



2 **Web Services ReliableMessaging Policy**
3 **Assertion**
4 **(WS-RM Policy)**

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16 **Abstract:**

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

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

25 **Status:**

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

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49 1 Introduction

50 This specification defines a domain-specific policy assertion for reliable messaging for use with WS-Policy
51 [\[WS-Policy\]](#) and WS-ReliableMessaging [\[WS-RM\]](#).

52 1.1 Goals and Requirements

53 1.1.1 Requirements

54 1.2 Notational Conventions

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

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

- 59 • The syntax appears as an XML instance, but values in italics indicate data types instead of values.
- 60 • Characters are appended to elements and attributes to indicate cardinality:
 - 61 ○ "?" (0 or 1)
 - 62 ○ "*" (0 or more)
 - 63 ○ "+" (1 or more)
- 64 • The character "|" is used to indicate a choice between alternatives.
- 65 • The characters "[" and "]" are used to indicate that contained items are to be treated as a group
66 with respect to cardinality or choice.
- 67 • An ellipsis (i.e. "...") indicates a point of extensibility that allows other child, or attribute, content.
68 Additional children and/or attributes MAY be added at the indicated extension points but MUST
69 NOT contradict the semantics of the parent and/or owner, respectively. If an extension is not
70 recognized it SHOULD be ignored.
- 71 • XML namespace prefixes (See Section [Namespace](#)) are used to indicate the namespace of the
72 element being defined.

73 1.3 Namespace

74 The XML namespace [\[XML-ns\]](#) URI that MUST be used by implementations of this specification is:

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

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

78 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.

87 2 RM Policy Assertions

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

93 2.1 Assertion Model

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

103 2.2 Inbound Messages

104 The normative outline for the inbound RM assertion is:

```
105 <wsrmp:RMInbound [wsp:Optional="true"]? ... >  
106 . . .  
107 </wsrmp:RMInbound>
```

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

109 /wsrmp:RMInbound

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

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

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

118 /wsrmp:RMInbound/{any}

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

121 /wsrmp:RMInbound/@{any}

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

124 2.3 Outbound Messages

125 The normative outline for the outbound RM assertion is:

```
126 <wsrmp:RMOutbound [wsp:Optional="true"]? ... >  
127 ...  
128 </wsrmp:RMOutbound>
```

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

130 /wsrmp:RMOutbound

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

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

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

139 /wsrmp:RMOutbound/{any}

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

142 /wsrmp:RMOutbound/@{any}

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

145 2.4 Assertion Attachment

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

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

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

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

158 2.5 Assertion Example

159 Table 2 lists an example use of RM policy assertions.

160 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:wssu="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 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, 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 to this binding, specifically indicating that WS-ReliableMessaging must be used for all inbound messages in the binding and that WS-ReliableMessaging may be used for all outbound messages in the binding.

195 **3 Security Considerations**

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

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

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

204 **4 References**

205 **4.1 Normative**

206 **[KEYWORDS]**

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

209 **[SOAP 1.1]**

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

211 **[SOAP 1.2]**

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

213 **[URI]**

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

216 **[WS-RM]**

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

219 **[WS-Policy]**

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

221 **[WS-PolicyAttachment]**

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

223 **[WSDL 1.1]**

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

225 **[XML]**

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

227 **[XML-ns]**

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

229 **[XML-Schema Part1]**

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

231 **[XML-Schema Part2]**

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

233 **4.2 Non Normative**

234 **[WSS]**

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

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

253 TBD

254 B. XML Schema

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

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

258 The following copy is provided for reference.

```
259 <?xml version="1.0" encoding="UTF-8"?>
260 <!--
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296 MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.
297 -->
298 <xs:schema xmlns:tns="http://docs.oasis-open.org/ws-rx/wsrmp/200510"
299 xmlns:xs="http://www.w3.org/2001/XMLSchema"
300 targetNamespace="http://docs.oasis-open.org/ws-rx/wsrmp/200510"
301 elementFormDefault="qualified" attributeFormDefault="unqualified">
302   <xs:complexType name="SimpleExAssertion">
303     <xs:sequence>
304       <xs:any namespace="##other" processContents="lax" minOccurs="0"
305 maxOccurs="unbounded"/>
306     </xs:sequence>
307     <xs:anyAttribute namespace="##any" processContents="lax"/>
308   </xs:complexType>
309   <xs:element name="RMInbound" type="tns:SimpleExAssertion"/>
```

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

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