



XMPP

XEP-0372: References

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Experimental	Standards Track	Refs

This document defines a method for one XMPP stanza to provide references to another entity, such as mentioning users, HTTP resources, or other XMPP resources.

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1 Introduction

It's often desirable to encode a reference to another entity within a chat message and to mark up the reference. Examples of this include HTTP URLs, 'mentions' (referring to another user), references to previous messages and references to [Form Discovery and Publishing \(XEP-0346\)](#)¹ (FDP) forms. This document provides a mechanism for marking up a section of a message body with information about the target of the reference.

2 Discovery

If a client implements references, it MUST specify the 'urn:xmpp:reference:0' feature in its service discovery information features as specified in [Service Discovery \(XEP-0030\)](#)² and the Entity Capabilities profile specified in [Entity Capabilities \(XEP-0115\)](#)³.

Listing 1: Client queries for contact's features

```
<iq type='get'
  id='disco1'
  from='romeo@montegue.lit/30d3d8'
  to='juliet@capulet.lit/sabo239'>
  <query xmlns='http://jabber.org/protocol/disco#info' />
</iq>
```

Listing 2: Contact's client responds with features

```
<iq type='result'
  id='disco1'
  from='juliet@capulet.lit/sabo239'
  to='romeo@montegue.lit/30d3d8'>
  <query xmlns='http://jabber.org/protocol/disco#info'>
    ...
    <feature var='urn:xmpp:reference:0' />
    ...
  </query>
</iq>
```

TODO: Individual discovery of reference types - FDP, Mentions, ...

¹XEP-0346: Form Discovery and Publishing <<https://xmpp.org/extensions/xep-0346.html>>.

²XEP-0030: Service Discovery <<https://xmpp.org/extensions/xep-0030.html>>.

³XEP-0115: Entity Capabilities <<https://xmpp.org/extensions/xep-0115.html>>.

3 Use Cases

3.1 Generics

References are provided in a 'reference' element of a message, with a namespace of 'urn:xmpp:reference:0'. The element MUST contain a 'type' attribute denoting the type of the reference and a 'uri' attribute of the thing that is referenced. It MAY contain 'begin', 'end' and 'anchor' elements.

The 'begin' and 'end' attributes are indexes denoting the beginning and end of the referenced substring in the message body. The Dijkstra convention of ranges⁴ is used, which means that 'begin' is inclusive and 'end' is exclusive. In other words, the 'begin' attribute is the index of the first unicode code point in the referenced substring, with 0 being the index of the first code point in the body, and the 'end' attribute is one higher than the index of the last code point in the substring. This convention has three main advantages. It matches subsequence indexing in various programming languages, 'end' minus 'begin' equals the length of the substring, and when two substrings are adjacent, the 'end' attribute of the first one matches the 'begin' attribute of the second one. Where the reference is not a substring of the message body in the referring stanza, 'begin' and 'end' are not used.

An 'anchor' attribute is used when the referring message is not the one containing the reference element, and points to the previous message containing the reference (the referring message).

Note that the URIs of the reference and anchor do not need to refer to the same mechanism as that in which the reference was received. E.g., a service could listen for mentions in a MIX channels of users outside that channel, and send them messages containing a reference to let them know that they've been mentioned.

3.2 Mentions

Mentions are a reference to a user's bare JID, and have a type of 'mention'.

Listing 3: Romeo sends a message mentioning Juliet

```
<message type='groupchat'
  id='sotehu-bthbtp32h3'
  to='balcony@channels.shakespeare.lit'>
  <body>But, soft! what light through yonder window breaks? It is the
    east, and Juliet is the sun.</body>
  <reference xmlns='urn:xmpp:reference:0'
    begin='72'
    end='78'
    type='mention'
    uri='xmpp:juliet@capulet.lit' />
</message>
```

⁴Dijkstra convention of ranges <<https://www.cs.utexas.edu/users/EWD/transcriptions/EWD08xx/EWD831.html>>

3.3 Data

Data references are a generic reference without additional information. The URI points to an 'item' that is able to be fetched. This is useful for, for example, fetching an item from pubsub, as in the example below. TODO: check URI syntax for referring to a pubsub item.

Listing 4: A MIX Channel sends a message that a new FDP form has been submitted elsewhere

```
<message type='groupchat'
  id='sotehu-bthbtp32h4'
  from='balcony@channels.shakespeare.lit'
  to='romeo@montegue.lit/30d3d8'>
  <body>Form received</body>
  <reference xmlns='urn:xmpp:reference:0'
    type='data'
    uri='xmpp:fdp.shakespeare.lit?;node=fdp/submitted/stan.
      isode.net/accidentreport;item=ndina872be' />
</message>
```

3.4 Previous messages

Sometimes it's desirable to annotate a reference in a previous message. An example of this might be where a MIX channel asynchronously adds information about references made in previous messages by users. In this case the message MUST NOT contain a body. Here the anchor attribute is used to provide a URI to the previous message. TODO: URI scheme for messages.

Listing 5: A MIX Channel annotates a previous user message

```
<message type='groupchat'
  id='sotehu-bthbtp32h5'
  from='balcony@channels.shakespeare.lit'
  to='romeo@montegue.lit/30d3d8'>
  <reference xmlns='urn:xmpp:reference:0'
    type='data'
    anchor='xmpp:balcony@channels.shakespeare.lit?;node=
      messages;item=bnhob'
    begin='72'
    end='78'
    uri='xmpp:fdp.shakespeare.lit?;node=fdp/submitted/stan.
      isode.net/accidentreport;item=ndina872be' />
</message>
```

4 Security Considerations

TODO.

5 IANA Considerations

None.

6 XMPP Registrar Considerations

Needs a namespace.

7 XML Schema

When advanced.