XEP-0478: Stream Limits Advertisement

Kim Alvefur
mailto:zash@zash.se
xmpp:zash@zash.se

Matthew Wild
mailto:mwild1@gmail.com
xmpp:me@matthewwild.co.uk

2023-05-04
Version 0.1.0

<table>
<thead>
<tr>
<th>Status</th>
<th>Type</th>
<th>Short Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experimental</td>
<td>Standards Track</td>
<td>sla</td>
</tr>
</tbody>
</table>

This specification defines a way for an XMPP entity to announce the limits it will enforce for data received on a stream.
Legal

Copyright

This XMPP Extension Protocol is copyright © 1999 – 2024 by the XMPP Standards Foundation (XSF).

Permissions

Permission is hereby granted, free of charge, to any person obtaining a copy of this specification (the “Specification”), to make use of the Specification without restriction, including without limitation the rights to implement the Specification in a software program, deploy the Specification in a network service, and copy, modify, merge, publish, translate, distribute, sublicense, or sell copies of the Specification, and to permit persons to whom the Specification is furnished to do so, subject to the condition that the foregoing copyright notice and this permission notice shall be included in all copies or substantial portions of the Specification. Unless separate permission is granted, modified works that are redistributed shall not contain misleading information regarding the authors, title, number, or publisher of the Specification, and shall not claim endorsement of the modified works by the authors, any organization or project to which the authors belong, or the XMPP Standards Foundation.

Warranty

## NOTE WELL: This Specification is provided on an "AS IS" BASIS, WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, express or implied, including, without limitation, any warranties or conditions of TITLE, NON-INFRINGEMENT, MERCHANTABILITY, or FITNESS FOR A PARTICULAR PURPOSE. ##

Liability

In no event and under no legal theory, whether in tort (including negligence), contract, or otherwise, unless required by applicable law (such as deliberate and grossly negligent acts) or agreed to in writing, shall the XMPP Standards Foundation or any author of this Specification be liable for damages, including any direct, indirect, special, incidental, or consequential damages of any character arising from, out of, or in connection with the Specification or the implementation, deployment, or other use of the Specification (including but not limited to damages for loss of goodwill, work stoppage, computer failure or malfunction, or any and all other commercial damages or losses), even if the XMPP Standards Foundation or such author has been advised of the possibility of such damages.

Conformance

This XMPP Extension Protocol has been contributed in full conformance with the XSF’s Intellectual Property Rights Policy (a copy of which can be found at <https://xmpp.org/about/xsf/ipr-policy> or obtained by writing to XMPP Standards Foundation, P.O. Box 787, Parker, CO 80134 USA).
## Contents

1 Introduction 1
   1.1 Problem statement ............................................. 1

2 Requirements 1

3 Use Cases 1
   3.1 Server advertises limits to connecting entity ................. 1
   3.2 Connecting server announces limits on bidirectional stream ... 2

4 Business Rules 2

5 Implementation Notes 3

6 Accessibility Considerations 3

7 Internationalization Considerations 3

8 Security Considerations 3

9 IANA Considerations 3

10 XMPP Registrar Considerations 3

11 Design Considerations 4

12 XML Schema 4
1 Introduction

This document describes a mechanism for communicating limits, such as stanza size limits that are in effect on a particular stream, in order to allow the sending party to avoid reaching those limits.

1.1 Problem statement

Where stanza size limits have been deployed, very often this leads to problems with large stanzas causing connection outages, most often User Avatar (XEP-0084) and XMPP Registrar Function (XEP-0053) result stanzas, which can be very large due to embedded images. If stanza size limit violations are met with stream errors then this may lead to temporary connection outage, which may a few seconds to recover from.

2 Requirements

- Enable discovery of the stanza size limit in use on a stream.
- Support for bi-directional streams.

These requirements will enable XMPP clients and servers to adapt data they generate, such that it will fit within the limits required by the recipient, or reject overly large stanzas early, rather than following a trial-and-error approach.

3 Use Cases

3.1 Server advertises limits to connecting entity

For any XMPP stream, there is an "initiating entity" (a client or server) and a "responding entity" that they are connecting to. The responding entity advertises its limits in the <stream:features/> element that it sends at the start of the stream. The limits are enclosed in a <limits/> element qualified by the 'urn:xmpp:stream-limits:0' namespace. This element SHOULD contain the following child elements:


---

4 BUSINESS RULES


Listing 1: Advertising limits to connecting entity

```xml
<stream:features>
  <mechanisms xmlns="urn:ietf:params:xml:ns:xmpp-sasl">
    <mechanism>SCRAM-SHA-1</mechanism>
    <mechanism>PLAIN</mechanism>
  </mechanisms>
  <limits xmlns="urn:xmpp:stream-limits:0">
    <max-bytes>10000</max-bytes>
    <idle-seconds>1800</idle-seconds>
  </limits>
</stream:features>
```

3.2 Connecting server announces limits on bidirectional stream

Servers using Bidirectional Server-to-Server Connections (XEP-0288) ³ to establish a bidirectional stream with another server do not get an opportunity to send <stream:features/> to the responding entity. For a server to advertise the limits about what it is willing to accept on such a stream, the <limits/> element can be included in the <bidi/> element.

Listing 2: Advertising limits to responding entity over bidirectional stream

```xml
<bidi xmlns='urn:xmpp:bidi'>
  <limits xmlns="urn:xmpp:stream-limits:0">
    <max-bytes>10000</max-bytes>
    <idle-seconds>1800</idle-seconds>
  </limits>
</bidi>
```

4 Business Rules

If, after serialization, a stanza exceeds the limits that have been advertised on a stream, it SHOULD NOT be sent on that stream. Instead, a server SHOULD return an error to the sender. Such an error SHOULD contain the <policy-violation/> error condition, and SHOULD NOT

contain a 'by' attribute (as the policy being violated is not the current entity’s). A <text/> may also be included, explaining the limit that would be exceeded.

It is acceptable for the limits on a stream to change whenever new stream features are announced - such as before and after authentication of the connecting entity.

5 Implementation Notes

OPTIONAL.

6 Accessibility Considerations

OPTIONAL.

7 Internationalization Considerations

OPTIONAL.

8 Security Considerations

REQUIRED.

Very large stanzas may incur memory and processing costs on the receiving entity. Advertising the actual limits could inform an attacker of how large a stanza to construct in order to maximize e.g. DoS effectiveness. Best combined with network level rate limits on raw bytes.

9 IANA Considerations

None.

10 XMPP Registrar Considerations

This specification defines the following namespace:

- urn:xmpp:stream-limits:0
11 Design Considerations

The ability for a client to announce limits on what it will receive on a client-to-server stream is deliberately not provided by this specification. This vastly simplifies discovery of the maximum limits between any two JIDs, and it avoids situations where the server is unable to deliver incoming stanzas to some or all of an account’s connected clients. Clients will already be protected from denial-of-service through excessive stanza sizes due to the server’s own limits.

12 XML Schema

TBD.