Sieve Notification Mechanism: xmpp
draft-ietf-sieve-notify-xmpp-09

Status of this Memo

Abstract

This document describes a profile of the Sieve extension for notifications, to allow notifications to be sent over the Extensible Messaging and Presence Protocol (XMPP), also known as Jabber.

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1. Introduction

1.1. Overview

The [NOTIFY] (Melnikov, A., Leiba, B., Segmuller, W., and T. Martin, "Sieve Email Filtering: Notifications," December 2007.) extension to the [SIEVE] (Showalter, T. and P. Guenther, "Sieve: An Email Filtering Language," October 2007.) mail filtering language is a framework for providing notifications by employing URIs to specify the notification mechanism. This document defines how xmpp URIs (see [XMPP-URI] (Saint-Andre, P., "Internationalized Resource Identifiers (IRIs) and Uniform Resource Identifiers (URIs) for the Extensible Messaging and Presence Protocol (XMPP)," June 2007.)) are used to generate notifications via the Extensible Messaging and Presence Protocol [XMPP] (Saint-Andre, P., "Extensible Messaging and Presence Protocol (XMPP): Core," October 2004.), which is widely implemented in Jabber instant messaging technologies.

1.2. Terminology

This document inherits terminology from [NOTIFY] (Melnikov, A., Leiba, B., Segmuller, W., and T. Martin, "Sieve Email Filtering: Notifications," December 2007.), [SIEVE] (Showalter, T. and P. Guenther, "Sieve: An Email Filtering Language," October 2007.), and [XMPP] (Saint-Andre, P., "Extensible Messaging and Presence Protocol (XMPP): Core," October 2004.).
The capitalized key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT", "SHOULD", "SHOULD NOT", "RECOMMENDED", "NOT RECOMMENDED", "MAY", and "OPTIONAL" in this document are to be interpreted as described in [TERMS] (Bradner, S., "Key words for use in RFCs to Indicate Requirement Levels," March 1997.).

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2. Definition   TOC

2.1. Notify parameter "method"   TOC

The "method" parameter MUST be a URI that conforms to the xmpp URI scheme (as specified in [XMPP-URI] (Saint-Andre, P., "Internationalized Resource Identifiers (IRIs) and Uniform Resource Identifiers (URIs) for the Extensible Messaging and Presence Protocol (XMPP)," June 2007.)) and that identifies an XMPP account associated with the email inbox. The URI MAY include the resource identifier of an XMPP address and/or the query component portion of an XMPP URI, but SHOULD NOT include an authority component or fragment identifier component. The processing application MUST extract an XMPP address from the URI in accordance with the processing rules specified in [XMPP-URI] (Saint-Andre, P., "Internationalized Resource Identifiers (IRIs) and Uniform Resource Identifiers (URIs) for the Extensible Messaging and Presence Protocol (XMPP)," June 2007.). The resulting XMPP address MUST be encapsulated in XMPP syntax as the value of the XMPP 'to' attribute.

2.2. Test notify_method_capability   TOC

In response to a notify_method_capability test for the "online" notification-capability, an implementation SHOULD return a value of "yes" if it has knowledge of an active presence session (see [XMPP-IM] (Saint-Andre, P., "Extensible Messaging and Presence Protocol (XMPP): Instant Messaging and Presence," October 2004.)) for the specified XMPP

notification-uri; otherwise it SHOULD return a value of "maybe" (since typical XMPP systems may not allow a Sieve engine to gain knowledge about the presence of XMPP entities).

2.3. Notify tag ":from"

If included, the ":from" tag MUST be an electronic address that conforms to the "Mailbox" rule defined in [RFC2821] (Klensin, J., "Simple Mail Transfer Protocol," April 2001.). The value of the ":from" tag MAY be included in the human-readable XML character data of the XMPP notification; alternatively or in addition, it MAY be transformed into formal XMPP syntax, in which case it MUST be encapsulated as the value of an XMPP Stanza Headers and Internet Metadata [SHIM] (Saint-Andre, P. and J. Hildebrand, "Stanza Headers and Internet Metadata," July 2006.) header named "Resent-From".

2.4. Notify tag ":importance"

The ":importance" tag has no special meaning for this notification mechanism, and this specification puts no restriction on its use. The value of the ":importance" tag MAY be transformed into XMPP syntax (in addition to or instead of including appropriate text in the XML character data of the XMPP <body/> element); if so, it SHOULD be encapsulated as the value of an XMPP Stanza Headers and Internet Metadata [SHIM] (Saint-Andre, P. and J. Hildebrand, "Stanza Headers and Internet Metadata," July 2006.) header named "Urgency", where the XML character of that header is "high" if the value of the ":importance" tag is "1", "medium" if the value of the ":importance" tag is "2", and "low" if the value of the ":importance" tag is "3".

2.5. Notify tag ":message"

If the ":message" tag is included, that string MUST be transformed into the XML character data of an XMPP <body/> element (where the string is generated according to the guidelines specified in Section 3.6 of [NOTIFY] (Melnikov, A., Leiba, B., Segmuller, W., and T. Martin, "Sieve Email Filtering: Notifications," December 2007.)).

2.6. Notify tag ":options"

The ":options" tag has no special meaning for this notification
mechanism. Any handling of this tag is the responsibility of an
implementation.

2.7. XMPP syntax

The xmpp mechanism results in the sending of an XMPP message to notify
a recipient about an email message. The general XMPP syntax is as
follows:

> *The notification MUST be an XMPP <message/> stanza.

> *The value of the XMPP 'from' attribute SHOULD be the XMPP address
> of the notification service associated with the Sieve engine or
> the XMPP address of the entity to be notified. The value of the
> XMPP 'from' attribute MUST NOT be generated from the Sieve
> ":from" tag.

> *The value of the XMPP 'to' attribute MUST be the XMPP address
> specified in the XMPP URI contained in the "method" notify
> parameter.

> *The value of the XMPP 'type' attribute MUST be 'headline' or
> 'normal'.

> *The XMPP <message/> stanza MUST include a <body/> child element.
> If the ":message" tag is included in the Sieve script, that
> string MUST be used as the XML character data of the <body/>
> element. If not and if the XMPP URI contained in the "method"
> notify parameter specified a "body" parameter in the query
> component, that value SHOULD be used. Otherwise the XML character
> data SHOULD be some configurable text indicating that the message
> is a Sieve notification.

> *The XMPP <message/> stanza MAY include a <subject/> child
> element. If the XMPP URI contained in the "method" notify
> parameter specified a "subject" parameter in the query component,
> that value SHOULD be used as the XML character data of the
> <subject/> element. Otherwise the XML character data SHOULD be
> some configurable text indicating that the message is a Sieve
> notification.

> *The XMPP <message/> stanza SHOULD include a URI for the recipient
> to use as a hint in locating the message, encapsulated as the XML
> character data of a <url/> child element of an <x/> element

qualified by the 'jabber:x:oob' namespace as specified in [OOB] (Saint-Andre, P., "Out of Band Data," August 2006.). If included, the URI SHOULD be an Internet Message Access Protocol [IMAP] (Crispin, M., "INTERNET MESSAGE ACCESS PROTOCOL - VERSION 4rev1," March 2003.) URL that specifies the location of the message as defined in [IMAP-URL] (Melnikov, A. and C. Newman, "IMAP URL Scheme," November 2007.), but MAY be another URI type that can specify or hint at the location of an email message, such as a URI for an HTTP resource [HTTP] (Fielding, R., Gettys, J., Mogul, J., Frystyk, H., Masinter, L., Leach, P., and T. Berners-Lee, "Hypertext Transfer Protocol -- HTTP/1.1," June 1999.) or a POP3 mailbox [POP-URL] (Gellens, R., "POP URL Scheme," August 1998.) at which the message can be accessed. It is not expected that an XMPP user agent shall directly handle such a URI, but instead that it shall invoke an appropriate helper application to handle the URI.

*The XMPP <message/> stanza MAY include an XMPP Stanza Headers and Internet Metadata [SHIM] (Saint-Andre, P. and J. Hildebrand, "Stanza Headers and Internet Metadata," July 2006.) header named "Resent-From". If the Sieve script included a ":from" tag, the "Resent-From" value MUST be the value of the ":from" tag; otherwise the "Resent-From" value SHOULD be the envelope recipient address of the original email message that triggered the notification.

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3. Examples

In the following examples, the sender of the email has an address of <mailto:juliet@example.org>, the entity to be notified has an email address of <mailto:romeo@example.com> and an XMPP address of romeo@im.example.com (resulting in an XMPP URI of <xmpp:romeo@im.example.com>), and the notification service associated with the Sieve engine has an XMPP address of notify.example.com. Note: In the following examples, line breaks are included in XMPP URIs solely for the purpose of readability.

3.1. Basic action

The following is a basic Sieve notify action with only a method. The XML character data of the XMPP <body/> and <subject/> elements are therefore generated by the Sieve engine based on configuration. In addition, the Sieve engine includes a URI pointing to the message.

```
Basic action (Sieve syntax)

        notify "xmpp:romeo@im.example.com"

The resulting XMPP <message/> stanza might be as follows.
Basic action (XMPP syntax)

        <message from='notify.example.com'
                 to='romeo@im.example.com'
                 type='headline'
                 xml:lang='en'>
          <subject>SIEVE</subject>
          <body>&lt;juliet@example.com&gt; You got mail.</body>
          <x xmlns='jabber:x:oob'>
            <url>
              imap://romeo@example.com/INBOX;UIDVALIDITY=385759043/;UID=18
            </url>
          </x>
        </message>
```

3.2. Action with body

The following action contains a "body" parameter in the query component
of the XMPP URI but no ":message" tag in the Sieve script. As a result,
the XML character data of the XMPP <body/> element in the XMPP
notification is taken from the XMPP URI. In addition, the Sieve engine
includes a URI pointing to the message.
Action with body (Sieve syntax)

```
        notify "xmpp:romeo@im.example.com?message
                ;body=Wherefore%20art%20thou%3F"
```

The resulting XMPP <message/> stanza might be as follows.
Action with body (XMPP syntax)

```
      <message from='notify.example.com'
               to='romeo@im.example.com'
               type='headline'
               xml:lang='en'>
        <subject>SIEVE</subject>
        <body>Wherefore art thou?</body>
        <x xmlns='jabber:x:oob'>
          <url>
            imap://romeo@example.com/INBOX;UIDVALIDITY=385759044/;UID=19
          </url>
        </x>
      </message>
```

3.3. Action with body, importance, message, and subject

The following action specifies an ":importance" tag and a ":message"
tag in the Sieve script, as well as a "body" parameter and a "subject"
parameter in the query component of the XMPP URI. As a result, the
":message" tag from the Sieve script overrides the "body" parameter
from the XMPP URI when generating the XML character data of the XMPP
<body/> element. In addition, the Sieve engine includes a URI pointing
to the message.
Action with body, importance, message, and subject (Sieve syntax)

```
      notify :importance "1"
             :message "Contact Juliet immediately!"
             "xmpp:romeo@im.example.com?message
               ;body=You%27re%20in%20trouble
               ;subject=ALERT%21"
```

The resulting XMPP <message/> stanza might be as follows.
Action with body, importance, message, and subject (XMPP syntax)

```
<message from='notify.example.com'
         to='romeo@im.example.com'
         type='headline'
         xml:lang='en'>
  <subject>ALERT!</subject>
  <body>Contact Juliet immediately!</body>
  <headers xmlns='http://jabber.org/protocol/shim'>
    <header name='Urgency'>high</header>
  </headers>
  <x xmlns='jabber:x:oob'>
    <url>
      imap://romeo@example.com/INBOX;UIDVALIDITY=385759045/;UID=20
    </url>
  </x>
</message>
```

3.4. Action with from, message, importance, body, and subject

The following action specifies a ":from" tag, an ":importance" tag, and
a ":message" tag in the Sieve script, as well as a "body" parameter and
a "subject" parameter in the query component of the XMPP URI. As a
result, the ":message" tag from the Sieve script overrides the "body"
parameter from the XMPP URI when generating the XML character data of
the XMPP <body/> element. In addition, the Sieve engine includes a URI
pointing to the message, as well as an XMPP Stanza Headers and Internet
Metadata [SHIM] (Saint-Andre, P. and J. Hildebrand, "Stanza Headers and
Internet Metadata," July 2006.) header named "Resent-From" (which
encapsulates the value of the ":from" tag).
Action with body, from, importance, message, and subject (Sieve syntax)

```
notify :from "romeo.my.romeo@example.com"
       :importance "1"
       :message "Contact Juliet immediately!"
       "xmpp:romeo@im.example.com?message
         ;body=You%27re%20in%20trouble
         ;subject=ALERT%21"
```

The resulting XMPP <message/> stanza might be as follows.
Action with body, from, importance, message, and subject (XMPP syntax)

```
    <message from='notify.example.com'
             to='romeo@im.example.com'
             type='headline'
             xml:lang='en'>
     <subject>ALERT!</subject>
     <body>Contact Juliet immediately!</body>
     <headers xmlns='http://jabber.org/protocol/shim'>
       <header name='Resent-From'>romeo.my.romeo@example.com</header>
       <header name='Urgency'>high</header>
     </headers>
     <x xmlns='jabber:x:oob'>
       <url>
         imap://romeo@example.com/INBOX;UIDVALIDITY=385759045/;UID=21
       </url>
     </x>
   </message>
```

---

4. Requirements Conformance

Section 3.8 of [NOTIFY] (Melnikov, A., Leiba, B., Segmuller, W., and T. Martin, "Sieve Email Filtering: Notifications," December 2007.) specifies a set of requirements for Sieve notification methods. The conformance of the xmpp notification mechanism is provided here.

1. An implementation of the xmpp notification method SHOULD NOT modify the final notification text (e.g., to limit the length); however, a given deployment MAY do so (e.g., if recipients pay per character or byte for XMPP messages). Modification of characters themselves should not be necessary, since XMPP character data is encoded in [UTF-8] (Yergeau, F., "UTF-8, a transformation format of ISO 10646," November 2003.).

2. An implementation MAY ignore parameters specified in the ":from", ":importance", and ":options" tags.

3. There is no recommended default message for an implementation to include if the ":message" argument is not specified.

4. A notification sent via the xmpp notification method MAY include a timestamp in the textual message.

5. The value of the XMPP 'from' attribute MUST be the XMPP address of the notification service associated with the Sieve engine. The value of the Sieve ":from" tag MAY be transformed into the value of an XMPP Stanza Headers and Internet Metadata [SHIM]

(Saint-Andre, P. and J. Hildebrand, "Stanza Headers and Internet Metadata," July 2006.) header named "Reply-To".

6. The value of the XMPP 'to' attribute MUST be the XMPP address specified in the XMPP URI contained in the "method" parameter.

7. In accordance with [XMPP-URI] (Saint-Andre, P., "Internationalized Resource Identifiers (IRIs) and Uniform Resource Identifiers (URIs) for the Extensible Messaging and Presence Protocol (XMPP)," June 2007.), an implementation MUST ignore any URI action or parameter it does not understand (i.e., the URI MUST be processed as if the action or parameter were not present). It is RECOMMENDED to support the XMPP "message" query type (see [QUERIES] (Saint-Andre, P., "XMPP URI Scheme Query Components," September 2006.)) and the associated "body" and "subject" parameters, which parameters SHOULD be mapped to the XMPP <body/> and <subject/> child elements of the XMPP <message/> stanza, respectively. However, if included then the Sieve notify ":message" parameter MUST be mapped to the XMPP <body/> element, overriding the "body" parameter (if any) included in the XMPP URI.

8. An implementation MUST NOT include any other extraneous information not specified in parameters to the notify action.

9. In response to a notify_method_capability test for the "online" notification-capability, an implementation SHOULD return a value of "yes" if it has knowledge of an active presence session (see [XMPP-IM] (Saint-Andre, P., "Extensible Messaging and Presence Protocol (XMPP): Instant Messaging and Presence," October 2004.)) for the specified XMPP notification-uri but only if the entity that requested the test is authorized to know the presence of the associated XMPP entity (e.g., via explicit presence subscription as specified in [XMPP-IM] (Saint-Andre, P., "Extensible Messaging and Presence Protocol (XMPP): Instant Messaging and Presence," October 2004.)); otherwise it SHOULD return a value of "maybe" (since typical XMPP systems may not allow a Sieve engine to gain knowledge about the presence of XMPP entities).

10. An implementation SHOULD NOT attempt to retry delivery of a notification if it receives an XMPP error of type "auth" or "cancel", MAY attempt to retry delivery if it receives an XMPP error of type "wait", and MAY attempt to retry delivery if it receives an XMPP error of "modify" but only if it makes appropriate modifications to the notification (see [XMPP] (Saint-Andre, P., "Extensible Messaging and Presence Protocol (XMPP): Core," October 2004.)); in any case the number of retries SHOULD be limited to a configurable number no less than

3 and no more than 10. An implementation MAY throttle
notifications if the number of notifications within a given
time period becomes excessive according to local service
policy. Duplicate suppression (if any) is a matter of
implementation and is not specified herein.

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5. Internationalization Considerations

Although an XMPP address may contain nearly any [UNICODE] (The Unicode
Consortium, "The Unicode Standard, Version 3.2.0," 2000.) character,
the value of the "method" parameter MUST be a Uniform Resource
Identifier (see [URI] (Berners-Lee, T., Fielding, R., and L. Masinter,
"Uniform Resource Identifier (URI): Generic Syntax," January 2005.))
rather than an Internationalized Resource Identifier (see [IRI]
(Duerst, M. and M. Suignard, "Internationalized Resource Identifiers
(IRIs)," January 2005.)). The rules specified in [XMPP-URI] (Saint-
Andre, P., "Internationalized Resource Identifiers (IRIs) and Uniform
Resource Identifiers (URIs) for the Extensible Messaging and Presence
Protocol (XMPP)," June 2007.) MUST be followed when generating XMPP
URIs.
In accordance with Section 13 of RFC 3920, all data sent over XMPP MUST
be encoded in [UTF-8] (Yergeau, F., "UTF-8, a transformation format of
ISO 10646," November 2003.).

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6. Security Considerations

Depending on the information included, sending a notification can be
comparable to forwarding mail to the notification recipient. Care must
be taken when forwarding mail automatically, to ensure that
confidential information is not sent into an insecure environment. In
particular, implementations MUST conform to the security considerations
given in [NOTIFY] (Melnikov, A., Leiba, B., Segmuller, W., and T.
Martin, "Sieve Email Filtering: Notifications," December 2007.),
[SIEVE] (Showalter, T. and P. Guenther, "Sieve: An Email Filtering
Language," October 2007.), and [XMPP] (Saint-Andre, P., "Extensible
Messaging and Presence Protocol (XMPP): Core," October 2004.).
[NOTIFY] (Melnikov, A., Leiba, B., Segmuller, W., and T. Martin, "Sieve
Email Filtering: Notifications," December 2007.) specifies that a
notification method MUST provide mechanisms for avoiding notification
loops. One type of notification loop can be caused by message
forwarding; however, such loops are prevented because XMPP does not
support forwarding of messages from one XMPP address to another.
Another type of notification loop can be caused by auto-replies to XMPP

messages received by the XMPP notification service associated with the
Sieve engine; therefore such a service MUST NOT auto-reply to XMPP
messages it receives.
A common use case might be for a user to create a script that enables
the Sieve engine to act differently if the user is currently available
at a particular type of service (e.g., send notifications to the user's
XMPP address if the user has an active session at an XMPP service).
Whether the user is currently available can be determined by means of a
notify_method_capability test for the "online" notification-capability.
In XMPP, information about current network availability is called
"presence" (see also [MODEL] (Day, M., Rosenberg, J., and H. Sugano, "A
Model for Presence and Instant Messaging," February 2000.)). Since
[XMPP-IM] (Saint-Andre, P., "Extensible Messaging and Presence Protocol
(XMPP): Instant Messaging and Presence," October 2004.) requires that a
user must approve a presence subscription before an entity can gain
access to the user's presence information, a limited but reasonably
safe implementation might be for the Sieve engine to request a
subscription to the user's presence. The user would then need to
approve that subscription request so that the Sieve engine can act
appropriately depending on whether the user is online or offline.
However, the Sieve engine MUST NOT use the user's presence information
when processing scripts on behalf of a script owner other than the
user, unless the Sieve engine has explicit knowledge (e.g., via
integration with an XMPP server's presence authorization rules) that
the script owner is authorized to know the user's presence. While it
would be possible to design a more advanced approach to delegation of
presence authorization, any such approach is left to future standards
work.

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7. IANA Considerations

The following template provides the IANA registration of the Sieve
notification mechanism specified in this document:

        To: iana@iana.org
        Subject: Registration of new Sieve notification mechanism
        Mechanism name: xmpp
        Mechanism URI: draft-saintandre-rfc4622bis
        Mechanism-specific options: none
        Standards Track/IESG-approved experimental RFC number: this RFC
        Person and email address to contact for further information:
            Peter Saint-Andre <stpeter@jabber.org>

This information should be added to the list of Sieve notification
mechanisms maintained at <http://www.iana.org/assignments/sieve-
notification>.

8. References

8.1. Normative References

[NOTIFY]	Melnikov, A., Leiba, B., Segmuller, W., and T. Martin, "Sieve Email Filtering: Notifications," draft-ietf-sieve-notify-12 (work in progress), December 2007 (TXT).
[OOB]	Saint-Andre, P., "Out of Band Data," XSF XEP 0066, August 2006.
[QUERIES]	Saint-Andre, P., "XMPP URI Scheme Query Components," XSF XEP 0147, September 2006.
[RFC2821]	Klensin, J., "Simple Mail Transfer Protocol," RFC 2821, April 2001 (TXT).
[SHIM]	Saint-Andre, P. and J. Hildebrand, "Stanza Headers and Internet Metadata," XSF XEP 0131, July 2006.
[SIEVE]	Showalter, T. and P. Guenther, "Sieve: An Email Filtering Language," draft-ietf-sieve-3028bis-13 (work in progress), October 2007 (TXT).
[TERMS]	Bradner, S., "Key words for use in RFCs to Indicate Requirement Levels," BCP 14, RFC 2119, March 1997.
[XMPP-URI]	Saint-Andre, P., "Internationalized Resource Identifiers (IRIs) and Uniform Resource Identifiers (URIs) for the Extensible Messaging and Presence Protocol (XMPP)," draft-saintandre-rfc4622bis-01 (work in progress), June 2007 (TXT).

8.2. Informative References

[HTTP]	Fielding, R., Gettys, J., Mogul, J., Frystyk, H., Masinter, L., Leach, P., and T. Berners-Lee, "Hypertext Transfer Protocol -- HTTP/1.1," RFC 2616, June 1999 (TXT, PS, PDF, HTML, XML).
[IMAP]	Crispin, M., "INTERNET MESSAGE ACCESS PROTOCOL - VERSION 4rev1," RFC 3501, March 2003 (TXT).
[IMAP-URL]	Melnikov, A. and C. Newman, "IMAP URL Scheme," RFC 5092, November 2007 (TXT).
[MODEL]	Day, M., Rosenberg, J., and H. Sugano, "A Model for Presence and Instant Messaging," RFC 2778, February 2000 (TXT).
[POP-URL]	Gellens, R., "POP URL Scheme," RFC 2384, August 1998 (TXT, XML).
[IRI]	

	Duerst, M. and M. Suignard, "[Internationalized Resource Identifiers (IRIs)](#)," RFC 3987, January 2005 ([TXT](#)).
[UNICODE]	The Unicode Consortium, "The Unicode Standard, Version 3.2.0," 2000. The Unicode Standard, Version 3.2.0 is defined by The Unicode Standard, Version 3.0 (Reading, MA, Addison-Wesley, 2000. ISBN 0-201-61633-5), as amended by the Unicode Standard Annex #27: Unicode 3.1 (http://www.unicode.org/reports/tr27/) and by the Unicode Standard Annex #28: Unicode 3.2 (http://www.unicode.org/reports/tr28/).
[URI]	Berners-Lee, T., Fielding, R., and L. Masinter, "[Uniform Resource Identifier (URI): Generic Syntax](#)," STD 66, RFC 3986, January 2005 ([TXT](#)).
[UTF-8]	Yergeau, F., "[UTF-8, a transformation format of ISO 10646](#)," STD 63, RFC 3629, November 2003 ([TXT](#)).
[XMPP]	Saint-Andre, P., "[Extensible Messaging and Presence Protocol (XMPP): Core](#)," RFC 3920, October 2004 ([TXT](#)).
[XMPP-IM]	Saint-Andre, P., "[Extensible Messaging and Presence Protocol (XMPP): Instant Messaging and Presence](#)," RFC 3921, October 2004 ([TXT](#)).

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