XEP-0333: Displayed Markers

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This specification introduces a method to let the sender, or multiple participants in a group chat, know that a client has displayed messages up to a certain point.

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Contents

1 Introduction

Letting the sender and/or multiple participants of a group chat know that an entity has displayed (Colloquially known as *read*) a message is a common feature in modern instant messaging.

Message Delivery Receipts (XEP-0184) [1] currently provides delivery receipts on a per message basis, but it does not provide any mechanism for the user to indicate that they have read the message.

This specification defines a protocol for the sender of a message to let the recipient know they are interested in whether the recipient's client has displayed the message and a protocol for the recipient to respond to said request. In group chats the explicit request is omitted and participants opportunistically share their displayed state with others.

Displayed Markers carry a semantic of *all messages up to this point*.

Note: Displayed Markers do not mark each individual message, nor do they assume a reliable transport. This means that Displayed Markers can only provide a heuristic solution, but this is often satisfactory for the majority of use cases.

2 Requirements

- Enable a client to mark the last displayed message in a chat.

- Enable a client to fetch and set Displayed Markers regardless of whether the other users in a chat are online.

- Do not replicate functionality of Message Delivery Receipts (XEP-0184) [2]

- Do not be concerned about displayed state synchronization across multiple devices of the same user

3 Determining support

If an entity supports the Displayed Markers protocol, it MUST report that by including a Service Discovery (XEP-0030) [3] feature of "urn:xmpp:chat-markers:0" in response to disco#info requests:

Listing 1: Client queries for features

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

---

[1]XEP-0184: Message Delivery Receipts <https://xmpp.org/extensions/xep-0184.html>.

[2]XEP-0184: Message Delivery Receipts <https://xmpp.org/extensions/xep-0184.html>.

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

Listing 2: Entity responds with features

```
<iq type='result' id='disco1' from='romeo@montague.lit/mobile' to='
    juliet@capulet.lit/balcony'>
  <query xmlns='http://jabber.org/protocol/disco#info'>
    ...
    <feature var='urn:xmpp:chat-markers:0'/>
    ...
  </query>
</iq>
```

Support can also be determined via Entity Capabilities (XEP-0115) [4] or Entity Capabilities 2.0 (XEP-0390) [5].

4   Use Cases

4.1   Requesting Displayed Markers

An entity interested to know if the recipient has displayed a message attaches a <markable/> element qualified by the 'urn:xmpp:chat-markers:0' namespace to the message. The message MUST possess an 'id' attribute for traceability.

Listing 3: Romeo sends a message to Juliet

```
<message to='juliet@capulet.lit' from='romeo@montegue.lit/orchard' id=
    'the-msg-1'>
  <body>Hi. How are you?</body>
  <markable xmlns='urn:xmpp:chat-markers:0'/>
  <request xmlns='urn:xmpp:receipts'/>
</message>
```

4.2   Sending Displayed Markers

To let the sender know a message has been displayed an entity sends a message with a <displayed/> element qualified by the 'urn:xmpp:chat-markers:0' namespace. The <displayed/> element MUST have an 'id' attribute that copies the value from the 'id' attribute of the message it refers to.
A Displayed Marker MAY be sent to the bare JID of the entity that requested it.
If multiple messages are displayed at once an entity SHOULD only send a <displayed/> marker for the most recent, received message.
To prevent looping, an entity MUST NOT send a Displayed Marker as a response to a Displayed Marker.

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[4]XEP-0115: Entity Capabilities <https://xmpp.org/extensions/xep-0115.html>.
[5]XEP-0390: Entity Capabilities 2.0 <https://xmpp.org/extensions/xep-0390.html>.

Listing 4: Juliet lets both Romeo she has displayed the message

```
<message to='romeo@montegue.lit' from='juliet@capulet.let/balcony'>
    <displayed xmlns='urn:xmpp:chat-markers:0' id='the-msg-1'/>
</message>
```

4.3 Group Chats

Displayed Markers can be used within group chats to indicate read status of each occupant. Within the context of a MUC messages are relayed through the MUC's own JID. In a MUC that preserves the 'id' attribute chosen by the sender of the message this 'id' attribute cannot be considered unique, as it may be unintentionally or even maliciously reused by another MUC occupant.

Therefore, if a MUC announces support for Unique and Stable Stanza IDs (XEP-0359) [6] then clients MUST always use the MUC-assigned id for Displayed Markers. The id will be contained in a <stanza-id/> element inserted into the stanza with a 'by' attribute matching the MUC's own JID.

As per XEP-0359 security considerations, if XEP-0359 support is not announced on the MUC room's JID then <stanza-id/> elements with a 'by' attribute that match the MUC's JID should be considered spoofed and MUST be ignored.

In group chats the Displayed Marker MAY be sent opportunistically, meaning without an explicit <markable/> request from the sender. While the sender might not be interested in or have support for Display Markers, other participants of the group chat could be interested in them.

Listing 5: Example MUC message with a markable Displayed Marker

```
<message
    from='coven@chat.shakespeare.lit/firstwitch'
    to='coven@chat.shakespeare.lit'
    id='message-1'
    type='groupchat'>
  <thread>Act IV, Scene I</thread>
  <body>Thrice the brinded cat hath mew'd.</body>
  <markable xmlns='urn:xmpp:chat-markers:0'/>
  <stanza-id xmlns='urn:xmpp:sid:0' by='coven@chat.shakespeare.lit' id
    ='39K7ZYIp'/>
</message>
```

Listing 6: Example marker response to a markable MUC message

```
<message
    from='coven@chat.shakespeare.lit/secondwitch'
    to='coven@chat.shakespeare.lit'
    id='message-2'
```

---

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

```
    type='groupchat'>
  <thread>Act IV, Scene I</thread>
  <displayed xmlns='urn:xmpp:chat-markers:0'
             id='39K7ZYIp'/>
</message>
```

5 Business Rules

- Displayed Marker only move forward. Receiving a Display Marker with an id-attribute that references a message older than the current local representation is considered redundant and MUST be ignored.

- Displayed Marker with an id-attribute that references a message not found in the respective chat MUST be ignored.

- Entities MUST not sent Displayed Markers for outgoing messages that were sent by the same or a different resource of the same entity (received for example via Message Carbons (XEP-0280) [7] or Message Archive Management (XEP-0313) [8]).

- Sending opportunistic Displayed Markers (as a response to messages without an explicit <markable/>) in normal, 1:1 chats is NOT RECOMMENDED.

6 Accessibility Considerations

Graphical representations of displayed markers for example in the form of checkmarks need to be made available for visually impaired users.

7 Security Considerations

- A user may not wish to disclose that they have displayed or acknowledge a message.

- It is possible for a sender to leak its presence when updating Displayed Markers; therefore, a sender SHOULD NOT send Displayed Markers to recipients who are not otherwise authorized to view its presence.

- To accurately and reliably match Displayed Markers to current participants of a group chat, implementations MUST use the real JID (when available, for example in non-anonymous MUCs) or Anonymous unique occupant identifiers for MUCs (XEP-0421) [9].

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[7]XEP-0280: Message Carbons <https://xmpp.org/extensions/xep-0280.html>.
[8]XEP-0313: Message Archive Management <https://xmpp.org/extensions/xep-0313.html>.
[9]XEP-0421: Anonymous unique occupant identifiers for MUCs <https://xmpp.org/extensions/xep-0421.html>.

8 Privacy Considerations

Letting others know that one has displayed (read) a message is not a desirable feature for everyone. Clients SHOULD provide ways to opt-out of this feature.

9 IANA Considerations

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

10 XMPP Registrar Considerations

10.1 Protocol Namespaces

This specification defines the following XML namespace:

- 'urn:xmpp:chat-markers:0'

11 Design Considerations

Earlier drafts of this specification included <received/> and <acknowledged/> with the same *up to this point* semantic as the remaining <displayed/>. However in the review phase it was concluded that most implementers prefer the per-message precision of Message Delivery Receipts (XEP-0184) [10] for received tracking. While <displayed/> has been widely implemented during a 10+ year review phase there was seemingly no demand for <acknowledged/>.

12 XML Schema

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

<xs:schema attributeFormDefault="unqualified"
  elementFormDefault="qualified"
  targetNamespace="urn:xmpp:chat-markers:0"
  xmlns:xs="http://www.w3.org/2001/XMLSchema">

  <xs:annotation>
    <xs:documentation>
      The protocol documented by this schema is defined in
      XEP-0333: http://xmpp.org/extensions/xep-0333.html
```

---

[10]XEP-0184: Message Delivery Receipts <https://xmpp.org/extensions/xep-0184.html>.

```xml
      </xs:documentation>
    </xs:annotation>

    <xs:element name="markable">
      <xs:complexType>
        <xs:simpleContent>
          <xs:extension base="xs:string">
          </xs:extension>
        </xs:simpleContent>
      </xs:complexType>
    </xs:element>

    <xs:element name="displayed">
      <xs:complexType>
        <xs:simpleContent>
          <xs:extension base="xs:string">
            <xs:attribute type="xs:string" name="id"/>
          </xs:extension>
        </xs:simpleContent>
      </xs:complexType>
    </xs:element>

</xs:schema>
```