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Interworking between the Session Initiation Protocol (SIP) and the
Extensible Messaging and Presence Protocol (XMPP): Multi-Party Text Chat
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Abstract

This document defines a bi-directional protocol mapping for the exchange of instant messages in the context of a many-to-many chat session among users of the Session Initiation Protocol (SIP) and users of the Extensible Messaging and Presence Protocol (XMPP). Specifically for SIP text chat, this document specifies a mapping to the Message Session Relay Protocol (MSRP).

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1. Introduction

1.1. Overview

Both the Session Initiation Protocol [RFC3261] and the Extensible Messaging and Presence Protocol [RFC6120] can be used for the purpose of many-to-many text chat over the Internet. To ensure interworking between these technologies, it is important to define bi-directional protocol mappings.

The architectural assumptions underlying such protocol mappings are provided in [I-D.saintandre-sip-xmpp-core], including mapping of addresses and error conditions. Mappings for single instant messages (sometimes called "pager-mode" messaging) are provided in [I-D.saintandre-sip-xmpp-im]. Mappings for one-to-one text chat sessions are provided in [I-D.saintandre-sip-xmpp-chat].

This document specifies mappings for many-to-many text chat sessions (sometimes called "groupchat"); in particular, this document specifies mappings between XMPP and the Message Session Relay Protocol [RFC4975].

1.2. Terminology

The 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 [RFC2119].

1.3. Scope

Both XMPP and SIP/SIMPLE technologies enable multi-user text chat, whereby users can exchange messages in the context of a room. The term "room" usually is a synonym for a virtual environment where people enter and exchange messages.

Groupchat messages are messages which are sent from a sender to multiple recipients (i.e., two or more) in the context of a "multi-user chat session", "text conference", or "chatroom". In XMPP a groupchat message is a <message/> stanza of type "groupchat" that is reflected from the sender to multiple recipients by a multi-user chat service, as defined in [XEP-0045]. In SIP/SIMPLE a groupchat message is reflected from the sender to multiple recipients by a conference server that uses MSRP to handle groupchat sessions, as defined in [I-D.ietf-simple-chat].

As in [I-D.saintandre-sip-xmpp-im] and related documents, the approach taken here is to directly map syntax and semantics from one

protocol to another. The mapping described herein depends on the protocols defined in the following specifications:

- o XMPP chat sessions using message stanzas of type "groupchat" are specified in [XEP-0045].
- o SIP-based chat room sessions using the SIP INVITE and SEND request types are specified in [I-D.ietf-simple-chat].

1.4. Formal and Informal Sessions

TBD: Does XMPP use Formal and Informal session also for group-chat?

1.5. Gateway Heuristics

TBD

1.6. Acknowledgements

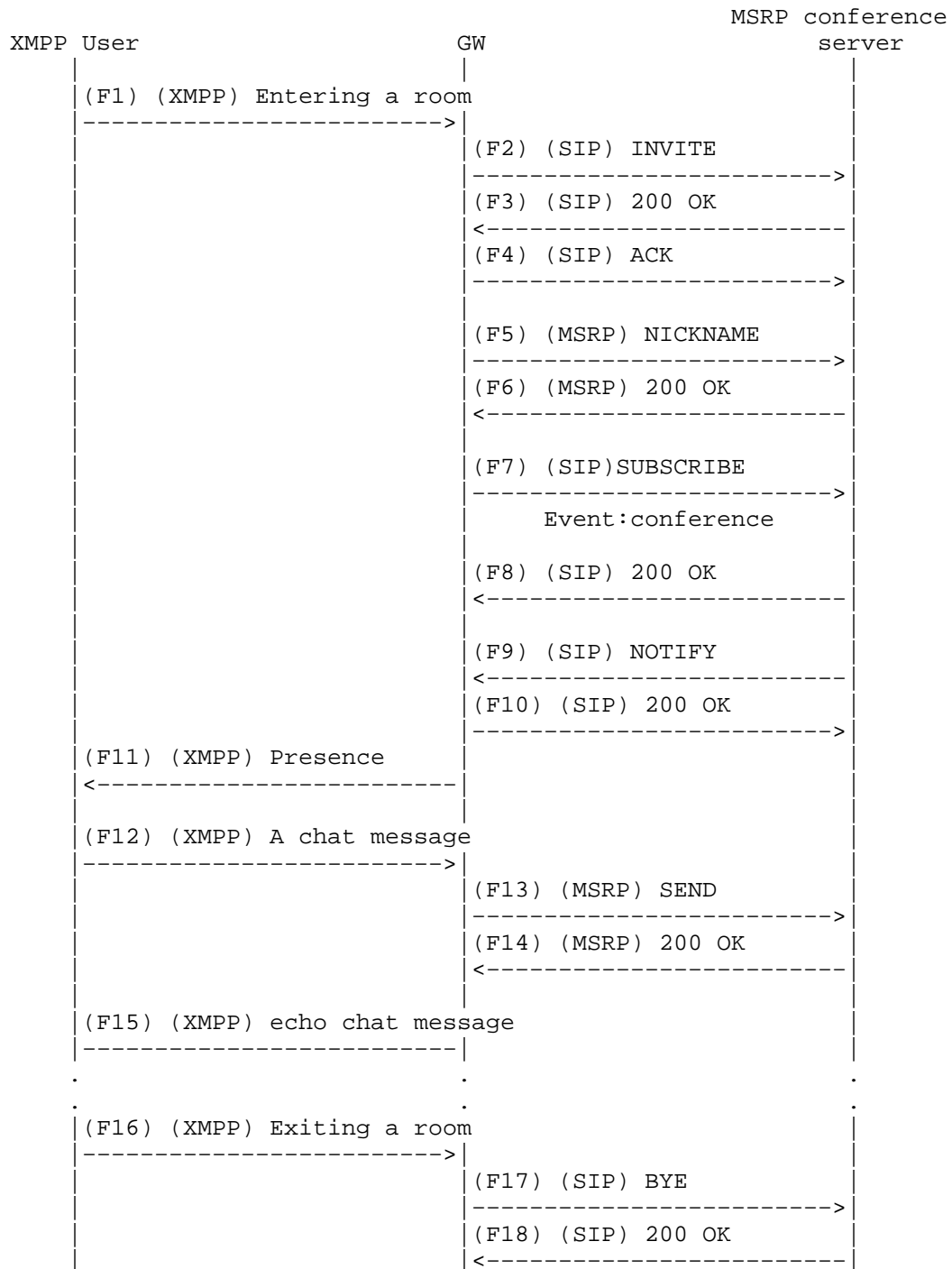
Some text in this document was borrowed from [I-D.saintandre-sip-xmpp-core] and from [XEP-0045].

1.7. Discussion Venue

The authors welcome discussion and comments related to the topics presented in this document. The preferred forum is the <sip-xmpp@xmpp.org> mailing list, for which archives and subscription information are available at <<http://mail.jabber.org/mailman/listinfo/sip-xmpp>>.

2. XMPP Group Chat to MSRP Multiparty Instant Message (IM) Session

This section describes how to map an XMPP Group Chat to a Multi-party Instant Message (IM) MSRP session.



2.1. Entering a Room

When the XMPP user ("Juliet") wants to join a multi-user chat room ("Verona"), she sends a <presence/> stanza to the hostname hosting that chat room, she also specifies the "nick" she desires to use within the room ("juliet"). The Room Nickname is the resource identifier portion of a Room JID. The Juliet client SHOULD signal its ability to speak the multi-user chat protocol by including in the initial presence stanza an empty <x/> element qualified by the 'http://jabber.org/protocol/muc' namespace.

Example: (F1) Juliet entering a chatroom

```
<presence from='juliet@example.com'
          to='verona@chat.shakespeare.net/juliet'>
  <x xmlns='http://jabber.org/protocol/muc' />
</presence>
```

Upon receiving such a presence stanza, the XMPP server to which Juliet has authenticated attempts to deliver the stanza to a local domain or attempts to route the presence stanza to the remote domain that services the hostname in the 'to' attribute. Naturally, in this document we assume that the hostname in the 'to' attribute is an Chat Room-aware SIP service hosted by a separate server.

As specified in [RFC6121], the XMPP server needs to determine the identity of the remote domain, which it does by performing one or more DNS SRV lookups [RFC2782]. For presence stanzas, the order of lookups recommended by [RFC6121] is to first try the "_xmpp-server" service as specified in [RFC6120] and to then try the "_im" service as specified in [RFC3861]. Here we assume that the first lookup will fail but that the second lookup will succeed and return a resolution "_im._simple.shakespeare.net", since we have already assumed that the shakespeare.net hostname is running a SIP instant messaging service. (Note: The XMPP server may have previously determined that the remote domain is a SIMPLE server, in which case it would not need to perform the SRV lookups; the caching of such information is a matter of implementation and local service policy, and is therefore out of scope for this document.)

Once the XMPP server (example.com) has determined that the remote domain is serviced by a SIMPLE server, it hands the XMPP presence stanza off to its local XMPP-to-SIP gateway (x2s.example.com), which transforms the presence stanza into SIP syntax and routes it to the remote conference server (shakespeare.net).

As a compliant multi-user chat services MUST accept the presence

stanza containing an empty <x/> element qualified by the 'http://jabber.org/protocol/muc' namespace as a request to enter a room; the XMPP-to-SIP gateway MUST transform it in a SIP INVITE request.

Example: (F2) Juliet entering a chatroom (SIP transformation)

```
INVITE sip:verona@chat.shakespeare.net SIP/2.0
To: <sip:verona@chat.shakespeare.net>
From: <sip:juliet@example.com>;tag=786
Call-ID: 711609sa
Content-Type: application/sdp
Content-Length: [length]

c=IN IP4 x2s.shakespeare.net
m=message 7654 TCP/MSRP *
a=accept-types:text/cpim text/plain text/html
a=path:msrp://x2s.example.com:7654/jshA7weztas;tcp
a=chatroom:nickname private-message
```

Here the Session Description Protocol offer specifies the MSRP-aware XMPP-to-SIP gateway on the XMPP side as well as other particulars of the session.

There is no direct mapping for the MSRP URIs. In fact MSRP URIs identify a session of instant messages at a particular device; they are ephemeral and have no meaning outside the scope of that session. The authority component of the MSRP URI MUST contain the XMPP-to-SIP gateway hostname or numeric IP address and an explicit port number.

As specified in [I-D.saintandre-sip-xmpp-core], the mapping of XMPP syntax elements to SIP and [RFC4566] syntax elements SHOULD be as shown in the following table. (Mappings for elements not mentioned are undefined.)

Table 1: Message syntax mapping from XMPP to SIP/SDP

XMPP Element or Attribute	SIP Header or SDP Contents
from to (without the /nick)	From To

Here we assume that the chat room server accepts the session establishment. It includes the 'isfocus' and other relevant feature tags in the Contact header field of the response. The chat room

server also includes an answer session description that acknowledges the choice of media and contains the extensions specified in [I-D.ietf-simple-chat].

Example: (F3) the chat room accepts the session establishment

```
SIP/2.0 200 OK
To: <sip:verona@chat.shakespeare.net>
From: <sip:juliet@example.com>;tag=786
Call-ID: 711609sa
Contact: <sip:verona@chat.shakespeare.net;transport=tcp>\
        ;methods="INVITE,BYE,OPTIONS,ACK,CANCEL,SUBSCRIBE,NOTIFY"\
        ;automata;isfocus;message;event="conference"
Content-Type: application/sdp
Content-Lenght: [length]

c=IN IP4 shakespeare.net
m=message 12763 TCP/MSRP *
a=accept-types:message/cpim
a=accept-wrapped-types:text/plain text/html *
a=path:msrp://s2x.shakespeare.net:12763/kjhd37s2s20w2a;tcp
```

Upon receiving such a response, the SIMPLE server or associated SIP-to-XMPP gateway MUST send a SIP ACK to the SIP user.

Example: (F4) the Gateway sends ACK to the chat room server

```
ACK sip:verona@chat.shakespeare.net SIP/2.0
To: <sip:verona@chat.shakespeare.net>;tag=087js
From: <sip:juliet@example.com>;tag=786
Call-ID: 711609sa
```

2.2. Setting up a nickname

If the chat room server accepted the session, the SIMPLE server or associated SIP-to-XMPP gateway MUST set up the nickname as received in the presence stanza. The nickname is set up using the extension specified in [I-D.ietf-simple-chat]

Example: (F5) the Gateway set up the nickname

```
MSRP a786hjs2 NICKNAME
To-Path: msrp://s2x.shakespeare.net:12763/kjhd37s2s20w2a;tcp
From-Path: msrp://x2s.example.com:7654/jshA7weztas;tcp
Use-Nickname: "juliet"
-----a786hjs2
```

The chat room server analyzes the existing allocation of nicknames,

accepts the nick name proposal and answers with a 200 response.

Example: (F6) the chat room accepts the nickname proposal

```
MSRP a786hjs2 200 OK
To-Path: msrp://x2s.example.com:7654/jshA7weztas;tcp
From-Path: msrp://s2x.shakespeare.net:12763/kjhd37s2s20w2a;tcp
-----a786hjs2
```

2.3. Presence Broadcast

If the multi-user chat service accepts the request to enter a room, the xmpp user expects to receive back presence information from all the existing occupants' room. So the XMPP-to-SIP gateway MUST SUBSCRIBE to the Conference Event package [RFC4575] on the MSRP conference server. When the subscription is completed the MSRP conference server send back to the XMPP-to-SIP gateway a NOTIFY with the presence information from all the existing occupants' room

Example: (F9) the chat room notifies the presence information

```
NOTIFY sip:verona@chat.shakespeare.net SIP/2.0
To: Juliet <sip:juliet@example.com>;tag=43524545
From: <sip:verona@chat.shakespeare.net>;tag=a3343df32
Call-ID: k3l43id034ksereree
Event: conference
Subscription-State: active;expires=3600
Content-Type: application/conference-info+xml
Content-Length: ...
```

```
<conference-info version="0" state="full"
  entity="sip:3402934234@conf.example.com">
  <conference-description>
    <subject>Today in Verona</subject>
    <conf-uris>
      <entry>
        <uri>tel:+18882934234</uri>
      </entry>
    </conf-uris>
  </conference-description>
  <users>
    <user entity="sip:romeo@example.com" state="full">
      <nickname-text>romeo</nickname-text>
      <roles>
        <entry>participant</entry>
      </roles>
    </user>
  </users>
</conference-info>
```

[NOTE: 1] a full mapping of RFC 4575 will be defined later on.

[NOTE: 2] the <nickname-text/> attribute is an extension to the conference package explained but not defined in [I-D.ietf-simple-chat]

[NOTE: 3] the subject (if present in the NOTIFY) must be sent with a separate <message/> stanza; so after F11 there should be another <message/> stanza from the gw to the joining party

[OPEN ISSUE: 1] how to send to the room jid with the subject child set: do we need to send it in a different presence stanza than the F11?

Upon receiving such a response, the SIP-to-XMPP gateway MUST send a 200 OK to the MSRP conference server and translate it in an xmpp presence stanza.

Example: (F11) the chat room presence information translated in XMPP

```
<presence from='romeo@example.com/romeo'
  to='verona@chat.shakespeare.net/juliet'>
  <x xmlns='http://jabber.org/protocol/muc#user'>
    <item affiliation='none' role='participant' />
  </x>
</presence>
```

As specified in ???, the mapping of SIP and SDP syntax elements to XMPP syntax elements SHOULD be as shown in the following table. (Mappings for elements not mentioned are undefined.)

Table 2: Message syntax mapping from SIP/SDP to XMPP

SIP Header or SDP Contents	XMPP Element or Attribute
<user entity=...> To + / <nickname-text> roles 'none'	From To role affiliation

[OPEN ISSUE: 1] how to match the <roles/> SIP Conference attribute in the XMPP <affiliation/> and <role/>. In XMPP roles are current privileges within the room while, affiliations are kept permanently in different sessions (they are the default for a given user).

2.4. Exchanging Messages

Once the user has joined the chat room, the user can exchange an unbounded number of messages both public and private.

The mapping of XMPP syntax elements to MSRP syntax elements SHOULD be as shown in the following table. (Mappings for elements not mentioned are undefined.)

Table 3: Message syntax mapping from XMPP Message to MSRP

XMPP Element or Attribute	CPIM Header
to from <body/>	To From body of the SEND request

2.4.1. Sending a Message to All Occupants

When Juliet wants to send a message to all other occupants in the room, she sends a message of type "groupchat" to <room@service> itself (i.e. <verona@chat.shakespeare.net> in our example).

The following examples show an exchange of a public message.

Example: (F12) Juliet sends a Message to all occupants

```
<message from='juliet@example.com'
        to='verona@chat.shakespeare.net'
        type='groupchat'>
  <body>Who knows where Romeo is?</body>
</message>
```

Upon receiving such stanza message, the XMPP-to-SIP gateway MUST translate it in an MSRP SEND message.

Example: (F13) Gateway transforms XMPP message to MSRP

```
MSRP a786hjs2 SEND
To-Path: msrp://s2x.shakespeare.net:12763/kjhd37s2s20w2a;tcp
From-Path: msrp://x2s.example.com:7654/jshA7weztas;tcp
Message-ID: 87652491
Byte-Range: 1-*/*
Content-Type: message/cpim

To: <sip:verona@chat.shakespeare.net;transport=tcp>
From: <sip:juliet@example.com>
DateTime: 2008-10-15T15:02:31-03:00
Content-Type: text/plain

Who knows where Romeo is?
-----a786hjs2$
```

Upon receiving the SEND request, if the request either contains a Failure-Report header field value of "yes" or does not contain a Failure-Report header at all, MSRP conference server MUST immediately generate and send a response.

```
MSRP d93kswow 200 OK
To-Path: msrp://x2s.example.com:7654/jshA7weztas;tcp
From-Path: msrp://s2x.shakespeare.net:12763/kjhd37s2s20w2a;tcp
-----d93kswow$
```

Since the XMPP room could be moderated and an XMPP User can not be sure whether his message has been accepted or not, without an echo

from the server, the [XEP-0045] states that the sender have to receive back the same message it has generated. So in this scenario the XMPP-to-SIP gateway has to generate the echo message.

2.4.2. Sending a Private Message

Since each occupant has a unique JID, Juliet MAY send a "private message" to a selected occupant via the service by sending a message to the occupant's room JID. The message type SHOULD be "chat" and MUST NOT be "groupchat", but MAY be left unspecified.

The following examples show an exchange of a private message.

Example: (F12) Juliet sends a private message

```
<message from='juliet@example.com'
  to='verona@chat.shakespeare.net/romeo'
  type='chat' />
  <body>O Romeo, Romeo! wherefore art thou Romeo?</body>
</message>
```

Upon receiving such stanza message, the XMPP-to-SIP gateway MUST translate it in an MSRP SEND message.

Example: (F13) Gateway transforms XMPP message to MSRP

```
MSRP a786hjs2 SEND
To-Path: msrp://s2x.shakespeare.net:12763/kjhd37s2s20w2a;tcp
From-Path: msrp://x2s.example.com:7654/jshA7weztas;tcp
Message-ID: 87652491
Byte-Range: 1-*/*
Content-Type: message/cpim

To: <sip:romeo@chat.shakespeare.net>
From: <sip:juliet@chat.shakespeare.net>
DateTime: 2008-10-15T15:02:31-03:00
Content-Type: text/plain

O Romeo, Romeo! wherefore art thou Romeo?
-----a786hjs2$
```

2.5. Exiting a Room

If Juliet decides to exit the multi-user chat room, her client sends a presence stanza of type "unavailable" to the <verona@chat.shakespeare.net/juliet> she is currently using in the room.

Example: (F16) Juliet exiting a chatroom

```
<presence from='juliet@example.com'
          to='verona@chat.shakespeare.net/juliet'
          type='unavailable'>
</presence>
```

Upon receiving such stanza exiting the multi-user chat room, the XMPP-to-SIP gateway terminates the SIP session by sending a SIP BYE to MSRP conference server. The MSRP conference server then responds with a 200 OK.

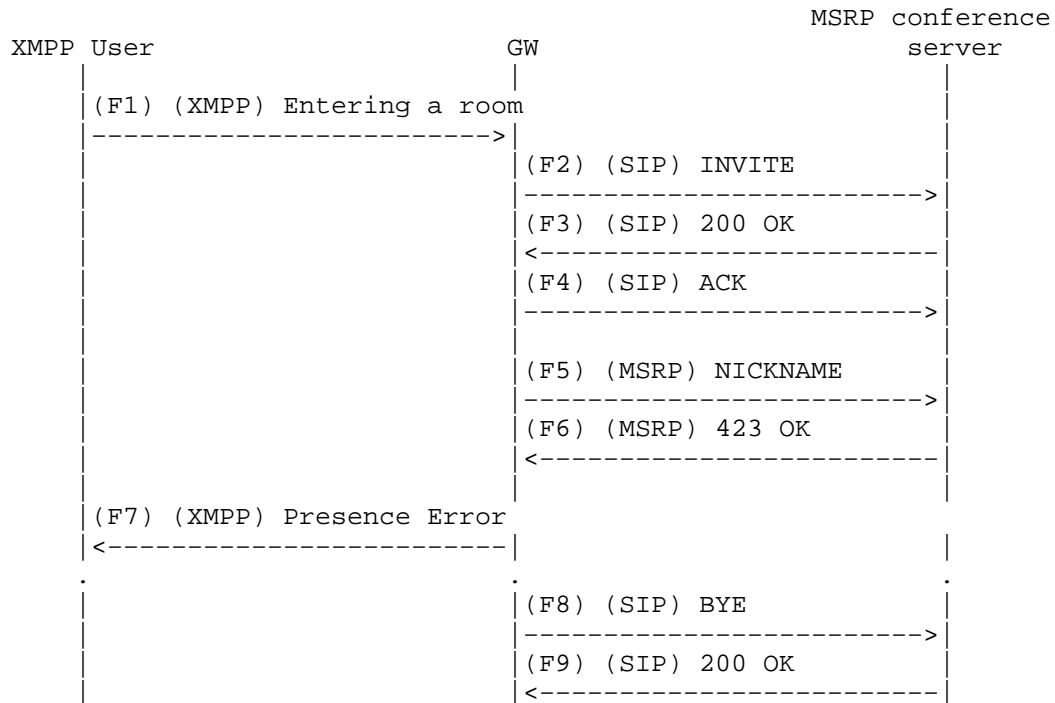
Juliet MAY include a custom exit message in the presence stanza of type "unavailable"

Example: (F16) Juliet exiting a chatroom

```
<presence from='juliet@example.com'
          to='verona@chat.shakespeare.net/juliet'
          type='unavailable'>
  <status>I can not chat now!</status>
</presence>
```

Upon receiving such stanza exiting the multi-user chat room, the XMPP-to-SIP gateway MUST before delivering the message and then, after the message is successfully delivered, it terminates the SIP session by sending a SIP BYE to MSRP conference server. The MSRP conference server then responds with a 200 OK.

2.6. Nickname Conflict



The chat room server analyzes the existing allocation of nicknames, and detects that the nickname proposal is already provided to another participant by the conference. In this case the MSRP conference server answers with a 423 response.

Example: (F6) the chat room does not accept the nickname proposal

```

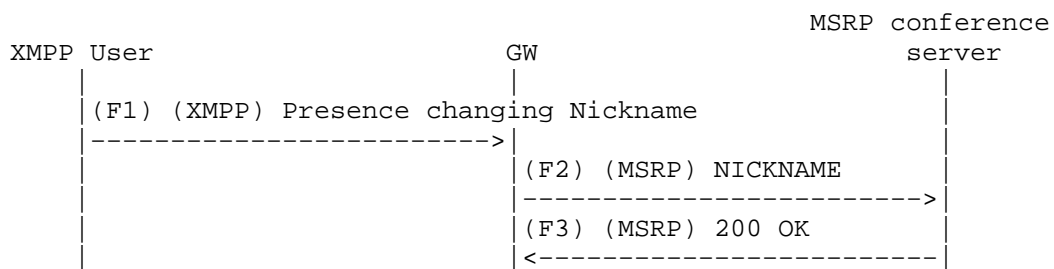
MSRP a786hjs2 423 Nickname usage failed
To-Path: msrp://x2s.example.com:7654/jshA7weztas;tcp
From-Path: msrp://s2x.shakespeare.net:12763/kjhd37s2s20w2a;tcp
-----a786hjs2
  
```

Upon receiving such a response, the SIP-to-XMPP gateway MUST translate it in an xmpp presence stanza of type "error" specifying a <conflict/> error condition.

Example: (F7) Juliet sends a Message to all occupants

```
<presence from='verona@chat.shakespeare.net'
  to='juliet@example.com'
  type='error'>
  <x xmlns='http://jabber.org/protocol/muc' />
  <error type='cancel'>
    <conflict xmlns='urn:ietf:params:xml:ns:xmpp-stanzas' />
  </error>
</presence>
```

2.7. Changing Nickname



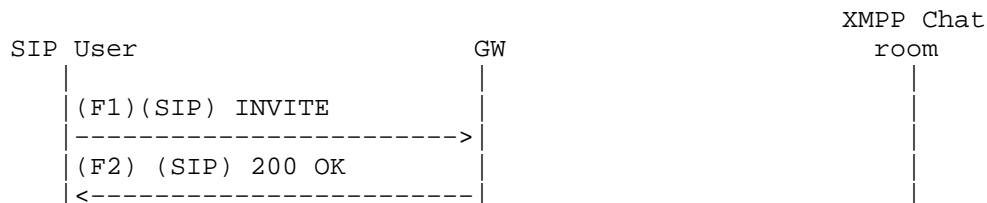
If Juliet decides to changing her nickname within the room, she SHOULD send an update presence information to the room, specifically she SHOULD send a new Nickname in the same room.

Example: (F1) Juliet changing the nickname

```
<presence from='juliet@example.com'
  to='verona@chat.shakespeare.net/July'>
</presence>
```

3. MSRP Multiparty Instant Message (IM) Session to XMPP Group Chat

This section describes how to map a Multi-party Instant Message (IM) MSRP session to an XMPP Group Chat.





3.1. Entering a Room

When the MSRP user ("Romeo") wants to join a multi-user chat room ("Verona"), he first has to start the SIP session by sending out a SIP INVITE request containing an offered session description that includes an MSRP media line accompanied by a mandatory "path" and "chatroom" attributes. The MSRP media line is also accompanied by an "accept-types" attribute specifying support for a Message/CPIM top level wrapper for the MSRP message.

Example: (F1) SIP user starts the session

```
INVITE sip:verona@chat.shakespeare.net SIP/2.0
To: <sip:verona@chat.shakespeare.net>
From: <sip:romeo@example.com>;tag=786
Call-ID: 742510no
Content-Type: application/sdp
Content-Length: [length]

c=IN IP4 s2x.example.net
m=message 7313 TCP/MSRP *
a=accept-types:message/cpim text/plain text/html
a=path:msrp://s2x.example.net:7313/ansp7lweztas;tcp
a=chatroom:nickname private-message
```

[OPEN ISSUE: 1] [I-D.ietf-simple-chat] does not say anything about the inclusion of the SDP "chatroom" attribute in the INVITE however that is the only way for a GW to understand the the INVITE is establishing a group-chat session

Upon receiving the INVITE, the SIP-to-XMPP gateway needs to determine the identity of the remote domain, which it does by performing one or more DNS SRV lookups [RFC2782]. The SIP-to-XMPP gateway SHOULD resolve the address present in the To header of the INVITE to an im URI, then follow the rules in [RFC3861] regarding the "_im" SRV service for the target domain contained in the To header. If SRV address resolution fails for the "_im" service, the SIP-to-XMPP gateway MAY attempt a lookup for the "_xmpp-server" service as specified in [RFC6120] or MAY return an error to the sender (i.e. 502 Bad Gateway).

If SRV address resolution succeeds, the SIP-to-XMPP gateway SHOULD answer successfully with a SIP 200 OK (F2), but it MUST NOT yet translate the request into an XMPP presec stanza before the MSRP user set up the nickname.

```
SIP/2.0 200 OK
To: <sip:verona@chat.shakespeare.net>
From: <sip:romeo@example.com>;tag=786
Contact: <sip:x2s.example.com;transport=tcp> \
        ;methods="INVITE,BYE,OPTIONS,ACK,CANCEL,SUBSCRIBE,NOTIFY"\
        ;automata;isfocus;message;event="conference"
Call-ID: 742510no
Content-Type: application/sdp

c=IN IP4 x2s.example.com
m=message 8763 TCP/MSRP *
a=accept-types:message/cpim text/plain text/html
a=path:msrp://x2s.example.com:8763/lkjh37s2s20w2a;tcp
```

[OPEN ISSUE: 1] the GW could use a temporary nick name and translate directly the request into a XMPP presence stanza, entering the XMPP chat room

Example: (F4) the MSRP user set up the nickname

```
MSRP a786hjs2 NICKNAME
To-Path: path:msrp://s2x.example.net:7313/ansp71weztas;tcp
From-Path: path:msrp://x2s.example.com:8763/lkjh37s2s20w2a;tcp
Use-Nickname: "romeo"
-----a786hjs2
```

Upon receiving the MSRP NICKNAME request, the SIP-to-XMPP gateway is responsible to generate an XMPP presence stanza and sending it to the hostname hosting that chat room.

Example: (F5) Romeo entering a chatroom

```
<presence from='romeo@example.com'
        to='verona@chat.shakespeare.net/romeo'>
  <x xmlns='http://jabber.org/protocol/muc' />
</presence>
```

If the room does not already contain another user with the nickname, the service accept the access. So if the GW does not receive any stanza of type "error" specifying a <conflict/> error condition, it MUST answer the MSRP nickname proposal with a 200 OK response (F6).

Example: (F6)

```
MSRP a786hjs2 200 OK
To-Path: path:msrp://x2s.example.com:8763/lkjh37s2s20w2a;tcp
From-Path: path:msrp://s2x.example.net:7313/ansp71weztas;tcp
-----a786hjs2
```

3.2. Presence Broadcast

If the multi-user chat service is able to add the user to the room, it sends presence from all the existing occupants' room JIDs to the new occupants's full JID, including extended presence information about roles in an <x/> element.

Example: (F7) the chat room presence information translated in XMPP

```
<presence from='verona@chat.shakespeare.net/juliet'
to='juliet@example.com'>
  <x xmlns='http://jabber.org/protocol/muc#user'>
    <item affiliation='none' role='participant' />
  </x>
</presence>
```

Upon receiving such a response, if the MSRP has already completed the subscription to the Conference Event package [RFC4575], the XMPP-to-SIP gateway MUST translate it in a SIP NOTIFY request.

Example: (F10) the XMPP-to-SIP notifies the presence information

```
NOTIFY sip:romeo@example.com SIP/2.0
To: Juliet <sip:romeo@example.com>;tag=43524545
From: <sip:verona@chat.shakespeare.net>;tag=a3343df32
Call-ID: k3l43id034ksererff
Event: conference
Subscription-State: active;expires=3600
Content-Type: application/conference-info+xml
Content-Length: ...
```

```
<conference-info version="0" state="full"
entity="sip:3402934234@conf.example.com">
  <conference-description>
    <subject>Today in Verona</subject>
    <conf-uris>
      <entry>
        <uri>tel:+18882934234</uri>
      </entry>
    </conf-uris>
  </conference-description>
  <users>
    <user entity="sip:juliet@example.com" state="full">
      <nickname-text>juliet</nickname-text>
      <roles>
        <entry>participant</entry>
      </roles>
    </user>
  </users>
</conference-info>
```

3.3. Exchanging Messages

Once the user has joined the chat room, the user can exchange an unbounded number of messages both public and private.

The mapping of MSRP syntax elements to XMPP syntax elements SHOULD be as shown in the following table. (Mappings for elements not mentioned are undefined.)

Table 4: Message syntax mapping from MSRP Message to XMPP

CPIM Header	XMPP Element or Attribute
To	to
From	from
body of the SEND request	<body/>

3.3.1. Sending a Message to All Occupants

When Romeo wants to send a message to all other occupants in the room, he sends a MSRP SEND request to <room@service> itself (i.e. <verona@chat.shakespeare.net> in our example).

Example: (F12) ROMEO sends a message to the chat room

```
MSRP a786hjs2 SEND
To-Path: path:msrp://s2x.example.net:7313/ansp7lweztas;tcp
From-Path: path:msrp://x2s.example.com:8763/lkjh37s2s20w2a;tcp
Message-ID: 87652492
Byte-Range: 1-*/*
Content-Type: message/cpim

To: <sip:verona@chat.shakespeare.net;transport=tcp>
From: <sip:juliet@example.com>
DateTime: 2008-10-15T15:02:31-03:00
Content-Type: text/plain

Romeo is here!
-----a786hjs2$
```

Upon receiving the SEND request, if the request either contains a Failure-Report header field value of "yes" or does not contain a Failure-Report header at all, the SIP-to-XMPP gateway MUST immediately translate in a xmpp message stanza (F13) and then generate and send an MSRP response (F14).

The following examples show an exchange of a public message.

Example: (F13) Romeo sends a Message to all occupants

```
<message from='romeo@example.com'
  to='verona@chat.shakespeare.net'
  type='groupchat'>
  <body>Romeo is here!</body>
</message>
```

Example: (F14) the SIP-to-XMPP send the MSRP response

```
MSRP d93kswow 200 OK
To-Path: path:msrp://x2s.example.com:8763/lkjh37s2s20w2a;tcp
From-Path: path:msrp://s2x.example.net:7313/ansp71weztas;tcp
-----d93kswow$
```

[OPEN ISSUE: 1] The SIP-to-XMPP gateway will receive back the echo message from the Chat room service. The SIP-to-XMPP gateway has to translate it back to the MSRP user or no?

3.3.2. Sending a Private Message

Romeo MAY send a "private message" to a selected occupant via the chat room service by sending a message to the occupant's room nick name.

The following examples show an exchange of a private message.

Example: (F12) Romeo sends a private message

```
MSRP a786hjs2 SEND
To-Path: path:msrp://s2x.example.net:7313/ansp71weztas;tcp
From-Path: path:msrp://x2s.example.com:8763/lkjh37s2s20w2a;tcp
Message-ID: 87652492
Byte-Range: 1-*/*
Content-Type: message/cpim

To: <sip:juliet@chat.shakespeare.net>
From: <sip:romeo@example.com>
DateTime: 2008-10-15T15:02:31-03:00
Content-Type: text/plain

I am here!!!
-----a786hjs2$
```

Example: (F13) Juliet sends a private message

```
<message from='romeo@example.com'
  to='verona@chat.shakespeare.net/juliet'
  type='chat' />
  <body>I am here!!!</body>
</message>
```


3.4. Exiting a Room

If Romeo decides to exit the multi-user chat room, his client sends SIP BYE to the <verona@chat.shakespeare.net> chat room.

Example: (F11) Romeo terminates the session

```

BYE sip:verona@chat.shakespeare.net SIP/2.0
Max-Forwards: 70
From: <sip:romeo@example.net>;tag=786
To: <sip:verona@chat.shakespeare.net>;tag=534
Call-ID: 742510no
Cseq: 1 BYE
Content-Length: 0

```

Upon receiving the SIP BYE, the SIP-to-XMPP gateway translate it in a presence stanza (F19) and send it to the XMPP chat room service. Then the SIP-to-XMPP gateway responds with a 200 OK to the MSRP user.

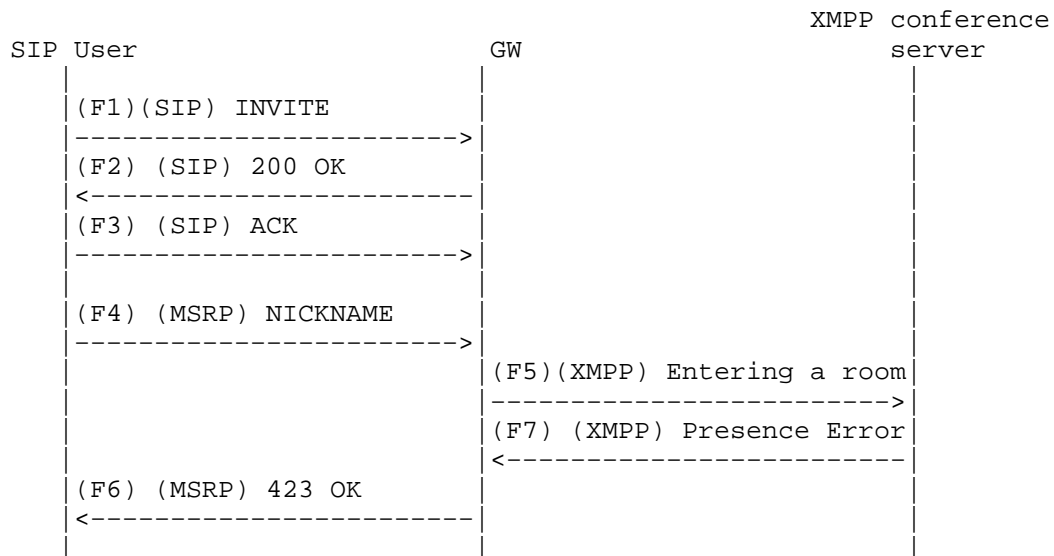
Example: (F19) Juliet exiting a chatroom

```

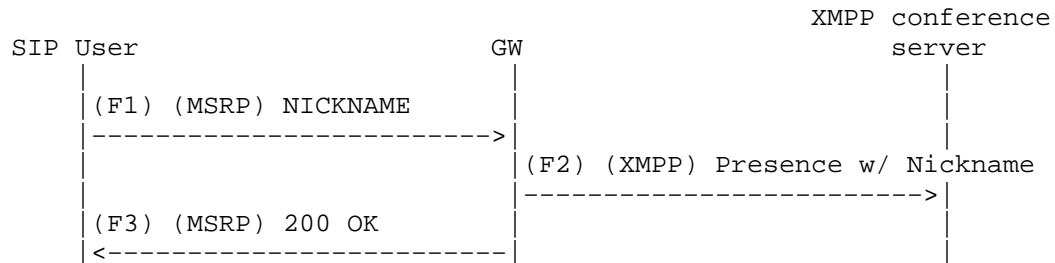
<presence from='romeo@example.com'
          to='verona@chat.shakespeare.net/romeo'
          type='unavailable'>
</presence>

```

3.5. Nickname Conflict



3.6. Changing Nickname



If Romeo decides to changing her nickname within the room, he SHOULD send a new MSRP NICKNAME request. In fact modification of the nickname in MSRP is not different from the initial reservation and usage of a nickname.

Example: (F1) the MSRP user changes the nickname

```

MSRP a786hjs2 NICKNAME
To-Path: path:msrp://s2x.example.net:7313/ansp71weztas;tcp
From-Path: path:msrp://x2s.example.com:8763/lkjh37s2s20w2a;tcp
Use-Nickname: "montecchi"
-----a786hjs2
  
```

Upon receiving such message, the SIP-to-XMPP gateway MUST translate it in a XMPP presence stanza.

Example: (F2) Juliet changing the nickname

```

<presence from='juliet@example.com'
          to='verona@chat.shakespeare.net/montecchi'>
</presence>
  
```

4. Security Considerations

To follow.

5. IANA Considerations

This document requests no actions of IANA.

6. References

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