



# XMPP

## XEP-0424: Message Retraction

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This specification defines a method for indicating that a message should be retracted.

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## 1 Introduction

A chat participant might want to retract a message which they've already sent out, for example if they've mistakenly sent it to the wrong recipient or groupchat.

Due to the federated and extensible nature of XMPP it's not possible to remove a message with full certainty and a retraction can only be considered an **unenforceable request** for such removal. Clients which don't support message retraction are not obligated to enforce the request and people could have seen or copied the message contents already.

## 2 Discovering support

If a client implements message retractions, it MUST specify the 'urn:xmpp:message-retract:1' feature in its service discovery information features as specified in [Service Discovery \(XEP-0030\)](#)<sup>1</sup> and the Entity Capabilities profile specified in [Entity Capabilities \(XEP-0115\)](#)<sup>2</sup>.

Similarly, a server that is aware of message retractions and will therefore ensure that they're archived for later retrieval (e.g. via [Message Archive Management \(XEP-0313\)](#)<sup>3</sup>), MUST also advertise the 'urn:xmpp:message-retract:1' feature.

Listing 1: Client requests information about a chat partner's client

```
<iq type='get'
  from='romeo@montague.example/orchard'
  to='juliet@capulet.example/balcony'
  id='info1'>
  <query xmlns='http://jabber.org/protocol/disco#info' />
</iq>
```

Listing 2: Partner's client advertises support for retraction

```
<iq type='result'
  to='romeo@montague.example/orchard'
  from='juliet@capulet.example/balcony'
  id='info1'>
  <query xmlns='http://jabber.org/protocol/disco#info'>
  ...
    <feature var='urn:xmpp:message-retract:1' />
  ...
  </query>
</iq>
```

---

<sup>1</sup>XEP-0030: Service Discovery <<https://xmpp.org/extensions/xep-0030.html>>.

<sup>2</sup>XEP-0115: Entity Capabilities <<https://xmpp.org/extensions/xep-0115.html>>.

<sup>3</sup>XEP-0313: Message Archive Management <<https://xmpp.org/extensions/xep-0313.html>>.

### 3 Use Case

Consider a situation where a user sends a message to the wrong recipient:

Listing 3: The user's client sends a message to the wrong recipient

```
<message type='chat' to='lord@capulet.example' id='wrong-recipient-1'>
  <body>Have not saints lips, and holy palmers too?</body>
</message>
```

The author notices that the message was sent to the wrong recipient and indicates to their client that it should be retracted.

The client sends out a retraction message and uses the 'id' attribute of the <message> element in the original message to indicate that it should be removed.

In the case of a group chat message, for example [Multi-User Chat \(XEP-0045\)](#)<sup>4</sup>, instead of the origin ID, the XEP-0359 stanza ID that was assigned by the group chat SHOULD be used.

Listing 4: The client sends out a retraction

```
<message type='chat' to='lord@capulet.example' id='retract-message-1'>
  <retract id="wrong-recipient-1" xmlns='urn:xmpp:message-retract:1' />
  <fallback xmlns="urn:xmpp:fallback:0" for='urn:xmpp:message-
    retract:1' />
  <body>/me retracted a previous message, but it's unsupported by your
    client.</body>
  <store xmlns="urn:xmpp:hints" />
</message>
```

It's RECOMMENDED that you include a [Fallback Indication \(XEP-0428\)](#)<sup>5</sup> tag with fallback text in the <body/>, so that servers will archive the retraction and non-supporting clients can still indicate that there was an intent to retract. Additionally, you MAY include a [Message Processing Hints \(XEP-0334\)](#)<sup>6</sup> <store/> hint, to indicate that the stanza needs to be archived.

### 4 Tombstones

It might be desirable to remove the retracted message from a [Message Archive Management \(XEP-0313\)](#)<sup>7</sup> service, while still recording the fact that it once existed, in order to aid clients in synchronizing their archives. To do this, the archiving service MAY replace the retracted message contents with a 'tombstone'.

A service which supports tombstones MUST advertise the 'urn:xmpp:message-retract:1#tombstone' feature in its Service Discovery responses.

<sup>4</sup>XEP-0045: Multi-User Chat <<https://xmpp.org/extensions/xep-0045.html>>.

<sup>5</sup>XEP-0428: Fallback Indication <<https://xmpp.org/extensions/xep-0428.html>>.

<sup>6</sup>XEP-0334: Message Processing Hints <<https://xmpp.org/extensions/xep-0334.html>>.

<sup>7</sup>XEP-0313: Message Archive Management <<https://xmpp.org/extensions/xep-0313.html>>.

Listing 5: Client requests service discovery information from the server

```
<iq type='get'
  from='romeo@montague.example/orchard'
  to='romeo@montague.example'
  id='info1'>
  <query xmlns='http://jabber.org/protocol/disco#info' />
</iq>
```

Listing 6: The server advertises support for tombstone retraction

```
<iq type='result'
  to='romeo@montague.example/orchard'
  from='romeo@montague.example'
  id='info1'>
  <query xmlns='http://jabber.org/protocol/disco#info'>
  ...
    <feature var='urn:xmpp:message-retract:1#tombstone' />
  ...
  </query>
</iq>
```

When replacing the original message with a tombstone, the original contents (i.e. the `<body/>` and any related elements which might leak information about the original message) get replaced with a `<retracted/>` element which MUST include an 'id' attribute that's set to the value of the retraction's `<message/>` element's 'id' attribute, so that clients can match the tombstone to the retraction (which MUST also be stored in the archive).

The `<retracted/>` element SHOULD also include a 'stamp' attribute indicating the time at which the retraction took place.

As with other XEP-0313 archived messages, the [Delayed Delivery \(XEP-0203\)](#)<sup>8</sup> `<delay/>` element is used to indicate when the original message was received.

Listing 7: Retracted message tombstone in a MAM result

```
<message id='aeb213' to='lord@capulet.example/chamber'>
  <result xmlns='urn:xmpp:mam:2' queryid='f27' id='stanza-id-1'>
    <forwarded xmlns='urn:xmpp:forward:0'>
      <delay xmlns='urn:xmpp:delay' stamp='2019-09-20T23:08:25Z' />
      <message type='groupchat' from='romeo@montague.example' to='
        lord@capulet.example' id='wrong-recipient-1'>
        <retracted stamp='2019-09-20T23:09:32Z' xmlns='
          urn:xmpp:message-retract:1' id='retract-message-1' />
      </message>
    </forwarded>
  </result>
</message>
```

<sup>8</sup>XEP-0203: Delayed Delivery <https://xmpp.org/extensions/xep-0203.html>.

## 5 Business Rules

A receiving client can choose to remove the retracted message from whatever display is used for messages, from any stored history, or choose to display the fact that a message has been retracted in another way.

A MUC or other service that supports message retraction SHOULD prevent further distribution of the message by the service (e.g., by not replaying the message to new occupants joining the room, omitting the message from history archive requests where possible, or replacing the original message with a 'tombstone').

Some clients may have been offline while the retraction was issued. The archiving service therefore MUST store the retraction message, regardless of whether the original message is deleted or replaced with a tombstone. These clients will then become aware of the retraction as soon as they catch up with the archive.

A client MAY inform the user that a no-longer displayed message did previously exist and has been removed.

Supporting clients MUST set a unique 'id' on the <message> element in outgoing stanzas (as per [Unique and Stable Stanza IDs \(XEP-0359\)](#)<sup>9</sup>), to make them suitable for retraction.

The Sender MUST NOT send a retraction request for a message with non-messaging payloads. For example, a sender MUST NOT send a retraction for a roster item exchange request or a file transfer part.

A retraction (that's not part of a [Message Moderation \(XEP-0425\)](#)<sup>10</sup> operation) MUST only be processed when both the original message and the retraction request are received from the same bare-JID (in a one-on-one conversation) or full-JID (in a non-anonymous MUC from [Multi-User Chat \(XEP-0045\)](#)<sup>11</sup>).

When used in a semi-anonymous MUC, the recipient client MUST check that a message retraction was sent by the author of the retracted message by checking the occupant id from [Anonymous unique occupant identifiers for MUCs \(XEP-0421\)](#)<sup>12</sup>.

### 5.1 Using the correct ID

For messages of type 'groupchat', the ID assigned to the stanza by the group chat itself must be used. This is discovered in a <stanza-id> element with a 'by' attribute that matches the bare JID of the group chat, as defined in [Unique and Stable Stanza IDs \(XEP-0359\)](#)<sup>13</sup>.

If a group chat does not support [Unique and Stable Stanza IDs \(XEP-0359\)](#)<sup>14</sup>, a client can still opt to include an <origin-id> element in the message stanza, which can be used to refer to the message in a retraction.

For other message types the sender should use the value of the 'id' attribute on the <message>

---

<sup>9</sup>XEP-0359: Unique and Stable Stanza IDs <<https://xmpp.org/extensions/xep-0359.html>>.

<sup>10</sup>XEP-0425: Message Moderation <<https://xmpp.org/extensions/xep-0425.html>>.

<sup>11</sup>XEP-0045: Multi-User Chat <<https://xmpp.org/extensions/xep-0045.html>>.

<sup>12</sup>XEP-0421: Anonymous unique occupant identifiers for MUCs <<https://xmpp.org/extensions/xep-0421.html>>.

<sup>13</sup>XEP-0359: Unique and Stable Stanza IDs <<https://xmpp.org/extensions/xep-0359.html>>.

<sup>14</sup>XEP-0359: Unique and Stable Stanza IDs <<https://xmpp.org/extensions/xep-0359.html>>.

element. See however the [Security Considerations](#) below.

## 6 Security Considerations

There can never be a guarantee that a retracted message was never seen or otherwise distributed, and it is encouraged for clients and services when possible to inform users that no such guarantee exists.

If message retraction results in the complete removal of any record of the original message's body, for example to be replaced by a tombstone, then this could be used to hide messages that moderators might want to be notified of.

To prevent message spoofing, it's very important that the sender's JID or XEP-0421 occupant id of message retractions are checked (as explained in the [Business Rules](#) section).

### 6.1 Uniqueness of message IDs

Clients that don't support [Unique and Stable Stanza IDs \(XEP-0359\)](#)<sup>15</sup> (and therefore don't support [Message Retraction \(XEP-0424\)](#)<sup>16</sup>), are not guaranteed to have a unique 'id' attribute on their <message> elements. This means that when someone is using a supporting client, and attempts to retract a message from a different, non-supporting client, it might not be possible to uniquely indentify the message being retracted, as more than one message could have the same 'id' attribute.

To mitigate this, clients can do a [Service Discovery \(XEP-0030\)](#)<sup>17</sup> request to check if the other client supports XEP-0359, and if not, they can choose to not support retraction for messages from that client, or otherwise warn the client about this limitation. However, the other client might not be online to respond to a disco request, so this is not a foolproof method.

## 7 IANA Considerations

None.

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<sup>15</sup>XEP-0359: Unique and Stable Stanza IDs <<https://xmpp.org/extensions/xep-0359.html>>.

<sup>16</sup>XEP-0424: Message Retraction <<https://xmpp.org/extensions/xep-0424.html>>.

<sup>17</sup>XEP-0030: Service Discovery <<https://xmpp.org/extensions/xep-0030.html>>.



## 8 XMPP Registrar Considerations

### 8.1 Protocol Namespaces

The XMPP Registrar <sup>18</sup> includes 'urn:xmpp:message-retract:1' in its registry of protocol namespaces (see <<https://xmpp.org/registrar/namespaces.html>>).

- urn:xmpp:message-retract:1

### 8.2 Protocol Versioning

If the protocol defined in this specification undergoes a revision that is not fully backwards-compatible with an older version, the XMPP Registrar shall increment the protocol version number found at the end of the XML namespaces defined herein, as described in Section 4 of XEP-0053.

## 9 XML Schema

```
<?xml version='1.0' encoding='UTF-8'?>
<xs:schema
  xmlns:xs='http://www.w3.org/2001/XMLSchema'
  targetNamespace='urn:xmpp:message-retract:1'
  xmlns='urn:xmpp:message-retract:1'
  elementFormDefault='qualified'>
  <xs:element name='retract'>
    <xs:attribute name='id' type='xs:string' use='required' />
  </xs:element>
  <xs:element name='retracted'>
    <xs:complexType>
      <xs:simpleContent>
        <xs:extension base='xs:string'>
          <xs:attribute name='by' type='xs:string' use='optional' />
          <xs:attribute name='id' type='xs:string' use='required' />
          <xs:attribute name='stamp' type='xs:dateTime' use='optional' />
        </xs:extension>
      </xs:simpleContent>
    </xs:complexType>
  </xs:element>
```

<sup>18</sup>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/>>.

```
</xs:schema>
```