XEP-0137: Publishing Stream Initiation Requests

Matthew Miller
mailto:linuxwolf@outer-planes.net
xmpp:linuxwolf@outer-planes.net

Thomas Muldowney
mailto:temas@jabber.org
xmpp:temas@jabber.org

2005-08-26
Version 1.0

Status	Type	Short Name
Draft	Standards Track	sipub

This specification defines an XMPP protocol extension that enables an XMPP entity to advertise the fact that it is willing accept a particular Stream Initiation request. The protocol is used mainly to inform other entities that a particular file is available for transfer via the File Transfer protocol defined in XEP-0096.

Legal

Copyright

Permissions

Warranty

Liability

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 <http://xmpp.org/about-xmpp/xsf/xsf-ipr-policy/> or obtained by writing to XMPP Standards Foundation, 1899 Wynkoop Street, Suite 600, Denver, CO 80202 USA).

Contents

1 Introduction

Stream Initiation [1] defines a protocol to initiate a data stream between two Jabber/XMPP entities (e.g., for the purpose of SI File Transfer [2]). However, the sender is still responsible for informing potential receivers about the existence of a given stream. This document provides an automated way for a sender to announce the availability of a stream without initiating the data transfer. The purpose is to provide a ”pull” protocol that enables a receiver to then request initiation of the stream from the sender.

2 Requirements

This proposal addresses the following requirements:

- Allow a potential receiver (rather than the sender) to initiate a data stream.
- Integrate Stream Initiation (SI) with Publish-Subscribe [3].
- Integrate Stream Initiation with Data Forms [4].

3 Use Cases

3.1 Publishing an SI Request

A stream owner uses the <sipub/> element to announce that it can perform a specific SI request. This element can be sent to a publish-subscribe (XEP-0060) node, or sent directly to potential recipients within a <message/> stanza.
The format of the <sipub/> element is as follows:

Listing 1: Sample <sipub/>

```
<sipub xmlns='http://jabber.org/protocol/sipub'
       from='sender-jid'
       id='publish-0123'
       profile='si-profile'
       mime-type='mime/type'>
   <profile xmlns='si-profile'></profile>
 </sipub>
```

This format is nearly identical to that for the stream initiation <si/> element (see XEP-0095). The major difference is the lack of the feature negotiation for the stream methods, and the

[1] XEP-0095: Stream Initiation <http://xmpp.org/extensions/xep-0095.html>.
[2] XEP-0096: SI File Transfer <http://xmpp.org/extensions/xep-0096.html>.
[3] XEP-0060: Publish-Subscribe <http://xmpp.org/extensions/xep-0060.html>.
[4] XEP-0004: Data Forms <http://xmpp.org/extensions/xep-0004.html>.

addition of a 'from' attribute.
The 'from' attribute SHOULD be present, and MUST be present if the stanza containing the <sipub/> is not from the stream owner (e.g., if the stream is advertised at a publish-subscribe node). If present, this attribute MUST be the valid JID for the stream owner.
The 'id' attribute is an opaque identifier. This attribute MUST be present, and MUST be a valid non-empty string. It uniquely identifies the published request at the potential sender.
As with stream initiation, the 'profile' attribute MUST be present, and MUST be the namespace URI governing the profile information. It identifies the format for the SI profile.
As with stream initiation, the 'mime-type' attribute SHOULD be present, and MUST be an IANA-registered content type. [5] It provides the receiver with additional information about what the data stream will be.
The <sipub/> element MUST contain an element qualified by the namespace specified by the 'profile' attribute (e.g., <file xmlns='http://jabber.org/protocol/si/profile/file-transfer'/> for file transfer). This is the additional information about the data stream.
The <sipub/> information is typically provided via pubsub:

Listing 2: Sender advertises stream via publish-subscribe

```
<iq from='bard@shakespeare.lit/globe'
    to='pubsub.shakespeare.lit'
    id='ps1'>
  <pubsub xmlns='http://jabber.org/protocol/pubsub'>
    <publish node='characters'>
      <sipub xmlns='http://jabber.org/protocol/sipub'
          from='bard@shakespeare.lit'
          id='publish-0123'
          mime-type='application/pdf'
          profile='http://jabber.org/protocol/si/profile/file-transfer
              '>
        <file xmlns='http://jabber.org/protocol/si/profile/file-
            transfer'
              name='NDA.pdf'
              size='138819'
              date='2004-01-28T10:07Z'>
          <desc>All Shakespearean characters must sign and return this
               NDA ASAP</desc>
        </file>
      </sipub>
    </publish>
  </pubsub>
</iq>
```

Listing 3: Pubsub service pushes announcement to all subscribers

```
<message from='pubsub.shakespeare.lit' to='juliet@capulet.com/balcony'
    >
```

[5] The IANA registry of content types is located at <http://www.iana.org/assignments/media-types/>.

```
  <event xmlns='http://jabber.org/protocol/pubsub#event'>
    <items node='characters'>
      <item id='current'>
        <sipub xmlns='http://jabber.org/protocol/sipub'
            from='bard@shakespeare.lit'
            id='publish-0123'
            mime-type='application/pdf'
            profile='http://jabber.org/protocol/si/profile/file-
               transfer'>
          <file xmlns='http://jabber.org/protocol/si/profile/file-
             transfer'
                name='NDA.pdf'
                size='138819'
                date='2004-01-28T10:07Z'>
            <desc>All Shakespearean characters must sign and return
               this NDA ASAP</desc>
          </file>
        </sipub>
      </item>
    </items>
  </event>
</message>
```

The <sipub/> element MAY also be included directly within a <message/> stanza sent to another entity (or multiple entities, e.g., in Multi-User Chat [6] or via Extended Stanza Addressing [7]). This can be especially useful for informing an offline entity about an available stream.

Listing 4: Advertising a stream in a message stanza

```
<message from='romeo@montague.net/pda' to='juliet@capulet.com'>
  <sipub xmlns='http://jabber.org/protocol/sipub'
      id='publish-0123'
      mime-type='application/pdf'
      profile='http://jabber.org/protocol/si/profile/file-transfer'>
    <file xmlns='http://jabber.org/protocol/si/profile/file-transfer'
          name='NDA.pdf'
          size='138819'
          date='2004-01-28T10:07Z'>
      <desc>All Shakespearean characters must sign and return this NDA
          ASAP</desc>
    </file>
  </sipub>
</message>
```

[6] XEP-0045: Multi-User Chat <http://xmpp.org/extensions/xep-0045.html>.
[7] XEP-0033: Extended Stanza Addressing <http://xmpp.org/extensions/xep-0033.html>.

3.2 Integration with Data Forms

One of the goals of sipub is to integrate Stream Initiation with Data Forms to provide a ”file upload” capability. This is accomplished via the datatypes specified in Data Forms Validation [8]. Each datatype is specific to the profile desired.
For example the datatype ”sipub:file-transfer” is used to identify the file upload field(s) corresponding to XEP-0096:

Listing 5: ”Upload File” Data Forms Field

```
<field var='file' type='text-single' label='File to Upload'>
    <validate xmlns='http://jabber.org/protocol/xdata-validate'
              datatype='sipub:file-transfer'/>
  </field>
```

When submitting such a form, a field's value(s) MUST be the <sipub/> identifier(s). Also, the submitter MUST provide an <sipub/> element within the data form for each file to be uploaded:

Listing 6: Submitting an ”Upload File” form

```
<x xmlns='jabber:x:data' type='submit'>
    <field var='file'>
      <value>publish-0123</value>
    </field>
    <sipub xmlns='http://jabber.org/protocol/sipub'
           id='publish-0123'
           mime-type='text/html'
           profile='http://jabber.org/protocol/si/profile/file-
               transfer'>
      <file xmlns='http://jabber.org/protocol/si/profile/file-transfer
          '
            name='missive.html'
            size='1024'
            date='2005-07-21T11:21Z'/>
    </sipub>
  </x>
```

The form processor will use this to retrieve the file(s) to be uploaded.

3.3 Triggering the Stream Initiation Request

A potential receiver starts the stream initiation session by sending an IQ-get to the sender, using the <start xmlns='http://jabber.org/protocol/sipub'/> element. This element contains the 'id' attribute to specify which published stream to retrieve:

[8] XEP-0122: Data Forms Validation <http://xmpp.org/extensions/xep-0122.html>.

Listing 7: Receiver requests start of stream

```
<iq type='get'
      id='sipub-request-0'
      from='juliet@capulet.com/balcony'
      to='romeo@montague.net/pda'>
    <start xmlns='http://jabber.org/protocol/sipub'
           id='publish-0123'/>
  </iq>
```

If the sender accepts the request, it responds with an IQ-result containing a <starting/> element. This element indicates the stream initiation identifier to be used:

Listing 8: Sender accepts request to start stream

```
<iq type='result'
      id='sipub-request-0'
      from='romeo@montague.net/pda'
      to='juliet@capulet.com/balcony'>
    <starting xmlns='http://jabber.org/protocol/sipub'
              sid='session-87651234'/>
  </iq>
```

Then the sender begins the stream initiation negotiation:

Listing 9: Sender starts negotiation

```
<iq type='set'
      id='sipub-set-1'
      from='romeo@montague.net/pda'
      to='juliet@capulet.com/balcony'>
    <si xmlns='http://jabber.org/protocol/si'
        id='session-87651234'
        mime-type='text/html'
        profile='http://jabber.org/protocol/si/profile/file-transfer'>
      <file xmlns='http://jabber.org/protocol/si/profile/file-transfer
          '
            name='missive.html'
            size='1024'
            date='2005-07-21T11:21Z'>
        <desc>A love letter</desc>
      </file>
    </si>
  </iq>
```

If the requested identifier is not valid, the sender SHOULD respond with a <not-acceptable/> error:

Listing 10: Sender denies because of invalid id

```
<iq type='error'
      id='sipub-set-1'
      from='romeo@montague.net/pda'
      to='juliet@capulet.com/balcony'>
    <start xmlns='http://jabber.org/protocol/sipub'>publish-0123</
        start>
    <error code='405' type='modify'>
      <not-acceptable xmlns='urn:ietf:params:xml:ns:xmpp-stanzas'/>
    </error>
  </iq>
```

If the receiver does not have permission to request the data stream, the sender SHOULD respond with a <forbidden/> error:

Listing 11: Sender denies because receiver is forbidden

```
<iq type='error'
      id='sipub-set-1'
      from='romeo@montague.net/pda'
      to='juliet@capulet.com/balcony'>
    <start xmlns='http://jabber.org/protocol/sipub'>publish-0123</
        start>
    <error code='403' type='auth'>
      <forbidden xmlns='urn:ietf:params:xml:ns:xmpp-stanzas'/>
    </error>
  </iq>
```

4 Implementation Notes

4.1 Publish ID versus SI ID

When publishing a stream via the <sipub/> element, the identifier SHOULD NOT be used as-is for the <si/> element, since a single publication will likely result in multiple <si/> requests, possibly from the same receiver.

5 Security Considerations

This document introduces no security concerns beyond those specified in XEP-0060 and the relevant Stream Initiation profile in use.

6 IANA Considerations

This document requires no interaction with the Internet Assigned Numbers Authority (IANA) [9].

7 XMPP Registrar Considerations

7.1 Protocol Namespaces

The XMPP Registrar [10] includes 'http://jabber.org/protocol/sipub' in its registry of protocol namespaces.

7.2 Data Form Validation Datatypes

The XMPP Registrar includes 'sipub:' in its registry of Data Forms Validation Datatype Prefixes. Normally, each SI profile that wishes to be considered for use with Data Forms MUST register its own datatype qualified by the "sipub:" prefix. However, this document provides an initial seed, based on the currently accepted SI profiles. The following datatypes shall be registered for use with Data Forms Validation:

```
<datatype>
  <name>sipub:file-transfer</name>
  <desc>Datatype for publishing an SI using the File Transfer Profile<
     /desc>
  <doc>XEP-0096</doc>
</datatype>
```

8 XML Schema

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

<xs:schema
    xmlns:xs='http://www.w3.org/2001/XMLSchema'
    targetNamespace='http://jabber.org/protocol/sipub'
    xmlns='http://jabber.org/protocol/sipub'
    elementFormDefault='qualified'>
```

[9] 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/>.

[10] 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 <http://xmpp.org/registrar/>.

```
  <xs:annotation>
    <xs:documentation>
      The protocol documented by this schema is defined in
      XEP-0137: http://www.xmpp.org/extensions/xep-0137.html
    </xs:documentation>
  </xs:annotation>

  <xs:element name='sipub'>
    <xs:annotation>
      <xs:documentation>This is the root content element for
          advertising a stream.</xs:documentation>
    </xs:annotation>
    <xs:complexType>
      <xs:sequence>
        <xs:any namespace='##other' minOccurs='1' maxOccurs='1'/>
      </xs:sequence>
      <xs:attribute name='id' type='xs:string' use='required'/>
      <xs:attribute name='from' type='xs:string' use='optional'/>
      <xs:attribute name='mime-type' type='xs:string' use='optional'/>
      <xs:attribute name='profile' type='xs:string' use='optional'/>
    </xs:complexType>
  </xs:element>

  <xs:element name='start'>
    <xs:annotation>
      <xs:documentation>This is the element for requesting retrieval
          of a stream.</xs:documentation>
    </xs:annotation>
    <xs:complexType>
      <xs:attribute name='id' type='xs:string' use='required'/>
    </xs:complexType>
  </xs:element>

  <xs:element name='starting'>
    <xs:annotation>
      <xs:documentation>This is the element for specifying the stream
          to be retrieved.</xs:documentation>
    </xs:annotation>
    <xs:complexType>
      <xs:attribute name='sid' type='xs:string' use='required'/>
    </xs:complexType>
  </xs:element>

</xs:schema>
```