XEP-0103: URL Address Information

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

2018-11-03
Version 0.4.1

<table>
<thead>
<tr>
<th>Status</th>
<th>Type</th>
<th>Short Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deferred</td>
<td>Standards Track</td>
<td>url-data</td>
</tr>
</tbody>
</table>

This document defines a structure for providing information about an Uniform Resource Locator (URL), and a protocol signaling retrieval states.
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 Requirements 1

3 Use Cases 1
  3.1 "Publishing" URLs .................................................. 1
  3.2 SI Usage ............................................................ 3

4 Implementation Notes 6
  4.1 Schemes ............................................................. 6

5 Formal Description 6
  5.1 <url-data/> Root Element ........................................... 6
  5.2 <desc/> Element ....................................................... 6
  5.3 Error Conditions ...................................................... 6
  5.4 XML Schema ........................................................ 7

6 Security Considerations 8

7 IANA Considerations 8

8 XMPP Registrar Considerations 8
1 Introduction

As Jabber becomes more widely utilized, applications of the protocol are veering away from traditional use as an IM product and are utilizing it for more generic data transportation and negotiation. While many advances are being made to facilitate non-IM data transportation, they do not address the use of already-established mechanisms of transporting data via URLs. This document provides a method that is compatible with these data transportation mechanisms and that is based on standard Internet Uniform Resource Locators (see RFC 3986 \(^1\)).

2 Requirements

The requirements this protocol fulfills are:

- Simple usage that can be easily extended
- Provide any metadata necessary for using the URL
- Compatibility with Stream Initiation (XEP-0095) \(^2\)

3 Use Cases

3.1 "Publishing" URLs

The simplest use of this protocol is to provide just a URL to another entity.

Listing 1: Exchanging a simple HTTP URL

```xml
<message from='d20M@festhall.outer-planes.net'
to='linuxwolf@outer-planes.net'>
<body>ANNOUNCEMENT: Next Session</body>
<url-data
  xmlns='http://jabber.org/protocol/url-data'
  target='http://festhall.outer-planes.net/d20M/announce/latest'/>
</message>
```

If more information is necessary for successfully using the URL, the sender includes meta-information in a scheme-specific format such as that defined in HTTP Scheme for URL Data (XEP-0104) \(^3\):

---

Listing 2: Exchanging a HTTP URL with Headers

```xml
<message from='d20M@festhall.outer-planes.net'
to='linuxwolf@outer-planes.net'>
<body>ANNOUNCEMENT:  Next Session</body>
<url-data
   xmlns='http://jabber.org/protocol/url-data'
   xmlns:http='http://jabber.org/protocol/url-data/scheme/http'
   target='http://festhall.outer-planes.net/d20M/announce/latest/'>
   <http:header name='Cookie'>jsessionid=1324123wdfq341w1243asdf'</http:header>
</url-data>
</message>
```

The above example illustrates supplying a HTTP URL with a cookie header. Additional information could be provided, such as HTTP authentication requirements or even POST data. To support the use of bulk publishing methods such as Publish-Subscribe (XEP-0060) or messages of type "headline", the <desc/> element is used to provide a textual description:

Listing 3: <message/> Headlines

```xml
<message from='d20M@festhall.outer-planes.net'
to='linuxwolf@outer-planes.net'
type='headline'>
<body>Complete list of Session Announcements</body>
<url-data
   xmlns='http://jabber.org/protocol/url-data'
   xmlns:http='http://jabber.org/protocol/url-data/scheme/http'
   target='http://festhall.outer-planes.net/d20M/announce/latest/'>
   <http:header name='Cookie'>jsessionid=1324123wdfq341w1243asdf'</http:header>
</url-data>
<desc>Dept-7_d20M_Campaign</desc>
</message>
```

```
<message from='d20M@festhall.outer-planes.net'
to='linuxwolf@outer-planes.net'
type='headline'>
<body>Complete list of Session Announcements</body>
<url-data
   xmlns='http://jabber.org/protocol/url-data'
   xmlns:http='http://jabber.org/protocol/url-data/scheme/http'
   target='http://festhall.outer-planes.net/add2/announce/latest/'>
   <http:header name='Cookie'>jsessionid=234asa4123wdfq341w1243asdf'</http:header>
</url-data>
<desc>Forgotten Realms, 2nd Edition</desc>
</message>
```

```
<message from='d20M@festhall.outer-planes.net'
to='linuxwolf@outer-planes.net'
type='headline'>
<body>Complete list of Session Announcements</body>
<url-data
   xmlns='http://jabber.org/protocol/url-data'
   xmlns:http='http://jabber.org/protocol/url-data/scheme/http'
   target='http://festhall.outer-planes.net/dd3/announce/latest/'>
   <http:header name='Cookie'>jsessionid=234asa4123wdfq341w1242341f'</http:header>
</url-data>
```

3 USE CASES

---

3.2 SI Usage

To use "url-data" in conjunction with SI, the "sid" attribute of <url-data/> is used. This attribute MUST be equal to the SI session id.

The general process flow for using "url-data" with SI is as follows⁵:

1. The sender makes a SI request, adding "http://jabber.org/protocols/url-data" as one of the "stream-method" features.
2. The receiver accepts the SI request, and selects "http://jabber.org/protocols/url-data".
3. The sender provides an <iq/> with the <url-data/>.
4. The receiver retrieves the data from the provided URL [E1, E2].
5. Once retrieval is complete, the Receiver responds to Sender (EUC).

- **E1**: The given URL is not supported/understood
- **E2**: Failure to connect to the given URL

The sender starts with an SI request, using the semantics from XEP-0095:

```
Listing 4: Requesting SI transfer

<iq type='set' id='offer1' to='receiver@jabber.org/resource'>
<si xmlns='http://jabber.org/protocol/si'
    id='a0'
    mime-type='text/plain'
    profile='http://jabber.org/protocol/si/profile/file-transfer'>
  <file xmlns='http://jabber.org/protocol/si/profile/file-transfer'
        name='test.txt'
        size='1022'/>
  <feature xmlns='http://jabber.org/protocol/feature-neg'>
    <x xmlns='jabber:x:data' type='form'>
      <field var='stream-method' type='list-single'>
        <option><value>http://jabber.org/protocols/url-data</value></option>
        <option><value>http://jabber.org/protocols/bytestreams</value></option>
        <option><value>http://jabber.org/protocols/ibb</value></option>
    </field>
  </feature>
</si>
</iq>
```

⁵The error conditions for SI are fully-documented in that document, and are therefore not included here.
The receiver then accepts the request, specifying "url-data" as the stream method:

```xml
<iq type='result' to='sender@jabber.org/resource' id='offer1'>
  <si xmlns='http://jabber.org/protocol/si'>
    <feature xmlns='http://jabber.org/protocol/feature-neg'>
      <x xmlns='jabber:x:data' type='submit'>
        <field var='stream-method'>
          <value>http://jabber.org/protocol/url-data</value>
        </field>
      </x>
    </feature>
  </si>
</iq>
```

The sender then sends an <iq/> with type "set" to the receiver, providing the <url-data/> element with the URL in the "target" attribute:

```xml
<iq type='set' from='sender@jabber.org/resource' to='receiver@jabber.org/resource' id='offer2'>
  <url-data xmlns='http://jabber.org/protocol/url-data'
    sid='a0'
    target='http://pass.jabber.org:8519/test.txt'/>
</iq>
```

The receiver attempts to retrieve the data from the given URL. The receiver MUST NOT respond to the <iq/> until the data is completely retrieved, or an error occurs. If the retrieval is successful, the receiver responds with an "iq-result":

```xml
<iq type='result' from='receiver@jabber.org/resource' to='sender@jabber.org/resource' id='offer2'>
  <url-data xmlns='http://jabber.org/protocol/url-data'
    sid='a0'
    target='http://pass.jabber.org:8519/test.txt'/>
</iq>
```

Including the <url-data/> element in the result is NOT REQUIRED. If the receiver does not understand or support the URL, it responds with an "iq-error" with the <malformed-url/> condition:
Listing 7: Receiver does not understand/support URL

```
<iq type='error' from='receiver@jabber.org/resource' to='sender@jabber.org/resource' id='offer2'>
  <url-data xmlns='http://jabber.org/protocol/url-data' id='a0'>
    <target>http://pass.jabber.org:8519/thefile.txt</target>
  </url-data>
  <error type='cancel' code='400'>Malformed URL</error>
  <bad-request xmlns='urn:ietf:params:xml:ns:xmpp-stanzas'/>
  <malformed-url xmlns='http://jabber.org/protocol/url-data'/>
</iq>
```

If the receiver fails to retrieve data from the URL, it responds with an "iq-error" with the `<transfer-failed/>` condition:

Listing 8: Receiver does not understand/support URL

```
<iq type='error' from='receiver@jabber.org/resource' to='sender@jabber.org/resource' id='offer2'>
  <url-data xmlns='http://jabber.org/protocol/url-data' id='a0'>
    <target>http://pass.jabber.org:8519/thefile.txt</target>
  </url-data>
  <error type='cancel' code='500'>transfer failed</error>
  <transfer-failed xmlns='http://jabber.org/protocol/url-data'/>
</iq>
```

If the receiver refuses to accept the URL, it responds with an "iq-error" with the `<transfer-refused/>` condition:

Listing 9: Receiver does not understand/support URL

```
<iq type='error' from='receiver@jabber.org/resource' to='sender@jabber.org/resource' id='offer2'>
  <url-data xmlns='http://jabber.org/protocol/url-data' id='a0'>
    <target>http://pass.jabber.org:8519/thefile.txt</target>
  </url-data>
  <error type='cancel' code='500'>transfer failed</error>
  <transfer-refused xmlns='http://jabber.org/protocol/url-data'/>
</iq>
```
4 Implementation Notes

4.1 Schemes

The additional information provided by a particular scheme is OPTIONAL. The additional data is provided as XML in a dedicated namespace, and this namespace SHOULD be declared (with an appropriate prefix) within the `<url-data/>` element. Entities receiving a `<url-data/>` element MAY incorporate this information into the use of the URL as necessary. An entity providing a `<url-data/>` with scheme-specific information SHOULD NOT assume the receiving entity understands it, even if the receiving entity is capable of processing a URL for that scheme.

5 Formal Description

5.1 `<url-data/>` Root Element

The `<url-data/>` element provides the root structure for providing URL addresses. The element has attribute for the target URL and (optional) stream identifier. It contains content for the optional description, and any and all scheme-specific content. The attribute "target" contains the URL. This attribute MUST be present, and MUST be a valid URL. The attribute "sid" contains the stream identifier. While this attribute is optional, its usage is REQUIRED when used with Stream Initiation, and MUST contain the Stream Initiation identifier previously agreed to.

5.2 `<desc/>` Element

In cases where textual descriptions cannot be provided, this element fulfills this need. It MAY include the "xml:lang" attribute for localization purposes, and its content is the text of the description. Multiple instances of `<desc/>` MAY be present, but each instance MUST have a different value for "xml:lang" attribute.

5.3 Error Conditions

To simplify the discussion on error conditions, this document uses the following mapping between namespace URIs and namespace prefixes.\(^6\)

---

\(^6\)This mapping is for the purpose of simplifying this discussion, and is not intended to be used in the actual protocol.
Prefix URI
xmpp urn:ietf:params:xml:ns:xmpp-stanzas
url http://jabber.org/protocol/url-data

Below are the errors that can result.

<table>
<thead>
<tr>
<th>Error Type</th>
<th>General Condition</th>
<th>Specific Condition</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>modify</td>
<td><a href="xmpp:bad-request/">xmpp:bad-request/</a></td>
<td><a href="">url:malformed-url/</a></td>
<td>The URL is not supported or understood.</td>
</tr>
<tr>
<td>cancel</td>
<td><a href="xmpp:not-acceptable/">xmpp:not-acceptable/</a></td>
<td><a href="">url:transfer-refused/</a></td>
<td>The URL transfer failed for some unspecified reason.</td>
</tr>
</tbody>
</table>

5.4 XML Schema

```xml
<?xml version='1.0' encoding='UTF-8'?>
<xs:schema
    xmlns:xs='http://www.w3.org/2001/XMLSchema'
    targetNamespace='http://jabber.org/protocol/url-data'
    xmlns='http://jabber.org/protocol/url-data'
    elementFormDefault='qualified'>
<xs:import
    namespace='http://www.w3.org/XML/1998/namespace'
    schemaLocation='http://www.w3.org/2001/xml.xsd'/>
<xs:element
    name='url-data'>
    <xs:complexType>
        <xs:sequence>
            <xs:any
                namespace='##other'
                minOccurs='0'
                maxOccurs='unbounded'/>
            <xs:element
                ref='desc'
                minOccurs='0'
                maxOccurs='unbounded'/>
        </xs:sequence>
        <xs:attribute
            name='target'
            type='xs:anyURI'
            use='required'/>
        <xs:attribute
            name='sid'
            type='xs:string'
            use='optional'/>
    </xs:complexType>
</xs:element>
<xs:element
    name='desc'
    type='xs:string'>
```
6 Security Considerations

This document does not yet have any security considerations.

7 IANA Considerations

This document requires no interaction with the Internet Assigned Numbers Authority (IANA)\(^7\).

8 XMPP Registrar Considerations

The XMPP Registrar\(^8\) shall register the namespace “http://jabber.org/protocol/url-data” as a standard namespace. Also, the XMPP Registrar shall register the Feature Negotiation (XEP-0020)\(^9\) option “url-data” for use with Stream Initiation.

\(^7\)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>.

\(^8\)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/>.