5.5 Designating Optional Behaviors

5.5.1 Optional behavior in Compact authoring

Optional behaviors represent behaviors that may be engaged by a consumer. When using the compact authoring form for assertions, such behaviors are marked by using wsp:Optional attribute with a value of "true". In order to simplify reference to such assertions, we just use the phrase "optional assertions" in this section. During the process of normalization the runtime behavior is indicated by two policy alternatives, one with and one without the assertion. In a consumer/provider scenario, the choice of engaging the runtime behavior is upon the consumer by selecting the appropriate policy alternative. The provider may influence what is possible by choosing whether or not to include policy alternatives in a policy expression, by using the wsp:Optional attribute.

5.5.2 Optional behavior at runtime

Since optional behaviors indicate optionality for both the provider and the consumer, behaviors that must always be engaged by a consumer must not be marked as "optional" with a value "true" since this would allow the consumer to select the policy alternative without the assertion, and thus not engaging the behaviour.

Good practice a: Limit use of Optional Assertions

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

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

Good practice b: Associate Optional Assertions at appropriate granularity

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

Good practice c: Define appropriate granularity for potentially Optional Assertions

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

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

39   An explicit, out of band mechanism may be necessary to enable a client to indicate that the optional
40   behavior is engaged. Currently such a mechanism is outside the scope of WS-Policy Framework.
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42   ***Good practice d: Indicate use of Optional Assertion***
43   When a given behaviour may be optional, it must be possible for both message participants to
44   determine that the assertion is selected by both parties, either out of band or as reflected by the message
45   content.
46
47   When optional behaviors are indicated by attaching assertions with only one side of an interaction, such
48   as an inbound message of a request-response, the engagement of the rest of the interaction will be
49   *undefined*. Therefore, the Assertion Authors are encouraged to consider how the attachment on a
50   message policy subject on a response message should be treated when optional behaviors are specified
51   for message exchanges within a request response for response messages, using message policy subject.
52   Leaving the semantics not specified or incompletely specified may result in providers making
53   assumptions. Similarly, if engagement of a behavior is only specified for an outbound message, the
54   Assertion Authors should consider describing the semantics if the incoming messages also utilized the
55   behavior. This is especially important if the assertion is applicable to more than one specific policy
56   subject. One approach that is currently taken by WS-RM Policy [*Web Services Reliable Messaging*
57   *Policy*] is to introduce both message and endpoint policy subjects for one of its assertions and require
58   the use of endpoint policy subject when message policy subject is used via attachment.
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60   ***Good practice e: Consider entire message exchange pattern when specifying Assertions that may***
61   ***bed optional***
62   Assertion Authors should associate optional assertions with the appropriate endpoint, and right
63   granularity to limit the degree to which optionality applies.
64
64   **Example**
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66   The *Web Services Policy Primer* document contains an example that outlines the use of *MTOM* as an
67   optional behavior that can be engaged by a consumer. Related to this behaviour is an assertion that
68   identifies the use of MIME Multipart/Related serialization. Policy-aware clients that recognize and
69   engage this policy assertion will use Optimized MIME Serialization for messages.
70
71   Note that if a MTOM assertion were only bound to an inbound message endpoint, then it it would not
72   be clear whether the outbound message from the provider would also utilize the behavior. Thus this
73   assertion should be associated at the granularity of an entire message exchange. (Good Practice b)
74
75   Even so, the semantics of the assertion should specify clearly what the appropriate granularity should
76   be and what happens if a different granularity is applied. Leaving the semantics not specified or
77   incompletely specified may result in providers making assumptions (i.e. if the incoming message
78   utilized the optimization, the response will be returned utilizing the MTOM serialization). (Good
79   Practice c)
80
81   The semantics of this assertion declare that the behavior must be reflected in messages: they use an
82   optimized wire format (MIME Multipart/Related serialization). Thus, this optional behavior is self
83   describing. For example, an inbound message to a web service that requires MTOM must adhere to
84   Optimized MIME Serialization. By examining the message, the provider can determine whether the
85   policy alternate that contains the MTOM assertion is being obeyed. (Good Practice d, e)
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