



XMPP

XEP-0447: Stateless file sharing

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Experimental	Standards Track	sfs

This specification describes a protocol for stateless asynchronous file sharing with integrity and transport flexibility. It allows clients to provide a good interoperable user experience in combination with Carbons and MAM.

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1 Introduction

This is a reiteration on [Stateless Inline Media Sharing \(XEP-0385\)](#)¹ with some significant changes:

- No focus on media, generic for every file type.
- Body can be used for fallback.
- Using [File metadata element \(XEP-0446\)](#)².
- Using XML for structured data instead of URIs when possible, adding further extensibility (like providing proper means of sharing encrypted files on http servers).
- Not relying on underspecified usage of [References \(XEP-0372\)](#)³.

2 Requirements

- Do not require any server components for easier deployment
- Should work and enable a good UX in multi-user chats like [Multi-User Chat \(XEP-0045\)](#)⁴ and [Mediated Information eXchange \(MIX\) \(XEP-0369\)](#)⁵
- Should work great together with conversation synchronization protocols like [Message Carbons \(XEP-0280\)](#)⁶ and [Message Archive Management \(XEP-0313\)](#)⁷
- Reuse existing protocols for the actual transport of the data, i.e. [Jingle File Transfer \(XEP-0234\)](#)⁸ or [HTTP File Upload \(XEP-0363\)](#)⁹
- Guarantee file integrity
- Enable aggressive caching
- Provide users with metadata, e.g. file size, file type or thumbnail, to help them decide whether or not they want to load the file
- Support referring to third party hosting services
- Backwards compatibility with existing protocols

¹XEP-0385: Stateless Inline Media Sharing (SIMS) <<https://xmpp.org/extensions/xep-0385.html>>.

²XEP-0446: File metadata element <<https://xmpp.org/extensions/xep-0446.html>>.

³XEP-0372: References <<https://xmpp.org/extensions/xep-0372.html>>.

⁴XEP-0045: Multi-User Chat <<https://xmpp.org/extensions/xep-0045.html>>.

⁵XEP-0369: Mediated Information eXchange (MIX) <<https://xmpp.org/extensions/xep-0369.html>>.

⁶XEP-0280: Message Carbons <<https://xmpp.org/extensions/xep-0280.html>>.

⁷XEP-0313: Message Archive Management <<https://xmpp.org/extensions/xep-0313.html>>.

⁸XEP-0234: Jingle File Transfer <<https://xmpp.org/extensions/xep-0234.html>>.

⁹XEP-0363: HTTP File Upload <<https://xmpp.org/extensions/xep-0363.html>>.

3 Basic use cases

3.1 Sharing a file

To share a file, a user sends a message stanza including `<file-sharing/>` to the intended recipient contact or group. The `<file-sharing/>` element MAY have a disposition attribute with a value of either attachment or inline and MAY have an id attribute. The `<file-sharing/>` element includes a `<file/>` metadata element as described in [File metadata element \(XEP-0446\)](#)¹⁰ and MAY include a `<sources/>` element. The `<sources/>` element provides one or multiple sources that the receiving client may use to obtain the file.

Listing 1: Sharing summit.jpg with juliet@shakespeare.lit

```
<message to='juliet@shakespeare.lit' from='romeo@montague.lit/resource
  ' id='sharing-a-file'>
  <file-sharing xmlns='urn:xmpp:sfs:0' disposition='inline'>
    <file xmlns='urn:xmpp:file:metadata:0'>
      <media-type>image/jpeg</media-type>
      <name>summit.jpg</name>
      <size>3032449</size>
      <width>4096</width>
      <height>2160</height>
      <hash xmlns='urn:xmpp:hashes:2' algo='sha3-256'>2
        XarmwTlNxDAMkvymloX3S5+VbylNrJt/l5QyPa+YoU=</hash>
      <hash xmlns='urn:xmpp:hashes:2' algo='id-blake2b256'>2
        AfMGH807UNPTvUVAM9aK13mpCY=</hash>
      <desc>Photo from the summit.</desc>
      <thumbnail xmlns='urn:xmpp:thumbs:1' uri='cid:sha1+
        ffd7c8d28e9c5e82afea41f97108c6b4@bob.xmpp.org' media-type='
        image/png' width='128' height='96' />
    </file>
    <sources>
      <url-data xmlns='http://jabber.org/protocol/url-data' target='
        https://download.montague.lit/4a771ac1-f0b2-4a4a-9700-
        f2a26fa2bb67/summit.jpg' />
      <jinglepub xmlns='urn:xmpp:jinglepub:1' from='romeo@montague.lit
        /resource' id='9559976B-3FBF-4E7E-B457-2DAA225972BB'>
        <description xmlns='urn:xmpp:jingle:apps:file-transfer:5' />
      </jinglepub>
    </sources>
  </file-sharing>
</message>
```

It is RECOMMENDED that the file metadata specifies name, media-type, size and one or multiple hash elements as described in [Use of Cryptographic Hash Functions in XMPP \(XEP-0300\)](#)¹¹. The hash elements provide end-to-end file integrity and allow efficient caching and flexible

¹⁰XEP-0446: File metadata element <<https://xmpp.org/extensions/xep-0446.html>>.

¹¹XEP-0300: Use of Cryptographic Hash Functions in XMPP <<https://xmpp.org/extensions/xep-0300.html>>.

retrieval methods.

The message MAY include a suitable fallback body. When doing so, an appropriate [Fallback Indication \(XEP-0428\)](#)¹² <fallback/> indicator with for set to urn:xmpp:sfs:0 MUST be added. The fallback body MUST NOT include any information that is not also represented in <file-sharing/>. If the <sources/> element includes an <url-data/> element that can be represented as a single URL, adding a [Out-of-Band Data \(XEP-0066\)](#)¹³ x-oob reference is RECOMMENDED for compatibility.

Listing 2: Sharing summit.jpg with juliet@shakespeare.lit with fallback

```
<message to='juliet@shakespeare.lit' from='romeo@montague.lit/resource
  id='sharing-a-file'>
  <file-sharing xmlns='urn:xmpp:sfs:0' disposition='inline'>
    <!--{}- ... -{}-->
  </file-sharing>
  <fallback xmlns='urn:xmpp:fallback:0' for='urn:xmpp:sfs:0'><body/></
    fallback>
  <body>https://download.montague.lit/4a771ac1-f0b2-4a4a-9700-
    f2a26fa2bb67/summit.jpg</body>
  <x xmlns='jabber:x:oob'><url>https://download.montague.lit/4a771ac1-
    f0b2-4a4a-9700-f2a26fa2bb67/summit.jpg</url></x>
</message>
```

If the message has an empty body, it is RECOMMENDED to add a message processing hint, see [Message Processing Hints \(XEP-0334\)](#)¹⁴, to indicate the message to be stored in message stores like [Message Archive Management \(XEP-0313\)](#)¹⁵.

Listing 3: Sharing summit.jpg with juliet@shakespeare.lit without fallback

```
<message to='juliet@shakespeare.lit' from='romeo@montague.lit/resource
  id='sharing-a-file'>
  <file-sharing xmlns='urn:xmpp:sfs:0' disposition='inline'>
    <!--{}- ... -{}-->
  </file-sharing>
  <store xmlns='urn:xmpp:hints' />
</message>
```

3.2 Receiving a file

On receive of a message including a <file-sharing/> element, the receiving entity SHOULD lookup in a local storage, whether the file with any of the provided hashes has already been retrieved and is available. In that case no transfer needs to be initiated and the cached file can

¹²XEP-0428: Fallback Indication <<https://xmpp.org/extensions/xep-0428.html>>.

¹³XEP-0066: Out of Band Data <<https://xmpp.org/extensions/xep-0066.html>>.

¹⁴XEP-0334: Message Processing Hints <<https://xmpp.org/extensions/xep-0334.html>>.

¹⁵XEP-0313: Message Archive Management <<https://xmpp.org/extensions/xep-0313.html>>.

be used instead.

If the file is not available locally, the file can be obtained by one of the sources listed in the <sources/> element. If further sources have been attached (as described in [Attaching a source](#)), the receiving entity may also try to obtain the file from any of those. If no <sources/> element is included with the message containing the <file-sharing/> element, the receiving entity SHOULD consider the file transfer pending and expect an attached source later.

The receiving entity SHOULD NOT fetch the file without prior user interaction if the disposition attribute is set to attachment. The receiving entity MAY fetch the file without prior user interaction otherwise, but when doing so, user's privacy, security (see [Security Considerations](#)) and network constraints should be considered.

When the source is an <url-data/> element as described in [URL Address Information \(XEP-0103\)](#)¹⁶, the receiving entity MAY obtain the file by downloading it from the specified URL. If the URL uses HTTP or HTTPS and additional HTTP request information as specified in [HTTP Scheme for URL Data \(XEP-0104\)](#)¹⁷ is provided, the receiving entity SHOULD use such information when obtaining the file. When sending and receiving files using <url-data/>, it is RECOMMENDED to prefer secure protocols (e.g. HTTPS, FTPS). Please read [security considerations](#) when implementing support for insecure URLs.

When the source is a <jingle-pub/> element as described in [Publishing Available Jingle Sessions \(XEP-0358\)](#)¹⁸, the receiving entity MAY obtain the file using the protocol described in [Publishing Available Jingle Sessions \(XEP-0358\)](#)¹⁹. If a <hash/> is provided, the receiving entity MAY obtain the file by requesting it as described in [Jingle File Transfer \(XEP-0234\)](#)²⁰.

If sources of any other type are provided, clients MAY attempt to obtain the files from such sources. The details of obtaining such file are out of scope of this document.

The intended method to provide or display a file to the user depends on the disposition attribute, <media-type/> and file type support of the receiving entity:

- If the disposition attribute is set to attachment, no <media-type/> is provided or the <media-type/> indicates that the file can not be displayed inline, i.e. when the media type is application/octet-stream, the receiving entity SHOULD NOT display the file inline and instead offer to download it or save it on the user's file system.
- If the disposition attribute is set to inline, the receiving entity SHOULD attempt to display the file inline. When displaying the file inline fails, the receiving entity SHOULD indicate to the user that the file was meant to be displayed inline but that the file type was not supported for inline display and offer to open the file using an external viewer or to download the file or save it to the user's file system instead.
- If no disposition attribute is set and the <media-type/> of the shared file indicates that it can be displayed inline, the receiving entity MAY display the file inline. When displaying

¹⁶XEP-0103: URL Address Information <<https://xmpp.org/extensions/xep-0103.html>>.

¹⁷XEP-0104: HTTP Scheme for URL Data <<https://xmpp.org/extensions/xep-0104.html>>.

¹⁸XEP-0358: Publishing Available Jingle Sessions <<https://xmpp.org/extensions/xep-0358.html>>.

¹⁹XEP-0358: Publishing Available Jingle Sessions <<https://xmpp.org/extensions/xep-0358.html>>.

²⁰XEP-0234: Jingle File Transfer <<https://xmpp.org/extensions/xep-0234.html>>.

the file inline fails, the receiving entity SHOULD NOT display any error and instead offer to open the file using an external viewer or to download the file or save it to the user's file system.

3.3 Attaching a source

TODO: The following section relies on [Message Attaching \(XEP-0367\)](#)²¹, however other methods to attach information to another message like the recently proposed [Message Fastening \(XEP-0422\)](#)²² might be suitable here as well. This is to be clarified before advancing to Draft. After a user shared a file using one entity and another entity in the conversation obtained it, found it in its local storage or knows a remote location that provides the same file, that entity MAY announce that the file is now available with an additional source. This increases availability of the file in case the sender goes offline before all the intended recipients were able to fetch the file. It also allows for peer-to-peer file distribution in group chats.

The entity MUST NOT announce itself as an additional source before verifying that *all* hashes provided match the hash of the file. If no hashes are provided, the entity SHOULD NOT announce itself as an additional source.

The attaching itself is performed by sending a message including a <sources> element with further sources using the protocol described in [Message Attaching \(XEP-0367\)](#)²³. If the <file-sharing/> element to attach to had an id attribute, the <sources> element MUST also have an id attribute with the same value.

Depending on the lifetime of the newly attached source, it may be useful to add a message processing hint, see [Message Processing Hints \(XEP-0334\)](#)²⁴, to indicate the message to be stored in message stores like [Message Archive Management \(XEP-0313\)](#)²⁵.

Listing 4: romeo@montague.lit/resource2 attaches itself as an additional source for the file

```
<message to='juliet@shakespeare.lit' from='romeo@montague.lit/
  resource2'>
  <attach-to id='sharing-a-file' xmlns='urn:xmpp:message-attaching:1' />
  <sources xmlns='urn:xmpp:sfs:0'>
    <jinglepub xmlns='urn:xmpp:jinglepub:1' from='romeo@montague.lit/
      resource2' id='9559976B-3FBF-4E7E-B457-2DAA225972BB'>
      <description xmlns='urn:xmpp:jingle:apps:file-transfer:5' />
    </jinglepub>
  </sources>
  <store xmlns='urn:xmpp:hints' />
</message>
```

²¹XEP-0367: Message Attaching <<https://xmpp.org/extensions/xep-0367.html>>.

²²XEP-0422: Message Fastening <<https://xmpp.org/extensions/xep-0422.html>>.

²³XEP-0367: Message Attaching <<https://xmpp.org/extensions/xep-0367.html>>.

²⁴XEP-0334: Message Processing Hints <<https://xmpp.org/extensions/xep-0334.html>>.

²⁵XEP-0313: Message Archive Management <<https://xmpp.org/extensions/xep-0313.html>>.

If the file was originally shared without a <sources/> element, the sending entity SHOULD attach a file source at a later point. For example, the sending entity may send a message with a <file-sharing/> element without a <sources/> element, when it starts uploading a file to the server (using [HTTP File Upload \(XEP-0363\)](https://xmpp.org/extensions/xep-0363.html)²⁶) and then attach the http source as soon as the upload is finished.

If the file was originally shared without a suitable fallback body, e.g. because the file was not yet uploaded at the time, the source attaching message MAY include a suitable fallback body. When doing so, an appropriate [Fallback Indication \(XEP-0428\)](https://xmpp.org/extensions/xep-0428.html)²⁷ <fallback/> indicator with for set to urn:xmpp:sfs:0 MUST be added. The fallback body MUST NOT include any information that is not also represented in <sources/>. If the <sources/> element includes an <url-data/> element that can be represented as a single URL, adding a [Out-of-Band Data \(XEP-0066\)](https://xmpp.org/extensions/xep-0066.html)²⁸ x-oob reference is RECOMMENDED for compatibility.

Listing 5: Sharing a file and attaching the primary source for the file later, including a fallback body.

```
<message to='juliet@shakespeare.lit' from='romeo@montague.lit/resource
  ' id='sharing-a-file'>
  <file-sharing xmlns='urn:xmpp:sfs:0' disposition='inline' id='file-
    sharing-id'>
    <file xmlns='urn:xmpp:file:metadata:0'>
      <media-type>image/jpeg</media-type>
      <name>summit.jpg</name>
      <size>3032449</size>
      <width>4096</width>
      <height>2160</height>
      <hash xmlns='urn:xmpp:hashes:2' algo='sha3-256'>2
        XarmwTlNxDAMkvymloX3S5+VbylNrJt/15QyPa+YoU=</hash>
      <hash xmlns='urn:xmpp:hashes:2' algo='id-blake2b256'>2
        AfMGH807UNPTvUVAM9aK13mpCY=</hash>
      <desc>Photo from the summit.</desc>
      <thumbnail xmlns='urn:xmpp:thumbs:1' uri='cid:sha1+
        ffd7c8d28e9c5e82afea41f97108c6b4@bob.xmpp.org' media-type='
        image/png' width='128' height='96'/>
    </file>
  </file-sharing>
</message>

<message to='juliet@shakespeare.lit' from='romeo@montague.lit/resource
  '>
  <attach-to id='sharing-a-file' xmlns='urn:xmpp:message-attaching:1' /
    >
  <sources xmlns='urn:xmpp:sfs:0' id='file-sharing-id'>
    <url-data xmlns='http://jabber.org/protocol/url-data' target='
      https://download.montague.lit/4a771ac1-f0b2-4a4a-9700-
```

²⁶XEP-0363: HTTP File Upload <<https://xmpp.org/extensions/xep-0363.html>>.

²⁷XEP-0428: Fallback Indication <<https://xmpp.org/extensions/xep-0428.html>>.

²⁸XEP-0066: Out of Band Data <<https://xmpp.org/extensions/xep-0066.html>>.

```

        f2a26fa2bb67/summit.jpg' />
</sources>
<fallback xmlns='urn:xmpp:fallback:0' for='urn:xmpp:sfs:0'><body/></
  fallback>
<body>https://download.montague.lit/4a771ac1-f0b2-4a4a-9700-
  f2a26fa2bb67/summit.jpg</body>
<x xmlns='jabber:x:oob'><url>https://download.montague.lit/4a771ac1-
  f0b2-4a4a-9700-f2a26fa2bb67/summit.jpg</url></x>
</message>

```

4 Advanced use cases

4.1 Sharing a file with additional body

When sharing files, the sending entity MAY want to include an additional textual message with the file share. To do so, the sending entity SHOULD add such textual message in the body of the message that contains the <file-sharing/> element.

If a <file-sharing/> message includes a textual body, it MAY also include a fallback in that body, that MUST be annotated using an appropriate [Fallback Indication \(XEP-0428\)](#)²⁹ <fallback/> indicator with for set to urn:xmpp:sfs:0. However, in this case it is RECOMMENDED to use a source attaching message with a fallback body. This allows to send messages in a way that is still understood well by legacy clients.

Listing 6: Sharing a file with additional body and attaching a source with fallback

```

<message to='juliet@shakespeare.lit' from='romeo@montague.lit/resource
  ' id='sharing-a-file'>
  <body>Summit was great, check out this cool photo of everyone.</body
  >
  <file-sharing xmlns='urn:xmpp:sfs:0' disposition='inline'>
    <file xmlns='urn:xmpp:file:metadata:0'>
      <media-type>image/jpeg</media-type>
      <name>summit.jpg</name>
      <size>3032449</size>
      <width>4096</width>
      <height>2160</height>
      <hash xmlns='urn:xmpp:hashes:2' algo='sha3-256'>2
        XarmwTlNxDAMkvymloX3S5+VbylNrJt/15QyPa+YoU=</hash>
      <hash xmlns='urn:xmpp:hashes:2' algo='id-blake2b256'>2
        AfMGH807UNPTvUVAM9aK13mpCY=</hash>
      <desc>Photo from the summit.</desc>
      <thumbnail xmlns='urn:xmpp:thumbs:1' uri='cid:sha1+
        ffd7c8d28e9c5e82afea41f97108c6b4@bob.xmpp.org' media-type='
        image/png' width='128' height='96' />
    </file>
  </file-sharing>

```

²⁹XEP-0428: Fallback Indication <<https://xmpp.org/extensions/xep-0428.html>>.

```

    </file-sharing>
</message>

<message to='juliet@shakespeare.lit' from='romeo@montague.lit/resource
  ' id='adding-the-source'>
  <attach-to id='sharing-a-file' xmlns='urn:xmpp:message-attaching:1' />
  <sources xmlns='urn:xmpp:sfs:0'>
    <url-data xmlns='http://jabber.org/protocol/url-data' target='
      https://download.montague.lit/4a771ac1-f0b2-4a4a-9700-
      f2a26fa2bb67/summit.jpg' />
  </sources>
  <fallback xmlns='urn:xmpp:fallback:0' for='urn:xmpp:sfs:0'><body/></
    fallback>
  <body>https://download.montague.lit/4a771ac1-f0b2-4a4a-9700-
    f2a26fa2bb67/summit.jpg</body>
  <x xmlns='jabber:x:oob'><url>https://download.montague.lit/4a771ac1-
    f0b2-4a4a-9700-f2a26fa2bb67/summit.jpg</url></x>
</message>

```

4.2 Sharing multiple files

When sharing files, the sending entity MAY want to share multiple files within a single message. To do so, the sending entity SHOULD add multiple `<file-sharing/>` elements in a single message. It MUST add an `id` attribute with differing values to each of these `<file-sharing/>` elements.

When sharing multiple files, it is RECOMMENDED to attach the sources of each file in an individual message. When doing so, it is RECOMMENDED to include appropriate fallbacks to the source attaching messages. This allows to send multiple files in a way that is still understood well by legacy clients.

Listing 7: Sharing multiple files and attaching sources with fallback

```

<message to='juliet@shakespeare.lit' from='romeo@montague.lit/resource
  ' id='sharing-files'>
  <file-sharing xmlns='urn:xmpp:sfs:0' disposition='inline' id='photo1
    .jpg'>
    <file xmlns='urn:xmpp:file:metadata:0'>
      <name>photo1.jpg</name>
    </file>
  </file-sharing>
  <file-sharing xmlns='urn:xmpp:sfs:0' disposition='inline' id='photo2
    .jpg'>
    <file xmlns='urn:xmpp:file:metadata:0'>
      <name>photo2.jpg</name>
    </file>
  </file-sharing>

```

```
<file-sharing xmlns='urn:xmpp:sfs:0' disposition='inline' id='photo3
.jpg'>
  <file xmlns='urn:xmpp:file:metadata:0'>
    <name>photo3.jpg</name>
  </file>
</file-sharing>
</message>

<message to='juliet@shakespeare.lit' from='romeo@montague.lit/resource
' id='adding-photo1'>
  <attach-to id='sharing-files' xmlns='urn:xmpp:message-attaching:1' />
  <sources xmlns='urn:xmpp:sfs:0' id='photo1.jpg'>
    <url-data xmlns='http://jabber.org/protocol/url-data' target='
      https://download.montague.lit/4a771ac1-f0b2-4a4a-9700-
      f2a26fa2bb67/photo1.jpg' />
  </sources>
  <fallback xmlns='urn:xmpp:fallback:0' for='urn:xmpp:sfs:0'><body/></
  fallback>
  <body>https://download.montague.lit/4a771ac1-f0b2-4a4a-9700-
    f2a26fa2bb67/photo1.jpg</body>
  <x xmlns='jabber:x:oob'><url>https://download.montague.lit/4a771ac1-
    f0b2-4a4a-9700-f2a26fa2bb67/photo1.jpg</url></x>
</message>

<message to='juliet@shakespeare.lit' from='romeo@montague.lit/resource
' id='adding-photo2'>
  <attach-to id='sharing-files' xmlns='urn:xmpp:message-attaching:1' />
  <sources xmlns='urn:xmpp:sfs:0' id='photo2.jpg'>
    <url-data xmlns='http://jabber.org/protocol/url-data' target='
      https://download.montague.lit/4a771ac1-f0b2-4a4a-9700-
      f2a26fa2bb67/photo2.jpg' />
  </sources>
  <fallback xmlns='urn:xmpp:fallback:0' for='urn:xmpp:sfs:0'><body/></
  fallback>
  <body>https://download.montague.lit/4a771ac1-f0b2-4a4a-9700-
    f2a26fa2bb67/photo2.jpg</body>
  <x xmlns='jabber:x:oob'><url>https://download.montague.lit/4a771ac1-
    f0b2-4a4a-9700-f2a26fa2bb67/photo2.jpg</url></x>
</message>

<message to='juliet@shakespeare.lit' from='romeo@montague.lit/resource
' id='adding-photo3'>
  <attach-to id='sharing-files' xmlns='urn:xmpp:message-attaching:1' />
  <sources xmlns='urn:xmpp:sfs:0' id='photo3.jpg'>
    <url-data xmlns='http://jabber.org/protocol/url-data' target='
      https://download.montague.lit/4a771ac1-f0b2-4a4a-9700-
      f2a26fa2bb67/photo3.jpg' />
  </sources>
  <fallback xmlns='urn:xmpp:fallback:0' for='urn:xmpp:sfs:0'><body/></
```

```

    fallback>
<body>https://download.montague.lit/4a771ac1-f0b2-4a4a-9700-
f2a26fa2bb67/photo3.jpg</body>
<x xmlns='jabber:x:oob'><url>https://download.montague.lit/4a771ac1-
f0b2-4a4a-9700-f2a26fa2bb67/photo3.jpg</url></x>
</message>

```

4.3 Compatibility with Stateless Inline Media Sharing

When sharing media, the sending entity may want to be compatible with [Stateless Inline Media Sharing \(XEP-0385\)](#)³⁰ as far as applicable. To do so, the [Stateless Inline Media Sharing \(XEP-0385\)](#)³¹ `<media-sharing/>` element can be added inside an [References \(XEP-0372\)](#)³² `<reference xmlns='urn:xmpp:reference:0' type='data'>` element in the same message that would also include the textual legacy fallback and [Out-of-Band Data \(XEP-0066\)](#)³³ `x-oob` reference.

Listing 8: Sharing summit.jpg with juliet@shakespeare.lit in full compatibility mode

```

<message to='juliet@shakespeare.lit' from='romeo@montague.lit/resource
'id='sharing-a-file'>
  <file-sharing xmlns='urn:xmpp:sfs:0' disposition='inline'>
    <file xmlns='urn:xmpp:file:metadata:0'>
      <media-type>image/jpeg</media-type>
      <name>summit.jpg</name>
      <size>3032449</size>
      <width>4096</width>
      <height>2160</height>
      <hash xmlns='urn:xmpp:hashes:2' algo='sha3-256'>2
        XarmwTlNxDAMkvymloX3S5+VbylNrJt/15QyPa+YoU=</hash>
      <hash xmlns='urn:xmpp:hashes:2' algo='id-blake2b256'>2
        AfMGH807UNPTvUVAM9aK13mpCY=</hash>
      <desc>Photo from the summit.</desc>
      <thumbnail xmlns='urn:xmpp:thumbs:1' uri='cid:sha1+
        ffd7c8d28e9c5e82afea41f97108c6b4@bob.xmpp.org' media-type='
        image/png' width='128' height='96' />
    </file>
    <sources>
      <url-data xmlns='http://jabber.org/protocol/url-data' target='
        https://download.montague.lit/4a771ac1-f0b2-4a4a-9700-
        f2a26fa2bb67/summit.jpg' />
      <jinglepub xmlns='urn:xmpp:jinglepub:1' from='romeo@montague.lit
        /resource' id='9559976B-3FBF-4E7E-B457-2DAA225972BB'>
        <description xmlns='urn:xmpp:jingle:apps:file-transfer:5' />

```

³⁰XEP-0385: Stateless Inline Media Sharing (SIMS) <<https://xmpp.org/extensions/xep-0385.html>>.

³¹XEP-0385: Stateless Inline Media Sharing (SIMS) <<https://xmpp.org/extensions/xep-0385.html>>.

³²XEP-0372: References <<https://xmpp.org/extensions/xep-0372.html>>.

³³XEP-0066: Out of Band Data <<https://xmpp.org/extensions/xep-0066.html>>.

```

    </jinglepub>
  </sources>
</file-sharing>
<reference xmlns='urn:xmpp:reference:0' type='data'>
  <media-sharing xmlns='urn:xmpp:sims:1'>
    <file xmlns='urn:xmpp:jingle:apps:file-transfer:5'>
      <media-type>image/jpeg</media-type>
      <name>summit.jpg</name>
      <size>3032449</size>
      <hash xmlns='urn:xmpp:hashes:2' algo='sha3-256'>2
        XarmwTlNxDAMkvymloX3S5+VbylNrJt/l5QyPa+YoU=</hash>
      <hash xmlns='urn:xmpp:hashes:2' algo='id-blake2b256'>2
        AfMGH807UNPTvUVAM9aK13mpCY=</hash>
      <thumbnail xmlns='urn:xmpp:thumbs:1' uri='cid:sha1+
        ffd7c8d28e9c5e82afea41f97108c6b4@bob.xmpp.org' media-type=
        'image/png' width='128' height='96' />
    </file>
    <sources>
      <reference uri='https://download.montague.lit/4a771ac1-f0b2-4
        a4a-9700-f2a26fa2bb67/summit.jpg' type='data' xmlns='
        urn:xmpp:reference:0' />
    </sources>
  </media-sharing>
</reference>
<fallback xmlns='urn:xmpp:fallback:0' for='urn:xmpp:sfs:0'><body/></
  fallback>
<body>https://download.montague.lit/4a771ac1-f0b2-4a4a-9700-
  f2a26fa2bb67/summit.jpg</body>
<x xmlns='jabber:x:oob'><url>https://download.montague.lit/4a771ac1-
  f0b2-4a4a-9700-f2a26fa2bb67/summit.jpg</url></x>
</message>

```

5 Accessibility Considerations

Entities that support displaying moving images inline SHOULD have an option to turn this functionality off and display a still image instead.

Entities that support displaying files inline SHOULD have an option to turn this functionality off entirely.

6 Security Considerations

If a <hash/> using any supported algorithm is provided, the receiving client SHOULD verify that the <hash/> of the announced file matches the obtained file before presenting it to the user. If no <hash/> is provided or the <hash/> elements provided use unsupported algorithms, receiving clients MUST ignore any attached sources from other senders and only obtain the

file from the sources announced by the original sender. If no <hash/> is provided or the <hash/> elements provided use unsupported algorithms, receiving clients MUST ignore any sources that use unsecure protocols (e.g. HTTP without TLS).

For most methods of transferring a file proposed through the <sources/> element, obtaining files requires revealing private information like IP addresses to the sending user or third-parties. Sources that do not require revealing private information to untrusted entities SHOULD be preferred by receiving entities. Receiving entities SHOULD ask users for confirmation before obtaining a file, if doing so would require revealing private information to untrusted entities. If the protocol that is used when obtaining the file is not secure (e.g. HTTP without TLS), this SHOULD be considered as if the protocol reveals private information. The security considerations of [File metadata element \(XEP-0446\)](#)³⁴ apply.

7 IANA Considerations

This document requires no interaction with the [Internet Assigned Numbers Authority \(IANA\)](#)³⁵.

8 XMPP Registrar Considerations

8.1 Protocol Namespaces

The [XMPP Registrar](#)³⁶ includes 'urn:xmpp:sfs:0' in its registry of protocol namespaces (see <https://xmpp.org/registrar/namespaces.html>).

- urn:xmpp:sfs:0

9 Acknowledgements

Thanks to the authors of [Stateless Inline Media Sharing \(XEP-0385\)](#)³⁷ which heavily inspired this XEP.

Thanks to Jérôme Poisson and others for their valuable feedback.

³⁴XEP-0446: File metadata element <https://xmpp.org/extensions/xep-0446.html>.

³⁵The 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/>.

³⁶The 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/>.

³⁷XEP-0385: Stateless Inline Media Sharing (SIMS) <https://xmpp.org/extensions/xep-0385.html>.