



2 Web Services Reliable-Messaging Policy 3 Assertion 4 (WS-RM Policy)

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18 **Abstract:**

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

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

27 **Status:**

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

30 ~~This document was last revised or approved by the OASIS WS-RX Technical Committee on the~~
31 ~~above date. The level of approval is also listed above. Check the current location noted above for~~
32 ~~possible later revisions of this document.~~

33 ~~For information on whether any patents have been disclosed that may be essential to~~
34 ~~implementing this specification and any offers of patent licensing terms please refer to the~~
35 ~~Intellectual Property Rights section of the Technical Committee web page ([http://www.oasis-](http://www.oasis-open.org/committees/ws-rx/ipr.php)~~
36 ~~[open.org/committees/ws-rx/ipr.php](http://www.oasis-open.org/committees/ws-rx/ipr.php)).~~

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59 1 Introduction

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

62 1.1 Goals and Requirements

63 1.1.1 Requirements

64 1.2 Notational Conventions

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

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

- 69 • The syntax appears as an XML instance, but values in italics indicate data types instead of values.
- 70 • Characters are appended to elements and attributes to indicate cardinality:
 - 71 ○ "?" (0 or 1)
 - 72 ○ "*" (0 or more)
 - 73 ○ "+" (1 or more)
- 74 • The character "|" is used to indicate a choice between alternatives.
- 75 • The characters "[" and "]" are used to indicate that contained items are to be treated as a group
76 with respect to cardinality or choice.
- 77 • An ellipsis (i.e. "...") indicates a point of extensibility that allows other child, or attribute, content.
78 Additional children and/or attributes MAY be added at the indicated extension points but MUST
79 NOT contradict the semantics of the parent and/or owner, respectively. If an extension is not
80 recognized it SHOULD be ignored.
- 81 • XML namespace prefixes (See Section [Namespace](#)) are used to indicate the namespace of the
82 element being defined.

83 -
|

84 1.3 Namespace

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

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

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

90 The following namespaces are used in this document:

91 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.
Prefix	Namespace	Specification
wsp	http://schemas.xmlsoap.org/ws/2004/09/policy	[WS-Policy]
wsrmp	http://docs.oasis-open.org/wsrmp/200510/	This specification

92 **1.4 Compliance**

93 ~~An implementation is not compliant with this specification if it fails to satisfy one or more of the MUST or~~
 94 ~~REQUIRED level requirements defined herein. A SOAP Node MUST NOT use the XML namespace~~
 95 ~~identifier for this specification (listed in Section~~ ~~An implementation is not compliant with this specification if~~
 96 ~~it fails to satisfy one or more of the MUST or REQUIRED level requirements defined herein. A SOAP~~
 97 ~~Node MUST NOT use the XML namespace identifier for this specification (listed in Section~~ ~~Namespace)~~
 98 ~~within SOAP Envelopes unless it is compliant with this specification.~~

99 Normative text within this specification takes precedence over normative outlines, which in turn take
 100 precedence over the XML Schema [XML Schema Part 1, Part 2] descriptions.

101 2 RM Policy Assertions

102 WS-Policy Framework [WS-Policy] and WS-Policy Attachment [WS-PolicyAttachment] collectively define
103 a framework, model and grammar for expressing the requirements, and general characteristics of entities
104 in an XML Web services-based system. To enable an RM Destination and an RM Source to describe their
105 requirements for a given Sequence, this specification defines a single RM policy assertion that leverages
106 the WS-Policy framework.

107 2.1 Assertion Model

108 The RM policy assertion indicates that the RM Source and RM Destination MUST use WS-
109 ReliableMessaging [WS-RM] to ensure reliable message delivery. Specifically, the WS-ReliableMessaging
110 protocol determines invariants maintained by the reliable messaging endpoints and the directives used to
111 track and manage the delivery of a Sequence of messages.

112 The assertion defines an inactivity timeout parameter that ~~the RM either the RM Source or RM-~~
113 Destination MAY include. If during this duration, an endpoint has received no application or control
114 messages, the endpoint MAY consider the RM Sequence to have been terminated due to inactivity.

115 ~~This assertion also defines a base retransmission interval parameter that the RM Source MAY include. If~~
116 ~~no acknowledgement has been received for a given message within the interval, the RM Source will~~
117 ~~retransmit the message. The retransmission interval MAY be modified at the Source's discretion during~~
118 ~~the lifetime of the Sequence. This parameter does not alter the formulation of messages as transmitted,~~
119 ~~only the timing of their transmission.~~

120 ~~Similarly, this assertion defines a backoff parameter that the RM Source MAY include to indicate the~~
121 ~~retransmission interval will be adjusted using the commonly known exponential backoff algorithm~~
122 ~~[Fanenbaum].~~

123 The assertion defines a maximum message number parameter that the RM Destination MAY include to
124 indicate the maximum message number the RM Destination will accept. This is useful for RM Destinations
125 that may be running in constrained environments that can not accept values as large as the default value
126 of a maximum unsigned long.

127 Finally, this assertion defines an acknowledgement interval parameter that the RM Destination MAY
128 include. Per WS-ReliableMessaging [WS-RM], acknowledgements are sent on return messages or sent
129 stand-alone. If a return message is not available to send an acknowledgement, an RM Destination MAY
130 wait for up to the acknowledgement interval before sending a stand-alone acknowledgement. If there are
131 no unacknowledged messages, the RM Destination MAY choose not to send an acknowledgement. This
132 parameter does not alter the formulation of messages or acknowledgements as transmitted; it does not
133 alter the meaning of the wsrmp:AckRequested directive. Its purpose is to communicate the timing of
134 acknowledgements so that the RM Source may tune appropriately.

135 ~~The RM assertion parameters do not affect the messages which are sent on the wire.~~

136 2.2 Normative Outline

137 The normative outline for the RM version assertion is:

```
138 <wsrmp:RMAssertion [wsp:Optional="true"]? ... >  
139 - <wsrmp:InactivityTimeout Milliseconds="xs:unsignedLong" ... /> ?
```

140
141
142
143
144
145
146

```
<wsrmp:AcknowledgementInterval Milliseconds="xs:unsignedLong" ... /> -  
<wsrmp:BaseRetransmissionInterval Milliseconds="xs:unsignedLong" ... /> ?  
<wsrmp:ExponentialBackoff ... /> ?  
<wsrmp:AcknowledgementInterval Milliseconds="xs:unsignedLong" ... /> ?  
<wsrmp:MaxMessageNumber Number="xs:unsignedLong" ... /> ?  
- ...  
</wsrm:RMAssertion>
```

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

148 /wsrmp:RMAssertion

149 A policy assertion that specifies that WS-ReliableMessaging [WS-RM] protocol MUST be used for
150 a Sequence.

151 /wsrmp:RMAssertion/@wsp:Optional="true"

152 Per WS-Policy [WS-Policy], this is compact notation for two policy alternatives, one with and one
153 without the assertion. The intuition is that the behavior indicated by the assertion is optional, or in
154 this case, that WS-ReliableMessaging MAY be used.

155 /wsrmp:RMAssertion/wsrmp:InactivityTimeout

156 A parameter that specifies a period of inactivity for a Sequence. If omitted, there is no implied
157 value.

158 /wsrmp:RMAssertion/wsrmp:InactivityTimeout/@Milliseconds

159 The inactivity timeout duration, specified in milliseconds.

160 ~~/wsrmp:RMAssertion/wsrmp:BaseRetransmissionInterval~~

161 ~~A parameter that specifies how long the RM Source will wait after transmitting a message and~~
162 ~~before retransmitting the message. If omitted, there is no implied value.~~

163 ~~/wsrmp:RMAssertion/wsrmp:BaseRetransmissionInterval/@Milliseconds~~

164 ~~The base retransmission interval, specified in milliseconds.~~

165 ~~/wsrmp:RMAssertion/wsrmp:ExponentialBackoff~~

166 ~~A parameter that specifies that the retransmission interval will be adjusted using the exponential~~
167 ~~backoff algorithm [Tanenbaum]. If omitted, there is no implied value.~~

168 /wsrmp:RMAssertion/wsrmp:AcknowledgementInterval

169 A parameter that specifies the duration after which the RM Destination will transmit an
170 acknowledgement. If omitted, there is no implied value.

171 /wsrmp:RMAssertion/wsrmp:AcknowledgementInterval/@Milliseconds

172 The acknowledgement interval, specified in milliseconds.

173 /wsrmp:RMAssertion/wsrmp:MaxMessageNumber

174 A parameter that specifies the maximum message number that the RM Destination will accept. If
175 omitted, the default value of the maximum unsigned long will be assumed.

176 /wsrmp:RMAssertion/wsrmp:MaxMessageNumber/@Number

177 The maximum message number.

178 2.3 Assertion Attachment

179 Because the RM policy assertion indicates endpoint behavior over an RM Sequence, the assertion has
180 Endpoint Policy Subject [WS-PolicyAttachment].

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

183 • wsdl:portType – A policy expression containing the RM policy assertion MUST NOT be attached to
184 a wsdl:portType; the RM policy assertion specifies a concrete behavior whereas the wsdl:portType is an
185 abstract construct.

186 • wsdl:binding – A policy expression containing the RM policy assertion SHOULD be attached to a
187 wsdl:binding.

188 • wsdl:port – A policy expression containing the RM policy assertion MAY be attached to a wsdl:port.

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

191 2.4 Assertion Example

192 Table 2 lists an example use of the RM policy assertion.

193 Table 2: Example policy with RM policy assertion

```
194 (01) <wsdl:definitions
195 (02) _____targetNamespace="example.com"
196 (03) _____xmlns:tns="example.com"
197 (04)
198 xmlns:wscdl="http://schemas.xmlsoap.org/wsdl/"_____xmlns:wscdl="http://schem
199 as.xmlsoap.org/wsdl/"_____
200 (05)
201 xmlns:wsp="http://schemas.xmlsoap.org/ws/2004/09/policy"_____xmlns:wsp="ht
202 tp://schemas.xmlsoap.org/ws/2004/09/policy"_____
203 (06) _____xmlns:wsrmp="http://docs.oasis-open.org/ws-
204 rx/wsrmp/200510"_____xmlns:wsrmp="http://docs.oasis-
205 open.org/wsrmp/200510/"_____
206 (07) _____xmlns:wssu="http://docs.oasis-open.org/wss/2004/01/oasis-200401-
207 wss-wssecurity-utility-1.0.xsd"_____xmlns:wssu="http://docs.oasis-
208 open.org/wss/2004/01/oasis-200401-wss-wssecurity-utility-1.0.xsd"_____>
209 (08) _____
210 (09) <wsp:UsingPolicy wsdl:required="true" />
211 (10) _____
212 (11) _<wsp:Policy wsu:Id="MyPolicy" >
213 (12) _____<wsrmp:RMAssertion>
214 (13) _____<wsrmp:InactivityTimeout Milliseconds="600000" />
215 (14) _____<wsrmp:AcknowledgementInterval Milliseconds="200" /
216 >_____<wsrmp:BaseRetransmissionInterval Milliseconds="3000"/>_____
217 (15) _____</wsrmp:RMAssertion>_____<wsrmp:ExponentialBackoff />_____
218 (16) _____<!-- omitted assertions -->_____<wsrmp:AcknowledgementInterval
219 Milliseconds="200"/>_____
220 (17) _____</wsp:Policy>_____</wsrmp:RMAssertion>
221 (18) _____<!-- omitted assertions -->_____
222 (19) _____<!-- omitted elements -->_____</wsp:Policy>
223 (20) _____
224 (21) _____<wsdl:binding name="MyBinding" type="tns:MyPortType" _____<!-- omitted
225 elements -->_____
226 (22) _____<wsp:PolicyReference URI="#MyPolicy" />_____
```

```

227 (23) <!-- omitted elements --><wsdl:binding name="MyBinding"
228 type="tns:MyPortType">
229 (24) </wsdl:binding <wsp:PolicyReference URI="#MyPolicy"/>
230 (25) <!-- omitted elements -->
231 (26) </wsdl:definitions </wsdl:binding>
232 (27)
233 (28) </wsdl:definitions>
234 (29)

```

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

236 Lines (11-19) are a policy expression that includes a RM policy assertion (Lines 12-15) to indicate that
 237 WS-ReliableMessaging [WS-RM] must used. Line (13) indicates the endpoint will consider the Sequence
 238 terminated if there is no activity after ten minutes. Line (14) to indicate that WS-ReliableMessaging [WS-
 239 RM] must used. Line (13) indicates the endpoint will consider the Sequence terminated if there is no
 240 activity after ten minutes. Line (14) indicates the RM Source will retransmit unacknowledged messages
 241 after three seconds, and Line (15) indicates that exponential backoff algorithm will be used for timing of
 242 successive retransmissions should the message continue to go unacknowledged. Line (16) indicates the
 243 RM Destination may buffer acknowledgements for up to two-tenths of a second.

244 Lines (21-24) are a WSDL [WSDL 1.1] binding. Line (22) indicates that the policy in Lines (11-173-26) are
 245 a WSDL [WSDL 1.1] binding. Line (24) indicates that the policy in Lines (11-19) applies to this binding,
 246 specifically indicating that WS-ReliableMessaging must be used over all the messages in the binding.

247 2.5 Delivery Assurance

248 The Delivery Assurance indicates a delivery assurance claim in effect between an Application Source and
 249 an RM Source or an Application Destination and an RM Destination. The wsrmp:DeliveryAssurance
 250 described below specifies the Delivery Assurance as defined by WS-ReliableMessaging [WS-RM].

251 *Note: This section is subject to change since the technical committee has not yet determined whether the*
 252 *DeliveryAssurance should be represented as a separate policy assertion or be expressed within a context*
 253 *of a wsrmp:RMAssertion.*

254 The normative outline of a Delivery Assurance is:

255 The Delivery Assurance indicates a delivery assurance claim observed between an Application Source
 256 and an RM Source or an Application Destination and an RM Destination. The wsrmp:DeliveryAssurance
 257 described below specifies the Delivery Assurance as defined by WS-ReliableMessaging [WS-RM].

258 *Note: This section is subject to change since the technical committee has not yet determined whether the*
 259 *DeliveryAssurance should be represented as a separate policy assertion or be expressed within a context of a*
 260 *wsrmp:RMAssertion.*

261 The normative outline of a Delivery Assurance is

```

262 <wsrmp:DeliveryAssertion mode=" [AtLeastOnce | AtMostOnce | ExactlyOnce] "
263 ordered=" [xs:boolean] "? ..=" " >

```

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

265 /wsrmp:DeliveryAssertion

266 An assertion that makes a claim as to the delivery assurance policy ~~in effect at~~observed by the
267 destination endpoint.

268 /wsrmp:DeliveryAssertion/@mode-

269 This required attribute specifies whether or not all of the messages within an RM Sequence will be
270 delivered by the RM Destination to the Application Destination, and whether or not duplicate
271 messages will be delivered.

272 A value of 'AtMostOnce' means that messages received by the RM Destination will be delivered to
273 the Application Destination at most once, without duplication. It is possible that some messages in
274 a sequence may not be delivered.-

275 A value of 'AtLeastOnce' means that every message received by the RM Destination will be
276 delivered to the Application Destination. Some messages may be delivered more than once.-

277 A value of 'ExactlyOnce' means that every message received by the RM Destination will be
278 delivered to the Application Destination without duplication.

279 /wsrmp:DeliveryAssertion/@ordered

280 This attribute, of type *xs:boolean*, specifies whether, or not, the destination endpoint ensures that
281 the messages within an RM Sequence will be delivered in order, by the RM Destination to the
282 Application Destination. ~~Order is determined by the value of the RM message number.-Order is~~
283 ~~determined by the value of the RM message number.-~~ Ordered delivery would mean that the
284 messages would be delivered in ascending order of the message number value. A value of 'true'
285 indicates that messages will be delivered in order. A value of 'false' makes no claims as to the
286 order of delivery of the messages within a RM Sequence. If omitted, the default implied value is
287 'false'.

288 **3 Security Considerations**

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

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

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

297 **4 References**

298 **4.1 Normative**

299 **4.2 Non-Normative**

300 **[KEYWORDS]**——[S. Bradner, "Key words for use in RFCs to Indicate Requirement Levels," RFC 2119, Harvard University, March 1997.](#)

301 [S. Bradner, "Key words for use in RFCs to Indicate Requirement Levels," RFC 2119, Harvard University, March 1997.](#)

304 **[SOAP]**

305 [W3C Note, "SOAP: Simple Object Access Protocol 1.1," 08 May 2000.](#)

306 **[URI]**

307 [T. Berners-Lee, R. Fielding, L. Masinter, "Uniform Resource Identifiers \(URI\): Generic Syntax," RFC 2396, MIT/LCS, U.C. Irvine, Xerox Corporation, August 1998.](#)

309 **[WS-RM]**

310 [R. Bilorusets, et al, "Web Services Reliable Messaging \(WS-ReliableMessaging\)," February 2005.](#)

311 **[WS-Policy]**

312 [D. Box, et al, "Web Services Policy Framework \(WS-Policy\)," September 2004.](#)

313 **[WS-PolicyAttachment]**

314 [D. Box, et al, "Web Services Policy Attachment \(WS-PolicyAttachment\)," September 2004.](#)

315 **[WSS]**

316 [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.](#)

318 **[WSDL 1.1]**

319 [W3C Note, "Web Services Description Language \(WSDL 1.1\)," 15 March 2001.](#)

320 **[XML]**

321 [W3C Recommendation, "Extensible Markup Language \(XML\) Third Edition," 4 February 2004.](#)

322 **[XML-ns]**

323 [W3C Recommendation, "Namespaces in XML," 14 January 1999.](#)

324 **[XML-Schema1]**

325 [W3C Recommendation, "XML Schema Part 1: Structures," 2 May 2001.](#)

326 **[XML-Schema2]**

327 [W3C Recommendation, "XML Schema Part 2: Datatypes," 2 May 2001.](#)

328 **A. Acknowledgments**

- 329 **[SOAP]**———W3C Note, "SOAP: Simple Object Access Protocol 1.1," 08 May 2000.
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332 Syntax," RFC 2396, MIT/LCS, U.C. Irvine, Xerox Corporation, August 1998.
- 333 **[WS-RM]**———R. Bilorusets, et al, "Web Services Reliable Messaging (WS-ReliableMessaging),"
334 February 2005.
- 335 **[WS-Policy]**———D. Box, et al, "Web Services Policy Framework (WS-Policy)," September 2004.
- 336 **[WS-PolicyAttachment]** D. Box, et al, "Web Services Policy Attachment (WS-PolicyAttachment),"
337 September 2004.
- 338 **[WSS]**———OASIS Web Services Security: SOAP Message Security 1.0 (WS-Security 2004),"
339 Chris Kaler, Phillip Hallam-Baker, Ronald Monzillo, eds, OASIS Standard 200401,
340 March 2004.
- 341 **[WSDL 1.1]**———W3C Note, "Web Services Description Language (WSDL 1.1)," 15 March 2001.
- 342 **[XML]**———W3C Recommendation, "Extensible Markup Language (XML) Third Edition," 4
343 February 2004.
- 344 **[XML-ns]**———W3C Recommendation, "Namespaces in XML," 14 January 1999.
- 345 **[XML-Schema1]**——W3C Recommendation, "XML Schema Part 1: Structures," 2 May 2001.
- 346 **[XML-Schema2]**W3C Recommendation, "XML Schema Part 2: Datatypes," 2 May 2001.

347 **Appendix A. Acknowledgments**

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363 TBD

364 **B. XML Schema**

365 **Appendix B. XML Schema**

366 A normative copy of the XML Schema [XML Schema Part 1, Part 2] description for this specification may
367 be retrieved from the following address:

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

369 The following copy is provided for reference.

```
370 <?xml version="1.0" encoding="UTF-8"?>
371 <!--
372 -
373 -
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375 intellectual property or other rights that might be claimed to pertain to
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419 MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.
```

```

420 -->
421 <xs:schema
422     targetNamespace="http://docs.oasis-open.org/ws-rx/wsrmp/200510"
423     targetNamespace="http://docs.oasis-open.org/wsrmp/200510/"
424     xmlns:tns="http://docs.oasis-open.org/ws-rx/wsrmp/200510"
425     xmlns:xs="http://docs.oasis-open.org/wsrmp/200510/"
426     xmlns:xs="http://www.w3.org/2001/XMLSchema"
427     elementFormDefault="qualified"
428     attributeFormDefault="unqualified" >
429
430     <xs:element name="RMAssertion" >
431         <xs:complexType>
432             <xs:sequence>
433                 <xs:element name="InactivityTimeout" minOccurs="0" >
434                     <xs:complexType>
435                         <xs:attribute name="Milliseconds"
436                             type="xs:unsignedLong"
437                             use="required" />
438                         <xs:anyAttribute namespace="##any" processContents="lax" />
439                     </xs:complexType>
440                 </xs:element>
441                 <xs:element name="AcknowledgementInterval" minOccurs="0" >
442                     <xs:complexType>
443                         <xs:attribute name="Milliseconds"
444                             type="xs:unsignedLong"
445                             use="required" />
446                         <xs:anyAttribute namespace="##any" processContents="lax" />
447                     </xs:complexType>
448                 </xs:element>
449
450     <xs:element name="RMAssertion" >
451         <xs:complexType>
452             <xs:sequence>
453                 <xs:element name="InactivityTimeout" minOccurs="0" >
454                     <xs:complexType>
455                         <xs:attribute name="Milliseconds"
456                             type="xs:unsignedLong"
457                             use="required" />
458                         <xs:anyAttribute namespace="##any" processContents="lax" />
459                     </xs:complexType>
460                 </xs:element>
461                 <xs:element name="BaseRetransmissionInterval" minOccurs="0" >
462                     <xs:complexType>
463                         <xs:attribute name="Milliseconds"
464                             type="xs:unsignedLong"
465                             use="required" />
466                         <xs:anyAttribute namespace="##any" processContents="lax" />
467                     </xs:complexType>
468                 </xs:element>
469                 <xs:element name="ExponentialBackoff" minOccurs="0" >
470                     <xs:complexType>
471                         <xs:anyAttribute namespace="##any" processContents="lax" />
472                     </xs:complexType>
473                 </xs:element>
474                 <xs:element name="AcknowledgementInterval" minOccurs="0" >
475                     <xs:complexType>
476                         <xs:attribute name="Milliseconds"
477                             type="xs:unsignedLong"
478                             use="required" />
479                         <xs:anyAttribute namespace="##any" processContents="lax" />
480                     </xs:complexType>
481                 </xs:element>
482     <xs:element name="MaxMessageNumber" minOccurs="0" >

```



```
483     <xs:complexType>
484         <xs:attribute name="Number"
485                     type="xs:unsignedLong"
486                     use="required" />
487         <xs:anyAttribute namespace="##any" processContents="lax" />
488     </xs:complexType>
489 </xs:element>
490     <xs:any namespace="##other"
491             processContents="lax"
492             minOccurs="0"
493             maxOccurs="unbounded" />
494 </xs:sequence>
495 <xs:anyAttribute namespace="##any" processContents="lax" />
496 </xs:complexType>
497 </xs:element>
498
499 </xs:schema>
```

500 **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

501 **D. Notices**

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
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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.

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