



XMPP

XEP-0363: HTTP File Upload

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This specification defines a protocol to request permissions from another entity to upload a file to a specific path on an HTTP server and at the same time receive a URL from which that file can later be downloaded again.

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1 Introduction

XMPP protocol extensions already define methods for peer-to-peer file transfer such as [SI File Transfer \(XEP-0096\)](#)¹ or [Jingle File Transfer \(XEP-0234\)](#)² however due to their very nature of being peer-to-peer they don't work very well in scenarios where it is required to send a file to multiple recipients or multiple resources of the same recipient at once. They also don't work alongside offline storage, MUC history and [Message Archive Management \(XEP-0313\)](#)³. Uploading files manually to an HTTP server and sharing the link has been a workaround for this for a long time now. While users have a variety of services to choose from the downside of this manual approach is that an XMPP client can not automate this process on behalf of the user since these services don't share a common API. Furthermore using a third party service would probably require the user to enter additional credentials into their XMPP client specifically for the file upload.

This XEP defines an approach to request permissions from another entity to upload a file to a specific path on an HTTP server and at the same time receive an URL from which that file can later be downloaded again. These tuples consisting of a PUT and a GET-URL are called slots.

2 Requirements

- Be as easy to implement as possible. This is grounded on the idea that most programming languages already have HTTP libraries available.
- Be agnostic toward the distribution of the actual URL. Users can choose to send the URL in the body of a message stanza, utilize [Out-of-Band Data \(XEP-0066\)](#)⁴, [Jingle HTTP Transport Method \(XEP-0370\)](#)⁵, or even use it as their avatar in [User Avatar \(XEP-0084\)](#)⁶
- Do not provide any kind of access control or security for file retrieval beyond Transport Layer Security in form of HTTPS and long random paths that are impossible to guess. That means everyone who knows the URL SHOULD be able to access it.

3 Discovering Support

An entity advertises support for this protocol by including the "urn:xmpp:http:upload:0" in its service discovery information features as specified in [Service Discovery \(XEP-0030\)](#)⁷ or section 6.3 of [Entity Capabilities \(XEP-0115\)](#)⁸. To avoid unnecessary round trips an entity

¹XEP-0096: SI File Transfer <<https://xmpp.org/extensions/xep-0096.html>>.

²XEP-0234: Jingle File Transfer <<https://xmpp.org/extensions/xep-0234.html>>.

³XEP-0313: Message Archive Management <<https://xmpp.org/extensions/xep-0313.html>>.

⁴XEP-0066: Out of Band Data <<https://xmpp.org/extensions/xep-0066.html>>.

⁵XEP-0370: Jingle HTTP Transport Method <<https://xmpp.org/extensions/xep-0370.html>>.

⁶XEP-0084: User Avatar <<https://xmpp.org/extensions/xep-0084.html>>.

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

⁸XEP-0115: Entity Capabilities <<https://xmpp.org/extensions/xep-0115.html>>.

SHOULD also include the maximum file size as specified in [Service Discovery Extensions \(XEP-0128\)](#)⁹ if such a limitation exists. The field name MUST be "max-file-size" and the value MUST be in bytes.

A user's server SHOULD include any known entities that provide such services into its service discovery items.

Listing 1: Client sends service discovery request to server

```
<iq from='romeo@montague.tld/garden'
  id='step_01'
  to='montague.tld'
  type='get'>
  <query xmlns='http://jabber.org/protocol/disco#items' />
</iq>
```

Listing 2: Server replies to service discovery request

```
<iq from='montague.tld'
  id='step_01'
  to='romeo@montague.tld/garden'
  type='result'>
  <query xmlns='http://jabber.org/protocol/disco#items'>
    <item jid='upload.montague.tld' name='HTTP_File_Upload' />
    <item jid='conference.montague.tld' name='Chatroom_Service' />
  </query>
</iq>
```

Listing 3: Client sends service discovery request to upload service

```
<iq from='romeo@montague.tld/garden'
  id='step_02'
  to='upload.montague.tld'
  type='get'>
  <query xmlns='http://jabber.org/protocol/disco#info' />
</iq>
```

Listing 4: Upload service replies to service discovery request and reports a maximum file size of 5MiB

```
<iq from='upload.montague.tld'
  id='step_02'
  to='romeo@montague.tld/garden'
  type='result'>
  <query xmlns='http://jabber.org/protocol/disco#info'>
    <identity category='store'
      type='file'
      name='HTTP_File_Upload' />
  </query>
</iq>
```

⁹XEP-0128: Service Discovery Extensions <<https://xmpp.org/extensions/xep-0128.html>>.

```

<feature var='urn:xmpp:http:upload:0' />
<x type='result' xmlns='jabber:x:data'>
  <field var='FORM_TYPE' type='hidden'>
    <value>urn:xmpp:http:upload:0</value>
  </field>
  <field var='max-file-size'>
    <value>5242880</value>
  </field>
</x>
</query>
</iq>

```

4 Requesting a slot

A client requests a new upload slot by sending an IQ-get to the upload service containing a <request> child element qualified by the urn:xmpp:http:upload:0 namespace. This element MUST include the attributes filename and size containing the file name and size respectively. An additional attribute content-type containing the Content-Type is OPTIONAL.

Listing 5: Client requests a slot on the upload service

```

<iq from='romeo@montague.tld/garden'
  id='step_03'
  to='upload.montague.tld'
  type='get'>
  <request xmlns='urn:xmpp:http:upload:0'
    filename='my-juliet.jpg'
    size='23456'
    content-type='image/jpeg' />
</iq>

```

The upload service responds with both a PUT and a GET URL wrapped by a <slot> element. The service SHOULD keep the file name and especially the file ending intact. Using the same hostname for PUT and GET is OPTIONAL. The host MUST provide Transport Layer Security (RFC 5246¹⁰).

The <put> element MAY also contain an unlimited number of <header> elements which correspond to HTTP header fields. Each <header> element MUST have a name-attribute and a content with the value of the header.

Listing 6: The upload service responds with a slot

```

<iq from='upload.montague.tld'
  id='step_03'
  to='romeo@montague.tld/garden'

```

¹⁰RFC 5246: The Transport Layer Security (TLS) Protocol Version 1.2 <<http://tools.ietf.org/html/rfc5246>>.

```

    type='result'>
<slot xmlns='urn:xmpp:http:upload:0'>
  <put url='https://upload.montague.tld/4a771ac1-f0b2-4a4a-9700-
    f2a26fa2bb67/my-juliet.jpg'>
    <header name='Authorization'>Basic Base64String==</header>
    <header name='Host'>montague.tld</header>
  </put>
  <get url='https://download.montague.tld/4a771ac1-f0b2-4a4a-9700-
    f2a26fa2bb67/my-juliet.jpg' />
</slot>
</iq>

```

5 Error conditions

Instead of providing the client with a slot the service MAY respond with an error if the requested file size is too large.

Listing 7: Alternative response by the upload service if the file size was too large

```

<iq from='upload.montague.tld'
  id='step_03'
  to='romeo@montague.tld/garden'
  type='error'>
<request xmlns='urn:xmpp:http:upload:0'
  filename='my-juliet.jpg'
  size='23456'
  content-type='image/jpeg' />
<error type='modify'>
  <not-acceptable xmlns='urn:ietf:params:xml:ns:xmpp-stanzas' />
  <text xmlns='urn:ietf:params:xml:ns:xmpp-stanzas'>File too large.
    The maximum file size is 20000 bytes</text>
  <file-too-large xmlns='urn:xmpp:http:upload:0'>
    <max-file-size>20000</max-file-size>
  </file-too-large>
</error>
</iq>

```

For any other type of error the service SHOULD respond with appropriate error types to indicate temporary or permanent errors.

Listing 8: Alternative response by the upload service to indicate a temporary error after the client exceeded a quota

```

<iq from='upload.montague.tld'
  id='step_03'
  to='romeo@montague.tld/garden'
  type='error'>

```

```

<request xmlns='urn:xmpp:http:upload:0'
  filename='my-juliet.jpg'
  size='23456'
  content-type='image/jpeg' />
<error type='wait'>
  <resource-constraint xmlns='urn:ietf:params:xml:ns:xmpp-stanzas' />
  <text xmlns='urn:ietf:params:xml:ns:xmpp-stanzas'>Quota reached.
    You can only upload 5 files in 5 minutes</text>
</error>
</iq>

```

Listing 9: Alternative response by the upload service to indicate a permanent error to a client that is not allowed to upload files

```

<iq from='upload.montague.tld'
  id='step_03'
  to='romeo@montague.tld/garden'
  type='error'>
  <request xmlns='urn:xmpp:http:upload:0'
    filename='my-juliet.jpg'
    size='23456'
    content-type='image/jpeg' />
  <error type='cancel'>
    <not-allowed xmlns='urn:ietf:params:xml:ns:xmpp-stanzas' />
    <text xmlns='urn:ietf:params:xml:ns:xmpp-stanzas'>Only premium
      members are allowed to upload files</text>
  </error>
</iq>

```

6 Upload

The actual upload of the file happens via HTTP-PUT and is out of scope of this document. The upload service **MUST** reject the file upload if the Content-Length does not match the size of the slot request. The service **SHOULD** reject the file if the Content-Type has been specified beforehand and does not match. The service **MAY** assume application/octet-stream as a Content-Type if it the client did not specify a Content-Type at all.

In addition to the Content-Length and Content-Type header the client **MUST** also include all additional headers that came with the slot assignment.

There is no further XMPP communication required between the upload service and the client. A HTTP status Code of 201 means that the server is now ready to serve the file via the provided GET URL. If the upload fails for whatever reasons the client **MAY** request a new slot.

7 Implementation Notes

The upload service SHOULD choose an appropriate timeout for the validity of the PUT URL. Since there is no reason for a client to wait between requesting the slot and starting the upload, relatively low timeout values of around 60s are RECOMMENDED.

It is RECOMMENDED that the service stores the files for as long as possible which is of course limited by storage capacity. A service MAY choose to store the latest x MiB of a given user.

8 Security Considerations

- Client implementors MUST consider the fact that without additional end-to-end-encryption files uploaded to a service described in this document will store those files in plain text on that service. Client implementors SHOULD either use this only for semi public files (for example files shared in a public MUC or a PEP Avatar) or implement appropriate end-to-end encryption.
- Service implementors SHOULD use long randomized parts in their URLs making it impossible to guess the location of arbitrary files
- Server operators SHOULD consider the responsibility that comes with storing user data and MAY consider appropriate measures such as full disk encryption.

9 IANA Considerations

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

10 XMPP Registrar Considerations

10.1 Protocol Namespaces

This specification defines the following XML namespace:

- urn:xmpp:http:upload:0

Upon advancement of this specification from a status of Experimental to a status of Draft, the [XMPP Registrar](https://xmpp.org/registrar/) ¹¹ shall add the foregoing namespace to the registry located at <https://xmpp.org/registrar/namespaces.html>, as described in Section 4 of [XMPP Registrar Function \(XEP-0053\)](https://xmpp.org/extensions/xep-0053.html) ¹².

¹¹The 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/>.

¹²XEP-0053: XMPP Registrar Function <https://xmpp.org/extensions/xep-0053.html>.

11 XML Schema

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