XML namespace prefixes (See Section [Namespace](#)) are used to indicate the namespace of the element being defined.

1.3 Namespace

The XML namespace [XML-ns] URI that MUST be used by implementations of this specification is:

```
http://docs.oasis-open.org/ws-rx/wsrmp/200510
```

Table 1 lists the XML namespaces that are used in this specification. The choice of any namespace prefix is arbitrary and not semantically significant.

The following namespaces are used in this document:

79 *Table 1*

Prefix	Namespace	Specification
wsp	http://schemas.xmlsoap.org/ws/2004/09/policy	[WS-Policy]
wsrmp	http://docs.oasis-open.org/ws-rx/wsrmp/200510	This specification.

80

1.4 Compliance

81 An implementation is not compliant with this specification if it fails to satisfy one or more of the MUST or
82 REQUIRED level requirements defined herein. A SOAP Node MUST NOT use the XML namespace
83 identifier for this specification (listed in Section [Namespace](#)) within SOAP Envelopes unless it is compliant
84 with this specification.

85 Normative text within this specification takes precedence over normative outlines, which in turn take
86 precedence over the XML Schema [[XML-Schema Part1](#), [XML-Schema Part2](#)] descriptions.

2 RM Policy Assertions

WS-Policy Framework [WS-Policy] and WS-Policy Attachment [WS-PolicyAttachment] collectively define a framework, model and grammar for expressing the requirements, and general characteristics of entities in an XML Web services-based system. To enable an RM Destination and an RM Source to describe their requirements for a given Sequence, this specification defines two assertions that leverage the WS-Policy framework.

2.1 Assertion Model

In general a RM policy assertion indicates that the Application Source and Application Destination MUST use WS-ReliableMessaging [WS-RM] to ensure reliable delivery of messages. Because an individual WS-RM Sequence only applies to messages carried in one direction (e.g. from an Application Source to an Application Destination) this specification defines separate assertions to cover inbound messages and outbound messages (for the purposes of this specification, the meaning and “inbound” and “outbound” are defined from the point of view of the service that is advertising these policies). These assertions can be combined using the WS-Policy Framework to indicate different combinations of supported behavior (e.g. WS-RM is required for inbound messages, but not for outbound messages; WS-RM is required for both inbound and outbound messages, etc.)

2.2 Inbound Messages

The normative outline for the inbound RM assertion is:

```
<wsrmp:RMInbound [wsp:Optional="true"]? ... >
...
</wsrmp:RMInbound>
```

The following describes additional, normative constraints on the outline listed above:

/wsrmp:RMInbound

A policy assertion that specifies that WS-ReliableMessaging [WS-RM] protocol MUST be used for inbound messages for the binding or port to which this assertion is attached (see Assertion Attachment)

/wsrmp:RMInbound/@wsp:Optional="true"

Per WS-Policy [WS-Policy], this is compact notation for two policy alternatives, one with and one without the assertion. The intuition is that the behavior indicated by the assertion is optional, or in this case, that WS-ReliableMessaging MAY be used for inbound messages for the binding or port to which this assertion is attached.

/wsrmp:RMInbound/{any}

This is an extensibility mechanism to allow different (extensible) types of information, based on a schema, to be expressed within the policy.

/wsrmp:RMInbound/@{any}

This is an extensibility mechanism to allow additional attributes, based on schema, to be added to the policy.

2.3 Outbound Messages

The normative outline for the outbound RM assertion is:

```
<wsrmp:RMOutbound [wsp:Optional="true"]? ... >
...
</wsrmp:RMOutbound>
```

The following describes additional, normative constraints on the outline listed above:

/wsrmp:RMOutbound

A policy assertion that specifies that WS-ReliableMessaging [WS-RM] protocol MUST be used for outbound messages for the binding or port to which this assertion is attached (see Assertion Attachment)

/wsrmp:RMOutbound/@wsp:Optional="true"

Per WS-Policy [WS-Policy], this is compact notation for two policy alternatives, one with and one without the assertion. The intuition is that the behavior indicated by the assertion is optional, or in this case, that WS-ReliableMessaging MAY be used for outbound messages for the binding or port to which this assertion is attached.

/wsrmp:RMOutbound/{any}

This is an extensibility mechanism to allow different (extensible) types of information, based on a schema, to be expressed within the policy.

/wsrmp:RMOutbound/@{any}

This is an extensibility mechanism to allow additional attributes, based on schema, to be added to the policy.

2.4 Assertion Attachment

Because the RM policy assertions indicate behavior over an RM Sequence, the assertion has Endpoint Policy Subject [WS-PolicyAttachment].

WS-PolicyAttachment defines three WSDL [WSDL 1.1] policy attachment points with Endpoint Policy Subject:

- wsdl:portType – A policy expression containing an RM policy assertion MUST NOT be attached to a wsdl:portType; RM policy assertions specify concrete behavior whereas the wsdl:portType is an abstract construct.
- wsdl:binding – A policy expression containing an RM policy assertion SHOULD be attached to a wsdl:binding.
- wsdl:port – A policy expression containing an RM policy assertion MAY be attached to a wsdl:port.

If a RM policy assertion appears in a policy expression attached to both a wsdl:port and its corresponding wsdl:binding, the parameters in the former MUST be used and the latter ignored.

2.5 Assertion Example

Table 2 lists an example use of RM policy assertions.

Table 2: Example policy with RM policy assertions

```

161 (01)<wsdl:definitions
162 (02)   targetNamespace="example.com"
163 (03)   xmlns:tns="example.com"
164 (04)   xmlns:wsdl="http://schemas.xmlsoap.org/wsdl/"
165 (05)   xmlns:wsp="http://schemas.xmlsoap.org/ws/2004/09/policy"
166 (06)   xmlns:wsrmp="http://docs.oasis-open.org/ws-rx/wsrmp/200510"
167 (07)   xmlns:wsu="http://docs.oasis-open.org/wss/2004/01/oasis-200401-
168 wss-wssecurity-utility-1.0.xsd">
169 (08)
170 (09)   <wsp:UsingPolicy wsdl:required="true" />
171 (10)
172 (11)   <wsp:Policy wsu:Id="MyPolicy" >
173 (12)     <wsrmp:RMInbound />
174 (13)     <wsrmp:RMOutbound wsp:Optional="true" />
175 (14)     <!-- omitted assertions -->
176 (15)   </wsp:Policy>
177 (16)
178 (17)   <!-- omitted elements -->
179 (18)
180 (19)   <wsdl:binding name="MyBinding" type="tns:MyPortType" >
181 (20)     <wsp:PolicyReference URI="#MyPolicy" />
182 (21)     <!-- omitted elements -->
183 (22)   </wsdl:binding>
184 (23)
185 (24)</wsdl:definitions>

```

186 Line (09) in Table 2 indicates that WS-Policy [WS-Policy] is in use as a required extension.

187 Lines (11-15) are a policy expression that includes two RM policy assertions.

188 Line (12) indicates that WS-ReliableMessaging [WS-RM] must be used for all inbound messages of the
189 binding, port or endpoint to which "MyPolicy" is attached.

190 Line (13) indicates that WS-ReliableMessaging may be used for all outbound messages of the binding,
191 port or endpoint to which "MyPolicy" is attached.

192 Lines (19-22) are a WSDL [WSDL 1.1] binding. Line (20) indicates that the policy in Lines (11-15) applies
193 to this binding, specifically indicating that WS-ReliableMessaging must be used for all inbound messages
194 in the binding and that WS-ReliableMessaging may be used for all outbound messages in the binding.

3 Security Considerations

It is strongly RECOMMENDED that policies and assertions be signed to prevent tampering.

It is RECOMMENDED that policies SHOULD NOT be accepted unless they are signed and have an associated security token to specify the signer has proper claims for the given policy. That is, a relying party shouldn't rely on a policy unless the policy is signed and presented with sufficient claims to pass the relying parties acceptance criteria.

It should be noted that the mechanisms described in this document could be secured as part of a SOAP message using WS-Security [WSS] or embedded within other objects using object-specific security mechanisms.

4 References

4.1 Normative

[KEYWORDS]

S. Bradner, "Key words for use in RFCs to Indicate Requirement Levels," RFC 2119, Harvard University, March 1997.

[SOAP 1.1]

W3C Note, "SOAP: Simple Object Access Protocol 1.1" 08 May 2000.

[SOAP 1.2]

W3C Recommendation, "[SOAP Version 1.2 Part 1: Messaging Framework](#)" June 2003.

[URI]

T. Berners-Lee, R. Fielding, L. Masinter, "Uniform Resource Identifiers (URI): Generic Syntax," RFC 3986, MIT/LCS, U.C. Irvine, Xerox Corporation, January 2005.

[WS-RM]

OASIS WS-RX Technical Committee Draft, "Web Services Reliable Messaging (WS-ReliableMessaging)," September 2005.

[WS-Policy]

D. Box, et al, "Web Services Policy Framework (WS-Policy)," September 2004.

[WS-PolicyAttachment]

D. Box, et al, "Web Services Policy Attachment (WS-PolicyAttachment)," September 2004.

[WSDL 1.1]

W3C Note, "Web Services Description Language (WSDL 1.1)," 15 March 2001.

[XML]

W3C Recommendation, "[Extensible Markup Language \(XML\) 1.0 \(Second Edition\)](#)", October 2000.

[XML-ns]

W3C Recommendation, "Namespaces in XML," 14 January 1999.

[XML-Schema Part1]

W3C Recommendation, "XML Schema Part 1: Structures," 2 May 2001.

[XML-Schema Part2]

W3C Recommendation, "XML Schema Part 2: Datatypes," 2 May 2001.

4.2 Non Normative

[WSS]

OASIS Web Services Security: SOAP Message Security 1.0 (WS-Security 2004)", Chris Kaler, Phillip Hallam-Baker, Ronald Monzillo, eds, OASIS Standard 200401, March 2004.

237 **A. Acknowledgments**

238 This document is based on initial contribution to OASIS WS-RX Technical Committee by the following
239 authors: Stefan Batres, Microsoft (Editor), Ruslan Bilorusets, BEA, Don Box, Microsoft, Luis Felipe
240 Cabrera, Microsoft, Derek Collison, TIBCO Software, Donald Ferguson, IBM, Christopher Ferris, IBM
241 (Editor), Tom Freund, IBM, Mary Ann Hondo, IBM, John Ibbotson, IBM, Lei Jin, BEA, Chris Kaler,
242 Microsoft, David Langworthy, Microsoft, Amelia Lewis, TIBCO Software, Rodney Limprecht, Microsoft,
243 Steve Lucco, Microsoft, Don Mullen, TIBCO Software, Anthony Nadalin, IBM, Mark Nottingham, BEA,
244 David Orchard, BEA, Shivajee Samdarshi, TIBCO Software, John Shewchuk, Microsoft, Tony Storey,
245 IBM.

246 The following individuals have provided invaluable input into the initial contribution:

247 Keith Ballinger, Microsoft, Allen Brown, Microsoft, Michael Conner, IBM, Francisco Curbera, IBM, Steve
248 Graham, IBM, Pat Helland, Microsoft, Rick Hill, Microsoft, Scott Hinkelman, IBM, Tim Holloway, IBM, Efim
249 Hudis, Microsoft, Johannes Klein, Microsoft, Frank Leymann, IBM, Martin Nally, IBM, Peter Niblett, IBM,
250 Jeffrey Schlimmer, Microsoft, Chris Sharp, IBM, James Snell, IBM, Keith Stobie, Microsoft, Satish Thatte,
251 Microsoft, Stephen Todd, IBM, Sanjiva Weerawarana, IBM, Roger Wolter, Microsoft.

252 The following individuals were members of the committee during the development of this specification:

253 TBD

B. XML Schema

A normative copy of the XML Schema [XML-Schema Part1, XML-Schema Part2] description for this specification may be retrieved from the following address:

<http://docs.oasis-open.org/ws-rx/wsrmp/200510/wsrmp-1.1-schema-200510.xsd>

The following copy is provided for reference.

```
<?xml version="1.0" encoding="UTF-8"?>
<!--
OASIS takes no position regarding the validity or scope of any
intellectual property or other rights that might be claimed to pertain to
the implementation or use of the technology described in this document or
the extent to which any license under such rights might or might not be
available; neither does it represent that it has made any effort to
identify any such rights. Information on OASIS's procedures with respect
to rights in OASIS specifications can be found at the OASIS website.
Copies of claims of rights made available for publication and any
assurances of licenses to be made available, or the result of an attempt
made to obtain a general license or permission for the use of such
proprietary rights by implementors or users of this specification, can be
obtained from the OASIS Executive Director.
OASIS invites any interested party to bring to its attention any
copyrights, patents or patent applications, or other proprietary rights
which may cover technology that may be required to implement this
specification. Please address the information to the OASIS Executive
Director.
Copyright © OASIS Open 2002-2006. All Rights Reserved.
This document and translations of it may be copied and furnished to
others, and derivative works that comment on or otherwise explain it or
assist in its implementation may be prepared, copied, published and
distributed, in whole or in part, without restriction of any kind,
provided that the above copyright notice and this paragraph are included
on all such copies and derivative works. However, this document itself
does not be modified in any way, such as by removing the copyright notice
or references to OASIS, except as needed for the purpose of developing
OASIS specifications, in which case the procedures for copyrights defined
in the OASIS Intellectual Property Rights document must be followed, or
as required to translate it into languages other than English.
The limited permissions granted above are perpetual and will not be
revoked by OASIS or its successors or assigns.
This document and the information contained herein is provided on an
"AS IS" basis and OASIS DISCLAIMS ALL WARRANTIES, EXPRESS OR IMPLIED,
INCLUDING BUT NOT LIMITED TO ANY WARRANTY THAT THE USE OF THE INFORMATION
HEREIN WILL NOT INFRINGE ANY RIGHTS OR ANY IMPLIED WARRANTIES OF
MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.
-->
<xs:schema xmlns:tns="http://docs.oasis-open.org/ws-rx/wsrmp/200510"
xmlns:xs="http://www.w3.org/2001/XMLSchema"
targetNamespace="http://docs.oasis-open.org/ws-rx/wsrmp/200510"
elementFormDefault="qualified" attributeFormDefault="unqualified">
  <xs:complexType name="SimpleExAssertion">
    <xs:sequence>
      <xs:any namespace="##other" processContents="lax" minOccurs="0"
maxOccurs="unbounded"/>
    </xs:sequence>
    <xs:anyAttribute namespace="##any" processContents="lax"/>
  </xs:complexType>
  <xs:element name="RMInbound" type="tns:SimpleExAssertion"/>
</xs:schema>
```

310
311

```
<xs:element name="RMOutbound" type="tns:SimpleExAssertion"/>  
</xs:schema>
```

C. Revision History

Revision	Date	By Whom	What
wd-01.doc	2005-07-06	Ümit Yalçinalp	Initial version created based on submission by the authors.
1.0-wd-01.swx	2005-09-01	Ümit Yalçinalp	Reformatted using Open Office
1.1-wd-01.swx	2005-09-18	Ümit Yalçinalp	Applied resolution i001 Applied resolution i015/16 (doc identifier) Partial application of i017, final yyyy/mm required, changed doc URI to TBD pending yyyy/mm Deleted original copyright section
1.1-wd-01.swx	2005-10-02	Anish Karmarkar	Applied resolution of i013 + minor editorial changes + fixed resolution of i017
1.1-wd-01.swx	2005-10-04	Ümit Yalçinalp	Applied actual value for yyyy/mm. Added resolution of i009
1.1-wd-01.swx	2005-10-06	Ümit Yalçinalp	Editorial fixes suggested by Anish Updated wd draft date to October 6th
1.1-wd-01.swx	2005-10-19	Ümit Yalçinalp	Editorial change to remove .swx suffix from doc id
wd-02	2005-11-03	Gilbert Pilz	Start wd-02 by changing title page from cd-01.
wd-02	2005-11-30	Gilbert Pilz	i072 – editorial nits
wd-02	2005-11-30	Gilbert Pilz	i074 - Use of [tcShortName] in artifact locations namespaces, etc
wd-02	2005-12-01	Gilbert Pilz	Updated fix to i074 to remove trailing '/' from wsrmp namespace.
wd-02	2005-12-01	Anish Karmarkar	Applied resolution for i022
wd-02	2005-12-01	Anish Karmarkar	Applied resolution for i024
wd-02	2005-12-01	Anish Karmarkar	Applied resolution for i054
wd-02	2005-12-01	Anish Karmarkar	Applied resolution of i073
wd-2	2005-12-05	Anish Karmarkar	Applied resolution of i055
wd-2	2005-12-05	Ümit Yalçinalp	Changed fixed date in footer to current date
wd-3	2005-12-21	Doug Davis	Added i050
wd-3	2005-12-23	Ümit Yalçinalp	I057 resolution
wd-3	2005-12-23	Ümit Yalçinalp	Changed the ref to WS-RM to the WS-RX committee

Revision	Date	By Whom	What
			draft instead of original version Fixed Dug's email address
wd-3	2005-12-23	Ümit Yalçinalp	I060 resolution
wd-03	2005-12-27	Gilbert Pilz	Remove schema example and put it in its own artifact (wsrmp-1.1-schema-200510.xsd). Convert source file to OpenDocument format. Make line numbers all the same style.
wd-03	2005-12-28	Anish Karmarkar	Included a section link to c:\temp\wsrmp-1.1-schema-200510.xsd
wd-03	2006-01-04	Gilbert Pilz	Fixed formatting of included section.
wd-03	2006-01-05	Gilbert Pilz	Fix closing tag of normative outline for RMAssertion.
wd-04	2006-11-11	Doug Davis	Minor tweaks/typos
wd-05	2006-01-23	Gilbert Pilz	Start wd-05 by accepting all changes from wd-04
wd-06	2006-01-23	Doug Davis	Minor typos found by Marc

313 D. Notices

314 OASIS takes no position regarding the validity or scope of any intellectual property or other rights that
315 might be claimed to pertain to the implementation or use of the technology described in this document or
316 the extent to which any license under such rights might or might not be available; neither does it represent
317 that it has made any effort to identify any such rights. Information on OASIS's procedures with respect to
318 rights in OASIS specifications can be found at the OASIS website. Copies of claims of rights made
319 available for publication and any assurances of licenses to be made available, or the result of an attempt
320 made to obtain a general license or permission for the use of such proprietary rights by implementors or
321 users of this specification, can be obtained from the OASIS Executive Director.

322 OASIS invites any interested party to bring to its attention any copyrights, patents or patent applications, or
323 other proprietary rights which may cover technology that may be required to implement this specification.
324 Please address the information to the OASIS Executive Director.

325 Copyright (C) OASIS Open (2006). All Rights Reserved.

326 This document and translations of it may be copied and furnished to others, and derivative works that
327 comment on or otherwise explain it or assist in its implementation may be prepared, copied, published and
328 distributed, in whole or in part, without restriction of any kind, provided that the above copyright notice and
329 this paragraph are included on all such copies and derivative works. However, this document itself may
330 not be modified in any way, such as by removing the copyright notice or references to OASIS, except as
331 needed for the purpose of developing OASIS specifications, in which case the procedures for copyrights
332 defined in the OASIS Intellectual Property Rights document must be followed, or as required to translate it
333 into languages other than English.

334 The limited permissions granted above are perpetual and will not be revoked by OASIS or its successors
335 or assigns.

336 This document and the information contained herein is provided on an "AS IS" basis and OASIS
337 DISCLAIMS ALL WARRANTIES, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO ANY
338 WARRANTY THAT THE USE OF THE INFORMATION HEREIN WILL NOT INFRINGE ANY RIGHTS OR
339 ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.