Instant Messaging using SIMPLE

Candidate Version 1.0 – 16 Aug 2007

Open Mobile Alliance

OMA-TS-SIMPLE_IM-V1_0-20070816-C

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1 Scope

The scope of the SIP/SIMPLE Instant Messaging document is to define the specification for the IM service enabler.

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2 References

2.1 Normative References

[IM-AD] "Instant Messaging Architecture ", Open Mobile Alliance™, OMA-AD_SIMPLE_IM-V1_0, URL: http://www.openmobilealliance.org/

[IM-XDM-Specification] "IM XDM Specifications", Open Mobile Alliance™, OMA-TS-IM_XDM-V1, URL: http://www.openmobilealliance.org/

[IOPPROC] "SCR Rules and Procedures", V1.0, Open Mobile Alliance™, OMA-ORG-SCR_Rules_and_Procedures-V1_0,

http://www.openmobilealliance.org/URL:http://www.openmobilealliance.org/

[OMA-AD-XDM] " XML Document Management Architecture "; Open Mobile Alliance™, OMA-AD-XDM-V2_0_1,

URL: http://www.openmobilealliance.org/

[OMA-Pres-Spec] "Presence SIMPLE Specification", Open Mobile Alliance™, OMA-TS-Presence_SIMPLE-V1_0_1-20061128-A,

URL: http://www.openmobilealliance.org/

[OMA-Pres-RD] "Presence SIMPLE Requirements", Open Mobile Alliance™, OMA-RD-Presence_SIMPLE-V1_0-20060725-A, U

RL: http://www.openmobilealliance.org/

[OMA-POC-FINAL-REP] "PoC - PoCV2.0 Discrete Media Transfer Final Report", Version 2.0, Open Mobile Alliance™, OMA-SUP-XSD_poc_finalReport-V2_0, URL: http://www.openmobilealliance.org/

[Shared-Group-XDM] "Shared Group XDM Specification"; Open Mobile Alliance™, OMA-TS-Shared_Group_XDM-V2_0, URL: http://www.openmobilealliance.org/

[Shared-Policy-XDM] "Shared Policy XDM specification"; Open Mobile Alliance™,

OMA-TS-XDM_Shared_Policy-V2,

URL: http://www.openmobilealliance.org/

[Shared-List] "Shared List XDM Specification" V2.0, Open Mobile Alliance™, OMA-TS-XDM_Shared_List-V2_0

URL: http://www.openmobilealliance.org/

[XDM-Core] XML Document Management (XDM) specifications, V2.0, Open Mobile Alliance™, OMA-TS-XDM_Core-V2

URL: http://www.openmobilealliance.org/

[XSD_IMUSAGE] "IM – IM Usage", Version 1.0, Open Mobile Alliance™, OMA-SUP-XSD_im_imusage-V1_0, URL: http://www.openmobilealliance.org/

[XSD_IM_Service_Setting] "IM Service Setting", Version 1.0, Open Mobile Alliance™, OMA-SUP-XSD_im_service_setting-V1_0,

URL: http://www.openmobilealliance.org/

[MSRP] "The Message Session Relay Protocol", B. Campbell, June 2006, URL:http://www.ietf.org/internet-drafts/draft-ietf-simple-message-sessions-19.txt

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[RFC2046] Multipurpose Internet Mail Extensions (MIME) Part Two: Media Types, URL: http://www.ietf.org/rfc/rfc2046.txt

[RFC2119] "Key words for use in RFCs to Indicate Requirement Levels", S. Bradner, March 1997, URL: http://www.ietf.org/rfc/rfc2119.txt

[RFC2183] Communicating Presentation Information in Internet Messages:The Content-Disposition Header Field, URL: http://www.ietf.org/rfc/rfc2183.txt

[RFC2234] "Augmented BNF for Syntax Specifications: ABNF". D. Crocker, Ed., P. Overell, November 1997, URL: http://www.ietf.org/rfc/rfc2234.txt

[RFC2396] "Uniform Resource Identifiers (URI): Generic Syntax", T. Berners-Lee, August 1998, URL: http://www.ietf.org/rfc/rfc2396.txt

[RFC2778] A Model for Presence and Instant Messaging, M. Day et al, February 2000, URL: http://www.ietf.org/rfc/rfc2778.txt

[RFC3261] "SIP: Session Initiation Protocol", J. Rosenberg et al, June 2002, URL: http://www.ietf.org/rfc/rfc3261.txt

[RFC3264] "An Offer/Answer Model with the Session Description Protocol (SDP)", June 2002 URL: http://www.ietf.org/rfc/rfc3264.txt

[RFC3265] IETF RFC 3265 "Session Initiation Protocol (SIP)-Specific Event Notification", URL: http://www.ietf.org/rfc/rfc3265.txt

[RFC3323] A Privacy Mechanism for the Session Initiation Protocol (SIP) URL: http://www.ietf.org/rfc/rfc3323.txt

[RFC3325] Private Extensions to the Session Initiation Protocol (SIP) for Asserted Identity within Trusted Networks, URL: http://www.ietf.org/rfc/rfc3325.txt

[RFC3420] Internet Media Type message/sipfrag, URL: http://www.ietf.org/rfc/rfc3420.tx

[RFC3428] "SIP Extension for Instant Messaging", B. Campbell et al, December 2002, URL: http://www.ietf.org/rfc/rfc3428.txt

[RFC3515] IETF RFC 3515 (April 2003): "The Session Initiation Protocol (SIP) REFER Method", URL: http://www.ietf.org/rfc/rfc3515.txt

[RFC3840] Indicating User Agent Capabilities in the Session Initiation Protocol (SIP), URL: http://www.ietf.org/rfc/rfc3840.txt

[RFC3841] Caller Preferences for the Session Initiation Protocol (SIP) (RFC 3841) URL: http://www.ietf.org/rfc/rfc3841.txt

[RFC3891] The Session Initiation Protocol (SIP) "Replaces" Header, URL: http://www.ietf.org/rfc/rfc3891.txt

[RFC3903] Session Initiation Protocol (SIP) Extension for Event State Publication, URL: http://www.ietf.org/rfc/rfc3903.txt

[RFC4028] Session Timers in the Session Initiation Protocol (SIP), URL: http://www.ietf.org/rfc/rfc4028.txt

[RFC4353] "A Framework for Conferencing with the Session Initiation Protocol (SIP)", URL: http://www.ietf.org/rfc/rfc4353.txt?number=4353

[RFC4354] "A Session Initiation Protocol (SIP) Event Package and Data Format for Various Settings in Support for the Push-to-Talk over Cellular (PoC) Service", M. Garcia-Martin, Nokia, January 2006, URL: http://www.ietf.org/rfc/rfc4354.txt

[RFC4483] A Mechanism for Content Indirection in Session Initiation Protocol (SIP) Messages, May 2006, URL: http://www.ietf.org/rfc/rfc4483.txt

[RFC4488] Suppression of Session Initiation Protocol (SIP) REFER Method Implicit Subscription,

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URL: http://www.ietf.org/rfc/rfc4488.txt

[RFC4566] SDP: Session Description Protocol, URL: http://www.rfc-editor.org/rfc/rfc4566.txt

[RFC 4575] A Session Initiation Protocol (SIP) Event Package for Conference State. J. Rosenberg, H. Schulzrinne, O. Levin, Ed.. August 2006. http://www.ietf.org/rfc/rfc4575.txt

[RFC 4579] "Session Initiation Protocol (SIP) Call Control - Conferencing for User Agents", August 2006, URL: http://www.ietf.org/rfc/rfc4579.txt

[draft--mmusic-file-transfer-mech] "Session Description Protocol (SDP) Offer/Answer Mechanism to Enable File Transfer", October 2006, URL: http://www.ietf.org/internet-drafts/draft-ietf-mmusic-file-transfer-mech-03.txt

[draft-multiple-refer] "Refering to Multiple Resources in the Session Initiation Protocol (SIP)", September 2006, URL: http://www.ietf.org/internet-drafts/draft-ietf-sip-multiple-refer-01.txt

[draft-URI-list] "Conference Establishment Using Request-Contained Lists in the Session Initiation Protocol (SIP)", February 2006 http://www.ietf.org/internet-drafts/draft-ietf-sip-uri-list-conferencing-01.txt

[draft-uri-list-message] "Multiple-Recipient MESSAGE Requests in the Session Initiation Protocol (SIP)",February 2006, URL

http://www.ietf.org/internet-drafts/draft-ietf-sip-uri-list-message-01.txt

[draft-URI-list-handling] "draft-hautakorpi-sipping-uri-list-handling-refused-01"

January, 2007, URL: http://www.ietf.org/internet-drafts/draft-hautakorpi-sipping-uri-list-handling-refused-01.txt

[IMDN] Instant Message Disposition Notification, October 2006 http://www.ietf.org/internet-drafts/draft-ietf-simple-imdn-04.txt

[3GPP TS 26.141] IP Multimedia System (IMS) Messaging and Presence; Media formats and codecs, TS 26.141 URL: http://www.3gpp.org/

[3GPP TS 24.229] IP multimedia call control protocol based on Session Initiation Protocol (SIP) and Session Description Protocol (SDP); Stage 3, TS 24.229, URL: http://www.3gpp.org/

[3GPP TS 23.218] 3GPP: "IP Multimedia (IM) session handling; IM call model; Stage 2", TS 23.218, Stage 3, URL: http://www.3gpp.org/ftp/Specs/archive/23_series/23.218/

[3GPP TS 29.228] IP Multimedia (IM) Subsystem Cx and Dx interfaces; Signalling flows and message contents", TS 29.228, URL: http://www.3gpp.org/ftp/Specs/latest/Rel-6/29_series/

[3GPP TS 33.203] 3G security; Access security for IP-based services (Release 7)

TS 33.203

URL: http://www.3gpp.org/ftp/Specs/latest/Rel-7/33_series/

[3GPP TS 33.210] 3G Security; Network Domain Security; IP network layer security (Release 7) TS 33.210 URL: http://www.3gpp.org/ftp/Specs/latest/Rel-7/33_series/

[3GPP2 X.S0013-004] All-IP Core Network Multimedia Domain - IP Multimedia Call Control Protocol Based on SIP and SDP Stage 3; X.S0013-004-A ; URL: http://www.3gpp2.org/Public_html/specs/X.S0013-004-A_v1.0_051103.pdf

[3GPP2 S.R0086-0] 3GPP2 S.R0086-A v1.0, MS Security Framework;

URL: http://www.3gpp2.org/Public_html/specs/S.R0086-A_v1.0_040614.pdf

2.2 Informative References

[3GPP-CHARGING] 3GPP TS 32.260 Telecommunication management; Charging management; IP Multimedia

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Subsystem (IMS) charging (Release 6), March 2004, URL: http://www.3gpp.org/

[3GPP2-CHARGING] 3GPP2 All-IP Core Network Multimedia Domain: IP Multimedia Subsystem - Charging Architecture X.S0013-007-0 v1.0, URL: http://www.3gpp2.org

[OMA-DICT] "OMA Dictionary", OMA-ORG-Dictionary-V2_4-20060725-A ,URL: http://www.openmobilealliance.org/

[RFC2617] "HTTP Authentication: Basic and Digest Access Authentication", URL: http://www.ietf.org/rfc/rfc2617.txt

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3 Terminology and Conventions

3.1 Conventions

The key words “MUST”, “MUST NOT”, “REQUIRED”, “SHALL”, “SHALL NOT”, “SHOULD”, “SHOULD NOT”, “RECOMMENDED”, “MAY”, and “OPTIONAL” in this document are to be interpreted as described in [RFC2119].

All sections and appendixes, except “Scope” and “Introduction”, are normative, unless they are explicitly indicated to be informative.

3.2 Definitions

Access control	Procedures for controlling incoming or outgoing requests to an entity. For IM System, the IM Server controls the access according to pre-defined access policy rules. For the IM User, the User defines/modifies the Access Lists to be enforced by the IM Server for controlling other user’s access to the served IM user.
Access Policy	Rules defined for the Access Control purposes. E.g., User defined rules for describing who is allowed to contact him/her using the IM Service.
Ad-hoc Group Session	An IM session for multiple users that does not involve the use of predefined groups. The list of users for the Ad hoc Group Session is created dynamically and is disbanded after the Ad hoc Group session ends.
Authenticated Originator's IM Address	The Authenticated Originator's IM Address is the IM Address of the originating IM Client that has been authenticated by the SIP/IP Core. E.g. the P-Asserted Identity.
Availability for IM	Indicates whether the IM User is able to join IM Communication e.g. the user is registered. See [OMA-Pres-RD]
Chat Alias	A name defined by a user to describe his preferred identity in a chat room. A Chat Alias serves as a temporary, routable identity of an IM User who wants to keep his real identity anonymous from other IM participants in a chat room, and MUST be unique in a particular chat room. Chat alias consist of two parts, Display name part and a URL part. The Display Name part may be temporarily modified by the IM Server to ensure that the Chat Alias is unique within a chat session.
Conference	A multi-party conversation with a central point of control, also called a chat session in SIMPLE IM.
Conference-factory-URI	A Conference-factory-URI for IM service is a provisioned SIP URI that identifies the Conference Server in the Home Network.
Conference focus	A central element in the ‘Controlling IM Function’ that maintains direct relationship with each participant by means of a SIP dialog. Each dialog can belong to a different SIP session i.e. Maintains the SIP dialogue in the IM conference session.
Contact	An address (expressed as a SIP URI) at which a user can be reached. This is generally dynamically associated with an address-of-record using a SIP REGISTER request. Defined in [RFC3261].
Controlling IM Function	The Controlling IM Function provides centralized IM session handling which includes MSRP Media distribution between conference participants, participants information, and executes conference control policies i.e acts as a IM conference server. For pager mode messages (e.g. SIP MESSAGEs), the controlling IM function acts as a message exploder.
Controlling IM Server	A SIP application server responsible for IM Service functionality in the network side. Function of the Controlling IM Server relates to group communication, e.g., acting as a conference focus in an IM Session.
Conversation	An ordered exchange of immediate messages in the context of a session between users.
Conversation History	A record of a user’s IM communication during all modes of operation (Pager, Large message, and Session modes). The Conversation History includes both the messages exchanged as well as supplementary descriptive information (e.g., topics and time of communication).
Conversation History Function	Conversation History Function provides the capabilities to manage storage, retrieval and manipulation (e.g., delete, rename) of conversation histories including obtaining descriptive information about conversations.

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Deferred Message	If an intended recipient of an IM pager-mode or large mode message communication is not available, either due to the recipient's Inbox settings or the recipient being IM offline, the message is stored in the IM Server for later delivery. I.e. the IM becomes deferred message.
Event Package	A specification for a set of events to be used with subscription and notification. The event package defines the semantics of the notification message body and of subscriptions to that event. Event packages are defined in [RFC3265].
File Transfer	A one-way transfer of data between entities in real-time fashion. The Session ends when the data has been transferred.
Group	A group is a nested collection of addresses or identifiers such as an address or record called as Group Members, and other information related to the group. A group is identified by a single address called Group Identity.
Group Advertisement	A message advertising a Group to Users. A Group Advertisement typically informs Users about a new Group and contains information about how to get access to the Group. The IM enabler uses the extended group advertisement as specified in [Group-XDM-Specification] for group advertisment messages
(Group) Member	An entity belonging to a Group according to the group definition.
Group Session	A session at which two or more users participate.
History	Stored conversation, which may also be called conversation history. There are two types of data related to the history: metadata and the actual conversation.
Home Network	Network comprising of the SIP/IP core and the IM Server of the local IM Client.
IM Address	An IM Address identifies an IM User. The IM Address can be used by one IM User to request communication with other IM Users.
IM Client	An IM Service endpoint.
IM Server	A network entity that provides messaging service.
IM Service	The instant message offering presented by a service provider that utilizes the IM Enabler and potentially other enablers.
IM Session	Exchange of near real-time messages where the senders and receivers join together for a period of time (session). The session is established at some moment in time, continues for a finite duration and then is dissolved. Messages exchanged are associated together in the context of this session.
IM Session Identity	SIP URI received by the IM Client during the IM Session establishment in the Contact header.
Instant Message (IM)	A message delivered to a user in an instant, interactive manner. Generally short, even brief. Instant Messages are often called IMs. IMs are often exchanged back-and-forth between users in a conversational fashion. Defined in [RFC2778]. In other words, a type of messaging service by which the sender expects immediate message delivery in (near) real time fashion.
Invited IM User	An IM User receiving invitation or has been invited to an IM Session.
Inviting IM Client	An IM Client either initiating or triggering initiation of the IM Session.
Joining IM Client	An IM Client joining in a Group Session.
Large Message Mode	This mode is used to send a single large instant message using MSRP. Since MSRP is used, a SIP session must be established, but it is torn down after the single message is transmitted.
MSRP Switch	A media level entity that receives MSRP messages and delivers them to the other conference participants
Media Parameter	Data provided in SDP to describe preferred or used media settings for an IM Session and large message mode.
Multimedia Encapsulation	Also called MIME. A formatting technique for rich messages originally used for email, but now used for HTTP and many other things. MIME allows serializing one or more message elements into a simple text stream. The message elements may be text, pictures, and many other types of data, or external references using a URI to an element actually stored elsewhere such as a web page.
Notification	A message, delivered in response to a subscription, which delivers information about an associated event in the format defined by the relevant event package. Defined in [RFC3265].
One-to-One IM Session	One user communicates with a single user. It includes Peer-to-Peer, and Ad hoc Group Session with only

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	two participants.
Originating participating function	The Participating IM function that performs the IM Session handling in the network of the originating client.
Pager Mode Message	A small size, one-shot message from an IM User to other IM User(s). SIP MESSAGE is used for carrying the message.
Participant	An entity participating in a Group Session.
Participating IM Function	The Participating IM Function provides IM Session handling and policy enforcement for incoming and outgoining IM Sessions (i.e.offers IM access and service policies), and may provide the media convey function between IM Client and the Controlling IM Function.
Pre-defined Group	A Group whose members are permanently stored in XDMS before the actual group communication starts. The IM Server creates the IM Group Session according to the definition in the group, e.g., when the creator of the group definition joins in, the IM Server may invite other users to the IM Group Session.
Presence	Information about the status and reachability of a specific individual, usually a person. See "Presentity". Defined in [RFC2778].
Presence Server (PS)	A node/application server (or set of nodes/application servers, in a clustering environment) that acts as an intermediate for the user to provide Presence information to other users and other users to subscribe or get Presence information of a certain user, i.e. Presentity.
(Presence) Tuple	A data model element of Presence information containing service specific information; e.g. status and communications means for a given Presentity.
Presentity	A distinguished entity or resource for which presence information may be available. A presentity is most commonly a reference for a person.
Proxy	A SIP node that forwards messages according to the proxy rules defined in [RFC3261]. SIP requests made by nodes using SIMPLE are processed by proxies just like any other SIP request would be.
Public Conference	A Pre-defined Group that is uniquely identified by a URI. A Public conference is usually hosted by a Service Provider which creates, maintains and manipulates the conferencing features.
Registrar	A SIP server node that receives and responds to SIP REGISTER messages. A registrar is generally associated with an administrative domain and may be associated with a presence server. The purpose of the registrar is to store the association of a "contact with presentity". This association may also be called a "binding". Defined in [RFC3261].
Service Setting	User and/or IM Client provided settings for the IM Service execution. User and/or IM Client may e.g. activate barring of SIP requests or activate storing of History.
Session based messaging	A type of IMS Messaging service by which the sender expects immediate message delivery in (near) real time fashion. In addition the sender(s) and the receiver(s) have to join to a messaging session e.g. chat room, before message exchange can take place [3GPP TS 22.340].
SIMPLE	A methodology and set of extensions to SIP supporting the Instant Messaging requirements defined by IETF.
SIP Session	A SIP Session is a SIP dialog. From [RFC 3261], a SIP dialog is defined as follows: A dialog is a peer-to-peer SIP relationship between two UAs that persists for some time. A dialog is established by SIP messages, such as a 2xx response to an INVITE request.
Subscription	A persistent relation between a subscriber and an event source (often a presence server for a presentity) by which the subscriber requests notifications of a specific even for a set duration. Defined in [RFC3265].
System	Assembly of entities comprising a whole with each and every element interacting or related to one another.
System Message	A special type of message sent by the IM Server for different purposes (e.g. advice of charge, service notifications, advertisements, instructions, etc). System Messages MAY contain a list of possible options and require actions or response from the user.
Terminating participating function	The Participating IM function that performs the IM Session handling in the network of the terminating client.
URI-list	A list of URIs issued by an IM Client to IM Server for exploding a SIP request to URIs contained in the list. The IM Client uses a URI-list for either creating an Ad-hoc Group Session or exploding a one-shot

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	message to multiple recipients. The IM Server takes care of sending individual requests to URIs.
User	A human using the described features through a terminal device.
User equipment	User equipment is a hardware device (e.g. phone) with IM software used by users.
User Profile	User related data stored in XDMS.
Visibility	Service setting, indicating whether the IM User wants to be visible (e.g. presence status shown as "available for IM") to other IM users. This allows an IM user to remain invisible to other IM users, even when registered to the IM service.
Watcher	A node/Application Server that requests presence information for a particular presentity.
Willingness for IM	Indicates whether the IM User is currently willing to accept new incoming IM request. See [OMA-Pres-RD]

3.3 Abbreviations

AD	Architecture Document
B2BUA	Back to Back User Agent
HTTP	Hyper Text Transfer Protocol
IETF	Internet Engineering Task Force
IM	Instant / Immediate Messaging
IMS	IP Multimedia Subsystem
IP	Internet Protocol
MIME	Multipurpose Internet Mail Extension
MMD	Multi Media Domain
MSRP	Message Session Relay Protocol
OMA	Open Mobile Alliance
PoC	Push to talk over Cellular
PS	Presence Server
RFC	Request for Comments
SDP	Session Description Protocol
SIMPLE	SIP Instant Message and Presence Leveraging Extensions
SIP	Session Initiation Protocol
UE	User Equipment
URI	Uniform Resource Identifier
URL	Uniform Resource Locator
XCAP	Extensible mark-up language (XML) Configuration Access Protocol
XDMS	XML Document Management Server
XML	Extensible Mark-up Language

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4 About Messaging Services

4.1 Introduction

Instant Messaging (IM) is a form of 2-way communications that allows users to exchange information with others in an interactive nature, i.e., users exchange messages in near real time to engage in conversations. This requires low latency in the delivery of messages. Typically, text messages are exchanged but this enabler supports content types beyond text. Communication can be in one-to-one or one-to-many configurations, meaning that the messaging can be between two individuals or within a group where everyone in the group can see what everyone else is sending. There is no need to maintain any type of floor control since messages are posted to the individual (or group) in the order they are received, and can be read as needed.

This specification supports three fundamental modes of IM communication: (1) Pager Mode (2) Large Message Mode and (3) IM Session Mode. The first is appropriate for brief message exchanges such as announcements with acknowledgements. The second is for brief message exchanges in which the size of the individual message is large (such as when carrying multimedia content).The last is similar to a conference hosted by a network where individual users join and leave the group conversation over time.

This specification allows the IM Service to ride atop a SIP/IP Core Network as a SIP application. One example of such a network is an IP Multimedia Subsystem (IMS) network but any appropriate SIP network may be used. While the underlying SIP "infrastructure" is responsible for SIP authentication and routing of SIP messages, all IM specific behaviour is documented in this specification.

Basic messaging capabilities are augmented with advanced features such as Conversation Storage and Searching. During IM communication, a record of the users incoming and outgoing messages may be stored as part of a conversation. The IM user is later able to selectively retrieve messages from within conversations as well as manage their storage. The Search feature in [XDM-Core] allows users to search through the metadata of stored IM content. Further, the Search feature enables users to explore the user profiles of others in order to find new people with which to communicate.

Together with companion OMA enablers for Presence Service and XML Document Management, this specification supports IM services built upon presence and group management to provide a more compelling user experience. In addition, user group lists may be created that operate across Presence and PoC services as well as IM service.

4.2 Pager Mode and Large Message Mode Messaging

4.2.1 General

These are the modes of IM communication that occur without the establishment of an IM session. Further, these messages form a uni-directional communication at any given time. Users may respond to a message that is sent. But responses and subsequent messages occur independently are unrelated to the initial message sent. The IM Server needs to maintain no state and provide no conferencing capabilities with this simple approach. For Pager Mode messages, the message is carried directly within the body of the SIP message. Using the SIP MESSAGE method, the message contents is inserted as a MIME attachment within the body of the message [RFC3428]. The SIP/IP Core provides the routing between the IM Servers and IM Client without establishing a SIP session.

However, the SIP MESSAGE method message size poses a limitation of the instant message that can be sent. This limitation is especially acute if the IM contents are multimedia in nature. To allow arbitrarily large pager mode messages, the contents of the message are not inserted into the SIP message but carried using MSRP [MSRP].Called Large Message Mode, a SIP session is established between the interested parties (sender and all receivers) with MSRP as the media component. The IM contents are then transmitted using MSRP using segmentation if necessary. This SIP session should *not* be confused with an IM session as no IM session is established. The SIP session is only used to transmit exactly one large message after which the SIP session is torn down.

Detailed procedures can be found in section 6.1.1.3 "*Originating Participating Function/Pager Mode Messaging",* section 8 "*IM Pager Mode*", and section 9 "*IM Large Message Mode*" for Pager Mode and Large Message Mode.

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4.2.2 Group Messages

To send a Pager Mode message to more than one user, the Request-URI field of the SIP MESSAGE may point to an IM Group identifier. Alternatively, a list of recipients may be carried as a MIME attachment in the body of the SIP message. An IM Group URI may be part of the recipient list. The IM Server delivers the message to the whole group as described in Section 8.3.1.1 "*Receiving SIP MESSAGE request for group communication*" or Section 9.1.1.2 "*Establishment of a Large Message Session*". Multiple copies of the instant message are created in the network and transmitted thereby relieving the client from transmitting multiple copies.

4.2.3 Deferred Messages

Users may send messages to other users when the recipient is not registered with the IM Service (in an offline state) or temporarily disconnected from the IM Service (e.g., loss of wireless coverage). In these cases, the messages are received by the recipient's IM Service and temporarily stored until the receiver comes back online. These are deferred messages which in the simple case are all pushed to the receiver automatically when re-connected to the IM Service.

If the size of deferred messages is large or the number of deferred messages high, the IM user may not have all deferred messages pushed automatically upon re-connection. In this case, the receiver may selectively choose which messages to retrieve by looking through a message summary. In addition, the receiver may selectively delete some deferred messages without retrieving them (e.g., based on subject or sender). All of these possibilities are detailed in section 12 "*Deferred Messages*".

4.3 Session Mode Messaging

In contrast with Pager Mode communication or Large Message Mode, Session Mode creates an IM session where the senders and receivers join together for a period of time. The IM session is established at some moment in time, continues for a finite duration and then is dissolved. Sometimes such a communication mode is called *chat* or joining a *chat room*. Messages exchanged are associated together in the context of this session.

In an IM session, the contents of the message are carried using MSRP [MSRP]. To achieve this, a SIP session is established between the interested parties (sender and all receivers) with MSRP as the media component. This is unlike Large Message Mode communication where there is a SIP session but there is never an IM Session. All communications during IM sessions are transmitted using MSRP regardless of the size of individual messages. The SIP session is maintained for the duration of the IM session and not torn down after message transmission is complete. All messages that occur during an IM session are all related together in the context of the session.

4.3.1 Session Mode Messaging as an IM Conference

This specification uses IM conference to mean an instantiation of an IM session that is uniquely identified by a URI. An IM conference is hosted by an IM Server which acts as a conference focus to provide a central point of control for the SIP session as well as the MSRP session. All messages are exchanged over the MSRP session by using the conference focus as an MSRP switch as defined in [MSRP]. Details of the conference focus can be found in Section 7 "*IM Session*". Since IM conferences usually involve a number of users, IM groups may be used to invite a number of users to join a conference. The IM group has policy information associated with it that controls the behaviour of the IM conference. One policy element, for example, is the maximum number of users allowed to join the conference at one time.

If no predefined IM group is used to create a conference, it is called an Ad-hoc IM session. The list of users for the Ad hoc session is created on-the-fly and disappears after the Ad-hoc session ends. It should be noted that Pager Mode or Large Message Mode communication do not constitute an Ad hoc session, i.e., an IM session must be created. Ad-hoc session creation is described in Section 7.1.1.3 "*IM Client initiates an Ad-hoc IM Conference*"

4.3.2 Peer-to-Peer IM Session

A One-to-one IM session is between exactly two parties. However, a special case of a one-to-one IM session is a peer-to-peer session. The conference is established through IM Servers as usual but a peer-to-peer MSRP path is established directly

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between the two parties. This allows an efficient mode of communication when only two parties are involved as the message contents do not traverse IM Service network entities.

If the IM user wishes to extend a peer-to-peer IM session to more than two parties, it must be converted to a regular IM conference first before additional users are invited to join. See Section 7.1.1.6 "*IM Client extends 1-to-1 IM Session to a conference*" for details.

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5 Common Procedures

5.1 Authenticated Originator's IM Address

The Authenticated Originator's IM Address is the IM Address of the originating IM Client that has been authenticated by the SIP/IP Core or the Group Identity when the IM Server performing the Controlling IM Function invites users to a Group Session.

When the SIP/IP Core corresponds to 3GPP/3GPP2 IMS, then the Authenticated Originator's IM Address is contained in the P-Asserted-Identity header according to rules and procedures of [3GPP TS 24.229] / [3GPP2 X.S0013.004]. The IM Client MAY insert a P-Preferred-Identity header, which contains a client preferred identity, for the SIP/IP Core to be used inside the P-Asserted-identity header. If privacy is required, the From header SHALL contain an anonymous URI according to [RFC 3323] and optionally an alias or "Anonymous" as the display name, and the Privacy header field values SHALL be set according to [RFC3323] and [RFC3325].

The From header MAY be used to carry the Authenticated Originator's IM Address, and MAY be supported by the IM Server. The IM Server MAY be able to support an Authenticated Originator's IM Address in the From header if the IM Server has transitive trust with the SIP/IP Core, and if the SIP/IP Core is able to perform proxy authentication of the IM Client.

If the IM Server cannot obtain an Authenticated Originator's IM Address for an initial request, it SHALL reject the request with a SIP 403 "Forbidden" response. The IM Server SHOULD include a Warning header to explain the reason in a human readable textual form.

5.2 IM Service Registration

5.2.1 General

The IM Client SHALL register, re-register and de-register to the SIP/IP Core according to rules and procedures of [RFC3261] with the clarifications in the following sections.

The IM Client:

- 1. SHALL generate a SIP REGISTER request;
- 2. SHALL include the IM feature-tag '+g.oma.sip-im' in the Contact header of the SIP REGISTER request;
- 3. SHALL include a Require header with the option tag "pref" according to rules and procedures of [RFC3840];
- 4. SHALL include the User-Agent header in the SIP REGISTER request to indicate the IM release version as specified in Appendix F "*Release version in User-agent and Server headers*"; and,
- 5. SHALL send the SIP REGISTER request towards the SIP/IP Core according to rules and procedures of the SIP/IP Core.

5.2.2 IM service registration and re-registration

When the IM Client sends a SIP REGISTER or SIP re-REGISTER request to the SIP/IP Core the IM Client:

1. SHALL generate a SIP REGISTER request as specified in section 5.2.1*"General"*;
2. SHALL insert in the SIP REGISTER request any necessary security parameters (e.g. Digest response) according to rules and procedures of the SIP/IP Core; and,

Each time the IM Client has successfully performed an initial registration the IM Client SHALL publish the IM service settings as specified in section 5.2.4 "*IM service setting client procedure*".

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NOTE 1: The SIP/IP Core may challenge and authenticate the SIP REGISTER request requiring the resending of the SIP REGISTER request with authentication credentials.

NOTE 2: Periodical application level re-registration is initiated by the IM Client to refresh an existing registration based on the re-registration requirements of the SIP/IP Core.

NOTE 3: E.164 type of identity can be registered using implicit registration.

When the SIP/IP Core corresponds with 3GPP/3GPP2 IMS the IM Client SHALL use 3GPP/3GPP2 IMS registration mechanisms according to rules and procedures of [3GPP TS 24.229] / [3GPP2 X.S0013.004] with the clarifications given in this section.

5.2.3 IM service de-registration

When the IM Client deregisters it:

- 1. SHALL generate a SIP REGISTER request as specified in section 5.2.1 *"General"*;
- 2. If the terminal needs to remain SIP/IP Core registered the IM Client SHALL reregister with the SIP/IP Core without including the IM feature-tag '+g.oma.sip-im';
- 3. If the terminal also needs to deregister from the SIP/IP Core, the IM Client SHALL send a SIP REGISTER request with an Expires header set to 0, as defined in [3GPP TS 24.229] / [3GPP2 X.S0013.004].

When the SIP/IP Core corresponds with 3GPP/3GPP2 IMS the IM Client SHALL use 3GPP/3GPP2 IMS registration mechanisms according to rules and procedures of [3GPP TS 24.229] / [3GPP2 X.S0013.004] with the clarifications given in this section.

5.2.4 IM Service Settings Client procedure

To set, update or refresh the IM Service Settings, the IM Client:

- 1. SHALL generate a SIP PUBLISH request according to rules and procedures of [RFC3903] and [RFC4353];
- 2. SHALL set the Request-URI of the SIP PUBLISH request to the IM Address of the IM User;
- 3. SHALL include the IM Address of the IM User as the Authenticated Originator's IM Address as specified in subclause 5.1 "*Authenticated Originator's IM Address*";
- 4. SHALL include an Accept-Contact header with the IM feature tag '+g.oma.sip-im';
- 5. SHALL include a User-Agent header to indicate the IM release version as specified in F.1 "*Release version in User-agent and Server headers*";
- 6. SHALL set the Event header to the value 'poc-settings';
- 7. SHALL set IM Service Settings expiration timer in expires header according to rules and procedures of [RFC 3903], in the same range as the registration timer recommended by SIP/IP Core;
- 8. SHALL include the IM Service Settings as follows and as described in Appendix E.2:

  a) Incoming IM Session Barring setting;

  b) Incoming pager mode and large mode IM barring setting;

  c) IM invisibility setting;

  d) Pager mode and large mode message IM offline delivery activation;

  e) IM conversation storing activation for session mode communication; and,

  f) IM conversation storing activation for pager mode and large mode communication.

- 9. SHALL send the SIP PUBLISH request according to rules and procedures of SIP/IP Core.

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If the setting for the offline delivery notification is set to 'active=false", the IM Client retrieve the user's deferred messages as described in section 12.1.2 "*Retrieving Deferred Message metadata*".

On receiving the SIP 200 "OK" response to the SIP PUBLISH request the IM Client MAY indicate to the IM User the successful communication of the IM Service Settings to the IM Server.

When the SIP/IP Core corresponds to 3GPP/3GPP2 IMS, the IM Client SHALL use 3GPP/3GPP2 IMS mechanisms according to rules and procedures of [3GPP TS 24.229] / [3GPP2 X.S0013.004] with the clarifications given in this subclause.

5.3 Getting Information on Client Status

The IM Server SHOULD support receiving 3rd party REGISTER from the SIP/IP core according to [3GPP TS 24.229].

When a 3rd party REGISTER request arrives containing information about the IM user's registration status, the IM Server SHALL generate a 200 (OK) response or an appropriate failure response. For the success case, the 200 (OK) response shall contain Expires value equal to the value received in the 3rd party REGISTER request.

5.4 IM Server sending System Message

If the IM Server intends to send system message destined to its user, the IM Server:

- 1. SHALL generate a SIP MESSAGE message per intended recipient according to rules and procedures of [RFC 3428];
- 2. SHALL include an Accept-Contact header field with the feature-tag set to '+g.oma.sip-im.system-message' to indicate that the SIP MESSAGE is a System Message;
- 3. If the System Notification needs interaction between the User/Client and the IM system or the system message payload size is bigger than 1300 bytes, the IM Server SHALL include in the Content-Type header field of the SIP MESSAGE, a Content-Type: message/external-body according to rules and procedures in [RFC4483]. The external document would be html document;
- 4. SHALL set the Request-URI(s) to registered IM Address of the intended recipient;
- 5. SHALL include the IM Server Identity in the Authenticated Originator's IM Address as specified in section 5.1 "*Authenticated Originator's IM Address*";
- 6. SHALL include the Server header to indicate the IM release version as specified in section "*Release version in User-agent and Server headers*";
- 7. MAY start the timer if the response to a system message is expected from the IM Client within operator specified time period; and,
- 8. SHALL send the SIP MESSAGE request towards the IM Client along the signalling path.

When the SIP/IP Core corresponds with 3GPP/3GPP2 IMS, the IM Server SHALL use 3GPP/3GPP2 IMS mechanisms and procedures according to rules and procedures of [3GPP TS 24.229] / [3GPP2 X.S0013.004] with the clarifications given in this section.

5.5 Display name

Using a display name in a conversation serves different purposes. In case anonymous access is requested, it provides the user with a chat alias. In case no anonymous access is requested, it is used to display a human readable name for the user. Finally, for a conversation in a predefined group, each participant may be given a group specific display name. This group specific display name is stored in the Shared Group XDM, as specified in [Group-XDM-Specification].

The IM server and IM client MAY send a display name in SIP requests and SIP responses.

The IM client MAY support the use of a display name.

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The IM server SHOULD support the use of a display name.

The following text describes the procedures in the IM Client and the IM Server when the IM Client and the IM Server support the use of a display name:

A IM Client MAY provide the inviting IM User's Alias name (this is a User_Input_Name) in the "display-name" part of the Authenticated Originator's IM Address, i.e. in the P-Preferred-Identity header or, e.g. when the P-Preferred-Identity header is not included, in the From header of the initial SIP INVITE request or SIP REFER request sent towards the IM Server performing the Participating IM Function.

NOTE 1: A display-name included in the P-Preferred-Identity header is moved to the P-Asserted-Identity header by the underlying SIP / IP Core if validation of the IM Address is successful as described in [RFC 3325].

If the P-Preferred-Identity doesn't correspond to any valid identity known to the proxy for that user, the proxy can add a P-Asserted-Identity header of its own construction, and the display-name, if included in the P-Preferred-Identity header, is lost. A display-name in the From header is never lost.

The terminating IM Client MAY provide the invited IM User's nick name in the "display-name" part of the To header of the SIP 200 "OK" response to an initial INVITE request sent to SIP / IP Core to the IM Server performing the Participating IM Function.

The IM Server performing the Controlling IM Function SHALL define the display-name to use, according to the following priority order:

- 1. In case anonymous access is requested, and the Group definition as specified in [Group-XDM-Specification] allows anonymous access, the display-name as provided by the IM client shall be used. If no display-name was defined by the IM client, or the display-name is already in use in the session, the IM server chooses a display-name as defined in 7.2.3.2 "*Chat alias in IM Conference";*
- 2. In case no anonymous access is requested;
  - The <display-name> child element of the <entry> element for IM Users in IM Group definitions as specified in [Group-XDM-Specification] if <display-name> is defined; or;
  - The display-name received in the "display-name" part of the Authenticated Originator's IM Address of initial SIP requests and SIP 200 "OK" responses to the initial SIP requests from Participants; or,
  - The display-name received in the "display-name" part of the From header of initial SIP requests or in the "display-name" part of the To header of the SIP 200 "OK" responses to the initial SIP requests from Participants.

5.6 Warning header

5.6.1 General

The IM Server MAY include a free text string in a SIP response to SIP requests

When the IM Server includes a text string in a response to a SIP INVITE request the text string SHALL be included in a Warning header as specified in [RFC3261]. The IM Server SHALL include the Warning code set to 399 and MAY include the host name set to the host name of the IM Server.

The IM Client MAY include the preferred language in Accept-Language header in the SIP INVITE request and SIP 2xx response.

The IM Server SHOULD choose language of the warning text in the Warning-header depending on the preferred language indicated in Accept-Language header received from the IM Client in the SIP INVITE request or in the SIP 2xx response. If the warning text is to be translated, only explanatory text of the free text string SHALL be replaced by the preferred language.

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5.6.2 Warning texts

The text string included in a Warning header consists of an explanatory text preceded by a 3-digit text code, according to the following format <xxx> + <explanatory text>, for example '102 Too many participants'.

The warning texts and codes are defined in [OMA-POC-CP].

5.7 Final Delivery Report

5.7.1 General

The IM Client and the IM Server SHALL support the Final Report functionality.

The Final Report is not recommended for messages of small size e.g. chat with text/plain or files of small size.

The IM Client MAY request Final Report functionality from the IM Server performing the Controlling IM Function when sending messages using MSRP. If the IM User wishes to know whether the message has been delivered to recipient(s) successfully or not, the IM Client SHALL request for the Final Report from the IM Server performing the Controlling IM Function.

For the Final-Report functionality this specification defines:

1. The namespace for the definition of new headers in message/cpim bodies to request Final Report. This namespace is identified by the URN <urn:oma:xml:poc:final-report>;
2. A new header field in message/cpim body. The name of this header is 'Final-Report' and belongs to the above mentioned namespace. According to the procedures of [RFC 3862], the header field is prefixed by a prefix that is linked to the mentioned namespace. The 'Final-Report' header field can have a value of 'yes' or 'no'; and,
3. A new MIME body of type "application/vnd.oma.poc.final-report" to identify a Final Report XML document that carries the Final Report information.

5.7.2 Originating Client procedures

When the IM Client requests for the Final Report, the IM Client includes in the MSRP SEND request a message/cpim body according to [RFC3862].

The IM Client:

1. SHALL include an NS header in the message/cpim body that links a prefix chosen by the IM Client with the well known URN of <urn:oma: xml:poc:final-report>;

NOTE 1: Although the IM Client is able to choose any prefix of its choice, it is recommended to use a meaningful prefix, such as 'FR' .

2. SHALL include a 'Final-Report' header in the message/cpim body, prefixed with earlier defined prefix. The value of the 'Final-Report' header SHALL be set to 'yes'; and,
3. MAY include in the MSRP SEND request a Success-Report header and a Failure-Report header set to value 'yes'.

Upon receiving the MSRP SEND or MSRP REPORT request containing the MIME body of type "application/vnd.oma.poc.final-report+xml", the IM Client:

1. SHOULD extract the delivery status(es) of Participant(s) from the body; and,
2. MAY provide the information about delivery status to the IM User.

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NOTE 2: The IM Client can receive more than one final report depending on the IM Server aggregation of the final reports. In this case, in the final report there can be the final delivery status of one or more IM Client(s), but not the status of all receiving IM Clients.

NOTE 3: The correlation of the messages sent and the final reports received are performed with the Message-ID. It is IM Client implementation issue how long IM Client maintains the Message-ID stored.

Upon receiving an MSRP failure response for the MSRP SEND request requesting the Final Report, the IM Client MAY provide the information about delivery status to the IM User.

5.7.3 Controlling Server procedures

The IM Server performing the Controlling IM Function MAY be requested to provide the final report about the delivery of messages. The IM Server SHOULD preserve an existing Final-Report header present in the message/cpim body of the SEND request.

If final report is requested, the IM Server performing the Controlling IM Function:

1. SHALL include in MSRP SEND request a Success-Report header and Failure-Report header with value set to 'yes'; and,
2. SHALL send the MSRP SEND request to the terminating IM Client(s) according to rules and procedures of [MSRP].

When receiving either an MSRP REPORT or an MSRP failure response from the terminating IM Clients, the IM Server:

1. SHALL cache the received delivery status information with information received from the other IM Client(s) receiving the message.

When composing the final report, the IM Server:

1. SHALL compose the final report XML document that contains the delivery information of one or more Participants.

NOTE 1: The IM Server can either send multiple final reports containing the delivery status of one or more Participants or it can send one final report at the end, containing the delivery statuses of all Participants.

When sending the final report to the originating IM Client, the IM Server:

1. SHALL in case the IM Client requested MSRP REPORTs,
    a. generate a MSRP REPORT request according to rules and procedures of [MSRP];
    b. add an MSRP Content-Type header field set to the value "application/vnd.oma.final-report+xml";
    c. include a final report XML document as previously indicated; and,
    d. send the MSRP REPORT request to the originating IM Client according to rules and procedures of [MSRP].

    or,

2. SHALL, in case the originating IM Client did not request MSRP REPORT,
    a. generate an MSRP SEND request according to rules and procedures of [MSRP];
    b. add an MSRP Content-Type header field set to the value "application/vnd.oma.final-report+xml";
    c. include a final report XML document as previously indicated; and,

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d. send the MSRP REPORT request to the originating IM Client according to rules and procedures of [MSRP].

When the IM Server performing the Controlling IM Function has been requested a final report, the IM Server SHALL send one or more final report(s) in a way that the final delivery status of each Participant is reported.

5.7.4 Procedures at the Participating Function

If the IM Server performing the Participating IM Function stays in the media path, the IM Server SHALL transparently pass the MSRP SEND requests, the MSRP SEND responses and MSRP REPORT requests, if applicable.

5.7.5 Terminating Client Procedures

The IM Client which is receiving the MSRP message can be requested to provide final delivery status to the sender. In this case the MSRP SEND request received contains a Success-Report header and Failure-Report header set to value 'yes'.

If requested, the IM Client SHALL generate and send the MSRP REPORT requests according to rules and procedures of [MSRP].

NOTE: The terminating IM Client can respond with 413 MSRP response if the terminating IM Client wishes the IM Server performing the Controlling IM Function to stop sending the particular message for any reason.

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6 Procedures at the IM Server

6.1 Participating IM Functions procedures

6.1.1 Originating Participating Function

The Participating Function may or may not stay in the media path depending on operator's settings.The settings may be static such that the Participating function always stays or does not stay in the media path, or the settings may depend on parameters such as:

- If the Conversation History function is supported and a user has his history settings active when he receives a session invitation or a large message.

- If the Participating function needs to do charging

-etc..

6.1.1.1 General

Upon receiving from the served IM Client a SIP Request, the IM Server:

- 1. SHALL check whether the Authenticated Originator's IM Address is of an IM User that is allowed to send the request and if it is not, the IM Server serving the originating IM Client SHALL respond with a SIP 403 "Forbidden" response to the IM Client. The IM Server SHOULD include a Warning header with the warning text set to '127 Service not authorised' as specified in subclause 5.6 *"Warning header"*. Otherwise, continue with the rest of the steps;
- 2. SHALL check
  - whether the Authenticated Originator's IM Address of an IM User has a pending response to an earlier received System Message;
  - and if the operator specified time period has expired or not.

  If a required response to a System Message is not received and the timer has expired, the IM Server serving the originating IM Client SHALL respond with a SIP 403 "Forbidden" response to the IM Client.

  The IM Server SHOULD include an Error-Info header to explain the reason. Otherwise, continue with the rest of the steps;
- 3. If the IM Server requires a specific User Agent version to be supported then the IM Server SHALL check the "User Agent" header field to determine if the server supports the User Agent version as specified in section Appendix F "*Release version in User-agent and Server headers*" and if not, the IM Server SHALL respond with SIP 403 "Forbidden" response to the IM Client. Also the IM Server SHALL include an "Error-Info" header to explain reason. Otherwise, continue with rest of the steps;
- 4. SHALL apply operator policies on message size and content as follows:
  - a. In case of Pager Mode message: SHALL check the content against operator policies specified for the service and for the IM user. If the content does not conform to the policies, the IM Server SHALL respond with a 415 "Unsupported Media Type" response with the list of supported formats or media types to the originating client. Otherwise, continue with the rest of the steps;
  - b. In case of Large Message mode, IM session or File Transfer: SHALL check the SIP INVITE SDP attributes against operator policies specified for the service and for the IM user. If the size or content do not conform to the policies, the IM Server SHALL respond with a SIP 488 "Not Acceptable Here" response to the originating client containing the size and contents supported by the operator policies. Otherwise, continue with the rest of the steps.

When sending a SIP 200 "OK" response and if the IM Server is acting as a B2BUA the IM Server:

- 1. SHALL generate a SIP 200 "OK" response according to rules and procedures of [RFC3261];
- 2. SHALL include a Server header to indicate the IM release version as specified in Appendix F "Release version in User-agent and Server headers";
- 3. SHOULD include an Allow header with all supported SIP methods, when responding to INVITE requests.

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When sending a SIP response (other than the SIP 200 “OK” response) to the SIP request, the IM Server :

- 1. SHALL generate the SIP response according to rules and procedures of [RFC3261];
- 2. SHALL include the Server header with the IM release version as specified in Appendix F "*Release version in User-agent and Server headers*" if not previously sent in a response for this dialog.

When the SIP/IP Core corresponds with 3GPP/3GPP2 IMS, the IM Server SHALL use 3GPP/3GPP2 IMS Session mechanisms according to rules and procedures of [3GPP TS 24.229] / [3GPP2 X.S0013.004] with the clarifications given in this section.

6.1.1.2 IM Session

6.1.1.2.1 Determintaion of session Handling

Upon receiving from the served IM Client an initial SIP INVITE request , the Participating IM Function:

- 1. SHALL verify if the Feature-tag ‘+g.oma.sip-im.large-message’ is received:
  - a. If the ‘+g.oma.sip-im.large-message’ feature-tag is received the Participating Function SHALL proceed according to 6.1.1.4.1 “*Receiving SIP Session request for Large Message Mode*”;
  - b. Otherwise, the Participating Function SHALL proceed according to 6.1.1.2.2 “*Reception of an initial SIP INVITE request*”.

6.1.1.2.2 Reception of an initial SIP INVITE IM Session request

Upon receiving an initial SIP INVITE request the IM Server:

- 1. If the Participating Function stays in the media path, the Participating Function:
  - a) SHALL copy the received Request-URI;
  - b) SHALL store the list of supported SIP methods if received in the Allow header;
  - c) SHALL behave as a B2BUA according to rules and procedures of [RFC3261] for the duration of the IM Session;
  - d) SHALL generate a SIP INVITE request;
  - e) SHOULD include an Allow header with all supported SIP methods;
  - f). SHALL insert a URI identifying its own address and include the IM feature-tag '+g.oma.sip-im’ in the Contact-header of the SIP INVITE request;
  - g) SHALL include a SDP body as a SDP offer in the SIP INVITE request according to rules and procedures of [RFC3264] , [RFC4566] and [MSRP] and information received in the SDP from the originating client; and,
  - h) SHALL send the SIP INVITE request according to rules and procedures of the SIP/IP Core.
- 2. If the Participating IM Function does not stay in the media path, the Participating IM Function
  - a. SHALL act as a SIP proxy according to rules and procedures of [RFC3261] for the duration of the IM Session;
  - b. SHALL include a Record-Route header containing a URI identifying its own address; and,
  - c. SHALL forward the SIP INVITE according to rules and procedures of [RFC3261] and SIP/IP Core.

Upon receiving a SIP 200 "OK" response, the Participating Function is acting as a B2BUA, the Participating Function:

- 1. SHALL store the list of supported SIP methods if received in the Allow header;
- 2. SHALL store the contact received in the Contact header;
- 3. SHALL generate a SIP 200 "OK" response;
- 4. SHALL include the received SDP body as a SDP answer according to rules and procedures of [RFC3264], [RFC4566] and [MSRP];
- 5. SHALL include a SIP URI for the Contact header as follows:
  - a) constructed such that the IM Server can resolve it back to the original SIP URI provided in the Contact header of the SIP 200 "OK" response by the Controlling IM Function;
- 6. SHALL send the SIP 200 "OK" response to the IM Client according to rules and procedures of SIP/IP Core; and,

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- 7. The IM Server SHALL check if the IM user's history setting "his-settings" i.e. <hist-activation> element is set to active for the IM User and if set to "active", it SHALL execute the processing described in 13.2.3 "*Storage for History"*.

Upon receiving a SIP 200 "OK" response, and when the Participating IM Function is acting as a SIP proxy, the participating IM Function:

- 1. SHALL forward the SIP 200 "OK" response toward the initiating IM Client according to rules and procedures of [RFC3261] and SIP/IP Core; and,
- 2. SHALL continue to act as a SIP proxy for the duration of the IM Session.

Upon receiving a SIP final response other than a SIP 200 "OK", the Participating Function SHALL forward the SIP final response along the signalling path towards the initiating IM Client.

When the SIP/IP Core corresponds with 3GPP/3GPP2 IMS, the IM Server SHALL use 3GPP/3GPP2 IMS mechanisms according to rules and procedures of [3GPP TS 24.229] / [3GPP2 X.S0013.4] with the clarifications given in this subclause.

6.1.1.2.3 Void

6.1.1.2.4 IM Session modification

Upon receiving a SIP re-INVITE request from the IM Client during an on-going IM Session, an IM Server acting as a B2BUA:

- 1. SHALL validate that the new Media Parameters are acceptable to the IM Server if the SIP re-INVITE includes a new SDP offer as specified by [RFC3264] and [RFC4566]. If the new SDP media parameters are not acceptable the IM Server SHALL reject the request with a SIP 488 "Not Acceptable Here" response. Otherwise continue with the rest of the steps;
- 2. SHALL generate a SIP re-INVITE request according to rules and procedures of [RFC3261];
- 3. SHALL include a MIME SDP body as a SDP offer in the SIP re-INVITE request according to rules and procedures of [RFC3264] and [RFC4566] with the new Media Parameters; and,
- 4. SHALL send the SIP re-INVITE request to the session identity populated in the Request URI of the received SIP re-INVITE request.

On receipt of a SIP 200 "OK" response the IM Server:

- 1. SHALL generate a SIP 200 "OK" response to the SIP re-INVITE according to rules and procedures of [RFC3261];
- 2. SHALL, if the IM Server is in the media path, update the User Plane with the new Media Parameters received in the MIME SDP body as specified in [MSRP]; and,
- 3. SHALL send a SIP 200 "OK" response towards the IM Client according to rules and procedures of SIP/IP Core.

Upon receiving a SIP re-INVITE request from the IM Client during an on-going IM Session an IM Server acting as a SIP proxy SHALL act according to rules and procedures of [RFC3261].

Upon receiving SIP final response other than SIP 200 "OK" the IM Server SHALL forward the SIP response to the IM Client according to rules and procedures of SIP/IP Core.

When the SIP/IP Core corresponds with 3GPP/3GPP2 IMS, the IM Server SHALL use 3GPP/3GPP2 IMS Session mechanisms according to rules and procedures of [3GPP TS 24.229] / [3GPP2 X.S0013.004] with the clarifications given in this section.

6.1.1.2.5 SIP SUBSCRIBE request

If the IM Server receives a SIP SUBSCRIBE request that contains an IM Session Identity or IM Group Identity not owned by this IM Server, then the IM Server:

NOTE: The case when the IM Session or the IM Group is owned by the IM Server is described in section 7.2.1.12 "*Subscribing to Participant Information*".

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- 1. SHALL, if the IM Server wants to stay on the signalling path insert a Record-Route header containing a URI identifying its own address;
- 2. SHALL, if the IM Server is acting as a B2BUA for the IM Session, insert a Request-URI by resolving back the received Request-URI to the SIP URI received in the Contact header from the Controlling IM Function within the SIP 200 "OK" response to the initial SIP INVITE request; and,
- 3. SHALL forward the SIP SUBSCRIBE request towards the SIP/IP Core.

Upon receiving a SIP final response, the IM Server SHALL forward the SIP final response along the signaling path towards the initiating IM Client according to rules and procedures of [RFC3261].

When the SIP/IP Core corresponds with 3GPP/3GPP2 IMS, the IM Server SHALL use 3GPP/3GPP2 IMS mechanisms according to rules and procedures of [3GPP TS 24.229] / [3GPP2 X.S0013.004] with the clarifications given in this section.

6.1.1.2.6 SIP REFER request

Upon receiving a SIP REFER request, the IM Server SHALL verify the destination of the REFER request contained in the Request-URI:

- 1. If the Request-URI is set to the Delete function: Delete@hostname SHALL determine if the request is to delete History files or Deferred messages:
  - a) if the request is to delete Deferred messages, the IM server SHALL proceed according to 12.2.2.7 "*IM Server Deleting Deferred Messages*"; and,
  - b) If the request is to delete History files, the IM server SHALL proceed according to 13.2.5.2 "*IM Server Deleting History Files*".
- 2. If the Request-URI is set to the Coversation History function (History@hostname), the IM server SHALL forward the SIP REFER request towards the History as described in section 13.2.2.2 "*Receiving SIP REFER*";
- 3. If the Request-URI is set to an IM Session Identity, the IM Server:

  a) SHALL, if the Method is set to INVITE or there is no method specified, send the REFER request to the Controlling Function as described in section 7.2.1.7 "*Adding Participants to an IM session request*". If the IM server acts as a B2BUA, include a dialog id that corresponds to the dialog id in the "Replaces" header of the incoming REFER; and,

  b) SHALL, if the method is set to BYE, send the REFER request to the Controlling Function as described in section 7.2.1.8 "*SIP REFER BYE request received when using IM Group session*".

NOTE: Appendix P describes handling of the SIP REFER method.

Upon receiving a SIP final response to a SIP REFER request, the IM Server SHALL forward the SIP final response along the signaling path towards the initiating IM Client according to rules and procedures of [RFC3261].

When the SIP/IP Core corresponds with 3GPP/3GPP2 IMS, the IM Server SHALL use 3GPP/3GPP2 IMS mechanisms according to rules and procedures of [3GPP TS 24.229] / [3GPP2 X.S0013.004] with the clarifications given in this section.

6.1.1.2.7 SIP CANCEL request

Upon receiving a SIP CANCEL request from the IM Client, an IM Server acting as a B2BUA:

- 1. SHALL act as UAS according to rules and procedures of [RFC3261]; and,
- 2. SHALL cancel the SIP INVITE request towards the IM Server performing the Controlling IM Function acting as UAC according to rules and procedures of [RFC3261].

When acting as a SIP proxy rules and procedures as specified in [RFC3261] SHALL be applied.

When the SIP/IP Core corresponds with 3GPP/3GPP2 IMS, the IM Server SHALL use 3GPP/3GPP2 IMS mechanisms according to rules and procedures of [3GPP TS 24.229] / [3GPP2 X.S0013.004] with the clarifications given in this section.

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6.1.1.2.8 SIP BYE request from IM Client

Upon receiving a SIP BYE request from the IM Client, an IM Server acting as a B2BUA:

- 1. SHALL generate a SIP 200 "OK" response and send it towards the IM Client according to rules and procedures of the SIP/IP Core;
- 2. SHALL release User Plane resources associated with the SIP Session with the IM Client, if it had inserted itself in the transport path for the ongoing session; and,
- 3. SHALL send a SIP BYE request towards the IM Server performing the Controlling IM Function according to rules and procedures of the SIP/IP Core;

Upon receiving a SIP 200 "OK" response to the SIP BYE request the IM Server SHALL release User Plane resources associated with the SIP Session with the IM Server performing the Controlling IM Function.

The IM Server SHALL check if the IM user's history setting "his-settings" i.e. <hist-activation> element is set to active for the IM User and if set to "active", it SHALL proceed according to 13.2.7 "*End History Recording*".

When acting as a SIP proxy rules and procedures as specified in [RFC3261] SHALL be applied.

When the SIP/IP Core corresponds with 3GPP/3GPP2 IMS, the IM Server SHALL use 3GPP/3GPP2 IMS mechanisms according to rules and procedures of [3GPP TS 24.229] / [3GPP2 X.S0013.004] with the clarifications given in this section.

6.1.1.2.9 SIP Session timer expiry

On expiry of the SIP Session timer and if the IM Server acts as a B2BUA the IM Server:

- 1. SHALL send a SIP BYE request to the IM Client according to rules and procedures of [RFC3261] and according to rules and procedures of the SIP/IP Core; and,
- 2. SHALL send a SIP BYE request to the IM Server performing the Controlling IM Function according to rules and procedures of [RFC3261] and according to rules and procedures of the SIP/IP Core.

On receipt of a SIP 200 "OK" response to the SIP BYE request from the IM Client the IM Server SHALL interact with the User Plane to release the IM Session resources in the direction towards the IM Client.

On receipt of a SIP 200 "OK" response to the SIP BYE request from the IM Server performing Controlling IM Function the IM Server SHALL interact with the User Plane to release IM Session resources in the direction towards the IM Server performing the Controlling IM Function.

The IM Server SHALL check if the IM user's history setting "his-settings" i.e. <hist-activation> element is set to active for the IM User and if set to "active", it SHALL proceed according to 13.2.7 "*End History Recording*".

When the SIP/IP Core corresponds with 3GPP/3GPP2 IMS, the IM Server SHALL use 3GPP/3GPP2 IMS Session mechanisms according to rules and procedures of [3GPP TS 24.229] / [3GPP2 X.S0013.004] with the clarifications given in this section.

6.1.1.3 Pager Mode Messaging

6.1.1.3.1 Receiving SIP MESSAGE request for Pager mode

Upon receiving from the served IM Client a SIP MESSAGE Request, the IM Server:

- 1. SHALL perform the actions specified in section 6.1.1.1 "*General*" and continue with rest of the steps;
- 2. SHALL return a SIP 403 "Forbidden" response if the IM Server does not allow anonymity and anonymity is requested. The IM server SHOULD include an Warning header with the warning text set to '119 Anonymity not allowed' as specified in subclause 5.6 *"Warning header"*... Otherwise, continue with the rest of the steps;
- 3. If the "Expires" header is included, SHALL check if the message is still valid,. If not valid, the message is handled as specified in [RFC3428], otherwise continue with the rest of the steps;
- 4. SHALL forward the SIP MESSAGE request to the SIP/IP Core.

Upon receiving SIP final response the IM Server SHALL forward the SIP final response according to rules and procedures of [RFC3261].

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The IM Server SHALL check if the IM user's history setting "his-settings" i.e. <hist-activation> element is set to active for the IM User and if set to "active", it SHALL execute the processing described in 13.2.3 "*Storage for History* ".

When the SIP/IP Core corresponds with 3GPP/3GPP2 IMS, the IM Server SHALL use 3GPP/3GPP2 IMS mechanisms according to rules and procedures of [3GPP TS 24.229] / [3GPP2 X.S0013.004] with the clarifications given in this section.

6.1.1.4 Large Message Mode

6.1.1.4.1 Receiving SIP Session request for Large Message Mode

Upon receiving from the served IM Client an initial SIP INVITE request that requires an initial SIP INVITE request to be sent, the IM Server:

- 1 If the IM Server stays in the media path, the IM Server:

  a. SHALL behave as a B2BUA according to rules and procedures of [RFC3261] for the duration of the Session;

  b. SHALL generate a SIP INVITE request;

  c. SHALL insert a URI identifying its own address in the Contact-header of the SIP INVITE request and include the IM feature-tag '+g.oma.sip-im.large-message';

  d. SHALL copy the received Request-URI;

  e. SHALL include the MIME SDP body received in the SIP INVITE from the client; and,

  f. SHALL send the SIP INVITE request according to rules and procedures of the SIP/IP Core.

- 2. If the IM Server does not stays in the media path the IM Server:

  a. SHALL act as a SIP proxy according to rules and procedures of [RFC3261] for the duration of the Session;

  b. SHALL include a Record-Route header containing a URI identifying its own address; and,

  c. SHALL send a SIP INVITE request according to rules and procedures of SIP/IP Core.

Upon receiving a SIP 200 "OK" response, if the IM Server is acting as a B2BUA, the IM Server:

- 1. SHALL store the list of supported SIP methods if received in the Allow header;
- 2. SHALL store the information received in the Contact header;
- 3. SHALL include a SIP URI for the Contact header as follows:
  - a) constructed such that the IM Server can resolve it back to the original SIP URI provided in the Contact header of the SIP 200 "OK" response by the Controlling IM Function;
- 4. SHALL generate a SIP 200 "OK" response;
- 5. SHALL include a MIME SDP body received in the SIP INVITE from the client;
- 6. SHALL include a Server header to indicate the IM release version as specified in Appendix F "*Release version in User-agent and Server headers*" if has not already been sent in a provisional response for this dialog;
- 7 SHOULD include an Allow header with all supported SIP methods,
- 8. SHALL send the SIP 200 "OK" response to the IM Client according to rules and procedures of SIP/IP Core; and,
- 9. SHALL check if the IM user's history setting "his-settings" i.e. <hist-activation> element is set to active for the IM User and if set to "active", it SHALL execute the processing described in 13.2.3 "*Storage for History"*.

Upon receiving a SIP 200 "OK" response, when the IM Server is acting as a SIP proxy, the IM Server:

- 1. SHALL forward the SIP 200 "OK" response toward the initiating IM Client according to rules and procedures of [RFC3261] and SIP/IP Core; and,
- 2. SHALL continue to act as a SIP proxy for the duration of the Session.

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Upon receiving a SIP final response other than a SIP 200 "OK", the IM Server SHALL forward the SIP final response along the signalling path towards the initiating IM Client.

When the SIP/IP Core corresponds with 3GPP/3GPP2 IMS, the IM Client SHALL use 3GPP/3GPP2 IMS mechanisms according to rules and procedures of [3GPP TS 24.229] / [3GPP2 X.S0013.004] with the clarifications given in this section.

6.1.1.4.2 SIP CANCEL Request

Upon receiving a SIP CANCEL request from the IM Client, an IM Server acting as a B2BUA:

- 1. SHALL act as UAS according to rules and procedures of [RFC3261]; and,
- 2. SHALL cancel the SIP INVITE request towards the IM Sever performing the Controlling IM Function acting as UAC according to rules and procedures of [RFC 3261].

When acting as a SIP proxy rules and procedures as specified in [RFC3261] SHALL be applied.

When the SIP/IP Core corresponds with 3GPP/3GPP2 IMS, the IM Server SHALL use 3GPP/3GPP2 IMS mechanisms according to rules and procedures of [3GPP TS 24.229] / [3GPP2 X.S0013.004] with the clarifications given in this section.

6.1.1.4.3 SIP BYE request

Upon receiving a SIP BYE request from the IM Client, an IM Server acting as a B2BUA:

- 1. SHALL generate a SIP 200 "OK" response according to rules and procedures of [RFC3261];
- 2. SHALL release User Plane resource associated with the SIP Session with the IM Client; and,
- 3. SHALL send a SIP BYE request towards the IM Server performing the Controlling IM Function according to rules and procedures of the SIP/IP Core.

Upon receiving a SIP 200 "OK" response to the SIP BYE request, the IM Server SHALL release User Plane resources associated with the SIP Session with the IM Server performing the Controlling IM Server.

When acting as a SIP proxy rules and procedures as specified in [RFC3261] SHALL be applied.

When the SIP/IP Core corresponds with 3GPP/3GPP2 IMS, the IM Server SHALL use 3GPP/3GPP2 IMS mechanisms according to rules and procedures of [3GPP TS 24.229] / [3GPP2 X.S0013.004] with the clarifications given in this section.

6.1.1.5 IM service setting procedure

Upon receiving a SIP PUBLISH request the IM Server:

- 2. SHALL check whether the Event header includes value 'poc-settings' and if present continue with the rest of the steps;
- 3. SHALL perform the actions to verify the Authenticated Originator's IM Address of the IM Client and if not authorized to publish settings, the IM Server SHALL return a SIP 403 "Forbidden" response. The IM server SHOULD include an Warning header with the warning text set to '127 Service not authorised' as specified in subclause 5.6 *"Warning header"*. Otherwise, continue with the rest of the steps;
- 4. SHALL process the SIP PUBLISH request according to rules and procedures of [RFC3903] and [RFC4354], and if processing of the SIP request was not successful, stop here; otherwise continue with next step;
- 5. SHALL store or refresh the service settings depending on the type of publication;

NOTE: The IM settings in IM 1.0 are "Incoming personal-alert-barringI", "incoming-session-barring", "offline-delivery", "vis-status" and "hist-activation". as described in Appendix E.2.

- 6. SHALL send SIP 200 "OK" response to the SIP PUBLISH request; and,
- 7. SHALL perform the procedures specified in section 12.2.2.2 "*Delivering of off-line messages*".

When the SIP/IP Core corresponds with 3GPP/3GPP2 IMS, the IM Server SHALL use 3GPP/3GPP2 IMS session mechanisms according to rules and procedures of [3GPP TS 24.229] / [3GPP2 X.PS0013.004] with the clarifications given in this section.

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6.1.2 Terminating Participating Function

6.1.2.1 General

Upon receiving an IM request to be terminated at the served IM user, the IM Server:

- 1. SHALL check the incoming request barring settings, i.e., isb-settings for IM Session and File Transfer and ipab-settings for IM Pager Mode and Large Message Mode, as specified in Appendix E.2 "*IM Specific Service Settings XML Document"*. If the settings result resolves into the barring of an IM request, the IM Server SHALL respond with SIP 403 Forbidden with the warning text set to '127 Service not authorised' as specified in subclause 5.6 *"Warning header* . Otherwise, continue with the rest of the steps;
- 2. SHALL check that the Authenticated Originator's IM Address of the sender in the initial IM request is not rejected according to the Access Policy as follows:
  - a). Check for rules where the <conditions> element evaluates to true for the IM service by evaluating the <service-list> elements and <service> elements with the attribute "featuretag" the value "+g.oma-sip-im" as described in [Shared-Policy-XDMS]. If such rules exist continue to evaluate the rules in the next step, otherwise continue in step 3.
  - b). Check for rules where the <conditions> child element <media-list> evaluates to true for the defined IM media pager-mode-message, message-session and file transfer. If such rules exist, continue to evaluate the rules in the next step, otherwise continue in step 3.
  - c) Check for rules where the <conditions> element evaluates to true for the sending IM User. If such rules exist continue to evaluate the rules in the next step, otherwise continue in step 3.
  - d) In case of IM Conference Session check for rules that evaluates to true for the IM media message-session and with the value "true" in the " in the <allow-reject-invite> action element defined in [Shared-Policy-XDMS] and illustrated in Appendix S "*Access Policy Exmaples*"; or,
  - e) in case of IM Pager Mode or Large check for rules that evaluates to true for the IM media pager mode message with the value "true" in the <allow-reject-invite > action element defined in [Shared-Policy-XDM] and illustrated in Appendix S "*Access Policy Exmaples*".

  If a rule in step d) or e) has been evaluated to true, the incoming IM request SHALL be rejected, and the IM Server SHALL respond with a SIP 403 Forbidden response as specified in [RFC3261]. The IM server SHOULD include a Warning header with the warning text set to '122 Function not allowed' as specified in subclause 5.6 *"Warning header"*. Otherwise, continue with the rest of the steps;
- 3. Shall apply operator policies on message size and content as follows:
  - a. In case of Pager Mode Message : SHALL check the message content against the Operator policies specified for the service and for the IM user. If the content does not conform to the policies, the IM Server SHALL respond with a SIP 415 "Unsupported Media Type" response with the list of supported formats and/or media types to the originating client. Otherwise, continue with the rest of the steps;
  - b. in case of Large Message Mode, IM Session or File Transfer session: SHALL check the SIP INVITE SDP attributes against operator policies specified for the service and for the IM user. If the size or content do not conform to the policies, the IM Server SHALL respond with a SIP 488 "Not Acceptable Here" response to the originating network containingthe size and content supported by operator policies. Otherwise, continue with the rest of the steps;
- 4. In case of Pager Mode,if the "Expires" header is included, it SHALL check if the IM request is still valid. If not, the IM request is handled based on local policy;
- 5. SHALL check the availability status of the IM User based on the IM User network registration status. If the IM User is unable to receive IM requets (e.g., the subscriber is not registered) and the IM request is for Large Message Mode or SIP MESSAGE as defined in 9.2.1 "*IM Client invited to Large Message Session*" and 8.2.1 *"IM Client receives a SIP MESSAGE"* respectively, then the IM Server SHALL execute the processing described in section 12.2.2 "*Request Terminated at the Served IM user"* for deferring the IM request. Otherwise, continue with the rest of the steps.

Upon receiving a SIP final response the IM Server SHALL forward the SIP final response along the signalling path towards the originating IM Client according to rules and procedures of [RFC3261].

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When the SIP/IP Core corresponds with 3GPP/3GPP2 IMS, the IM Server SHALL use 3GPP/3GPP2 IMS mechanisms, according to rules and procedures of [3GPP TS 24.229] / [3GPP2 X.S0013.004] with the clarifications given in this section.

6.1.2.2 IM Session

6.1.2.2.1 Determination of Session Handling

Upon receiving an initial SIP INVITE request to be terminated at the served IM user, the Participating IM Function:

1. SHALL check if the Feature-tag '+g.oma.sip-im.large-message' is received
   - a. If the '+g.oma.sip-im.large-message' feature-tag is received, the Participating Function SHALL proceed according to 6.1.2.4.1 "*Receiving SIP Session request for Large Message Mode*";
   - b. Otherwise, the Participating Function SHALL proceed according to 6.1.2.2.2 *"Receiving request for IM Session"*.

6.1.2.2.2 Receiving request for IM Session

- When receiving a request for an IM session, the IM Server : 1. SHALL perform the procedures specified in 6.1.2.1 *" General";*
- 2. SHALL generate an initial SIP INVITE request according to rules and procedures of [RFC3261] with the clarifications in this section;
- 3. SHALL include value 'id' in a Privacy header according to rules and procedures of [RFC3325] if anonymity is requested with the Privacy header containing the tag "id";
- 4. SHALL set the Request-URI to the IM Address of the IM Client to be invited;
- 5. SHALL include an Accept-Contact header with the feature-tag '+g.oma.sip-im' according to rules and procedures of [RFC3841];
- 6. SHALL include User-Agent header to indicate the IM release version as specified in Appendix F "*Release version in User-agent and Server headers*";
- 7. SHOULD include the Session-Expires header in the INVITE with the refresher parameter set to 'uas' according to rules and procedures of [RFC 4028];
- 8. SHALL include the option tag "timer" in the Supported header;
- 9. SHOULD include the Allow header with the supported SIP methods;
- 10. SHALL include a Contact header as follows:

  a) a SIP URI constructed such that the IM Server can also resolve it back to the original SIP URI provided in the SIP INVITE request by the Controlling IM Function;

  b) include the IM feature-tag '+g.oma.sip-im';

  c) include the feature-tag 'isfocus' if received from the Controlling IM Server;
- 11. SHALL include the Authenticated Originator's IM Address received in the incoming SIP INVITE request in the outgoing SIP INVITE request.

When sending a SIP 200 "OK" response to the SIP INVITE request the IM Server:

- 1. SHALL generate the SIP 200 "OK" response according to rules and procedures of [RFC3261];
- 2. SHALL include as the URI in the Authenticated Originator's IM Address in the outgoing SIP 200 "OK" response the URI contained in the Authenticated Originator's IM Address received in the incoming SIP 200 "OK" response;
- 3. SHOULD include value 'id' in the Privacy header according to rules and procedures of [RFC3325], if the privacy is requested through a Privacy header with the value 'id' in the incoming SIP INVITE;
- 4. SHALL include the option tag 'timer' in the Require header;
- 5. SHALL include the Session-Expires header in the SIP 200 "OK" before sending the response towards the IM Server performing the Controlling IM Function with the refresher parameter set to 'uas';
- 6. SHALL start the SIP Session timer according to rules and procedures of [RFC 4028];
- 7. SHOULD include the Allow header with the supported SIP methods if not previously sent in a provisional response for this dialog;

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- 8. SHALL include the Server header with the IM release version as specified in Appendix F "*Release version in User-agent and Server headers*" if not previously sent in a provisional response for this dialog;
- 9. SHALL include a Contact header with a SIP URI identifying this IM Server and the feature-tag '+g.oma.sip-im'; and,
- 10. SHALL check if the IM user's history setting "his-settings" i.e. <hist-activation> element is set to active for the IM User and if set to "active", it SHALL execute the processing described in 13.2.3 "*Storage for History"*.

When sending a SIP response (other than the SIP 200 "OK" response) to the SIP request, the IM Server :
- 1. SHALL generate the SIP response according to rules and procedures of [RFC3261];
- 2. SHALL include the Server header with the IM release version as specified in Appendix F "*Release version in User-agent and Server headers*" if not previously sent in a response for this dialog.

When the SIP/IP Core corresponds with 3GPP/3GPP2 IMS, the IM Server SHALL use 3GPP/3GPP2 IMS Session mechanisms according to rules and procedures of [3GPP TS 24.229] / [3GPP2 X.S0013.004] with the clarifications given in this section.

6.1.2.2.3 IM Session modification

Upon receiving a SIP re-INVITE request and when the IM Server acts as a B2BUA during an on-going IM Session the IM Server:

1. SHALL perform the procedures specified in 6.1.2.1 "*General";*
- 2. SHALL generate a SIP re-INVITE request according to rules and procedures of [RFC3261];
- 3. SHALL include a MIME SDP body of a SIP re-INVITE request with a SDP offer according to rules and procedures of [RFC3264] and [RFC4566] with the new Media Parameters; and,
- 4. SHALL send the SIP request towards the IM Client within the existing SIP dialog according to rules and procedures of the SIP / IP Core.

Upon receiving a SIP re-INVITE request during an on-going IM Session and when the IM Server acts as a SIP proxy the IM Server SHALL forward the SIP request according to rules and procedures of [RFC3261].

Upon receiving of a SIP 200 "OK" response and when the IM Server acts as a B2BUA the IM Server:

- 1. SHALL generate a SIP 200 "OK" to the SIP re-INVITE request according to rules and procedures of the [RFC3261];
- 2. SHALL include a MIME SDP body in the SIP 200 "OK" response as the SDP answer according to rules and procedures of [RFC3264] and [RFC4566] with the new Media Parameters;
- 3. SHALL send a SIP 200 "OK" response towards the IM Server performing the Controlling IM Function according to rules and procedures of SIP/IP Core; and,
- 4. SHALL if the IM Server is in the media path, activate the Media Parameters received in the MIME SDP body as SDP answer as specified in [MSRP].

Upon receiving of a SIP 200 "OK" response and when the IM Server acts as a SIP proxy the IM Server SHALL forward the SIP 200 "OK" response according to rules and procedures of [RFC3261].

Upon receiving of a SIP final response (other than the SIP 200 "OK" response) to the SIP re-INVITE request the IM Server SHALL forward the SIP final response according to rules and procedures of [RFC3261].

When the SIP/IP Core corresponds with 3GPP/3GPP2 IMS, the IM Server SHALL use 3GPP/3GPP2 IMS Session mechanisms according to rules and procedures of [3GPP TS 24.229] / [3GPP2 X.S0013.004] with the clarifications given in this section.

6.1.2.2.4 SIP CANCEL request

Upon receiving a SIP CANCEL request, an IM Server acting as a B2BUA:

- 1. SHALL act as UAS according to rules and procedures of [RFC3261]; and,
- 2. SHALL cancel the SIP INVITE request towards the IM Client acting as UAC according to rules and procedures of [RFC 3261].

When acting as a SIP proxy rules and procedures as specified in [RFC3261] SHALL be applied.

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When the SIP/IP Core corresponds with 3GPP/3GPP2 IMS, the IM Server SHALL use 3GPP/3GPP2 IMS mechanisms according to rules and procedures of [3GPP TS 24.229] / [3GPP2 X.S0013.004] with the clarifications given in this section.

6.1.2.2.5 SIP BYE request

Upon receiving a SIP BYE request, an IM Server acting as a B2BUA:

- 1. SHALL generate a SIP 200 "OK" response and send it towards the IM Server performing the Controlling IM Function according to rules and procedures of the SIP/IP Core;
- 2. SHALL release User Plane resource associated with the SIP Session with the IM Server performing the Controlling IM Function; and,
- 3. SHALL send a SIP BYE request towards the IM Client according to rules and procedures of the SIP/IP Core.

Upon receiving a SIP 200 "OK" response to the SIP BYE request the IM Server SHALL release User Plane resources associated with the SIP Session with the IM Client.

The IM Server SHALL check if the IM user's history setting "his-settings" i.e. <hist-activation> element is set to active for the IM User and if set to "active", it SHALL proceed according to 13.2.7 "*End History Recording*".

When acting as a SIP proxy rules and procedures as specified in [RFC3261] SHALL be applied.

When the SIP/IP Core corresponds with 3GPP/3GPP2 IMS, the IM Server SHALL use 3GPP/3GPP2 IMS mechanisms according to rules and procedures of [3GPP TS 24.229] / [3GPP2 X.S0013.004] with the clarifications given in this section.

6.1.2.3 Pager Mode Messaging

6.1.2.3.1 Receiving SIP MESSAGE request

Upon receiving a SIP MESSAGE Request destined to a terminating IM User the IM Server:

- 1. SHALL perform the actions specified in section 6.1.2.1 *"General"*;
- 3. SHALL include a Server header with the IM release version as specified in Appendix F *"Release version in User-agent and Server headers*";
- 3. SHALL forward the SIP request towards the terminating Client; and,
- 4. SHALL check if the IM user's history setting "his-settings" i.e. <hist-activation> element is set to active for the IM User and if set to "active", it SHALL execute the processing described in 13.2.3 "*Storage for History"*.

6.1.2.4 Large Message Mode

6.1.2.4.1 Receiving Session request for Large Message Mode

Upon receiving a SIP INVITE Request destined to a terminating IM User, the IM Server:

- 1. SHALL perform the actions specified in subclause 6.1.2.1*"General"*;
- 2. If the IM Server stays in the media path, the IM Server:
    - a. SHALL behave as a B2BUA according to rules and procedures of [RFC3261] for the duration of the Session;
    - b. SHALL generate a SIP INVITE request;
    - c. SHALL insert a URI identifying its own address in the Contact-header of the SIP INVITE request and SHALL copy the received '+g.oma.sip-im.large-message' feature-tag to the Contact header;
    - d. SHALL copy the received Request-URI;
    - e. SHALL include a User-Agent header with the IM release version as specified in Appendix F "Release version in User-agent and Server headers";
    - f. SHALL include the MIME SDP body received in the SIP INVITE;
    - g. SHALL send the SIP INVITE request according to rules and procedures of the SIP/IP Core towards the terminating IM Client;

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h. SHALL check if the IM user's history setting "his-settings" i.e. <hist-activation> element is set to active for the IM User and if set to "active", it SHALL execute the processing described in 13.2.3 "*Storage for History"*.

- 3. If the IM Server does not stay in the media path the IM Server:

  a. SHALL act as a SIP proxy according to rules and procedures of [RFC3261] for the duration of the Session;

  b. SHALL include a Record-Route header containing a URI identifying its own address; and,

  c. SHALL send a SIP INVITE request according to rules and procedures of SIP/IP Core towards the terminating Client.

Upon receiving a SIP 200 "OK" response, if the IM Server is acting as a B2BUA, the IM Server:

- 1. SHALL store the information received in the Contact header;
- 2. SHALL generate a SIP 200 "OK" response;
- 3. SHALL include a MIME SDP body Received in the SIP INVITE from the terminating client;
- 4. SHALL include a Server header to indicate the IM release version as specified in Appendix F "*Release version in User-agent and Server headers*" if has not already been sent in a provisional response for this dialog;
- 5 SHOULD include an Allow header with all supported SIP methods; and,
- 6. SHALL send the SIP 200 "OK" response towards the Controlling Function according to procedures of SIP/IP Core.

Upon receiving a SIP 200 "OK" response, when the IM Server is acting as a SIP proxy, the IM Server:

- 1. SHALL forward the SIP 200 "OK" response toward the initiating IM Client according to rules and procedures of [RFC3261] and SIP/IP Core; and,
- 2. SHALL continue to act as a SIP proxy for the duration of the Session.

Upon receiving a SIP final response other than a SIP 200 "OK", the IM Server SHALL forward the SIP final response along the signalling path towards Controlling Function.

When the SIP/IP Core corresponds with 3GPP/3GPP2 IMS, the IM Client SHALL use 3GPP/3GPP2 IMS mechanisms according to rules and procedures of [3GPP TS 24.229] / [3GPP2 X.S0013.004] with the clarifications given in this section.

6.1.2.4.2 SIP CANCEL Request

Upon receiving a SIP CANCEL, an IM Server acting as a B2BUA:

- 1. SHALL act as UAS according to rules and procedures of [RFC3261]; and,
- 2. SHALL cancel the SIP INVITE request towards the IM Client acting as UAC according to rules and procedures of [RFC 3261].

When acting as a SIP proxy rules and procedures as specified in [RFC3261] SHALL be applied.

When the SIP/IP Core corresponds with 3GPP/3GPP2 IMS, the IM Server SHALL use 3GPP/3GPP2 IMS mechanisms according to rules and procedures of [3GPP TS 24.229] / [3GPP2 X.S0013.004] with the clarifications given in this section.

6.1.2.4.3 SIP BYE request

Upon receiving a SIP BYE request from the IM Server, an IM Server acting as a B2BUA:

- 1. SHALL generate a SIP 200 "OK" response and send it towards the IM Server performing the Controlling IM Function according to rules and procedures of the SIP/IP Core;

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- 2. SHALL release User Plane resource associated with the SIP Session with the IM Server performing the Controlling IM Function; and,
- 3. SHALL send a SIP BYE request towards the IM Client according to rules and procedures of the SIP/IP Core.

Upon receiving a SIP 200 "OK" response to the SIP BYE request the IM Server SHALL release User Plane resources associated with the SIP Session with the IM Client.

When acting as a SIP proxy rules and procedures as specified in [RFC3261] SHALL be applied.

When the SIP/IP Core corresponds with 3GPP/3GPP2 IMS, the IM Server SHALL use 3GPP/3GPP2 IMS mechanisms according to rules and procedures of [3GPP TS 24.229] / [3GPP2 X.S0013.004] with the clarifications given in this section.

6.1.2.5 SIP Notify request

If the IM Server performing the Participating IM Function receives an incoming SIP NOTIFY request that is part of the same dialog as the previously sent SIP SUBSCRIBE request, the IM Server SHALL process the NOTIFY according to the rules and procedures of [RFC 3265], and with the clarifications in this section:

- 1. The IM Server SHALL send the SIP NOTIFY request towards the IM Client along the signalling path; and,
- 2. When the response to the NOTIFY is received by the IM server, it SHALL forward the response along the signalling path to the Controlling function.

When the SIP/IP Core corresponds with 3GPP/3GPP2 IMS, the IM Server SHALL use 3GPP/3GPP2 IMS mechanisms and procedures according to rules and procedures of [3GPP TS 24.229] / [3GPP2 X.S0013.004] with the clarifications given in this section.

6.1.2.6 Extended Group Advertisement Request

The [Shared-Group-XDMS] processing of changes to a Shared Group allows for sending an automatic update to group members when modifications are made to the group, if the <automatic-group-advertisement> element is enabled.

Upon receiving of a SIP MESSAGE request containing a Group Advertisement from the Shared Group XDMS function or from another network, the IM Server:

- 1. SHALL check that if the <allow-reject-invite> action for the group-advertisement <service> element> in the [Shared-Policy-XDMS] is set to “true” for the originating user in the request and if so, SHALL respond with SIP 403 Forbidden response as specified in [RFC3261]. Otherwise, continue with the rest of the steps;
- 2. SHALL send the message to the IM Client.

Upon receiving SIP final response the IM Server SHALL forward the SIP final response according to rules and procedures of [RFC3261].

When the SIP/IP Core corresponds with 3GPP/3GPP2 IMS, the IM Client SHALL use 3GPP/3GPP2 IMS mechanisms according to rules and procedures of [3GPP TS 24.229] / [3GPP2 X.S0013.004] with the clarifications given in this section.

6.1.3 User Plane

The Participating Function MAY stay in the media path, both for IM sessions and for Large Message. If the Participating Function stays in the media path, it SHALL act as a B2BUA for the MSRP traffic.

When an IM Session is initiated and the Participating Function remains on the media path, the Participating Function

- 1. SHALL maintain a mapping between the two MSRP connections:
  - the MSRP connection between the IM Client and the Participating Function;
  - the MSRP connection between the Participating Function and the Controlling Function.
- 2. SHALL forward all MSRP messages from the IM Client to the IM Server performing the Controlling IM Function at the address and port as specified during IM Session setup. See 6.1.1.2 IM Session and 6.1.1.4 Large Message Mode; and,
- 3. SHALL forward all MSRP messages from the IM Server performing the Controlling IM Function to the IM Client at the address and port as specified during IM Session setup. See 6.1.1.2 IM Session and 6.1.1.4 Large Message Mode.

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6.1.4 Private Messages

6.1.4.1 Receiving Private Message

When the IM Server receives a MSRP SEND request containing a Private Message during an on-going an IM Conference, the IM Server:

- SHALL check and verify from the release version in the User-agent or Server headers that the next node is either an IM Client or a Controlling IM Server as specified in Appendix F *Release version in User-agent and Server headers*, and if not then the IM Server SHALL reject the request with MSRP 403 response.

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7 IM Sessions

7.1 IM Client procedures for IM Sessions

7.1.1 Originating Client procedures

7.1.1.1 General

The IM Client SHALL generate an initial SIP request according to rules and procedures of [RFC3261]. The IM Client:

- 1. SHALL include an Accept-Contact header with the IM feature-tag '+g.oma.sip-im' according to rules and procedures of [RFC3841] in all initial SIP requests;
- 2. SHALL include a User-Agent header to indicate the IM release version as specified in Appendix F "*Release version in User-agent and Server headers*";
- 3. SHOULD include an Allow header with all supported SIP methods;
- 4. SHALL include the IM feature-tag '+g.oma.sip-im' in the Contact header;
- 5. SHALL include value "id" in a Privacy header if anonymity is requested according to rules and procedures of [RFC3325];

NOTE: If anonymity is not allowed for the IM Group indicated with the Request-URI of the SIP INVITE based on the rules specified in the [Shared-Group-XDM] the IM Session will not be allowed by the IM Server hosting the IM Group.

- 6. SHALL include the option tag 'timer' in the Supported header;
- 7. SHOULD include the Session-Expires header with the refresher parameter set to "uac" according to rules and procedures of [RFC4028];
- 8. SHALL, in case the user wants to join the session anonymously, include a Privacy header as specified in subclause 7.1.1.15 "*Joining in an IM Conference with a chat alias*"; and,
- 9. MAY include a display name as specified in subclause 5.5 "*Display Name*".

On receipt of a SIP final response or SIP provisional response to the SIP request, the IM Client:

- 1. SHALL store the list of SIP methods that the IM Server supports if received in the Allow header; and,
- 2. SHALL store the content received in the Contact header.

On receipt of the SIP 200 "OK" response to the initial SIP INVITE request the IM Client:

- 1. SHALL start the SIP Session timer using the value received in the Session-Expires header according to rules and procedures of [RFC4028]; and,
- 2. In the case of IM group session, the IM Client SHALL subscribe to the Conference State Event Package as specified in section 7.1.1.11 *"IM Client Subscription to the Conference State Event Package"*.

When the SIP/IP Core corresponds to 3GPP/3GPP2 IMS, the IM Client SHALL use 3GPP/3GPP2 IMS Session establishment mechanisms according to rules and procedures of [3GPP TS 24.229] / [3GPP2 X.S0013.004] with the clarifications given in this section.

7.1.1.2 Establishment of an One-to-One IM session

Upon receiving a request from an IM User to establish a One-to-One IM session with peer-to-peer MSRP media, the IM Client:

- 1. SHALL generate an initial SIP INVITE request according to rules and procedures of [RFC3261] and with the additional clarification as specified in section 7.1.1.1 *"General"*;
- 2. The IM Client SHALL set the Request-URI of the SIP INVITE request to the intended recipient IM User;
- 3. SHALL include in the SIP INVITE request a MIME SDP body as a SDP offer according to rules and procedures of [RFC3264] and [RFC4566] and [MSRP]; and,

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- 4. SHALL send the SIP INVITE request towards the IM Server according to rules and procedures of the SIP/IP Core.

On receiving a SIP 200 "OK" response to the SIP INVITE request the IM Client:

- 1. SHALL store the IM Session Identity if received in the Contact header as described in [RFC 3261]; and,
- 2. SHALL interact with the User Plane as described in section 7.1.3 "*User Plane*".

When the SIP/IP Core corresponds to 3GPP/3GPP2 IMS, the IM Client SHALL use 3GPP/3GPP2 IMS Session establishment mechanisms according to rules and procedures of [3GPP TS 24.229] / [3GPP2 X.S0013.004] with the clarifications given in this section.

7.1.1.3 IM Client initiates an Ad-hoc IM Conference

Upon receiving a request from an IM User to establish an IM Conference, the IM Client:

- 1. SHALL generate an initial SIP INVITE request according to rules and procedures of [RFC3261] and with the additional clarification as specified in section 7.1.1.1 *"General"*; and the IM Client SHALL;
- 2. set the Request-URI of the SIP INVITE request to the Conference-factory-URI for the IM service in the Home Network of the IM User;
- 3. include a MIME resource-list body with the invited IM Users as specified in [draft-URI-list];
- 4. The IM Client SHALL check that the number of Invited IM Users on the URI-list does not exceed the maximum number of Participants allowed in an Ad-hoc IM Group Session as indicated in "MAX-ADHOC-GROUP-SIZE" parameter provisioned for IM Client as described in Appendix I "*The parameters to be provisioned for IM service*". If exceeded, the IM Client SHOULD notify the IM User. Otherwise, continue with the rest of the steps;
- 5. SHALL include in the SIP INVITE request a MIME SDP body as a SDP offer according to rules and procedures of [RFC3264] , [RFC4566] and [MSRP] with the following additional clarification. The IM Client:
  - SHALL set the SDP "accept-types" attribute to a = accept-types : message/cpim; and
  - MAY list other formats or use '*' as defined in [MSRP];
- 6. SHALL send the SIP INVITE request towards the IM Server according to rules and procedures of the SIP/IP Core.

On receiving a SIP 200 "OK" response to the SIP INVITE request the IM Client:

- 1. SHALL store the IM Session Identity if received in the Contact header as described in [RFC4579]; and,
- 2. SHALL interact with the User Plane.

NOTE: According to [draft-URI-list] the received 200 "OK" means that the conference was created successfully, that the client that generated the SIP INVITE request is in the conference, and that the server understood the URI-list.

When the SIP/IP Core corresponds to 3GPP/3GPP2 IMS, the IM Client SHALL use 3GPP/3GPP2 IMS Session establishment mechanisms according to rules and procedures of [3GPP TS 24.229] / [3GPP2 X.S0013.004] with the clarifications given in this section.

7.1.1.4 IM Client initiates a Pre-Defined IM Conference

Upon receiving a request from an IM User to establish an IM Conference, the IM Client:

- 1. SHALL generate an initial SIP INVITE request according to rules and procedures of [RFC3261] and with the additional clarification as specified in section 7.1.1.1 *"General"*; and the IM Client SHALL:
  - a) set the Request-URI of the SIP INVITE request to the Pre-Defined IM Conference URI for the IM service in the Home Network of the IM User;
  - b) SHALL include in the SIP INVITE request a MIME SDP body as a SDP offer according to rules and procedures of [RFC3264], [RFC 4566] and [MSRP] with the following additional clarification, the IM Client;
  - c) SHALL set the SDP "accept-types" attribute to a = accept-types: message/cpim; and,
  - d) MAY list other formats or use '*' as defined in [MSRP];
- 2. SHALL send the SIP INVITE request towards the IM Server according to rules and procedures of the SIP/IP Core.

On receiving a SIP 200 "OK" response to the SIP INVITE request the IM Client:

- 1. SHALL store the IM Session Identity if received in the Contact header as described in [RFC 4579]; and,

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- 2. SHALL interact with the User Plane.

NOTE: The received 200 "OK" means that the conference was created successfully, that the client that generated the SIP INVITE request is in the conference, and that the server understood the Pre-Defined group request.

When the SIP/IP Core corresponds to 3GPP/3GPP2 IMS, the IM Client SHALL use 3GPP/3GPP2 IMS Session establishment mechanisms according to rules and procedures of [3GPP TS 24.229] / [3GPP2 X.S0013.004] with the clarifications given in this section.

7.1.1.5 IM Client IM Session Modification

The IM Client SHALL generate and send a SIP re-INVITE request according to rules and procedures of [RFC3261] and with the additional clarification as specified in section 7.1.1.1 "*General*".

On receiving a SIP 200 "OK" response to the SIP re-INVITE request the IM Client:

- 1. SHALL store the IM Session Identity if received in the Contact header as described in [RFC3261]; and,
- 2. SHALL interact with the User Plane.

When the SIP/IP Core corresponds to 3GPP/3GPP2 IMS, the IM Client SHALL use 3GPP/3GPP2 IMS Session mechanisms according to rules and procedures of [3GPP TS 24.229] / [3GPP2 X.S0013.004].

7.1.1.6 IM Client extends 1-to-1 IM Session to an Ad-hoc IM conference

When a participant in a one to one session wants to extend the session to an Ad-hoc conference session, the IM Client:

- 1. SHALL generate an initial SIP INVITE request according to rules and procedures of [RFC3261] and with the additional clarification as specified in section 7.1.1.1 *"General";*
- 2. SHALL set the Request-URI of the SIP INVITE request to the Conference-factory-URI for the IM service in the Home Network of the IM User;
- 3. SHALL add the invited user(s) in a MIME resource-list body according to [draft-URI-list], including also the identity of the original invited user;
  - a) SHALL for the originally invited user identity in the MIME resource list, include a Replaces header with the original session identity according to rules and procedures of [RFC3891] as illustrated in Appendix L "*Extending a one to one session to a conference*";
- 4. The IM Client SHALL check that the number of Invited IM Users on the URI-list does not exceed the maximum number of Participants allowed in an Ad-hoc IM Group Session as indicated in "MAX-ADHOC-GROUP-SIZE" parameter provisioned for IM Client as described in Appendix I "*The parameters to be provisioned for IM service*". If exceeded, the IM Client SHOULD notify the IM User. Otherwise, continue with the rest of the steps;
- 5. SHALL insert in the SIP INVITE request a Content-Type header with multipart/mixed as specified in [RFC2046];
- 6. SHALL include in the SIP INVITE request a MIME SDP body as a SDP offer according to rules and procedures of [RFC3264], [RFC 4566] and [MSRP] with the following additional clarification, the IM Client:
  - a) SHALL set the SDP "accept-types" attribute to a = accept-types : message/cpim; and
  - b) MAY list other formats or use '*' as defined in [MSRP];
- 7. SHALL send the SIP INVITE request towards the controlling IM Server according to rules and procedures of SIP/IP Core.

On receiving a SIP 200 "OK" response to the SIP INVITE request the IM Client:

- 1. SHALL store the IM Session Identity if received in the Contact header as described in [draft-URI-list]; and,
- 2. SHALL interact with the User Plane.

NOTE: The BYE request received as a result of the Replaces header is handled as described in 7.1.2.3 "*IM Client Receiving a session release request*".

When the SIP/IP Core corresponds with 3GPP/3GPP2 IMS, the IM Client SHALL use 3GPP/3GPP2 IMS mechanisms according to rules and procedures of [3GPP TS 24.229] / [3GPP2 X.S0013.004] with the clarifications given in this section.

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7.1.1.7 IM Client adding IM User(s) to an IM Conference Session

Upon receiving a request from the IM User to add one or more IM Users to an ongoing IM Conference Session, the IM Client:

- 1. SHALL generate a SIP REFER request according to rules and procedures of [RFC3515] and with the additional clarification as specified in section 7.1.1.1 "*General*";
- 2. SHALL set the Request-URI of the SIP REFER request to the IM Session Identity;
- 3. SHALL, if only one IM User is invited:
  - a) set the Refer-To header of the SIP REFER request to the IM Address of the Invited IM User according to rules and procedures of [RFC3515]; and,
  - b) ii. SHALL set the Refer-Sub header to "false" according to rules and procedures of [RFC 4488];
- 4. SHALL, if more then one IM user is invited:
  - a) include a Refer-To header with a pointer to an URI-list in a body part containing the MIME resource-list body according to rules and procedures of [draft -multiple-refer];
  - b) SHALL include a MIME resource-lists body with the list of the IM Users to be added according to rules and procedures of [draft -multiple-refer];
  - c) SHALL set the Refer-Sub header to "false" according to rules and procedures of [RFC 4488] and [draft-multiple-refer]; and,
  - d) SHALL include the "multiple-refer" and "norefersub" option-tag in the Require header field of the REFER according to rules and procedures of [RFC 4488] and [draft -multiple-refer].
- 5. SHOULD, if the on-going IM Session is an Ad-hoc IM Group Session or 1-1 IM Session on the Home IM Server of the IM User, check that the number of the Invited IM Users on the URI-list or in the Refer-To header does not exceed the maximum number of Participants allowed in an Ad-hoc IM Group Session as indicated in "MAX-ADHOC-GROUP-SIZE" parameter provisioned for IM Client. If exceeded, the IM Client SHOULD notify the IM User. Otherwise, continue with the rest of the steps;
- 6. SHALL include value "id" in a Privacy header according to rules and procedures of [RFC3325], if anonymity is requested;

NOTE 1: If anonymity is not allowed for the IM Group indicated with the Request-URI of the SIP REFER request based on rules specified in the [Shared-Group-XDM] the IM Session will not be allowed by the IM Server hosting the IM Group.

- 7. SHALL send the SIP REFER request towards SIP/IP Core.

When the SIP/IP Core corresponds with 3GPP/3GPP2 IMS, the IM Client SHALL use 3GPP/3GPP2 IMS mechanisms according to rules and procedures of [3GPP TS 24.229] / [3GPP2 X.S0013.004] with the clarifications given in this section.

7.1.1.8 SIP Session refresh

Prior to the expiry of the SIP Session timer the IM Client:

- 1. SHALL generate an initial SIP INVITE request as specified in section 7.1.1.1 *"General*;
- 2. SHOULD include the Session-Expires header with the refresher parameter set to 'uac' according to rules and procedures of [RFC4028];
- 3. SHALL include option tag timer in the Supported header;
- 4. SHALL include an SDP body with the SDP parameters being used in the session; and,
- 5. SHALL send the SIP request towards the IM Server according to rules and procedures of the SIP/IP Core.

When the SIP/IP Core corresponds to 3GPP/3GPP2 IMS, the IM Client SHALL use 3GPP/3GPP2 IMS Session refresh mechanisms according to rules and procedures of [3GPP TS 24.229] / [3GPP2 X.S0013.004] with the clarifications given in this section.

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7.1.1.9 IM Client rejoins an IM Conference Session

Upon receiving a request from an IM User to rejoin an IM conference session, the IM Client:

- 1. SHALL check if the Session Identity is still stored in the client. If it is not, then the IM Client SHALL display an error message to the IM user, otherwise continue with the following steps;
- 2. SHALL generate an initial SIP INVITE request according to rules and procedures of [RFC3261] and with the additional clarification as specified in section 7.1.1.1 *"General"*;
- 3. SHALL set the Request-URI of the SIP INVITE request to the IM Session Identity of the IM Conference;
- 4. SHALL include in the SIP INVITE request a MIME SDP body as a SDP offer according to rules and procedures of [RFC3264], [RFC4566], [MSRP]; and,
- 5. SHALL send the SIP INVITE request towards the IM Server according to rules and procedures of the SIP/IP Core.

On receiving a SIP 200 "OK" response to the SIP INVITE request the IM Client:

- 1. SHALL store the list of supported SIP methods if received in the Allow header; and,
- 2. SHALL store the IM Session Identity received in the Contact header as described in [RFC 4579].

When the SIP/IP Core corresponds to 3GPP/3GPP2 IMS, the IM Client SHALL use 3GPP/3GPP2 IMS Session establishment mechanisms according to rules and procedures of [3GPP TS 24.229] / [3GPP2 X.S0013.004] with the clarifications given in this section.

7.1.1.10 IM Client joins a Public Conference Session

Upon receiving a request from an IM User to join a Public Conference Session with the public conference URI, the IM Client:

- 1. SHALL generate an initial SIP INVITE request according to rules and procedures of [RFC3261] and with the additional clarification as specified in section 7.1.1.1 *"General"*;
- 2. SHALL set the Request-URI of the SIP INVITE request to the intended Public Conference URI;
- 3. SHALL insert in the SIP INVITE request a Content-Type header with application/sdp;
- 4. SHALL include in the SIP INVITE request a MIME SDP body as a SDP offer according to rules and procedures of [RFC3264], [RFC4566] and [MSRP] with the following additional clarification, the IM Client:
  - SHALL set the SDP “accept-types” attribute to a = accept-types : message/cpim; and
  - MAY list other formats or use ‘*’ as defined in [MSRP].
- 5. SHALL send the SIP INVITE request towards the IM Server according to rules and procedures of the SIP/IP Core.

On receiving a SIP 200 "OK" response to the SIP INVITE request the IM Client:

- 1. SHALL store the list of supported SIP methods if received in the Allow header; and,
- 2. SHALL store the IM Session Identity if received in the Contact header as described in [RFC 4579].

When the SIP/IP Core corresponds to 3GPP/3GPP2 IMS, the IM Client SHALL use 3GPP/3GPP2 IMS Session establishment mechanisms according to rules and procedures of [3GPP TS 24.229] / [3GPP2 X.S0013.004] with the clarifications given in this section.

7.1.1.11 IM Client subscription to the conference state event package

When an IM Client subscribes to the Conference State Event Package by sending a SIP SUBSCRIBE request to obtain information of the status of an IM Session.

The IM Client:

- 1. SHALL generate a SIP SUBSCRIBE request and use a new SIP-dialog, according to rules and procedures of [RFC3265] and [RFC 4575];
- 2. SHALL set the Request-URI of the SIP SUBSCRIBE request to the IM Session Identity or the IM Group Identity; and,
- 3. SHALL send the SIP SUBSCRIBE request according to rules and procedures of the SIP/IP Core.

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The responses to the SIP SUBSCRIBE request SHALL be handled according to rules and procedures of [RFC3265] and [RFC 4575], and rules and procedures of the SIP/IP Core with the clarifications given in this section.

Upon receiving a SIP 200 "OK" or a SIP 202 “Accepted” response to the SIP SUBSCRIBE request the IM Client:

- 1. SHALL store the contents of the Contact header field.

Upon receiving an incoming SIP NOTIFY request that is part of the same SIP dialog as the previously sent SIP SUBSCRIBE request the IM Client:

- 1. SHALL handle the request according to rules and procedures of [RFC3265] and [RFC 4575];
- 2. SHALL display the current state information (e.g. joined/left users, conference-info) of the IM Session to the IM User;
- 3. SHALL identify the receiving IM Client’s own information with the “yourown” attribute of the <user> element as defined in Appendix M “*Conference Event Package*”, if available. Otherwise receiving IM Client’s information is identified based on <user> element as defined in [RFC4575]; and,
- 4. The client SHALL check the joined users against the access policy of the IM User and display the blocked users who joined in the conference. The access list is stored in the [Shared-Policy-XDMS] and MAY be cached on the client.

NOTE: The IM Client fetches the joined/existing users in the IM conference from the SIP NOTIFY request body according to rules of [RFC 4575] and checks whether those users are in the block list of the IM User. The block list may be stored in the IM Client or fetched from the [Shared-Policy-XDMS].

The contents of the SIP NOTIFY request body is specified in section 7.2.2.10 "*Generating a SIP NOTIFY request*".

When needed the IM Client SHALL terminate the subscription and indicate it terminated according to rules and procedures of [RFC3265].

When the SIP/IP Core corresponds with 3GPP/3GPP2 IMS, the IM Client SHALL use 3GPP/3GPP2 IMS mechanisms according to rules and procedures of [3GPP TS 24.229] / [3GPP2 X.S0013.004] with the clarifications given in this section.

7.1.1.12 IM Client leaving an IM Session

When the Participant wants to leave the Session the IM Client:

- 1. SHALL generate a SIP BYE request according to rules and procedures of [RFC3261];
- 2. SHALL set the Request-URI to the IM Session Identity of the IM Session to leave;
- 3. SHALL include value "id" in the Privacy header according to rules and procedures of [RFC3325], if anonymity is requested; and,
- 4. SHALL send a SIP BYE request according to rules and procedures of SIP/IP Core.

NOTE: The client MAY store the Session Identity for a short period of time to be able to re-join the session. This time period is implementation dependent.

Upon receiving a SIP 200 "OK" response to the SIP BYE request, the IM Client SHALL interact with the User Plane sa described in 7.1.3 “*User Plane*” to release the resources associated to the session.

When the SIP/IP Core corresponds with 3GPP/3GPP2 IMS, the IM Client SHALL use 3GPP/3GPP2 IMS mechanisms according to rules and procedures of [3GPP TS 24.229] / [3GPP2 X.S0013.004] with the clarifications given in this section.

7.1.1.13 IM Client cancelling a IM Session

When the Participant wants to cancel the IM Session initiation, when IM Session signalling is used as specified in section 7.1.1.3 *" IM Client initiates a an Ad-hoc IM conference”* or 7.1.1.4 *“IM Client initiates a Pre-defined IM conference”,* and when the IM Client has not yet received a final SIP response for the SIP INVITE request, the IM Client SHALL cancel the SIP INVITE request by sending a SIP CANCEL according to rules and procedures of [RFC3261].

When the SIP/IP Core corresponds with 3GPP/3GPP2 IMS, the IM Client SHALL use 3GPP/3GPP2 IMS mechanisms according to rules and procedures of [3GPP TS 24.229] / [3GPP2 X.S0013.004] with the clarifications given in this section.

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7.1.1.14 IM Client removing IM User from an IM Conference Session

Upon receiving a request from the IM User to remove an IM User from an ongoing IM Conference Session, the IM Client:

- 1. SHALL generate a SIP REFER request according to rules and procedures of [RFC3515] and with the additional clarifications as specified in 7.1.1.1 General;
- 2. SHALL set the Request-URI of the SIP REFER request to the IM Session Identity;
- 3. SHALL set the Refer-To header of the SIP REFER request to the IM Address of the removed IM User and set the "method" parameter to "BYE" according to rules and procedures of [RFC3515];
- 4. SHALL set the Refer-Sub header to "false" according to rules and procedures of [RFC 4488]; and,
- 5. SHALL send the SIP REFER request towards the IM Session Identity.

When the SIP/IP Core corresponds with 3GPP/3GPP2 IMS, the IM Client SHALL use 3GPP/3GPP2 IMS mechanisms according to rules and procedures of [3GPP TS 24.229] / [3GPP2 X.S0013.004] with the clarifications given in this section.

7.1.1.15 Joining an IM Conference with a chat alias

Upon receiving a request from an IM User to establish or join a pre-defined IM Group session and the user has requested the use of a Chat Alias (this is a User_Input_Name) to keep his real identity anonymous, the IM Client SHALL initiate a SIP INVITE request as defined in [RFC 3261] with the following additional clarification:

The IM Client SHALL:

- 1. Include value "id" in a Privacy header according to rules and procedures of [RFC3325];
- 2. Set the 'From' header field of the SIP INVITE to an anonymous URI, such as <sip:anonymous@anonymous.invalid>, according to the procedures described in [RFC 3261]; and,
- 3. SHALL Send the SIP INVITE request towards the IM Server according to rules and procedures of the SIP/IP Core.

On receiving a 200 OK for the SIP INVITE, The IM Client SHALL subscribe for the conference event package as defined in 7.1.1.11 *"IM Client subscription to the conference state event package"*.

Upon receiving an incoming SIP NOTIFY request as described in 7.2.2.10 *"Generating a SIP NOTIFY request"* the receiving IM Client SHALL use the information of the "entity" attribute of the <user > element that contains the "yourown" attribute extension as the user information belonging to the receiving IM Client.

7.1.1.16 Ending a One-to-One IM session

Upon receiving a request from an IM User to end a One-to-One IM session, the IM Client:

- 1. SHALL generate a SIP BYE request according to rules and procedures of [RFC3261; and,
- 2. SHALL send the SIP BYE request according to rules and procedures of the SIP/IP Core.

On receiving a SIP 200 "OK" response to the SIP BYE request the IM Client:

- 1. SHALL interact with the User Plane as described in section 7.1.3 "*User Plane*".

When the SIP/IP Core corresponds to 3GPP/3GPP2 IMS, the IM Client SHALL use 3GPP/3GPP2 IMS Session ending mechanisms according to rules and procedures of [3GPP TS 24.229] / [3GPP2 X.S0013.004] with the clarifications given in this section.

7.1.2 Terminating Client procedures

An IM Client can receive a SIP INVITE to set up three different types of IM features:

a. Large Message session

b. File Transfer

c. IM Session

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To differentiate between the three cases above, the IM Client SHALL check the feature-tag '+g.oma.sip-im.large-message':

- If the feature tag is received, then the client SHALL process the INVITE according to 9.2.1 "*IM Client Invited to a Large Message session*", else
- The Client SHALL process the SIP INVITE for a session set up as defined in [MSRP] with the following clarification,
- If the File Transfer parameters, such as "File-Selector" are included in the SDP of the SIP INVITE, then the client SHALL process the INVITE according to 10.3 "*Client receiving File Transfer request*", else
- The client shall process the SIP INVITE according to 7.1.2.1 "*IM Client Invited to an IM Session"*.

7.1.2.1 IM Client invited to an IM Session

On receipt of the initial SIP INVITE request the IM Client:

- 1. MAY reject the SIP INVITE request with an appropriate response code as specified in [RFC3261] for example:

  a) when the IM Client determines that there is not enough resources to handle the IM Session;

  b) based on user's input to reject the invitation; or,

  c) any other reason outside the scope of this specification.
- 2. SHALL store the list of supported SIP methods if received in the Allow header;
- 3. SHALL store as the IM Session Identity the content of the Contact header;
- 4. If the IM user accepts the IM Session invitation, perform steps 5, 6 and 7. If the IM client declines the IM Session invitation, perform step 8;
- 5. SHALL generate a SIP 200 "OK" response to the SIP INVITE request;
- 6. SHALL include the accepted Media Parameters and "accept-types" a-line attribute in a MIME SDP body as the SDP answer according to rules and procedures of [RFC3264], [RFC4566] and [MSRP];
- 7. MAY include a display name as specified in subclause 5.5 "*Display Name*" in the SIP 200 "OK" response to the initial SIP INVITE request;
- 8. SHALL send the SIP 200 "OK" response to the IM Server; and,
- 9. SHALL send a SIP 480 "Temporarily Unavailable" response if the IM User or IM Client declines the IM Session invitation, or a SIP 408 "Request Timeout" response if the invitation times out.

When the SIP/IP Core corresponds with 3GPP/3GPP2 IMS, the IM Client SHALL use 3GPP/3GPP2 IMS mechanisms according to rules and procedures of [3GPP TS 24.229] / [3GPP2 X.S0013.004] with the clarifications given in this section.

7.1.2.2 IM Client receiving an IM Session modification request

Upon receiving a SIP re-INVITE request with a MIME SDP body including a new SDP offer as specified by [RFC3264] and [RFC4566], the IM Client:

- 1. SHALL check whether the session to be modified by the received SIP re-INVITE exists. If the session does not exist the IM Client SHALL reject the request with a SIP 606 "Not Acceptable" response towards the IM Server according to the rules and procedures of SIP/IP Core, including a warning header text indicating that the session does not exist. Otherwise, continue with the rest of the steps;
- 2. SHALL validate the Media Parameters and content types listed in "accept-types". If none of the media parameters are acceptable then reject the request with a SIP 488 "Not Acceptable Here" response towards the IM Server according to the rules and procedures of SIP/IP Core and exit this procedure. Otherwise select a subset of the acceptable received Media Parameters and content types, to replace the original SDP parameters, and continue with the rest of steps;

  a) reject the request with a SIP 488 "Not Acceptable Here" response towards the IM Server according to the rules and procedures of SIP/IP Core. Otherwise, continue with the rest of the steps.

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- 3. SHALL change Media Parameters as specified in [MSRP];
- 4. SHALL generate a SIP 200 "OK" according to rules and procedures of [RFC3261];
- 5. SHALL include the Session-Expires header in the SIP 200 "OK" response to SIP re-INVITE request with the refresher parameter set to 'uas' and re-start the SIP Session timer according to rules and procedures specified in [RFC 4028];
- 6. SHALL include the option tag 'timer' in the Supported header;
- 7. SHALL include the accepted Media Parameters and “accept-types” a-line attribute in a MIME SDP body as the SDP answer according to rules and procedures of [RFC3264] and [RFC4566]; and [MSRP] with the following additional clarification:
  - The “accept-types” a-line attribute SHALL contain at least message/CPIM MIME type; and
- 8. SHALL send the SIP 200 "OK" response towards the IM Server according to rules and procedures of SIP/IP Core.

When the SIP/IP Core corresponds with 3GPP/3GPP2 IMS, the IM Client SHALL use 3GPP/3GPP2 IMS mechanisms according to rules and procedures of [3GPP TS 24.229] / [3GPP2 X.S0013.004] with the clarifications given in this section.

7.1.2.3 IM Client receiving an IM Session release request

Upon reception of a SIP BYE request, the IM Client:

- 1. SHALL send SIP 200 "OK" response towards IM Server according to rules and procedures of the SIP/IP Core; and,
- 2. SHALL interact with the User Plane as described in 7.1.3 “*User Plane*” and specified in [MSRP].

NOTE: The client MAY store the Session Identity for a short period of time to be able to re-join the session. This time period is implementation dependent.

When the SIP/IP Core corresponds with 3GPP/3GPP2 IMS, the IM Client SHALL use 3GPP/3GPP2 IMS mechanisms according to rules and procedures of [3GPP TS 24.229] / [3GPP2 X.S0013.004] with the clarifications given in this section.

7.1.2.4 IM Client receiving an IM Session SIP CANCEL request

Upon reception of a SIP CANCEL request, the IM Client SHALL behave as UAS as described in [RFC3261] and send a 200 (OK) response.

The client SHOULD then consider the original transaction cancelled and SHOULD destroy the client transaction handling the original request according to rules and procedures of [RFC3261].

When the SIP/IP Core corresponds with 3GPP/3GPP2 IMS, the IM Client SHALL use 3GPP/3GPP2 IMS mechanisms according to rules and procedures of [3GPP TS 24.229] / [3GPP2 X.S0013.004] with the clarifications given in this section.

7.1.3 User Plane

7.1.3.1 General

- When inviting, being invited or joining a IM Session, the IM Clients SHALL negotiate the Media Parameters with the invited IM Client or the IM Server by using SDP within SIP communication.
- Allowed Media Parameters to be used in a near real-time communication are recommended in [3GPP TS 26.141].

7.1.3.2 Generating MSRP requests in an IM Session

MSRP requests are generated by IM Client according to the rules and procedures defined in [MSRP] and the following additional clarifications:

If the IM Client does not want the content to be rendered automatically to the receiver, but only on express action of the receiver, then the sending IM Client:

- 1. SHALL add a Content-Disposition header field ‘attachment’ according to [RFC 2183] to the MSRP SEND;
- 2. MAY include into the Content-Disposition header a parameter "filename" with value containing the file name of the content according to rules and procedures of [RFC2183];

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- 3. MAY refer to content external to the media session. Then the content type SHOULD be set to message/external body in according to rules and procedures in [RFC4483].

If the IM Client wishes to know whether the MSRP message is delivered to the recipient(s) successfully or not, the IM Client SHALL set the delivery report request according to the rules and procedures of [MSRP].

7.1.3.2.1 Generating MSRP requests in an IM Conference

When the IM Client sends a MSRP request to an IM Session, the IM Client SHALL generate the MSRP SEND request according to [MSRP], and the following procedures:

- 1. The content type of the request SHALL be set to message/CPIM [RFC 3862];
- 2. when the IM User wants to send the request to all the Participants of the IM Conference, The "To" header of the message/CPIM wrapper SHALL be set to the IM Group Identity in case of Pre-defined Group and IM Session Identity in case of Ad-hoc Group;
- 3. when the IM User wants to send a Private Message to one or more Participants of the IM Conference, the IM Client:
    - a) SHOULD ensure that the node receiving the Private Message is an IM Server by checking if the information previously received either in the initial INVITE request or the SIP 200 OK response contained the user agent and server headers as specified in Appendix F *Release version in User-agent and Server headers.* Otherwise, the IM Client SHOULD notify the IM User with an error message;
    - b) SHALL set the "To" headers of the Message/CPIM wrapper are set to the IM Address of the particular Participants.
- 4. The "From" header of the message/CPIM wrapper SHALL be set to the value of the entity attribute of the <user> element, which has "yourown" attribute extension as defined in Appendix M "Conference Event Package", in the SIP NOTIFY response received from subscribing to conference event package. If "yourown" attribute extension is not available, the "From" header of the Message/CPIM SHALL be set to the value of the entity attribute of the <user> element belonging to the User as defined in [RFC4575];
- 5. The body of the message/CPIM, which is the actual instant message payload, MAY be set to o any type negotiated in the SDP "accept-types" according to [MSRP]; and,
- 6. If the IM user requests to receive a Final Delivery Report, the procedures described in 5.7.2 "*Originating Client Procedures*" SHALL be executed.

7.1.3.3 Receiving MSRP requests in an IM Conference Session

When the IM Client receives a MSRP request, the Client SHALL follow the rules and procedures defined in [MSRP] and the following additional procedure:

- the IM Client SHALL check the "To" header field(s) of the Message/CPIM of a MSRP request. If the "To" header field(s) contains the IM Session Identity or IM Group Identity, the IM Client SHALL consider the request as a message sent to all participants of the IM Conference Session. If the "To" header field(s) contains IM Address of the recipient IM User(s) , the IM Client SHALL consider the request as a Private Message and SHOULD render the request differently.

The IM Client SHALL check whether the message contains the request for delivery report. If true, the IM Client SHALL send a delivery notification with MSRP REPORT as described in 5.7.5 "*Terminating Client Procedures*".

7.1.3.4 Sending isComposing status during IM Session

An IM Client that has any ongoing IM Session MAY inform receiver(s) on the activity status by sending MSRP SEND messages holding an isComposing status according to the rules and procedures of [RFC 3994].

7.1.3.5 Receiving isComposing status during IM Session

When IM Client receives a MSRP SEND message holding an isComposing status, the IM Client SHOULD change the isComposing status of the sender according to the rules and procedures of [RFC 3994].

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7.2 IM Controlling Functions for IM sessions

7.2.1 Requests Terminating at the IM Server

7.2.1.1 General

On receipt of an initial SIP INVITE request the IM Server:

When sending a SIP 200 "OK" response to the initial SIP INVITE request the IM Server:

- 1. SHALL generate the SIP 200 "OK" response according to rules and procedures of [RFC3261];
- 2. SHOULD include an Allow header with all the supported SIP methods;
- 3. SHALL include the Session-Expires header with the refresher parameter set to 'uac' and start supervising the SIP Session according to rules and procedures of [RFC 4028];
- 4. SHALL include Authenticated Originator's IM Address as specified in section 5.1 "*Authenticated Originator's IM Address*":
    - a) set to the Conference-factory-URI in case of 1-1 IM Session or Ad-hoc IM Group Session; or
    - b) set to the IM Group Identity in the case of pre-defined IM Group.
- 5. SHALL include in the Contact header the IM Session Identity with the feature-tag 'isfocus' as described in [RFC 4579] and the IM feature-tag '+g.oma.sip-im';
- 6. SHALL include the Server header with the IM release version as specified in Appendix F "*Release version in User-agent and Server headers*" if not already included in a SIP provisional response; and,
- 7. In case of IM Group sessions, the IM Server SHALL send a notification to the IM Clients, which have subscribed to the conference state event package containing the changes in the conference state as specified in subclause 7.2.2.10 *"Generating a SIP NOTIFY request"*.

When the SIP/IP Core corresponds with 3GPP/3GPP2 IMS, the IM Server SHALL use 3GPP/3GPP2 IMS Session establishment mechanisms according to rules and procedures of [3GPP TS 24.229] / [3GPP2 X.S0013.004] with the clarifications given in this section.

7.2.1.2 Ad-hoc IM Group setup request

A client can set up a 1-to-1 session as a special case of an ad hoc IM Conference with only one participant in the Uri-list.

Upon receiving of an initial SIP INVITE request the IM Server:

- 1. SHALL check whether the Conference-factory-URI contained in the Request URI is allocated and perform the actions specified in section 11.1 "*Conference-factory URI does not exist*" if it is not allocated;
- 2. SHALL perform actions to verify the Authenticated Originator's IM Address and authorize the request, and if it is not authorized by the IM Server SHALL return a SIP 403 "Forbidden" response with the warning text set to '127 Service not authorised' as specified in subclause 5.6 *"Warning header"*. Otherwise, continue with the rest of the steps;
- 3. If anonymity is not allowed by IM server and anonymity is requested, it SHALL return a SIP 403 "Forbidden" response with the warning text set to '119 Anonymity not allowed' as specified in subclause 5.6 *"Warning header"*. Otherwise, continue with the rest of the steps;
- 4. SHALL store the supported SIP methods if received in the Allow header;
- 5. SHALL use the display name, if a display name is included, according to the priority specified in section 5.5 "*Display Name*";
- 6. SHALL establish an IM Session and allocate an IM Session Identity for the IM Session as described in [RFC 4579];
- 7. SHALL check if the SDP parameters in the SDP offer of the inviting User are allowed/supported by the Conference Server according to operator policy. If the received SDP parameters are not allowed, the Conference Server SHALL respond with SIP 488 "Not Acceptable here" with a description of the supported SDP parameters by the Server, otherwise continue with the rest of the steps;
- 8. SHALL check from the MIME resource-lists body that the maximum number of Participants allowed in an Ad-hoc IM Group Session is not exceeded. If exceeded, IM Server SHALL return SIP 486 "Busy Here" response with the warning

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text set to “102 too many participants” as specified in subclause 5.6 *"Warning header”* . Otherwise, continue with the rest of the steps; and,

- 9. SHALL invite the IM Users listed in the MIME resource-lists body as specified in section 7.2.2.2 "*IM Session invitation request*".

NOTE: How the multiple invited members are conveyed in the SIP INVITE request is specified in [draft-URI-list].

Upon receiving a SIP 200 "OK" response for the SIP INVITE request:

- 1. SHALL generate a SIP 200 "OK" response to the SIP INVITE request as specified in the section 7.2.1.1 "*General*" and continue with the rest of the steps if the SIP final response is not yet sent to the Inviting IM Client otherwise do not proceed with the rest of the steps;
- 2. SHALL include in the SIP 200 “OK” response a SDP body as a SDP answer according to rules and procedures of [RFC3264], [RFC4566] and [MSRP] with the following instructions:

  a) propose in the accept type media attribute of the SDP from the selected MIME types by the IM Server from both those contained in the original SDP offer from the originating network and those contained in the received SDP answer in the SIP 200 “OK” response from the terminating network;

  b) Include all the ‘a’ attributes accompanying the MSRP media line selected by the IM Server from those selected in step 4 of this procedure.
- 3. SHALL send a SIP 200 "OK" response to the Inviting IM Client; and
- 4. SHALL interact with MSRP switch as specified in 7.2.3 “*User Plane*” and according to the rules and procedures defined in [MSRP].

Upon receiving a SIP final response other than 2xx or 3xx, that is one of the SIP 4xx, 5xx or 6xx final responses the IM Server shall perform one of the following:

- 1. SHALL send the SIP final response towards the Inviting IM Client, if a SIP final response was received from all the Invited IM Clients and the SIP 200 "OK" response is not yet sent to the Inviting IM Client. The SIP final response SHALL include the Status-Code defined by the IM Server according to local policy e.g. the lowest value received from the Invited IM User(s); or,
- 2. SHALL remove Inviting IM Client from the IM Session as specified in section **Error! Reference source not found.** "*Removal of Participant from IM Session*", if a SIP final response other than 2xx or 3xx was received from all the Invited IM Clients and the SIP 200 "OK" response has already been sent to the Inviting IM Client.

When the SIP/IP Core corresponds with 3GPP/3GPP2 IMS, the IM Server SHALL use 3GPP/3GPP2 IMS mechanisms according to rules and procedures of [3GPP TS 24.229] / [3GPP2 X.S0013.004] with the clarifications given in this section.

7.2.1.3 Pre-defined IM Group Session setup request

Upon receiving an initial SIP INVITE request the IM Server:

- 1. SHALL check that the IM Group Identity in the Request-URI, identifying a Pre-defined Group as defined in [Shared-Group-XDM], is specified to support the IM service by evaluating if the <supported-services> element indicates support for the IM service. If the IM service is not supported then the IM Server SHALL perform the actions specified in section 11.2 *"Conference URI does not exist"*. Otherwise, continue with the rest of the steps*;*
- 2. SHALL check the presence of the "isfocus" feature parameter in the URI of the Contact header and if it is present then the IM Server performing the Controlling IM Function SHALL reject the request with a SIP 495 "URI-List Handling Refused" response according to the rules and procedures of [draft-URI-list-handling] with the content of URI-List. It sahll include a warning header with the warning text set to '105 isfocus already assigned' as specified in subclause 5.6 *"Warning header"*.. Otherwise, continue with the rest of the steps;
- 3. SHALL perform actions to verify the Authenticated Originator's IM Address of the Inviting IM User and authorize the request as specified in section 7.2.2.3 “*IM Session initiation policy*” and if it is not authorized the IM Server SHALL return a SIP 403 “Forbidden” response. The IM server SHOULD include an Warning response with the warning text set to '127 Service not authorised' as specified in subclause 5.6 *"Warning header”*. Otherwise, continue with the rest of the steps;
- 4. SHALL store the supported SIP methods if received in the Allow header;

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- 5. SHALL use the display name, if a display name is included, according to the priority specified in section 5.5 "*Display Name*";
- 6. If privacy is requested, the procedures in 7.2.3.2 "*Chat alias in an IM conference*" SHALL be executed;
- 7. SHALL validate that the MSRP Media Parameters are acceptable for the IM Server and if not reject the request with a SIP 488 "Not Acceptable Here" response. Otherwise, continue with the rest of the steps;
- 8. if the IM Group does not have an Active IM Session then the IM Server: SHALL establish a conference focus and allocate IM Session Identity for the IM Session as described in [RFC 4353], and the IM Server;
  - a) SHALL invite members of the Pre-defined IM Group as specified in sections 7.2.2.3 "*IM Session initiation policy*" and 7.2.2.2 "*IM Session invitation request*";
  - b) SHALL interact with MSRP Switch as defined in [MSRP].
- 9. if the IM Group has already an active IM Session then IM Server:

  a) SHALL process the INVITE as specified in the 7.2.1.4"*Joining Pre-defined IM Group Session request*".

Upon receiving a SIP 200 "OK" response for the SIP INVITE request as specified in section 7.2.2.2 *"IM Session invitation request*" the IM Server:

- 1. SHALL generate SIP 200 "OK" response to the SIP INVITE request as specified in the section 7.2.1.1 "*General*" and continue with the rest of the steps if the SIP final response is not yet sent to the Inviting IM Client. Otherwise do not proceed with the rest of the steps;
- 2. SHALL include a MIME SDP body in the SIP 200 "OK" response as a SDP answer according to rules and procedures of [RFC3264], [RFC4566] and [MSRP] as follows:

  a) Include in the 'accept types' SDP media attribute the selected 'mime types' by the IM Server from those contained in the SDP offer in the incoming SIP INVITE request from the originating network, and those in the SDP answer in SIP 200 "OK";
- 3. SHALL send a SIP 200 "OK" response to the Inviting IM Client according to rules and procedures of the SIP/IP Core;
- 4. SHALL interact with MSRP switch as specified in 7.2.3 "*User Plane*" and [MSRP]; and,

Upon receiving a SIP final response other than 2xx or 3xx that is one of the SIP 4xx, 5xx or 6xx final responses the IM Server SHALL perform one of the following:

- 1. SHALL send the SIP final response towards the Inviting IM Client, according to rules and procedures of the SIP/IP Core, if a SIP final response was received from all the Invited IM Clients and the SIP 200 "OK" response is not yet sent to the Inviting IM Client. The SIP final response SHALL include the Status-Code defined by the IM Server according to local policy e.g. the lowest value received from the Invited IM User(s); or,
- 2. SHALL remove the Inviting IM Client from the IM Session as specified in section **Error! Reference source not found.** "*Removal of Participant from IM Session*", if a SIP final response other than 2xx or 3xx was received from all the Invited IM Clients and the SIP 200 "OK" response has already been sent to the Inviting IM Client.

When the SIP/IP Core corresponds with 3GPP/3GPP2 IMS, the IM Server SHALL use 3GPP/3GPP2 IMS mechanisms according to rules and procedures of [3GPP TS 24.229] / [3GPP2 X.S0013.004] with the clarifications given in this section.

7.2.1.4 Joining Pre-defined IM Group Session request

Upon receipt of a SIP INVITE request that includes an IM Group Identity, which identifies the Pre-defined IM Group in the request URI that is owned by the IM Server, the IM Server:

- 1. SHALL check the presence of the "isfocus" feature parameter in the URI of the Contact header and if it is present then the IM Server SHALL reject the request with a SIP 403 "Forbidden" response with the warning text set to '105 isfocus already assigned' as specified in subclause 5.6 *"Warning header"*. Otherwise, continue with the rest of the steps;
- 2. SHALL check whether the Authenticated Originator's IM Address of the joining IM User is allowed to join by performing the actions specified in section 7.2.2.9 *"IM Session joining policy"*. If it is not allowed to join the IM Server SHALL reject the request with a SIP 403 "Forbidden" response to the originating network with the warning text set to '127 Service not authorised' as specified in subclause 5.6 *"Warning header"*. Otherwise, continue with the rest of the steps;
- 3. SHALL check if the <max-participant-count> as specified in [Shared-Group-XDM] is already reached.

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NOTE: The Conversation History Function Participant SHALL NOT be calculated as a Participant when evaluating the <max-participant-count>.

- If reached, IM Server SHALL
  - If the joining participant is a Conversation History function, check if the Refer-by header field is that of a user who is allowed to invoke the Conversation History Function, and if yes then continue with the step 4; otherwise
  - return SIP 486 “Busy Here” response with the Warning header with the warning text set to “102 Too many participants” to the originating network as specified in subclause 5.6 *"Warning header”* . Otherwise, continue with the rest of the steps;
- 4. SHALL store the supported SIP methods if received in the Allow header;
- 5. SHALL use the display name, if a display name is included, according to the priority specified in section 5.5 “*Display Name*”;
- 6. If privacy is requested, the procedures in 7.2.3.2 “*Chat alias in an IM conference*” SHALL be executed;
- 7. SHALL validate that the SDP offer includes at least one Media Type for which the Media Parameters is acceptable for the IM Server and if not reject the request with a SIP 488 "Not Acceptable Here" response. Otherwise, continue with the rest of the steps;
- 8. SHALL check whether the IM Group Session already exists. If it doesn't exist, the IM Server creates an IM Group Session as follows:

  a) SHALL follow the procedures as specified in sections 7.2.2.3 "*IM Session initiation policy*" and 7.2.2.2 "*IM Session invitation requests*";

  b) SHALL interact with MSRP Switch as defined in 7.2.3 “*User Plane*” and in [MSRP] and SHALL not continue the rest of the steps.
- 9. SHALL accept the SIP request and generate a SIP 200 "OK" response to the SIP INVITE request as specified in the section 7.2.1.1 "*General*". The IM Server:

  a) SHALL include a SDP body in the SIP 200 "OK" response as a SDP answer according to rules and procedures of [RFC3264], [RFC4566] and [MSRP] with the following additional instruction;

  b) Include in the ‘accept types’ SDP media attribute the selected ‘mime types’ supported by the IM Server from those contained in the SDP offer in the incoming SIP INVITE request;
- 10. SHALL send the SIP 200 "OK" response towards the IM Client according to rules and procedures of SIP/IP Core;
- 11. SHALL send a notification to the IM Clients, which have subscribed to the conference state event package that a IM User has joined in the IM Group Session, as specified in section 7.2.2.10 "*Generating a SIP NOTIFY request*"; and,
- 12 SHALL send the SIP NOTIFY request to the IM Clients according to rules and procedure of the SIP/IP Core.

When the SIP/IP Core corresponds with 3GPP/3GPP2 IMS, the IM Server SHALL use 3GPP/3GPP2 IMS Session establishment mechanisms according to rules and procedures of [3GPP TS 24.229] / [3GPP2 X.S0013.004] with the clarifications given in this section.

7.2.1.5 Rejoining IM Group Session request

Upon receipt of a SIP INVITE request that includes an IM Session Identity in the Request-URI the IM Server:

- 1. SHALL check whether the IM Session with this IM Session Identity exists. If it does not exist, the IM Server performing the Controlling IM Function SHALL respond with a SIP 403 ”Forbidden” response to the originating network. The IM server SHOULD include an Warning header with the warning text set to '123 Session does not exist' as specified in subclause 5.6 *"Warning header”*. Otherwise, continue with the rest of the steps;
- 2. SHALL check whether the Authenticated Originator's IM Address of the joining IM User is allowed to join by performing the actions specified in section 7.2.2.9 *"IM Session joining policy"*. If it is not allowed to join the IM Server performing the Controlling IM Function SHALL respond with a SIP 403 ”Forbidden” response to the originating network. The IM server SHOULD include an Warning header with the warning text set to '122 Function not allowed' as specified in subclause 5.6 *"Warning header”*. Otherwise, continue with the rest of the steps;
- 3. SHALL in the case a Pre-defined IM Group Session check if the <max-participant-count> as specified in [Shared-Group-XDM] is already reached. If reached, IM Server SHALL return a SIP 486 “Busy Here” response. The IM server

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SHOULD include an Warning header with the warning text set to "102 Too many participants" to the originating network as specified in subclause 5.6 *"Warning header"* . Otherwise, continue with the rest of the steps;

- 4. SHALL store the supported SIP methods if received in the Allow header;
- 5. SHALL use the display name, if a display name is included, according to the priority specified in section 5.5 "*Display Name*";
- 6. If privacy is requested, the procedures in 7.2.3.2 "Chat alias in an IM conference" SHALL be executed;
- 7. SHALL validate that the MSRP Media Parameters are acceptable for the IM Server and if not reject the request with a SIP 488 "Not Acceptable Here" response. Otherwise, continue with the rest of the steps;
- 8. SHALL accept the SIP request and generate a SIP 200 "OK" response to the SIP request as specified in the section 7.2.2.1 "*General*";
- 9. SHALL include a MIME SDP body as a SDP answer in the SIP 200 "OK" response according to rules and procedures of [RFC3264], [RFC4566] and [MSRP] as follows:

  a) Include in the 'accept types' SDP media attribute the selected 'mime types' supported by the IM Server from those contained in the SDP offer in the incoming SIP INVITE request from the originating network.

- 10. SHALL send the SIP 200 "OK" response towards the IM Client according to rules and procedures of SIP/IP Core;
- 11. SHALL interact with the MSRP Switch as specified in 7.2.3 "*User Plane*" and [MSRP];
- 12. SHALL generate a notification to the IM Clients, which have subscribed to the conference state event package that a IM User has joined in the IM Group Session, as specified in section 7.2.2.10 "*Generating a SIP NOTIFY request*"; and,
- 13. SHALL send the SIP NOTIFY request to the IM Clients according to rules and procedure of the SIP/IP Core.

When the SIP/IP Core corresponds with 3GPP/3GPP2 IMS, the IM Server SHALL use 3GPP/3GPP2 IMS Session establishment mechanisms according to rules and procedures of [3GPP TS 24.229] / [3GPP2 X.S0013.004] with the clarifications given in this section.

7.2.1.6 IM Session modification

Upon receiving a SIP re-INVITE request within an existing IM Session including a new SDP offer as specified by [RFC3264], [RFC4566] and [MSRP] the IM Server:

- 1. SHALL validate that the new MSRP parameters in the SIP re-INVITE request are acceptable by the IM Server and if not reject the request with a SIP 488 "Not Acceptable Here" response. Otherwise, continue with the rest of the steps;
- 2. SHALL interact with the MSRP Switch as specified in 7.2.3 "*User Plane*" [MSRP];
- 3. SHALL generate a SIP 200 "OK" response as follows:

  a) include a MIME SDP body as a SDP answer according to rules and procedures of [RFC3264], [RFC4566] and [MSRP] with the new MSRP Parameters , which SHALL be from the list contained in the SDP offer contained in the SIP re-INVITE request; and,

  b) send the SIP 200 "OK" response to the SIP/IP Core along the signalling path.

NOTE: The IM Server may determine to update the MSRP Parameters of the other Participants according to the local policy. The modification is specified in section 7.2.2.6"*IM Session modification*and is always executed in case of file transfer.

When the SIP/IP Core corresponds with 3GPP/3GPP2 IMS, the IM Server SHALL use 3GPP/3GPP2 IMS mechanisms according to rules and procedures of [3GPP TS 24.229] / [3GPP2 X.S0013.004] with the clarifications given in this section.

7.2.1.7 Adding Participants to IM Group Session request

Upon receiving a SIP REFER request that is without a method parameter in the Refer-To header or when the method parameter is set to "INVITE" in the Refer-To header, the IM Server:

- 1. SHALL perform actions to verify the Authenticated Originator's IM Address of the inviting IM User and authorize the request as specified in sections 7.2.2.3 "*IM Session initiation policy*" and 7.2.2.7 "*IM Session adding policy*" and if it is not authorized the IM Server SHALL return a SIP 403 "Forbidden" response. The IM server SHOULD include an

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Warning header with the warning text set to '122 Function not allowed' as specified in subclause 5.6 *"Warning header"*. Otherwise, continue with the rest of the steps;

- 2. If privacy is requested, the procedures in 7.2.3.2 "*Chat alias in an IM conference*" SHALL be executed;

NOTE: Privacy in case of REFER means that the inviting IM user wants to remain anonymous to the invited user.

- 3. SHALL extract the IM Address(es) of the IM User(s) from the SIP REFER request to be invited either:

  a) from the Refer-To header according to rules and procedures of [RFC3515] for inviting a single user; or,

  b) from the MIME resource-list body according to rules and procedures of [draft-multiple-refer] for inviting multiple Users.

- 4. SHALL, for the addition of IM User(s) to an Ad-hoc IM Group Session, check whether the IM User(s) to be added, in addition to those already participating, do not exceed the maximum number of Participants allowed in an Ad-hoc IM Group Session. If exceeded, according to the local policy, the IM Server SHALL return a SIP 486 "Busy Here" response. The IM server SHOULD include an Warning header with the Warning text set to " 102 Too many participants" to the originating network as specified in subclause 5.6 *"Warning header"*. Otherwise, continue with the rest of the steps;
- 5. SHALL generate a SIP 2xx final response to the SIP REFER request according to rules and procedures of [RFC3515];
- 6. SHALL if the SIP REFER request was an initial SIP request received outside of an existing dialog, then the IM Server SHALL include in the response to the SIP REFER request a Supported header with the option tag "norefersub" according to rules and procedures of [RFC4488];
- 7. SHALL check the presence of the Refer-Sub header of the SIP REFER request and if it is present and it has the value "false" then the IM Server SHALL include in the response to the SIP REFER request a Refer-Sub header set to "false" according to rules and procedures of [RFC448];
- 8. SHALL send the SIP 2xx final response to the SIP REFER request towards the IM Client according to rules and procedures of the SIP/IP Core;
- 9. SHALL perform for the IM Addresses allowed according to 7.2.2.7 "*IM Session adding policy*" the actions described in section 7.2.2.2 "*IM Session invitation requests*" for each IM User; and,
- 10. SHALL if the Refer-Sub header is not present or is set to "true" in the SIP REFER request, generate and send to the IM Client SIP NOTIFY request(s) as specified in the section 7.2.2.10 "*Generating a SIP NOTIFY*" based on the progress of each SIP INVITE request sent to IM User(s) in accordance with sub-clause 7.2.2.2 "*IM Session invitation request*".

NOTE: A SIP REFER request according to rules and procedures of [RFC3515] or [draft-multiple-refer] is an implicit subscription to event "refer" if the Refer-Sub header is not present or is set to "true".

Upon receiving a SIP 403 "Forbidden" response with the warning text "105 isfocus already assigned" in the Warning header, the IM Server SHALL if the Refer-Sub header is not present or is set to "true" in the SIP REFER request, generate and send to the IM Client a SIP NOTIFY request as specified in the section 7.2.2.10 "*Generating a SIP NOTIFY request*".

When the SIP/IP Core corresponds with 3GPP/3GPP2 IMS, theIM Server SHALL use 3GPP/3GPP2 IMS mechanisms according to rules and procedures of [3GPP TS 24.229] / [3GPP2 X.S0013.004] with the clarifications given in this section.

7.2.1.8 SIP REFER BYE request received when using IM Group session

Upon receiving from the IM Client a SIP REFER request with the method parameter set to value "BYE" in the Refer-To header the IM Server:

- 1. SHALL perform the actions to verify the Authenticated Originator's IM Address of the IM Client and authorize the request and if it is not authorized the IM Server SHALL return a SIP 403 "Forbidden" response. The IM server SHOULD include an Warning header with the warning text set to '122 Function not allowed' as specified in subclause 5.6 *"Warning header"*;
- 2. SHALL examine the URI in the Refer-To header of the SIP REFER request; and

  a) if the URI is an identity of an existing IM Session and the Participant referred by the Authenticated Originator's IM Address of the SIP REFER request is participating in the IM Session then the IM Server:

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i. SHALL generate a SIP 2xx final response to the SIP REFER request according to rules and procedures of [RFC3515];

ii. SHALL if the SIP REFER request was an initial SIP request received outside of an existing dialog, then the IM Server SHALL include in the response to the SIP REFER request a Supported header with the option tag “norefersub” according to rules and procedures of [RFC4488];

iii. SHALL check the presence of the Refer-Sub header of the SIP REFER request and if it is present and it has the value “false” then the IM Server SHALL include in the response to the SIP REFER request a Refer-Sub header set to “false” according to rules and procedures of [RFC4488];

iv. SHALL send the SIP response to the SIP REFER request towards the IM Client according to rules and procedures of the SIP/IP Core;

v. SHALL remove the Participant in the Refer-To header from the IM Session by performing the procedures as specified in section **Error! Reference source not found.** *“Removal of Participant from the IM Session"*;

vi. SHALL check the IM Session release policy as specified in section 7.2.2.8 "*IM Session release policy*" and according to the applied release policy perform for each Participant of the IM Session the procedures specified in section **Error! Reference source not found.** *"Removal of Participant from the IM Session"*, if needed;

vii. SHALL check the subscription termination policy as specified in section 7.2.2.11 *"Terminating the subscription"* and for each IM Clients terminate the existing subscription acording to it;

ix. SHALL send the SIP NOTIFY request to the IM Client(s) as a result of the REFER request according to rules and procedure of [RFC 3515].

b) if the URI is not an identity of an existing IM Session or the Participant referred by the Authenticated Originator’s IM Address of the SIP REFER request is not participating in the IM Session then the IM Server:

- i. SHALL return a SIP 403 "Forbidden" response. The IM server SHOULD include an Warning header with the warning text set to '122 Function not allowed' as specified in subclause 5.6 *"Warning header”*.

- 3. SHALL if the Refer-Sub header is not present or is set to “true” in the SIP REFER request, generate and send to the IM Client SIP NOTIFY request(s) as specified in section 7.2.2.10 “*Generating a SIP NOTIFY request to the SIP REFER request*” based on the progress of the BYE request.

NOTE: A SIP REFER request according to rules and procedures of [RFC3515] or [draft-multiple-refer] is an implicit subscription to event “refer” in case the Refer-Sub header is not present in or is set to “true”.

When the SIP/IP Core corresponds with 3GPP/3GPP2 IMS, the IM Server SHALL use 3GPP/3GPP2 IMS mechanisms according to rules and procedures of [3GPP TS 24.229] / [3GPP2 X.S0013.004] with the clarifications given in this section.

7.2.1.9 Void

7.2.1.10 SIP BYE request received in a IM Session

Upon receiving a SIP BYE request the IM Server:

- 1. SHALL send a SIP 200 "OK" response towards the IM Client according to rules and procedures of the SIP/IP Core;
- 2. SHALL release MSRP resources towards the Participating IM Function (or towards the IM Client if there is no Participating IM Function on the MSRP path);
- 3. SHALL check IM Session release policy as specified in the section 7.2.2.8 *“IM Session release policy”* and according to the applied release policy perform for each Participant of the IM Session the procedures as specified in the section **Error! Reference source not found.** "Removal of Participant from the IM Session", if needed;
- 4. SHALL check the subscription termination policy as specified in section 7.2.2.11 *"Terminating the subscription"* and act according to that section.

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When the SIP/IP Core corresponds with 3GPP/3GPP2 IMS, the IM Server SHALL use 3GPP/3GPP2 IMS mechanisms according to rules and procedures of [3GPP TS 24.229] / [3GPP2 X.S0013.004] with the clarifications given in this sectionPage-mode requests.

7.2.1.11 SIP Session refresh procedure

On receipt of a SIP re-INVITE request including a Session-Expires value the IM Server:

- 1. SHALL include the Session-Expires header in a SIP 200 "OK" response to the SIP request with the refresher parameter set to 'uac' and restart the SIP Session timer according to rules and procedures of [RFC 4028].

On expiry of the SIP Session timer the IM Server SHALL initiate disconnection of the SIP Session as specified in section **Error! Reference source not found.** "*Removal of Participant from IM Session*".

When the SIP/IP Core corresponds with 3GPP/3GPP2 IMS, the IM Server SHALL use 3GPP/3GPP2 IMS session refresh mechanisms according to rules and procedures of [3GPP TS 24.229] / [3GPP2 X.S0013.004] with the clarifications given in this section.

7.2.1.12 Subscribing to Participant information

Upon receiving a SIP SUBSCRIBE request with the Event header set to “conference” according to rules and procedures of [RFC 4575], the IM Server:

- 1. SHALL, if the Request-URI contains a IM Session Identity, check whether the IM Session identified by the IM Session Identity in the Request-URI is owned by the IM Server and perform the actions specified in section 11.2 *"Conference URI does not exist"* if it is not owned by the IM Server; Otherwise continue with the rest of the steps;
- 2. SHALL, if the request-URI contains a IM Group Identity, check whether the IM Group identified with the IM Group Identity in the Request-URI is owned by the IM Server and perform the actions specified in section 11.2 *"Conference URI does not exist"* if it is not owned by the IM Server. Otherwise continue with the rest of the steps;
- 3. SHALL perform the actions to verify the Authenticated Originator's IM Address and authorize the request and if it is not authorized the IM Server SHALL return a SIP 403 "Forbidden" response. The IM server SHOULD include an Warning header with the warning text set to '122 Function not allowed' as specified in subclause 5.6 *"Warning header”*. Otherwise, continue with the rest of the steps;

  NOTE: A local policy, e.g. number of simultaneous subscriptions exceeded, may cause the IM Server to reject the subscription request.

- 4. SHALL check whether the Authenticated Originator’s IM Address is allowed to subscribe to Participant information according to the <allow-conference-state> action as specified in [Shared-Group-XDM] and if user is a participant in the IM conference. If it is not allowed or if the IM User is not attending the conference, the IM Server performing the Controlling IM Function SHALL respond with a SIP 403 “Forbidden” response to the originating network. The IM server SHOULD include an Warning header to with the warning text set to '122 Function not allowed' as specified in subclause 5.6 *"Warning header”*. Otherwise, continue with the rest of the steps;
- 5. SHALL create a subscription to the conference state of the IM Session according to rules and procedures of [RFC3265] and [RFC 4575] with the following clarifications:
  - a). SHALL generate a SIP 200 "OK" or a SIP 202 "Accepted" response to the SIP SUBSCRIBE request according to rules and procedures of [RFC3265] [RFC 4575];
- 6. SHALL set the Contact header of the SIP response to the address of the IM Server;
- 7. SHALL send the SIP response towards the IM Client according to rules and procedures of the SIP/IP Core;
- 8. SHALL generate an initial SIP NOTIFY request as specified in section 7.2.2.10 *"Generating a SIP NOTIFY request"*; and,
- 9. SHALL send the SIP NOTIFY request to the IM Client according to rules and procedure of the SIP/IP Core.

When a change in the subscribed state occurs, the IM Server SHOULD generate and send a SIP NOTIFY request as specified in section 7.2.2.10 "*Generating a SIP NOTIFY request*" and according to rules and procedures of SIP/IP Core respectively.

When needed the IM Server SHALL terminate the subscription and indicate it to the IM Client as described in the section 7.2.2.11 "*Terminating the subscription*".

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When the SIP/IP Core corresponds with 3GPP/3GPP2 IMS, the IM Server SHALL use 3GPP/3GPP2 IMS mechanisms according to rules and procedures of [3GPP TS 24.229] / [3GPP2 X.S0013.004] with the clarifications given in this section.

7.2.2 Requests Initiated by the IM Server

7.2.2.1 General

The IM Server SHALL generate an initial SIP INVITE request according to rules and procedures of [RFC3261]. The IM Server:

- 1. SHALL include an Accept-Contact header with the IM feature-tag '+g.oma.sip-im' according to rules and procedures of [RFC3841] in all initial INVITE requests;
- 2. SHALL set the Request-URI to the IM Address of the IM User to be invited;
- 3. SHALL include User-Agent header to indicate the IM release version as specified in Appendix F "*Release version in User-agent and Server headers*";
- 4. SHALL include the Authenticated Originator's IM Address as specified in section 5.1 "*Authenticated Originator's IM Address*"
    - a) with the URI and Display name set to the IM Address of the Inviting IM Client in case of 1-1IM Session and Ad-hoc IM Group Session; or,
    - b) with the URI and Display name set to the IM Group Identity in case of the Pre-defined Group;
- 5. SHALL include a Referred-By header with the Authenticated Originator's IM Address of the Inviting IM Client in the case of Ad-hoc and Pre-defined IM Group Session;
- 6. SHALL include in the Contact header as IM Session Identity the contact address of the conference with the IM feature-tag '+g.oma.sip-im' and the feature-tag "isfocus";
- 7. SHOULD include the Session-Expires header with the refresher parameter set to 'uas' according to rules and procedures of [RFC 4028];
- 8. SHALL include the Supported header set to "timer";
- 9. SHALL include value 'id' in a Privacy header according to rules and procedures of [RFC3325], if anonymity is requested with the "Privacy: id" header by the Inviting IM Client;
- 10. SHOULD include an Allow header with all supported SIP methods;
- 11. MAY include the "Subject" header associated with the Group if it is a Pre-defined group.

On receipt of the SIP 200 "OK" response to the initial outgoing SIP INVITE request the IM Server SHALL:

- 1. start the SIP Session timer according to rules and procedures of [RFC 4028];
- 2. SHALL use the display name, if a display name is included, according to the priority specified in subclause 5.5 "Display Name".

When the SIP/IP Core corresponds with 3GPP/3GPP2 IMS, the IM Server SHALL use 3GPP/3GPP2 IMS Session establishment mechanisms according to rules and procedures of [3GPP TS 24.229] / [3GPP2 X.S0013.004] with the clarifications given in this section.

7.2.2.2 IM Session invitation requests

This section describes the procedures for inviting an IM User to an IM Session. The IM Server:

- 1. SHALL generate a SIP INVITE request as specified in section 7.2.2.1 "*General*";
- 2. IF the SIP INIVTE request contain a URI-List, the IM Server SHALL send the SIP INVITE request to the participants in the URI-list as defined in [Draft URI-list];
- 3. IF the SIP INVITE request is for a pre-defined group, the IM Server SHALL send the SIP INVITE request to each one of the members of the pre-defined group;
- 4. SHALL include a MIME SDP body as a SDP offer according to rules and procedures of [RFC3264] , [RFC4566] and [MSRP] as following additional instruction:

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- a) Include all the 'a' attributes accompanying the MSRP media line selected by the IM Server from those contained in the original SDP offer from the originating network,
- 5. SHALL send the SIP INVITE request towards the SIP/IP Core according to rules and procedures of the SIP/IP Core.

Upon receiving SIP provisional responses for the SIP INVITE request(s) the IM Server:

- 1. SHALL store the list of supported SIP methods if received in the Allow header; and
- 2. SHALL store the contact received in the Contact header.

Upon receiving SIP 200 "OK" response for the SIP INVITE request the IM Server

- 1. SHALL store the list of supported SIP methods if received in the Allow header;
- 2. SHALL store the contact received in the Contact header;
- 3. SHALL check whether the privacy is allowed in this IM Group, when anonymity is requested with the Privacy header containing the tag "id". If not allowed, the IM Server SHOULD release the IM Client from the IM Session immediately as specified in **Error! Reference source not found.** *"Removal of Participant from the IM Session"*. Allowing privacy in the Group is defined using <allow-anonymity> element as specified in [Shared-Group-XDM]. If accepted, provide anonimization according to [RFC3323] and [RFC3325] and continue with the rest of the steps;
- 4. SHALL interact with MSRP switch as specified in 7.2.3 "*User Plane*"; and,
- 5. SHALL send a notification to the IM Clients, which have subscribed to the conference state event package that an Invited IM User has joined in the IM Group Session, as specified in section 7.2.2.10 *"Generating a SIP NOTIFY request"*.

When the SIP/IP Core corresponds with 3GPP/3GPP2 IMS, the IM Server SHALL use 3GPP/3GPP2 IMS mechanisms according to rules and procedures of [3GPP TS 24.229] / [3GPP2 X.S0013.004] with the clarifications given in this section.

7.2.2.3 IM Session initiation policy

In the case of a Pre-defined IM Group, the IM Server performing the Controlling IM Function SHALL initiate the IM Session if the Authenticated Originator's IM Address is allowed the action <allow-initiate-conference> as specified in [Shared-Group-XDM].

In the case of a Pre-defined IM Group, the IM Server performing the Controlling IM Function SHALL invite IM Group Members contained in the <list> element of the Group document as specified in [Shared-Group-XDM] if the value of the <invite-members> element is 'true'.

NOTE: How the IM Server performing the Controlling IM Function selects the <max-participant-count> members to invite is outside the scope of this specification.

7.2.2.4 Cancel of IM Session invitation requests

When the IM Server needs to cancel the IM Session invitation request and when it has not received a SIP final response, the IM Server SHALL cancel the SIP INVITE request acting as UAC according to rules and procedures of [RFC3261].

When the SIP/IP Core corresponds with 3GPP/3GPP2 IMS, the IM Client SHALL use 3GPP/3GPP2 IMS mechanisms according to rules and procedures of [3GPP TS 24.229] / [3GPP2 X.S0013.004] with the clarifications given in this section.

7.2.2.5 Ending an IM Session

When the IM Server performing the Controlling IM Function find the IM session SHOULD be released according to the section 7.2.2.8 *"IM Session release policy",* the IM Server:

- 1. SHALL remove all the participants in the IM session as specified in **Error! Reference source not found.** *"Removal of Participant from IM Session";*

When the SIP/IP Core corresponds with 3GPP/3GPP2 IMS, the IM Client SHALL use 3GPP/3GPP2 IMS mechanisms according to rules and procedures of [3GPP TS 24.229] / [3GPP2 X.S0013.004] with the clarifications given in this section.

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7.2.2.6 IM Session modification

This section describes the procedures for modifying Media Parameters for one SIP Session in an ongoing IM Session. The IM Server:

- 1. SHALL generate a SIP re-INVITE request;
- 2. SHALL include a MIME SDP body as a SDP offer according to rules and procedures of [RFC3264] ,[RFC4566] and [MSRP] with the modified Media Parameters; and,
- 3. SHALL send the SIP request towards the session participants according to rules and procedures of SIP/IP Core.

Upon receipt of a SIP 200 "OK" response the IM Server:

- 1. SHALL activate the new Media Parameters as specified in [MSRP].

The IM Server SHALL continue to use the current Media Parameters until it has received a SIP 200 "OK" response.

When the SIP/IP Core corresponds with 3GPP/3GPP2 IMS, the IM Server SHALL use 3GPP/3GPP2 IMS mechanisms according to rules and procedures of [3GPP TS 24.229] / [3GPP2 X.S0013.004] with the clarifications given in this section.

7.2.2.7 IM Session adding policy

In the case of a Pre-defined IM Group, the IM Server performing the Controlling IM Function SHALL invite IM Users if the Authenticated Originator's IM Address of the inviting IM User is allowed by the <allow-invite-users-dynamically> action as specified in [Shared-Group-XDM].

When a request to add one or more IM Users to a IM Group is made by an authorized Participant of an ongoing IM Session, the IM Server performing the Controlling IM Function SHALL only invite IM Users if the invited IM Users are allowed to be Participants according to the rules defined in the Group document as specified in [Shared-Group-XDM]. If age restrictions apply to the group, the Controlling IM server SHALL fetch the invited IM User's age from his home network. If the home network is in a different domain than the Controlling Function, then the Controlling Function shall use XCAP commands to the Aggregation Proxy to fetch the invited user's real age.

7.2.2.8 IM Session release policy

To enable the IM Server to remove Participants from an IM Session, the IM Session release policy SHALL support the rules defined in Group definition as specified in [Shared-Group-XDM] and default operator configurable variables at the IM Server. In case of overlapping definitions, the Group definition takes precedence.

The IM Session release policy SHALL be executed based on the <session-active-policy> parameters in the Group definition as specified in [Shared-Group-XDM].

The IM Session release policy SHALL support the following operator configurable variables together with the possible values shown in parenthesis:

auto-release (true/false)

- o if true the IM Server SHALL remove rest of the Participants from Pre-defined IM Group Session and release the IM Session when the originator leaves the IM Session
- o if false the IM Server SHALL NOT remove rest of the Participants from Pre-defined IM Group Session nor release the IM Session when the originator leaves the IM Session

NOTE 1: 1-1 and Ad-Hoc IM Group Sessions are always released when the IM Session initiator leaves the IM Session regardless of the value of "auto-release".

session max length (seconds)

- o if the IM Session has lasted the specified amount of seconds the IM Server SHALL release the IM Session

number-of-remaining-participants (0/1)

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- o if a Pre-defined or Ad-hoc IM Group Session has as many as or less than specified Participants left the IM Server SHALL release the IM Session. The possible values should be 0 or 1.

NOTE 2: 1-1 IM Sessions are always released whenever there is only one or no members left in the IM Session regardless of the value of "number-of-remaining-participants".

The release policy SHALL include the following:

NOTE 3: Local policies may be defined by the operator and these local policies may impact the release policies defined here.

- 1. The IM Server performing the Controlling IM Function SHALL remove the rest of the Participants from the IM Session it hosts and release the IM Session:

  a) if the IM Session is an Ad-hoc or 1-1 IM Session and the originator of the IM Session leaves the IM Session;

  b) if the IM Session is a Pre-defined IM Session and the originator of the IM Session leaves the IM Session and the auto-release has the value "true";

  c) if the IM Session is a 1-1 IM Session and there is only one or no Participants in the IM Session;

  d) if the IM Session is a Pre-defined or Ad-hoc IM Group Session and there are as many as or less than "number-of-remaining-participants" Participants in the IM Session;

  e) if the IM Session has lasted longer than the session max length variable specifies; and,

  f) if the IM Session is Pre-defined IM Group Session and the IM Group is deleted.

- 2. The IM Server performing the Controlling IM Function SHALL remove a Participant from the IM Session:

  a) if the IM Session is Pre-defined IM Group Session and the rules of the Group definition are changed so that Participant is no longer allowed to participate the IM Group Session.

7.2.2.9 IM Session joining policy

The IM Server performing the Controlling IM Function SHALL allow only those IM Users to join in the Ad-hoc IM Group Session that it hosts who:

- have been invited in the original invitation; and,
- have been invited during the IM Session by the owner or by another Participant of the IM Session depending on the session policy.

The IM Server performing the Controlling IM Function SHALL allow only those IM Users to join in the Pre-defined IM Group Session that it hosts:

- whose Authenticated Originator's IM Addresses are allowed by the <join-handling> action of the Group's authorization rules, as specified in [Shared-Group-XDM].

If the IM Server supports age limitation in a group sessions, the IM Server SHALL allow only those IM Users to join the Group Session who have satisfied the condition in the <age-restrictions> element in a group as described in [Shared-Group-XDM].

Upon receiving a SIP INVITE request, an IM Server SHALL check the conditional <age-limit> element as follows:

- fetch the joining user's profile XDM <age> element information as defined in [Shared-Group-XDM] from the IM Server home network, if the joining user is owned by this IM Server; or,
- fetch the joining user's profile XDM <age> element information from the joining User's home network via XCAP NNI (XDM-8) as defined in [Shared-Group-XDM], if the joining user is from a different network;
- SHALL check the <age> element obtained from user's profile against the group session <age-restrictions> condition, and if the <age> element meets the condition in <age-restrictions> element, then the IM Server SHALL allow the joining User to join the group session, otherwise reject the request with SIP 403 "Forbidden" response

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with the warning text set to '124 Service not allowed due to the age limit' as specified in subclause 5.6 *"Warning header*".

The IM Server performing the Controlling IM Function SHALL allow the History Function to join only for IM Users who are participating in the session.

7.2.2.10 Generating a SIP NOTIFY request

The IM Server SHALL generate a SIP NOTIFY request according to rules and procedures of [RFC3265] with the clarifications in this section.

The IM Server SHOULD limit the rate of SIP NOTIFY requests sent toward an IM Client.

NOTE: How an IM Server limits the rate of SIP NOTIFY requests towards the IM Client is out of scope of this specification.

When reporting changes in the Participant information the IM Server SHALL use partial output according to rules and procedures of [RFC 4575].

The IM Server SHALL include a MIME application/conference-info+xml body according to rules and procedures of [RFC 4575] with the following limitations:

- 1. The IM Server SHALL include the IM Group Identity in the case of a Pre-defined IM Group or Session Identity in the case of an ad hoc IM group in the <entity> attribute of the <conference-info> element;
- 2. For each Participant in the IM Session except for the Conversation History Function, the IM Server SHALL include a <user> element. The "user" element:

  a) SHALL include the <entity> attribute. The <entity> attribute:

  i. SHALL for the originating IM Client include the Authenticated originator's IM Address of the initial SIP INVITE request, if the Participant has not requested privacy; or,

  ii. SHALL for the originating IM Client include the from header, if the Participant has requested privacy; and,

  iii. SHALL for an Invited IM Client include the identity used in the URI-list for the Invited IM Client to an Ad-hoc IM Group Session or the identity used in the IM Group definition in case of a Predefined Group Session, if the Participant has not requested privacy; or,

  iv. SHALL for an Invited IM Client include an anonymous identity as specified in [RFC 4575], if the Participant has requested privacy;

  v. SHALL include, for each participant receiving the NOTIFY an extension to the <user> element, "yourown" attribute to identify the participant's own information as defined in Appendix M "*Conference Event Package*".

  b) MAY include the <display-text> element. If include, the <display-text> element SHALL include the Display Name of the identity which was used in the <entity> attribute as defined in a).

  c) SHALL include a single <endpoint> element. The <endpoint> element

  i. SHALL include the <entity> attribute;

  ii. SHALL include the <status> element. The <status> element SHOULD have one of the following values:

  A. "connected", when the Participant has joined to the IM Session; or,

  B. "disconnected", when the Participant has left the IM Session since the last SIP NOTIFY request was sent.

NOTE 1: The usage of other values of the <status-type> element is not defined for IM.

NOTE 2: The usage of other elements specified in [RFC 4575] is not defined for IM.

When the SIP/IP Core corresponds with 3GPP/3GPP2 IMS, the IM Server SHALL use 3GPP/3GPP2 IMS mechanisms according to rules and procedures of [3GPP TS 24.229] / [3GPP2 X.S0013.004] with the clarifications given in this section.

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7.2.2.11 Terminating the subscription

The IM Server:

- 1. SHALL terminate all subscriptions for IM Session Participant information for the IM Session when the IM Session is released and not accept any re-subscriptions;
- 2. MAY terminate the subscription for an IM Client when it leaves the IM Session;
- 3. For each subscription that shall be terminated the IM Server:

  a) SHALL generate a SIP NOTIFY request according to rules and procedures specified in [RFC3265];

  b) SHALL set the Subscription-State header to "terminated; reason=noresource"; and,

  c) SHALL send the SIP NOTIFY request to the IM Client according to rules and procedure of SIP/IP Core.

When the SIP/IP Core corresponds with 3GPP/3GPP2 IMS, the IM Server SHALL use 3GPP/3GPP2 IMS mechanisms according to rules and procedures of [3GPP TS 24.229] / [3GPP2 X.S0013.004] with the clarifications given in this section.

7.2.2.12 Removal of Participant from IM Session

When a Participant needs to be removed from the IM Session the IM Server:

- 1. SHALL generate a SIP BYE request according to rules and procedures of [RFC3261]; and,
- 2. SHALL send the SIP BYE request towards the IM Client of the Participant according to rules and procedures of the SIP/IP Core.

Upon receiving a SIP 200 "OK" for the SIP BYE request, the IM Server

- 1. SHALL release MSRP resources towards the Participating IM Function (or towards the IM Client if there is no Participating IM Function on the MSRP path) by interacting with the MSRP Switch as described in 7.2.3 "*User Plane*";
- 2. SHALL generate a notification to the IM Clients, which have subscribed to the conference state event package that a IM User has left the IM Group Session, as specified in section 7.2.2.10 *"Generating a SIP NOTIFY request"*; and,
- 3. SHALL send the SIP NOTIFY request to the IM Clients according to rules and procedures of the SIP/IP Core.

When the SIP/IP Core corresponds with 3GPP/3GPP2 IMS, the IM Server SHALL use 3GPP/3GPP2 IMS mechanisms according to rules and procedures of [3GPP TS 24.229] / [3GPP2 X.S0013.004] with the clarifications given in this section.

7.2.3 User plane

User plane in IM group session /IM conference is a type of conference as specified in [RFC 4353]. Such a conference can involve several media components, and an MSRP session is one of the possible media components. Participants in this type of conference will be aware that the media offered is MSRP due to the presence of an SDP media type being 'message' with TCP/MSRP being the protocol as defined in [MSRP]. The special MSRP application level entity that handles the media session in the conference is called MSRP switch.

7.2.3.1 MSRP Switch

MSRP switch functions in a similar way as a conference mixer because it handles media sessions with each of the participants and bridges these streams together. However, unlike a conference mixer, the MSRP switch merely relays messages between participants but doesn't actually mix the streams in any way. Each conference participant establishes MSRP Session with the MSRP Switch.

In a group session /IM conference, the msrp switch

- SHALL support media type message/cpim
- SHALL maintain mappings of IM conference participants msrp sessions with their corresponding user identities (SIP, display name), SDP attributes such as max-size, etc within a duration of an active session
- SHALL check the 'From' header of the message/cpim in each MSRP SEND against the identity of the sender in its mapping table, and if the 'From' header of the message/cpim corresponds to the sender's identity in the mapping table, the msrp switch shall relay message to intended recipient(s), otherwise reject the message as described in 7.2.3.3 *"Receiving and Sending messages in an IM conference"*

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- SHALL allow the use of anonymity to keep participants real SIP URI identities hidden in the IM conference without downgrading participant's services as defined in 7.2.3.2 *"Chat Alias in an IM Conference"*
- SHALL relay or distribute received message to the entire participants of the IM conference as defined in 7.2.3.3 *"Receiving and Sending messages in an IM conference"*
- SHALL support sending of Private messages as define in 7.2.3.4 *"Receiving and Sending Private messages in an IM conference"*
- SHOULD start relaying the MSRP chunks once the message/cpim wrapper information is received.

7.2.3.2 Chat Alias in an IM conference

The IM Server maintains a table where all the participants are listed with the chat aliases they are using. The purpose of this table is to guarantee that a chat alias is uniquely allocated to a user to avoid duplicated entries.

When the IM Server receives a SIP INVITE request and the IM user requests for privacy as defined in [RFC3325] or the IM Server receives a SIP REFER request that is without a method parameter in the Refer-To header or when the method parameter is set to "INVITE" in the Refer-To header and the user requests for privacy as defined in [RFC3325], the IM Controlling Function SHALL:

- 1. Check whether privacy is allowed for the Authenticated Originator's IM Address, when anonymity is requested with the Privacy header containing the tag "id". If not allowed, the IM Server SHALL respond with a SIP 403 "Forbidden" response. The IM server SHOULD include a Warning header with the warning text set to ' 119 Anonymity not allowed' as specified in subclause 5.6 *"Warning header"*. Otherwise, provide anonimization according to [RFC3323] and [RFC3325] and continue with the rest of the steps;

  NOTE: Allowing privacy for an Authenticated Originator's IM Address is defined using the <allow-anonymity> element of the rules of the IM Group definition as specified in [Shared-Group-XDM].

- 2. Check the 'From' header field values against the entries in the IM Server's mapping for the session and
  - If the 'From' header field values are unique, the IM Server:
    - SHALL insert the 'From' header field values into its mapping table for the joining User.
  - If the 'From' header field is NOT unique, the IM Server:
    - SHALL insert a modified/changed values of the 'From' header field in its mapping table to make it unique for the joining User.

  NOTE: When an IM Controlling Function checks the 'From' header field e.g. <bob><sip: anonymous@anonymous.invalid>" and this field is not unique in the IM Conference mapping table, then the IM Controlling Function could modify it to <bob-X><sip:anonymousX@anonymous.invalid>, in the mapping table, where X could be any value. This is an example and the form of modified chat alias is a matter of local server policy.

- 3. SHALL respond with SIP 200 OK as defined in [MSRP].

If the IM user is subscribed to the conference event package, the IM Server

- 1. SHALL insert in the NOTIFY response of the conference event package subscription destined to the joining User, the modified value of the 'From' header field as the value of the "entity" attribute of the <user> element;
- 2. SHALL include "yourown" attribute extension with the value "true" to the <user> element as described in Appendix M "*Conference Event Package*";
- 3. SHALL respond with 200 OK with Content-Type multipart/mixed as defined in [RFC2046] with the following clarification:
  - Message/cpim top level wrapper with the 'To' header set to the modified/changed value of the SIP 'From' header field, and the 'From' header of cpim wrapper set to the authenticated IM address of the IM conference.

7.2.3.3 Receiving and Sending messages in an IM conference Server

When the IM Server acting as a MSRP Switch receives a MSRP request or response, the IM Server SHALL function according to the following rules and procedures:

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- 1. The IM Server SHALL check the "From" header field of the message/CPIM of the MSRP request. If the "From" header field does not contain a valid value based on expected information described for the "From" header in 7.1.3.2.1 "*Generating MSRP requests in an IM Conference"*, the IM Server SHALL reject the request with MSRP 403 response. Otherwise, continue with the rest of the steps;
- 2. The IM Server SHALL check the "To" header field(s) of the Message/CPIM of a MSRP request. If the "To" header field(s) contains the IM Session Identity or IM Group Identity, the IM Server SHALL consider the request as a message to be distributed to all Participants of the IM Conference Session, otherwise continue at step 3. The IM Server:
  - a) SHALL check if the "max-size" attribute of SDP had been received from the invited IM user in the SIP 200 OK response to the invite. If it has not been received, the IM Server will continue processing. If it has been received, the IM Server SHALL compare the "max-size" value with the total size of the message received in the Byte-Range parameter in a SEND request of a chunked message.

    i. If the total message size is larger than the "max-size", the IM Server shall not the send the message to this particular invited IM user and SHALL indicate that a Failure report is to be returned to the sender.

    b) SHALL send the MSRP request to IM Address of each Participant of the IM Session except the sender user's IM Address as follows:
    - The IM Server SHALL copy the originally received SEND request and SHALL not modify the body included in the original MSRP SEND request.The IM Server should start distributing the MSRP request once received the message/CPIM wrapper information.
- 3. The request SHALL be considered as a Private Message and processed as defined in 7.2.3.4 "*Receiving and Sending Private messages in an IM Conference*".

When an IM server receives an MSRP SEND request that includes a request for a Final Delivery Report, indicated by the Final-Report header present in the message/cpim body of the SEND request, the IM server SHALL execute the procedures described in 5.7.3 "*Controlling Server Procedures*".

7.2.3.4 Receiving and Sending Private messages in an IM Conference

The IM Server SHALL check the "To" header field(s) of the Message/CPIM of a MSRP request. If the "To" header field(s) contains IM Address of the recipient IM Client(s) instead of the IM Session Identity or IM Group Identity, the IM Server SHALL consider the request as a Private Message, and if the IM Server supports Private Messages, the IM Server:

a) SHALL check if the sender is allowed to send Private Messages by checking rules and the value of <allow-private-message> element from the group definition as defined in [Shared-Group-XDM-] in case of the Pre-defined Group or according to Operator policies in case of Ad-Hoc Group. If it is not allowed, the IM Server SHALL reject the request with MSRP 403 response. Otherwise, continue with the rest of steps;

b) SHALL check whether the information previously received either in the initial INVITE request or the SIP 200 OK response contained the release version in User-agent and Server header of an IM server to ensure that the next node receiving the Private Message is an IM Server or IM Client as specified in Appendix F *Release version in User-agent and Server headers*; and if ensured, continue with the next step. Otherwise, the IM Server SHALL reject the request with MSRP 403 response;

c) SHALL send the MSRP request to each IM Address in the "To" header field(s) with the following clarification:

- the IM Server SHALL generate exactly the same copy of the original received SEND request and SHALL not modify the body included in the original MSRP SEND request.

NOTE: the IM Server SHOULD start distributing the MSRP request once it receives the message/CPIM wrapper information.

If the IM Server does not support the Private Messages the IM Server SHALL reject the request with MSRP 403 response

7.2.3.5 System Messages from an IM Conference

When the IM Server wants to send a system message to one or more Participants of an IM Session, the IM Server SHALL

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- For each target recipient, generate the MSRP SEND request according to [MSRP], 7.1.3.2.1 "*Generating MSRP requests in an IM Conference"*, and the following clarifications:
  - the "To" header filed of the Message/CPIM is set to the Authenticated IM Address of each target IM recipient;
  - the "From" header of the Message/CPIM is set to the Address of IM conference with the following clarification :
    - Set the Display name part of the "From" header of the Message/CPIM header to type of system message as follows depending on operator policy;
      - From: Service-Type < Address of IM Conference>

  Note: For an IM Conference with Address : <sip:imconfenrence@example.com>, the From header of Message/CPIM for the system message type MAY be set as defined in the examples below:

      - For System message = From: SysAdmin <sip:imconfenrence@example.com>
      - For Announcement = From: Announcement <sip:imconfenrence@example.com>
      - For Advertisement = From: Advertisement <sip:imconfenrence@example.com>
  - The message body or the payload of the announcement message could be of any content type as defined in [MSRP].

In case the system message intends to refer to content external to the media session. Then the IM Server SHOULD set content type to message/external body according to rules and procedures of [RFC 4483].

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8 IM Pager Mode

8.1 Originating Client Procedures

Upon receiving a request from an IM User to send message to one or more than one users, the IM Client SHALL follow the procedures in 8.1.1 "*Sending SIP message for Pager Mode"* for Pager Mode messages when:

- the total size of the message is below 1300 bytes; or
- the total size of the message is greater than 1300 bytes and the IM Client has a positive knowledge of a guaranteed end-to-end connection of a 'connection-oriented transport protocol', as defined in [RFC 3428].

Otherwise, the IM Client SHALL follow the procedures of 9 "*IM Large Message Mode*".

8.1.1 Sending SIP MESSAGE for Pager Mode

The IM Client SHALL generate a SIP MESSAGE according to rules and procedures of [RFC 3428] The IM Client:

- 1. SHALL include an Accept-Contact header with the IM feature-tag '+g.oma.sip-im' along according to rules and procedures of [RFC3841] in all initial SIP requests;
- 2. SHALL include a User-Agent header to indicate the IM release version as specified in Appendix F "*Release version in User-agent and Server headers*";
- 3. SHALL include value "id" in a Privacy header if anonymity is requested according to rules and procedures of [RFC3325].

NOTE 1: If SIP MESSAGE is sent to a IM Group and anonymity is not allowed for the IM Group indicated with the Request-URI of the SIP MESSAGE based on the rules specified in the [Shared-Group-XDM] the pager mode MESSAGE will not be allowed by the IM Server hosting the IM Group.

- 4. If the message is to be sent to one IM user, the IM Client SHALL set the Request-URI of the SIP MESSAGE request to the intended recipient IM User;
- 5. If the message is to be sent to more than one IM user, then the client SHALL;
  - a. include a MIME resource-list body with the receiving IM Users as specified in [draft-ietf-sipping-uri-list-message-04.txt];
  - b. set the Request-URI to the Conference-factory-URI for the IM service in the Home IM Network of the IM User;
  - c. SHOULD set the sessiontype parameter to "adhoc", as specified in E.5 "URI parameters";
- 6. If the IM message is to be sent to a pre-defined group, then the IM Client;
  - a. SHALL set the Request-URI to the identity of the IM group;
- 7. If the message is to be sent to the Participants of an on-going Session other than an IM Session, the Client:
  - SHALL set the Request-URI of the SIP MESSAGE request to the SIP Session Identity of the on-going Session;
- 8. The IM Client MAY refer to content stored external to the message. Then the content type header field SHOULD be set to message/external body in according to rules and procedures in [RFC4483];
- 9. If the IM user wishes to know whether the message is delivered to the recipient(s) successfully or not, the IM Client shall set the delivery report request according to the rules and procedures of [IMDN];
- 10. The IM Client shall send the SIP MESSAGE message towards the IM Server according to rules and procedures of the SIP/IP Core.

When the SIP/IP Core corresponds to 3GPP/3GPP2 IMS, the IM Client SHALL use 3GPP/3GPP2 IMS Session establishment mechanisms according to rules and procedures of [3GPP TS 24.229] / [3GPP2 X.S0013.004] with the clarifications given in this section.

NOTE 2: On receiving 202 Accept response and the client has requested a delivery report as defined in [IMDN], then the client SHOULD store at a minimum the message-ID in the IMDN request for a period of time (implementation dependent) to be able to correlate the delivery report with the original sent message.

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8.2 Terminating Client procedures

8.2.1 IM Client receives SIP MESSAGE

On receipt of a SIP MESSAGE request the IM Client:

- 1. MAY reject the SIP MESSAGE request with an appropriate reject code as specified in [RFC 3428] if any of the conditions described below apply; otherwise continue at step 2.
  - a. when the IM Client determines that there is not enough resources to handle the SIP MESSAGE; or,
  - b. in case of any other reason outside the scope of this specification.

  NOTE: The decision to reject a SIP MESSAGE request can e.g. be based on procedures between the IM Client and the IM User outside the scope of this specification.
- 2. If the feature-tag '+g.oma.sip-im.system-message' is received in the Accept-Contact header, the IM Client SHALL present System Message to the User in a distinguished manner from regular SIP MESSAGE messages;
- 3. If the MIME type in the message is set to "application/vnd.poc.group-advertisement+xml", the IM client SHALL render the text content in Subject header to the IM User if text is included in the Subject header and if Text Content is supported by the IM Client and SHALL present the message to the User in a distinguished manner from regular SIP MESSAGE messages;
- 4. SHALL store the Message body and headers and MAY use the received information in a Group Usage List in the [Shared List XDMS];
- 5. If the body includes references to content external to the message having the Content-Type: message/external-body; the IM Client SHOULD store and treat them according to rules and procedures in [RFC4483];
- 6. SHALL check whether the message contains the request for successful delivery report. If true, the IM Client SHALL send a successful delivery notification with SIP MESSAGE to the initiating IM Client according to the rules and procedures of [IMDN].

The IM Client:

- 1. SHALL generate SIP responses according to rules and procedures of [RFC 3428];
- 2. SHALL include User Agent header to indicate the IM release version as specified in Appendix F "*Release version in User-agent and Server headers*";
- 3. SHALL include the IM Address of the IM User as the Authenticated Originator's IM Address as specified in section 5.1 "*Authenticated Originator's IM Address*";
- 4. SHALL send the SIP response towards the initiating IM Client according to rules and procedures of the SIP/IP Core.

When the SIP/IP Core corresponds with 3GPP/3GPP2 IMS, the IM Client SHALL use 3GPP/3GPP2 IMS mechanisms according to rules and procedures of [3GPP TS 24.229] / [3GPP2 X.S0013.004] with the clarifications given in this section.

8.3 Controlling Server procedures for Pager Mode

8.3.1 Requests Terminated at the Controlling Function

8.3.1.1 Receiving SIP MESSAGE request for group communication

Upon receipt of a SIP MESSAGE request IM Server:

- 1. SHALL reject the SIP MESSAGE request with a SIP 420 "Bad Extension" response, if the SIP MESSAGE request contains a URI-list and the IM Server does not support the "MESSAGE URI-list service" as defined in [draft-uri-list-message]. The IM server SHOULD include a Warning header with the warning text set to '122 Function not allowed' as specified in subclause 5.6 *"Warning header";*otherwise continue with next step;
- 2. . SHALL check that the IM Group Identity in the Request-URI, identifying a Pre-defined Group as defined in [Shared-Group-XDM], is specified to support the IM service by evaluating if the <supported-services> element indicates support for the IM service. If the IM service is not supported then the IM Server SHALL perform the actions specified in section 11.2 *"Conference URI does not exist"*. Otherwise, continue with the rest of the steps;

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- 3. SHALL check if the received Session Identity is that of an on-going Session known by the Server If the SIP MESSAGE received is destined for an on-going SIP Session. If not, then it will return a SIP 403 "Forbidden" response; Otherwise, continue with the rest of the steps;
- 4. If the MESSAGE is for an ad-hoc group, SHALL check if the number of participants exceeds the maximum allowed by local policy and if it does, then it SHALL return a SIP 486 “Busy Here” response with the warning header set to “102 too many participants”. Otherwise, continue with the rest of the steps;
- 5. SHALL check the Authenticated Originator's IM Address and authorize the request and if it is not authorized the IM Server SHALL return a SIP 403 "Forbidden" response. The IM server SHOULD include an Warning header with the warning text set to '127 Service not authorised' as specified in subclause 5.6 *"Warning header”*. Otherwise, continue with the rest of the steps;
- 6. SHALL if the SIP MESSAGE was received for a Pre-defined Group and anonymity is requested check whether privacy is allowed for the Authenticated originator’s IM Address. Allowing privacy for a specific Authenticated Originator’s IM Address is defined using <allow-anonymity> element of the IM Group’s authorization rules as specified in [Shared-Group-XDM]. If not allowed, the IM Server SHALL respond with a SIP 403 "Forbidden" error response to the originating network with the warning text set to '119 Anonymity not allowed' as specified in subclause 5.6 *"Warning header”* . Otherwise, continue with the rest of the steps;
- 7. SHALL, if the SIP MESSAGE was received for an adhoc group and anonymity is requested check whether anonymity is allowed by the IM server. If not allowed, the IM Server SHALL respond with a SIP 403 "Forbidden" error response to the originating network network with the warning text set to '119 Anonymity not allowed' as specified in subclause 5.6 *"Warning header”* . Otherwise, continue with the rest of the steps.
- 8. If the message is for an ad-hoc group, SHALL check if the number of participants exceeds the maximum allowed by local policy and if it does, then it SHALL return a SIP 486 “Busy Here” response with the warning header set to “102 too many recipients”. Otherwise, continue with the rest of the steps;
- 9. SHALL check whether the SIP MESSAGE contains Disposition-Notification header fields, if true the IM Server SHALL start a timer (Ts2) as defined in **Error! Reference source not found.** with a configurable period of time to wait for aggregating delivery notifications;
- 10. SHALL send the SIP MESSAGE requests towards each IM Address as specified in the section 8.3.2.1 "*SIP MESSAGE requests*";
- 12. SHALL send a SIP 202 "Accepted" response along the signaling path towards the initiating IM Client according to [draft-uri-list-message].

When the SIP/IP Core corresponds with 3GPP/3GPP2 IMS, the IM Client SHALL use 3GPP/3GPP2 IMS mechanisms according to rules and procedures of [3GPP TS 24.229] / [3GPP2 X.S0013.004] with the clarifications given in this section.

8.3.1.2 Receiving a Delivery Notification

Upon receipt of an IM delivery notification, IM Server:

- 1. SHALL check whether the aggregating timer (Ts2) as defined in section **Error! Reference source not found.** is set, if false the IM Server SHALL forward the notification towards the recipient according to the rules and procedures of [IMDN]. Otherwise, continue with the rest of the steps;
- 2. SHALL store the notification to aggregate.

8.3.1.3 Delivery Notification Aggregation Timer Expired

When the IM delivery notification aggregating timer (Ts2) i as defined in section **Error! Reference source not found.** s expired, the IM Server:

- 1. SHALL aggregate all the stored notifications and send the aggregated notification towards the recipient according to the rules and procedures of [IMDN];
- 2. MAY restart the aggregate the aggregating timer (Ts2) as defined in section **Error! Reference source not found.** according to the operator’s policy if not all notifications have been received.

8.3.1.4 Receiving SIP Failure response

Upon receipt of an SIP Failure response (e.g. 4XX), IM Server:

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- 1. SHALL check whether the corresponding SIP request contained a failure delivery request, if true the IM Server SHALL generate a Failure delivery notification; Otherwise, end the procedure;
- 2. SHALL check whether the aggregating timer is expired, if true the IM Server SHALL send the notification towards the recipient according to the rules and procedures of [IMDN]. Otherwise, continue with the rest of the steps;
- 3. SHALL store the notification to aggregate.

8.3.2 Requests Originated by the Controlling Function

8.3.2.1 SIP MESSAGE requests

When the IM Server sends a SIP MESSAGE, the IM Server:

- 1. SHALL generate a SIP MESSAGE request according to rules and procedures of [RFC3428];
- 2. SHALL include an Accept-Contact header with the IM feature-tag '+g.oma.sip-im' according to rules and procedures of [RFC3841];
- 3. In the case of Ad-hoc Group MESSAGE , the IM Server SHALL include Authenticated Originator's 'IM Address as defined in s 5.1 "*Authenticated Originator's IM Address*" according to rules and procedures specified in [draft-ietf-sipping-uri-list-message-04.txt];
- 4. In the case of a Pre-defined IM Group, the IM Server SHALL include Authenticated Originator's IM Address as defined in "*5.1 Authenticated Originator's IM Address"* with the following clarification:
  - a) The URI in the *Authenticated Originator's IM Address* is set to the IM Group Identity;
  - b) SHALL include a Referred-By header with the *Authenticated Originator's IM Address* of the Sending IM User.
- 5. In the case of sending a SIP MESSAGE to an on-going SIP session, the IM Server SHALL include Authenticated Originator's IM Address as defined in "*5.1 Authenticated Originator's IM Address"* with the following clarification:
  - a) The URI in the *Authenticated Originator's IM Address* is set to the SIP Session Identity of the on-going SIP Session;
  - b) SHALL include a Referred-By header with the Authenticated Originator's IM Address of the Sending IM User.
- 6. SHALL set the Request-URI to the IM Address of the intended message recipient;
- 7. SHALL perform one of the following if the SIP MESSAGE is to be sent to more than one IM User:
  a. Generate a SIP MESSAGE for each member of the list according to procedures defined in [draft-ietf-sipping-uri-list-message-04.txt], if the SIP MESSAGE was received for an Ad-hoc Group;
  b. Generate a SIP MESSAGE to each member of the IM Group by retrieving the IM Addresses of the members belonging to the IM Group by interacting with [Shared-Group-XDMS], if the SIP MESSAGE was received for a Pre-defined Group;
  c. Generate a SIP MESSAGE to each member of the participants of an on-going SIP session if the MESSAGE was received for an on-going SIP Session Identity.

NOTE: Case c is applicable when a SIP MESSAGE needs to be sent to all participants of a PoC session.

- 8. SHALL forward the SIP MESSAGE request towards the SIP/IP Core according to rules and procedures of the SIP/IP Core.

When the SIP/IP Core corresponds with 3GPP/3GPP2 IMS, the IM Server SHALL use 3GPP/3GPP2 IMS mechanisms according to rules and procedures of [3GPP TS 24.229] / [3GPP2 X.S0013.004] with the clarifications given in this section.

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9 IM Large Message Mode

When the IM user wishes to send a "one shot" message, the IM Client SHALL follow the procedures in 8.1.1 "*Sending SIP message for Pager Mode"* for Pager Mode messages when:

- the total size of the message is below 1300 bytes; or
- the total size of the message is greater than 1300 bytes and the IM Client has a positive knowledge of a guaranteed end-to-end connection of a 'connection-oriented transport protocol', as defined in [RFC 3428]larger than 1300 bytes.

Otherwise, the IM Client shall initiate a Large Message session as described in procedure 9.1.1 *"Large Message Session Initiation"*. Once the session for the large message is established and the message is delivered, the IM Client shall automatically close down the session as specified in 9.1.3 *"Large Message Session Release"*.

9.1 Originating Client procedures

9.1.1 Large Message Session initiation

9.1.1.1 General

The IM Client SHALL generate an initial SIP request according to rules and procedures of [RFC3261]. The IM Client:

- 1. SHALL include an Accept-Contact header with the IM feature-tag '+g.oma.sip-im' according to rules and procedures of [RFC3841] in all initial SIP requests;
- 2. SHALL include a User-Agent header to indicate the IM release version as specified in Appendix F "*Release version in User-agent and Server headers*";
- 3. SHALL include the IM feature-tag '+g.oma.sip-im' in the Contact header;
- 4. SHALL include value "id" in a Privacy header if anonymity is requested according to rules and procedures of [RFC3325].

NOTE: If anonymity is not allowed for the IM Group indicated with the Request-URI of the SIP INVITE based on the rules specified in the [Shared-Group-XDM] the IM Session will not be allowed by the IM Server hosting the IM Group.

- 5. SHALL include the option tag 'timer' in the Supported header; and,
- 6. SHOULD include the Session-Expires header with the refresher parameter set to "uac" according to rules and procedures of [RFC4028].

When the SIP/IP Core corresponds to 3GPP/3GPP2 IMS, the IM Client SHALL use 3GPP/3GPP2 IMS Session establishment mechanisms according to rules and procedures of [3GPP TS 24.229] / [3GPP2 X.S0013.004] with the clarifications given in this section.

9.1.1.2 Establishment of a Large Message Session

Upon receiving a request from an IM User to establish a Large Message session, the IM Client:

- 1. SHALL generate an initial SIP INVITE request as specified in section 9.1.1.1 *"General"*;
- 2. SHALL set the Request-URI of the SIP INVITE request to the intended recipient IM User if the message is to be sent to one IM User;
- 3. If the message is to be sent to more than one IM user, then the IM Client:
  - a. SHALL include a MIME resource-list in the body with the receiving IM Users as specified in [draft-URI-list];
  - b. SHALL set the Request-URI of the SIP INVITE request to the Conference-factory-URI for the IM service in the Home Network of the IM User;
  - c. SHALL insert in the SIP INVITE request a Content-Type header with multipart/mixed as specified in [RFC2046].
- 4. If the IM message is to be sent to a Pre-defined IM Group, then the IM Client:

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  - a. SHALL set the Request-URI to the identity of the IM Group.
- .5. SHALL insert in the SIP INVITE request the feature-tag with the value "+g.oma.sip-im.large-message" in the Accept-Contact header;
- 6. SHALL include in the SIP INVITE request a MIME SDP body as a SDP offer according to rules and procedures of [RFC3264], [RFC4566] and [MSRP] with the clarification given in this section:
  - a. set the SDP directional media attribute to a=sendonly.

NOTE: If the SDP directional attribute is not set, it is assumed to be a=sendrecv.

- 7. SHALL send the SIP INVITE request towards the IM Server according to rules and procedures of the SIP/IP Core.

On receiving a SIP 200 "OK" response to the SIP INVITE request the IM Client:

- 1. SHALL start the SIP Session timer using the value received in the Session-Expires header according to rules and procedures of [RFC4028];
- 2. SHALL store the content of the contact header field;
- 3. SHALL interact with the User Plane as specified in 9.4.2 "*Large Message Session*";
- 4. If the feature tag "automata" is present in the Contact header field according to [RFC 3840], and the Client requests a delivery report in the MSRP session for the large mode message as defined in section 5.7.2 "*Originating Client Procedures*", then the client SHOULD store at a minimum the message-ID in the request for a period of time (implementation dependent) to be able to correlate the delivery report with the original sent message.

When the last MSRP SEND has been sent and acknowledged, the IM Client SHALL act as specified in 9.1.3 "*Large Message Session release*".

When the SIP/IP Core corresponds to 3GPP/3GPP2 IMS, the IM Client SHALL use 3GPP/3GPP2 IMS Session establishment mechanisms according to rules and procedures of [3GPP TS 24.229] / [3GPP2 X.S0013.004] with the clarifications given in this section.

9.1.2 IM Client cancelling a Large Message Session

When the IM User wants to cancel the Large Message Session initiation, and the IM Session signalling is used as specified in section 9.1.1 *" Large Message Session initiation"* and the IM Client has not yet received a final SIP response for the SIP INVITE request, the IM Client SHALL send a SIP CANCEL according to rules and procedures of [RFC3261].

When the SIP/IP Core corresponds with 3GPP/3GPP2 IMS, the IM Client SHALL use 3GPP/3GPP2 IMS mechanisms according to rules and procedures of [3GPP TS 24.229] / [3GPP2 X.S0013.004] with the clarifications given in this section.

9.1.3 Large Message Session release

When the IM Client completes Large Message session, the IM Client:

- 1. SHALL generate a SIP BYE request according to rules and procedures of [RFC3261];
- 2. SHALL set the Request-URI to the SIP Session Identity of the SIP Session to release;
- 3. SHALL send a SIP BYE request according to rules and procedures of SIP/IP Core.

Upon receiving a SIP 200 "OK" response to the SIP BYE request the IM Server SHALL release User Plane resources associated with the SIP Session with the IM Client.

When the SIP/IP Core corresponds with 3GPP/3GPP2 IMS, the IM Client SHALL use 3GPP/3GPP2 IMS mechanisms according to rules and procedures of [3GPP TS 24.229] / [3GPP2 X.S0013.004] with the clarifications given in this section.

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9.2 Terminating Client Procedures

9.2.1 Large Message Session Invitation

9.2.1.1 General

On receipt of the initial SIP INVITE request the IM Client:

- 1. MAY reject the SIP INVITE request with an appropriate reject code as specified in [RFC3261] e.g.

  a) when the IM Client determines that there is not enough resources to handle the Large Message Session; or,

  b) in case of any other reason outside the scope of this specification.

  NOTE: The decision to reject a SIP INVITE request to a Large Message Session can e.g. be based on procedures between the IM Client and the IM User outside the scope of this specification.

- 2. SHALL process the SIP INVITE according to the rules and procedures of [RFC3261] with the following additional clarification
  - a). SHALL store as the Session Identity the content of the Contact header as described in [RFC 3261];
  - b) SHALL set User Plane parameter as described in 9.2.1.2"*Large Message Session set up*".

When generating SIP responses other than the SIP 100 "Trying" to the received initial SIP request the IM Client:

- 1. SHALL generate SIP responses according to rules and procedures of [RFC3261];
- 2. SHALL include User Agent header to indicate the IM release version as specified in Appendix F "*Release version in User-agent and Server headers*";
- 3. SHOULD include an Allow header with all supported SIP methods;
- 4. SHALL include the IM Address of the IM User as the Authenticated Originator's IM Address as specified in subclause 5.1 "*Authenticated Originator's IM Address*".

When the SIP/IP Core corresponds with 3GPP/3GPP2 IMS, the IM Client SHALL use 3GPP/3GPP2 IMS mechanisms according to rules and procedures of [3GPP TS 24.229] / [3GPP2 X.S0013.004] with the clarifications given in this section.

9.2.1.2 Large Message Session set up

When the IM Client receives a SIP INVITE to set up a Large Message session, the IM Client:

- 1. SHALL check if the accept-type attribute of the SDP m line in the SIP INVITE request are acceptable to the IM Client and if not, reject the request with a SIP 488 "Not Acceptable Here" response. Otherwise, continue with the rest of the steps;
- 2. SHALL accept the request and generate a SIP 200 "OK" response as specified in the 9.2.1.1 "*General*" towards the IM Server;
- 3. SHALL include in the SIP 200 "OK" response a SDP body as a SDP answer according to rules and procedures of [RFC3264], [RFC4566] and [MSRP];
- 4. SHALL send the SIP 200 "OK" response towards the IM Server according to rules and procedures of the SIP/IP Core; and, 5. SHALL prepare to receive MSRP SEND messages as described in [MSRP].

When the SIP/IP Core corresponds with 3GPP/3GPP2 IMS, the IM Client SHALL use 3GPP/3GPP2 IMS Session establishment mechanisms according to rules and procedures of [3GPP TS 24.229] / [3GPP2 X.S0013.004] with the clarifications given in this section.

9.2.2 Large Message Session release

Upon reception of a SIP BYE request, the IM Client:

- 1. SHALL generate a 200 "OK" response to the received SIP BYE request according to rules and procedures of [RFC3261];
- 2. SHALL send a 200 "OK" response according to rules and procedures of SIP/IP Core;

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- 3. SHALL release User Plane resources associated with the SIP Session ;

When the SIP/IP Core corresponds with 3GPP/3GPP2 IMS, the IM Client SHALL use 3GPP/3GPP2 IMS mechanisms according to rules and procedures of [3GPP TS 24.229] / [3GPP2 X.S0013.004] with the clarifications given in this section.

9.3 Controlling Server procedures for Large Message Mode

9.3.1 Requests Terminated at the Controlling Function

9.3.1.1 Receiving a Large Message Mode session Request for Group communication

Upon receiving of an initial SIP INVITE request, the IM Server:

- 1. SHALL execute the procedures specified in 7.2.1.2 "*AD-hoc IM Group Set up request"* if the SIP INVITE includes a MIME resource-list body with the invited IM Users as specified in [draft-URI-list];
- 2. SHALL execute the procedures specified in 7.2.1.3 "*Pre-defined IM Group Session setup request"* if the SIP INVITE request includes an IM Group Identity, which identifies a Pre-defined IM Group in the request URI that is owned by the IM Server.

Upon receiving a SIP 200 "OK" response for the SIP INVITE request as specified in section 9.3.2.1 *"Large Message Session initiation*" the IM Server:

- 1. SHALL generate SIP 200 "OK" response to the incoming SIP INVITE request and continue with the rest of the steps if the SIP final response is not yet sent to the Inviting IM Client. Otherwise do not proceed with the rest of the steps;
- 2. SHALL include a MIME SDP body in the SIP 200 "OK" response as a SDP answer according to rules and procedures of [RFC3264], [RFC4566] and [MSRP] as follows:

  a) Include in the 'accept types' SDP media attribute the 'mime types' selected by the IM Server from those contained in the SDP offer in the incoming SIP INVITE request from the Inviting IM Client, and those in the SDP answer in SIP 200 "OK".

- 3. SHALL send a SIP 200 "OK" response to the Inviting IM Client according to rules and procedures of the SIP/IP Core;
- 4. SHALL interact with MSRP switch as specified in *9.4.4 "Controlling Server Procedures for Group Communication*".

Upon receiving a SIP final response other than 2xx or 3xx that is one of the SIP 4xx, 5xx or 6xx final responses the IM Server either:

- 1. SHALL send the SIP final response towards the Inviting IM Client according to rules and procedures of the SIP/IP Core, if a SIP final response was received from all the Invited IM Clients and the SIP 200 "OK" response is not yet sent to the Inviting Client. The SIP final response SHALL include the Status-Code defined by the IM Server according to local policy e.g. the lowest value received from the Invited IM User(s); or,
- 2. SHALL remove the Inviting IM Client from the IM Session as specified in section **Error! Reference source not found.** "*Removal of Participant from IM Session*", if a SIP final response other than 2xx or 3xx was received from all the Invited IM Clients and the SIP 200 "OK" response is already sent.

When the SIP/IP Core corresponds with 3GPP/3GPP2 IMS, the IM Server SHALL use 3GPP/3GPP2 IMS mechanisms according to rules and procedures of [3GPP TS 24.229] / [3GPP2 X.S0013.004] with the clarifications given in this section.

9.3.1.2 Cancelling of Large Message Session invitation requests

When the IM Server receives a CANCEL message cancelling the Large Message Session invitation request from the originating IM Client and when it has not received a SIP final response, the IM Server SHALL cancel the SIP INVITE request acting as UAC according to rules and procedures of [RFC3261].

When the SIP/IP Core corresponds with 3GPP/3GPP2 IMS, the IM Client SHALL use 3GPP/3GPP2 IMS mechanisms according to rules and procedures of [3GPP TS 24.229] / [3GPP2 X.S0013.004] with the clarifications given in this section.

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9.3.1.3 Releasing a Large Message session

Upon reception of a SIP BYE request from the originating Client, the IM Server:

- 1. SHALL send a SIP 200 "OK" response to received SIP BYE request according to rules and procedures of the SIP/IP Core;
- 2. SHALL generate SIP BYEs request to all the participants in the large message session according to rules and procedures of [RFC3261];
- 3. SHALL set Request-URIs to the participants in the large message session;
- 4. SHALL send SIP BYEs request according to rules and procedures of SIP/IP Core.

Upon receiving a SIP 200 "OK" response to the SIP BYEs requests the IM Server SHALL release User Plane resources associated with the SIP Session.

When the SIP/IP Core corresponds with 3GPP/3GPP2 IMS, the IM Client SHALL use 3GPP/3GPP2 IMS mechanisms according to rules and procedures of [3GPP TS 24.229] / [3GPP2 X.S0013.004] with the clarifications given in this section.

9.3.2 Requests Originated by the Controlling Function

9.3.2.1 Large Message session initiation

This section describes the procedures for inviting an IM User to a Large Message Session. The procedure is initiated by the IM Server as the result of an action specified in section 9.3.1.1 *"Receiving Large Message session Request for Group communication"*.

The IM Server:

- 1. SHALL generate a SIP INVITE request as specified in section 7.2.2.1 "*General*";
- 2. SHALL send the SIP INVITE request to the IM Addresses obtained from the URI-list as defined in [draft-URI-list] if the incoming SIP INIVTE contained a URI-list;
- 3. SHALL send the SIP INVITE request to the members belonging to the IM Group by interacting with Shared Group XDMS as defined in [Shared-Group-XDM] if the incoming SIP INIVTE contained an IM Group Identity;
- 4. SHALL include a MIME SDP body as a SDP offer according to rules and procedures of [RFC3264], [RFC4566] and [MSRP] as follows:

  a) Set a path attribute or the MSRP URL for the MSRP Session;

  b) include media line proposing MSRP media parameters selected by the IM Server from those contained in the SDP offer in the incoming SIP INVITE request;

  c) include all the 'a' attributes accompanying the MSRP media line selected by the IM Server from those contained in the original SDP offer in the incoming SIP INVITE request.
- 5. SHALL send the SIP INVITE request towards the SIP/IP Core according to rules and procedures of the SIP/IP Core.

Upon receiving SIP 200 "OK" response for the SIP INVITE request the IM Server SHALL process the 200 OK according to the rules and procedures of [RFC3261] with the following additional clarification:

- 1. SHALL store the content received in the Contact header; and
- 2. SHALL interact with MSRP switch as specified in 7.1.3.2 *"Generating MSRP requests in an IM session"*.

When the SIP/IP Core corresponds with 3GPP/3GPP2 IMS, the IM Server SHALL use 3GPP/3GPP2 IMS mechanisms according to rules and procedures of [3GPP TS 24.229] / [3GPP2 X.S0013.004] with the clarifications given in this section.

NOTE: This is not ordinary conference/chat but a large mode message session. They have different behaviour: for large mode message, the session is closed after the message has been successfully sent.

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9.4 User Plane

9.4.1 General

- IM Large Message Session between end points is negotiated with an Offer and Answer model using Session Description Protocol. These negotiation parameters are carried by SIP Signaling.
- Recommended minimum media parameters to be used in near real-time communication are specified in [3GPP TS 26.141].

9.4.2 Large Message Session

The IM Client sends a Large Message according to the following procedure:

- 1. To provide rich description of the IM content when sending multimedia message during an IM session, the IM Client:
    a. SHOULD add a Content-Disposition header field according to [RFC 2183] to the MSRP SEND header;
    b. If the IM Client does not want the content to be rendered automatically to the receiver, but only on an express action of the receiver, then the sending IM Client SHALL add a Content-Disposition header field 'attachment' according to [RFC 2183] to the MSRP SEND according to rules and procedures of [MSRP].
- 2. The IM Client MAY include Content-Description header field whenever available;
- 3. The IM Client MAY refer to content external to the media session. Then the content type SHOULD be set to message/external body in according to rules and procedures in [RFC4483];
- 4. If the IM user wishes to know whether the message is delivered to the recipient(s) successfully or not, the IM Client shall set the the Final Report header according to the rules and procedures of 5.7.2 "*Originating Client Procedures".*

When the IM Client has received the corresponding response for the last chunk of the MSRP SEND request, e.g. 200 OK or Success-Report, the IM Client SHALL close the MSRP session by sending a BYE request.

9.4.3 Sending Delivery Notification

The receiving IM Client SHALL support the Final Report according to procedures in 5.7.5 "*Terminating Client Procedures*".

9.4.4 Controlling Server procedures for Group Communication

An IM Server acts as a MSRP Switch after the Large Message Mode session set up for Group Communication.

When the IM Server acting as a MSRP Switch receives a MSRP request or response, the IM Server SHALL function according to the rules and procedures defined in 7.2.3.3 "*User Plane*" and [MSRP] with the following clarification:

- When IM Server receives a MSRP SEND request that is not addressed to the session identity of the Group, the IM Server SHALL reject the request with MSRP 403 response.

9.4.5 Controlling Server procedures for Final Delivery report

Upon receiving an MSRP SEND request, containing the Final Report header, the IM server SHALL act according to 5.7.3 "*Controlling Server Procedures".*

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10 File Transfer

When a IM User wishes to send a File, the IM Client SHALL initiate a File Transfer mode as described in 10.1 *"File Transfer"*.

10.1 File Transfer

When an IM Client receives instruction to send one or more files or to request one or more files, the IM Client:

- 1. If the file is to be transferred during an ongoing session, SHALL send a re-INVITE as described in 7.2.1.6 "*IM session Modification*", with the description of the file to be transferred in the SDP as described in [draft-mmusic-file-transfer-mech];
- 2. If there is no ongoing session, SHALL follow the procedures defined in 7.1.1.2 *"Establishmant of a one to one session"* if the file transfer is to one recipient or in 7.1.1.3"*IM Client initiates an Ad-Hoc Conference"* if the file transfer is to a list of recipients, or in 7.1.1.4 "*IM Client initiates a Pre-Defined IM Conference*" if the file transfer is to a pre-defined group andaccording to rules and procedures of [draft -mmusic-file-transfer-mech-];
- 3. SHALL add the media attribute to the SDP settings as specified in [draft -mmusic-file-transfer-mech];
- 4. If more than one file is attached/Requested, each set of file descriptors SHALL be separated as described in [draft-mmusic-file-transfer-mech];
- 5. When the 200 OK response for the last MSRP SEND is received, the IM Client SHALL close the MSRP session for that particular file transfer by setting the m line to zero i.e. m= 0, according to the procedures defined in 10.2 *"File Transfer Session Release"*.

10.2 File Transfer Session Release

When a File has been transferred, the IM Client MAY start a timer for a suitable amount of time to (e.g. 30 seconds) determine if instruction to send another file or series of files to the same destination will be received from the IM user.

If the timer set by the client expires, the IM Client:

- SHALL send SIP BYE, if there had been only the MSRP-file or the MSRP-file is the last remaining media stream in the SDP file;
- SHALL send re-INVITE to set the media line to zero i.e. m= 0 of the MSRP-file that has been transferred, if there is any other media stream than the MSRP-file transfer media stream in the SDP file;
- In case of multiple media lines for multiple different file transfer , the IM Client SHALL send the re-INVITE to set to zero i.e. m=0 , of all the media lines corresponding to the MSRP-files that have been transferred.

10.3 Client Receiving File Transfer Request

When the IM Client receives a SIP INVITE containing a "File-Selector" parameter, the IM Client:

- 1. SHOULD render to the IM user the file description parameters received;When the IM user accepts some or all of the offered files;
- 2. The client SHALL accept from the IM user input regarding the file (s) he is willing to accept;
- 3. The IM Client SHALL generate a SIP 200 "OK" with an SDP answer containing the file identities of the requested files as described in [draft-mmusic-file-transfer-mech];
- 4. The IM Client SHALL send the SIP 200 "OK".

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11 Error Handling

11.1 Conference-factory URI does not exist

Upon receipt of a request that includes as the Request-URI a Conference-factory-URI that is not allocated in the IM Server, the IM Server SHALL return a SIP 404 "Not found" response.

11.2 Conference URI does not exist

Upon receipt of a SIP INVITE or a SIP MESSAAE request that include as the Request-URI a Conference URI or a group URI that is not allocated in the IM Server performing the Controlling IM Function, the IM Server SHALL return a SIP 404 "Not found" response.

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12 Deferred Messages

12.1 Procedures at the IM Client

12.1.1 Retrieving Deferred message(s)

The retrieval of deferred message(s) is performed by setting up a session with a Home Network Deferred Messaging Function which has provisioned URI defined as Deferred@hostname. The message-id of the stored message(s) to be retrieved are listed in the URI-list as defined in [draft-URI-list]. The absence of a URI-list in the session set up with the deferred Messaging Function indicates that all messages are to be retrieved.

When retrieving deferred message(s), the IM Client SHALL perform the following procedures:

- 1. If an IM user instructs client to retrieve a particular or multiple selected deferred messages, the IM Client SHALL
  - a. perform the procedures defined in section 7.1.1.3 "*IM Client initiates an Ad hoc conference*"; except that the Request-URI is described in Step-3 below.
  - b. In the case of retrieving one deferred message, the URI-list SHALL contain the particular URI (Message-ID of the deferred message) that identifies the deferred message that the IM user wants to retrieve or;
  - -c. In the case of retrieving multiple selected deferred message, the URI-list SHALL contain a list of URIs (list of stored Message-IDs) that identify the selected deferred messages that the IM user wants to retrieve.
- 2. If an IM user instructs client to retrieve all deferred messages , the IM Client SHALL perform the procedures defined in section 7.1.1.4 *"IM Client initiates an Pre-Defined IM conference"* except that the Request-URI is described in Step-3 below*;*
- 3. SHALL set the Request-URI of the SIP INVITE request to the Deferred@hostname for the IM service in the Home IM Network of the IM User; and
- 4. SHALL include in the SIP INVITE request a MIME SDP body as a SDP offer according to rules and procedures of [RFC3264], [RFC4566] and [MSRP]:
  - a. set the media direction attribute to a=recvonly.
- 5. SHALL send the SIP INVITE request to the Deferred Messaging Function according to rules and procedure of [RFC 3261] and SIP/IP core.

On receiving a SIP 200 "OK" response to the SIP INVITE request the IM Client: SHALL store the list of supported SIP methods if received in the Allow header.

When the SIP/IP Core corresponds to 3GPP/3GPP2 IMS, the IM Client SHALL use 3GPP/3GPP2 IMS Session establishment mechanisms according to rules and procedures of [3GPP TS 24.229] / [3GPP2 X.S0013.004] with the clarifications given in this section.

12.1.2 Retrieving Deferred Message metadata

When the active attribute of <offline-delivery> element is set to 'false' in the Service Settings as described in Appendix E "*IM service Setting*", the IM Client SHALL retrieve the XML documents of the Deferred Metadata in the IM XDMS as defined by the procedures in [IM-XDM- Specification].

12.1.3 Message Deletion

12.1.3.1 Deleting Mechanism

Deleting always results in an item taken from a regular folder or storage and transferred into a "DELETE bin" or Garbage collector bin. To enable this mechanism in IM service, a garbage collector bin or " DELETE bin" is define in the IM system as "DELETEbin" and is associated with a URI: sip: Delete@hostname, where the hostname is the operator domain pointing the particular location of the garbage collector, for example sip: Delete@mailserver.operator.domain.

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12.1.3.2 Deleting one particular stored message

When an IM Client receives instruction from the IM user to delete a particular message, the IM Client;

- 1. SHALL, generate an initial SIP REFER request as specified in section 7.1.1.1 *"General"* and according to rules and procedures of [RFC3515];
- 2. SHALL set the Request-URI of the SIP REFER request to sip: Delete@hostname;
- 3. SHALL set the Refer-To header of the SIP REFER request to the message-ID as defined in 12.2.2.3 *"Storage for Deferred Messages"* of the particular stored message to be deleted according to rules and procedures of [RFC3515];
- 4. Upon receiving an incoming SIP NOTIFY request that is part of the same dialog as the previously sent SIP REFER request the, IM Client SHALL respond with 200 OK according to rules and procedures of [RFC3515].

When the SIP/IP Core corresponds with 3GPP/3GPP2 IMS, the IM Client SHALL use 3GPP/3GPP2 IMS mechanisms according to rules and procedures of [3GPP TS 24.229] / [3GPP2 X.S0013.004] with the clarifications given in this section.

12.1.3.3 Deleting multiple selected messages

Upon receiving a request from the IM User to delete multiple selected stored messages, the IM Client:

- 1. SHALL generate an initial SIP REFER request as specified in section 7.1.1.1*"General"* and according to rules and procedures of [RFC3515];
- 2. SHALL set the Request-URI of the SIP REFER request to sip: Delete@hostname;
- 3. SHALL include a MIME resource-lists body with the list of the selected multiple message-IDs to be added according to rules and procedures of [draft-multiple-refer];
- 4. SHALL include a Refer-To header with a pointer to an URI-list in a body part containing the MIME resource-list body according to rules and procedures of [draft-multiple-refer];
- 5. SHALL set the Refer-Sub header to "true" according to rules and procedures of [RFC4488];
- 6. SHALL include the "multiple-refer" option-tag in the Require header field of the REFER according to rules and procedures of [draft-multiple-refer].

When the SIP/IP Core corresponds with 3GPP/3GPP2 IMS, the IM Client SHALL use 3GPP/3GPP2 IMS mechanisms according to rules and procedures of [3GPP TS 24.229] / [3GPP2 X.S0013.004] with the clarifications given in this section.

12.1.3.4 Deleting all messages

When an IM Client receives instruction from the IM user to delete all stored messages in a user's account, the IM Client;

- 1. SHALL, generate an initial SIP REFER request as specified in section 7.1.1.1*"Genera""* and according to rules and procedures of [RFC3515];
- 2. SHALL set the Request-URI of the SIP REFER request to sip: Delete@hostname;
- 3. SHALL, set the Refer-To header of the SIP REFER request to the Deferred Messaging Function as sip: Deferred@hostname according to rules and procedures of [RFC3515];
- 4. SHALL set the Norefer-Sub header to "true" according to rules and procedures of [RFC4488]When the SIP/IP Core corresponds with 3GPP/3GPP2 IMS, the IM Client SHALL use 3GPP/3GPP2 IMS mechanisms according to rules and procedures of [3GPP TS 24.229] / [3GPP2 X.S0013.004] with the clarifications given in this section.

12.1.4 Delivery Report for receiving Message

When the IM Client receives a Deferred IM message (PUSH or Retrieval), the IM Client

- 1. SHALL check whether the messages include a Successful Delivery Report request as defined in [IMDN]. If the request is not included the procedure is stopped. Otherwise, continue with the rest of the steps;
- 2. SHALL use SIP MESSAGE to send a Successful Delivery Report to the sender according to rules and procedures of [IMDN].

12.2 Procedures at the IM Server

The Deferred Messaging Function is modelled at the IM Server as a virtual entity composed of:

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- An URI-list server or focus for SIP INVITE transactions, also known as a conference server in [draft-URI-list] and [draft-Conf-FW]. The Deferred Messaging function is associated with URI: Deferred@hostname.
- One or more virtual SIP User Agents, also contained in the same Deferred Messaging Function. Each of these virtual SIP User Agents represents a resource, which in this case, is effectively a deferredmessage.

A characteristic is that each deferred message is identified by a unique uniform resource identifier (URI).

12.2.1 Stored Messaging Function receiving requests from IM user

Upon receiving a SIP INVITE request with a 'deferred@hostname' URI initiated by the served IM user, the IM Server:

- 1. SHALL check whether the Authenticated Originator's IM Address is that of an IM User that is allowed to retrieve deferred messages and if it is not the IM Server serving the originating IM Client SHALL respond with a SIP 403 "Forbidden" response to the IM Client. The IM server SHOULD include an Warning header with the warning text set to '127 Service not authorised' as specified in subclause 5.6 *"Warning header"*. Otherwise, continue with the rest of the steps;
- 2. SHALL verify the SDP description. If the SDP does not contain a session attribute 'recvonly' or if the SDP does not contain a media attribute 'recvonly' modifying the "m=message" media stream, then the IM Server SHALL respond with a SIP 488 "Not Acceptable Here" response with the correct SDP parameters.

When sending a SIP 200 "OK" response, the IM Server:

- 1. SHALL generate a SIP 200 "OK" response according to rules and procedures of [RFC3261];
- 2. SHALL include a Server header to indicate the IM release version as specified in Appendix F "*Release version in User-agent and Server headers*" if has not already been sent in a provisional response for this dialog;
- 3. SHOULD include an Allow header field that includes all the supported methods within the INVITE-initiated dialog, when responding to INVITE requests, according to the procedures of [RFC3261];
- 4. SHALL include the feature tag "automata" in the Contact header field according [RFC 3840];
- 5. SHALL include in the SIP 200 "OK" response a SDP body as a SDP answer according to rules and procedures of [RFC3264], [RFC4566] and [MSRP].

When the SIP/IP Core corresponds with 3GPP/3GPP2 IMS, the IM Server SHALL use 3GPP/3GPP2 IMS Session mechanisms according to rules and procedures of [3GPP TS 24.229] / [3GPP2 X.S0013.004] with the clarifications given in this section.

12.2.1.1 Retrieving Deferred Message(s)

The "Deferred Messaging Function" extracts the deferred message(s) representing the Message-ID(s) in the Uri-list from the User's account storage if the received request contains Uri-list body or extracts all deferred messages from the User's account storage, if the received request does not contain Uri-list body. The Deferred Messaging Function then sends the deferred message(s) to the IM user as defined in section 12.2.2.5 "*Pushing Deferred Messages*".

The retrieval of one or multiple deferred message is performed by setting up a conference between the requesting client and virtual SIP UAs. These virtual SIP UAs represent the deferred messages in the message store. The list of deferred message to retrieve is specified during the setup of the session according [draft-URI-list]. The retrieval of all deferred messages is preformed by setting up a conference between the requesting Client and virtual SIP UAs according to [draft-Conf-FW].

12.2.1.1.1 Void

12.2.1.1.2 Procedure for retrieval at the Deferred Messaging Function

On receiving an INVITE request targeted to Deferred@hostname:

- 1. If all messages are to be retrieved, and If the Deferred Messaging Function determines there are no deferred messages to be delivered, it SHALL send a 488 "Not accepted here" response with a Warning header with the warning text set to '125 No messages' as specified in subclause 5.6 *"Warning header"*; Otherwise continue with the rest of the steps;
- 2. If one or multiple selected deferred message(s) is to be retrieved, the following procedure is performed:

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  - a. The "URI-list server for SIP INVITE transactions" component part of the Deferred Messaging Function, SHALL initiate the INVITE request to each of the virtual SIP User Agents that identify the stored message, as defined in [draft-URI-list].
  - b. The "URI-list server for SIP INVITE transactions" SHALL send an INVITE request that includes SDP to each of the URIs indicated in the URI list of the incoming INVITE. This creates a virtual centralized conference between the end user and each of the virtual SIP User Agents that identify a given message.
- 3. If all deferred message are to be retrieved, the following procedure is performed:
  - a. The focus for SIP INVITE, SHALL initiate the INVITE request to each and all virtual SIP User Agents that identify the stored message, as defined in [draft-Conf-FW]. This creates a virtual centralized conference between the end user and each of the virtual SIP User Agents that identify a given message.
- 4. Then each of these virtual SIP User Agents SHALL send the deferred message to the "URI-list server/SIP Focus for SIP INVITE transactions", which in turn, relays them to the end user, as defined in [MSRP];
- 5. Messages in the MSRP SEND requests SHALL be sent as defined in section 12.2.2.5 "*Pushing Deferred Messages*".

In the case of OMA SIMPLE IM 1.0 scenario, all components of the Deferred Messaging Function are in the same host; therefore the interface between these components is a matter of server internal implementation i.e. internal calls or a defined APIs.

12.2.2 Stored Messaging Function terminating requests to IM user

12.2.2.1 Receiving SIP INVITE for deferred Large Message

Upon receiving an IM request to be terminated at the served IM user from the procedures in 6.1.2 "*Terminating Participating Function*", the IM Server:

- 1. SHALL store the content of the Contact header field;
- 2. SHALL store relevant headers of SIP INVITE as defined in 12.2.2.3 *"Storage forDeferred Messages"* for storing the message.

When the SIP/IP Core corresponds with 3GPP/3GPP2 IMS, the IM Server SHALL use 3GPP/3GPP2 IMS mechanisms according to rules and procedures of [3GPP TS 24.229] / [3GPP2 X.S0013.004] with the clarifications given in this section.

12.2.2.2 Delivering of offline Messages

Each time an IM C*lient* sends a PUBLISH request the IM Server

- 1. SHALL check the settings of Delivery of deferred messages <deferred-settings>. If the "active" attribute of the <offline-delivery > element is set to "true" as defined in Appendix E " *IM Service Settings",* and there are deferred messages for the User, then the IM Server SHALL generate an initial SIP INVITE according to rules and procedures of [RFC3261] and:

  a) SHALL set the Request-URI of the SIP INVITE request to the served IM User identity;

  b) SHALL include an Accept-Contact header with the IM feature-tag '+g.oma.sip-im' according to rules and procedures of [RFC3841];

  c) SHALL include a User-Agent header to indicate the IM release version as specified in Appendix F "*Release version in User-agent and Server headers*";

  d) SHALL include the IM feature-tag '+g.oma.sip-im' in the Contact header field;

  e) SHALL include the feature tag "automata" in the Contact header field according [RFC 3840];

  f) SHOULD include the Session-Expires header with the refresher parameter set to "uac" according to rules and procedures of [RFC4028];

  g) SHALL include a SDP body as a SDP offer in the SIP INVITE request according to rules and procedures of [RFC3264] and , [RFC4566] and additionally:

    i. add either a session 'sendonly' attribute or

    ii. a media 'sendonly attribute that modifies the "m=message" line in the SDP

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h) SHALL send the SIP INVITE request towards the served IM User according to rules and procedures of the [RFC3621].

On receipt of the SIP 200 "OK" response to the initial SIP INVITE request the IM Server:

- 1. SHALL start the SIP Session timer using the value received in the Session-Expires header according to rules and procedures of [RFC4028];
- 2. SHALL store the Contact header as defined in [RFC 3261];
- 3. SHALL follow the procedures defined in 12.2.2.5 *Pushing Deferred Messages.*

When the SIP/IP Core corresponds to 3GPP/3GPP2 IMS, the IM Client SHALL use 3GPP/3GPP2 IMS Session establishment mechanisms according to rules and procedures of [3GPP TS 24.229] / [3GPP2 X.S0013.004] with the clarifications given in this section.

12.2.2.3 Storage for Deferred Messages

Each time the IM Server receives a message to be stored on behalf of the served IM User who is offline, the IM Server:

- 1. SHALL, in case of SIP MESSAGE request , store the complete message including all the header fields and bodies of the SIP MESSAGE request;
- 2. SHALL not store P-Asserted-Identity if the sending User requested anonymity;
- 3. SHALL, in the case of Large Message mode, store the following:
    - Relevant headers of SIP INVITE and 200 OK of the session establishment of the deferred message
        - From
        - To
        - P-Asserted-Identity only if if the sending User did not request anonymity
        - Subject
        - Date
    - The MSRP SEND request including the timestamp the IM Server receives the complete msrp messages
    - Relevant headers of the SIP BYE request
- 4. SHALL assign a unique Message-ID for each deferred message whose general format as Message-ID= "sip: String@hostname" with the following clarification:
    - The IM Server generates the unique string by itself
- 5. SHALL store the deferred message in the served IM user's account of the IM Server's Deferred Function entity;
- 6. MAY be able (on IM Service Provider choice) to mark the stored message with an Expire value:
    - In case of Pager mode message sent via SIP MESSAGE request,
        - If the SIP MESSAGE request contains the Expires header, and the value is below the maximum value per local policy, the IM Server SHALL set the Expire value to the value contained in the SIP MESSAGE Expires header field;
        - If the SIP MESSAGE request does not contain the Expires header field or the provided Expires header value is above the maximum value per local policy, the IM Server SHALL set the Expire value to a default value (e.g.: configurable by the IM Service Provider)
    - In case of Large Message mode the IM Server MAY set the Expire value of the deferred message to a default value (e.g.: configurable by the IM Service Provider)
- 7. SHALL store metadata in IM XDMS as described in 12.2.2.8 "*Updating Metadata in IM XDMS*".

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12.2.2.4 Deferred Message Expiration

If the Deferred message expires before being delivered by the IM Server to the destination User, the IM Server SHOULD handle the message based on local policy (on IM Service Provider choice). This policy could mean: the expired message is deleted undelivered to the destination User, the expired message is still delivered to the destination User (as long as the User come back online), or some other policy may be invoked.

If the expired message is delivered to the destination User (as long as the User come back online), the IM Server MAY indicate to the destination User that the message has expired.

If the expired message has not been delivered, the IM server MAY send a failure report as described in 12.2.2.6 "*Delivery Report for deleted messages*".

The Deferred message SHALL be considered to be expired according to the original "Expire" value and/or the configurable one as described in section 12.2.2.3 "*Storage for Deferred Messages*".

12.2.2.5 Pushing Deferred Messages

After the IM Server has established an IM Session to deliver deferred messages to the served IM User as defined in 12.2.2.2 "*Delivering of offline Messages*", the IM Server constructs MSRP SEND request for each Deferred Message. The IM Server sends MSRP SEND with the encapsulated Deferred Message and the timestamp received by the IM Server to the IM Client through the MSRP channel established as follows, the IM server:

- SHALL generate MSRP SEND request for each deferred Message
- Each generated MSRP SEND request SHALL be of Content-Type "Multipart/mixed" and carry the deferred Message as payload with the following clarification:
    - Each Deferred message SHALL include the timestamp received by the IM Server in SIP headers
    - The Original headers in the deferred messages, i.e. Call-IDs and message-id in case of MSRP SEND, SHALL not be altered by the IM Server
    - SHALL encapsulate "SIP MESSAGE" request with the Content-Type of either message/sip or message/sipfrag, according to the procedures of [RFC3261] or [RFC3420], respectively
    - SHALL encapsulate "MSRP SEND" messages (i.e. Large Message Mode message session) with the Content type message/msrp
    - SHALL encapsulate the relevant headers of the deferred message indicated below:
        - To
        - From
        - Date,
        - Subject
        - Priority
        - Call-ID
        - P-Asserted-Identity
- After sending all the deferred messages, the IM Server SHALL send a SIP BYE to SIP/IP Core to disconnect the MSRP session with the IM Client.

12.2.2.6 Delivery Report for deleted Messages

When receiving an IM request to delete the stored Deferred IM message(s), which are not retrieved by the IM user; or when the expired deferred message(s) undelivered to the destination user are deleted by the IM Server, the IM Server:

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- 1. SHALL check whether the deleted messages include a Failure Delivery Report request as defined in [IMDN]. If the request is not included the procedure is stopped. Otherwise, continue with the rest of the steps;
- 2. SHALL use SIP MESSAGE to send a Failure Delivery Report to the original sender of the Deferred Message(s) according to rules and procedures of [IMDN].

12.2.2.7 IM Server deleting Deferred Messages

When receiving a REFER request to delete stored Deferred Message(s) or when the IM Server decides to delete stored Deferred Messages, e.g. on expiry, the IM Server:

- 1. SHALL delete the Deferred Message(s) from the Storage;
- 2. SHALL send a 200 OK as a response to the REFER request if a REFER request was received;
- 3. SHALL act according to 12.2.2.6 "*Delivery Report for deleted Messages*";
- 4. SHALL update metadata in IM XDMS as described in 12.2.2.8 "*Updating Metadata in IM XDMS*";
- 5. In case the REFER was received, the IM Server SHALL send a NOTIFY request to the client according to the rules and procedures of [RFC 3515].

12.2.2.8 Updating Metadata in IM XDMS

When storage of a Pager Mode or Large Message Mode message is required, the Deferred Messaging Function SHALL update the deferred message metadata XML document in the IM XDMS with a new <history> element according to [IM-XDM-Specification].

When deletion of a stored Pager Mode or Large Message Mode message is required, the Deferred Messaging Function SHALL update the deferred message metadata XML document in the IM XDMS by removing the corresponding <history> element according to [IM-XDM-Specification].

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13 Conversation History Function

The Conversation History Function can be invoked in two different ways by an IM user:

- 1. By setting his <hist-settings> activity attributes to “Active” as described in Appendix E.1 or
- 2. By dynamically turning on and off the Conversation history function during an IM session.

For the first method, the Originating Participating function determines the settings for the History Settings when it receives a session or pager mode request from the originating IM user and the Terminating Particiapting Function checks the same settings when it receives a session or message request destined to the IM user. If the setting is “active”, the IM Server SHALL automatically record the session or message.

For the second method, the Conversation History Function is turned on by the IM user at the beginning or during a session, and the client adds the Conversation History function as a participant to that session. The Conversation History Function then records the messages exchanged during the session. The Conversation History Function is turned off by the IM user at any time by removing the Conversation History Function as a participant to that session.

Appendix K describes the two methods above.

13.1 Client Procedures

The following sections describe the optional procedures that the IM Client SHALL use if it supports conversation history.

13.1.1 Requesting History during IM Session

When the Participant wants to store a copy of the IM Session during an ongoing IM Session, the IM Client can then invoke IM History. The IM Client:

- 1. SHALL, if the “isFocus” feature tag is not set by the acknowledgement of this session:
    a. follow the procedures as specified in section 7.1.1.6 “*IM Client extends 1-to-1 IM Session to a conference*”, and;
    b. add History@hostname to the URI list according to [draft-URI-list].

- 2. SHALL, if the isFocus feature tag is set by the acknowledgement of this session:
    a. generate an initial SIP REFER request as specified in section 7.1.1.1 *"General"* and according to rules and procedures of [RFC3515].
    b. set the Request-URI of the SIP REFER request to History@hostname
    c. set the Refer-To header of the SIP REFER request to the IM Session Identity of an ongoing IM Session according to rules and procedures of [RFC3515].
    d. set the REFER method to INVITE. This will cause the IM Server to invite itself to the ongoing conference.
- 3. MAY include in the Request-URI a Historyfilename uri-parameter “Historyfilename =user_provided_file_name” as specified in E.5"URI parameter".

NOTE: The inclusion of the historyfilename uri-parameter in case of the On-demand recording is not mandatory, as it is not needed by the IM Server for further processing by the History IM Function. If not set, the History IM Function will assign a file name to the history file.

An IM user will be informed by a NOTIFY when the recording starts as described in [RFC3515].

When the SIP/IP Core corresponds with 3GPP/3GPP2 IMS, the IM Client SHALL use 3GPP/3GPP2 IMS mechanisms according to rules and procedures of [3GPP TS 24.229] / [3GPP2 X.S0013.004] with the clarifications given in this section.

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13.1.2 Requesting to End History during IM Session

When the Participant wants to terminate an ongoing recording of an IM Session, the IM Client

- 1. SHALL generate an initial SIP REFER request as specified in section 7.1.1.1 *"General"* and according to rules and procedures of [RFC3515];
- 2. SHALL set the Request-URI of the SIP REFER request to History@hostname;
- 3. SHALL set the Refer-To header of the SIP REFER request to the IM Session Identity of the Conference session according to rules and procedures of [RFC3515];
- 4. SHALL set the method parameter "BYE" in the Refer-To header. This will cause the IM Server to end the communication of ongoing conference.

A NOTIFY message will be received when the recording ends, as a result of sending the REFER message.

When the SIP/IP Core corresponds with 3GPP/3GPP2 IMS, the IM Client SHALL use 3GPP/3GPP2 IMS mechanisms according to rules and procedures of [3GPP TS 24.229] / [3GPP2 X.S0013.004] with the clarifications given in this section.

13.1.3 User Initiates a Request to Retrieve IM History

Upon receiving a request from an IM User to retrieve IM History, the IM Client:

- 1. SHALL generate an initial SIP INVITE request as specified in section 7.1.1.1 *"General"*;
- 2. The IM Client SHALL set the Request-URI of the SIP INVITE request to History@hostname;
- 3. SHALL include in the SIP INVITE request a MIME SDP body as a SDP offer according to rules and procedures of [RFC3264], [RFC4566], and [MSRP]:
  - a. include the Media Parameters being offered by the IM Client for the IM Service:
  - b. set the media direction attribute to a=recvonly.
- 4. SHALL include a list of History references as defined in [draft-URI-list].
  - The URI-list SHALL contain a list of message ID's representing each stored history item (list of history reference(s) according to the definition in [IM-XDM- Specification] that identifies the stored history that the IM user wants to retrieve.

On receiving a SIP 200 "OK" response to the SIP INVITE requests the IM Client SHALL store the list of supported SIP methods if received in the Allow header.

When the SIP/IP Core corresponds to 3GPP/3GPP2 IMS, the IM Client SHALL use 3GPP/3GPP2 IMS Session establishment mechanisms according to rules and procedures of [3GPP TS 24.229] / [3GPP2 X.S0013.004] with the clarifications given in this section.

13.1.4 Retrieving History Metadata

At the end of the History recording, or at any time after that, the Client MAY retrieve the History metadata as described in [IM-XDM- Specification]. The metadata will contain information about all the History contents stored for the user, including the History Reference assigned by the Conversation History Function for each History. The History Reference can be used by the IM Client to retrieve the corresponding History content.

13.1.5 Deleting one particular stored history

When an IM Client receives instruction from the IM user to delete a particular history, the IM Client;

- 1. SHALL, generate an initial SIP REFER request as specified in section 6.1.2.1 *"General"* and according to rules and procedures of [RFC3515];
- 2. SHALL set the Request-URI of the SIP REFER request to sip: Delete@hostname;
- 3. SHALL, set the Refer-To header of the SIP REFER request to the history reference as defined in 13.2.3 *"Storage for History"* of the particular stored history to be deleted according to rules and procedures of [RFC3515];

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- 4. SHALL set the REFER method to INVITE according to rules and procedures of [RFC3515]. And additional set the SDP directional attribute of the SDP media line = “m” to “a” = recvonly;
- 5. Upon receiving an incoming SIP NOTIFY request that is part of the same dialog as the previously sent SIP REFER request the, IM Client SHALL respond with 200 OK according to rules and procedures of [RFC3515].

When the SIP/IP Core corresponds with 3GPP/3GPP2 IMS, the IM Client SHALL use 3GPP/3GPP2 IMS mechanisms according to rules and procedures of [3GPP TS 24.229] / [3GPP2 X.S0013.004] with the clarifications given in this section.

13.1.6 Deleting multiple selected histories

Upon receiving a request from the IM User to delete multiple selected stored histories, the IM Client:

- 1. SHALL generate an initial SIP REFER request as specified in section 6.1.2.1 *"General"* and according to rules and procedures of [RFC3515];
- 2. SHALL set the Request-URI of the SIP REFER request to sip: Delete@hostname;
- 3. SHALL include a MIME resource-lists body with the list of the selected multiple history references to be added according to rules and procedures of [draft-multiple-refer;
- 4. SHALL include a Refer-To header with a pointer to an URI-list in a body part containing the MIME resource-list body according to rules and procedures of [draft-multiple-refer];
- 5. SHALL set the SDP directional attribute of the media line = “m” to “a” = recvonly;
- 6. SHALL set the Norefer-Sub header to “true” according to rules and procedures of [draft-ietf-sip-refer-with-norefersub-03]; and,
- 7. SHALL include the “multiple-refer” option-tag in the Require header field of the REFER according to rules and procedures of [draft-ietf-sip-refer-with-norefersub-03].

When the SIP/IP Core corresponds with 3GPP/3GPP2 IMS, the IM Client SHALL use 3GPP/3GPP2 IMS mechanisms according to rules and procedures of [3GPP TS 24.229] / [3GPP2 X.S0013.004] with the clarifications given in this section.

13.1.7 Deleting all histories

When an IM Client receives instruction from the IM user to delete all stored histories in a user’s account, the IM Client;

- 1. SHALL, generate an initial SIP REFER request as specified in section 6.1.2.1 *"General"* and according to rules and procedures of [RFC3515];
- 2. SHALL set the Request-URI of the SIP REFER request to sip: Delete@hostname
- 3. SHALL, set the Refer-To header of the SIP REFER request to the Conversation History Function as sip: History@hostname according to rules and procedures of [RFC3515];
- 4. SHALL set the REFER method to INVITE according to rules and procedures of [RFC3515] and additionally set the SDP directional attribute of the SDP media line = “m” to “a” = recvonly.

When the SIP/IP Core corresponds with 3GPP/3GPP2 IMS, the IM Client SHALL use 3GPP/3GPP2 IMS mechanisms according to rules and procedures of [3GPP TS 24.229] / [3GPP2 X.S0013.004] with the clarifications given in this section.

13.2 Requests Received by the Conversation History Function

The following sections describe the optional procedures that the IM Server SHALL use if it supports conversation history.

13.2.1 Request for Retrieving stored History

On receipt of the initial SIP INVITE request the Conversation History Function:

- 1. SHALL reject the SIP INVITE request with an appropriate reject code as specified in [RFC3261] under certain conditions, e.g.

  a) when a P-Asserted-Identity is not present.

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- 2. SHALL store the list of supported SIP methods if received in the Allow header;
- 3. SHALL verify that the SDP body has the media direction attribute set to a=recvonly; and if it does not the IM Server SHALL return a SIP SIP 488 “Not Acceptable Here” response with the correct SDP parameters;
- 4. SHALL verify that the INVITE body includes a URI-list.

Upon verifying P-asserted-identity of a user in the INVITE request, The Conversation History Function performs the following

- 1. SHALL generate SIP responses according to rules and procedures of [RFC3261];
- 2. SHALL include Server header to indicate the IM release version as specified in Appendix F *“Release version in User-agent and Server headers”*;
- 3. SHOULD include an Allow header with all supported SIP methods;
- 4. SHALL include the IM Session Identity in the Contact header, as described in [RFC 4579];
- 5. SHALL include a MIME SDP body as a SDP answer in the SIP 200 "OK" response according to rules and procedures of [RFC3264], [RFC4566] [RFC4566] as follows:
    - a). set the direction attribute to a=sendonly.
- 6. SHALL send the SIP 200 "OK" response to the IM Client.

The Conversation History Function:

- 1. SHALL process the INVITE request by retrieving each of the history references, as defined in [draft-URI-list];
- 2. SHALL deliver the content of the each history reference indicated in the URI list of the incoming INVITE;
- 3. Messages in the MSRP SEND SHALL be sent as defined in section 13.3.3 *“History Delivery- User Plane”*.

When the SIP/IP Core corresponds with 3GPP/3GPP2 IMS, the IM Client SHALL use 3GPP/3GPP2 IMS Session establishment mechanisms according to rules and procedures of [3GPP TS 24.229] / [3GPP2 X.S0013.004] with the clarifications given in this section.

13.2.2 Creating SIP Session History

13.2.2.1 General

On receipt of the initial SIP REFER request the Conversation History Function:

- 1. SHALL reject the SIP REFER request with an appropriate reject code as specified in [RFC3515] e.g.

  a) when a P-Asserted-Identity is not present the IM server SHALL reject the request with a SIP 401 "Unauthorized" response. The IM Server SHOULD include a Warning header with the warning text set to '127 Service not authorised' as specified in subclause 5.6 *"Warning header”;*

  b) when the IM History determines that there is not enough resources to handle the IM Session, the IM server SHALL reject the request with a 486 “Busy Here” response. The IM Server SHOULD include a Warning header the warning text set to '122 Function not allowed' as specified in subclause 5.6 "Warning header”;2. SHALL store the list of supported SIP methods if received in the Allow header.

When generating SIP responses the Conversation History Function:

- 1. SHALL generate SIP responses according to rules and procedures of [RFC 3515];
- 2. SHALL include Server header to indicate the IM release version as specified in Appendix F “*Release version in User-agent and Server headers*”;
- 3. SHOULD include an Allow header with all supported SIP methods.

13.2.2.2 Receiving SIP REFER

Upon receiving a SIP REFER request to start or stop History recording dynamically, the History Function, the IM Server:

- 1. SHALL perform actions to verify the Authenticated Originator's IM Address of the inviting IM User and authorize the request . If is the IM User is not authorized the IM Server SHALL return a SIP 403 "Forbidden" response. The IM server

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SHOULD include an Warning header with the warning text set to '127 Service not authorised' as specified in subclause 5.6 *"Warning header* ". Otherwise, continue with the rest of the steps;

- 2. If the REFER is without a method or if the method is set to INVITE:
  - a) SHALL extract the IM History Filename from the value of the filename attribute in the Request-URI History Type uri-parameter in the SIP REFER request, if such an attribute is present;
  - b) SHALL generate a SIP INVITE to the IM Session Identity according to procedures in section 13.3.1.2 "*Generating a SIP INVITE"*.
- 3. If the REFER method is set to BYE:
  - a) SHALL generate a SIP BYE request;
  - b) SHALL set the Request-URI to the IM Session Identity received in the Refer-To header of the received REFER;
  - c) SHALL include the SIP URI of the initiator of the request in the From header field;
  - d) SHALL send the BYE request according to the rules and procedures of the SIP/IP core.
- 4. SHALL generate a SIP 2xx final response to the SIP REFER request according to rules and procedures of [RFC3515];
- 5. SHALL send the SIP 2xx final response to the SIP REFER request towards the IM Client according to rules and procedures of the SIP/IP Core;
- 6. SHALL generate and send a SIP NOTIFY to IM User to report the outcome of the SIP INVITE or SIP BYE if the Norefer-Sub header is set to "false" or is not present.

When the SIP/IP Core corresponds with 3GPP/3GPP2 IMS, the IM Server SHALL use 3GPP/3GPP2 IMS mechanisms according to rules and procedures of [3GPP TS 24.229] / [3GPP2 X.S0013.004] with the clarifications given in this section.

13.2.3 Storage for History

- 1. Each time the IM Server receives a SIP message or a MSRP Session to be stored on behalf of the served IM User, the IM Server:
  - a). SHALL determine if enough resources are available to store the SIP Message and If there are not enough resources, the Conversation History Function:
    - i. SHALL not record the MESSAGE message;
    - ii. SHOULD send a system message to the user indicating that there is not enough storage for History recording.
  - b). If enough resources are available, continue at step 4.
- 2. Each time the IM server receives an MSRP SEND as part of a Large Message Mode, to be stored on behalf of the served IM User, the Conversation History Function:
  - a) SHALL determine if enough resources are available to store the Large message and If there are not enough resources, the Conversation History Function:
    - i. SHALL stop recording and discard any portions of the chunked Large message already received;
    - ii. SHOULD send a system message to the user indicating that there is not enough storage for History recording.
  - b) If enough resources are available, continue at step 4.

- 3. Each time a server receives a MSRP SEND message as part of an IM session to be stored on behalf of the served IM user, the Conversation History Function:
  - a) SHALL determine if enough resources are available to store the MSRP SEND message and If there are not enough resources, the Conversation History Function:
    - i. SHALL stop the recording;
    - ii. If the SEND is a chunked part of a large message exchange during a session , the Conversation History Function SHALL reject the message with an MSRP 413 response and SHALL discard the other chunks of that message;
    - iii. If the SEND is a part of a session exchange, the Conversation History Function SHALL keep the stored portion of the session;
    - iv. The Conversation History Function SHALL leave the conference by sending a SIP BYE to the conference server;

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- v. SHOULD send a system message to the user indicating that there is not enough storage for History recording.
- b) If enough resources are available, resume processing at step 5;

- 4. SHALL, in case of SIP MESSAGE request, store the complete message including all the header fields and bodies of the SIP MESSAGE request;
- 5. SHALL, in the case of MSRP session, store the following:
    - All Relevant headers of SIP INVITE and 200 OK of the session establishment of the history session for example
        - From
        - To
        - P-Asserted-Identity
        - Subject
        - Date
- 6. SHALL store the content of the message exchanges as follows:
    - For Large Message mode: The MSRP SEND request including all headers, the timestamp for when the IM Server received the message and the complete content of the msrp message
    - For a session mode messaging: Each MSRP SEND request including all headers, the timestamp for when the IM Server received the message and the complete message content of the MSRP SEND's as it was received.
    - Relevant headers of the SIP BYE request
- 7. SHALL assign a unique history reference for each stored message in the form of a URI as defined by [RFC 2396] (e.g. abc1234@mailserver.example.com);
- 8. SHALL store the history in the served IM user's account of the IM Server's message store entity;
- 9. SHALL store meta data in XDMS [IM-XDM- Specification] as described in 12.2.2.8 "*Updating Metadata in IM XDMS*".

13.2.4 SIP BYE request

Upon reception of a SIP BYE request from the Controlling IM Function, the Conversation History Function:

- 1. SHALL release User Plane resources associated with the Session;
- 2. SHALL update XDMS with metadata and reference to content created by the user plane so that retrieving services can consider them as one set of meta data relating according to the instructions in "*Store Metadata*"; and,
- 3. SHALL generate a 200 "OK" response according to rules and procedures of [RFC3261].

When the SIP/IP Core corresponds with 3GPP/3GPP2 IMS, the IM Server SHALL use 3GPP/3GPP2 IMS mechanisms according to rules and procedures of [3GPP TS 24.229] / [3GPP2 X.S0013.004] with the clarifications given in this section.

13.2.5 Request to delete History

13.2.5.1 Deleting Mechanism

Deleting always results in an item taken from a regular folder or storage and transferred into a "DELETE bin" or Garbage collector bin. To enable this mechanism in IM service, a garbage collector bin or " DELETE bin" is define in the IM system as "DELETEbin" and is associated with a URI: sip: Delete@hostname, where the hostname is the operator domain pointing the particular location of the garbage collector, for example sip: Delete@mailserver.operator.domain.

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13.2.5.2 IM Server deleting History files

When receiving a REFER request to delete stored History files or when the IM Server decides to delete stored History files e.g. based on operator policy, the IM Server:

- 1. SHALL delete the History files from the Storage;
- 2. SHALL send a 200 OK as a response to the REFER request if a REFER request was received;
- 3. SHALL update metadata in IM XDMS as described in 13.3.2 "*Updating XDMS*"; and,
- 4. In case the REFER was received, the IM Server SHALL send a NOTIFY request to the client according to the rules and procedures of [RFC 3515].

13.2.6 Request to End History Recording

Upon receiving from the IM Client a SIP REFER request with the method parameter set to value "BYE" in the Refer-To header, the Conversation History Function:

- 1. SHALL perform the actions to verify the Authenticated Originator's IM Address of the IM Client and authorize the request, and if it is not authorized the IM Server SHALL return a SIP 403 "Forbidden" response. The IM server SHOULD include an Warning header with the warning text set to '127 Service not authorised' as specified in subclause 5.6 *"Warning header"* ; otherwise continue with the rest of the steps;
- 2. SHALL examine the URI in the Refer-To header of the SIP REFER request and

  a) if the URI is an identity of an existing IM Session and the Conversation History Function is a Participant of that IM Session, the IM Server:

    i. SHALL generate a SIP 2xx final response to the SIP REFER request according to rules and procedures of [RFC3515];

    ii. SHALL check the presence of the Refer-Sub header of the SIP REFER request and if it is present and it has the value "false" then the IM Server SHALL include in the response to the SIP REFER request a Refer-Sub header set to "false" according to rules and procedures of [draft-norefersub];

    iii. SHALL send the SIP response to the SIP REFER request towards the IM Client according to rules and procedures of the SIP/IP Core;

  b) if the URI is not an identity of an existing IM Session, the IM Server SHALL:

    i. if the method parameter in the Refer-To header is empty continue according to 13.2.2.2 "*Receiving SIP REFER"* without returning to this procedure; otherwise continue with the next steps;

    ii. SHALL return a SIP 404 "Not Found" response.
- 3.The Conversation History Function SHALL generate a SIP BYE according to rules and procedures of 7.1.1.12 *IM Client leaving an IM Session* and acting as a IM Client for the Controlling Server;
- 4. SHALL if the Refer-Sub header is not present or is set to "true" in the SIP REFER request, generate and send to the IM Client SIP NOTIFY request(s) as specified in section 7.2.2.10 "*Generating a SIP NOTIFY request to the SIP REFER request"* based on the progress of the BYE request.

NOTE: A SIP REFER request according to rules and procedures of [RFC3515] or [draft-multiple-refer] is an implicit subscription to event "refer" in case the Refer-Sub header is not present or is set to "true".

When the SIP/IP Core corresponds with 3GPP/3GPP2 IMS, the Conversation History function SHALL use 3GPP/3GPP2 IMS mechanisms according to rules and procedures of [3GPP TS 24.229] / [3GPP2 X.S0013.004] with the clarifications given in this section.

13.2.7 End History Recording

When one of the following conditions occurs:

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  - a) A notification that a session has ended is received from the Originating or Terminating Participating Functions;
  - b) Memory capacity for storage has been reached.
- The IM Server SHALL:
- 1. Stop History recording;
- 2. Update the History XDMS as described in 13.3.2 "*Updating XDMS*".

13.3 Requests Initiated by the Conversation History Function

The following sections describe the optional procedures that the IM Server SHALL use if it supports conversation history.

13.3.1 Inviting the Conference Function

13.3.1.1 General

The Conversation History Function SHALL generate an initial SIP request according to rules and procedures of [RFC3261]. The Conversation History Function:

- 1. SHALL include an Accept-Contact header with the IM feature-tag '+g.oma.sip-im' along with 'according to rules and procedures of [RFC3841] in all initial SIP requests;
- 2. SHALL include a User-Agent header to indicate the IM release version as specified in Appendix F "*Release version in User-agent and Server headers*";
- 3. SHOULD include an Allow header with all supported SIP methods;
- 4. SHALL include the option tag 'timer' in the Supported header;
- 5. SHOULD include the Session-Expires header with the refresher parameter set to "uac" according to rules and procedures of [RFC4028].

On receipt of a SIP final response or SIP provisional response to the SIP request, the Conversation History Function:

- 1. SHALL store the list of SIP methods that the IM Server supports if received in the Allow header; and,
- 2. SHALL store the contact if received in the Contact header.

On receipt of the SIP 200 "OK" response to the initial SIP INVITE request the Conversation History Function:

- 1. SHALL start the SIP Session timer using the value received in the Session-Expires header according to rules and procedures of [RFC4028].

When the SIP/IP Core corresponds to 3GPP/3GPP2 IMS, the IM Client SHALL use 3GPP/3GPP2 IMS Session establishment mechanisms according to rules and procedures of [3GPP TS 24.229] / [3GPP2 X.S0013.004] with the clarifications given in this section.

13.3.1.2 Generating a SIP INVITE

The Conversation History Function:

- 1. SHALL generate an initial SIP INVITE request as specified in section 13.3.1.1"General" with the following clarification: set the Request-URI of the SIP INVITE request to the to the Session Identity received in the Refer-To header field, if SIP REFER is received from an IM Client,
- 2. SHALL include the SIP URI of the initiators of the request in the From: header field;
- 3. SHALL include in the SIP INVITE request a MIME SDP body as a SDP offer according to rules and procedures of [RFC3264], [RFC45566], and [MSRP];
- 4. SHALL send the SIP INVITE request towards the IM Server according to rules and procedures of the SIP/IP Core.

On receiving a SIP 200 "OK" response to the SIP INVITE request, the Conversation History Function:

- 1. SHALL store the list of supported SIP methods if received in the Allow header;
- 2. SHALL store the IM Session Identity if received in the Contact header as described in [RFC 4579];
- 3. SHALL store all the SIP Headers;

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- 4. SHALL subscribe to the Conference State Event Package by sending a SIP SUBSCRIBE request to obtain information of the status of an IM Session according to 7.1.1.11"*IM Client subscription to the conference state event package*";
- 5. SHALL, if the Conversation History Function accepts the SIP Session invitation, interact with the User Plane as specified in 13.3.3 "*History Delivery – User Plane*".

When the SIP/IP Core corresponds to 3GPP/3GPP2 IMS, the IM Client SHALL use 3GPP/3GPP2 IMS Session establishment mechanisms according to rules and procedures of [3GPP TS 24.229] / [3GPP2 X.S0013.004] with the clarifications given in this section.

13.3.2 Updating XDMS

When storage of an IM history is required (e.g., session or large message or pager mode message), the Conversation History Function SHALL update the history metadata XML document in the IM XDMS with a new <history> element according to [IM-XDM-Specification].

When deletion of a stored history content is required, the Conversation History Function SHALL update the Conversation history metadata XML document in the IM XDMS by removing the corresponding <history> element according to [IM-XDM-Specification].

13.3.3 History Delivery – User Plane

After the IM Server has established an IM session to deliver history messages to the served IM User, the IM Server constructs MSRP SEND request for each history reference. Sending of messages SHALL follow the procedures and rules of [MSRP].

13.3.3.1 For Pager Mode Messages

The IM Server sends MSRP SEND with the encapsulated history IM message and the timestamp received by the IM Server to the IM Client through the MSRP channel established as follows:

- 1. SHALL generate MSRP SEND request for each history Message:
    - Each generated MSRP SEND request SHALL be of Content-Type "Multipart/mixed" and carry the history Message as payload with the following clarification:
        - Each history message SHALL include the timestamp received by the IM Server in SIP headers;
        - The Original headers in the history messages, i.e. Call-IDs and message-id in case of MSRP SEND, SHALL not be altered by the IM Server;
        - SHALL encapsulate the stored "SIP MESSAGE" request with the Content-Type of either message/sip or message/sipfrag, according to the procedures of [RFC3261] or [RFC3420], respectively;
        - SHALL encapsulate the stored "MSRP SEND" (i.e. page mode with MSRP session) with the Content type message/msrp.
- 2. After sending all the history messages, the IM Server SHALL send a SIP BYE to SIP/IP Core to disconnect the MSRP channel with the IM Client.

13.3.3.2 For stored IM Session

The IM Server SHALL retrieve the stored IM Session History and for each of them behave as following:

Each incoming MSRP SEND SHOULD be sent in the order they arrived to the Conversation History Function;

Each MSRP SEND SHOULD be reconstructed with the original meta data and sent as it was received;

SHALL encapsulate "MSRP SEND" messages with the Content type message/msrp;

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After sending all the history conversation, the IM Server SHALL send a SIP BYE to SIP/IP Core to disconnect the MSRP channel with the IM Client.

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14 System Concepts

14.1 Security

The IM service environment must be protected against misuse and attacks and it must provide user privacy. There are several aspects to be considered: Service access control, SIP signalling security in general and protection of user messages/media in SIP MESSAGE and in the User Plane. For user message/media security, source origin authentication is an important feature.

14.1.1 General

The IM Service environment SHOULD rely on / reuse security features/ mechanisms provided by the underlying SIP/IP Core, to e.g. secure the service environment and authenticate users. Such dependence will be the assumed as the basis for the security architecture. The SIP/IP Core is assumed to provide user authentication and integrity and (optionally) confidentiality protection of SIP signaling as defined in [3GPP TS 33.203]. When the SIP/IP Core corresponds to 3GPP/3GPP2 IMS, and the User Equipment contains USIM/ISIM or UIM/R-UIM, mutual authentication between the user and the SIP/IP Core SHALL be applied as specified in [3GPP TS 33.203]/[3GPP2 S.R0086-0]. All IM users SHALL be securely authenticated to allow reliable access control to IM services.

The SIP/IP Core also needs to ensure, during registration, that the registered IM users public and private address is allocated and authorized to be used by that User in order to prevent spoofing attacks as identified in Appendix E.

Note that the user plane is not a part of the SIP IP Core Security.

14.1.2 Trust Model

The IM trust model for SIP signalling is based on a trusted network model with hop-by-hop security and proxy authentication. In those cases the intradomain security is insufficient, IM Servers SHOULD authenticate and secure communication to other servers/proxies according to [3GPP TS 33.210]. For inter-domain security, IM Servers SHALL rely on communication channels that are protected according to [3GPP TS 33.210].

If the IM Server acts as originating UA then it SHALL support P-Asserted-Identities according to [3GPP TS 24.229].

14.1.3 SIP signalling security

The SIP signalling security mechanisms/features described here cover signalling and user messaging using SIP MESSAGE.

14.1.3.1 Integrity and confidentiality protection

The integrity and optional confidentiality protection mechanism SHALL be used as specified in 3GPP TS 33.203/3GPP2 S.R0086-0 when the SIP/IP core corresponds to 3GPP/3GPP2 IMS. Otherwise appropriate Integrity and Confidentiality mechanisms should be used.

NOTE: [RFC3261] mandates the support for HTTP digest authentication [RFC2617 according to] if authentication is performed. However, the 3GPP standard overrules this requirement (as well as the requirement of TLS usage).

14.1.3.2 Assurance of user identity

For assurance of user identities and for source origin authentication of SIP Signalling the IM Service SHALL use P-Asserted-Identities according to [3GPP TS 24.229] in this release.

If the IM Server acts as an originating UA then it SHALL support P-Asserted-Identities according to [3GPP TS 24.229].

14.1.3.3 SIP MESSAGE Security

In particular, a SIP MESSAGE SHALL be secured according to TS 33.203, TS 33.210.and [3GPP TS 24.229]. when the SIP/IP core corresponds to 3GPP IMS. Otherwise appropriate security mechanisms should be used.

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14.1.4 User Plane security

The IM service User Plane communication between IM Client and IM Client, IM Client and IM Server, and between IM Servers SHOULD be protected to support the integrity and confidentiality of the communication. Such protection is not provided by the SIP/IP Core according to IMS for 3GPP(2).

14.1.5 Relation between SIP Signalling and User Plane Security

The security model requires that user authentication and SIP Sessions SHALL be securely coupled to the corresponding User Plane communications to ensure that the user identity / source origin is the same in both instances.

14.1.5.1 Denial of Services

The IM Server should mitigate and warn for DoS in SIP Signalling and User Plane when appropriate.

14.1.6 XDMS Security

The XDMS security model is based on IM user authentication for access control and protection of the communication between the user and the Aggregation Proxy (AP).

The XDMS security and Privacy model is described in OMA-AD-Presence_SIMPLE-V1 and in OMA-AD-XDMS_SIMPLE-V1.

14.2 Authorization

The IMS Core can authorize a user to access a service. However, the service SHOULD make an authorization decision of what the user is entitled to do.

The same applies to XDMS, where the AP shall make an authorization decision if the user may access the service, while the service SHALL make an authorization decision of what the user may do.

14.3 Privacy

An IM User MAY request privacy for the identity of the IM User meaning that the IM Address of the IM User is hidden from other IM Users. The IM Client SHALL use mechanisms defined in [3GPP TS 24.229] to request privacy when the SIP/IP core corresponds to 3GPP IMS. Otherwise appropriate privacy mechanisms should be used such as those described in [RFC3323] and [RFC3325].

If an inviting, invited or joining IM User requests privacy of his IM Address then the following procedures SHALL take place in the system operating in the trusted domain(s):

- The IM Server performing the Controlling IM Function SHALL retain privacy information of the Participants for the duration of the IM Session.
- The SIP/IP Core serving the invited IM User SHALL provide the privacy of the IM Address of the inviting IM User on Control Plane at the IM-1 reference point.
- The IM Server performing the Controlling IM Function SHALL provide the privacy of the IM Addresses of Participants when providing the Participant information notifications.
- The IM Server performing the Controlling IM Function SHALL provide the privacy of the IM Address of the talking IM User at the IM-3 and IM-4 reference points.

If privacy for the identity is not requested then IM Servers and SIP/IP Core passes the IM Address of the inviting IM User to the invited IM User.

If privacy for the identity is requested the IM Server SHALL perform the following actions:

- In case of adhoc groups or one-to-one communication : if privacy is not allowed according to the IM Server policy, the involved entity SHALL reject the request.

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- In case of predefined groups : if privacy for the identity is not allowed in the IM Group authorization rules as specified in [Shared-Group-XDM], the involved entity SHALL reject the request.

When SIP/IP Core corresponds with 3GPP/3GPP2 IMS then privacy mechanisms as defined in [3GPP TS 24.229]/[3GPP2 X.S0013.004] are used ; otherwise appropriate privacy mechanisms should be used such as those described in [RFC3323] and [RFC3325].

User's Personal Information SHALL be protected by adequate security.

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15 Timers

This section explains various timers maintained by IM Server and IM Client.

15.1 Timers in the IM Server

TIMER	TIMER VALUE	CAUSE OF START	NORMAL STOP	ON EXPIRY
Ts1 'Time limit for receiving response for System Message'	Configurable Min - 0 seconds Recommended value: Operator configuration NOTE: When an IM Sever intends to block access of IM Service immediately after sending System Message, the minimum value (Min) should be set as '0'.	When an IM Server sends a System Message which requires response from an IM Client within a specified time period.	At the reception of the response to System Message from an IM Client.	When Ts1 expires it is concluded that the response for System Message has not been received and IM Server applies local policy.
Ts2 'Aggregating Delivery Notifications'	Configurable Recommended value: Operator configuration	1. When a Controlling IM Server receives a request for Group communication along with aggregated delivery notification request. 2. Re-start according to the operator's policy, when not all notifications have been received by the Controlling IM Server.	At the reception of delivery notifications from all the intended IM Clients.	When Ts2 expires, 1. The Controlling IM Server shall aggregate all stored notifications and send the aggregated notification to IM Client that requested for aggregated delivery notification. Re-start Ts2 according to the operator's policy.

Table 1: Timers in the IM Server

15.2 Timers in the IM Client

TIMER	TIMER VALUE	CAUSE OF START	NORMAL STOP	ON EXPIRY
Tc1 'Time limit for additional file transfer'	Configurable Recommended value: Client configuration (e.g. 30 seconds)	When the 200 OK response for the last MSRP SEND is received by the sending IM Client during File Transfer.	If the instruction to send another file or series of files to the same destination is received from the user in File Transfer.	When Tc1 expires it is concluded that there are no more files to transfer and IM Client will release the session.
Tc2 'Time limit for storing Message-ID at minimum'	Configurable Recommended value: Client configuration	On receiving 202 Accept response from the IM Server, when the IM Client has requested a delivery report in sending Pager mode message	If delivery report is received for the original Pager mode message sent.	When Tc2 expires it is concluded that there are no more delivery reports expected and IM Client removes temporarily stored parameters e.g. Message-ID, stored at minimum.
Tc3 'Time limit for storing IM Session Identity'	Configurable Recommended value: Client configuration	On IM Client leaving the IM Session.	If the IM Client re-joins the IM Session.	When Tc3 expires IM Client removes temporarily stored IM Session Identity.

Table 2: Timers in the IM Client

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Appendix A Change History (Informative)

A.1 Approved Version History

Reference	Date	Description
n/a	n/a	No prior version

A.2 Draft/Candidate Version 1.0 History

Document Identifier	Date	Sections	Description
Draft Versions: OMA-TS-IM_SIMPLE-V1_0_0	30 Oct 2005		Incorporates input to committee:
	22 Nov 2005	7 App E, J	Incorporates input to committee: OMA-IM-2005-0717R01 OMA-IM-2005-0726R01 OMA-IM-2005-0730
	12 Dec 2005		Incorporates input to committee: OMA-IM-2005-0749R01 OMA-IM-2005-0753R01 OMA-IM-2005-0754R01 OMA-IM-2005-0755R01 OMA-IM-2005-0756R01 OMA-IM-2005-0758R01 OMA-IM-2005-0759R01 OMA-IM-2005-0760 OMA-IM-2005-0761 OMA-IM-2005-0764R01 OMA-IM-2005-0766R02 OMA-IM-2005-0767R01 OMA-IM-2005-0768R01 OMA-IM-2005-0769R01 OMA-IM-2005-0770R01 OMA-IM-2005-0772R01 OMA-IM-2005-0774R01 OMA-IM-2005-0775R01 OMA-IM-2005-0776R01

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Document Identifier	Date	Sections	Description
	23 Feb 2006		Following documents are incorporated OMA-IM-2006-0008R01 OMA-IM-2006-0009 OMA-IM-2006-0010 OMA-IM-2006-0011 OMA-IM-2006-0013 OMA-IM-2006-0014 OMA-IM-2006-0015R01 OMA-IM-2006-0016 OMA-IM-2006-0017- OMA-IM-2006-0018 OMA-IM-2006-0019 OMA-IM-2006-0022 OMA-IM-2006-0021R01 OMA-IM-2006-0043R01 OMA-IM-2006-0042R01 OMA-IM-2006-0041 OMA-IM-2006-0040 OMA-IM-2006-0039R01 OMA-IM-2006-0038 OMA-IM-2006-0037 OMA-IM-2006-0036R02 OMA-IM-2006-0035 OMA-IM-2006-0034R01 OMA-IM-2006-0032 OMA-IM-2006-0031R02 OMA-IM-2006-0030R01 OMA-IM-2006-0029R01 OMA-IM-2006-0028R01 OMA-IM-2006-0027R01 OMA-IM-2006-0026 OMA-IM-2006-0025 OMA-IM-2006-0024 OMA-IM-2006-0046R01 OMA-IM-2006-0046R01 OMA-IM-2006-0048 OMA-IM-2006-0047R01 OMA-IM-2006-0049R01 OMA-IM-2006-0050 OMA-IM-2006-0051
	23 Feb 2006		OMA-IM-2006-0056 OMA-IM-2006-0057R01 OMA-IM-2006-0058R01
	20 Mar 2006		Incorporates following contributions OMA-IM-2006-0099 OMA-IM-2006-0100 OMA-IM-2006-0101R01 OMA-IM-2006-0103R01 OMA-IM-2006-0104R01 OMA-IM-2006-0105 OMA-IM-2006-0106 OMA-IM-2006-0126R02 OMA-IM-2006-0094R01
	24 Mar 2006		Incorporates following contributions 6.1.5 IM History OMA-IM-2006-0086R02 OMA-IM-2006-0074

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Document Identifier	Date	Sections	Description
	10 Apr 2006		OMA-IM-2006-0088R02 OMA-IM-2006-0090R01 OMA-IM-2006-0092R03 OMA-IM-2006-0093 OMA-IM-2006-0095R01 OMA-IM-2006-0112R01 OMA-IM-2006-0148 OMA-IM-2006-0149R01 OMA-IM-2006-0154R01 OMA-IM-2006-0109R01 OMA-IM-2006-0150R02
	12 Apr 2006		Restructure of the TS according to contribution 114 R01
	18 Apr 2006		Restructured TS uploaded to permanent document section
	19 Apr 2006		OMA-IM-2006-0086R04 OMA-IM-2006-0087R04 OMA-IM-2006-0089R03 OMA-IM-2006-0178 OMA-IM-2006-0180 OMA-IM-2006-0181
	23 May 2006		OMA-IM-2006-0182 OMA-IM-2006-0183 OMA-IM-2006-0184 OMA-IM-2006-0194R01 OMA-IM-2006-0198R01 OMA-IM-2006-0200R01 OMA-IM-2006-0216R01 OMA-IM-2006-0217R01 OMA-IM-2006-0218R02 OMA-IM-2006-0219R02 OMA-IM-2006-0221R01 OMA-IM-2006-0222R01 OMA-IM-2006-0224 OMA-IM-2006-0225 OMA-IM-2006-0228R01 OMA-IM-2006-0229R01 OMA-IM-2006-0233R01 OMA-IM-2006-0235 OMA-IM-2006-0239
	08 Jun 2006		Editorial cleanup

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Document Identifier	Date	Sections	Description
	01 Aug 2006		OMA-IM-2006-0237R02 OMA-IM-2006-0250R01 OMA-IM-2006-0257R01 OMA-IM-2006-0258R01 OMA-IM-2006-0259R01 OMA-IM-2006-0260R01 OMA-IM-2006-0262 OMA-IM-2006-0264R01 OMA-IM-2006-0265 OMA-IM-2006-0266 OMA-IM-2006-0267 OMA-IM-2006-0269 OMA-IM-2006-0270 OMA-IM-2006-0271R01 OMA-IM-2006-0272 OMA-IM-2006-0273R01 OMA-IM-2006-0274R01 OMA-IM-2006-0276R01 OMA-IM-2006-0277R01 OMA-IM-2006-0279R02 OMA-IM-2006-0280 OMA-IM-2006-0281 OMA-IM-2006-0282 OMA-IM-2006-0283
	08 Aug 2006		OMA-IM-2006-0256R01
Draft Versions: OMA-TS-IM_SIMPLE-V1_0	05 Sep 2006		OMA-IM-2006-0169R02 OMA-IM-2006-0289R02 OMA-IM-2006-0302 OMA-IM-2006-0303R01 OMA-IM-2006-0320 OMA-IM-2006-0321R01 OMA-IM-2006-0329R01 OMA-IM-2006-0330R01 OMA-IM-2006-0332 OMA-IM-2006-0333 OMA-IM-2006-0334R01 OMA-IM-2006-0336R01 OMA-IM-2006-0337R01 OMA-IM-2006-0338R01 OMA-IM-2006-0339R01 OMA-IM-2006-0344 OMA-IM-2006-0348R02 OMA-IM-2006-0349R02 OMA-IM-2006-0357
	13 Sep 2006		OMA-IM-2006-0097R02 OMA-IM-2006-0297R02 OMA-IM-2006-0314 OMA-IM-2006-0343
	26 Sep 2006		OMA-IM-2006-0370R02 OMA-IM-2006-0373 OMA-IM-2006-0377 OMA-IM-2006-0381

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Document Identifier	Date	Sections	Description
	02 Oct 2006		OMA-IM-2006-0380 OMA-IM-2006-0383 OMA-IM-2006-0386 OMA-IM-2006-0387R01 OMA-IM-2006-0388 OMA-IM-2006-0390 OMA-IM-2006-0395 OMA-IM-2006-0396 OMA-IM-2006-0397R02 OMA-IM-2006-0398 OMA-IM-2006-0399
	19 Oct 2006		OMA-IM-2006-0308R03 OMA-IM-2006-0376R01 OMA-IM-2006-0382R01 OMA-IM-2006-0392R02 OMA-IM-2006-0393R02 OMA-IM-2006-0400 OMA-IM-2006-0401R02 OMA-IM-2006-0402R02 OMA-IM-2006-0403 OMA-IM-2006-0404R01 OMA-IM-2006-0408 OMA-IM-2006-0409R01 OMA-IM-2006-0413R01 OMA-IM-2006-0414 OMA-IM-2006-0423R01 OMA-IM-2006-0425R01 OMA-IM-2006-0427R01 OMA-IM-2006-0431R01 OMA-IM-2006-0433 OMA-IM-2006-0434R01 OMA-IM-2006-0435R02 OMA-IM-2006-0437R01 OMA-IM-2006-0438R01 OMA-IM-2006-0439R01 OMA-IM-2006-0440 OMA-IM-2006-0441R01 OMA-IM-2006-0442R01
			OMA-IM-2006-0447 OMA-IM-2006-0448 OMA-IM-2006-0449R01 OMA-IM-2006-0450 OMA-IM-2006-0452R01 OMA-IM-2006-0454 OMA-IM-2006-0456 OMA-IM-2006-0458R01 OMA-IM-2006-0461R02 OMA-IM-2006-0466R01
	20 Oct 2006		Final version without change marks
	30 Oct 2006	All	Editorial clean-up of document styles.

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Document Identifier	Date	Sections	Description
	17 Nov 2006		OMA-IM-2006-0472 OMA-IM-2006-0475 OMA-IM-2006-0477 OMA-IM-2006-0478 OMA-IM-2006-0479 OMA-IM-2006-0480 OMA-IM-2006-0481R01 OMA-IM-2006-0482
	23 Nov 2006		Editorial cleanup to remove all editor's notes and OMA-IM-2006-0489 OMA-IM-2006-0491R01 OMA-IM-2006-0493
	28 Nov 2006		Editorial cleanup to renumber SCR table entries and OMA-IM-2006-0486R02
	29 Nov 2006		Functional name changed to SIMPLE IM. Minor editorial clean-up.
	12 Mar2007		Intermediate version with the following approved CRs incorporated OMA-IM-2006-0525 OMA-IM-2006-0529 OMA-IM-2006-0530 OMA-IM-2006-0534 OMA-IM-2006-0536 OMA-IM-2006-0539 OMA-IM-2006-0540 OMA-IM-2006-0541R04 OMA-IM-2006-0542 OMA-IM-2007-0002R01 OMA-IM-2007-0019 OMA-IM-2007-0058
	16 Apr 2007		OMA-IM-2006-0533R01 OMA-IM-2006-0544 OMA-IM-2006-0547R01 OMA-IM-2006-0557 OMA-IM-2006-0565R02

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Document Identifier	Date	Sections	Description
	21 May 2007		OMA-IM-2006-0526R02 OMA-IM-2006-0549R01 OMA-IM-2007-031R02 OMA-IM-2007-063 OMA-IM-2007-065R04 OMA-IM-2007-072R01 OMA-IM-2007-074 OMA-IM-2007-082 OMA-IM-2007-096R01 OMA-IM-2007-097 OMA-IM-2007-112R01 OMA-IM-2007-113R01 OMA-IM-2007-114R01 OMA-IM-2007-116 OMA-IM-2007-117R01 OMA-IM-2007-118 OMA-IM-2007-123 OMA-IM-2007-125 OMA-IM-2007-127R03 OMA-IM-2007-128R01 OMA-IM-2007-129R01 OMA-IM-2007-130R01 OMA-IM-2007-131 OMA-IM-2007-137R01 OMA-IM-2007-138 OMA-IM-2007-139 OMA-IM-2007-142R01 OMA-IM-2007-153 OMA-IM-2007-154R01 OMA-IM-2007-155R03 OMA-IM-2007-157R01 OMA-IM-2007-159 OMA-IM-2007-162R01 OMA-IM-2007-166 OMA-IM-2007-167

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Document Identifier	Date	Sections	Description
	06 Jun 2007		OMA-IM-2007-160R01 OMA-IM-2007-161R01 OMA-IM-2007-163R02 OMA-IM-2007-168 OMA-IM-2007-174 OMA-IM-2007-175R01 OMA-IM-2007-176 OMA-IM-2007-177 OMA-IM-2007-178R01 OMA-IM-2007-179R01 OMA-IM-2007-180R01 OMA-IM-2007-185R01 OMA-IM-2007-186 OMA-IM-2007-188R02 OMA-IM-2007-189R01 OMA-IM-2007-190 OMA-IM-2007-191R01 OMA-IM-2007-192R01 OMA-IM-2007-193R02 OMA-IM-2007-194R01 OMA-IM-2007-195R01 OMA-IM-2007-196R01 OMA-IM-2007-197 OMA-IM-2007-199 OMA-IM-2007-200R01 OMA-IM-2007-203R03 OMA-IM-2007-204R01 OMA-IM-2007-207 OMA-IM-2007-209 OMA-IM-2007-210 OMA-IM-2007-211R02 OMA-IM-2007-214 OMA-IM-2007-215 OMA-IM-2007-216R01 OMA-IM-2007-218 OMA-IM-2007-219 OMA-IM-2007-265 OMA-IM-2007-268R01

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Document Identifier	Date	Sections	Description
	June 15, 2007		OMA-IM-2007-047R01 OMA-IM-2007-083R02 OMA-IM-2007-096R03 OMA-IM-2007-124 OMA-IM-2007-171 OMA-IM-2007-181R02 OMA-IM-2007-208R02 OMA-IM-2007-217R01 OMA-IM-2007-231 OMA-IM-2007-232 OMA-IM-2007-234R01 OMA-IM-2007-236 OMA-IM-2007-237R01 OMA-IM-2007-238R01 OMA-IM-2007-239 OMA-IM-2007-240 OMA-IM-2007-241R01 OMA-IM-2007-242 OMA-IM-2007-251 OMA-IM-2007-252R01 OMA-IM-2007-253 OMA-IM-2007-254 OMA-IM-2007-255R01 OMA-IM-2007-258 OMA-IM-2007-266 OMA-IM-2007-267 OMA-IM-2007-273 OMA-IM-2007-275R01 OMA-IM-2007-278 OMA-IM-2007-279R01 OMA-IM-2007-280 OMA-IM-2007-282R01
	13 Jul 2007		OMA-IM-2007-294R02 OMA-IM-2007-303R01 OMA-IM-2007-306
	17 Jul 2007	All	Editorial clean-up
	20 Jul 2007		Links added in References section
	16 Aug 2007	n/a	Status changed to Candidate TP doc #: OMA-TP-2007-0301R02-INP_SIMPLE_IM_ERP_for_Candidate_approval

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Appendix B Static Conformance Requirements (Normative)

The notation used in this appendix is specified in [IOPPROC].

B.1 SCR for Session Mode Messaging

B.1.1 Originating Client Procedures for Session Mode Messaging

Item	Function	Reference	Status	Requirement
IMSpec-SMM-C-001	Establishing One to One IM Session	7.1.1.2	M	
IMSpec-SMM-C-002	Establishing an IM Ad-Hoc Conference	7.1.1.3	M	
IMSpec-SMM-C-003	Establishing Pre-Defined IM Conference	7.1.1.4,	M	
IMSpec-SMM-C-004	Joining A chat room	7.1.1.10	M	
IMSpec-SMM-C-005	Using Chat alias in Conference	7.2.3.2	M	
IMSpec-SMM-C-006	Sending Private message	7.2.3.4	O	
IMSpec-SMM-C-007	Adding users to an IM Conference session	7.1.1.7	M	
IMSpec-SMM-C-008	Extending one-to-one to one-to-many	7.1.1.6, Appendix M	M	
IMSpec-SMM-C-009	Sending SIP REFER with a BYE Method to a conference to expel a user from a session	**Error! Reference source not found.**	M	
IMSpec-SMM-C-010	Subscription to conference event package	7.1.1.11	O	
IMSpec-SMM-C-011	Leaving an IM Session	7.1.1.12	M	
IMSpec-SMM-C-012	Cancelling an IM Session	7.1.1.13	M	
IMSpec-SMM-C-013	IM Client sending composition status	7.1.3.4	O	
IMSpec-SMM-C-014	Initiating IM Session Modification	7.1.1.5	O	
IMSpec-SMM-C-015	Rejoining IM Conference Session	7.1.1.9	O	

B.1.2 Terminating Client Procedures for Session Mode Message

Item	Function	Reference	Status	Requirement
IMSpec-SMM-C-016	IM Client receiving invitation for an IM Session	7.1.2.1	M	
IMSpec-SMM-C-017	IM Client receiving release for an IM Session	7.1.2.3	M	
IMSpec-SMM-C-018	IM Client receiving an	7.1.2.2	O	

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Item	Function	Reference	Status	Requirement
	IM Session modification request			
IMSpec-SMM-C-019	IM Client receiving an IM session SIP CANCEL request	7.1.2.4	M	
IMSpec-SMM-C-020	IM Client receiving composition status	7.1.3.5	O	
IMSpec-SMM-C-021	IM Client receiving Private message	7.2.3.4	M	

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B.1.3 Controlling Server Procedures for Session Mode Messaging

Item	Function	Reference	Status	Requirement
IMSpec-SMM-S-001	IM Server receiving invitation for an IM Session	7.2.1.1	M	
IMSpec-SMM-S-002	IM Server receiving cancellation for an IM Session	7.2.2.4	M	
IMSpec-SMM-S-003	IM Server receiving release for an IM Session	7.2.2.5	M	
IMSpec-SMM-S-004	IM Server receiving a request for an Ad-hoc IM Group Session	7.2.1.2	M	
IMSpec-SMM-S-005	IM Server receiving a request for a Pre-defined IM Group	7.2.1.3	M	
IMSpec-SMM-S-006	IM Server generating SIP INVITE requests	7.2.2.2	M	
IMSpec-SMM-S-007	IM Server generating a requests for users in an Ad-hoc IM Group Session	7.2.1.2	M	
IMSpec-SMM-S-008	IM Server generating a SIP INVITE requests for Users in a Pre-defined IM Group	7.2.2.2	M	
IMSpec-SMM-S-009	IM Server receiving IM Session modification request	7.2.1.6	M	
IMSpec-SMM-S-010	Rejoining IM Group Session request	7.2.1.5	M	
IMSpec-SMM-S-011	Adding participants to IM Group Session request	7.2.1.7	M	
IMSpec-SMM-S-012	Removal of participants from IM Session	**Error! Reference source not found.**	M	
IMSpec-SMM-S-013	SIP BYE request received in a IM Session	7.2.1.10	M	
IMSpec-SMM-S-014	Subscribing to participant information	7.2.1.12	O	
IMSpec-SMM-S-015	IM Session modification	7.2.2.6	O	
IMSpec-SMM-S-016	IM Server generating SIP Notify request	7.2.2.10	M	
IMSpec-SMM-S-017	IM Server terminating subscriptions	7.2.2.11	O	

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B.1.4 Participating Server Procedures for Session Mode Messaging

B.1.4.1 Originating participating functions

Item	Function	Reference	Status	Requirement
IMSpec-SMM-S-018	IM Server receiving invitation for an IM Session	6.1.1.2.2	M	
IMSpec-SMM-S-019	IM Server receiving cancellation for an IM Session	6.1.1.2.7	M	
IMSpec-SMM-S-020	IM Server receiving release for an IM Session	6.1.1.2.8	M	
IMSpec-SMM-S-021	Receiving IM Session modification	6.1.1.2.4	M	
IMSpec-SMM-S-022	Receiving SIP SUBSCRIBE request	6.1.1.2.5	M	
IMSpec-SMM-S-023	Receiving SIP REFER request	6.1.1.2.6	M	

B.1.4.2 Terminating participating functions

Item	Function	Reference	Status	Requirement
IMSpec-SMM-S-025	IM Server receiving request for IM Session	6.1.2.2.2	M	
IMSpec-SMM-S-026	IM Server receiving IM Session modification	6.1.2.2.3	M	
IMSpec-SMM-S-027	IM Server receiving cancellation for an IM Session	6.1.2.2.4	M	
IMSpec-SMM-S-028	IM Server receiving release for an IM Session	6.1.2.2.5	M	

B.2 SCR for Large Message Mode Messaging

B.2.1 Originating Client Procedures for Large Message Mode

Item	Function	Reference	Status	Requirement
IMSpec-LMM-C-001	IM Client sending Large Message to one user	9.1.1.2	M	
IMSpec-LMM-C-002	IM Client sending Large Message to URI-List (more than one user)	9.1.1.2	M	
IMSpec-LMM-C-003	IM Client sending Large Message to Pre-defined group	9.1.1.2	M	
IMSpec-LMM-C-004	IM Client cancelling a Large Message	9.1.2	M	
IMSpec-LMM-C-005	IM Client releasing a Large Message Session	9.1.3	M	

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B.2.2 Terminating Client Procedures for Large Message Mode

Item	Function	Reference	Status	Requirement
IMSpec-LMM-C-006	IM Client receiving invitation to a Large Message IM Session	9.2.1, 9.2.1.2	M	
IMSpec-LMM-C-007	IM Client receiving release to a Large Message IM Session	9.2.2	M	

B.2.3 Controlling Server Procedures for Large Message Mode

Item	Function	Reference	Status	Requirement
IMSpec-LMM-S-001	IM Server receiving invitation to a Large Message IM Session	9.3.1.1	M	
IMSpec-LMM-S-002	IM Server receiving cancellation to a Large Message invitation	9.3.1.2	M	
IMSpec-LMM-S-003	IM Server receiving release to a Large Message IM Session	9.3.1.3	M	
IMSpec-LMM-S-004	IM Server receiving a Large Message request for an Ad-hoc IM Group	9.3.1.1, 7.2.1.2	M	
IMSpec-LMM-S-005	IM Server receiving a Large Message request for a Pre-defined IM Group	9.3.1.1, 7.2.1.3	M	
IMSpec-LMM-S-006	IM Server generating Large Message requests	9.3.2	M	
IMSpec-LMM-S-007	IM Server generating Large Message requests for an Ad-hoc IM Group	9.3.2.1	M	
IMSpec-LMM-S-008	IM Server generating Large Message requests for a Pre-defined IM Group	9.3.2.1	M	

B.2.4 Participating Server Procedures for Large Message Mode

Item	Function	Reference	Status	Requirement
IMSpec-LMM-S-009	Originating Participating Server receiving an invitation to a Large Message IM Session	6.1.1.4.1	M	
IMSpec-LMM-S-010	Originating Participating Server receiving a cancellation to a Large Message IM Session	6.1.1.4.2	M	
IMSpec-LMM-S-011	Originating Participating Server receiving a release to a Large Message IM Session	6.1.1.4.3	M	
IMSpec-LMM-S-012	Terminating Participating Server	6.1.2.4.1	M	

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Item	Function	Reference	Status	Requirement
	receiving an invitation to a Large Message IM Session			
IMSpec-LMM-S-013	Terminating Participating Server receiving a cancellation to a Large Message IM Session	6.1.2.4.2	M	
IMSpec-LMM-S-014	Terminating Participating Server receiving a release to a Large Message IM Session	6.1.2.4.3	M	

B.3 SCR for Pager Mode

B.3.1 Originating Client Procedures for Pager Mode

Item	Function	Reference	Status	Requirement
IMSpec-PMM-C-001	IM Client Sending SIP MESSAGE to one user	8.1.1	M	IMSpec-PGO-C-001
IMSpec-PMM-C-002	IM Client Sending SIP MESSAGE to URI-List(More than one user)	8.1.1	M	IMSpec-PGO-C-001
IMSpec-PMM-C-003	IM Client Sending SIP MESSAGE to Pre-defined group	8.1.1	M	IMSpec-PGO-C-001
IMSpec-PMM-C-004	IM Client Sending SIP MESSAGE to an on-going SIP Session	8.1.1	M	IMSpec-PGO-C-001
IMSpec-PMM-C-005	IM Client Sending SIP MESSAGE with external content	8.1.1	O	IMSpec-PGO-C-001

B.3.2 Terminating Client Procedures for Pager Mode

Item	Function	Reference	Status	Requirement
IMSpec-PMM-C-007	IM Client receiving SIP MESSAGE	8.2.1	M	
IMSpec-PMM-C-008	IM Client receiving SIP MESSAGE with external content	8.2.1	O	

B.3.3 Participating Server Procedures for Pager Mode Messaging

Item	Function	Reference	Status	Requirement
IMSpec-PMM-S-001	Originating Participating Server receiving a SIP MESSAGE	6.1.1.3.1	M	
IMSpec-PMM-S-002	Terminating Participating Server receiving a SIP MESSAGE	6.1.2.1	M	
IMSpec-GA-S-001	Originating Participating	6.1.2.6	M	

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Item	Function	Reference	Status	Requirement
	Server receiving a Group Advertisement			

B.3.4 Terminated at the Controlling Function for Pager Mode

Item	Function	Reference	Status	Requirement
IMSpec-PMM-S-003	Receiving SIP MESSAGE request for group communication	9.3.1.1	M	IMSpec-COR-S-001

B.3.5 Originated by the Controlling Function for Pager Mode

Item	Function	Reference	Status	Requirement
IMSpec-PMM-S-004	Sending SIP MESSAGE request to each member of the URI-List	8.3.2.1	O	IMSpec-COR-S-001
IMSpec-PMM-S-005	Sending SIP MESSAGE request to each member of the Pre-defined Group	8.3.2.1	O	IMSpec-COR-S-001
IMSpec-PMM-S-006	Sending SIP MESSAGE request to each member of the on-going SIP Session	8.3.2.1	O	IMSpec-COR-S-001

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B.4 File Transfer

B.4.1 Originating Client Procedures for File transfer

Item	Function	Reference	Status	Requirement
IMSpec-FT-C-001	IM Client Transferring File	10	O	IMSpec-LMM-C-001
IMSpec-FT-C-002	IM Client releasing File transfer Session with a SIP BYE	10	O	

B.4.2 Terminating Client Procedures for File transfer

Item	Function	Reference	Status	Requirement
IMSpec-FT-C-003	IM Client receiving a Transferring File request	9.2.1, 9.2.1.2	O	IMSpec-LMM-C-010

B.5 SCR Table for Deferred Messages

B.5.1 Client Procedures for Deferred messages

Item	Function	Reference	Status	Requirement
IMSpec-DM-C-001	IM Client receiving deferred message metadata	**Error! Reference source not found.**	M	IMSpec-DMO-C-004
IMSpec-DM-C-002	Selective retrieval of deferred messages (SIP INVITE – URI List)	12.1.1	O	
IMSpec-DM-C-003	Retrieval of all deferred messages (SIP INVITE – No URI List)	12.1.1	M	
IMSpec-DM-C-004	IM Client Retrieving deferred messages metadata	12.1.2	M	
IMSpec-DM-C-005	Deleting deferred messages	12.1.3	M	
IMSpec-DM-C-006	IM Client sending delivery report for deferred messages	12.1.4	M	

B.5.2 Participating Server procedures for Deferred Messages

Item	Function	Reference	Status	Requirement
IMSpec-DM-S-001	IM Server storing a Deferred Message	12.2.2.3	M	
IMSpec-DM-S-002	IM Server determining availability of the IM Client for delivering Deferred Messages	12.2.2.2, H.1.1	M	
IMSpec-DM-S-003	IM Server delivering Deferred Messages	12.2.2.2, 12.2.2.5	M	
IMSpec-DM-S-004	Receive request to retrieve deferred messages	12.2.1	M	
IMSpec-DM-S-005	Send INVITE for MSRP session with a client to deliver the deferred messages	12.2.2.2, 12.2.1.1.2	M	

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Item	Function	Reference	Status	Requirement
IMSpec-DM-S-006	IM Server sending report for delivery failure in deferred messages	12.2.2.6	M	

B.6 SCR Table for Conversation history

B.6.1 Originating Client Procedures for Conversation History

Item	Function	Reference	Status	Requirement
IMSpec-HIST-C-001	IM Client invokes IM History	13.1.1	O	
IMSpec-HIST-C-002	IM Client terminates an ongoing recording of an IM session	13.1.2	O	
IMSpec-HIST-C-003	IM Client retrieves an IM history	13.1.3	O	
IMSpec-HIST-C-004	IM Client sending a request to delete conversation histories	13.2.5	O	

B.6.2 Terminated at Conversation History Function Procedures for Conversation History

Item	Function	Reference	Status	Requirement
IMSpec-HIST-S-001	IM History function receiving a request for retrieving stored history	13.2.1	O	IMSpec-HIST-S-0010
IMSpec-HIST-S-002	IM History function receiving a request for creating a SIP Session history	13.2.2	O	
IMSpec-HIST-S-003	IM History function receiving a SIP message or a MSRP session to be stored	13.2.3	O	IMSpec-HIST-S-008
IMSpec-HIST-S-004	IM History function receiving a session cancellation	13.2.4	O	
IMSpec-HIST-S-005	IM History function receiving a session release	13.2.5	O	IMSpec-HIST-S-008
IMSpec-HIST-S-006	IM History function receiving a request to delete history	13.1.3	O	

B.6.3 Originated at Conversation History Function Procedures for Conversation History

Item	Function	Reference	Status	Requirement
IMSpec-HIST-S-007	IM History function inviting himself to a conference	13.3.1	O	
IMSpec-HIST-S-008	IM History function updating the IM XDMS	13.3.2	O	
IMSpec-HIST-S-009	Delivering IM History	13.3.3	O	

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Item	Function	Reference	Status	Requirement
IMSpec-HIST-S-0010	IM History delivering a Pager mode message	13.3.3.1	O	
IMSpec-HIST-S-0011	IM History delivering a stored IM session	13.3.3.2	O	

B.7 SCR Table for IM Settings

B.7.1 Originating Client Procedures for IM Settings

Item	Function	Reference	Status	Requirement
IMSpec-SS-C-001	IM Client publishing Service Setting	5.2.2	M	
IMSpec-SS-C-002	IM Client publishes IM specific Presence	Appendix H	O	

B.7.2 Participating Server Procedures for IM Settings

Item	Function	Reference	Status	Requirement
IMSpec-SS-S-001	IM Service setting procedure	6.1.1.5	M	
IMSpec-SS-S-002	IM Server updates the IM specific Presence Attribute Values	Appendix H	O	

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Appendix C Initial Filter Criteria (Informative)

C.1 General

The 3GPP IMS/ 3GPP2 MMD SIP/IP Core uses initial Filter Criteria to determine the routing of initial SIP requests between the home network SIP/IP Core and Application Servers such as the IM Server. The initial Filter Criteria is part of the IM User subscription information and represent the provisioned subscription of a IM User to an application(s).

If some other SIP/IP Core than 3GPP IMS/ 3GPP2 MMD that does not use initial Filter Criteria is used to deploy the IM service then the logic identified here needs to be implemented by the SIP/IP Core to route the IM related SIP requests to the IM Server.

Based on filter criteria SIP/IP Core sends a 3rd party REGISTER to the IM Server.

Further details on initial Filter Criteria are specified in [3GPP TS 23.218] and [3GPP TS 29.228].

C.2 Originating Filter Criteria

NOTE: Originating Filter Criteria is indexed on the P-Asserted-Identity header.

CASE method="INVITE" AND header="Accept-Contact" = "+g.oma.sip-im"

THEN: ROUTE request to the specified IM Server Originating Port Address

CASE method="MESSAGE" AND header="Accept-Contact" = "+g.oma.sip-im"

THEN: ROUTE request to the specified IM Server Originating Port Address

CASE method="SUBSCRIBE" AND header="Accept-Contact" = "+g.oma.sip-im"

THEN: ROUTE request to the specified IM Server Originating Port Address

CASE method="REFER" AND header="Accept-Contact" = "+g.oma.sip-im"

THEN: ROUTE request to the specified IM Server Originating Port Address

C.3 Terminating Filter Criteria

NOTE: Terminating Filter Criteria is indexed on the Request URI.

CASE method="INVITE" AND header="Accept-Contact" = "+g.oma.sip-im"

THEN: ROUTE request to the specified IM Server Terminating Port Address

CASE method="MESSAGE" AND header="Accept-Contact" = "+g.oma.sip-im"

THEN: ROUTE request to the specified IM Server Terminaing Port Address

CASE method= “MESSAGE” THEN: ROUTE request through the SIP Core.

NOTE: To allow routing MESSAGE message from clients that do not support the “+g.oma.sip-im” to the specified IM Server Originating Port Address, the port number can be configured by the operator.

CASE method="SUBSCRIBE" AND header="Accept-Contact" = "+g.oma.sip-im"

THEN: ROUTE request to the specified IM Server Terminating Port Address

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CASE method="REFER" AND header="Accept-Contact" = "+g.oma.sip-im"

THEN: ROUTE request to the specified IM Server Terminating Port Address

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Appendix D Examples of Signalling Flows (Informative)

D.1 Subscribe to the conference state

This section shows an example on how one IM User subscribes to the conference state information during an ongoing IM conference Session. The flow is as shown in Figure 1 *"A Participant at the IM Client A subscribes to conference state information"*.

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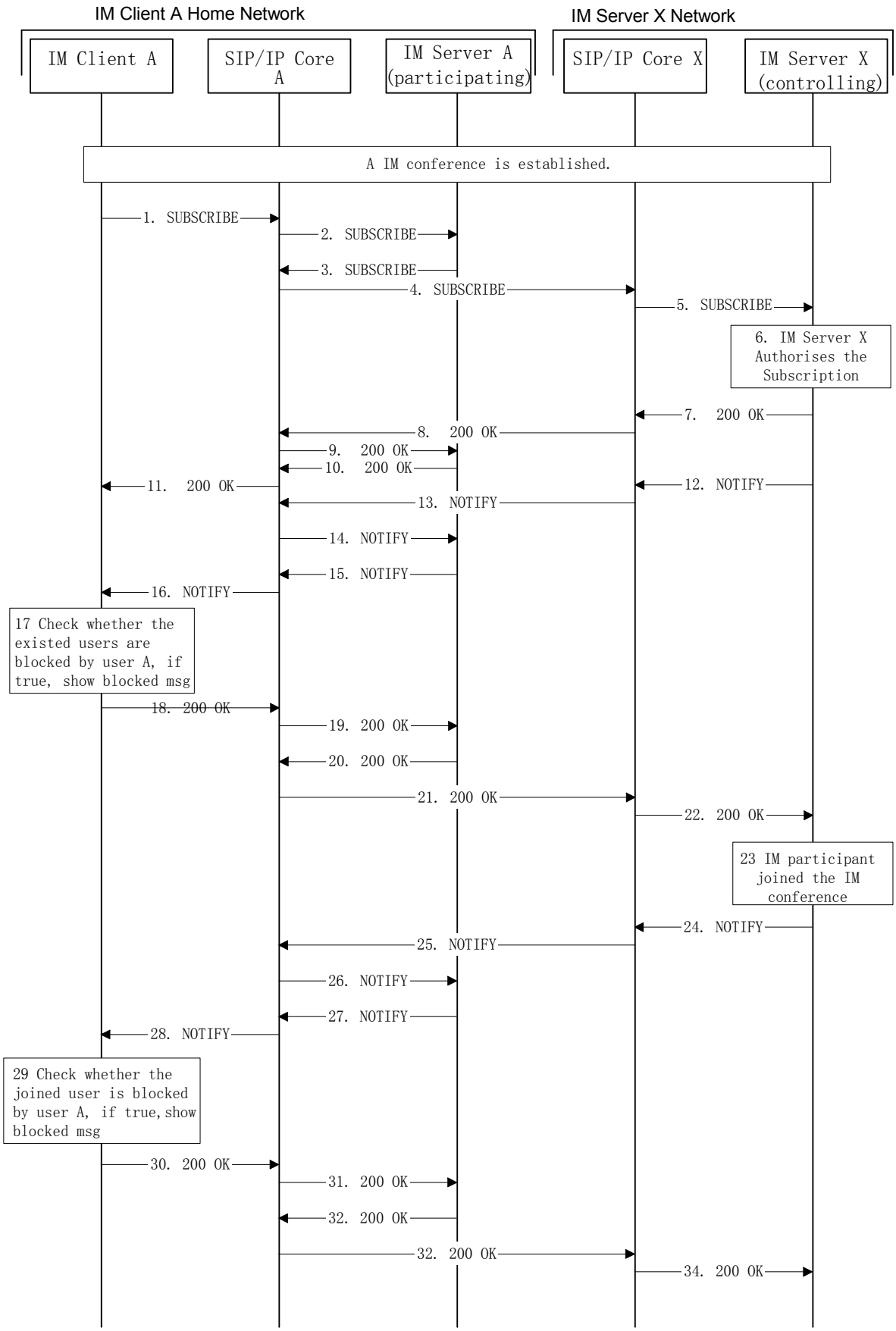

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Figure 1: A Participant at the IM Client A subscribes to conference state information

The steps of the flows are as follows:

1. **SIP SUBSCRIBE request (from IM Client A to SIP/IP Core A)**

   The IM Client A sends the SIP SUBSCRIBE request to the SIP/IP Core. The SIP request includes the IM Group Identity of the IM Group or the ad-hoc IM Session Identity in the Request-URI and an Accept-Contact header with the feature-tag '+g.oma.sip-im'.

2. **SIP SUBSCRIBE request (from SIP/IP Core A to IM Server A)**

   The SIP/IP Core A sends the SIP SUBSCRIBE request to the IM Server A performing the Participating IM Function based on the feature-tag'+g.oma.sip-im' in the Accept-Contact header.

3. **SIP SUBSCRIBE request (from IM Server A to SIP/IP Core A)**

   The IM Server A performing the Participating IM Function does not recognise the IM Group Identity or the IM Session Identity as its own and sends the SIP SUBSCRIBE request to the SIP/IP Core A.

4. **SIP SUBSCRIBE request (from SIP/IP Core A to SIP/IP Core X)**

   The SIP/IP Core A sends the SIP SUBSCRIBE request to the SIP/IP Core X based on the Request-URI.

5. **SIP SUBSCRIBE request (from SIP/IP Core X to IM Server X)**

   The SIP/IP Core X sends the SIP SUBSCRIBE request to the IM Server X performing the Controlling IM Function based on the IM Group Identity in the Request-URI and the feature-tag '+g.oma.sip-im' in the Accept-Contact header.

6. **The authorization (IM Server X)**

   The IM Server X authorizes the IM User at the IM Client A to receive event information. The authorization may, for example, be based on membership in the IM Group, number of IM Users already subscribing to the event information or if the IM User is a Participant in the ongoing IM Session.

7. **SIP 200 “OK” response (from IM Server X to SIP/IP Core X)**

   The authorization is successful and the IM Server X (performing the Controlling IM Function) sends the SIP 200 "OK" response to the SIP SUBSCRIBE request to SIP/IP Core X.

8. **SIP 200 “OK” response (from SIP/IP Core X to SIP/IP Core A)**

   The SIP/IP Core X forwards the SIP 200 "OK" response to the SIP/IP Core A

9. **SIP 200 “OK” response (from SIP/IP Core A to IM Server A)**

   The SIP/IP Core A forwards the SIP 200 "OK" response to the IM Server A

10. **SIP 200 “OK” response (from IM Server A to SIP/IP Core A)**

    The IM Server A forwards the SIP 200 "OK" response to the SIP/IP Core A

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11. SIP 200 “OK” response (from SIP/IP Core A to IM Client A)

The SIP/IP Core A forwards the SIP 200 "OK" response to the IM Client A

12 SIP NOTIFY request (from IM Server X to SIP/IP Core X)

The IM Server X performing the Controlling IM Function collects information about all Participants in the IM Session and sends a complete list of all Participants (referred to as a "full" output in the conference event package) in a SIP NOTIFY request to the SIP/IP Core X.

13. SIP NOTIFY request (from SIP/IP Core X to SIP/IP Core A)

The SIP/IP Core X forwards the SIP NOTIFY request to SIP/IP Core A

14. SIP NOTIFY request (from SIP/IP Core A to IM Server A)

The SIP/IP Core A forwards the SIP NOTIFY request to the IM Server A

15. SIP NOTIFY request (from IM Server A to SIP/IP Core A)

The IM Server A forwards the SIP NOTIFY request to the SIP/IP Core A

16. SIP NOTIFY request (from SIP/IP Core A to IM Client A)

The SIP/IP Core A forwards the SIP NOTIFY request to the IM Client A

17. Check blocked users and display them to user

The IM Client A checks whether the existed users are blocked by user A, if true, show the blocked users information message to the user A.

18. SIP 200 “OK” response (from IM Client A to SIP/IP Core A)

The IM Client A sends the SIP 200 "OK" response to the SIP NOTIFY request to the SIP/IP Core A.

19. SIP 200 “OK” response (from SIP/IP Core A to IM Server A)

The SIP/IP Core A forwards the SIP 200 "OK" response to the IM Server A.

20. SIP 200 “OK” response (from IM Server A to SIP/IP Core A)

The IM Server A forwards the SIP 200 "OK" response to the SIP/IP Core A.

21. SIP 200 “OK” response (from SIP/IP Core A to SIP/IP Core X)

The SIP/IP Core A forwards the SIP 200 "OK" response to the SIP/IP Core X.

22. SIP 200 “OK” response (from SIP/IP Core X to IM Server X)

The SIP/IP Core X forwards the SIP 200 "OK" response to the IM Server X.

NOTE: The steps 23-34 only happen if the subscription is active.

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23. The Participant IM Client C joins the IM Session.

24. SIP NOTIFY request (from IM Server X to SIP/IP Core X)

The IM Server X performing the Controlling IM Function sends a SIP NOTIFY request to the SIP/IP Core X. This time only information about the Participant joining the IM Session is sent (referred to by the conference event package as a "partial" output).

25. SIP NOTIFY request (from SIP/IP Core X to SIP/IP Core A)

The SIP/IP Core X forwards the SIP NOTIFY request to the SIP/IP Core A.

26. SIP NOTIFY request (from SIP/IP Core A to IM Server A)

The SIP/IP Core A forwards the SIP NOTIFY request to the IM Server A.

27. SIP NOTIFY request (from IM Server A to SIP/IP Core A)

The IM Server A forwards the SIP NOTIFY request to the SIP/IP Core A.

28. SIP NOTIFY request (from SIP/IP Core A to IM Client A)

The SIP/IP Core A forwards the SIP NOTIFY request to the IM Client A.

29. Check whether joined user blocked and display to user

The IM Client A checks whether the joined user is blocked by user A, if true, show the user information message to the user A.

30. SIP 200 “OK” response (from IM Client A to SIP/IP Core A)

The IM Client A sends the SIP 200 "OK" response to the SIP NOTIFY request to the SIP/IP Core A.

31. SIP 200 “OK” response (from SIP/IP Core A to IM Server A)

The SIP/IP Core A forwards the SIP 200 "OK" response to the IM Server A.

32. SIP 200 “OK” response (from IM Server A to SIP/IP Core A)

The IM Server A forwards the SIP 200 "OK" response to the SIP/IP Core A.

33. SIP 200 “OK” response (from SIP/IP Core A to SIP/IP Core X)

The SIP/IP Core A forwards the SIP 200 "OK" response to the SIP/IP Core X.

34. SIP 200 “OK” response (from SIP/IP Core X to IM Server X)

The SIP/IP Core X forwards the SIP 200 "OK" response to the IM Server X.

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D.2 Pushing Deferred Messages

When a user is offline and other user send IM messages to him/her, the network saves the IM messages into a message store entity of the IM Server. After the user registers into the IM Server to use IM service, IM Server should be able to push the deferred IM messages to the IM Client based on the service setting of user, when it is allowed by the operator.

The following example describes how to push deferred IM messages to a user.

Use MSRP to Push Deferred Messages

In this scenario, the Deferred IM Message will be sent to the IM Client.

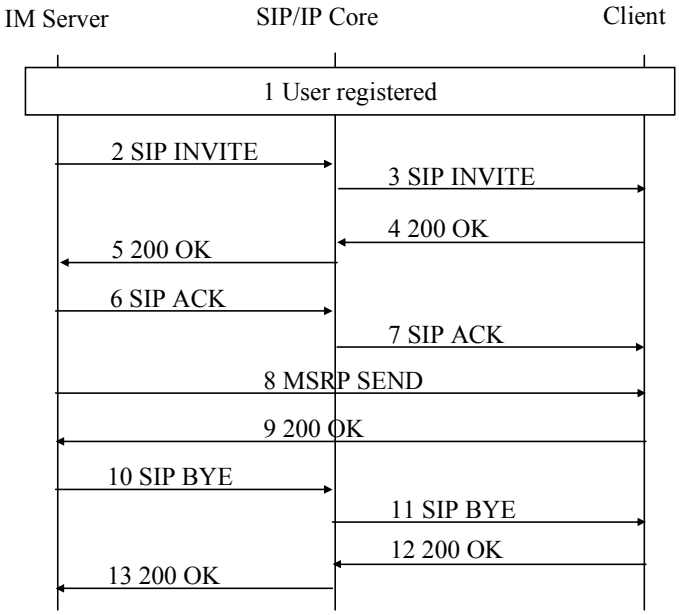

Figure 2: Pushing Deferred IM Messages

1. The user through IM Client registeres into IM Server.

2. One or more deferred IM messages are stored on the IM Server and the IM Server decides to send messages to the client by MSRP channel. So the IM Server sends a SIP INVITE request to the SIP/IP core to negotiate with the IM Client about establishing MSRP channel.

3. The SIP/IP Core sends the SIP INVITE to the IM Client based on information stored during registration.

4. The IM Client analyses the MSRP parameters and returns the agreed parameters by sending a SIP 200 "OK" response to the SIP/IP Core.

5. The SIP/IP Core forwards the SIP 200 "OK" response to the IM Server.

6. The IM Server acknowledges the SIP 200 "OK" response with a SIP ACK request sent to the SIP/IP Core.

7. The SIP/IP Core forwards the SIP ACK request to the IM Client.

8. The IM Server send the MSRP SEND (with the encapsulated deferred IM message and the timestamp of the time and date received by the IM Server) to the IM Client using the MSRP channel.

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The MSRP SEND request that will carry the deferred IM message as payload should encapsulate “SIP MESSAGE” message with the Content-Type message/sip or message/sipfrag or “MSRP SEND” messages with the Content type message/msrp.

The Call-ID in SIP MESSAGE and Message-ID in MSRP are kept intact, providing correlation with other SIP standard mechanism for UA processing transactions. The relevant header of the deferred message, e.g., From, To, P-Asserted-Identity, etc should be encapsulated into the MSRP SEND request content.

9. The IM Client responds with an MSRP 200 “OK” to the IM Server using the MSRP channel.

10. If the IM Server and the IM Client do not need the MSRP channel, the IM Server sends the SIP BYE to SIP/IP Core to disconnect the MSRP channel with the IM Client.

11. The SIP/IP Core forwards the SIP BYE request to the IM Client.

12. The IM Client responsds to the IM Client with SIP 200 "OK" through the SIP/IP Core.

13. The SIP/IP Core forwards the SIP 200 "OK” to the IM Server.

NOTE: If more than one deferred IM messages are to be sent to the client before step10, the IM Server will repeat the step 8-9.

Examples of the deferred messages encapsulate in MSRP

1. If the deferred message to be sent is a message received by IM Server in a SIP MESSAGE:

IM Server has received and stored deferred message as:

```
MESSAGE sip:user2@imserver.com SIP/2.0
Via: SIP/2.0/TCP user1pc.imserver.com; branch=z9hG4bK776sgdkse
Max-Forwards: 70
From: sip:user1@imserver.com;tag=49583
To: sip:user2@imserver.com
Call-ID: asd88asd77a@1.2.3.4
CSeq: 1 MESSAGE
Content-Type: text/plain
Content-Length: 18


Watson, come here.
```

The IM Server pushes the deferred message to the client by MSRP:

```
MSRP dkei38sd SEND
To-Path: msrp://user2.imserver.com:7777/iau39;tcp
From-Path: msrp://imserver.com:8888/9di4ea;tcp
Message-ID: 452
Content-Type: message/sip


MESSAGE sip:user2@imserver.com SIP/2.0
Via: SIP/2.0/TCP user1pc.imserver.com;branch=z9hG4bK776sgdkse
Max-Forwards: 70
From: sip:user1@imserver.com;tag=49583
To: sip:user2@imserver.com
Call-ID: asd88asd77a@1.2.3.4
```

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Date: Thu, 21 Feb 2002 13:02:03 GMT

CSeq: 1 MESSAGE
Content-Type: text/plain
Content-Length: 18

Watson, come here.

2. If the deferred message to be sent, is a message received by IM Server in an MSRP SEND:

The IM Server has received and stored the deferred message as:

INVITE sip:user2@imserver.com SIP/2.0
To: <sip:user2@imserver.com>
From: <sip:user1@imserver.com>;tag=786
Call-ID: 3413an89KU
Content-Type: application/sdp

c=IN IP4 user1.imserver.com
m=message 7654 TCP/MSRP *
a=accept-types:text/plain
a=path:msrp://user1.imserver.com:7654/jshA7we;tcp

SIP/2.0 200 OK

To: <sip:user2@imserver.com>;tag=087js

From: <sip: user1@imserver.com >;tag=786

Call-ID: 3413an89KU

Content-Type: application/sdp

c=IN IP4 imserver.com

m=message 12763 TCP/MSRP *

a=accept-types:text/plain

a=path:msrp://imserver.com:12763/kjhd37s2s2;tcp

MSRP dkei38sd SEND
To-Path: msrp://imserver.com:12763/kjhd37s2s2;tcp
From-Path: msrp://user1.imserver.com:7654/jshA7we;tcp
Message-ID: 456
Content-Type: text/plain

Hi, Alice! I'm Bob!
-------dkei38sd$

BYE sip: user2@imserver.com SIP/2.0

.....

The IM Server pushes the deferred message to the client by MSRP:

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```
MSRP elfj49te SEND
To-Path: msrp://user2.imserver.com:7777/iau39;tcp
From-Path: msrp://imserver.com:8888/9di4ea;tcp
Message-ID: 453

Content-Type: multipart/mixed; boundary="boundary42"

 --boundary42


Content-Type: message/sip

INVITE sip: user2@imserver.com SIP/2.0
To: <sip:user2@imserver.com>
From: <sip:user1@imserver.com>;tag=786
Call-ID: 3413an89KU
Date: Thu, 21 Feb 2005 13:02:03 GMT

Content-Type: application/sdp

c=IN IP4 user1.imserver.com
m=message 7654 TCP/MSRP *
a=accept-types:text/plain
a=path:msrp://user1.imserver.com:7654/jshA7we;tcp


 --boundary42


Content-Type: message/sip

SIP/2.0 200 OK

To: <sip:user2@imserver.com>;tag=087js

From: <sip: user1@imserver.com >;tag=786

Call-ID: 3413an89KU

Date: Thu, 21 Feb 2005 13:02:03 GMT

Content-Type: application/sdp

c=IN IP4 imserver.com

m=message 12763 TCP/MSRP *

a=accept-types:text/plain

a=path:msrp://imserver.com:12763/kjhd37s2s2;tcp

 --boundary42


Content-Type: message/msrp


MSRP dkei38sd SEND
To-Path: msrp://imserver.com:7777/iau39;tcp
From-Path: msrp://user1.imserver.com:8888/9di4ea;tcp
```

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Message-ID: 456
Date: Thu, 21 Feb 2005 13:02:04 GMT

Content-Type: text/plain

Hi, Alice! I'm Bob!
-------dkei38sd$

--boundary42
Content-Type: message/sip

BYE sip:user2@imserver.com SIP/2.0

Date: Thu, 21 Feb 2005 13:02:05 GMT

.....

--boundary42-

-------elfj49te$

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D.3 Message Delivery to a Group and Delivery Notification

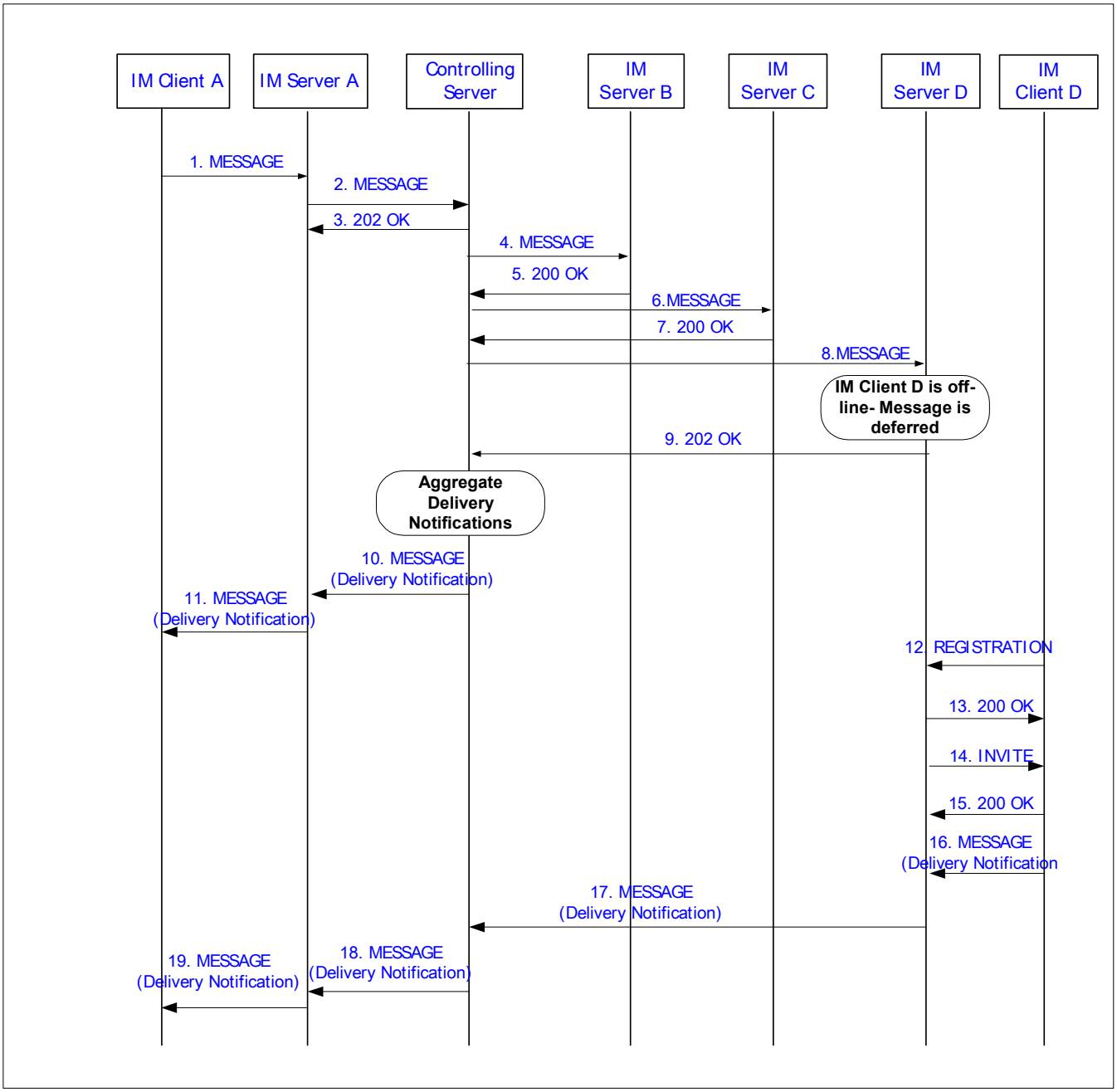

Figure 3: Message Delivery to a Group and Delivery Notification

1. User A sends a MESSAGE message to a group and requests successful Delivery Notification.
2. Server A forwards the MESSAGE to the Controlling Function.
3. The Controlling Server answers with a 202 OK indicating it has received the MESSAGE

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4. The Controlling Function sends the MESSAGE to Server B, serving user B.

5. Server B sends the MESSAGE to user B and forwards the 200 OK it receives from user B to the Controlling Server.

6. The Controlling Function sends the MESSAGE to Server C, serving user C.

7. Server C sends the MESSAGE to user C and forwards the 200 OK it receives from user C to the Controlling Server.

8. The Controlling Function sends the MESSAGE to Server D, serving user D.

9. User D is not on-line and cannot receive the MESSAGE. Server D saves the MESSAGE and marks it as a deferred MESSAGE and sends a 202 indicating it has received the MESSAGE.

10. The Controlling function aggregates the delivery notification responses from user B and user C and sends a MESSAGE containing Delivery Notification to server A.

11. Server A sends the MESSAGE with delivery notification to user A.

12. After a while user D becomes active and sends a REGISTER message to server D.

13. Server D sends a 200 OK to user D.

14. Server D sends the deferred MESSAGE to user D.

15. User D sends a 200 OK.

16. User D determines that a delivery notification was requested and sends a MESSAGE message with successful delivery notification to server D.

17-19. The MESSAGE with the successful delivery notification is sent all the way back to the user A.

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Appendix E IM Service Setting (Normative)

This appendix describes the IM specific service settings.

E.1 Structure of the Service Settings XML Document

The basic structure of the XML document containing Service Settings is defined in [RFC4354]. The XML Schema defined in [RFC4354] is extended with the following new XML elements and attributes for enabling new enabler service requirements as well as "multiple service" enabler functionality:

- an optional "service-id" XML attribute to all service setting specific XML elements for indicating which enabler's settings are being set;
- a new XML element <deferred-settings> for controlling the delivery of deferred messages;
- a new XML element <vis-settings> for controlling visibility of the user to other users;
- a new XML element <hist-settings> for controlling the storing of conversations.

The "service-id" XML attribute contains a string type of identifier of the enabler service.

The <deferred-settings> XML element contains zero or one <offline-delivery> element that contains an "active" XML attribute of type Boolean. The "active" attribute indicates whether the messages stored during the offline period of the client are pushed to the client when the client gets on-line. When the user prefers to get the messages pushed the value of the "active" attribute is set to 'true'. The default value of the "active" attribute is 'false'. Other elements and attributes from other namespaces MAY be present for the purposes of extensibility; elements and attributes from unknown namespaces SHALL be ignored. The <deferred-settings> element must contain at least one child XML element.

The <vis-settings> XML element contains zero or one <vis-status> element that contains an "active" XML attribute of type Boolean. The "active" attribute indicates whether the user prefers to be visible to other users. When the user prefers to be invisible the value of the "active" attribute is set to 'false'. The default value of the "active" attribute is 'true'. Other elements and attributes from other namespaces MAY be present for the purposes of extensibility; elements and attributes from unknown namespaces SHALL be ignored. The <vis-settings> element must contain at least one child XML element.

The <hist-settings> XML element contains one or more <hist-activation> elements that each contain an "active" XML attribute of type Boolean. The "active" attribute of <hist-activation> element indicates together with subelements whether the user prefers to store IM Sessions and/or messages. When the user prefers to activate storing the value of the "active" attribute is set to 'true'. The default value of the "active" attribute is 'false'. The <hist-activation> element contains at least one subelement, the <session-mode> or <pager-large-mode> or other potential extension elements . The <session-mode> and <pager-large-mode> subelements of the <hist-activation> element indicates to which issues the active attribute value relates to e.g. to IM Sessions mode or Pager mode/ Large Message messaging respectively. Other elements and attributes from other namespaces MAY be present for the purposes of extensibility; elements and attributes from unknown namespaces SHALL be ignored.

Note that the XML Schemas defined in section E.1.1.3 and [RFC4354] are normative and take precedence over the textual description.

E.2 IM Specific Service Settings XML Document

This section is informative unless otherwise separately stated.

Table 3 describes XML items and their values used to control a certain specific functionality at the IM Server.

The value of the "service-id" XML attribute for all IM Service Settings SHALL be the same as registered at OMNA for IM Presence information, which is 'IM'. When the Service Settings request is targeted to IM Server and contains only IM Service Settings the "service-id" attribute MAY be omitted.

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Use case	Used XML items	Value
Setting incoming IM Session barring active	isb-settings -> incoming-session-barring	active = true
Setting incoming pager mode and large mode IM barring active	ipab-settings -> incoming-personal-alert-barring	active = true
IM invisibility setting	vis-settings -> vis-status	active = false
Pager mode and large IM offline delivery activation	deferred-settings -> offline-delivery	active = true
IM conversation storing activation for session mode communication	hist-settings -> hist-activation -> session-mode	active = true
IM conversation storing activation for pager mode and large mode communication	hist-settings -> hist-activation -> pager-large-mode	active = true

Table 3: IM Service Settings depending on the use case

The following contains an example of IM Service Setting XML document. (Note that the "service-id" XML attribute may be omitted when publication is issued to the IM Server using the IM specific SIP feature tag and contains only IM Service Settings.) The example describes a case where the IM Client activates the IM Session Barring but allows the pager mode and large mode IMs, sets his/her visibility to other users invisible, does not want to store pager mode messages but session mode conversations and wants to get stored messages pushed when gets online.

```
<?xml version="1.0" encoding="UTF-8"?>
  <poc-settings xmlns="urn:oma:params:xml:ns:poc:poc-settings"
                                xmlns:ss=" urn:oma:xml:im:service-settings">
    <entity id="do39s8zksn2d98x">
      <isb-settings service-id="IM">
        <incoming-session-barring active="true"/>
      </isb-settings>
      <ipab-settings service-id="IM">
        <incoming-personal-alert-barring active="false"/>
      </ipab-settings>
      <ss:deferred-settings service-id="IM">
                <ss:offline-delivery active="true"/>
      </ss:deferred-settings>
      <ss:vis-settings service-id="IM">
                <ss:vis-status active="false"/>
      </ss:vis-settings>
      <ss:hist-settings service-id="IM">
                <ss:hist-activation active="false"><ss:pager-large-mode/></ss:hist-activation>
                <ss:hist-activation active="true"><ss:session-mode/></ss:hist-activation>
```

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```
      </ss:hist-settings>
    </entity>
  </poc-settings>
```

E.3 Extensions to Service Settings XML Schema

This section is normative.

The IM specific servide setting document SHALL conform the XML schema defined by that namespace "urn:oma:params:xml:ns:poc:poc-settings" described in [RFC4354] and the XML schema described in [XSD_IM_Service_Setting].

E.4 XML Schema Registration to OMNA

This is an informative section.

This section registers with OMNA the following new namespace: urn:oma:xml:im:service-settings.

E.5 URI parameters

History uri-parameter to be used to request a filename to be used to store IM History. The History Type uri-parameter takes the form:

historyfilename"="filename

Example 1:

In this example the IM Client is recording a part of an ongoing IM Session.

historyfilename= my_filename

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Appendix F OMA IM Parameter Definition and Conventions (Normative)

F.1 Release version in User-agent and Server headers

User agent and Server headers are used to indicate the release version and product information of the IM Clients and IM Servers.

The IM Client and the IM Server shall implement the User-Agent and Server headers, according to rules and procedures of [RFC3261] with the clarifications in this section specific for IM.

The User-Agent and Server headers ABNF are specified in [RFC3261] and extended as follows:

Server = "Server" HCOLON server-val *(LWS server-val)

User-Agent = "User-Agent" HCOLON server-val *(LWS server-val)

server-val = product / comment

product = IM-product / token [SLASH product-version]

product-version = token

This specification allows having several server-val tags. The first of those server-val tags shall be encoding according to the following ABNF:

IM-product = "IM-" IM-device-token (SLASH IM-product-version)

IM-device-token = "client" | "serv" | token

IM-product-version = "OMA1.0"

Where

client = IM Client

serv = IM Server

IM-product-version = OMA IM release version

Example 1:

In this example IM Client acting as UAC and the IM Server acting as UAS are OMA IM release version 1.0 products. The IM Client has inserted its own company and product name and version "Acme-Talk5000/v1.01".

User-Agent: IM-client/OMA1.0 Acme-Talk5000/v1.01

Server: IM-serv/OMA1.0

Example 2:

In this example both the IM Server acting as UAC and the IM Client acting as UAS are OMA IM release version 1.0 products.

User-Agent: IM-serv/OMA1.0

Server: IM-client/OMA1.0

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F.2 Global URI Definition an Convention

In order to maintain high compatibility for SIP User agents, a convention in creating and reserving a global Uri for OMA IM Functions : <scheme>:<Name of OMA IM function>@<hostname>

From RFC2396, the common syntax used for URL schemes that involve the direct use of an IP-based protocol to a specified server is as follows:

<scheme>: <userinfo>@<host>:<port>, where host = hostname|IPv4 address

"Userinfo" in the OMA convention case will be the "Name of function" , therefore the convention for defining OMA IM functionalities will be <sip>:<Name of OMA IM Function>@<hostname>

Name of OMA IM Function = "Deferred" | "History" | "Delete"

Where the hostname = Operator domain pointing to the particular location of the OMA IM function , for example sip: history@historyfunction1.example.com

The currently defined global URI in OMA are:

History Function = History@hostname

Deferred Function = Deferred@hostname

DELETE Function = Delete@hostname

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Appendix G OMA SEC Group security threats analysis(Informative)

OMA Security Group has analysed the potential SIMPLE IM security threats. When the SIP/IP Core corresponds with 3GPP/3GPP2 IMS, these potential security threats are addressed. If other SIP/IP Cores are used then these potential security threats need to be addressed by the SIP/IP Core:

1. Registering misleading usernames

   Currently with the OMA SIMPLE IM framework a user is required to have one private identity (which is kept internally by the SIP/IP Core service provider) and a number of public identities. Currently it is possible for users to register misleading public identities in order to fool or masquerade at the IM User Plane as other users. For example, a users real name may be John Smith and may have a private SIP address as: SIP:John.Smith@operator.net, however, John Smith can then register public ID's such as SIP:Bob.Holmes@operator.net. Please note that all public ID's require operator provisioning before they can be used. An unknown public ID to the SIP/IP Core operator cannot be registered without prior provisioning.

2. SPAM

   There is a general SPAM problem with SIMPLE IM. It is possible for advertising companies or other third parties to randomly invite users to their groups, although the user has to accept the invite before participating, this will still cause a nuisance. SPAM coupled with misleading user public identities can trick the user into participating into a group or one on one IM Session. On the network side, SPAM will cause network clogging on the air interface, if for example a third party tries to invite users from a particular cell based on location information.

3. Eavesdropping in IM Sessions

   Because it is possible for users to register arbitrary public user names, as suggested in point 1, it is possible for the attacker to trick the user into accepting an invite that may have been from a trusted user. For one to one communication this may be identified once the attacker starts his speech, however in Ad-hoc Group IM Sessions it may be possible for the attacker to invite him-self on to a group session and passively eavesdrop. This could be picked up in the network at a later time as the network operator can identify the real user behind the public identity.

4. The possibility of attacks such as eavesdropping makes it possible for Pre-Pay customers that have not registered personal details with operators difficult to trace because identities are tied down to an IMSI (SIM card) and not the actual user information such as name and address.

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Appendix H Presence information elements and procedures (Normative)

This Appendix defines the IM specific presence information elements and the presence procedures, which the IM functional entities follow in order to perform presence related actions.

H.1 IM specific presence information elements overview

OMA IM RD specifies a set of presence information elements that allow expressing the IM User's Presence status. This section describes these IM specific presence information elements and how they fit into the overall presence data model as described in [OMA-Pres-Spec].

Table 4 contains the IM User's Presence status mapping to the respective presence information elements.

Presence information element	Presence information elements as specified in [OMA-Pres-Spec]	Description
Availability for IM Pager Mode and Large Mode Messaging	Application-specific Availability for IM Pager Mode and Large Mode Messaging	Indicates whether the IM User's IM Client is able to receive IM Pager Mode and Large Mode messages e.g. the user's IM client is registered for IM Pager Mode and Large Mode Messaging.
Willingness for IM Pager Mode and Large Mode Messaging	Application-specific Willingness for IM Pager Mode and Large Mode Messaging	Indicates whether the IM User is currently willing to accept new incoming IM Pager Mode and Large Mode messages
Availability for IM Session Mode Messaging	Application-specific Availability for IM Session Mode Messaging	Indicates whether the IM user's IM Client is able to receive and request for an IM session e.g. the user's IM client is registered for IM Session Mode Messaging
Willingness for IM Session Mode Messaging	Application-specific Willingness for IM Session Mode Messaging	Indicates whether the IM User is currently willing to join an IM session.

Table 4: IM specific Presence information elements

NOTE: IM availability is the default setting when a user is registered and ready to communicate in IM, including all communication methods of IM.

H.1.1 Availability for IM Pager Mode and Large Mode Messaging

The "Availability for IM Pager Mode and Large Mode Messaging" is mapped onto the "Application-specific Availability" presence information element as specified in [OMA-Pres-Spec] "*Application-specific Availability*" pertaining to "IM" service:

<tuple > →<status>→<basic>→open/closed

→<service-description>→<service-id>→org.openmobilealliance:IM-pager-mode

→<version>→1.0

The "Application-specific Availability" presence information element SHALL be mapped to a <status> element with a <basic> subelement with the value "open" indicating if the presentity is able to participate in IM IM Pager Mode and Large

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Mode messaging service. This happens when the IM User registers and does not activate incoming barring of IM Pager Mode and Large Mode Messaging or does not decide to remain invisible to other users.

The "Application-specific Availability" presence information element SHALL be mapped to a <status> element with a <basic> subelement with the value "closed" if the presentity is not able to participate in IM Pager Mode and Large Mode messaging service. This happens when the IM User deregisters, decides to remain invisible to other users or activates incoming barring of IM Pager Mode and Large Mode Messaging.

H.1.2 Willingness for IM Pager Mode and Large Mode Messaging

The "Willingness for IM Pager Mode and Large Mode messaging" is mapped onto the "Application-specific Willingness" presence information element as specified in [OMA-Pres-Spec] "*Application-specific Willingness*" pertaining to "IM Pager Mode and Large Mode Messaging" service:

<tuple> →<status> →<willingness>→<basic>→open/closed

→<service-description> →<service-id>→org.openmobilealliance:IM-pager-mode

→<version>→1.0

The "Application-specific Willingness" presence information element SHALL be mapped to a <willingness> element with a <basic> subelement with the value "open" if the presentity is willing to accept new, incoming IM Pager Mode and Large Mode messages. This can be expressed by the Presence Source residing in the same UE as the IM Client publishing the "open" value for willingness.

The "Application-specific Willingness" presence information element SHALL be mapped to a <willingness> element with a <basic> subelement with the value "closed" if the presentity is not willing to accept incoming IM Pager Mode and Large Mode messages. This can be expressed by the Presence Source residing in the same UE as the IM Client publishing the "closed" value for willingness.

H.1.3 Availability for IM Session Mode Messaging

The "Availability for IM Session Mode Messaging" is mapped onto the "Application-specific Availability" presence information element as specified in [OMA-Pres-Spec] "*Application-specific Availability*" pertaining to "IM Session" service:

<tuple > →<status>→<basic>→open/closed

→<service-description>→<service-id>→org.openmobilealliance:IM-session

→<version>→1.0

The "Application-specific Availability" presence information element SHALL be mapped to a <status> element with a <basic> subelement with the value "open" indicating if the presentity is able to participate in IM Session service . This happens when the IM User registers and does not activate incoming barring of IM Session Mode Messaging or does not decide to remain invisible to other users.

The "Application-specific Availability" presence information element SHALL be mapped to a <status> element with a <basic> subelement with the value "closed" if the presentity is not able to participate in IM Session service. This happens when the IM User deregisters, decides to remain invisible to other users or activates incoming barring of IM Session Mode Messaging.

H.1.4 Willingness for IM Session Mode Messaging

The "Willingness for IM Session Mode Messaging" is mapped onto the "Application-specific Willingness" presence information element as specified in [OMA-Pres-Spec] "*Application-specific Willingness*" pertaining to "IM Session" service:

<tuple> →<status> →<willingness>→<basic>→open/closed

→<service-description> →<service-id>→org.openmobilealliance:IM-session

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→<version>→1.0

The “Application-specific Willingness” presence information element SHALL be mapped to a <willingness> element with a <basic> subelement with the value “open” if the presentity is willing to accept new, incoming IM-session requests. This can be expressed by the Presence Source residing in the same UE as the IM Client publishing the “open” value for willingness.

The “Application-specific Willingness” presence information element SHALL be mapped to a <willingness> element with a <basic> subelement with the value “closed” if the presentity is not willing to accept incoming IM-session requests. This can be expressed by the Presence Source residing in the same UE as the IM Client publishing the “closed” value for willingness.

H.2 IM Server Procedures

This section outlines the mapping between IM Server procedures and the presence information elements as given in section H.1 “*IM specific presence information elements overview*”. Table 5 defines how the IM Server specific procedures SHALL be mapped to presence attributes specified in [OMA-Pres-Spec] if the IM Server is presence enabled.

Procedure	Action or setting of Presence information elements as specified in [OMA-Pres-Spec]	Value of Presence information element
Registration	Application-specific Availability for IM-Pager Mode and Large Node Messaging Application-specific Availability for IM Session Mode Messaging	basic: open
Service setting: the “active” attribute of the <incoming-personal-alert-barring> element is set to "false”	Application-specific Availability for IM-Pager Mode and Large Node Messaging	basic: open
Service setting: the “active” attribute of the <incoming-session-barring> element is set to "false”	Application-specific Availability for IM Session Mode Messaging	basic: open
De-registration	Application-specific Availability for IM-Pager Mode and Large Node Messaging Application-specific Availability for IM Session Mode Messaging	basic: closed
Service setting: the “active” attribute of the <incoming-personal-alert-barring> element is set to "true”	Application-specific Availability for IM-Pager Mode and Large Mode Messaging	basic: closed
Service setting: the “active” attribute of the <incoming-session-barring> element is set to "true”	Application-specific Availability for IM Session Mode Messaging	basic: closed
Service setting: the active attribute of the <vis-status> is set to “false”	Application-specific Availability for IM Pager Mode and Large Mode Messaging Application-specific Availability for IM Session Mode Messaging	basic: closed
Service setting: the active attribute of the <vis-status> is set to “true”	Application-specific Availability for IM-Pager Mode and Large Mode Messaging Application-specific Availability for IM Session Mode Messaging	basic: open

Table 5: Definition of presence information elements for Server Procedures

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H.2.1 Acting as Presence Source

The IM Server performing the Participating IM Function in the IM User's Home Network MAY act as a Presence Source as specified in [IM-AD] and [OMA-Pres-Spec] and publish certain sets of presence information on behalf of the IM User. If the IM Server is presence enabled, it SHALL publish the information elements indicated in the provisioning parameter that is provisioned to the IM Client (see I.2.1.1).

All the following procedures SHALL apply when the IM Server acts as a Presence Source and supports the publication of presence information elements as specified in Table 5

When the SIP/IP Core corresponds with 3GPP/3GPP2 IMS, the IM Server SHALL use the procedures of "AS acting as originating User Agent" defined in [3GPP TS 24.229] / [3GPP2 X.S0013.004] section 5.7.3, when acting as a Presence Source.

H.2.1.1 IM User Registration and Deregistration

Upon accepting a registration request from an IM User the IM Server SHALL act as a Presence Source. In that case, the IM Server SHALL perform the publication of presence information as defined in [OMA-Pres-Spec] "*Publication of presence information*". The IM Server:

- SHALL set the values of "Application-specific Availability for IM Pager Mode and Large Mode Messaging" and "Application-specific Availability for IM Session Mode Messaging" presence information elements to available (as defined in section H.1 "*IM specific presence information elements overview* " and Table 4);
- SHALL set the entity attribute of the presence information document as defined in [OMA-Pres-Spec] to the value of the authenticated identity of the IM User that has registered to the IM service (e.g. to the value of the P-Asserted-Identity header field of the REGISTER request).

NOTE 1: Other Presence information elements might be published with the appropriate values at the same time.

Upon accepting a deregistration request from an IM User the IM Server SHALL act as a Presence Source. In that case, the IM Server SHALL perform the publication of Presence information as defined in [OMA-Pres-Spec] "*Publication of presence information*". The IM Server:

- SHALL set the value of "Application-specific Availability for IM" Presence information element to unavailable (as defined in H.1 "*IM specific presence information elements overview* " and Table 4));
- SHALL set the <entity> element of Presence information document as defined in [OMA-Pres-Spec] to the value of the authenticated identity of the IM User that has de-registered (e.g. to the value of the P-Asserted-Identity header field of the REGISTER request).

NOTE 2: Other Presence information elements might be published with the appropriate values at the same time.

NOTE 3: It is beyond the scope of the present specification to determine how the IM Server becomes aware of registration/ de-registration state.

H.2.1.2 IM User's Service Settings

Upon receiving a service setting request containing the <incoming-personal-alert-barring> element, as defined in E.2, from an IM User the IM Server SHALL act as a Presence Source.

In the case when the value of the active attribute of the <incoming-personal-alert-barring> element is "true", the IM Server SHALL perform the publication of presence information as defined in [OMA-Pres-Spec]. The IM Server:

- SHALL set the value of "Application-specific Availability for IM Pager Mode and Large Mode Messaging" presence information element to unavailable (as defined in section H.1 "*IM specific presence information elements overview*");

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- SHALL set the entity attribute of the presence information document as defined in [OMA-Pres-Spec] to the value of the authenticated identity of the IM User (e.g. to the value of the P-Asserted-Identity header field of the PUBLISH request).

NOTE 1: Other Presence information elements might be published with the appropriate values at the same time.

In the case when the value of the active attribute of the <incoming-personal-alert-barring> element is "false", the IM Server SHALL perform the publication of Presence information as defined in [OMA-Pres-Spec] "*Publication of presence information*". The IM Server:

- SHALL set the value of "Application-specific Availability for IM Pager Mode and Large Mode Messaging " Presence information element to available (as defined in section H.1 "*IM specific presence information elements overview*";
- SHALL set the entity attribute of presence information document as defined in [OMA-Pres-Spec] to the value of the authenticated identity of the IM User (e.g. to the value of the P-Asserted-Identity header field of the PUBLISH request).

NOTE 2: Other Presence information elements might be published with the appropriate values at the same time.

Upon receiving a service setting request containing the <incoming-session-barring> element, as defined in E.2, from an IM User the IM Server MAY act as a Presence Source.

In the case when the value of the active attribute of the <incoming-session-barring> element is "true", the IM Server SHALL perform the publication of presence information as defined in [OMA-Pres-Spec] "*Publication of presence information*". The IM Server:

- SHALL set the value of "Application-specific Availability for IM Session Mode Messaging" presence information element to unavailable (as defined in H.1 "*IM specific presence information elements overview*");
- SHALL set the entity attribute of the presence information document as defined in [OMA-Pres-Spec] to the value of the authenticated identity of the IM User (e.g. to the value of the P-Asserted-Identity header field of the PUBLISH request).

NOTE 3: Other Presence information elements might be published with the appropriate values at the same time.

In the case when the value of the active attribute of the <incoming-session-barring> element is "false", the IM Server SHALL perform the publication of Presence information as defined in [OMA-Pres-Spec] "*Publication of presence information*". The IM Server:

- SHALL set the value of "Application-specific Availability for IM Session Mode Messaging" Presence information element to available (as defined in section H.1 "*IM specific presence information elements overview*";
- SHALL set the entity attribute of presence information document as defined in [OMA-Pres-Spec] to the value of the authenticated identity of the IM User (e.g. to the value of the P-Asserted-Identity header field of the PUBLISH request).

NOTE 4: Other Presence information elements might be published with the appropriate values at the same time.

Upon receiving a service setting request containing the <vis-settings> element, as defined in Appendix E, from an IM User the IM Server SHALL act as a Presence Source.

In the case when the value of the active attribute of the <vis-status> element is "false", the IM Server SHALL perform the publication of presence information as defined in [OMA-Pres-Spec] "*Publication of presence information*". The IM Server:

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- SHALL set the values of "Application-specific Availability for IM Pager Mode and Large Mode Messaging" and "Application-specific Availability for IM Session Mode Messaging" presence information elements to unavailable (as defined in section H.1 "*IM specific presence information elements overview*");
- SHALL set the entity attribute of the presence information document as defined in [OMA-Pres-Spec] to the value of the authenticated identity of the IM User (e.g. to the value of the P-Asserted-Identity header field of the PUBLISH request).

NOTE 5: Other Presence information elements might be published with the appropriate values at the same time.

In the case when the value of the active attribute of the <vis-status> element is "true", the IM Server SHALL perform the publication of Presence information as defined in [OMA-Pres-Spec] "*Publication of presence information*". The IM Server:

- SHALL set the values of "Application-specific Availability for IM Pager Mode and Large Mode Messaging" and "Application-specific Availability for IM Session Mode Messaging" Presence information element to available (as defined in section H.1 "*IM specific presence information elements overview*");
- SHALL set the entity attribute of presence information document as defined in [OMA-Pres-Spec] to the value of the authenticated identity of the IM User (e.g. to the value of the P-Asserted-Identity header field of the PUBLISH request).

In the case where all three elements <vis-settings>, <incoming-session-barring> and <incoming-personal-alert-barring> exists and the setting of the presence information results in a conflict, a <vis-settings> element with a "active" attribute set to "false" presence information setting SHALL be given higher priority then the other two elements presence information settings and a <vis-setting> element with an "active" attribute set to "true" presence information setting SHALL be given lower priority then the other two elements presence information settings.

NOTE 6: Other Presence information elements might be published with the appropriate values at the same time.

H.2.2 Acting as watcher

The IM Server MAY act as a watcher as specified in [IM-AD] and [OMA-Pres-Spec].

When the SIP/IP Core corresponds with 3GPP/3GPP2 IMS, the IM Server SHALL use the procedures of "*AS acting as originating User Agent*" specified in [3GPP TS 24.229] / [3GPP2 X.S0013.004] section 5.7.3.

The exact procedures determining the behaviour of the IM Server acting as watcher is beyond the scope of the present specification.

H.3 IM Client Procedures

This section outlines the mapping between IM Client procedures and the presence attributes as given in section H.1 "*IM specific presence information elements overview*".

Table 6 defines how IM Client specific procedures SHALL be mapped to presence attributes specified in [OMA-Pres-Spec].

Procedure	Action or setting of Presence information elements as specified in [OMA-Pres-Spec]	Value of Presence information element
Setting: Willing for IM Pager Mode and Large Mode Messaging	Application-specific Willingness for IM Pager Mode and Large Mode Messaging	basic: open
Setting: Not Willing for IM Pager Mode and Large Mode Messaging	Application-specific Willingness for IM Pager Mode and Large Mode Messaging	basic: closed
Setting: Willing for IM Session Mode Messaging	Application-specific Willingness for IM Session Mode Messaging	basic: open

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Setting: Not Willing for IM Session Mode Messaging	Application-specific Willingness for IM Session Mode Messaging	basic: closed

Table 6: Definition of presence information elements for Client procedures

H.3.1 Acting as Presence Source

The IM Client SHOULD collaborate with the Presence Source entity when residing in the same UE.

If the IM Server is not presence enabled (as indicated in the provisioning parameter,'PRES-SRV-CAP'), the Presence Source residing in the same UE with the IM Client SHOULD publish presence information for all the elements specified in section H.1, as defined in Table 5 and Table 6. . When publishing presence information elements of Table 5, the IM Client SHALL perform the functions defined for the IM Server in section H.2.1 "*Acting as a Presence Source*"

If the IM Server is presence enabled (as indicated in the provisioning parameter, 'PRES-SRV-CAP'), the Presence Source residing in the same UE with the IM Client SHOULD NOT publish presence information for those elements, which are published by the IM Server. In this case, the IM Client SHOULD publish presence information for the elements specified inTable 6

Additionally, the Presence Source residing in the same UE with the IM Client MAY publish any other Presence Information Element described in [OMA-Pres-Spec].

The exact procedures determining the collaboration between the IM Client and Presence Source in the UE are beyond the scope of the present specification.

H.3.1.1 Setting Willingness for IM Pager Mode and Large Mode Messaging

When the IM User sets the value of the "Willingness for IM" Presence information element to "willing", the Presence Source SHALL perform the publication of presence information as defined in [OMA-Pres-Spec] "*Publication of presence information*". The Presence Source:

- SHALL set the value of "Application-specific Willingness for IM Pager Mode and Large Mode Messaging" presence information element to willing (as defined in section H.1 "*IM specific presence information elements overview*" andTable 6);
- SHALL set the entity attribute of the presence information document as defined in [OMA-Pres-Spec] to the value of the authenticated identity of the IM User that has registered to the IM service.

NOTE 1: Other Presence information elements might be published with the appropriate values at the same time.

When the IM User sets the value of the "Willingness for IM" presence information element to "not willing" the Presence Source SHALL perform the publication of presence information as defined in [OMA-Pres-Spec] "*Publication of presence information*". The Presence Source:

- SHALL set the value of "Application-specific Willingness for IM Pager Mode and Large Mode Messaging " Presence information element to not willing (as defined in section H.1 "*IM specific presence information elements overview*"and Table 6);
- SHALL set the entity attribute of Presence information document as defined in [OMA-Pres-Spec] to the value of the authenticated identity of the IM User that has registered to the IM service.

NOTE 2: Other Presence information elements might be published with the appropriate values at the same time.

H.3.1.2 Setting Willingness for IM Session Mode Messaging

When the IM User sets the value of the "Willingness for IM Session Mode Messaging" Presence information element to "willing", the Presence Source SHALL perform the publication of presence information as defined in [OMA-Pres-Spec] "*Publication of presence information*". The Presence Source:

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- SHALL set the value of "Application-specific Willingness for IM Session Mode Messaging " presence information element to willing (as defined in section H.1 "*IM specific presence information elements overview*" and Table 6);
- SHALL set the entity attribute of the presence information document as defined in [OMA-Pres-Spec] to the value of the authenticated identity of the IM User that has registered to the IM service.

NOTE 1: Other Presence information elements might be published with the appropriate values at the same time.

When the IM User sets the value of the "Willingness for IM Session Mode Messaging" presence information element to "not willing" the Presence Source SHALL perform the publication of presence information as defined in [OMA-Pres-Spec] "*Publication of presence information*". The Presence Source:

- SHALL set the value of "Application-specific Willingness for IM Session Mode Messaging " Presence information element to not willing (as defined in section H.1 "*IM specific presence information elements overview*" and Table 6);
- SHALL set the entity attribute of Presence information document as defined in [OMA-Pres-Spec] to the value of the authenticated identity of the IM User that has registered to the IM service.

NOTE 2: Other Presence information elements might be published with the appropriate values at the same time.

H.3.2 Acting as watcher

The IM Client MAY collaborate with the Watcher entity when residing in the same UE.

When the SIP/IP Core corresponds with 3GPP/3GPP2 IMS, the IM Client SHALL use the procedures of "*Mobile-originating case*" specified in [3GPP TS 24.229] / [3GPP2 X.S0013.004] subsection 5.1.2A.1.

The exact procedures determining the behaviour of the IM Client acting as a watcher is beyond the scope of the present specification.

H.4 IM specific presence values

The OMNA SHALL register the following new values of the <service-description> presence information element defined in [OMA-Pres-Spec] related to IM:

<service-id>: org.openmobilealliance:IM-pager-mode

<version>: 1.0

<service-id>: org.openmobilealliance:IM-session

<version>: 1.0

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Appendix I The parameters to be provisioned for IM service (Normative)

I.1 OMA IM Device Management general

IM Server Presence support is indicated with the parameters defined in the following subsections. The Presence Source residing in the same UE with the IM Client can use this information for discovering which Presence information elements need to be published by the IM Client.

I.2 OMA IM Device Management Object file

I.2.1 OMA IM Device Management Object tree

I.2.1.1 OMA IM Device Management Object parameters

1. **/<X>/PRES-SRV-CAP/**

A binary flag used for the IM Server to indicate the Presence publish capability of a Presence information element of the IM Server on behalf of the IM Client. The flag must be given in sequence order according to the list of parameters below:

bit 4: "Application-specific (IM) Availability for IM "

- Occurrence: One
- Format: bin
- Access Types: Get
- Values: <A binary, xxxb4xxxx>

Bit 4 has 2 values: 0 means no support by the Server and 1 means support is available.

NOTE: CHANGES To AC file: The following parameters are added for IM

```
APPLICATION-SPECIFIC PARAMETERS

##############################
Characteristic/name: APPLICATION/PRES-SRV-CAP.

Status: Required if Presence is supported.

Occurs: 1/1.

Default value: None.

Used values: Binary.

Interpretation: Indicates the Presence publishing capability of the presence
information element of the IM Server on behalf of the IM Client. The flag must be
given in sequence order according to the list of parameters as b1b2b3b4b5b6b7b8
(bit 8 is the lowest bit), where bit 4 is the flag of "Application-specific
Availability for IM", bit 1-3 and bit 5-8 are for other use.

-------
```

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PARAMETER VALUES

################

Characteristic/name/parameter: APPLICATION/PRES-SRV-CAP/1.

Status: Optional.

Interpretation: Indicates the support of the Presence publishing by the IM Server on behalf of an IM Client.

I.2.1.2 Provisioning Parameters- AC File

IDENTIFYING INFORMATION

#######################

APPID:<TBD>?.

APPID type: OMNA.

Owner: OMA Instant Messaging Sub-Working Group

Contact: OMA Instant Messaging Sub-Working Group<TECHNICAL-COMMENTS@MAIL.OPENMOBILEALLIANCE.ORG>.

Registration version:

Registration timestamp:

Application description: SIP/SIMPLE Instant Messaging

Application reference: <TBD>.

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WELL-KNOWN PARAMETERS

#####################

Characteristic/name: APPLICATION/APPID.

Status: Mandatory.

Occurs: 1/1.

Default value: None.

Used values: <TBD>

Interpretation:

To uniquely identify the IM enabler.

Characteristic/name: APPLICATION/NAME.

Status: Mandatory.

Occurs: 1/1.

Default value: None.

Used values: "IM".

Interpretation:

Application name. User displayable name for the IM enabler.

Characteristic/name: APPLICATION/PROVIDER-ID.

Status: Optional.

Occurs: 0/1.

Default value: None.

Used values: N/A

Interpretation:

provides an identifier for the application service access point

---

Characteristic/name: APPLICATION/TO-NAPID.

Status: Required if direct use of Network Access Point supported.

Occurs: 0/*.

Default value: None.

Used values: N/A.

Interpretation: N/A.

APPLICATION-SPECIFIC PARAMETERS

##################################

Characteristic/name: APPLICATION/ **PRES-SRV-CAP**

Status: Mandatory

Occurs: 1/1

Default value: None

Used values: <Integer>

Interpretation:
A binary flag used for the IM Server to indicate the Presence publish capability of a Presence information element of the IM Server on behalf of the IM Client.

Characteristic/name: APPLICATION/MAX_AD-HOC_GROUP_SIZE

Status: Mandatory

Occurs: 1/1

Default value: None

Used values: <Integer>

Interpretation:

Maximum number of Participants allowed for an Ad-hoc IM Group Session

---

Characteristic/name: APPLICATION/CONF-FCTY-URI

Status: Mandatory

Occurs: 1/1

Default value: None

Used values: N/A

Interpretation: <SIP URI>

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A SIP URI used for setting up an Ad-hoc IM Group or 1-1 IM Session

---

Characteristic/name: APPLICATION/EXPLODER-URI

Status: Mandatory

Occurs: 0/1

Default value: None

Used values: <SIP URI>

Interpretation:

A SIP URI used for sending SIP MESSAGE e.g. Sending SIP MESSAGE to an Ad hoc Group.

Characteristic/name: APPLICATION/CONV-HIST-FUNC-URI

Status: Optional

Occurs: 1/1

Default value: None

Used values: N/A

Interpretation: <SIP URI>

A SIP URI for IM user's conversation history storage

Characteristic/name: APPLICATION/DEFERRED-MSG-FUNC-URI

Status: Mandatory

Occurs: 1/1

Default value: None

Used values: N/A

Interpretation: <SIP URI>

A SIP-URI used for IM User's message-store account for deferred messaging

---

EXAMPLE

#######

```
<characteristic type="APPLICATION">
  <parm name="APPID" value="TBD"/>
  <parm name="NAME" value="IM"/>
  <parm name="MAX_AD-HOC_GROUP_SIZE" value="25"/>
  <parm name="CONF-FCTY-URI" value="sip:IM-User@network.net" />
  <parm name="MSG-STORE-URI" value="sip:IM-User@mailserver.network.net" />
</characteristic>
```

###END###

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Appendix J Retrieve deferred messages (Informative)

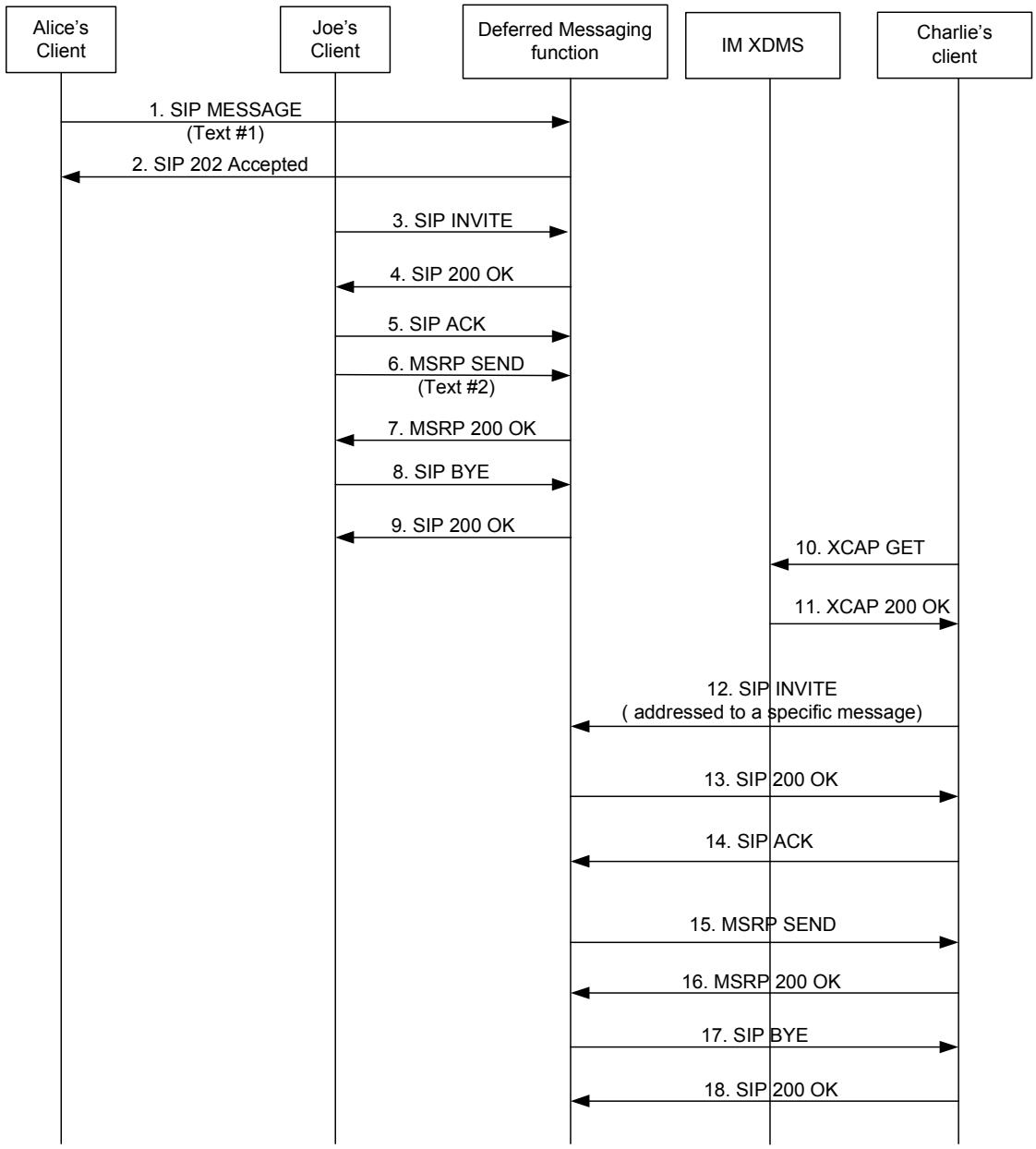

Figure 3: Charlie's Client selectively retrieves only the message deposited by Joe's Client

Let's assume that an offline user (Charlie), gets back on line and receives the following notification indicating that there are two text messages waiting to be retrieved:

While a user (Charlie) is offline:

1-2. Alice sends an IM with SIP MESSAGE method, the Message is accepted by Charlie's Message Server and stored with a unique Identifier

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2-9. Joe sends an IM using SIP INVITE, the Message is accepted by Charlie's Message Server (Message Store), and stored with a unique identifier

10-11. Charlie gets back online, gets deferred message meta data via XCAP GET for the summary of the stored messages waiting in the format as defined in [IM-XDM Specification]including message headers such as To, From, Date, Subject, and Message-ID appended to each message, see below:

```
<?xml version="1.0" encoding="UTF-8"?>

<history-list xmlns="urn:oma:xml:history-list">

  <history date="2000-07-09" history-reference="32098d@mailserver.example.com">

    <size>10</size>

    <expiry>2000-07-15T21:13:00.0Z</expiry>

    <subject>carpool tomorrow?</subject>

    <pager>

      <time-stamp>2000-07-09T21:13:00.0Z</time-stamp>

        <from>alice@example.org</from >

        <to>charlie@example.com</to>

      </pager>

   </history>

  <history date="2000-07-09" history-reference="d0982dkjs@mailserver.example.com">

    <size>18</size>

    <expiry>2000-07-17T21:25:12.0Z</expiry>

    <subject>HELP! at home ill, present for me please</subject>

    <pager>

      <time-stamp>2000-07-09T21:25:12.0Z</time-stamp>

        <from>Joe@example.net</from >

        <to>charlie@example.com</to>

      </pager>

   </history>

</history-list>
```

****

12-14. Let us assume that Charlie wants to retrieve only the second message, which has been sent by Joe@example.net and is identified by a Message-ID header whose value is d0982dkjs@mailserver.example.com.

Charlie then creates a SIP INVITE request addressed to a SIP URI as defined in section 12.1.1 "*Retrieving Deferred message(s)*"

```
INVITE sip:Deferred@mailserver.example.com SIP/2.0

From: <sip:charlie@example.com>
```

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```
       To: <sip:Deferred@mailserver.example.com>

Content-Type: multiparty/mixed; boundary = 'Boundary'


Boundary

Content-Type : application/Sdp

.

     <SDP file>

Boundary

Content-Type: application/resource-list+xml

.

.

   < Recipient-list> // list of Unique Message-Ids.., in this example there
will be only one entry i.e. the message-id
'd0982dkjs@mailserver.example.com'
```

This INVITE request is routed to the Deferred Messaging Function according to SIP procedures.

15-16. The Deferred Messaging Function extracts sends the stored message to Charlie as defined in section 12.2.2.5 "*Pushing Deferred Messages*"

17-18. The "message store" server sends SIP BYE and the corresponding 200 OK from the client to end the session .

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Appendix K Saving IM Content

The network SHOULD be able to save (record) the IM content upon the request of the user, when it is allowed by the operator. The user indicates to the IM Server when to start the recording. The IM conversation recording ends in one of the following conditions:

1. anytime during the IM conversation that user indicates
2. end of the IM conversation
3. the maximum storage limit defined by the operator has been reached

The following sub-sections describe the different scenarios on saving the IM conversation.

K.1 IM content recording starts at the beginning of the IM conversation

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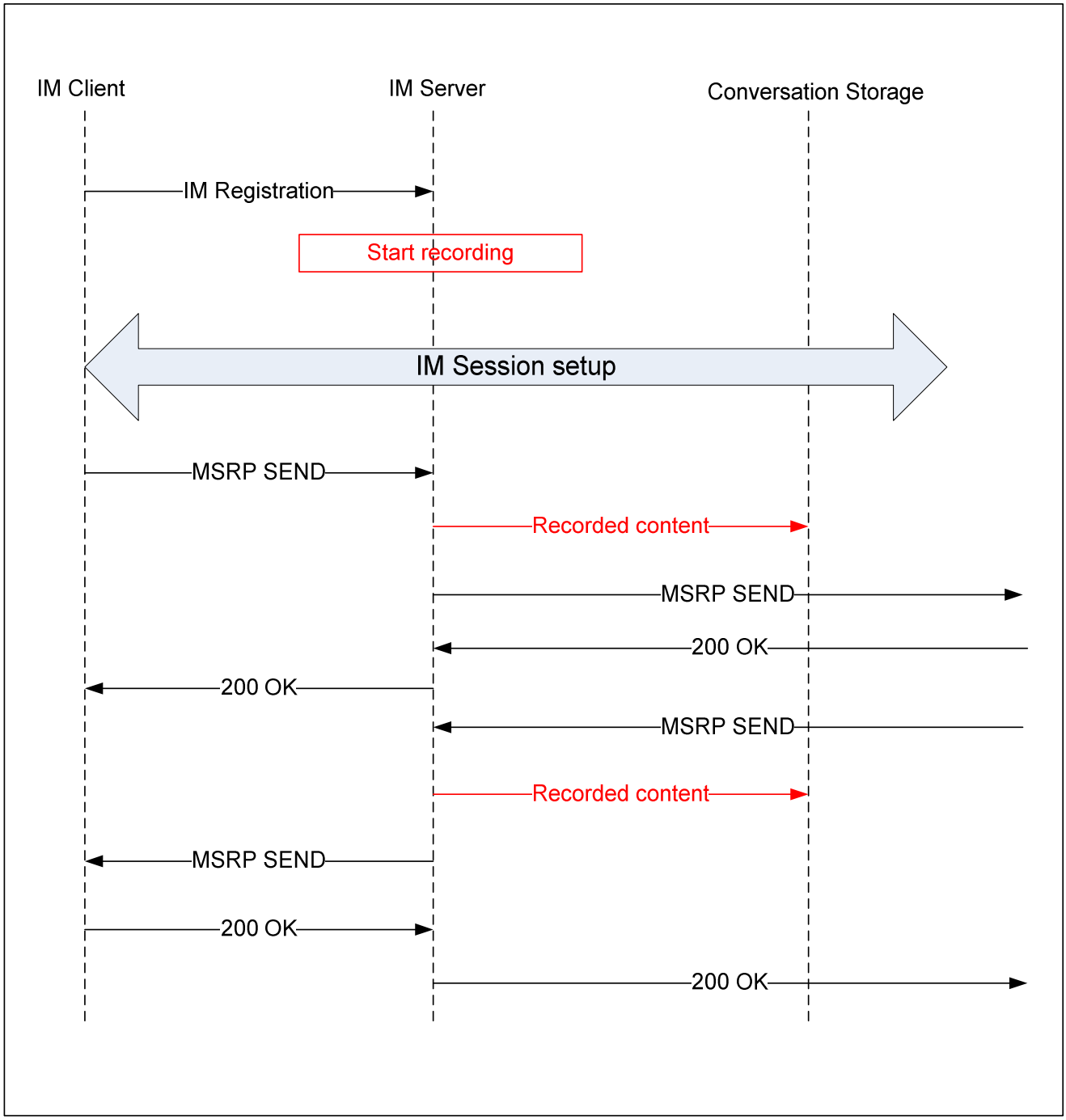
K.1.1 Session Mode with IM Setting default

In this scenario, the user IM Setting indicates that all IM content will be recorded. The IM content will be recorded at the beginning of every IM session and no user intervention is needed.



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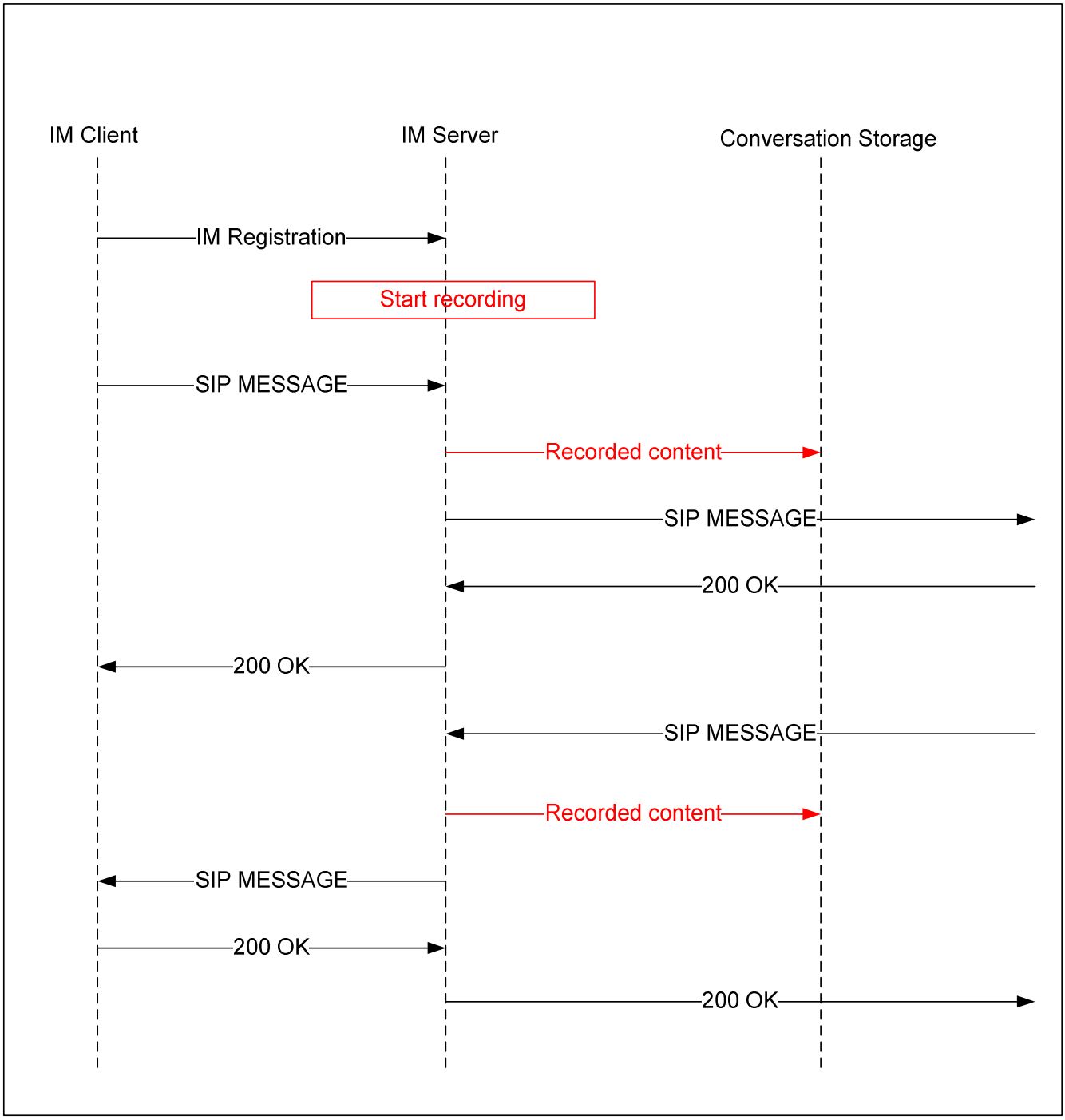
K.1.2 Page Mode with IM Setting default

In this scenario, the user IM Setting indicates that all IM content will be recorded. The IM content will be recorded anytime a SIP MESSAGE method is detected on the IM Server and no user intervention is needed.



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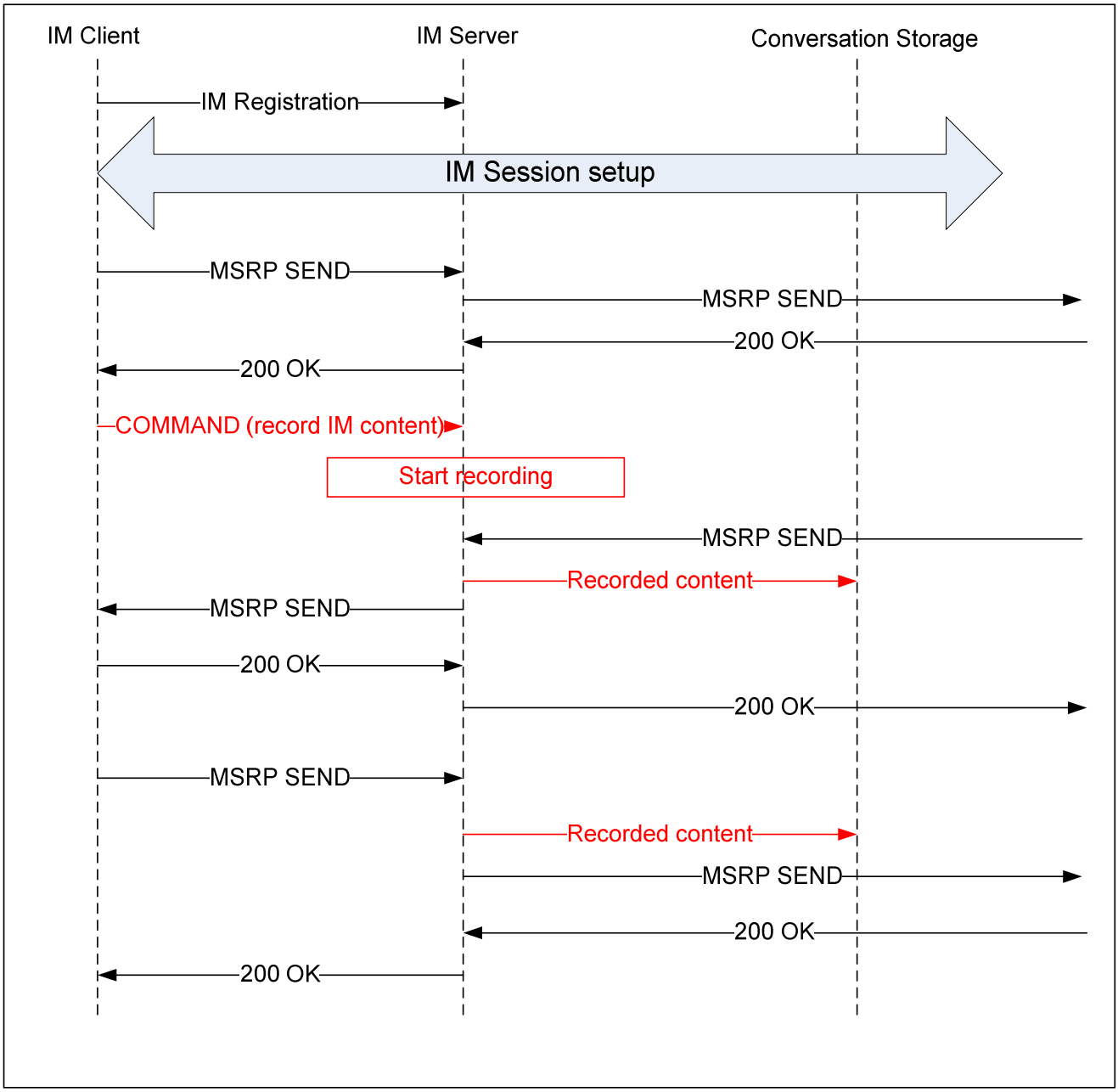
K.1.3 IM content recording starts at user directive

K.1.3.1 Session mode with user directive

In this scenario the user will tell the IM Server when the IM content recording should start.



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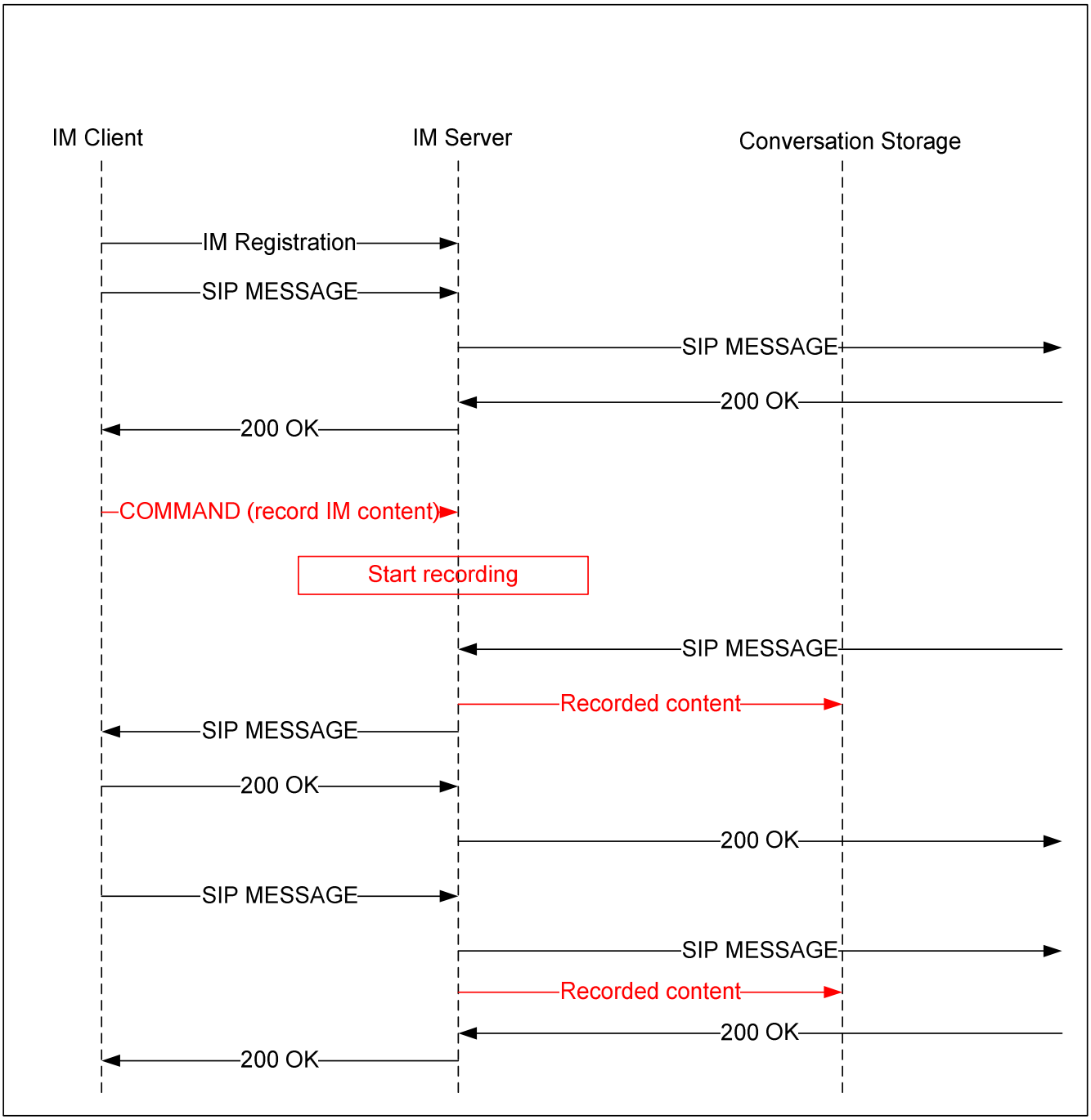
K.1.3.2 Page mode with user directive

In this scenario the user will tell the IM Server when the IM content recording should start.



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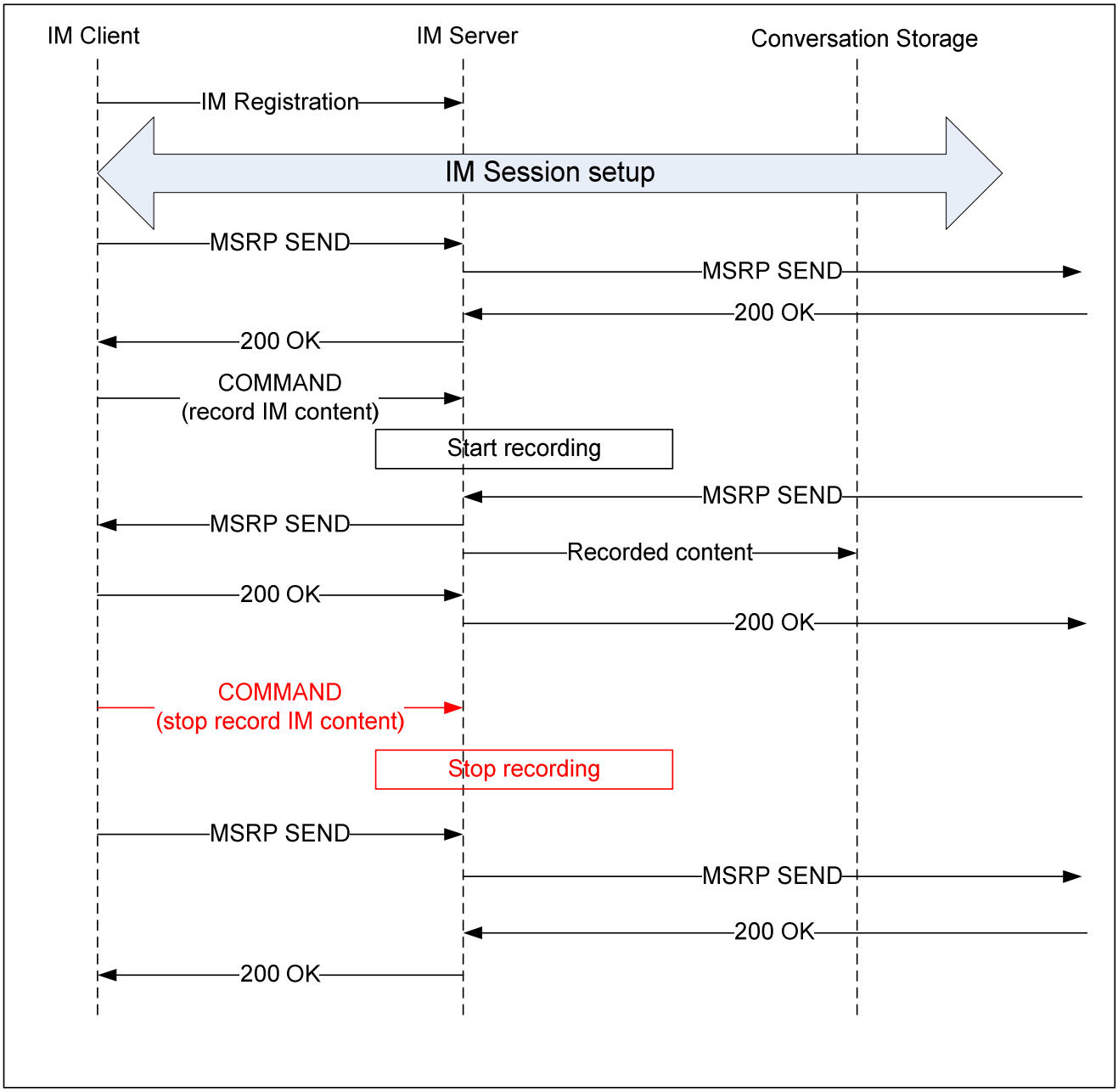
K.1.4 IM conversation recording ends at user directive

K.1.4.1 Session mode with user directive

In this scenario the user will tell the IM Server when the IM content recording should end.



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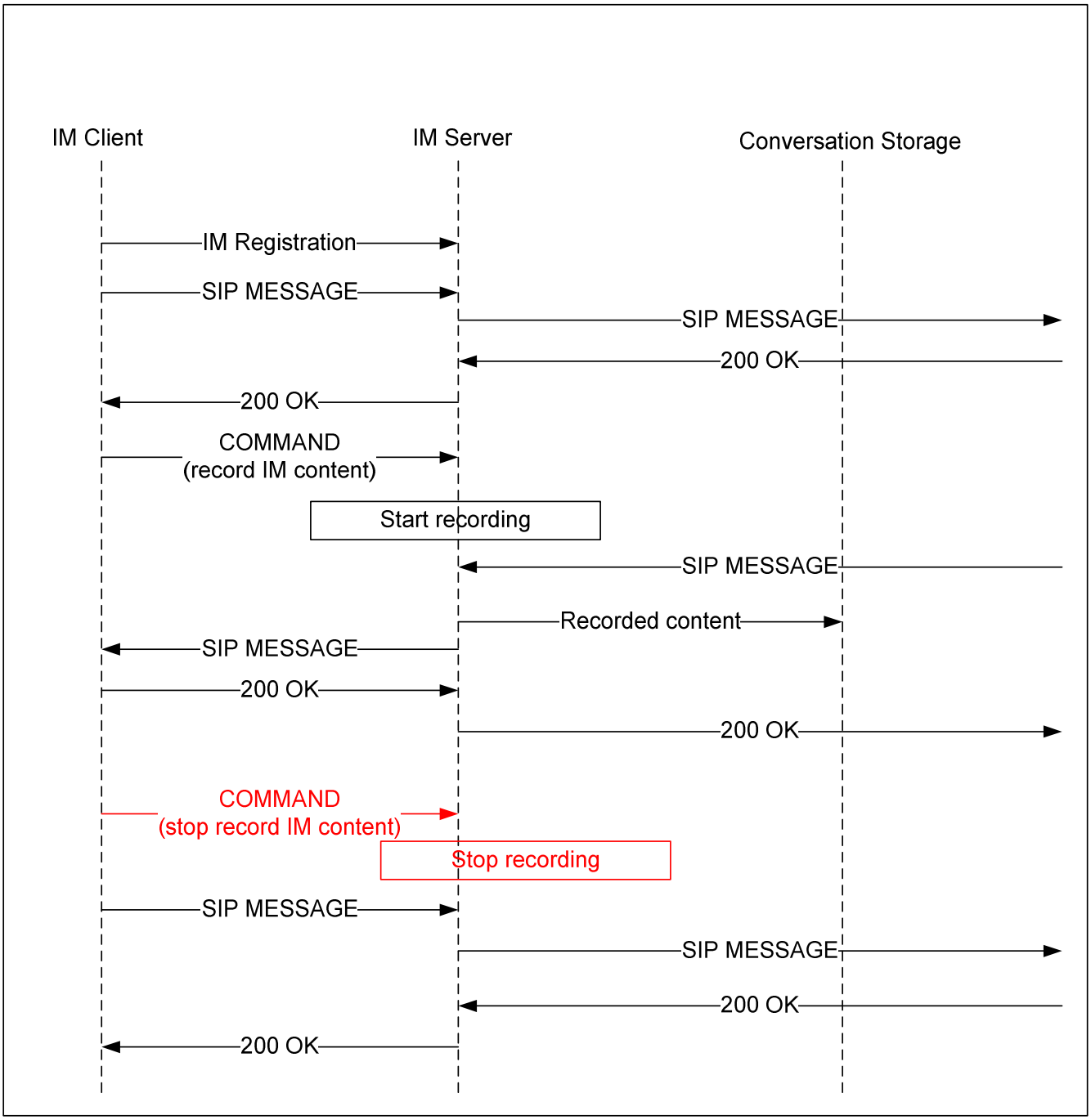
K.1.4.2 Page mode with user directive

In this scenario the user will tell the IM Server when the IM content recording should end.



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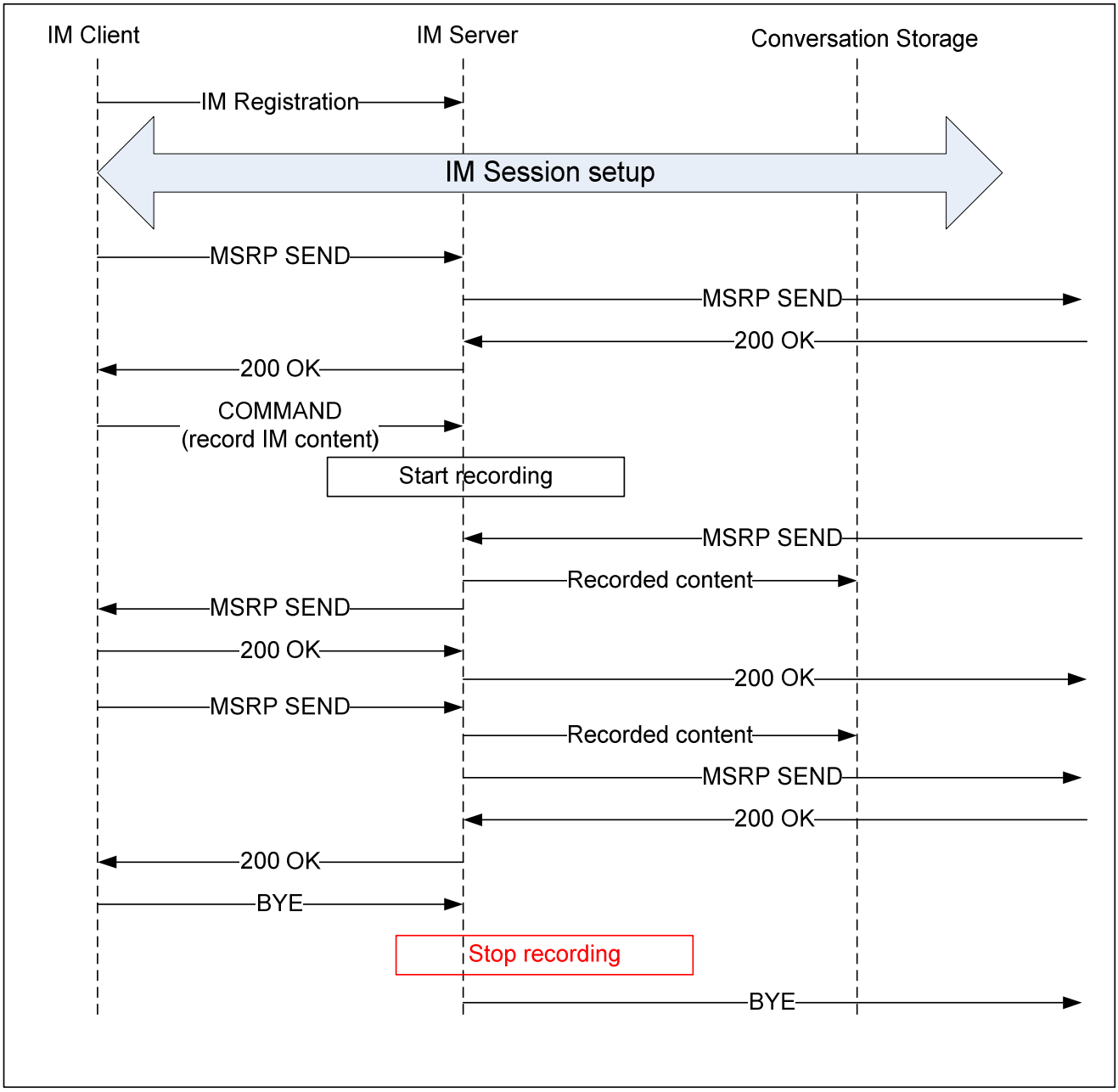
K.1.5 IM content recording ends at the end of IM conversation

The following diagram illustrates the IM content recording ends at the end of IM conversation which only applies to Session Mode IM conversation.



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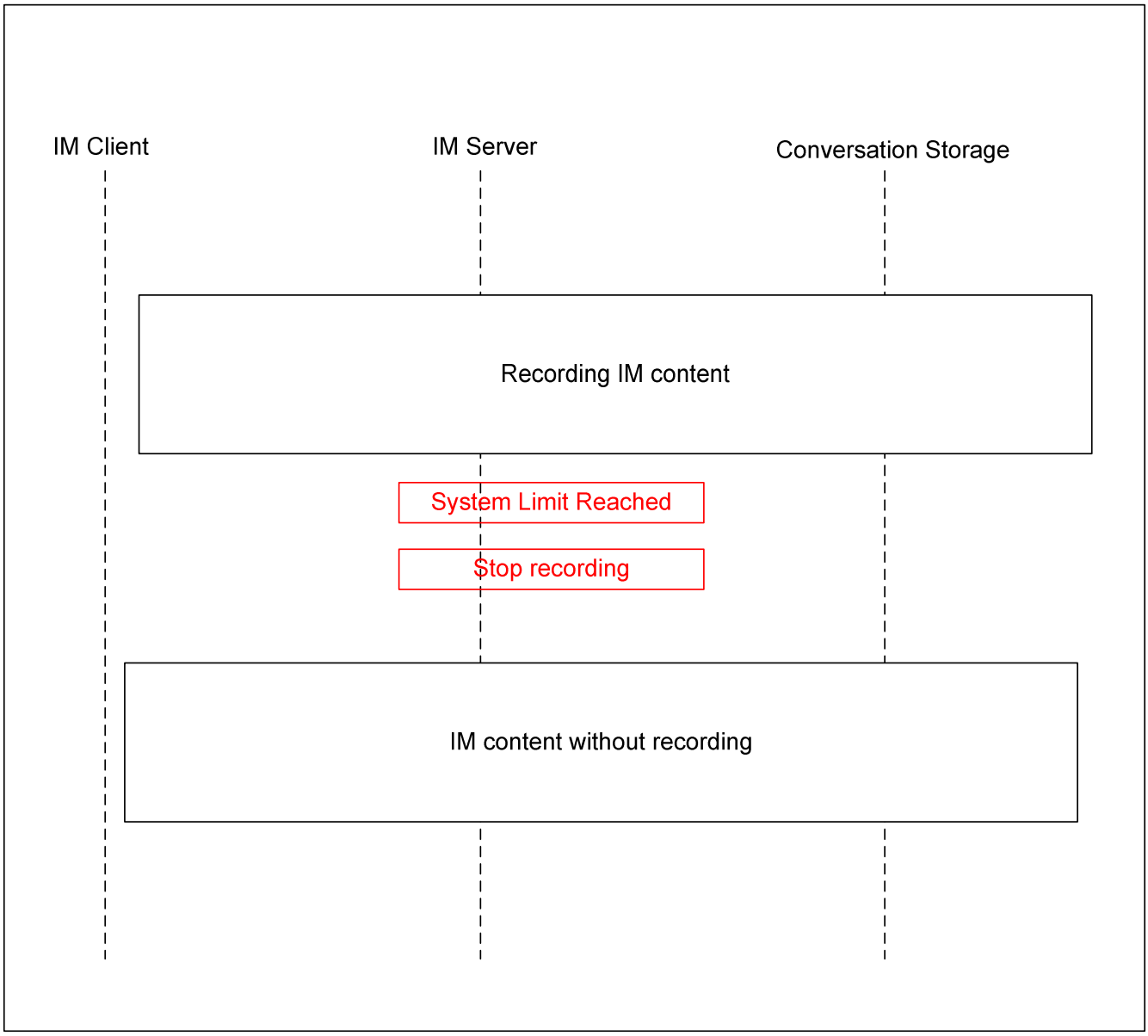
K.1.6 IM content recording ends when system limit reached

The following diagram illustrates the scenario that IM Server will stop IM content recording when the system limited has been reached; it makes no different if the IM conversation is in a Session mode or Page mode.



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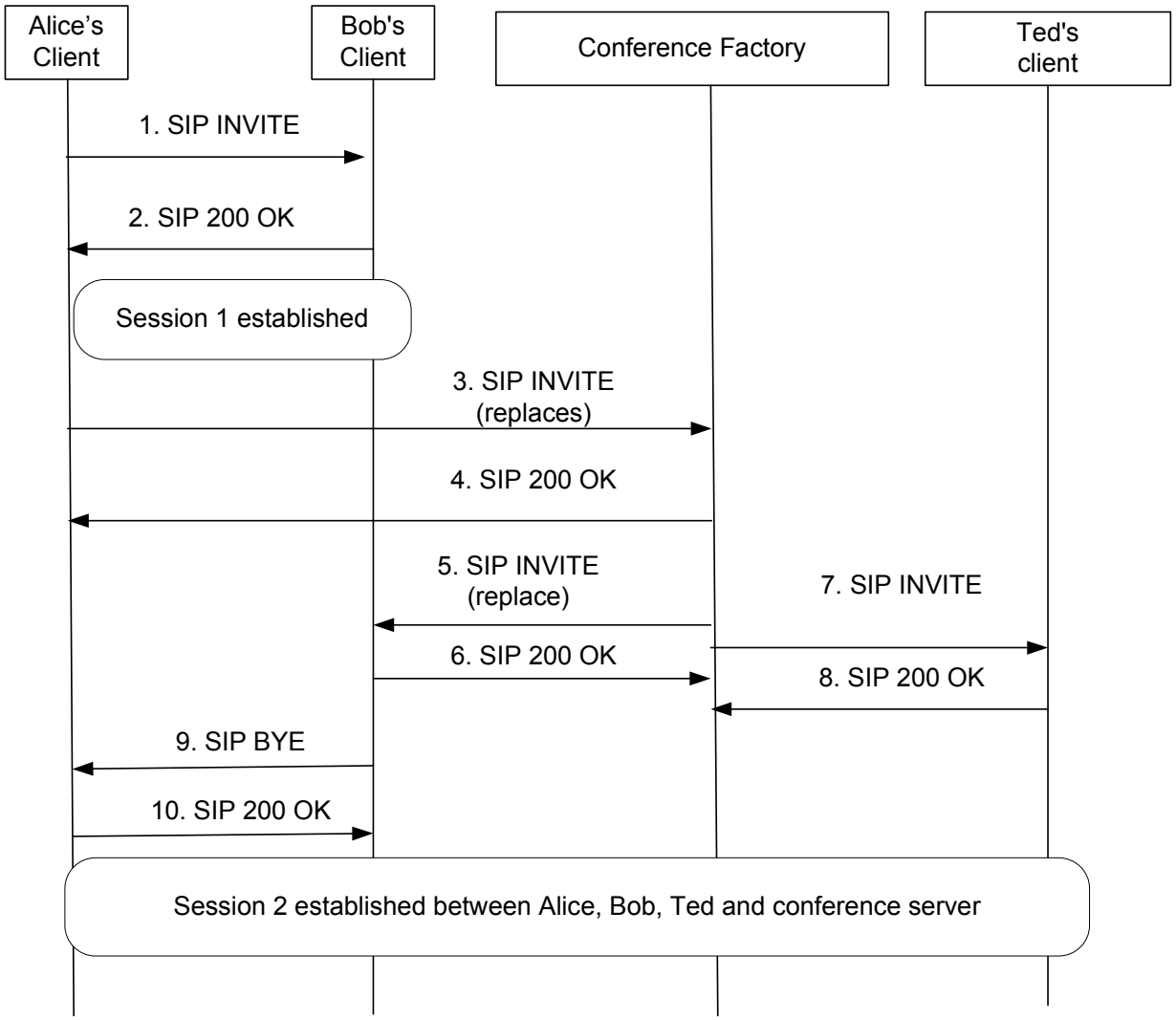
Appendix L Extending one to one session to a conference (Informative)

This appendix illustrates how a one to one session can be transformed into a conference.

The following is an example of a one to one session between Alice <sip:alice@atlanta.com>; and Bob <sip:bob@biloxi.com> being transformed into a conference that also includes Ted < sip:ted@example.net>.



The "replaces" parameter is used in the URI list to ask Bob to relinquish the initial session and join the new conference.

The highlighted portion of step 3 below illustrates the use of the "Replaces" header.

1. INVITE sip:bob@biloxi.com SIP/2.0

Via: SIP/2.0/UDP pc33.atlanta.com;branch=z9hG4bK776asdhds

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Max-Forwards: 70

To: Bob <sip:bob@biloxi.com>

From: Alice <sip:alice@atlanta.com>;tag=1928301774

Call-ID: a84b4c76e66710

CSeq: 314159 INVITE

Contact: <sip:alice@pc33.atlanta.com>

Content-Type: application/sdp

Content-Length: 142

(Alice's SDP not shown)

2. SIP/2.0 200 OK

Via: SIP/2.0/UDP pc33.atlanta.com;branch=z9hG4bKnashds8;received=192.0.2.1

To: Alice <sip:alice@atlanta.com>;tag=1928301774

From: Bob <sip:bob@biloxi.com>;tag=a6c85cf

Call-ID: a84b4c76e66710

CSeq: 314159 INVITE

Contact: <sip:bob@biloxi.com>

Content-Type: application/sdp

Content-Length: 131

Bob's SDP not shown

3. INVITE conf-fact@example.com SIP/2.0

Via: SIP/2.0/UDP pc33.atlanta.com;branch=z9hG4bK776asdhds

Max-Forwards: 70

To: Conf Factory <sip:conf-fact@example.com>

From: Alice <sip:alice@atlanta.com>;tag=2837302775

Call-ID: 563b4c76e66712

CSeq: 203048 INVITE

Contact: <sip:alice@pc33.atlanta.com>

Require: recipient-list-subscribe, replaces

Supported: eventlist

Content-Type: `multipart/mixed; boundary="boundary42"`

--boundary42

Content-Type: application/sdp

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(Alice's SDP not shown)

--boundary42

Content-Type: application/resource-lists+xml

Content-Disposition: recipient-list

Content-Length: 337

<?xml version="1.0" encoding="UTF-8"?>

<resource-lists xmlns="urn:ietf:params:xml:ns:resource-lists"

xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">

<list>

<entry uri="bob@biloxi.com;method=INVITE?Replaces: a84b4c76e66710;to-tag=1928301774;from-tag= a6c85cf " /" />

<entry uri="sip:ted@example.net" />

</list>

</resource-lists>

--boundary42

5. INVITE bob@biloxi.com SIP/2.0

Via: SIP/2.0/UDP pc33.atlanta.com;branch=z9hG4bK776asdhds

Max-Forwards: 70

To: Bob < bob@biloxi.com>;tag=2837302775

Referred-By: <sip:alice@atlanta.com>

Call-ID: 563b4c76e66712

CSeq: 345768 INVITE

Contact: <sip:conf-123@example.com>

Content-Type: application/sdp

Content-Length: 142

Feature-Tag: isfocus

Require: replaces

Replaces: a84b4c76e66710;to-tag=1928301774;from-tag= a6c85cf

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Appendix M Conference Event Package (Normative)

The conference event package in SIMPLE IM is based on [RFC4575]. This annex describes how the [RFC4575] XML document is extended to explicitly give indication to joining users which user child element belongs to them. The example below does not include all elements of the XML document in [RFC 4575] for the sake of simplicity.

Alice first joins a conference where she indicates a requirement for anonymity with a display name as “MISS JOY”<sip:anonymous@anonymous.invalid> to the conference server. Then she subscribes to the conference event package and gets a conference XML document, whose relevant part contains the list of participants, including Alice's anonymous information. Notice the addition of the "yourown" XML attribute with a value set to "true" close to Alice's information. This indicates to Alice the Identity she is known by to the rest of the participants.

```
<conference-state>
    <user-count>33</user-count>
   </conference-state>

   <users>
    <user entity="sip:bob@example.com" state="full">
       <display-text>Bob Hoskins</display-text>
    </user>

    ...

    <user entity= "sip:anon34@anonymous.invalid"  state="full" yourown="true">
       <display-text>MISS JOY-03</display-text>
    </user>

   </users>
```

The conference server has modified Alice original information for anonymity from “MISS JOY”<sip:anonymous@anonymous.invalid> to “MISS JOY-03”<sip:anon34@anonymous.invalid> to make her full identity unique in the conference room. Now Alice’s IM Client can use this information as its Identity in sending messages to the conference room.

M.1 Extensions to Conference Event Package XML Schema

The following describes the XML schema that extends the current XML schema specified in RFC 4575 to add the "yourown" XML attribute.

```
<?xml version="1.0" encoding="UTF-8"?>
<xs:schema targetNamespace="urn:oma:params:xml:ns:ownflag"
   xmlns="urn:oma:params:xml:ns:ownflag"
   xmlns:xs="http://www.w3.org/2001/XMLSchema"
   elementFormDefault="qualified"
   attributeFormDefault="unqualified">

   <xs:annotation>
     <xs:documentation xml:lang="en">
        Adds a flag to a user of the conference event
        package to indicate own user information.
     </xs:documentation>
   </xs:annotation>

  <xs:import namespace="urn:ietf:params:xml:ns:conference-info"
```

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```
        schemaLocation="urn:ietf:params:xml:schema:conference-info"/>

  <xs:attribute name="yourown" type="xs:boolean" default="false" />
</xs:schema>
```

The 'yourown' attribute is an extension of the <user> element in the conference XML document. Therefore, the 'yourown' attribute SHALL NOT be included in any other element than <user>.

The "yourown" attribute is used to indicate to the IM Client which of the <user> elements belong to the IM Client to whom the notification is to be sent in case the IM conference Server has modified any of the user's information.

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Appendix N Emoticons (Normative)

N.1 List of supported emoticons

The SIMPLE IM enabler allows a client to take advantage of emoticons. A client taking advantage of such feature will replace specific character sequences known as emoticons when an instant message is received and is displayed to the user, or when the user composes an instant message the emoticons are replaced with the specific character sequence(s) before the instant message is sent. The exact behaviour for clients is described inN.2. This feature is an implementation choice, and as such is OPTIONAL for the client. The list of character sequences and emoticons are listed in Table 7. The table captures only a subset of emoticons that are widely used - client implementations MAY extend the list with additional character sequences. The first column in the table identifies the emoticons; the second column defines one or more character sequences for each emoticon so that different client implementations can associate the same meaning to a character sequence and ensure interoperability between them. The third column provides a description of possible graphical renditions. Note that the third column provides examples only and client implementations are not constrained to follow the examples. The exact images representing the individual emoticons are not in the scope of this enabler – it is a client implementation choice.

Emoticons	Character sequences	Examples describing graphical renditions
Happy, smile	:-) or :)	A happy or smiling face
Sad	:-(or :(	A sad face
Wink	;-) or ;) or ;o) or ;O)	A winking face
Big grin	:-D or :D or :oD or :-d or :d or :od or :Od or :OD	A big grin face
Confused	:-/ or :-\	A confused face
Blushing, embarrassed	:”-) or :”) or :”> or :- or $ or :$	A blushing, embarrassed face
Stick-out tongue	:-P or :P or :oP or :-p or :p or :op or :OP or :Op	A stick-out tongue face
Kiss, red lips	**:-*** or **:***	A kissing face or red lips
Shocked, surprised	:-O or :-o or :o or :O	A shocked, Surprised face
Angry	:-@ or :@ or X-(or X(or x-(or x(or xo(or XO(	An angry face
Cool, sunglasses	B) or B-) or (H) or (h) or Bo) or BO)	A face with sunglasses
Worried	:-S or :S or :-s or :s or :oS	A worried face
Devilish	>:-) or >:) or >:o) or >:O)	A devilish face
Crying	:,-(or :,(or :’-(or :’(or :,o(or :’o(or :,O(or :’O(	A crying face
Laughing	:-)) or :)) or :o)) or :O))	A laughing face
Straight face, disappointed	:-| or :| or :o| or :O|	A straight face
Angel, innocent	O:-) or O:) or o:-) or o:)	An innocent face
Nerd	:-B or :B	A nerdish face
Sleepy	|-O or |O or |-o or |o	A sleepy face
Rolling eyes	8-) or 8) or 8o) or 8O)	A rolling eyes face
Sick, berk	:-& or :& or ;o& or :O&	A sick/ill face
Shhh! No speak, lips sealed	:-SS or :SS or :ss or :-ss	A face with sealed lips

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Emoticons	Character sequences	Examples describing graphical renditions
Thinking, pensive	:-? or :?	A pensive face
Raised eyebrow, sarcastic look	/:-) or /:) or /:o) or /:O)	A raised eyebrow face or a face with a sarcastic look
Rose, flower	@):-	A rose
Cup of coffee	~o)	A cup of coffee
Drink, cocktail	)-|	A cocktail glass
Idea (light bulb)	*-:-) or *-:)	A light bulb
Love struck, heart	(L) or <3	A heart

Table 7: Character sequences and emoticons

N.2 Emoticon processing by the clients

The client will process the character sequences associated with each emoticon, converting the character sequences from/to their corresponding image representation when an instant message is received/displayed or composed/sent.

N.2.1 Emoticons in composed/sent instant messages

Whenever an instant message is composed by the user, the client MAY replace the recognized character sequences with the corresponding emoticon as the user types them into the instant message. Depending on client implementation the client MAY also offer the possibility to insert the emoticons using shortcuts. When the client uses shortcuts to insert emoticons into the instant message, it SHOULD choose the first character sequence from Table 7 corresponding to the inserted emoticon. In any case, when the client sends the instant message, the recognized emoticons SHALL be converted to their corresponding character sequence before the instant message is submitted to the server.

N.2.2 Emoticons in received/displayed instant messages

Whenever an instant message is received or displayed by/for the user, the client MAY replace the recognized character sequences with the corresponding emoticon.

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Appendix O Final Delivery Report (Normative)

O.1 Structure of the Final Delivery Report

The Final Delivery Report is an XML document that must be well formed and has to be valid. The Final Delivery Report documents are based on XML 1.0 and use UTF-8 encoding. This specification makes use of XML namespaces for identifying the Final Delivery Report documents and document fragments. The namespace URI for elements defined by this specification is a URN, using the namespace identifier 'oma'. This URN is:

urn:oma:xml:poc:final-report

The Final Delivery Report document begins with the root <final> element.

The <final> element consists of number of <leg> elements and two attributes, "last" and "Message-ID". The "last" attribute is used only in the last Final Report and it indicates that this is the last Final Delivery Report document. "Message-ID" contains the Message-ID of the SEND message for which the Final Delivery Report is generated.

Each <leg> element contains a mandatory "uri" attribute containing the URI of the recipient and a "status" attribute with or without a "max-size" attribute. If "status" attribute is missing, the <leg> element is ignored.

If the MSRP message was completely delivered to the Participant or if the MSRP message delivery to the Participant failed, the <leg> element contains the "status" attribute containing the MSRP status code of the recipient indicated with 'uri' attribute.

If the MSRP message cannot be sent to the Participant because the Participant has negotiated the SDP attribute "a=max-size" lower than the MSRP message size, the <leg> element contains the "status" attribute with value "9999" and the "max-size" attribute with the value corresponding to the SDP attribute "a=max-size" negotiated by the Participant indicated with 'uri' attribute.

The Final Delivery Report document shall be identified with the MIME content type "application/vnd.oma.final+xml"

O.2 Example of Final Delivery Report

```
<?xml version="1.0" encoding="UTF-8"?>
<final xmlns="urn:oma:xml:poc:final-report" Message-ID="r2d2" last="true">
      <leg uri="sip:userC@example.com" status="200"/>
      <leg uri="sip:userD@example.com" status="413"/>
      <leg uri="sip:userF@example.com" status="9999" max-size="50000"/>
</final>
```

O.3XML Schema for the Final Delivery Report

The Final Delivery Report document SHALL conform to the XML schema described in [OMA-POC-FINAL-REP].

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Appendix P Use of REFER Method in IM (Informative)

This appendix illustrates how the REFER message is used to accomplish different functions.

The first figure illustrates the use of REFER to invite a user to an ongoing session or remove a user from an ongoing session. The REFER is sent to the Controlling function with the requested method.

The second figure illustrates the use of REFER to dynamically activate or deactivate History recording during a session. The REFER is sent to the Participating function, which transfers the REFER to the Conversation History Function. The Conversation History Function then either invites itself to the session or removes itself from the session by sending either an INVITE or a BYE to the Controlling function with the Session identity.

The third figure illustrates the use of REFER to delete History recordings or Deferred messages. The REFER is sent to the Delete Function with the identities of the data to be removed.

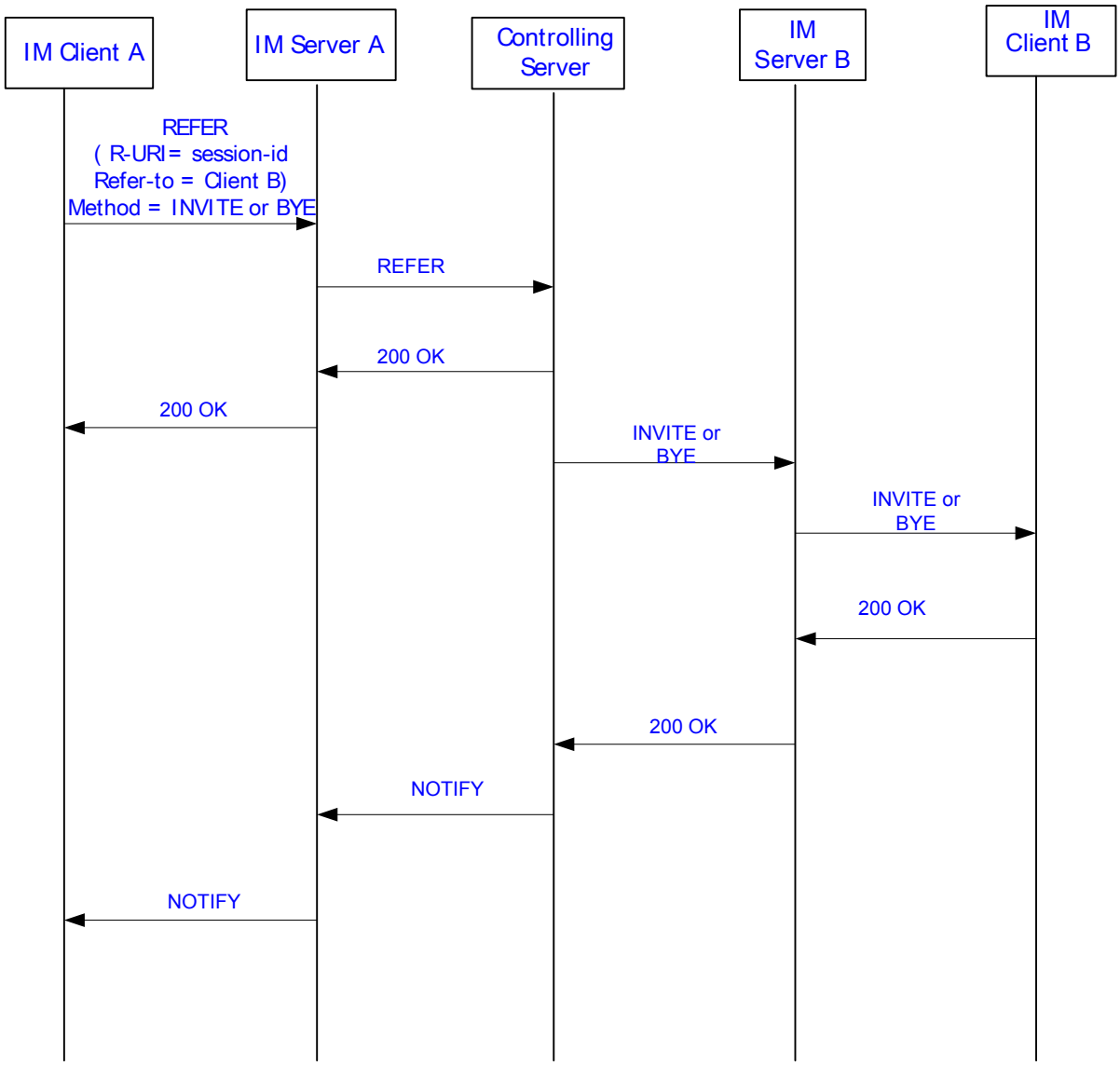

Figure 1: Inviting or removing a user to/from a session

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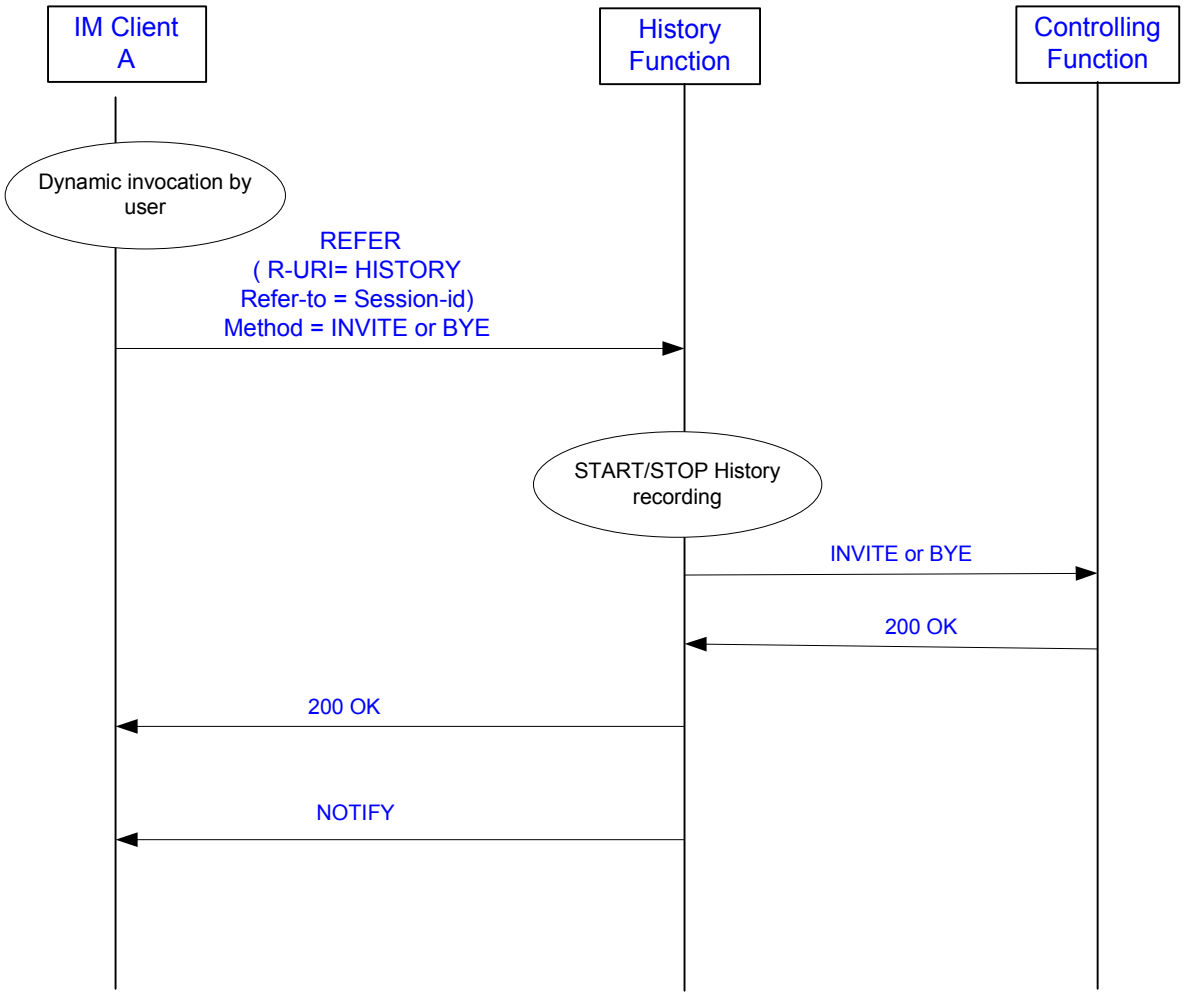

Figure 2: Dynamic Start/Stop History

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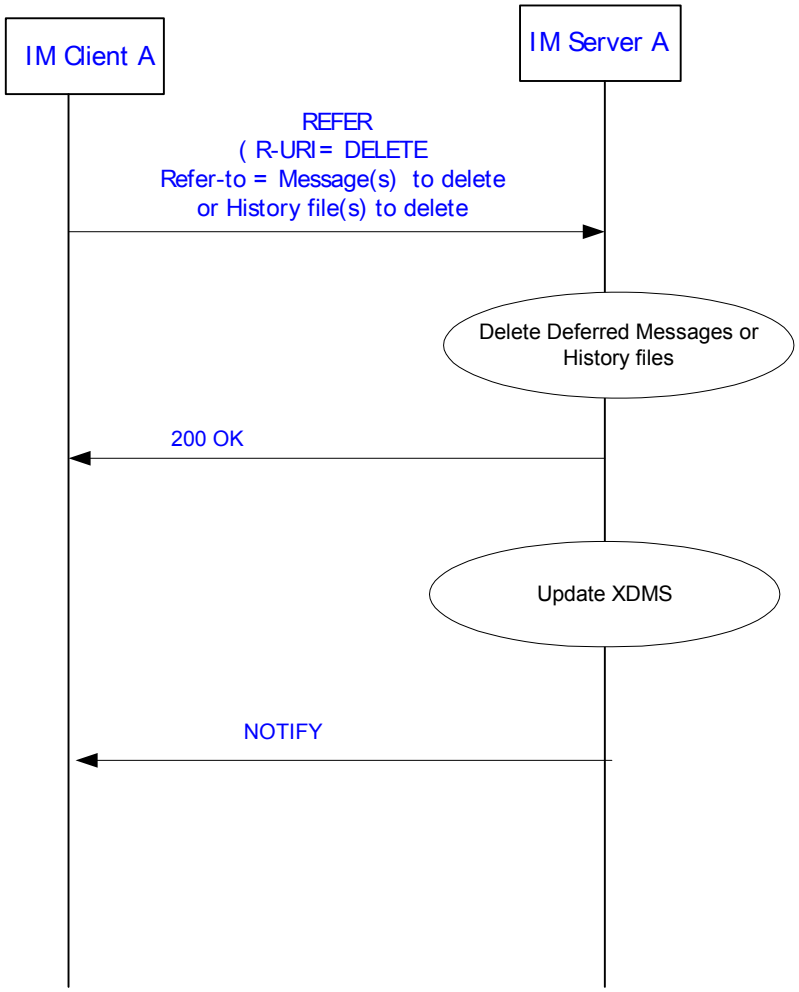

Figure 3: Deleting History Files or Deferred Messages

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Appendix Q IM related Shared XDM extensions (Normative)

Q.1 IM extensions to Shared List XDM application usages

Q.1.1 Group Usage List

Q.1.1.1 Structure

A IM specific URI usage SHALL be used in a Group Usage List stored in the Shared List XDMS.

The IM URI usage, <imusage> element, is defined to substitute <uriusage> element and is used within the <uriusages> element as specified in [OMA-LIST_XDM-TS]. The <imusage> element has two values:

- chat
- predefined.

With the default value being "predefined"

If present in any <uriusages> element, the <imusage> element indicates the type of the IM Group URI.

Q.1.1.2 XML schema

The <imusage> element SHALL conform to the XML schema described in [XSD_IMUSAGE].

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Appendix R Access Policy examples (Informative)

This appendix illustrates the use of the Shared Access Policy to define how messages, file transfer requests and or session invitations are to be accepted or rejected from an individual sender or a list of senders.

The User Access Policy document makes use of the following two elements defined for the <rule> element in [COMMONPOL]:

- <conditions>
- <actions>

The <conditions> child element of any <rule> element:

a) MAY include the <external-list> element, as defined in [XDM_Spec] "*Common Extensions*";

The <external-list> element can be used to provide a "blocklist" of users to be blocked. This <external-list> would be oma_blockedcontacts as described in [Shared-List] XDMS.

b) MAY include the <media> element, as defined in [XDM_Spec] "*Common Extensions*"

The <media> element:

1) MAY include the <message-session> media element indicating session based messaging as defined in [MSRP];
2) MAY include the <pager-mode-message> media element indicating pager mode message requests as defined in [RFC3428];
3) MAY include the <file-transfer> media element indicating file transfer as defined in [IM TS];
4) MAY include the <group-advertisement> media element indicating extended group advertisement as defined in [XDM_Shared_Group];
5) MAY include the <audio> media element indicating a streaming media type as defined in [RFC3840];
6) MAY include the <video> media element indicating a streaming media type as defined in [RFC3840];
7) MAY include any other elements from any other namespaces for the purpose of extensibility

The <actions> child element of any <rule> element:

a) MAY include the <allow-invite> element;

The <allow-invite> element defines the action the Application Server is to take when processing a communication request, respectively, for a particular User. This element has one of the following three values, whose use is described in Application Server in question. The value is of an enumerated integer type:

"reject" instructing the Application Server to reject the communication request.

"accept" instructing the Application Server to accept the communication request.

This example illustrates the use of a shared Policy rule to define a blocked list of users from whom pager mode messages are not to be accepted

```
<?xml version="1.0" encoding="UTF-8"?>
```

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```
<ruleset xmlns="urn:ietf:params:xml:ns:common-policy"
xmlns:uap="urn:oma:xml:poc:poc-rules"
                        xmlns:ocp="urn:oma:xml:xdm:common-policy"
          xmlns:ocp1="urn:oma:xml:xdm:media-extension">


<rule id="ythk765">
   <conditions>
    <ocp:external-list>
              <ocp:entry anchor="http//:xcapserver/resource-lists/users/sip:bob@example.com/index/~~/resource-
lists/list%5b@name=%22oma_blockedcontacts%22"/>
        </ocp:external-list>
     <ocp1:media>
          <ocp1: pager-mode-message/>
     </ocp1:media>
   </conditions>
   <actions>
      <uap:allow-invite>reject</uap:allow-invite>
   </actions>
</rule>
</ruleset>
```

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Appendix S Access Policy examples (Informative)

This appendix illustrates the use of the Shared Access Policy to define how messages, file transfer requests and or session invitations are to be accepted or rejected from an individual sender or a list of senders.

The User Access Policy document makes use of the following two elements defined for the <rule> element in [Shared-Policy-XDMS]:

- <conditions>
- <actions>

The <conditions> child element of any <rule> element MAY include all elements listed in [Shared-Policy-XDMS] with the following clarifications:

a) MAY include the <external-list> element, as defined in [XDM_Spec] "*Common Extensions*";

The <external-list> element can be used to provide a "blocklist" of users to be blocked. This <external-list> would be oma_blockedcontacts as described in [Shared-List] XDMS.

b) MAY include a <service> element with the "featuretag" attribute with the value "+g.oma-im-sip"

c) MAY include the <media> elements, as defined in [XDM_Spec] "*Common Extensions*"

The <media> element:

1) MAY include the <message-session> media element indicating session based messaging as defined in [MSRP];

2) MAY include the <pager-mode-message> media element indicating pager mode message requests as defined in [RFC3428];

3) MAY include the <file-transfer> media element indicating file transfer as defined in [IM TS];

The <actions> child element of any <rule> element:

a) MAY include the <allow-reject-invite> element as defined [Shared-Policy-XDMS];

This example illustrates the use of a shared Policy rule to define a blocked list of users from whom pager mode messages are not to be accepted for all type of services including the IM service.

```
<?xml version="1.0" encoding="UTF-8"?>
<ruleset xmlns="urn:ietf:params:xml:ns:common-policy"

                xmlns:ocp="urn:oma:xml:xdm:common-policy"
        xmlns:oxe="urn:oma:xml:xdm:extentions">

<rule id="ythk765">
   <conditions>
    <ocp:external-list>
```

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```
            <ocp:entry anchor="http//:xcapserver/resource-lists/users/sip:bob@example.com/index/~~/resource-
lists/list%5b@name=%22oma_blockedcontacts%22"/>
        </ocp:external-list>
    <oxe:media-list>
        <oxe: pager-mode-message/>
    <oxe:media-list>
  </conditions>
  <actions>
    <oxe:allow-reject-invite>true</oxe:allow-reject-invite>
  </actions>
</rule>
</ruleset>
```

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Appendix T Charging use cases (Informative)

In this section, a number of use cases for charging in IM are described. These use cases do not describe the way an operator must charge for IM services, they only explore the different charging scenarios that can be implemented in SIMPLE IM.

1. Sending a pager mode message to a single user

Alternative scenarios

1.1.

- Sender sends pager mode message to one single receiver via the IM Server
- Sender and receiver are in the same network
- Message is delivered successfully
- Sender is charged based on **message size**

1.2.

- Sender sends pager mode message to one single receiver via the IM Server
- Sender and receiver are in the same network
- Message is delivered successfully
- Sender is charged based on **number of messages sent**

1.3.

- Sender sends pager mode message to one single receiver via the IM Server
- Sender and receiver are in the same network
- Receiver is not online
- Message is **deferred**
- Sender is charged based on message size

Remark : deferred messages are charged the same way as successfully delivered messages.

1.4.

- Sender sends pager mode message to one single receiver via the IM Server
- Sender and receiver are in the same network
- Message is delivered successfully
- **Receiver** is charged based on message size

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1.5.

- Sender sends pager mode message to one single receiver via the IM Server
- Sender and receiver are in the same network
- Message is delivered successfully
- **Receiver** is charged based on number of messages received

1.6.

- Sender sends pager mode message to one single receiver via the IM Server
- Sender and receiver are in the same network
- Message is delivered successfully
- **Sender and receiver** are charged

2. Sending a pager mode message to a group

Alternative scenarios

2.1.

- Sender sends pager mode message to a pre defined group URI via the IM Server
- Sender and receivers are in the same network
- Some messages are delivered successfully, some message deliveries fail.
- Sender receives delivery report, containing the number of messages successfully delivered
- Sender is charged based **on message size** (disregard the number of recipients)

2.2.

- Sender sends pager mode message to a pre defined group URI via the IM Server
- Sender and receivers are in the same network
- Some messages are delivered successfully, some message deliveries fail.
- Sender receives delivery report, containing the number of messages successfully delivered
- Sender is charged for **only one message** (disregard the number of recipients)

2.3.

- Sender sends pager mode message to a pre defined group URI via the IM Server
- Sender and receivers are in the same network
- Some messages are delivered successfully, some message deliveries fail.

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- Sender receives delivery report, containing the number of messages successfully delivered
- Sender is charged based on **volume of successful messages** (message size * nr of successful deliveries)

2.4.

- Sender sends pager mode message to a pre defined group URI via the IM Server
- Sender and receivers are in the same network
- Some messages are delivered successfully, some message deliveries fail.
- Sender receives delivery report, containing the number of messages successfully delivered
- Sender is charged based on **number of successful deliveries**

2.5.

- Sender sends pager mode message to a pre defined group URI via the IM Server
- Sender and receivers are in the same network
- Some messages are delivered successfully ,some messages are **deferred**
- Sender receives delivery report, containing the number of messages successfully delivered
- Sender is charged for successful and deferred messages

Remark : deferred messages are charged the same way as successfully delivered messages.

2.6.

- Sender sends pager mode message to a pre defined group URI via the IM Server
- Sender and receivers are in a **different** network. The **controlling** function is on the **sender** side (operator A).
- The sender is charged according to the charging policies of his network operator (operator A)
- The receiver is charged according to the charging policies of his network operator (operator B)

Remark : this use case differs from the previous from a commercial viewpoint, but not from technical viewpoint

3. User sends a large message to a single user : all scenarios of use case 1 (Sending a pager mode message to a single user) will be supported for use case 3

4. User sends a large message to a group : all scenarios of use case 2 (Sending a pager mode message to a group) will be supported for use case 4

5. User establishes a one-to-one session Peer-to-Peer

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Alternative scenarios

5.1.

- Initiator establishes one-to-one session through IM Server.
- Both participants are in the same network
- Messages are sent peer-to-peer
- Initiator is charged for starting the one-to-one session
- Sender/Receiver are charged based on traffic volume on IMS level.

5.2.

- Initiator establishes one-to-one session through IM Server.
- Both participants are in the same network
- Messages are sent peer-to-peer
- Session is closed through IM Server
- Participants are charged for session duration

6.

User establishes a one-to-one session through participating function

6.1.

- Initiator establishes a one-to-one session through the IM Server
- Both participants are in the same network
- MSRP messages are going through the IM Server
- Initiator is charged for **starting** the one-to-one session

6.2.

- Initiator establishes a one-to-one session through the IM Server
- Both participants are in the same network
- MSRP messages are going through the IM Server
- **Initiator** is charged based on **total duration of the session**

6.3.

- Initiator establishes a one-to-one session through the IM Server
- Both participants are in the same network
- MSRP messages are going through the IM Server

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- **Participants** are charged based on **total duration of the session**

6.4.

- Initiator establishes a one-to-one session through the IM Server
- Both participants are in the same network
- MSRP messages are going through the IM Server
- Participants are charged based on **number/volume of messages sent/received**

7. User establishes an IM Session conference

7.1.

- Initiator establishes an IM Session conference, using a predefined group or ad-hoc IM session
- Participants are in the same network
- A number of messages are sent
- Initiator is charged for **starting** the one-to-one session

7.2.

- Initiator establishes an IM Session conference, using a predefined group or ad-hoc IM session
- Participants are in the same network
- A number of messages are sent
- **Initiator** is charged based on **total duration of the conference**

7.3.

- Initiator establishes an IM Session conference, using a predefined group or ad-hoc IM session
- Participants are in the same network
- A number of messages are sent
- **Participants** are charged for joining the session

7.4.

- Initiator establishes an IM Session conference, using a predefined group or ad-hoc IM session
- Participants are in the same network
- A number of messages are sent
- a participant joins the session, leaves the session and later rejoins the session
- Participant is charged for **joining** the session. The participant is charged again for **rejoining** the session.

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Remark : rejoining a session will be charged the same way as joining a session.

7.5.

- Initiator establishes an IM Session conference, using a predefined group or ad-hoc IM session
- Participants are in the same network
- A number of messages are sent
- Participants are charged based on **time they actually spent in the session**

7.6.

- Initiator establishes an IM Session conference, using a **predefined group**
- Participants are in the same network
- A number of messages are sent
- Participants are charged **depending on the name of the predefined group**

7.7.

- Initiator establishes an IM Session conference, using a predefined group or ad-hoc IM session
- Participants are in the same network
- A number of messages are sent
- Senders/Receivers are charged based on number/volume of **messages** sent

8. User subscribes for IM service

8.1.

- User subscribes for IM service
- IM Server details are written to user's service profile
- User is charged for the duration of the subscription.

9. User has requested history

9.1.

- There is an IM session going on
- One of the participants requests the history to be recorded
- Participant is charged for this request

9.2.

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- There is an IM session going on
- One of the participants requests the history to be recorded
- Participant is charged for volume/number of messages recorded

9.3.

- There is an IM session going on
- One of the participants requests the history to be recorded
- Participant is charged for duration of the history recording

9.4.

- There is an IM session going on
- One of the participants requests the history to be recorded
- After a while, the participant requests that the recording of history is stopped
- Afterwards, the participant requests to retrieve the stored history
- Participant is charged for volume/number of messages retrieved

10. Deferred messages

10.1.

- A user turns on his mobile device
- There are deferred messages waiting for him
- The IM Server is configured to send a Message Waiting notification
- The IM Server sends a Message Waiting notification
- The user is charged for receiving the Message Waiting notification
- The user retrieves one deferred message
- The user is charged for receiving one deferred message

10.2.

- A user turns on his mobile device
- There are deferred messages waiting for him
- The IM Server is configured to send a Message Waiting notification
- The IM Server sends a Message Waiting notification
- The user is charged for receiving the Message Waiting notification
- The user retrieves all deferred messages

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- The user is charged for receiving all deferred messages

10.3.

- A user turns on his mobile device
- There are deferred messages waiting for him
- The IM Server is configured to push the deferred messages to the client immediately.
- The IM Server pushes all deferred messages to the client
- The user is charged for receiving all deferred messages

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