



XMPP

XEP-0359: Unique and Stable Stanza IDs

Florian Schmaus

<mailto:flo@geekplace.eu>

<xmpp:flo@geekplace.eu>

2020-11-03

Version 0.6.1

Status	Type	Short Name
Deferred	Standards Track	stanza-id

This specification describes unique and stable IDs for messages.

Legal

Copyright

This XMPP Extension Protocol is copyright © 1999 – 2020 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
2	Use Cases	1
2.1	Unique stanza IDs	1
2.2	Origin generated stanza IDs	1
3	Business Rules	2
4	Discovering Support	3
5	Security Considerations	3
6	IANA Considerations	4
7	XMPP Registrar Considerations	4
7.1	Protocol Namespaces	4
8	XML Schema	4
9	Acknowledgements	5

1 Introduction

This XEP introduces unique and stable IDs for messages, which are beneficial in various ways. For example, they can be used together with [Message Archive Management \(XEP-0313\)](#)¹ to uniquely identify a message within an archive. They are also useful in the context of [Multi-User Chat \(XEP-0045\)](#)² conferences, as they allow to identify a message reflected by a MUC service back to the originating entity.

2 Use Cases

2.1 Unique stanza IDs

Listing 1: The stanza ID extension.

```
<stanza-id xmlns='urn:xmpp:sid:0'  
  id='de305d54-75b4-431b-adb2-eb6b9e546013'  
  by='room@muc.example.com' />
```

In order to create a `<stanza-id/>` extension element, the creating XMPP entity generates and sets the value of the 'id' attribute, and puts its own XMPP address as value of the 'by' attribute. The value of the 'id' attribute must be unique and stable, i.e. it MUST NOT change later for some reason within the scope of the 'by' value. Thus the IDs defined in this extension MUST be unique and stable within the scope of the generating XMPP entity. It is RECOMMENDED that the ID generating service uses UUID and the algorithm defined in [RFC 4122](#)³ to generate the IDs.

2.2 Origin generated stanza IDs

Some use cases require the originating entity, e.g. a client, to generate the stanza ID. In this case, the client MUST use the `<origin-id/>` element extension element qualified by the 'urn:xmpp:sid:0' namespace. Note that originating entities often want to conceal their XMPP address and therefore the `<origin-id/>` element has no 'by' attribute.

Listing 2: A message stanza with the origin ID extension.

```
<message xmlns='jabber:client'  
  to='room@muc.example.com'  
  type='groupchat'  
  <body>Typical body text</body>  
  <origin-id xmlns='urn:xmpp:sid:0' id='de305d54-75b4-431b-adb2-  
    eb6b9e546013' />
```

¹XEP-0313: Message Archive Management <<https://xmpp.org/extensions/xep-0313.html>>.

²XEP-0045: Multi-User Chat <<https://xmpp.org/extensions/xep-0045.html>>.

³RFC 4122: A Universally Unique Identifier (UUID) URN Namespace <<http://tools.ietf.org/html/rfc4122>>.

```
</message>
```

The server or component MAY add a <stanza-id/> element. In that case, it MUST preserve the content of the <origin-id/> element.

Listing 3: A message stanza with the stanza ID extension.

```
<message xmlns='jabber:client'
  to='room@muc.example.com'
  type='groupchat'>
  <body>Typical body text</body>
  <stanza-id xmlns='urn:xmpp:sid:0'
    id='5f3dbc5e-e1d3-4077-a492-693f3769c7ad'
    by='room@muc.example.com' />
  <origin-id xmlns='urn:xmpp:sid:0' id='de305d54-75b4-431b-adb2-
    eb6b9e546013' />
</message>
```

3 Business Rules

1. The values of the 'id' attribute SHOULD be unpredictable.
2. Stanza ID generating entities, which encounter a <stanza-id/> element where the 'by' attribute matches the 'by' attribute they would otherwise set, MUST delete that element even if they are not adding their own stanza ID.
3. Entities, which are routing stanzas, SHOULD NOT strip any elements qualified by the 'urn:xmpp:sid:0' namespace from message stanzas unless the preceding rule applied to those elements.
4. Stanzas MUST possess, in the direct child level of the stanza, at most one <stanza-id/> extension element with the same XMPP address as value of the 'by' attribute.
5. Every <stanza-id/> extension element MUST have the 'id' attribute and the 'by' attribute set.
6. Every <stanza-id/> and <origin-id/> extension element MUST always possess an 'id' attribute and MUST NOT have any child elements or text content.
7. The value of the 'by' attribute MUST be the XMPP address of the entity assigning the unique and stable stanza ID. For one-on-one messages the assigning entity is the account. In groupchats the assigning entity is the room. Note that XMPP addresses are normalized as defined in [RFC 6122](http://tools.ietf.org/html/rfc6122)⁴.

⁴RFC 6122: Extensible Messaging and Presence Protocol (XMPP): Address Format <<http://tools.ietf.org/html/rfc6122>>.

4 Discovering Support

An entity that follows the business rules, especially the rule on overriding the ID in elements where the `by` attribute matches the `'by'` attribute they would otherwise set, SHOULD announce the `'urn:xmpp:sid:0'` namespace in its disco features allowing other entities to verify that those business rules are properly enforced.

Listing 4: Client sends service discovery request to the room

```
<iq from='romeo@montague.tld/garden'
  id='somethingrandom'
  to='room@muc.example.com'
  type='get'>
  <query xmlns='http://jabber.org/protocol/disco#info' />
</iq>
```

Listing 5: Servers includes the stanza ID namespace in its features

```
<iq from='room@muc.example.com'
  to='romeo@montague.tld/garden'
  id='somethingrandom'
  type='result'>
  <query xmlns='http://jabber.org/protocol/disco#info'>...

  <feature var='urn:xmpp:sid:0' />...

  </query>
</iq>
```

5 Security Considerations

The value of the `'id'` attribute should not provide any further information besides the opaque ID itself. Entities observing the value MUST NOT be able to infer any information from it, e.g. the size of the message archive. The value of `'id'` MUST be considered a non-secret value.

Before processing the stanza ID of a message and using it for deduplication purposes or for MAM catchup, the receiving entity SHOULD ensure that the stanza ID could not have been faked, by verifying that the entity referenced in the `by` attribute does announce the `'urn:xmpp:sid:0'` namespace in its disco features.

6 IANA Considerations

This document requires no interaction with the [Internet Assigned Numbers Authority \(IANA\)](#)⁵.

7 XMPP Registrar Considerations

7.1 Protocol Namespaces

This specification defines the following XML namespaces:

- urn:xmpp:sid:0

The [XMPP Registrar](#)⁶ shall include the foregoing namespaces in its registry of protocol namespaces (see <https://xmpp.org/registrar/namespaces.html>) and in its disco features registry (<https://xmpp.org/registrar/disco-features.html>) as defined in [Service Discovery \(XEP-0030\)](#)⁷.

```
<var>
  <name>urn:xmpp:sid:0</name>
  <desc>Indicates that an entity adds stanza-ids and follows the
    business rules described in the XEP</desc>
  <doc>XEP-0359</doc>
</var>
```

8 XML Schema

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

<xs:schema
  xmlns:xs='http://www.w3.org/2001/XMLSchema'
  targetNamespace='urn:xmpp:sid:0'
  elementFormDefault='qualified'>

  <xs:annotation>
    <xs:documentation>
```

⁵The Internet Assigned Numbers Authority (IANA) is the central coordinator for the assignment of unique parameter values for Internet protocols, such as port numbers and URI schemes. For further information, see <http://www.iana.org/>.

⁶The 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/>.

⁷XEP-0030: Service Discovery <https://xmpp.org/extensions/xep-0030.html>.

```
    The protocol documented by this schema is defined in
    XEP-0359: https://www.xmpp.org/extensions/xep-0359.html
  </xs:documentation>
</xs:annotation>

<xs:element name='stanza-id'>
  <xs:complexType>
    <xs:attribute name='id' type='xs:string' use='required' />
    <xs:attribute name='by' type='xs:string' use='required' />
  </xs:complexType>
</xs:element>

<xs:element name='origin-id'>
  <xs:complexType>
    <xs:attribute name='id' type='xs:string' use='required' />
  </xs:complexType>
</xs:element>

</xs:schema>
```

9 Acknowledgements

Thanks to Thijs Alkemade and Georg Lukas for providing feedback.