XEP-0359: Unique and Stable Stanza IDs

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Experimental	Standards Track	stanza-id

This specification describes unique and stable IDs for messages.

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Contents

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'/>
```

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[1]XEP-0313: Message Archive Management <https://xmpp.org/extensions/xep-0313.html>.
[2]XEP-0045: Multi-User Chat <https://xmpp.org/extensions/xep-0045.html>.
[3]RFC 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 [4].

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

4 Referencing Other Stanzas

The <referenced-stanza/> element can be used to reference another stanza. The <referenced-stanza/> element MUST be qualified by the 'urn:xmpp:sid:0' namespace and MUST have an 'id' attribute and SHOULD have a 'by' attribute. The values of the attributes are the values of the referenced stanza's <stanza-id/> element.

Listing 4: Example <referenced-stanza/> element

```
<referenced-stanza xmlns='urn:xmpp:sid:0' id='xep359-stanza-id' by='
    muc.example.org'/>
```

5 Discovering Support

An entity that follows the business rules, especially the rule on overriding the ID in elements where the by atttribute 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 5: 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 6: 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>
```

6 Security Considerations

The value of origin-id is spoofable and hence SHOULD not be used when referencing other stanzas. The value tuple of 'id' and 'by' of the stanza-id element is unspoofable iff all involved

implementations follow the requirements of this specification.

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 annouce the 'urn:xmpp:sid:0' namespace in its disco features.

7 IANA Considerations

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

8 XMPP Registrar Considerations

8.1 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>
```

---

[5]The 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/>.

[6]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/>.

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

9 XML Schema

```xml
<?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>
      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:element name='referenced-stanza'>
    <xs:complexType>
      <xs:attribute name='id' type='xs:string' use='required'/>
      <xs:attribute name='by' type='xs:string' use='optional'/>
    </xs:complexType>
  </xs:element>

</xs:schema>
```

10 Acknowledgements