XEP-0427: MAM Fastening Collation

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This specification proposes a mechanism by which MAM results containing fastenings can be collated effectively.

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1 Introduction

In XMPP, all messages are not equal. Some are semantically actual human messages; these are referred to in this document as ”instant messages”. Others are ancillary messages - reactions, receipts, and so on - that are useful and important, but do not conform to the concept of an instant message in the sense that a user might reasonably expect.
Fastenings, Message Fastening (XEP-0422) [1], provides a generic mechanism for a sending entity to indicate that a particular message is associated closely to an instant message. But in doing so, this presents the problem that if many messages are not in fact actual human messages, an archive query might end up downloading dozens or even hundreds of messages in order to present just a handful of actual instant messages to the user. Much of the information downloaded is not required.
For example, to display a message, a client may need to download all the ”likes” for it - whereas a simply number of likes might be sufficient for most users' needs.
This specification tackles the problem by allowing these to be filtered, collated, or presented in full depending on the needs of the client. The client now downloads just the instant messages from the archive, and any likes, reactions, or receipts are simply summarized.

1.1 Terminology

Because this document defines mechanisms for dealing generically with potential types of fastenings, it does not offer any real examples of actual fastenings that might be used.
Instead, example fastenings are used within an XML namespace prefixed by urn:example:
Pseudo-fastenings are messages that are semantically equivalent to fastenings, but use a different syntax, see Pseudo Fastenings.
Nomenclature used for instant messages versus ancillary messages will need to be adjusted to make it consistent with Message Fastening (XEP-0422) [2] et al.

2 Overview

2.1 Discovering Support

Support for this protocol is advertised by the Service Discovery protocol defined in Service Discovery (XEP-0030) [3] using a feature of urn:xmpp:mamfc:0.

[1] XEP-0422: Message Fastening <https://xmpp.org/extensions/xep-0422.html>.
[2] XEP-0422: Message Fastening <https://xmpp.org/extensions/xep-0422.html>.
[3] XEP-0030: Service Discovery <https://xmpp.org/extensions/xep-0030.html>.

2.2 Summarizing

This specification provides for four types of summary listing.
The first form, ”simplified”, is the default, and essentially represents the status quo. MAM queries behave as if the archive contains only traditional IM traffic. No summary is provided.
The second form, ”full”, presents every message stanza in the results, including all fastenings, errors, and so on.
The third form, ”collate”, presents each traditional IM message, as ”simplified”, but within the result includes summary information about the fastenings (and pseudo-fastenings) encountered.
Finally a fourth form, ”fastenings”, returns only the fastenings for a particular message.
The ”collate” form is the bulk of the specification presented herein.

2.2.1 Summary Information

The <apply-to/> element of Message Fastening (XEP-0422) [4] contains a number of fastening elements. These in turn consist of a qualified element, with a number of attributes, and potentially some content within the element.
This specification refers to the qualified name (the tuple of XML namespace and local-name) as the ”fastening type” (represented as an XML element herein), and the top-level element (including attributes and their values), as the ”fastening summary”.
For example, a hypothetical edit fastening type might be <edit xmlns=”urn:example:edit:0”/>, and that would be the fastening summary as well. The full fastening would include any children (text or further XML elements) of the top-level element. But a hypothetical reaction fastening type might be <reaction xmlns=”urn:example:reaction:0”/>, but the fastening summary could be <reaction xmlns=”urn:example:reaction:0” emoji=”□”/>
The summary information against each parent message consists of, for each fastening summary:

- The fastening summary itself.
- A count of the number of fastenings with this summary fastened to the parent message.
- The full fastening for the last fastening received for the parent message.

3 Protocol Elements

3.1 Querying

This specification adds an additional field to the form defined in Message Archive Management (XEP-0313) [5] with the field name ”{urn:xmpp:mamfc:0}summary”. This may have only

[4] XEP-0422: Message Fastening <https://xmpp.org/extensions/xep-0422.html>.
[5] XEP-0313: Message Archive Management <https://xmpp.org/extensions/xep-0313.html>.

the following values (unless of course further values are advertised by a future specification):

- simplified
- full
- collate
- fastenings

3.2 Results

The <result/> element defined in Message Archive Management (XEP-0313) [6] is extended by adding zero or more additional elements with a local name of "applied", qualified by the "urn:xmpp:mamfc:0" namespace.
Each <applied/> element is associated with precisely one fastening summary.
This element contains, as its first child element, the full fastening for the last fastening received by the server for the parent message. This is not included for "shell" fastenings, which are untyped.
There is a "count" attribute, consisting of an integral count of the fastenings with the same summary as the first child element (or the count of shell fastenings when this is not included). This count, if absent, defaults to 1. For "shell" fastenings, the attribute "shell" is set to true (or another value with the same semantics for an XML boolean).
The <applied/> elements are only included in the <result/> element when the requested summary type is "collate".

3.3 Latest Archive ID

The latest archive id can usually be deduced either from the last message stanza received (and its stanza-id, see Unique and Stable Stanza IDs (XEP-0359) [7]) or by the id attribute of the last <result/> element from a query extending to the latest message.
Since this specification can cause the latest message to be only in a summarized form when presented in the archive, it also adds an additional element to the <fin/> element which terminates the query, to indicate the latest id held in the archive (which may be that of a fastening).
This element, qualified by the "urn:xmpp:mamfc:0", has the local name of "latest" and a single attribute, "id", containing the latest archive id.

[6] XEP-0313: Message Archive Management <https://xmpp.org/extensions/xep-0313.html>.
[7] XEP-0359: Unique and Stable Stanza IDs <https://xmpp.org/extensions/xep-0359.html>.

3.4 Incremental queries

A MAM query where the MAM summary type is ”collate”, and where ”start” and ”end” (or the RSM <after/> element) would exclude the parent message but include the fastening, then the MAM result is sent with the <forwarded/> element omitted but the summary present (including all fastenings, not just those that have changed).

4 Pseudo-Fastenings

A number of previous specifications exist that - if they were rewritten today - might use fastenings.
For the purposes of this specification, it is convenient to treat these as pseudo-fastenings, behaving as if they were a fastening for the purposes of the ”collate” and ”fastenings” summary types.
This specification defines two such types. Both MUST be supported by servers:

- Message Delivery Receipts: Message Delivery Receipts (XEP-0184) [8] ”ack messages” - those containing a <received/> element - are considered to be equivalent to a fastening containing just the <received/> element, applying to the message given by the ”id” attribute.
- Chat Markers: Displayed Markers (XEP-0333) [9] A Chat Marker is similarly equivalent to a fastening containing the Chat Marker, but applying to all previous messages (since previous messages can be assumed to have been read and or displayed, etc).

In both cases, the fastening summary SHOULD omit the id attribute.

5 Examples

A firm TODO; contributions are welcome - and a good test of whether I’ve written the rest right!

6 Schema

```
<?xml version="1.0" encoding="UTF-8"?>
<xs:schema attributeFormDefault="unqualified" elementFormDefault="
    qualified" targetNamespace="urn:xmpp:mamfc:0" xmlns:xs="http://www
    .w3.org/2001/XMLSchema">
```

[8] XEP-0184: Message Delivery Receipts <https://xmpp.org/extensions/xep-0184.html>.
[9] XEP-0333: Displayed Markers <https://xmpp.org/extensions/xep-0333.html>.

```
  <xs:element name="applied" type="mamfc:appliedType" xmlns:mamfc="
      urn:xmpp:mamfc:0"/>
  <xs:complexType name="appliedType">
    <xs:sequence>
      <xs:any minOccurs="0" maxOccurs="1"/>
      <!-- Fastening summary, absent when shell is true -->
    </xs:sequence>
    <xs:attribute type="xs:positiveInteger" name="count" default="1"/>
    <xs:attribute type="xs:boolean" name="shell" default="false"/>
  </xs:complexType>
  <xs:element name="latest" type="mamfc:latestType" xmlns:mamfc="
      urn:xmpp:mamfc:0"/>
  <xs:complexType name="latestType">
    <xs:attribute type="xs:string"/>
  </xs:complexType>
</xs:schema>
```

7 Security Considerations

This specification imposes substantial workload for servers.

8 IANA Considerations

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

9 XMPP Registrar Considerations

None.

10 Acknowledgements

The authors wish to share any credit with many members of the community, including Marvin Wissfield.

[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/>.