Web Services ReliableMessaging Policy Assertion
(WS-RM Policy)

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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.
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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/200602

Dereferencing the above URI will produce the Resource Directory Description Language [RDDL 2.0] document that describes this namespace.

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:
### Table 1

<table>
<thead>
<tr>
<th>Prefix</th>
<th>Namespace</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>wsrmp</td>
<td><a href="http://docs.oasis-open.org/ws-rx/wsrmp/200602">http://docs.oasis-open.org/ws-rx/wsrmp/200602</a></td>
<td>This specification.</td>
</tr>
</tbody>
</table>

#### 1.4 Compliance

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

Normative text within this specification takes precedence over normative outlines, which in turn take 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 a single RM policy assertion that leverages the WS-Policy framework.

2.1 Assertion Model

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

2.2 Normative Outline

The normative outline for the RM assertion is:

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

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

/wsrmp:RMAssertion

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

/wsrmp:RMAssertion/@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.

2.3 Assertion Attachment

Because the RM policy assertion indicates endpoint 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 the RM policy assertion MUST NOT be attached to a wsdl:portType; the RM policy assertion specifies a concrete behavior whereas the wsdl:portType is an abstract construct.
wsdl:binding – A policy expression containing the RM policy assertion SHOULD be attached to a wsdl:binding.

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

If the 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.

An RM policy assertion allows for extensibility as defined in Section 2.2. Because the WSRM specification allows an RM Sequence to span multiple WSDL ports and/or endpoints, implementations or specifications that make use of this capability should be aware that doing so may create situations in which multiple policies containing extended RM policy assertions may apply to the same RM Sequence. The means and mechanisms for collating and resolving conflicts between RM policy assertions attached to multiple wsdl:bindings and/or wsdl:ports that participate in a single RM Sequence is not defined by this specification. Users/creators of extended RM policy assertions are encouraged to consider and address any possible conflicts in the content and semantics of the RM policy assertion extensions.

### 2.4 Assertion Example

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

**Table 2: Example policy with RM policy assertion**

```xml
<wsdl:definitions
    targetNamespace="example.com"
    xmlns:tns="example.com"
    xmlns:wsdl="http://schemas.xmlsoap.org/wsdl/
    xmlns:wsrmp="http://docs.oasis-open.org/ws-rx/wsrmp/200602"
    xmlns:wsu="http://docs.oasis-open.org/wss/2004/01/oasis-200401-wss-wssecurity-utility-1.0.xsd">
  <wsp:UsingPolicy wsdl:required="true" />
  <wsp:Policy wsu:Id="MyPolicy" >
    <wsrmp:RMAssertion/>
    <!-- omitted assertions -->
  </wsp:Policy>
  <!-- omitted elements -->
  <wsdl:binding name="MyBinding" type="tns:MyPortType" >
    <wsp:PolicyReference URI="#MyPolicy" />
    <!-- omitted elements -->
  </wsdl:binding>
</wsdl:definitions>
```

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

Lines (11-14) are a policy expression that includes a RM policy assertion (Line 12) to indicate that WS-ReliableMessaging [WS-RM] must be used.

Lines (18-21) are a WSDL [WSDL 1.1] binding. Line (21) indicates that the policy in Lines (11-14) applies to this binding, specifically indicating that WS-ReliableMessaging must be used over all the 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]

[SOAP 1.2]

[URI]

[WS-RM]

[WS-Policy]

[WS-PolicyAttachment]

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

[XML]

[XML-ns]

[XML-Schema Part1]

[XML-Schema Part2]

4.2 Non Normative

[RDDL 2.0]
A. Acknowledgments

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

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

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/200602/wsrmp-1.1-schema-200602.xsd

The following copy is provided for reference.

<?xml version="1.0" encoding="UTF-8"?>
<!--
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-->


targetNamespace="http://docs.oasis-open.org/ws-rx/wsrmp/200602"
elementFormDefault="qualified" attributeFormDefault="unqualified">
  <xs:element name="RMAssertion">
    <xs:complexType>
      <xs:sequence>
        <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded"/>
      </xs:sequence>
      <xs:anyAttribute namespace="##any" processContents="lax"/>
    </xs:complexType>
  </xs:element>
</xs:schema>
# C. Revision History

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<th>By Whom</th>
<th>What</th>
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<td>wd-01.doc</td>
<td>2005-07-06</td>
<td>Ümit Yalçınalp</td>
<td>Initial version created based on submission by the authors.</td>
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<td>2005-09-01</td>
<td>Ümit Yalçınalp</td>
<td>Reformatted using Open Office</td>
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| 1.1-wd-01.swx | 2005-09-18   | Ümit Yalçınalp | 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                                                      |
  Added resolution of i009                                                                                                          |
| 1.1-wd-01.swx | 2005-10-06   | Ümit Yalçınalp | Editorial fixes suggested by Anish  
  Updated wd draft date to October 6th                                                                                               |
<p>| 1.1-wd-01.swx | 2005-10-19   | Ümit Yalçınalp | Editorial change to remove .sxw 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 Yalçınalp | Changed fixed date in footer to current date                                                                                         |
| wd-3      | 2005-12-21  | Doug Davis     | Added i050                                                                                                                         |
| wd-3      | 2005-12-23  | Ümit Yalçınalp | i057 resolution                                                                                                                    |
| wd-3      | 2005-12-23  | Ümit Yalçınalp | Changed the ref to WS-RM to the WS-RX committee                                                                                      |</p>
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<td>2005-12-27</td>
<td>Gilbert Pilz</td>
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<td>Gilbert Pilz</td>
<td>Fixed formatting of included section.</td>
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<td>Gilbert Pilz</td>
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<td>2006-11-11</td>
<td>Doug Davis</td>
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<td>2006-01-23</td>
<td>Gilbert Pilz</td>
<td>Start wd-05 by accepting all changes from wd-04</td>
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<td>wd-06</td>
<td>2006-01-23</td>
<td>Doug Davis</td>
<td>Minor typos found by Marc</td>
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<td>2006-02-14</td>
<td>Doug Davis</td>
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<td>Doug Davis</td>
<td>Issues 086, 087 resolutions</td>
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<tr>
<td>wd-06</td>
<td>2006-02-15</td>
<td>Gilbert Pilz</td>
<td>Issue 088; added link for namespace URI; added text describing link; added non-normative reference for RDDL 2.0</td>
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<td>wd-06</td>
<td>2006-02-17</td>
<td>Anish Karmarkar</td>
<td>Removed a sentence in section 2.1 that talked about RM assertion parameters, as there aren't any.</td>
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<tr>
<td>wd-06</td>
<td>2006-02-17</td>
<td>Anish Karmarkar</td>
<td>Change the namespace to 200602.</td>
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