XEP-0334: Message Processing Hints

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This document defines a way to include hints to entities routing or receiving a message.

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1 Introduction

Message types ('normal', 'chat', 'headline', etc.) provide an existing framework for determining how an entity should deliver or handle a message. For example XMPP IM [1] defines that messages of type 'headline' should not be stored offline by the server, and that messages of type 'groupchat' must not be directed to other resources.
However this framework of rules is quite inflexible, and new extensions are being developed that push at the boundaries of what is capable of. This specification defines a more flexible approach that allows the sender to add finer-grained 'hints' to messages, which can be used as a generic mechanism for XMPP entities to handle messages.

2 Requirements

This specification aims to solve the following common problems, and allow a sender to hint to the recipient:

- Whether to store a message (e.g. for archival or as an 'offline message').
- Whether to copy a message to other resources.
- Whether to store a message that would not have been stored under normal conditions

2.1 Comparison with XEP-0079: Advanced Message Processing

Previous work has been done to make XMPP's routing rules extensible, most notably in Advanced Message Processing (XEP-0079) [2]. However, this specification failed to gain widespread adoption, likely due to its complexity. This specification aims to be much simpler for both senders and routing entities to incorporate into their existing stanza handling.
Some other differences include:

- XEP-0079 provides a rule-based prescriptive approach to routing. Hints only convey the stanza's semantics from the perspective of the sender, leaving the exact processing up to the receiving/routing entities.
- XEP-0079 requires multiple discovery steps before you can send a message. Hints are lighter, but provide no guarantee to the sender about how entities will process a hint.
- Reuse of XEP-0079 within other XEPs is harder. The "semantic building blocks" of hints fit well into many protocols, and are already used in this way.

[1] RFC 6121: Extensible Messaging and Presence Protocol (XMPP): Instant Messaging and Presence <http://tools.ietf.org/html/rfc6121>.
[2] XEP-0079: Advanced Message Processing <https://xmpp.org/extensions/xep-0079.html>.

- XEP-0079 has lots of potential edge cases, e.g. when it comes to interaction with group chats. Hints are more adaptable and even forwards-compatible, as the relatively simple semantics can be remapped onto future protocols.
- Hints intentionally do not include time restrictions, tracking, or any of the advanced features XEP-0079 provides.

Implementations are free to support both XEP-0079 and hints simultaneously - they are not mutually exclusive.

3 Use Cases

3.1 Session-based stanzas

Suppose that Romeo and Juliet are avoiding the surveillance of Prince Escalus and communicating using a session-based encryption protocol between their laptops. In order to prevent Juliet's tablet computer that uses Message Carbons (XEP-0280) [3] from receiving copies of the encrypted messages (and not being able to decrypt them), Romeo inserts the <no-copy/> hint into the messages he sends. Since it is also useless for these messages to be archived, he additionally adds the <no-store/> hint:

Listing 1: Sending a message with no-copy and no-store hints

```
<message
    from='romeo@montague.lit/laptop'
    to='juliet@capulet.lit/laptop'>
  <body>V unir avtug'f␣pybnx␣gb␣uvqr␣zr␣sebz␣gurve␣fvtug</body>
␣␣<no-copy␣xmlns="urn:xmpp:hints"/>
␣␣<no-store␣xmlns="urn:xmpp:hints"/>
</message>
```

3.2 Notifications

Some automated notifications may be transient, and there would be no purpose in delaying their delivery. Such messages may be marked with the <no-store/> hint.

3.3 Sensitive messages

A sender may want to indicate their preference to have no permanent record of a message (also known as "off the record" messages), but may be happy for it to be stored temporarily as a normal part of delivery (e.g. if the recipient is offline at the time of sending). Such a message can be marked with the <no-permanent-store/> hint.

[3] XEP-0280: Message Carbons <https://xmpp.org/extensions/xep-0280.html>.

3.4 Storage-worthy messages

Offline storage and Message Archive Management (XEP-0313) [4] can define their own rules on what messages to store and usually only store messages that contain a body element. However a sender may want to indicate that a message is worth storing even though it might not match those rules (e.g. an encrypted message that carries the payload outside the body element). Such a message can be marked with a <store/> hint.

4 Hints

4.1 No permanent store

The <no-permanent-store/> hint informs entities that they shouldn't store the message in any permanent or semi-permanent public or private archive (such as described in Message Archiving (XEP-0136) [5] and Message Archive Management (XEP-0313) [6]) or in logs (such as chatroom logs).

4.2 No store

A message containing a <no-store/> hint should not be stored by a server either permanently (as above) or temporarily, e.g. for later delivery to an offline client, or to users not currently present in a chatroom.

4.3 No copies

Messages with the <no-copy/> hint should not be copied to addresses other than the one to which it is addressed, for example through Message Carbons (XEP-0280) [7].
This hint MUST only be included on messages addressed to full JIDs and explicitly does not override the behaviour defined in XMPP IM [8] for handling messages to bare JIDs, which may involve copying to multiple resources, or multiple occupants in a Multi-User Chat (XEP-0045) [9] room.

[4] XEP-0313: Message Archive Management <https://xmpp.org/extensions/xep-0313.html>.
[5] XEP-0136: Message Archiving <https://xmpp.org/extensions/xep-0136.html>.
[6] XEP-0313: Message Archive Management <https://xmpp.org/extensions/xep-0313.html>.
[7] XEP-0280: Message Carbons <https://xmpp.org/extensions/xep-0280.html>.
[8] RFC 6121: Extensible Messaging and Presence Protocol (XMPP): Instant Messaging and Presence <http://tools.ietf.org/html/rfc6121>.
[9] XEP-0045: Multi-User Chat <https://xmpp.org/extensions/xep-0045.html>.

4.4 Store

A message containing the <store/> hint that is not of type 'error' SHOULD be stored by the entity.

5 Business Rules

It is important to note that message hints are, as the name implies, just hints. Implementations MUST NOT rely on other entities interpretation of the hints for any particular purpose. In particular, if an entity supports both this protocol and the protocol defined in XEP-0079, the directives in the latter SHOULD take precedence over any hints present in a stanza.
Hints contained within a stanza of type 'error' SHOULD be ignored. This is because error stanzas often include the unmodified payload of an original stanza that caused the error, while an implementation may want to apply different logic to an error response for such a stanza.

6 Security Considerations

This specification introduces no known security considerations.

7 IANA Considerations

This document requires no interaction with the Internet Assigned Numbers Authority (IANA) [10].

8 XMPP Registrar Considerations

This document requires no interaction with XMPP Registrar [11].

9 XML Schema

[10] The Internet Assigned Numbers Authority (IANA) is the central coordinator for the assignment of unique parameter values for Internet protocols, such as port numbers and URI schemes. For further information, see <http://www.iana.org/>.

[11] The XMPP Registrar maintains a list of reserved protocol namespaces as well as registries of parameters used in the context of XMPP extension protocols approved by the XMPP Standards Foundation. For further information, see <https://xmpp.org/registrar/>.

```
<?xml version='1.0' encoding='UTF-8'?>

<xs:schema
    xmlns:xs='http://www.w3.org/2001/XMLSchema'
    targetNamespace='urn:xmpp:hints'
    xmlns='urn:xmpp:hints'
    elementFormDefault='qualified'>

  <xs:element name='no-permanent-store' type='empty'/>
  <xs:element name='no-store' type='empty'/>
  <xs:element name='no-copy' type='empty'/>
  <xs:element name='store' type='empty'/>

  <xs:simpleType name='empty'>
    <xs:restriction base='xs:string'>
      <xs:enumeration value=''/>
    </xs:restriction>
  </xs:simpleType>

</xs:schema>
```