



# XMPP

## XEP-0502: MUC Activity Indicator

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This specification provides querying entities an approximate indication of the level of activity in a given XEP-0045 Multi-User Chat room.

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## 1 Introduction

Currently, the only activity metric available to entities considering interacting with a [Multi-User Chat \(XEP-0045\)](#)<sup>1</sup> chat is the number of occupants which is published in the [Service Discovery \(XEP-0030\)](#)<sup>2</sup> response.

However, the number of occupants alone is not a great metric for usefulness of a chat. On the one end of the spectrum there may be highly active, but small, groups of experts on a specific topic who are happy to help. On the other end of the spectrum there may be huge chats consisting mostly of lurkers.

This specification introduces a new field in the disco#info data which gives an indication of the rate at which messages are sent in a given group chat.

## 2 Requirements

- MUST NOT impose excessive computing requirements on servers.
- MUST be useful as rough indicator.

## 3 Use Cases

### 3.1 Retrieving the message activity level

To request the current level of message activity, an entity sends a standard [Service Discovery \(XEP-0030\)](#)<sup>3</sup> information request to a MUC's address:

Listing 1: Entity Queries Chat Room for Information

```
<iq from='hag66@shakespeare.lit/pda'
  id='lx09df27'
  to='coven@chat.shakespeare.lit'
  type='get'>
  <query xmlns='http://jabber.org/protocol/disco#info' />
</iq>
```

Services implementing this specification MUST return the {urn:xmpp:muc-activity}message-activity field, if:

- The room is persistent, and
- The room is public, and

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<sup>1</sup>XEP-0045: Multi-User Chat <<https://xmpp.org/extensions/xep-0045.html>>.

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

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

- The data is currently available.

The field MUST contain an approximation of the number of messages sent per hour in this room as floating point value. For example approximation approaches, see the [Implementation Notes](#) below.

Listing 2: Service Returns Disco Info Result for Room

```
<iq from='coven@chat.shakespeare.lit'
  id='lx09df27'
  to='hag66@shakespeare.lit/pda'
  type='result'>
  <query xmlns='http://jabber.org/protocol/disco#info'>
    <!--{}- ... -{}-->
    <x xmlns='jabber:x:data' type='result'>
      <field var='FORM_TYPE' type='hidden'>
        <value>http://jabber.org/protocol/muc#roominfo</value>
      </field>
      <!--{}- ... -{}-->
      <field var='{urn:xmpp:muc-activity}message-activity'
        label='Messages_per_hour'>
        <value>23.42</value>
      </field>
    </x>
  </query>
</iq>
```

In particular, services MUST omit the field entirely if the above preconditions are not met. Services MUST NOT put placeholder values in the field.

## 4 Business Rules

- The value provided in the form field MUST be in units of messages per hour.
- The time frame over which this number is derived is service-defined. However, services SHOULD NOT take into account messages which are older than 72 hours.
- Services MUST NOT count messages without a `<body/>` element, unless it is known that this message would be rendered as standalone message on a compliant client nonetheless.
- Services MUST NOT count messages where the type is not groupchat; in particular, they MUST NOT count private messages among occupants.
- Services SHOULD NOT count [Last Message Correction \(XEP-0308\)](#)<sup>4</sup> messages.
- Consumers MUST NOT assume that the number is exact.

<sup>4</sup>XEP-0308: Last Message Correction <<https://xmpp.org/extensions/xep-0308.html>>.

- Consumers **MUST NOT** assume that the number is updated in real-time.
- Services **SHOULD** update the number at least once per hour.

## 5 Implementation Notes

The obvious "correct" implementation to provide the message rate would be to, internally, query the number of messages sent in the room since its inception and divide that by the number of hours since its inception. Such an implementation is likely to be expensive, in particular for large, high-traffic rooms.

In order to cater for that, the [Business Rules](#) allow for some significant leeway in how implementations approximate the number of messages per hour.

For implementations where fetching the number of messages in a certain time frame is too expensive, the following simplified approach is outlined: For each MUC, allocate a shift register of 25 counters. Whenever an eligible message is broadcast through the MUC, increase the first counter. Every hour, shift the counters onward (so that the first counter becomes the second and so on) and reset the first counter to zero. Whenever the message rate is requested (via `disco#info` or otherwise), sum the counters two through 25 and divide the sum by 24.

That way, only constant storage per MUC and constant CPU time per message and request is required. As a trade-off, this introduces a latency of one hour for updating the counter.

## 6 Accessibility Considerations

This specification does not introduce new user interaction concepts.

## 7 Internationalization Considerations

Services **MAY** translate the label attribute of the field according to the language indicated in the requester's IQ stanza.

## 8 Security Considerations

Services **MUST** choose a sufficiently cheap algorithm to provide the message activity indicator. Otherwise, they are open to trivial denial-of-service attacks by high-rate `disco#info` requests.

## 9 Privacy Considerations

Services MUST NOT publish message activity indicators for MUCs which are not publicly listed (`muc_public` feature flag) or where users would need some kind of specific authorization to join (such as a password or the member affiliation).

## 10 IANA Considerations

No IANA interactions required.

## 11 XMPP Registrar Considerations

The form field should be registered, eventually.