

1 5.5 Designating Optional Behaviors

2 5.5.1 Optional behavior in Compact authoring

3 Optional behaviors represent behaviors ~~which~~that may be engaged by a consumer. When using the
4 compact authoring form for assertions, such behaviors are marked by using `wsp:Optional` attribute ~~that~~
5 has~~with~~ a value of, "true". In order to simplify reference to such assertions, we just use the phrase
6 “optional assertions” in this section. During the process of normalization, the runtime behavior is
7 indicated by two policy alternatives, one with and one without the assertion. In a consumer/provider
8 scenario, the choice of engaging the runtime behavior is upon the consumer by selecting the
9 appropriate policy alternative. ~~although~~ ~~†~~The provider is capable of engaging the runtime behavior. may
10 influence what is possible by choosing whether or not to include policy alternatives in a policy
11 expression, by using the `wsp:Optional` attribute. ~~In order to simplify reference to such assertions, we~~
12 ~~just use the term optional assertions in this section.~~

13 5.5.2 Optional behavior at runtime

14 ~~The *Web Services Policy Primer* document contains an example that proposes the use of *MTOM* as an~~
15 ~~optional behavior that can be engaged by a consumer. The primer proposes that an assertion that~~
16 ~~identifies the use of MIME Multipart/Related serialization (see *MTOM*, *XOP* for messages to enable a~~
17 ~~Policy-aware clients to recognize the policy assertion and if they select an alternative with this~~
18 ~~assertion, they engage Optimized MIME Serialization for messages.~~

19 ~~The semantics of this assertion declare that the behavior is reflected in messages: they use an optimized~~
20 ~~wire format (MIME Multipart/Related serialization). Note that in order for an optional behavior to be~~
21 ~~engaged, the wire message that would utilize the specific assertion must be self-describing. For~~
22 ~~example, an inbound message to a web service that asserts *MTOM*, must evaluate, the protocol format~~
23 ~~of the message to determine whether the incoming message adheres to the Optimized MIME~~
24 ~~Serialization. By examining the message, the provider can determine whether the policy alternate that~~
25 ~~contains the *MTOM* assertion is being selected.~~

26 ~~Assertion Authors should be aware that optional behaviors, like utilizing optional support for~~
27 ~~Optimized MIME Serialization require some care considering the scoping of the assertion that is~~
28 ~~applicable.~~

29 ~~Since optional behaviors indicate optionality for both the provider and the consumer, behaviors that~~
30 ~~must always be engaged by a consumer must not be marked as "optional" with a value "true" since~~
31 ~~presence of two alternatives due to normalization enables at this would allow the consumer to~~
32 ~~choose select the the policy alternative that does not contain without the assertion, and thus making the~~
33 ~~behavior not being engaged ing in an interaction the behaviour.~~

34 *Good practice a: Limit use of Optional Assertions*

35 *Assertion Authors should not use optional assertions for behaviors that must be present in*
36 *compatible policy expressions.*

37 ~~As demonstrated in the MIME optimization behavior, behaviors must be engaged with respect to~~

38 ~~messages that are targeted to the provider so that the provider can determine that the optional behavior~~
39 ~~is engaged. In other words, the requirement of self describing nature of messages [5.3.3 Self~~
40 ~~Describing Messages] in order to engage behaviors must not be forgotten with regard to the client's~~
41 ~~ability to detect and select the alternative if it is to participate in the exchange.~~

42 The target scope of an optional assertion is an important factor for Assertion Authors to consider as it
43 determines the *granularity* where the behavior is optionally engaged. For example, if the assertion is
44 targeted for an endpoint policy subject, it is expected to govern all the messages that are indicated by
45 the specific endpoint when optional behavior is *engaged* . Since the behavior would be applicable to
46 policy subject that is designated, it is important for the Assertion Authors to choose the appropriate
47 level of granularity for optional behaviors, to consider whether a specific message or all messages, etc.
48 are targeted.

49

50 ~~Attaching optional assertions to outbound messages using message policy subject require some care.~~
51 ~~An explicit, out of band mechanism may be necessary to enable a client to indicate that the optional~~
52 ~~behavior is engaged. Currently such a mechanism is outside the scope of WS-Policy Framework.~~

53 *Good practice b: Associate Optional Assertions at appropriate granularity*

54 Assertion users should associate optional assertions with the appropriate endpoint, and the right
55 granularity to limit the degree to which optionality applies.

56 *Good practice c: Define appropriate granularity for potentially Optional Assertions*

57 Assertion Authors should clearly define the expected granularity to be used with the assertion and
58 what the behaviour should be when that assertion is used in a different granularity.

59 Behaviors must be engaged with respect to messages that are targeted to the provider so that the
60 provider can determine that the optional behavior is engaged. In other words, the requirement of self
61 describing nature of messages [5.3.3 Self Describing Messages] in order to engage behaviors must not
62 be forgotten with regard to the client's ability to detect and select the alternative if it is to participate in
63 the exchange.

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65 An explicit, out of band mechanism may be necessary to enable a client to indicate that the optional
66 behavior is engaged. Currently such a mechanism is outside the scope of WS-Policy Framework.

67

68 *Good practice d: Indicate use of Optional Assertion*

69 When a given behaviour may be optional, it must be possible for both message participants to
70 determine that the assertion is selected by both parties, either out of band or as reflected by the message
71 content.

72

73 When optional behaviors are indicated by attaching assertions with only one side of an interaction, such
74 as an inbound message of a request-response, the engagement of the rest of the interaction will be
75 *undefined*. ~~For example, if a request-response interaction only specified MTOM optimization for an~~
76 ~~inbound message, it would not be clear whether the outbound message from the provider could also~~
77 ~~utilize the behavior.~~ Therefore, the Assertion Authors are encouraged to consider how the attachment
78 on a message policy subject on a response message should be treated when optional behaviors are
79 specified for message exchanges within a request response for response messages, using message
80 policy subject. Leaving the semantics not specified or incompletely specified may result in providers
81 making assumptions ~~(i.e. if the incoming message utilized the optimization, the response will be~~
82 ~~returned utilizing the MTOM serialization).~~ Similarly, if engagement of a behavior is only specified for
83 an outbound message, the Assertion Authors should consider describing the semantics if the incoming
84 messages also utilized the behavior. This is especially important if the assertion is applicable to more

85 than one specific policy subject. One approach that is currently taken by WS-RM Policy [[Web Services](#)
86 [Reliable Messaging Policy](#)] is to introduce both message and endpoint policy subjects for one of its
87 assertions and require the use of endpoint policy subject when message policy subject is used via
88 attachment.

89

90 *Good practice e: Consider entire message exchange pattern when specifying Assertions that may*
91 *bed optional*

92 Assertion Authors should associate optional assertions with the appropriate endpoint, and right
93 granularity to limit the degree to which optionality applies.

94 ***Good practice 10: Optional Assertions***

95 ~~Optional Assertion Authors should explicitly state how the behavior that is enabled by the~~
96 ~~assertion would be engaged when they are designing their assertion, whether by specific headers~~
97 ~~or some other means. See also.~~

98 **Example**

99

100 The *Web Services Policy Primer* document contains an example that outlines the use of *MTOM* as an
101 optional behavior that can be engaged by a consumer. Related to this behaviour is an assertion that
102 identifies the use of MIME Multipart/Related serialization. Policy-aware clients that recognize and
103 engage this policy assertion will use Optimized MIME Serialization for messages.

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105 Note that if a *MTOM* assertion were only bound to an inbound message endpoint, then it it would not
106 be clear whether the outbound message from the provider would also utilize the behavior. Thus this
107 assertion should be associated at the granularity of an entire message exchange. (Good Practice b)

108

109 Even so, the semantics of the assertion should specify clearly what the appropriate granularity should
110 be and what happens if a different granularity is applied. Leaving the semantics not specified or
111 incompletely specified may result in providers making assumptions (i.e. if the incoming message
112 utilized the optimization, the response will be returned utilizing the *MTOM* serialization). (Good
113 Practice c)

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115 The semantics of this assertion declare that the behavior must be reflected in messages: they use an
116 optimized wire format (MIME Multipart/Related serialization). Thus, this optional behavior is self
117 describing. For example, an inbound message to a web service that requires *MTOM* must adhere to
118 Optimized MIME Serialization. By examining the message, the provider can determine whether the
119 policy alternate that contains the *MTOM* assertion is being obeyed. (Good Practice d, e)

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