



# **CPM Conversation Functions**

Approved Version 1.0 – 12 Jun 2012

---

**Open Mobile Alliance**  
OMA-TS-CPM\_Conv\_Fnct-V1\_0-20120612-A

Use of this document is subject to all of the terms and conditions of the Use Agreement located at <http://www.openmobilealliance.org/UseAgreement.html>.

Unless this document is clearly designated as an approved specification, this document is a work in process, is not an approved Open Mobile Alliance™ specification, and is subject to revision or removal without notice.

You may use this document or any part of the document for internal or educational purposes only, provided you do not modify, edit or take out of context the information in this document in any manner. Information contained in this document may be used, at your sole risk, for any purposes. You may not use this document in any other manner without the prior written permission of the Open Mobile Alliance. The Open Mobile Alliance authorizes you to copy this document, provided that you retain all copyright and other proprietary notices contained in the original materials on any copies of the materials and that you comply strictly with these terms. This copyright permission does not constitute an endorsement of the products or services. The Open Mobile Alliance assumes no responsibility for errors or omissions in this document.

Each Open Mobile Alliance member has agreed to use reasonable endeavors to inform the Open Mobile Alliance in a timely manner of Essential IPR as it becomes aware that the Essential IPR is related to the prepared or published specification. However, the members do not have an obligation to conduct IPR searches. The declared Essential IPR is publicly available to members and non-members of the Open Mobile Alliance and may be found on the “OMA IPR Declarations” list at <http://www.openmobilealliance.org/ipr.html>. The Open Mobile Alliance has not conducted an independent IPR review of this document and the information contained herein, and makes no representations or warranties regarding third party IPR, including without limitation patents, copyrights or trade secret rights. This document may contain inventions for which you must obtain licenses from third parties before making, using or selling the inventions. Defined terms above are set forth in the schedule to the Open Mobile Alliance Application Form.

NO REPRESENTATIONS OR WARRANTIES (WHETHER EXPRESS OR IMPLIED) ARE MADE BY THE OPEN MOBILE ALLIANCE OR ANY OPEN MOBILE ALLIANCE MEMBER OR ITS AFFILIATES REGARDING ANY OF THE IPR'S REPRESENTED ON THE “OMA IPR DECLARATIONS” LIST, INCLUDING, BUT NOT LIMITED TO THE ACCURACY, COMPLETENESS, VALIDITY OR RELEVANCE OF THE INFORMATION OR WHETHER OR NOT SUCH RIGHTS ARE ESSENTIAL OR NON-ESSENTIAL.

THE OPEN MOBILE ALLIANCE IS NOT LIABLE FOR AND HEREBY DISCLAIMS ANY DIRECT, INDIRECT, PUNITIVE, SPECIAL, INCIDENTAL, CONSEQUENTIAL, OR EXEMPLARY DAMAGES ARISING OUT OF OR IN CONNECTION WITH THE USE OF DOCUMENTS AND THE INFORMATION CONTAINED IN THE DOCUMENTS.

© 2012 Open Mobile Alliance Ltd. All Rights Reserved.

Used with the permission of the Open Mobile Alliance Ltd. under the terms set forth above.

# Contents

<b>1. SCOPE</b> .....	<b>6</b>
<b>2. REFERENCES</b> .....	<b>7</b>
<b>2.1 NORMATIVE REFERENCES</b> .....	<b>7</b>
<b>2.2 INFORMATIVE REFERENCES</b> .....	<b>10</b>
<b>3. TERMINOLOGY AND CONVENTIONS</b> .....	<b>11</b>
<b>3.1 CONVENTIONS</b> .....	<b>11</b>
<b>3.2 DEFINITIONS</b> .....	<b>11</b>
<b>3.3 ABBREVIATIONS</b> .....	<b>12</b>
<b>4. INTRODUCTION</b> .....	<b>14</b>
<b>4.1 VERSION 1.0</b> .....	<b>14</b>
<b>5. FORMAT OF CPM CONVERSATION ITEMS</b> .....	<b>16</b>
<b>5.1 CPM STANDALONE MESSAGE</b> .....	<b>16</b>
<b>5.2 CPM SESSION</b> .....	<b>16</b>
5.2.1 SDP Contents for CPM Sessions .....	16
<b>5.3 CPM CONVERSATION IDENTIFICATION</b> .....	<b>17</b>
<b>6. COMMON PROCEDURES</b> .....	<b>18</b>
<b>6.1 AUTHENTICATED ORIGINATOR'S CPM ADDRESS</b> .....	<b>18</b>
<b>6.2 SIP/IP CORE</b> .....	<b>18</b>
<b>6.3 DISPLAY NAME AND ANONYMITY</b> .....	<b>18</b>
<b>6.4 WARNING HEADER</b> .....	<b>19</b>
6.4.1 General.....	19
6.4.2 Warning Texts.....	20
<b>6.5 COMMUNICATING WITH THE ISF</b> .....	<b>20</b>
<b>7. PROCEDURES AT CPM CLIENT</b> .....	<b>21</b>
<b>7.1 REGISTERING AT THE SIP/IP CORE</b> .....	<b>21</b>
<b>7.2 CPM STANDALONE MESSAGE HANDLING</b> .....	<b>22</b>
7.2.1 Sending CPM Standalone Messages.....	22
7.2.2 Receiving CPM Standalone Messages.....	26
7.2.3 Deferred CPM Message Handling .....	28
7.2.4 Disposition Notification.....	31
<b>7.3 CPM SESSION HANDLING</b> .....	<b>32</b>
7.3.1 Initiating New CPM Sessions .....	32
7.3.2 Receiving a CPM Session Invitation.....	35
7.3.3 Extending a CPM 1-1 Session to a CPM Group Session .....	36
7.3.4 Closing a CPM Session.....	37
7.3.5 Invite other Principals to existing CPM Group Session.....	38
7.3.6 Remove Participants from a CPM Group Session .....	39
7.3.7 Modifying a CPM Session .....	40
7.3.8 Handling a Received CPM Session Modification Request .....	40
7.3.9 Media Plane Handling for CPM Sessions.....	41
7.3.10 Participant Information .....	42
<b>7.4 CPM FILE TRANSFER</b> .....	<b>42</b>
7.4.1 CPM File Transfer Session Initiation.....	42
7.4.2 Receiving a CPM File Transfer Request.....	43
7.4.3 CPM File Transfer Session Release.....	43
<b>8. PROCEDURES AT CPM PARTICIPATING FUNCTION</b> .....	<b>44</b>
<b>8.1 REGISTRATION</b> .....	<b>44</b>
8.1.1 Receive SIP REGISTER Notification.....	44
8.1.2 Receive Registration Event Information Notifications .....	44
8.1.3 Terminating the Subscription to Registration Event Information .....	44
8.1.4 Using the Registration Event Information .....	44

<b>8.2</b>	<b>PROCEDURES IN THE ORIGINATING NETWORK</b>	<b>45</b>
8.2.1	CPM Standalone Message Handling	45
8.2.2	CPM Session Handling	51
8.2.3	CPM File Transfer Handling	56
<b>8.3</b>	<b>PROCEDURES IN THE TERMINATING NETWORK</b>	<b>57</b>
8.3.1	CPM Message Handling	57
8.3.2	CPM Session Handling	74
8.3.3	CPM File Transfer Handling	79
<b>8.4</b>	<b>USER PREFERENCES</b>	<b>79</b>
8.4.1	Retrieving User Preferences	80
<b>8.5</b>	<b>RECORD CPM CONVERSATION HISTORY</b>	<b>80</b>
8.5.1	Record CPM Standalone Message	80
8.5.2	Record CPM Session	80
8.5.3	Record CPM File Transfer	81
<b>9.</b>	<b>PROCEDURES AT CPM CONTROLLING FUNCTION</b>	<b>83</b>
<b>9.1</b>	<b>CPM STANDALONE MESSAGE HANDLING</b>	<b>83</b>
9.1.1	Pager Mode CPM Standalone Message Handling	83
9.1.2	Large Message Mode CPM Standalone Message Handling	85
9.1.3	Disposition Notification	88
<b>9.2</b>	<b>CPM GROUP SESSION HANDLING</b>	<b>89</b>
9.2.1	CPM Group Session Initiation	89
9.2.2	Session Cancellation Request	91
9.2.3	Participant Joining a CPM Group Session for a CPM Pre-defined Group	91
9.2.4	Rejoining CPM Group Session Request	92
9.2.5	Adding Participants Request	92
9.2.6	Removing Participant Request	93
9.2.7	Session Leaving Request	94
9.2.8	CPM Group Session Modification	94
9.2.9	Group Session Ending Request	95
9.2.10	Create Session with a Participant	95
9.2.11	Participant Removing Request	97
9.2.12	Media Plane Handling	97
9.2.13	Pseudonyms in a CPM Group Session	98
9.2.14	Participant Information	98
<b>9.3</b>	<b>CPM FILE TRANSFER HANDLING</b>	<b>100</b>
<b>APPENDIX A.</b>	<b>CHANGE HISTORY (INFORMATIVE)</b>	<b>101</b>
<b>A.1</b>	<b>APPROVED VERSION 1.0 HISTORY</b>	<b>101</b>
<b>APPENDIX B.</b>	<b>STATIC CONFORMANCE REQUIREMENTS (NORMATIVE)</b>	<b>102</b>
<b>B.1</b>	<b>SCR FOR CPM CLIENT</b>	<b>102</b>
<b>B.2</b>	<b>SCR FOR CPM PARTICIPATING FUNCTION</b>	<b>104</b>
<b>B.3</b>	<b>SCR FOR CPM CONTROLLING FUNCTION</b>	<b>105</b>
<b>APPENDIX C.</b>	<b>CPM-DEFINED SIP HEADERS</b>	<b>107</b>
<b>C.1</b>	<b>HEADER DEFINITIONS</b>	<b>107</b>
C.1.1	Conversation-ID	107
C.1.2	Contribution-ID	107
C.1.3	InReplyTo-Contribution-ID	107
C.1.4	Session-Replaces	107
C.1.5	Message-Expires	108
C.1.6	Message-UID	108
<b>C.2</b>	<b>ABNF FOR THE CPM-DEFINED SIP HEADERS</b>	<b>108</b>
<b>APPENDIX D.</b>	<b>RELEASE VERSION IN USER-AGENT AND SERVER HEADERS</b>	<b>110</b>
<b>APPENDIX E.</b>	<b>EXAMPLES OF CPM-BASED SERVICES</b>	<b>111</b>
<b>E.1</b>	<b>VIDEO SHARE SERVICE ALONG WITH A PRE-EXISTING VOICE CALL</b>	<b>111</b>
<b>E.2</b>	<b>VIDEO SHARE SERVICE WITHOUT A PRE-EXISTING VOICE CALL</b>	<b>111</b>

<b>APPENDIX F. THE PARAMETERS TO BE PROVISIONED THE CPM SERVICE (NORMATIVE )</b>	<b>112</b>
<b>F.1 OMA CPM DEVICE MANAGEMENT GENERAL</b>	<b>112</b>
<b>APPENDIX G. INTEROPERABILITY WITH OMA SIMPLE IM CLIENTS</b>	<b>113</b>
<b>APPENDIX H. CPM FEATURE TAGS</b>	<b>115</b>
<b>H.1 CPM FEATURE IDENTIFIERS</b>	<b>115</b>
<b>H.2 CPM CLIENT BEHAVIOUR</b>	<b>115</b>
<b>H.3 PROPOSED FORMATS FOR CPM FEATURE IDENTIFIERS</b>	<b>115</b>
<b>H.4 CLIENT CPM-BASED SERVICE IDENTIFICATION</b>	<b>116</b>
<b>APPENDIX I. CPM NOTIFICATION FORMATS</b>	<b>117</b>
<b>I.1 DEFERRED CPM MESSAGE NOTIFICATION FORMAT</b>	<b>117</b>
I.1.1 Out-of-band Deferred CPM Message Notification Format	117
I.1.2 In-band Deferred CPM Message Notification Format	117
<b>I.2 NOTIFICATION FORMAT OF DEFERRED CPM MESSAGE AFTER EXPIRY</b>	<b>117</b>
I.2.1 Out-of-band Notification	117
I.2.2 In-band notification	118
<b>APPENDIX J. DEFERRED MESSAGES EVENT PACKAGE DEFINITION</b>	<b>119</b>
<b>J.1 DEFERRED MESSAGES METADATA</b>	<b>120</b>
J.1.1 Structure	120
<b>APPENDIX K. FORMAT OF NOTIFICATION FOR DEFERRED CPM MESSAGE AFTER EXPIRY</b>	<b>122</b>

## Tables

<b>Table 1: CPM specific warning texts</b>	<b>20</b>
<b>Table 2: SIMPLE IM Enabler Feature Tags Mapping to/from OMA CPM Enabler Identifiers</b>	<b>113</b>
<b>Table 3: Formats for CPM Feature identifiers</b>	<b>116</b>
<b>Table 4: CPM-based Service identifiers</b>	<b>116</b>

# 1. Scope

This document provides the technical specifications for the conversation functionality of the CPM Enabler. The document covers the formats and procedures that Principals can use to exchange CPM Standalone Messages, CPM File Transfers and CPM Sessions. Also, it specifies how the CPM Standalone Messages, CPM File Transfers and CPM Sessions are linked to each other in CPM Conversations. The technical specifications are designed to fulfil the requirements, architecture and system concepts that are described in [OMA-CPM-RD], [OMA-CPM-AD] and [OMA-CPM-SD] respectively.

As such, these technical specifications provide the formal definitions of the CPM-PF1, CPM-PF2, and CPM-CF interfaces that have been identified in [OMA-CPM-AD]. Also, these technical specifications formally define the expected behaviour of the CPM Client, CPM Participating Function and CPM Controlling Function functional components that have been identified in [OMA-CPM-AD].

## 2. References

### 2.1 Normative References

- [3GPP TS 24.229] “IP Multimedia Call Control Protocol based on Session Initiation Protocol (SIP) and Session Description Protocol (SDP)”, 3GPP, TS24.229, URL:<http://www.3gpp.org/>
- [3GPP TS 26.141] “IP Multimedia System (IMS) Messaging and Presence; Media formats and codecs”, 3GPP, TS26.141, URL:<http://www.3gpp.org/>
- [3GPP2 X.S0013.004] “All-IP Core Network Multimedia Domain: IP Multimedia Call Control Protocol Based on SIP and SDP”, 3GPP2, X.S0013.004, URL:<http://www.3gpp2.org/>
- [draft-session-id] “A Session Identifier for the Session Initiation Protocol (SIP)”, H. Kaplan, July2010, URL:<http://tools.ietf.org/id/draft-kaplan-dispatch-session-id-02.txt>
- [draft-ietf-simple-msrp-acm] “An Alternative Connection Model for the Message Session Relay Protocol”, C. Holmberg et al, June 2010, URL:<http://tools.ietf.org/id/draft-ietf-simple-msrp-acm-09.txt>
- [draft-ietf-simple-msrp-sessmatch] “Session Matching Update for the Message Session Relay Protocol (MSRP)”, C. Holmberg et al, June 2010, URL:<http://www.ietf.org/id/draft-ietf-simple-msrp-sessmatch-06.txt>
- [draft-referred-by] “Updates to Referred-By in the Session Initiation Protocol (SIP)”, S. Loreto et al, June 2010, URL:<http://tools.ietf.org/html/draft-loreto-dispatch-3892bis-01>
- [GSM IR.74] “Video Share Interoperability Specification, 1.3”, GSM Association, PRD IR.74 1.3, URL:<http://www.gsmworld.com/documents/IR7413.pdf>
- [GSM IR 84] “Video Share Phase 2 Interoperability Specification, 1.0”, GSM Association, PRD IR.84 1.0, URL:[http://www.gsmworld.com/documents/IR.84v1\\_0.pdf](http://www.gsmworld.com/documents/IR.84v1_0.pdf)
- [GSM IR.92] “IMS Profile for Voice and SMS, 1.0”, GSM Association, PRD IR.92 1.0, URL:<http://www.gsmworld.com/documents/IR9210.pdf>
- [OMA-SIMPLE-IM] “Instant Messaging using SIMPLE”; Open Mobile Alliance™, OMA-TS-SIMPLE\_IM-V1\_0, URL:<http://www.openmobilealliance.org/>
- [OMA Client Provisioning] “OMA Client Provisioning”, Open Mobile Alliance™, OMA-ERP-ClientProvisioning-V1\_1, URL:<http://www.openmobilealliance.org/>
- [OMA-CPM-AD] “Converged IP Messaging Architecture”, Open Mobile Alliance™, OMA-AD-CPM-V1\_0, URL:<http://www.openmobilealliance.org/>
- [OMA-CPM-RD] “Converged IP Messaging Requirements”, Open Mobile Alliance™, OMA-RD-CPM-V1\_0, URL:<http://www.openmobilealliance.org/>
- [OMA-CPM-SD] “Converged IP Messaging System Description”, Open Mobile Alliance™, OMA-TS-CPM\_System\_Description-V1\_0, URL:<http://www.openmobilealliance.org/>
- [OMA-CPM\_TS\_MessageStorage] “CPM Message Storage; Open Mobile Alliance™, OMA-TS-CPM\_MessageStorage -V1\_0, URL:<http://www.openmobilealliance.org/>
- [OMA DM] “OMA Device Management Protocol”, Open Mobile Alliance™, OMA-TS-DM\_Protocol-V1\_2, URL:<http://www.openmobilealliance.org/>
- [OMA-PAP] “Push Access Control”, Open Mobile Alliance™, OMA-TS-PAP-V2\_3, URL:<http://www.openmobilealliance.org/>
- [OMA-POC] “Push to talk Over Cellular”, Open Mobile Alliance™, OMA-TS-PoC\_System\_Description-V2\_1, URL:<http://www.openmobilealliance.org/>
- [OMA-Push-Message] “Push Message”, Open Mobile Alliance™, OMA-TS-Push\_Message-V2\_3, URL:<http://www.openmobilealliance.org/>
- [OMA-Push-OTA] “Push over the Air”, Open Mobile Alliance™, OMA-TS-PushOTA-V2\_3, URL:<http://www.openmobilealliance.org/>

- [OMA-XDM-AD] “XML Document Management Architecture”; Open Mobile Alliance™, OMA-AD-XDM-V2\_1, URL:<http://www.openmobilealliance.org/>
- [OMA-XDM-Core] “XML Document Management (XDM) Specification”; Open Mobile Alliance™, OMA-TS-XDM\_Core-V2\_1, URL:<http://www.openmobilealliance.org/>
- [OMA-XDM-List] “XML List Specification”; Open Mobile Alliance™, OMA-TS-XDM\_List-V2\_1, URL:<http://www.openmobilealliance.org/>
- [OMA-XDM-Policy] “Policy XDM Specification”; Open Mobile Alliance™, OMA-TS-XDM\_Policy-V1\_1, URL:<http://www.openmobilealliance.org/>
- [OMA-XDM-Group] “Group XDM Specification”, Open Mobile Alliance™, OMA-TS-XDM\_Group-V1\_1, URL:<http://www.openmobilealliance.org/>
- [OMA-XDM-UPP] “UPP Directory XDM Specification”; Open Mobile Alliance™, OMA-TS-XDM\_UPP\_Directory-V1\_0, URL:<http://www.openmobilealliance.org/>
- [OMA Provisioning Content] “Provisioning Content”, Open Mobile Alliance™, OMA-WAP-TS-ProvCont-V1\_1 URL:<http://www.openmobilealliance.org/>
- [RFC2046] “Multipurpose Internet Mail Extensions (MIME) Part Two: Media Types”, N. Freed et al, November 1996, 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”, R. Troost et al, August 1997, URL:<http://www.ietf.org/rfc/rfc2183.txt>
- [RFC2822] “Internet Message Format”, P. Resnick, April 2001, URL: <http://www.ietf.org/rfc/rfc2822.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)”, J. Rosenberg et al, June 2002, URL: <http://www.ietf.org/rfc/rfc3264.txt>
- [RFC3265] “Session Initiation Protocol (SIP)-Specific Event Notification”, A. B. Roach, June 2002, URL:<http://www.ietf.org/rfc/rfc3265.txt>
- [RFC3323] “A Privacy Mechanism for the Session Initiation Protocol (SIP)”, J. Peterson, November 2002, URL:<http://www.ietf.org/rfc/rfc3323.txt>
- [RFC3325] “Private Extensions to the Session Initiation Protocol (SIP) for Asserted Identity within Trusted Networks”, C. Jennings et al, November 2002, URL: <http://www.ietf.org/rfc/rfc3325.txt>
- [RFC3326] “The Reason Header Field for the Session Initiation Protocol”, H. Schulzrinne, December 2002, URL:<http://www.ietf.org/rfc/rfc3326.txt>
- [RFC3420] “Internet Media Type message/sipfrag”, R. Sparks, November 2002, URL:<http://www.ietf.org/rfc/rfc3420.txt>
- [RFC3428] “Session Initiation Protocol (SIP) Extension for Instant Messaging”, B. Campbell (Editor), December 2002, URL:<http://www.ietf.org/rfc/rfc3428.txt>
- [RFC3501] “Internet Message Access Protocol - Version 4rev1”, M. Crispin, March 2003, URL:<http://www.ietf.org/rfc/rfc3501.txt>
- [RFC3515] “The Session Initiation Protocol (SIP) Refer Method”, R. Sparks, April 2003, URL:<http://www.ietf.org/rfc/rfc3515.txt>
- [RFC3550] “RTP: A Transport Protocol for Real-Time Applications”, H. Schulzrinne et al, July 2003, URL:<http://www.ietf.org/rfc/rfc3550.txt>
- [RFC3680] “A Session Initiation Protocol (SIP) Event Package for Registrations”, J. Rosenberg, March 2004, URL:<http://www.ietf.org/rfc/rfc3680.txt>
- [RFC3840] “Indicating User Agent Capabilities in the Session Initiation Protocol (SIP)”, J. Rosenberg et al, August 2004, URL:<http://www.ietf.org/rfc/rfc3840.txt>



- [RFC3841] “Caller Preferences for the Session Initiation Protocol (SIP)”, J. Rosenberg et al, August 2004, URL:<http://www.ietf.org/rfc/rfc3841.txt>
- [RFC3862] “Common Presence and Instant Messaging (CPIM): Message Format”, G. Klyne et al, August 2004, URL:<http://www.ietf.org/rfc/rfc3862.txt>
- [RFC3903] “Session Initiation Protocol (SIP) Extension for Event State Publication”, A. Niemi (Editor), October 2004, URL:<http://www.ietf.org/rfc/rfc3903.txt>
- [RFC4028] “Session Timers in the Session Initiation Protocol (SIP)”, S. Donovan et al, April 2005, URL:<http://www.ietf.org/rfc/rfc4028.txt>
- [RFC4086] "Randomness Recommendations for Security", D. Eastlake et al, June 2005, URL:<http://www.ietf.org/rfc/rfc4086.txt>
- [RFC4353] “Conferencing Framework with SIP”, J. Rosenberg, February 2006, URL:<http://www.ietf.org/rfc/rfc4353.txt>
- [RFC4483] “A Mechanism for Content Indirection in Session Initiation Protocol (SIP) Messages”, E. Burger (Editor), May 2006, URL:<http://www.ietf.org/rfc/rfc4483.txt>
- [RFC4488] “Suppression of Session Initiation Protocol (SIP) REFER Method Implicit Subscription”, O. Levin, May 2006, URL:<http://www.ietf.org/rfc/rfc4488.txt>
- [RFC4566] “SDP: Session Description Protocol”, M. Handley et al, July 2006, URL:<http://www.ietf.org/rfc/rfc4566.txt>
- [RFC4575] “A Session Initiation Protocol (SIP) Event Package for Conference State”, J. Rosenberg et al, August 2006, URL:<http://www.ietf.org/rfc/rfc4575.txt>
- [RFC4579] “Session Initiation Protocol (SIP) Call Control - Conferencing for User Agents”, A. Johnston et al, August 2006, URL:<http://www.ietf.org/rfc/rfc4579.txt>
- [RFC4975] “The Message Session Relay Protocol (MSRP)”, B. Campbell (Editor), September 2006, URL:<http://www.ietf.org/rfc/rfc4975.txt>
- [RFC5092] “IMAP URL Scheme”, A. Melnikov (Editor), November 2007, URL:<http://www.ietf.org/rfc/rfc5092.txt>
- [RFC5318] “The Session Initiation Protocol (SIP) P-Refused-URI-List Private-Header (P-Header)”, J. Hautakorpi et al, December 2008, URL:<http://www.ietf.org/rfc/rfc5318.txt>
- [RFC5364] “Extensible Markup Language (XML) Format Extension for Representing Copy Control Attributes in Resource Lists”, M. Garcia-Martin et al, October 2008, URL:<http://www.ietf.org/rfc/rfc5364.txt>
- [RFC5365] “Multiple-Recipient MESSAGE Requests in the Session Initiation Protocol”, M. Garcia-Martin et al, October 2008, URL:<http://www.ietf.org/rfc/rfc5365.txt>
- [RFC5366] “Conference Establishment Using Request-Contained Lists in the Session Initiation Protocol (SIP)”, G. Camarillo et al, October 2008, URL:<http://www.ietf.org/rfc/rfc5366.txt>
- [RFC5368] “Referring to Multiple Resources in the Session Initiation Protocol (SIP)”, G. Camarillo et al, October 2008, URL:<http://www.ietf.org/rfc/rfc5368.txt>
- [RFC5438] “Instant Message Disposition Notification (IMDN)”, E. Burger et al, February 2009, URL:<http://www.ietf.org/rfc/rfc5438.txt>
- [RFC5547] “A Session Description Protocol (SDP) Offer/Answer Mechanism to Enable File Transfer”, M. Garcia-Martin et al, May 2009, URL:<http://www.ietf.org/rfc/rfc5547.txt>
- [RFC5626] “Managing Client-Initiated Connections in the Session Initiation Protocol (SIP)”, C. Jennings (Editor), October 2009, URL:<http://www.ietf.org/rfc/rfc5626.txt>
- [RFC5627] “Obtaining and Using Globally Routable User Agent URIs (GRUUs) in the Session Initiation Protocol (SIP)”, J. Rosenberg, October 2009, URL:<http://www.ietf.org/rfc/rfc5627.txt>
- [RFC5628] “Registration Event Package Extension for Session Initiation Protocol (SIP) Globally Routable User Agent URIs (GRUUs)”, P. Kyzivat, October 2009, URL:<http://www.ietf.org/rfc/rfc5628.txt>
- [RFC5806] “Diversion Indication in SIP”, S. Levy, March 2010, URL:<http://www.ietf.org/rfc/rfc5806.txt>
- [RFC5876] “Updates to Asserted Identity in the Session Initiation Protocol (SIP)”, J. Elwell, April 2010, URL:<http://www.ietf.org/rfc/rfc5876.txt>

[OMA-SCRRULES] “SCR Rules and Procedures”, Open Mobile Alliance™, OMA-ORG-SCR\_Rules\_and\_Procedures,  
URL:<http://www.openmobilealliance.org/>

## 2.2 Informative References

[OMADICT] “Dictionary for OMA Specifications”, Open Mobile Alliance™,  
OMA-ORG-Dictionary-V2\_7, URL:<http://www.openmobilealliance.org/>

## 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

<b>CPM 1-1 Session</b>	See [OMA-CPM-SD].
<b>CPM-based Service</b>	See [OMA-CPM-AD].
<b>CPM Ad-hoc Group</b>	See [OMA-CPM-RD].
<b>CPM Address</b>	See [OMA-CPM-RD].
<b>CPM Client</b>	See [OMA-CPM-SD].
<b>CPM Contribution Identity</b>	See [OMA-CPM-SD].
<b>CPM Controlling Function</b>	See [OMA-CPM-AD].
<b>CPM Conversation</b>	See [OMA-CPM-RD].
<b>CPM Conversation History</b>	See [OMA-CPM-RD].
<b>CPM Conversation Identity</b>	See [OMA-CPM-SD].
<b>CPM Group Session</b>	See [OMA-CPM-RD].
<b>CPM Group Session Identity</b>	See [OMA-CPM-SD].
<b>CPM Feature</b>	A basic feature offered by the CPM Enabler (e.g. Pager Mode messaging, Large Message Mode messaging, session-based messaging, file transfer, deferred messaging, etc).
<b>CPM Feature Tag</b>	See [OMA-CPM-SD].
<b>CPM File Transfer</b>	See [OMA-CPM-SD].
<b>CPM Message</b>	See [OMA-CPM-RD].
<b>CPM Participating Function</b>	See [OMA-CPM-AD].
<b>CPM Pre-defined Group</b>	See [OMA-CPM-RD].
<b>CPM Session</b>	See [OMA-CPM-RD].
<b>CPM Session Invitation</b>	See [OMA-CPM-RD].
<b>CPM User</b>	See [OMA-CPM-RD].
<b>Deferred CPM Message</b>	See [OMA-CPM-SD].
<b>Device</b>	See [OMADICT].
<b>Enabler</b>	See [OMADICT].
<b>Large Message Mode</b>	See [OMA-CPM-AD].
<b>Interworking Function</b>	See [OMA-CPM-AD].
<b>Interworking Selection Function</b>	See [OMA-CPM-AD].
<b>Group XDMS</b>	See [OMA-XDM-AD].
<b>Join-in Group</b>	See [OMA-XDM-Group].

<b>Large Message Mode</b>	See [OMA-CPM-AD].
<b>Media</b>	See [OMA-CPM-RD].
<b>Media Object</b>	See [OMA-CPM-AD].
<b>Media Plane</b>	See [OMA-CPM-AD].
<b>Media Stream</b>	As defined in [RFC3264].
<b>Message Storage Server</b>	See [OMA-CPM-AD].
<b>Pager Mode</b>	See [OMA-CPM-AD].
<b>Participant</b>	See [OMADICT].
<b>Participant Information</b>	See [OMA-CPM-SD].
<b>Principal</b>	See [OMADICT].
<b>Pseudonym</b>	See [OMA-CPM-RD].
<b>Registration Event Information</b>	See [OMA-CPM-SD].
<b>Signalling Path</b>	See [OMA-CPM-SD].
<b>Unique User Agent Identifier</b>	See [OMA-CPM-SD].
<b>User Preferences Profile</b>	See [OMA-CPM-RD].

### 3.3 Abbreviations

<b>3GPP</b>	3rd Generation Partnership Project
<b>3GPP2</b>	Third Generation Partnership Project 2
<b>ABNF</b>	Augmented Backus–Naur Form
<b>B2BUA</b>	Back to back user agent
<b>CPIM</b>	Common Presence and Instant Messaging
<b>CPM</b>	Converged IP Messaging
<b>GRUU</b>	Globally Routable User Agent URI
<b>IETF</b>	Internet Engineering Task Force
<b>IMAP</b>	Internet Message Access Protocol
<b>IMDN</b>	Instant Message Disposition Notification
<b>IMS</b>	IP Multimedia Subsystem
<b>ISF</b>	Interworking Selection Function
<b>IWF</b>	Interworking Function
<b>IP</b>	Internet Protocol
<b>MIME</b>	Multipurpose Internet Mail Extensions
<b>MSRP</b>	Message Session Relay Protocol
<b>OMA</b>	Open Mobile Alliance
<b>OMNA</b>	Open Mobile Naming Authority
<b>RFC</b>	Request For Comments
<b>RTP</b>	Real-time Transport Protocol
<b>RTCP</b>	RTP Control Protocol
<b>SCR</b>	Static Conformance Requirements
<b>SDP</b>	Session Description Protocol

---

<b>SIMPLE</b>	SIP for Instant Messaging and Presence Leveraging Extensions
<b>SIP</b>	Session Initiation Protocol
<b>TCP</b>	Transmission Control Protocol
<b>UA</b>	User Agent
<b>UAC</b>	User Agent Client
<b>UAS</b>	User Agent Server
<b>UDP</b>	User Datagram Protocol
<b>URI</b>	Uniform Resource Identifier
<b>URL</b>	Uniform Resource Locator
<b>WAP</b>	Wireless Application Protocol
<b>XDM</b>	XML Document Management
<b>XDMS</b>	XML Document Management Server
<b>XML</b>	eXtensible Markup Language

## 4. Introduction

The Converged IP Messaging (CPM) Enabler provides the convergence of multimedia communication services which accommodate different user experiences such as deferred and immediate messaging, session-based messaging, and half duplex/full duplex conferencing, while leveraging standardized service functionalities from existing communication Enablers like Instant Messaging [OMA-SIMPLE-IM] or Push to talk over Cellular [OMA-POC].

The CPM Enabler provides a framework by defining a horizontal Enabler built on top of a SIP/IP core infrastructure. This framework comprises a set of functional components and interfaces that have been designed to facilitate easy deployment of existing and future communication services. The components of the CPM Enabler are independently reusable. The set of functions interact with one another via the framework provided by the CPM Enabler. The CPM Enabler offers multimedia communication functionalities and can be used to build Services, a.k.a. CPM-based Services. An instantiation of a CPM communication can have one or more media types.

All CPM-based Services will use the functional components and interfaces provided by the framework. Non-CPM Communication Services require Interworking Functions that provide adaptation/mapping between the CPM Enabler and the different technologies of these Non-CPM Communication Services to communicate with the framework.

### 4.1 Version 1.0

CPM Enabler version 1.0 Conversation Function offers:

- Registration
  - handling 3rd party CPM service registrations
  - handling Registration Event Information
- CPM Client function, CPM Participating Function, CPM Controlling Function
- CPM Standalone Message handling
  - sending/receiving Pager Mode CPM Standalone Message, Large Message Mode CPM Standalone Message
  - with/without disposition notifications
  - immediate/deferred delivery of CPM Standalone Message
- CPM 1-1 Session handling
  - initiating/receiving/modifying/closing CPM 1-1 Session
  - media plane handling
  - extending CPM 1-1 Session to CPM Group Session
- CPM Group Session handling
  - initiating/receiving/modifying/closing CPM Group Session for CPM Ad-hoc Groups and CPM Pre-defined Groups
  - media plane handling
  - adding/removing users at any time during a CPM Session
  - receiving participant information
- CPM File Transfer
  - initiating/receiving/rejecting CPM File Transfer

- supports discrete (e.g. text, image, video clip, audio clip, voice clip, binary file) Media Types and continuous (e.g. bidirectional voice, streaming video) Media Stream Types
- supports multiple device environment
- applying appropriate User Preferences Profiles among several User Preferences Profiles like Office, Home, Meeting, etc. to which the preferences of the CPM User are associated for message delivery
- supports if interworking decision with Non-CPM Communication Services is required or not
- recording of CPM Standalone Messages, CPM File Transfers and CPM Sessions, including any Media Objects attached to them in a network-based storage subject to the preferences of the CPM User and service provider policies

## 5. Format of CPM Conversation Items

### 5.1 CPM Standalone Message

A CPM Standalone Message is either a Pager Mode CPM Standalone Message carried in a SIP MESSAGE request as described in [RFC3428] or a Large Message Mode CPM Standalone Message. The size of a Pager Mode CPM Standalone Message should not exceed 1300 bytes. If a CPM Standalone Message is larger than 1300 bytes, the contents of the message are not inserted into the SIP MESSAGE request but are carried via MSRP as defined in [RFC4975]. In that case, a SIP session is established between the interested parties (sender and all receivers) with MSRP as the Media Stream. The CPM Standalone Message contents are then transmitted via MSRP, using chunking if necessary. This SIP session should *not* be confused with a CPM Session as no CPM Session is established. The SIP session is only used to transmit exactly one Large Message Mode CPM Standalone Message after which the SIP session is torn down. The CPM Standalone Message contents are contained in a CPIM wrapper as defined in [RFC3862].

### 5.2 CPM Session

A CPM Session uses SIP session functionality as defined by [RFC3261] to exchange multimedia content as well as CPM Chat Messages between two or more CPM Principals or between CPM Principals and non-CPM Principals. A CPM Session can be established between two Principals as a CPM 1-1 Session or between several Principals as a CPM Group Session. In the latter case, a CPM Controlling Function acts as a conference focus as defined by [RFC4353].

A CPM 1-1 Session can be extended by one of the Participants to a CPM Group Session as described in section 7.3.3 “*Extending a CPM 1-1 Session to a CPM Group Session*”.

A CPM User can invite other CPM and non-CPM Principals to a CPM Session. The invitees are either members of a CPM Pre-defined Group or a number of ad-hoc recipients that the CPM User selects dynamically. A CPM Pre-defined Group is a “Shared Group” as described in [OMA-XDM-Group]. Ad-hoc recipients are carried as a 'recipient-list' body in the SIP INVITE request as described in [RFC5366].

The duration of a CPM Session depends on whether it is a CPM 1-1 Session or a CPM Group Session. In the case of a CPM 1-1 Session, the session is terminated when one of the two Participants leaves the session. In the case of a CPM Group Session for a CPM Ad-hoc Group, the session usually ends when the session initiator ends the session. In the case of a CPM Group Session for a CPM Pre-defined Group, the ending of the session depends on the conditions set in the policy of that group as described in [OMA-XDM-Group].

#### 5.2.1 SDP Contents for CPM Sessions

##### 5.2.1.1 SDP Contents when Initiating or Modifying a CPM Session

An initiating entity (e.g. a CPM Client or an IWF) SHALL populate the SDP of a CPM Session Invitation or a CPM Session modification request to match the Media Streams that are needed to be set up, deleted or modified. Therefore the initiating entity SHALL include in the SIP INVITE request a MIME SDP body as an SDP offer according to the rules and procedures of [RFC4566] and [RFC3264]. The SDP offer SHALL contain media descriptions matching the requested Media Streams according to the following clarifications:

- When including an offer for a Media Stream for CPM Chat Messages, using MSRP, the initiating entity SHALL include a media description according to the rules and procedures of [RFC4975].
- When including an offer for a Media Stream for real-time continuous Media, using RTP/RTCP, the initiating entity SHALL include a media description according to the rules and procedures of [RFC3264] and [RFC3550].
- When including an offer for a Media Stream of another Media Stream Type, the initiating entity SHALL follow the respective standard for that Media Stream Type.

In the case of CPM Session modification, the modified SDP SHALL follow the rules and procedures for modifying a session described in [RFC3264].



When the SIP/IP core corresponds with 3GPP/3GPP2 IMS, the SDP offer SHALL also adhere to the rules and procedures described in [3GPP TS 24.229] / [3GPP2 X.S0013.004] and described in [GSMA IR.92].

### 5.2.1.2 SDP Handling at Intermediate Nodes

Intermediate nodes (e.g. a CPM Participating Function, a CPM Controlling Function or an ISF) SHALL include the contents of the SDP they received in the SDP they send out, in accordance with the rules and procedures of [RFC3264]. Specific attributes in the SDP MAY be modified for the following reasons:

- To remove or modify media descriptions that are not allowed according to service provider policies or CPM Group policy or user preferences.
- To modify IP-address and port information to insert the intermediate entity in the media path of the session.

All modifications SHALL be according to the rules and procedures of [RFC3264] and the respective Media Stream standards (i.e. [RFC4975] for MSRP-based media description and [RFC3264] and [RFC3550] for RCP/RTCP-based media descriptions).

### 5.2.1.3 SDP Handling at Terminating Nodes

A terminating entity (e.g. a CPM Client or an IWF) SHALL process an incoming SDP and accept, modify or reject the Media Streams requested in the incoming SDP as defined by [RFC3264]. The terminating entity SHALL handle the media descriptions according to the following clarifications:

- Media descriptions for a Media Stream for CPM Chat Messages, using MSRP, SHALL be handled and responded to according to the rules and procedures of [RFC4975].
- Media descriptions for a Media Stream for real-time continuous Media, using RTP/RTCP, SHALL be handled and responded to according to the rules and procedures of [RFC3264] and [RFC3550].
- Media descriptions for a Media Stream of another Media Stream Type SHALL be handled and responded to according to the respective standard for that Media Stream Type.

## 5.3 CPM Conversation Identification

In order to support the concept of CPM Conversations and a threaded view of a CPM Conversation History, three new SIP headers have been defined:

- **Conversation-ID:** this is a header that identifies the CPM Conversation Identity that is associated with CPM Standalone Messages, CPM File Transfers and CPM Sessions. All CPM Standalone Messages, CPM File Transfers and CPM Sessions belonging to the same CPM Conversation carry the same value for the Conversation-ID header.
- **Contribution-ID:** this is a header that identifies the CPM Contribution Identity of an individual CPM Standalone Message, CPM File Transfer or CPM Session that is part of a CPM Conversation.
- **InReplyTo-Contribution-ID:** this is a header that, in case of a reply to an earlier received CPM Standalone Message, CPM File Transfer or CPM Session, identifies the Contribution-ID of the CPM Standalone Message, CPM File Transfer or CPM Session that is being replied to.

Appendix C “*CPM-defined SIP Headers*” contains a formal definition of these three SIP headers.

These three SIP headers are end-to-end SIP headers. They SHALL NOT be modified or deleted by any intermediate node in any CPM communication.

The three headers SHALL be carried in Pager Mode CPM Standalone Messages (SIP MESSAGE request) and the session invitations of Large Message Mode CPM Standalone Messages, CPM File Transfers and CPM Sessions (SIP INVITE request). All CPM functional components SHALL support these SIP headers.

## 6. Common Procedures

### 6.1 Authenticated Originator's CPM Address

The authenticated originator's CPM Address is:

- the CPM Address of the originating CPM Client that has been authenticated by the SIP/IP core; or
- the CPM Pre-defined Group address when the CPM Controlling Function sends a CPM Standalone Message, CPM Session Invitation or CPM File Transfer request to CPM Pre-defined Group members; or
- the CPM Group Session Identity for this particular CPM Ad-hoc Group when the CPM Controlling Function invites users to a CPM Ad-hoc Group.

When the SIP/IP core corresponds to 3GPP/3GPP2 IMS, then the authenticated originator's CPM Address is contained in the P-Asserted-Identity header according to the rules and procedures of [3GPP TS 24.229] / [3GPP2 X.S0013.004] and as described in [RFC3325] and [RFC5876]. The CPM Client MAY insert a P-Preferred-Identity header, which contains the CPM Client's preferred identity, for the SIP/IP core to be used inside the P-Asserted-Identity header. The P-Preferred-Identity is selected by the CPM Client from the list of CPM Addresses in the P-Associated-URI header received at registration response.

If anonymity is required, the From header SHALL contain an anonymous URI according to [RFC3323] and optionally a Pseudonym or "Anonymous" as the display name, and the Privacy header field values SHALL be set according to [RFC3323] and [RFC3325].

NOTE: The term "anonymity" in this specification is referring to the term "privacy" used in [RFC3323].

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

When the Referred-By header is set to the authenticated originator's CPM Address, then both the SIP URI and TEL URI values in the P-Asserted-Identity header [RFC3325] SHALL be included in the Referred-By header as described in [draft-referred-by].

### 6.2 SIP/IP Core

The CPM Functional components SHALL interface to the underlying SIP/IP core in accordance with the rules and procedures for that SIP/IP core as described in [RFC3261].

When the SIP/IP core corresponds with 3GPP/3GPP2 IMS, these rules and procedures are described in [3GPP TS 24.229] / [3GPP2 X.S0013.004].

### 6.3 Display Name and Anonymity

Using a display name in a CPM Conversation serves different purposes. In case anonymity is requested, it provides the user with a Pseudonym, hiding the user's real identity. In case anonymity is not requested, it is used to display a human readable name for the user. Finally, for a CPM Conversation in a CPM Pre-defined Group, each Participant may be given a group specific display name. This group specific display name is stored in the Group XDMS, as specified in [OMA-XDM-Group].

The CPM Participating Function, CPM Controlling Function and CPM Client MAY send a display name in SIP requests and SIP responses.

The CPM Client MAY support the use of a display name. The CPM Client MAY support the user agent behaviour described in [RFC3323] and [RFC3325].

The CPM Participating Function and CPM Controlling Function SHALL support the use of a display name and the network-provided anonymity/privacy described in [RFC3323] and [RFC3325].

The following text describes the procedures when the CPM Client, the CPM Participating Function and CPM Controlling Function support the use of a display name and anonymity.

A CPM Client MAY provide the inviting CPM User's Pseudonym (this is a user defined name) in the "display-name" part of the authenticated originator's CPM 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 CPM Participating Function.

NOTE: 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 CPM Address is successful as described in [RFC3325].

The terminating CPM Client MAY provide the invited CPM User's display name in the "display-name" part of the To header of a SIP 200 "OK" response to an initial SIP INVITE request.

An originating or terminating CPM Client MAY request anonymity by adding privacy type "id" to the Privacy header as described in [RFC3323] and [RFC3325].

The CPM Participating Function SHALL act on privacy type "id" detected in a Privacy header as described in [RFC3323] and [RFC3325] to provide the CPM User with anonymity when requested.

The CPM Controlling Function SHALL determine the display name to use, according to the following priority order:

1. In case anonymity is requested, and the CPM Pre-defined Group definition as specified in [OMA-XDM-Group] allows anonymity, the display name as provided by the CPM Client SHALL be used if the display name is allowed by service provider's policy. If no display name was defined by the CPM Client, or this display name is already in use in the session, the CPM Controlling Functions chooses a display name as defined in 9.2.13 "Pseudonyms in a CPM Group Session".
2. In case anonymity is not requested, the display name received in the "display-name" part of the authenticated originator's CPM Address of initial SIP requests and, for display name of the responding side, of SIP 200 "OK" responses to the initial SIP requests from Participants SHALL be used. If no authenticated originator's CPM Address was provided, the display name received in the "display-name" part of the From header of initial SIP requests and, for display name of responding side, in the "display-name" part of the To header of the SIP 200 "OK" responses to the initial SIP requests from Participants SHALL be used.

A CPM Client receiving a display name (either on the terminating or the originating side) SHALL display the display name to the user.

## 6.4 Warning Header

### 6.4.1 General

The CPM Participating Function or CPM Controlling Function MAY include a free text string in an error response to SIP requests.

When the CPM Participating Function or CPM Controlling Function includes a text string in an error response to a SIP INVITE request or a SIP MESSAGE request the text string SHALL be included in a Warning header as specified in [RFC3261]. When including a text string in an error response, the CPM Participating Function or CPM Controlling Function SHALL include the Warning code set to 399 and MAY include the host name set to the host name of the CPM Participating Function or CPM Controlling Function.

The CPM Client MAY include the preferred language in the Accept-Language header in the SIP INVITE request, SIP MESSAGE request or SIP 2xx response.

The CPM Participating Function or CPM Controlling Function SHOULD choose the language of the warning text in the Warning header depending on the preferred language indicated in the Accept-Language header received from the CPM Client

in the SIP INVITE request, SIP MESSAGE 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.

## 6.4.2 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 format <xxx> + <explanatory text>, for example “102 Too many participants”.

The warning texts and codes are defined in Table 1.

Code	Explanatory text	Description
102	Too many participants	The maximum number of Participants allowed in a CPM Session is exceeded.
105	Isfocus already assigned	A conference focus (a CPM Controlling Function) has already been assigned to the CPM Session.
119	Anonymity not allowed	Anonymity is requested, but is not allowed.
122	Function not allowed	Function is not allowed, but a detailed description about the reason is not given.
123	Session does not exist	The target session in the Request URI does not exist.
125	No messages	Messages are requested to be retrieved, but there are no messages.
127	Service not authorised	The User is not authorised for this service.
129	No destinations	No destination addresses available for the action.
132	Version not supported	The CPM version indicated in the request is not supported.

**Table 1: CPM specific warning texts**

## 6.5 Communicating with the ISF

In order to send a CPM Standalone Message, CPM File Transfer or CPM Session Invitation to the ISF, the CPM Participating Function or the CPM Controlling Function SHALL act as a UAC, as defined in [RFC3261], and send the SIP MESSAGE request (corresponding with a Pager Mode CPM Standalone Message or a CPM Standalone Message Disposition Notification) or SIP INVITE request (corresponding with a Large Message Mode CPM Standalone Message, CPM File Transfer or a CPM Session Invitation) directly to the ISF, without routing the SIP request via the SIP/IP core.

## 7. Procedures at CPM Client

A CPM Client provides the CPM User with an interface to access the functionalities of the CPM Enabler.

Before a CPM Client can provide CPM functionalities to the CPM User it has to register to the SIP/IP core as described in section 7.1 “*Registering at the SIP/IP Core*”.

A CPM Client can initiate new communications in a number of ways, as follows:

- When a CPM Client needs to send a Pager Mode CPM Standalone Message, it SHALL follow the procedures described in section 7.2.1.1 “*Sending a Pager Mode CPM Standalone Message*”.
- When a CPM Client needs to send a Large Message Mode CPM Standalone Message, it SHALL follow the procedures described in section 7.2.1.2 “*Sending a Large Message Mode CPM Standalone Message*”.
- When a CPM Client needs to initiate a new CPM Session, it SHALL follow one of the procedures described in section 7.3.1 “*Initiating New CPM Sessions*”, depending on what kind of CPM Session is to be initiated.
- When a CPM Client needs to initiate a new CPM File Transfer, it SHALL follow the procedures defined in section 7.4.1 “*CPM File Transfer Session Initiation*”.
- When a CPM Client needs to handle Deferred CPM Message(s), it SHALL follow the procedures defined in section 7.2.3.2 “*Handling Deferred CPM Message(s)*”.

A CPM Client handles incoming CPM communications in the following manners:

- Upon receiving a SIP MESSAGE request with the CPM Feature Tag ‘3gpp-service.ims.icsi.oma.cpm.msg’ or with CPM Feature Tag ‘3gpp-service.ims.icsi.oma.cpm.deferred’ (defined in Appendix H) included in the Accept-Contact header, the CPM Client SHALL handle this SIP MESSAGE request as described in section 7.2.2.1 “*Receiving a Pager Mode CPM Standalone Message*”.
- Upon receiving a SIP INVITE request with the CPM Feature Tag ‘3gpp-service.ims.icsi.oma.cpm.largemsg’ or with CPM Feature Tag ‘3gpp-service.ims.icsi.oma.cpm.deferred’ (defined in Appendix H) included in the Accept-Contact header, the CPM Client SHALL handle this SIP INVITE request as described in section 7.2.2.2 “*Receiving a Large Message Mode CPM Standalone Message*”.
- Upon receiving a SIP INVITE request with the CPM Feature Tag ‘3gpp-service.ims.icsi.oma.cpm.session’ (defined in Appendix H) included in the Accept-Contact header, the CPM Client SHALL handle this SIP INVITE request as described in section 7.3.2 “*Receiving a CPM Session Invitation*”.
- Upon receiving a SIP INVITE request with the CPM Feature Tag ‘3gpp-service.ims.icsi.oma.cpm.filetransfer’ (defined in Appendix H) included in the Accept-Contact header, the CPM Client SHALL handle this SIP INVITE request as described in section 7.4.2 “*Receiving a CPM File Transfer Request*”.

### 7.1 Registering at the SIP/IP Core

The CPM Client’s CPM service registration or re-registration to the SIP/IP core SHALL be made according to the rules and procedures of [RFC3261] and the SIP/IP core.

When registering or re-registering for the CPM service, the CPM Client:

1. SHALL generate a SIP REGISTER request according to the rules and procedures of [RFC3261];
2. SHALL include the CPM Feature Tags of the supported features in the Contact header as described in Appendix H “*CPM Feature Tags*”;
3. SHALL include a sip instance media feature tag with the Unique User Agent Identifier of the CPM Client in the Contact header according to [RFC5626];

4. SHALL indicate CPM Client user agent capabilities in the Contact header according to [RFC3840];
5. SHALL indicate the name of the CPM Client, as provided by the CPM User, in the display-name part of the Contact header as provided by the CPM User;
6. SHALL include a Supported header with the option tag 'gruu' according to [RFC5627];
7. SHALL include a Require header with the option tag 'gruu' according to [RFC5627];
8. SHALL send the SIP REGISTER request towards the SIP/IP core according to the rules and procedures of the SIP/IP core.

To maintain the SIP registration for the CPM service active, the CPM Client SHALL use the re-registration procedure as specified in [RFC3261].

When the CPM service is no longer required, the CPM Client SHALL send a SIP REGISTER request without CPM Feature Tags of the supported features in the Contact header as described in Appendix H "*CPM Feature Tags*"; according to the rules and procedures of [RFC3261] terminating the existing CPM registration. If the CPM Client also needs to deregister from the SIP/IP core, it SHALL send a SIP REGISTER request with an Expires header set to 0, as defined in [RFC3261]

If device settings are to pull Deferred CPM Messages, the CPM Client SHALL subscribe to the "deferred-messages" event package as described in section 7.2.3.1 "*Subscribe to Deferred CPM Message Info*".

## 7.2 CPM Standalone Message Handling

CPM Clients MAY support different text and media types (including SMIL) as defined in [3GPP TS 26.141].

### 7.2.1 Sending CPM Standalone Messages

#### 7.2.1.1 Sending a Pager Mode CPM Standalone Message

When the CPM Client wants to send a CPM Standalone Message and the CPM Standalone Message is small enough (i.e. less than or equal to 1300 bytes) to be sent as a Pager Mode CPM Standalone Message, the CPM Client SHALL generate a SIP MESSAGE request according to the rules and procedures of [RFC3428]. The CPM Client:

1. SHALL include an Accept-Contact header with the CPM Feature Tag '3gpp-service.ims.icsi.oma.cpm.msg' according to the rules and procedures of [RFC3841];
2. MAY include one of the registered CPM Addresses of the CPM User as described in section 6.1 "*Authenticated Originator's CPM Address*" as authenticated originator's CPM Address;
3. SHALL include a Reply-To header if the CPM User requests a different reply address from the address included in the From header;
4. SHALL include a User-Agent header to indicate the OMA CPM release version of the CPM Client as specified in Appendix D "*Release Version in User-agent and Server headers*";
5. If anonymity is requested, SHALL include value "id" in a Privacy header according to the rules and procedures of [RFC3325];
6. If the CPM User or CPM Client wants to specify an expiry time for the CPM Standalone Message, SHALL include an Expires header as defined in [RFC3261];
7. If the CPM Standalone Message is to be sent to one CPM user or to one non-CPM User, the CPM Client SHALL set the Request-URI of the SIP MESSAGE request as follows:
  - a. In case of a new CPM Standalone Message to the address of the target CPM User or the target non-CPM User;
  - b. In case of a reply and a Reply-To header is included in the received CPM Standalone Message for which the CPM Standalone Message is a reply to, to the address in that Reply-To header, unless a new address is provided by the CPM User;

- c. In case of a reply and no Reply-To header is included in the received CPM Standalone Message for which the CPM Standalone Message is a reply to, to the address in the header containing the authenticated originator's CPM Address, unless a new address is provided by the CPM User.
8. If the CPM Standalone Message is to be sent to a CPM Ad-hoc Group, then the CPM Client:
  - a. SHALL set the Request-URI to the address of the CPM Controlling Function provisioned to the CPM Client;
  - b. SHALL include a MIME resource-list body with the target addresses of the CPM Users and non-CPM Users as specified in [RFC5365];
  - c. In case of a reply and a Reply-To header is included in the received CPM Standalone Message for which the CPM Standalone Message is a reply to, SHALL insert to the MIME resource-list body at least the address of that Reply-To header, unless a new address is provided by the CPM User;
  - d. In case of a reply and no Reply-To header is included in the received CPM Standalone Message for which the CPM Standalone Message is a reply to, SHALL insert to the MIME resource-list body at least the address in the header containing the authenticated originator's CPM Address, unless a new address is provided by the CPM User.
9. If the CPM Standalone Message is to be sent to a CPM Pre-defined Group, then the CPM Client SHALL set the Request-URI to the address of the target CPM Pre-defined Group;
10. If the CPM Standalone Message starts a new CPM Conversation, the CPM Client SHALL include a Conversation-ID header set to a newly generated value as specified in Appendix C "*CPM-defined SIP Headers*", Otherwise, the CPM Client SHALL include the Conversation-ID of the existing CPM Conversation;
11. The CPM Client SHALL include a Contribution-ID header with a newly generated Contribution-ID value as specified in Appendix C "*CPM-defined SIP Headers*";
12. If the CPM Standalone Message is in reply to a previously received CPM Standalone Message, CPM File Transfer or CPM Session Invitation, the CPM Client SHALL include the InReplyTo-Contribution-ID header with the value of Contribution-ID in the previously received CPM Standalone Message, CPM File Transfer or CPM Session Invitation;
13. The CPM Client SHALL generate a CPIM message wrapper as defined in section 7.2.1.3 "*Generate a CPM Standalone Message*";
14. The CPM Client SHALL set the body of the SIP MESSAGE request to the generated CPIM message wrapper;
15. The CPM Client SHALL send the SIP MESSAGE request according to the rules and procedures of the SIP/IP core.

### 7.2.1.2 Sending a Large Message Mode CPM Standalone Message

When the CPM Client wants to send a CPM Standalone Message and the CPM Standalone Message is too large (i.e. larger than 1300 bytes) to be sent as a Pager Mode CPM Standalone Message, the CPM Client SHALL generate an initial SIP INVITE request according to the rules and procedures of [RFC3261]. The CPM Client:

1. SHALL include an Accept-Contact header with the CPM Feature Tag '3gpp-service.ims.icsi.oma.cpm.largemsg' according to the rules and procedures of [RFC3841];
2. SHALL include a Contact header with the CPM Feature Tag '3gpp-service.ims.icsi.oma.cpm.largemsg' according to the rules and procedures of [RFC38410];
3. MAY include one of the registered CPM Addresses of the CPM User as described in section 6.1 "*Authenticated Originator's CPM Address*" as authenticated originator's CPM Address;
4. SHALL include a Reply-To header if the CPM User requests a different reply address;
5. SHALL include a User-Agent header to indicate the OMA CPM release version of the CPM Client as specified in Appendix D "*Release Version in User-agent and Server headers*";
6. If anonymity is requested, SHALL include value "id" in a Privacy header according to the rules and procedures of [RFC3325];

7. If the CPM User or CPM Client wants to specify an expiry time for the CPM Standalone Message, SHALL include a Message-Expires header as defined in Appendix C “CPM-defined SIP Headers”;
8. If the Large Message Mode CPM Standalone Message is to be sent to one CPM user or to one non-CPM User, the CPM Client SHALL set the Request-URI of the SIP INVITE request as follows:
  - a. In the case of a new CPM Standalone Message, to the address of the target CPM User or the target non-CPM User;
  - b. In case of a reply and a Reply-To header is included in the received CPM Standalone Message, CPM File Transfer or CPM Session Invitation for which the CPM Standalone Message is a reply to, to the address of that Reply-To header, unless a new address is provided by the CPM User;
  - c. In case of a reply and no Reply-To header is included in the received CPM Standalone Message, CPM File Transfer or CPM Session Invitation for which the CPM Standalone Message is a reply to, to the address of the header containing the authenticated originator's CPM Address, unless a new address is provided by the CPM User.
9. If the Large Message Mode CPM Standalone Message is to be sent to a CPM Ad-hoc Group, then the CPM Client:
  - a. SHALL set the Request-URI to the address of the CPM Controlling Function provisioned to the CPM Client;
  - b. SHALL include a MIME resource-list body with the target addresses of the CPM Users and non-CPM Users as specified in [RFC5364];
  - c. In case of a reply and a Reply-To header is included in the received CPM Standalone Message for which the CPM Standalone Message is a reply to, SHALL insert to the MIME resource-list body at least the address of that Reply-To header, unless a new address is provided by the CPM User;
  - d. In case of a reply and no Reply-To header is included in the received CPM Standalone Message, CPM File Transfer or CPM Session Invitation for which the CPM Standalone Message is a reply to, to the address in the header containing the authenticated originator's CPM Address of the received CPM Standalone Message, unless a new address is provided by the CPM User.
10. If the Large Message Mode CPM Standalone Message is to be sent to a CPM Pre-defined Group, then the CPM Client SHALL set the Request-URI to the address of the target CPM Pre-defined Group;
11. SHALL include the option tag 'timer' in the Supported header;
12. SHOULD include the Session-Expires header with the refresher parameter set to "uac" according to the rules and procedures of [RFC4028];
13. If the Large Message Mode CPM Standalone Message starts a new CPM Conversation, the CPM Client SHALL include a Conversation-ID header set to a newly generated value as specified in Appendix C “CPM-defined SIP Headers”. Otherwise, the CPM Client SHALL include the Conversation-ID of the existing CPM Conversation.
14. The CPM Client SHALL include a Contribution-ID header with a newly generated Contribution-ID value as specified in Appendix C “CPM-defined SIP Headers”;
15. If the Large Message Mode CPM Standalone Message is in reply to a previously received CPM Standalone Message, CPM File Transfer or CPM Session Invitation, the CPM Client SHALL include the InReplyTo-Contribution-ID header with the value of Contribution-ID in the previously received CPM Standalone Message, CPM File Transfer or CPM Session Invitation as specified in Appendix C “CPM-defined SIP Headers”;
16. SHALL include in the SIP INVITE request a MIME SDP body as a SDP offer according to the rules and procedures of [RFC3264], [RFC4566], [RFC4975], [draft-ietf-simple-msrp-acm] and [draft-ietf-simple-msrp-sessmatch] with the following clarification:
  - a. SHALL set the SDP directional media attribute to a=sendonly;
  - b. SHALL set the content type as a=accept-types:message/cpim;
  - c. SHALL set the sub-content type as a=accept-wrapped-types.\*;
  - d. SHALL set MSRP URI for the MSRP connection setup as a=path:MSRP URI;



- e. SHALL set the size as a=file-selector:size:actual message size;
- f. SHALL set the a=setup attribute as “active”.

NOTE: The value ‘\*’ is for example and implementations shall set this value to the MIME sub-media types of the CPIM.

17. The CPM Client SHALL send the SIP INVITE request according to the rules and procedures of the SIP/IP core.

When the CPM Client needs to cancel the message delivery and if the CPM Client has not yet received a final SIP response for the SIP INVITE request, the CPM Client SHALL send a SIP CANCEL request according to the rules and procedures of [RFC3261].

On receiving a SIP 200 “OK” response to the sent SIP INVITE request, the CPM Client:

1. SHALL start a SIP session timer using the value received in the Session-Expires header according to the rules and procedures of [RFC4028];
2. SHALL generate and send a SIP ACK request as an acknowledgement of the final response according to the rules and procedures of [RFC3261];
3. SHALL act as an MSRP client according to [draft-ietf-simple-msrp-acm];
4. SHALL act as an active endpoint to open the transport connection according to [draft-ietf-simple-msrp-acm];
5. SHALL establish the MSRP connection according to the MSRP connection parameters in the SDP answer received in the SIP 200 “OK” response according to [RFC4975];
6. SHALL send an empty MSRP SEND request to bind the MSRP connection to the MSRP session from the perspective of the passive endpoint according to the rules and procedures of [RFC4975] and [draft-ietf-simple-msrp-acm];
7. SHALL generate a CPIM message wrapper as defined in section 7.2.1.3 “Generate a CPM Standalone Message”.
8. SHALL generate one or more MSRP SEND requests (depending on whether chunking is used) according to the rules and procedures of [RFC4975] and the following additional clarifications. The CPM Client:
  - a. SHALL set To-Path header according to the MSRP URI(s) received in the answer SDP;
  - b. SHALL set the content type as Content-Type = message/cpim as described in [RFC3862];
  - c. SHALL set the body of the MSRP SEND request(s) to the generated CPIM message wrapper.
9. SHALL send the MSRP SEND request(s) on the established MSRP connection

Once the CPM Standalone Message has been successfully transferred via MSRP, the CPM Client:

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

### 7.2.1.3 Generate a CPM Standalone Message

In order to generate a CPM Standalone Message, a CPM Client SHALL generate a CPIM message as defined in [RFC3862], with the following clarifications:

2. SHALL set the From header of the CPIM message to the address of the sending CPM User;
3. SHALL set the To header of the CPIM message as follows:
  - a. If the CPM Standalone Message is to be sent to one CPM Principal or to one non-CPM Principal, the CPM Client SHALL set the To header of the CPIM message to the address of the recipient;
  - b. If the CPM Standalone Message is to be sent to a CPM Ad-hoc Group, the CPM Client SHALL set the To header of the CPIM message to the address of the CPM Controlling Function provisioned to the CPM Client;

- c. If the CPM Standalone Message is to be sent to a CPM Pre-defined Group, the CPM Client SHALL set the To header of the CPIM message to the address of the target CPM Pre-defined Group;
4. If the CPM user wishes to obtain the disposition-state of the CPM Standalone Message (e.g. whether the message is delivered to the recipients or not, whether the recipients read the message), the CPM Client SHALL set the disposition notification according to the rules and procedures described in section 7.2.4 “Disposition Notification”.

#### 7.2.1.4 Forwarding/Including Stored Data without Downloading to the CPM Client

When a CPM Client generates a SIP MESSAGE or MSRP SEND request with references to stored data (e.g. Media Objects, CPM Standalone Messages, CPM Session Histories or CPM Conversation History) in the Message Storage Server, the CPM Client:

1. SHALL obtain the URL to the stored data from the Message Storage Client;  
NOTE: The Message Storage Client obtains the URL from the Message Storage Server.
2. SHALL include a Content-Type header as specified in [RFC4483] (i.e. type set to “message/external-body”, access-type set to “URL”, and the URL obtained in step 1 in the URL parameter). When including a URL, the URL SHALL be modified to include the extension “?action=fetch”;  
NOTE: If there are other Content-Type headers within the SIP MESSAGE request, the CPM Client shall include the Content-Type header “multipart/mixed” with the proper boundary value to distinguish the URL part and existing parts as described in [RFC2046].
3. If the size of the message is over 1300 bytes, the CPM Client SHALL perform the procedures specified in 7.2.1.2 “Sending a Large Message”. Otherwise, the CPM Client SHALL perform the procedures specified in 7.2.1.1 “Sending a Pager Mode CPM Standalone Message”.

## 7.2.2 Receiving CPM Standalone Messages

### 7.2.2.1 Receiving a Pager Mode CPM Standalone Message

Upon receiving a SIP MESSAGE request with the CPM Feature Tag ‘3gpp-service.ims.icsi.oma.cpm.msg’ included in the Accept-Contact header corresponding to Pager Mode CPM Standalone Message or with the CPM Feature Tag ‘3gpp-service.ims.icsi.oma.cpm.deferred’ included in the Accept-Contact header corresponding to a Deferred CPM Message, the CPM Client:

1. MAY reject the SIP MESSAGE request if it determines that there are not enough resources to handle the SIP MESSAGE request and return a SIP 480 “Temporarily Unavailable” response.

Otherwise, the CPM Client:

1. SHALL generate a SIP 200 “OK” response according to rules and procedures of [RFC3428];
2. SHALL include a Server header to indicate the OMA CPM release version of the CPM Client as specified in Appendix D “Release Version in User-agent and Server headers”.
3. MAY include one of the registered CPM Addresses of the CPM User as described in section 6.1 “Authenticated Originator’s CPM Address” as authenticated recipient’s CPM Address;
4. SHALL include all of the Conversation-ID, Contribution-ID and InReplyTo-Contribution-ID headers received in the SIP MESSAGE request;
5. SHALL send the SIP response according to rules and procedures of the SIP/IP core;
6. SHALL handle the received Pager Mode CPM Standalone Message as described in section 7.2.2.3 “Handling of Received CPM Standalone Messages”.

### 7.2.2.2 Receiving a Large Message Mode CPM Standalone Message

Upon receiving a SIP INVITE request with the CPM Feature Tag '3gpp-service.ims.icsi.oma.cpm.largemsg' included in the Accept-Contact header corresponding to Large Message Mode CPM Standalone Message, or upon receiving a SIP INVITE request with the CPM Feature Tag '3gpp-service.ims.icsi.oma.cpm.deferred' included in the Accept-Contact header corresponding to Deferred Large Message Mode CPM Standalone Message, the CPM Client MAY reject the SIP INVITE request if it determines that there are not enough resources to handle the SIP INVITE request and return a SIP 480 "Temporarily Unavailable" response;

Otherwise, the CPM Client:

1. SHALL check if the accept-type attribute of the SDP m line in the SIP INVITE request are acceptable to the CPM Client and if not, reject the request with a SIP 488 "Media Type Not Acceptable Here" response.

Otherwise, continue with the rest of the steps;

2. SHALL generate a SIP 200 "OK" response to the received initial SIP INVITE request according to the rules and procedures of [RFC3261] with the following clarifications:

- a. The CPM Client SHALL include a Server header to indicate the OMA CPM release version of the CPM Client as specified in Appendix D "*Release Version in User-agent and Server headers*"
- b. The CPM Client MAY include one of the registered CPM Addresses of the CPM User as described in section 6.1 "*Authenticated Originator's CPM Address*" as authenticated recipient 's CPM Address;
- c. The CPM Client SHALL include an answer SDP according to the rules and procedures of [RFC3264], [RFC4566], [RFC4975], [draft-ietf-simple-msrp-acm] and [draft-ietf-simple-msrp-sessmatch] with the following clarifications:
  - i. The CPM Client SHALL include media line proposing MSRP media parameters;
  - ii. The CPM Client SHALL include its own MSRP URI for the MSRP connection setup as a=path:MSRP URI;
  - iii. The CPM Client SHALL set the SDP directional media attribute to a=recvonly;
  - iv. The CPM Client SHALL set the content type as a=accept-types:message/cpim;
  - v. The CPM Client SHALL set the sub-content type as a=accept-wrapped-types:\*;
  - vi. The CPM Client SHALL set the a=setup attribute as "active".

NOTE: The value '\*' for 'accept-wrapped-types' attribute is for example and implementations may copy the value from the SDP offer or don't have to include this attribute in the SDP answer.

- d. The CPM Client SHALL include any of the Conversation-ID, Contribution-ID and InReplyTo-Contribution-ID headers received in the SIP INVITE request.
3. SHALL send the SIP 200 "OK" response according to the rules and procedures of the SIP/IP core.

Upon receiving a SIP CANCEL request, the CPM Client SHALL act as UAS to handle the request according to the rules and procedures of [RFC3261].

Upon receiving a SIP ACK request, the CPM Client:

1. SHALL handle the SIP ACK request according to the rules and procedures of [RFC3261];
2. SHALL act as an MSRP client according to [draft-ietf-simple-msrp-acm];
3. SHALL act as an active endpoint to open the transport connection according to [draft-ietf-simple-msrp-acm];
4. SHALL establish the MSRP connection according to the MSRP connection parameters in the SDP offer received in the SIP INVITE request according to [RFC4975];
5. SHALL send an empty MSRP SEND request to bind the MSRP connection to the MSRP session from the perspective of the passive endpoint according to the rules and procedures of [RFC4975] and [draft-ietf-simple-msrp-acm].

When the CPM Client receives an MSRP request, the Client SHALL follow the rules and procedures defined in [RFC4975] and in [draft-ietf-simple-msrp-sessmatch]. If an MSRP SEND request indicates the use of chunking, the CPM Client SHALL wait until all further MSRP SEND requests for the remaining chunks have been received and SHALL reassemble the entire set of MSRP requests into the CPM Standalone Message.

Upon receiving a SIP BYE request, the CPM Client SHALL respond to the SIP BYE request as described in [RFC3261].

The CPM Client SHALL handle the received CPM Standalone Message as described in section 7.2.2.3 “*Handling of Received CPM Standalone Messages*”.

### 7.2.2.3 Handling of Received CPM Standalone Messages

When a CPM Client has received a CPM Standalone Message, the CPM Client:

1. SHALL check the Content-Disposition header of the CPIM message. If there is a value in the header, the terminating CPM Client SHALL follow the value;
2. If the body includes references to content external to the message having the Content-Type: message/external-body; the CPM Client SHALL treat them according to rules and procedures in [RFC4483];
3. SHALL check whether the message contains the request for delivery notification. If true, the CPM Client SHALL send a disposition notification as described in section 7.2.4.1 “*Generate Delivery Notification*”;
4. SHALL check whether the message contains the request for read report. If true, the CPM Client SHALL handle the request for read report as described in section 7.2.4.2 “*Generate Read Report*”;
5. If a Message-UID header as defined in Appendix C “*CPM-defined SIP Headers*” is included, SHALL store the UID value in conjunction with the message if storing the received CPM Standalone Message in the local storage.

## 7.2.3 Deferred CPM Message Handling

### 7.2.3.1 Subscribe to Deferred CPM Message Info

To receive information about Deferred CPM Messages, the CPM Client:

1. SHALL generate a SIP SUBSCRIBE request, according to the rules and procedures of [RFC3265];
2. SHALL set the Request-URI to the following address: CPMDeferredMsgMgmt@hostname as provisioned to the CPM Client;
3. SHALL include an Accept-Contact header with the CPM Feature Tag ‘3gpp-service.ims.icsi.oma.cpm.deferred’ according to the rules and procedures of [RFC3841];
4. SHALL include a Contact header with the CPM Feature Tag ‘3gpp-service.ims.icsi.oma.cpm.deferred’ according to the rules and procedures of [RFC3841];
5. MAY include one of the registered CPM Addresses of the CPM User as described in section 6.1 “*Authenticated Originator’s CPM Address*” as the authenticated originator’s CPM Address;
6. SHALL set the Event header to “deferred-messages”;
7. SHALL set the Expires header to “0”;
8. SHALL send the SUBSCRIBE request according to the rules and procedures of the SIP/IP core.

Upon receiving a SIP NOTIFY request with the information on the Deferred CPM Messages, the CPM Client SHALL display the list of Deferred CPM Messages to the CPM User and SHALL allow the CPM User to process the list as described in section 7.2.3.2.1 “*Handling Deferred CPM Message(s) before Having Received an Expiry Notification*” to execute the decisions of the CPM User.

## 7.2.3.2 Handling Deferred CPM Message(s)

### 7.2.3.2.1 Handling Deferred CPM Message(s) before Having Received an Expiry Notification

Handling of Deferred CPM Message(s) is performed by setting up a session with the CPM Participating Function. The message-URI-ID(s) of the Deferred CPM Message(s) to be retrieved, deleted, interworked or stored are listed in a URI list as defined in [RFC5366]. The absence of a URI-list in the session set up indicates that all messages are to be retrieved.

NOTE 1: The CPM Client may initiate this procedure at the instruction of the CPM User.

When handling Deferred CPM Message(s) before receiving a notification about expiry, the CPM Client:

1. SHALL generate an initial SIP INVITE request according to the rules and procedures of [RFC3261];
2. SHALL set the Request-URI of the SIP INVITE request to CPMDerivedMsgMgmtURI for the CPM service in the home CPM network of the CPM User;
3. SHALL include the CPM Feature Tag ‘3gpp-service.ims.icsi.oma.cpm.deferred’ in the Contact header;
4. SHALL include the CPM Feature Tag ‘3gpp-service.ims.icsi.oma.cpm.deferred’ in the Accept-Contact header;
5. SHALL include in the SIP INVITE request a MIME SDP body as an SDP offer according to the rules and procedures of [RFC3264], [RFC4566] and [RFC4975] with the following additional clarifications. The CPM Client:
  - a. SHALL set the SDP “accept-types” attribute to a=accept-types:message/cpim;
  - b. MAY list other formats or use ‘\*’ as defined in [RFC4975];
  - c. SHALL set the media direction attribute to a=recvonly.
6. If not all the Deferred CPM Messages are to be retrieved, the CPM Client
  - a. SHALL include a MIME resource-list body as specified in [RFC5366]. Each entry in the URI-list identifies a Deferred CPM Message and SHALL contain one of the following parameters:
    - i. “?cpm\_action=deliver”, if the Deferred CPM Message identified by the URI is to be retrieved;
    - ii. “?cpm\_action=delete”, if the Deferred CPM Message identified by the URI is to be deleted;
    - iii. “?cpm\_action=interwork”, if the Deferred CPM Message identified by the URI is to be interworked;
    - iv. “?cpm\_action=store”, if the Deferred CPM Message identified by the URI is to be delivered to the Message Storage Server.

NOTE 2: Any deferred message not mentioned in the MIME resource-list in the SIP INVITE request will stay deferred.

7. SHALL send the SIP INVITE request to the CPM Participating Function according to the rules and procedures of [RFC3261] and the SIP/IP core.

NOTE 3: The media plane of the above session is not needed and therefore is not being set up.

On receiving a SIP 488 “Not Acceptable Here” response with a Warning header with the warning text set to “125 No messages” the CPM Client SHALL not pursue handling of the Deferred CPM Messages specified in above SIP INVITE request and SHALL process the SIP 488 “Not Acceptable Here” response according to the rules and procedures of [RFC3261].

Any other error response SHALL be processed according to the rules and procedures of [RFC3261].

On receiving a SIP 200 “OK” response to the SIP INVITE request, the CPM Client SHALL generate and send a SIP ACK request according to [RFC3261]. After having sent the SIP ACK request, the CPM Client SHALL send a SIP BYE request.

If there are any Deferred CPM Messages to be delivered, these will be sent by the CPM Participating Function and the CPM Client SHALL handle the received CPM Standalone Message as described in section 7.2.2 “*Receiving CPM Standalone Messages*”.

### 7.2.3.2.2 Retrieving CPM Standalone Message(s) after Receiving a Notification for Expiry of Deferred CPM Message(s)

When retrieving CPM Standalone Message(s) after receiving a notification that Deferred CPM Message(s) were expired as in section 7.2.3.3 “*Receiving a notification for Expiry of Deferred CPM Message*”, the CPM Client SHALL perform the following procedures:

1. If the Deferred CPM Messages were discarded after expiry, the CPM Client SHALL inform the CPM User that the Deferred CPM Messages were already discarded because they were expired;
2. If the Deferred CPM Messages were stored in Message Storage Server after expiry, the CPM Client SHALL perform the following procedures:
  - a. MAY send a request to fetch the stored messages as described in section 6.3.2 “*Object Fetch Operation*” of [OMA-CPM\_TS\_MessageStorage]. The request SHALL use the UID which was obtained in section 7.2.3.3 “*Receiving a notification for Expiry of Deferred CPM Message*”; or, alternatively
  - b. MAY inform the CPM User that the Deferred CPM Messages were already stored in Message Storage Server because they were expired.

### 7.2.3.3 Receiving a notification for Expiry of Deferred CPM Message

When receiving a notification that includes information on the handling of deferred messages that expired (i.e. whether those messages discarded or stored), the CPM Client:

1. MAY inform the CPM User that the messages expired and were processed according to the user preferences;
2. SHALL store the UID(s) included in the notification, if any.

NOTE: The CPM Client can later fetch the corresponding messages from the Message Storage Server.

### 7.2.3.4 Notification Handling

#### 7.2.3.4.1 Out-of-band Notifications

NOTE: The out-of-band notifications reach the CPM Client via the Push Client of the device.

Upon receiving an out-of-band notification from the CPM Participating Function to signal that there is a new unseen Deferred CPM Message available for the CPM Client, the CPM Client:

1. MAY display the received notification to the CPM User to verify whether the CPM User wants to connect to the CPM service;

NOTE: The CPM Client may also, e.g. based on device settings, take a decision on behalf of the CPM User, without interacting with the CPM User.

2. SHALL decide, possibly based on the CPM User’s input, whether to connect to the CPM service. If yes, then the CPM Client SHALL register to the CPM service as described in section 7.1 “*Registering at the SIP/IP Core*”.

#### 7.2.3.4.2 In-band Notifications

Upon receiving a SIP MESSAGE request containing the CPM Feature Tag ‘3gpp-service.ims.icsi.oma.cpm.systemmsg’ included in the Accept-Contact header for in-band notification to signal that there are Deferred CPM Messages available for the CPM Client, the CPM Client MAY, depending on device settings, display the received notification to the CPM User to allow him to process the notification as described in section 7.2.3.2.1 “*Handling Deferred CPM Message(s) before Having Received an Expiry Notification*”.

## 7.2.4 Disposition Notification

The disposition notification mechanism in CPM is an extension to the specification in [RFC5438]. The extension is that an original message requesting disposition notification can be also sent using a MSRP SEND request in case of Large Message Mode CPM Standalone Message.

When a CPM User requests to obtain the disposition-state of the sent CPM Standalone Message, the CPM Client SHALL include a disposition notification request in a CPIM header field of the sent CPM Standalone Message. Disposition notifications for CPM are delivery notification and read report.

In the case where a terminating CPM Client receives a CPM Standalone Message with the disposition notification request, if allowed by the local device's settings, the terminating CPM Client SHALL reply to the disposition notification request by sending a disposition notification message. The disposition notification message is sent using a SIP MESSAGE request according to the rules and procedures of [RFC5438].

In the case that a CPM Standalone Message containing a disposition notification request is targeted at multiple recipients (i.e. pre-defined/ad-hoc group) or multiple different types of disposition notifications are requested for the same CPM Standalone Message, the originating user MAY receive aggregated disposition notifications.

### 7.2.4.1 Generate Delivery Notification

Upon receiving a CPM Standalone Message, the CPM Client:

1. SHALL check whether the message contains the request for a successful delivery notification element in a CPIM header as described in [RFC5438];
2. If true and allowed by local device's settings, the CPM Client SHALL construct a successful delivery notification (IMDN) according to the rules and procedures of [RFC5438] with the following additional clarifications:
  - a. If an IMDN-Record-Route header was received in the corresponding CPM Standalone Message, the CPM Client SHALL include in the Request-URI the topmost entry from the IMDN-Route header;
  - b. If no IMDN-Record-Route header was received in the corresponding CPM Standalone Message, the CPM Client SHALL include in the Request-URI the public GRUU included in the Contact header of the received SIP INVITE request or the authenticated originator's CPM Address of the received SIP MESSAGE request;
  - c. The CPM Client SHALL set the CPIM To header to the public GRUU included in the Contact header of the received SIP INVITE request or the authenticated originator's CPM Address of the received SIP MESSAGE request;
  - d. The CPM Client SHALL include in the Conversation-ID header the value received in the original CPM Standalone Message and a Contribution-ID header with a newly generated value;
  - e. The CPM Client SHALL send the SIP MESSAGE request carrying a successful delivery notification according to the rules and procedures of the SIP/IP core.

### 7.2.4.2 Generate Read Report

Upon receiving a CPM Standalone Message, the CPM Client:

1. The CPM Client SHALL check whether the message contains the request for display notification element in CPIM header, as described in [RFC5438], to generate a read report;
  - a. If it contains the request for display notification, the CPM Client SHALL check if the message is stored in the CPM User's network-based Message Storage.
    - i. If it is stored, the CPM Client SHALL check the “\read-report-sent” status flag attribute as described in [OMA-CPM\_TS\_MessageStorage].
      - If it is false, proceed with step 2;
      - Otherwise, no further steps are required.

- ii. Otherwise, proceed with step 2.
  - b. Otherwise, no further steps are required.
2. When the CPM Client determines that the CPM User has read the message (e.g. by user confirmation) and allowed by local device's settings, the CPM Client SHALL construct a read report according to the rules and procedures of [RFC5438] and with following additional clarifications.
  - a. If an IMDN-Record-Route header was received in the corresponding CPM Standalone Message, SHALL include in the Request-URI the topmost entry from the IMDN-Route header;
  - b. If no IMDN-Record-Route header was received in the corresponding CPM Standalone Message, SHALL include in the Request-URI the public GRUU included in the Contact header of the received SIP INVITE request or the authenticated originator's CPM Address of received SIP MESSAGE request;
  - c. SHALL set the CPIM To header to the public GRUU included in the Contact header of the received SIP INVITE request or the authenticated originator's CPM Address of the received SIP MESSAGE request;
  - d. The CPM Client SHALL include in the Conversation-ID header the value received in the original CPM Standalone Message and a Contribution-ID header with a newly generated value;
  - e. SHALL send the SIP MESSAGE request carrying a read report according to the rules and procedures of the SIP/IP core;
  - f. If the message is stored in the Message Storage Server, the CPM Client SHALL send a request to set "read-report-sent" status flag attribute to true for the corresponding message in the Message Storage Server as described in section 6.6.1 "Metadata Operation" in [OMA-CPM\_TS\_MessageStorage] to indicate that future retrievals of this message need not to generate a read report.

NOTE: The "read-report-sent" status flag is visible to the CPM Client but masked to the CPM User.

### 7.2.4.3 Receive Delivery Notification

Upon receiving a delivery notification, the CPM Client SHALL process the notification as specified in [RFC5438].

### 7.2.4.4 Receive Read Report

Upon receiving a read report, the CPM Client SHALL process the notification as specified in [RFC5438].

## 7.3 CPM Session Handling

### 7.3.1 Initiating New CPM Sessions

#### 7.3.1.1 Initiating a CPM 1-1 Session

The CPM Client SHALL generate an initial SIP INVITE request according to the rules and procedures of [RFC3261]. In this SIP INVITE request, the CPM Client:

1. SHALL include the address of a target CPM Principal or a non-CPM Principal in the Request-URI;
2. SHALL include an Accept-Contact header with the CPM Feature Tag '3gpp-service.ims.icsi.oma.cpm.session', according to the rules and procedures of [RFC3841];
3. SHALL include a Contact header with the CPM Feature Tag '3gpp-service.ims.icsi.oma.cpm.session', according to the rules and procedures of [RFC38410];
4. SHALL include the CPM Address of the CPM User as the authenticated originator's CPM Address;
5. SHALL include a User-Agent header to indicate the OMA CPM release version of the CPM Client as specified in Appendix D "Release Version in User-agent and Server headers";
6. SHALL include a temporary GRUU of the sending CPM Client in the Contact header if anonymity is requested, and include the public GRUU otherwise.



7. If anonymity is requested, SHALL include value "id" in a Privacy header according to the rules and procedures of [RFC3325];
8. SHALL include a Supported header with the option tag 'timer' and option tag 'gruu';
9. SHOULD include a Session-Expires header with the refresher parameter set to "uac" according to the rules and procedures of [RFC4028];
10. If the CPM Session starts a new CPM Conversation, the CPM Client SHALL include a Conversation-ID header set to a newly generated value as specified in Appendix C “CPM-defined SIP Headers”; Otherwise include the Conversation-ID of the existing CPM Conversation;
11. The CPM Client SHALL include a Contribution-ID header with a newly generated Contribution-ID value as specified in Appendix C “CPM-defined SIP Headers”;
12. If the CPM Session is in reply to a previously received CPM Standalone Message, CPM File Transfer or CPM Session Invitation, the CPM Client SHALL include the InReplyTo-Contribution-ID header with the value of Contribution-ID in the previously received CPM Standalone Message, CPM File Transfer or CPM Session Invitation;
13. SHALL include a MIME SDP body as an SDP offer as described in section 5.2.1.1 “SDP Contents when Initiating or Modifying a CPM Session” ;
14. SHALL send the SIP INVITE request according to the rules and procedures of the SIP/IP core.

On receipt of the SIP 200 "OK" response to the initial SIP INVITE request the CPM Client SHALL handle the response according to the rules and procedures of [RFC3261], with the following clarifications:

1. The CPM Client SHALL start a SIP session timer using the value received in the Session-Expires header according to the rules and procedures of [RFC4028].
2. The CPM Client SHALL generate and send a SIP ACK request as an acknowledgement of the final response according to the rules and procedures of [RFC3261].
3. The CPM Client SHALL initiate the Media Plane as described in section 7.3.9 “Media Plane Handling for CPM Sessions”.

### 7.3.1.2 Initiating a CPM Group Session for a CPM Ad-hoc Group

The CPM Client SHALL generate an initial SIP INVITE request according to the rules and procedures of [RFC3261]. In this SIP INVITE request the CPM Client:

1. SHALL set the Request-URI of the SIP INVITE request to the CPM Controlling Function URI provisioned in the device;
2. SHALL include an Accept-Contact header with the CPM feature-tag ‘3gpp-service.ims.icsi.oma.cpm.session’, according to the rules and procedures of [RFC3841];
3. SHALL include a Contact header with the CPM feature-tag ‘3gpp-service.ims.icsi.oma.cpm.session’, according to the rules and procedures of [RFC3841];
4. SHALL include a MIME resource-list body with the invited CPM Users as specified in [RFC5366];
5. SHALL check that the number of Invited CPM Users on the URI-list does not exceed the maximum number of Participants allowed in a CPM Group Session for a CPM Ad-hoc Group, as provisioned to the device. If exceeded, the CPM Client SHALL notify the CPM User.  
Otherwise, continue with the rest of the steps;
6. If anonymity is requested by the CPM User, SHALL include value "id" in the Privacy header according to the rules and procedures of [RFC3325];
7. If the CPM Session starts a new CPM Conversation, the CPM Client SHALL include a Conversation-ID header set to a newly generated value as specified in Appendix C “CPM-defined SIP Headers”; Otherwise include the Conversation-ID of the existing CPM Conversation;

8. The CPM Client SHALL include a Contribution-ID header with a newly generated Contribution-ID value as specified in Appendix C “*CPM-defined SIP Headers*”;
9. If the CPM Session is in reply to a previously received CPM Standalone Message, CPM File Transfer or CPM Session Invitation, the CPM Client SHALL include the InReplyTo-Contribution-ID header with the value of Contribution-ID in the previously received CPM Standalone Message, CPM File Transfer or CPM Session Invitation;
10. SHALL include a MIME SDP body as a SDP offer as described in section 5.2.1.1 “*SDP Contents when Initiating or Modifying a CPM Session*”;
11. SHALL send the SIP INVITE request according to the rules and procedures of the SIP/IP core.

On receiving a SIP 200 "OK" response to the SIP INVITE request, the CPM Client SHALL handle the response according to the rules and procedures of [RFC3261], with the following clarifications:

1. The CPM Client SHALL generate and send a SIP ACK request as an acknowledgement of the final response according to the rules and procedures of [RFC3261];
2. The CPM Client SHALL store the contents of the Contact header as the CPM Group Session Identity, as described in [RFC4579];
3. The CPM Client SHALL initiate the Media Plane as in section 7.3.9 “*Media Plane Handling for CPM Sessions*”.

### 7.3.1.3 Initiating a CPM Group Session for a CPM Pre-defined Group

The CPM Client SHALL generate an initial SIP INVITE request according to the rules and procedures of [RFC3261]. In this SIP INVITE request the CPM Client:

1. SHALL set the Request-URI of the SIP INVITE request to the CPM Pre-Defined Group address;
2. SHALL include an Accept-Contact header with the CPM feature-tag ‘3gpp-service.ims.icsi.cpm.session’, according to the rules and procedures of [RFC3841];
3. SHALL include a Contact header with the CPM feature-tag ‘3gpp-service.ims.icsi.cpm.session’, according to the rules and procedures of [RFC38410];
4. If anonymity is requested by the CPM User, the CPM Client SHALL include value "id" in the Privacy header according to the rules and procedures of [RFC3325];
5. If the CPM Session starts a new CPM Conversation, the CPM Client SHALL include a Conversation-ID header set to a newly generated value as specified in Appendix C “*CPM-defined SIP Headers*”; Otherwise include the Conversation-ID of the existing CPM Conversation;
6. The CPM Client SHALL include a Contribution-ID header with a newly generated Contribution-ID value as specified in Appendix C “*CPM-defined SIP Headers*”;
7. If the CPM Session is in reply to a previously received CPM Standalone Message, CPM File Transfer or CPM Session Invitation, the CPM Client SHALL include the InReplyTo-Contribution-ID header with the value of Contribution-ID in the previously received CPM Standalone Message , CPM File Transfer or CPM Session Invitation;
8. SHALL include in the SIP INVITE request a MIME SDP body as a SDP offer as described in section 5.2.1.1 “*SDP Contents when Initiating or Modifying a CPM Session*”;
9. SHALL send the SIP INVITE request according to the rules and procedures of the SIP/IP core.

On receiving a SIP 200 "OK" response to the SIP INVITE request, the CPM Client SHALL handle the response according to the rules and procedures of [RFC3261], with the following clarifications:

1. The CPM Client SHALL generate and send a SIP ACK request as an acknowledgement of the final response towards the CPM Controlling Function; and,
2. The CPM Client SHALL store the contents of the Contact header as the CPM Group Session Identity, as described in [RFC4579]; and,
3. The CPM Client SHALL initiate the Media Plane as in section 7.3.9 “*Media Plane Handling for CPM Sessions*”.

### 7.3.1.4 Joining a CPM Group Session for a Join-in Group

The CPM Client SHALL generate a SIP INVITE request according to the rules and procedures of [RFC3261]. In this SIP INVITE request the CPM Client:

1. SHALL set the Request-URI to the address of the target CPM Pre-defined Group;
2. SHALL include an Accept-Contact header with the CPM Feature Tag '3gpp-service.ims.icsi.oma.cpm.session' according to the rules and procedures of [RFC3841];
3. SHALL include a Contact header with the CPM Feature Tag '3gpp-service.ims.icsi.oma.cpm.session' according to the rules and procedures of [RFC38410];
4. SHALL include the CPM Address of the CPM User as the authenticated originator's CPM Address;
5. SHALL include a User-Agent header to indicate the OMA CPM release version of the CPM Client as specified in Appendix D "Release Version in User-agent and Server headers"
6. If anonymity is requested, SHALL include value "id" in a Privacy header according to the rules and procedures of [RFC3325].

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

7. SHALL include a Conversation-ID header set to a newly generated value as specified in Appendix C "CPM-defined SIP Headers";
8. SHALL include a Contribution-ID header with a newly generated Contribution-ID value as specified in Appendix C "CPM-defined SIP Headers";
9. SHALL include a MIME SDP body as a SDP offer as described in section 5.2.1.1 "SDP Contents when Initiating or Modifying a CPM Session".
10. SHALL send the SIP INVITE request according to the rules and procedures of the SIP/IP core.

On receiving a SIP 200 "OK" response to the SIP INVITE request the CPM Client SHALL handle the response according to the rules and procedures of [RFC3261], with the following clarifications:

1. The CPM Client SHALL generate and send a SIP ACK request as an acknowledgement of the final response towards the CPM Controlling Function;
2. The CPM Client SHALL store the contents of the Contact header as the CPM Group Session Identity, as described in [RFC4579];
3. The CPM Client SHALL store the CPM Conversation Identity and CPM Contribution Identity, if received, and use them for CPM Conversation identification instead of the newly generated CPM Conversation Identity and CPM Contribution Identity included in the SIP INVITE request;
4. The CPM Client SHALL initiate the Media Plane as in section 7.3.9 "Media Plane Handling for CPM Sessions".

## 7.3.2 Receiving a CPM Session Invitation

Upon receiving an initial SIP INVITE request with the CPM Feature Tag '3gpp-service.ims.icsi.oma.cpm.session' included in the Accept-Contact header, the CPM Client:

1. SHALL return a SIP 480 "Temporarily Unavailable" response if there are not enough resources to handle the CPM Session.  
Otherwise, continue with the rest of steps;
2. If a Session-Replaces header (as defined in Appendix C "CPM-defined SIP Headers") is included in the SIP INVITE request, it SHALL determine whether a corresponding CPM 1-1 Session exists. If there is no ongoing CPM 1-1 Session whose Contribution-ID is identical to the value indicated in the Session-Replaces header, the CPM Client SHALL return a SIP 481 "Call/Transaction Does Not Exist" response.

Otherwise, continue with rest of steps:

3. MAY render the CPM Session Invitation to the CPM User based on a local device settings, with the following clarifications:
  - a. The CPM Client MAY render the subject header as part of the CPM Session Invitation, if present;
  - b. If a Session-Replaces header is received, the CPM Client MAY render an indication that the CPM Group Session is a replacement for a CPM 1-1 Session;
  - c. The CPM Client MAY display to the invited CPM User the CPM Address of the inviting CPM User, if privacy rules allow it. The CPM Client SHALL NOT display the CPM address of the inviting CPM User if Privacy header includes value 'id'.
4. If the CPM Session Invitation is for a CPM Group Session, MAY subscribe to the conference state event package as specified in section 7.3.10 "*Participant Information*" based on a local device settings.
5. SHALL send a SIP 480 "Temporarily Unavailable" response if the CPM User or CPM Client declines the CPM Session invitation, a SIP 486 "Busy Here" response if the CPM User or CPM Client decides not to take additional session (e.g. if audio session is requested when audio is already part of another session) or a SIP 408 "Request Timeout" response if the invitation times out, or a SIP 302 "Moved Temporarily" response if redirecting the CPM Session Invitation is requested by a local device's setting or CPM User.

Otherwise, continue with the rest of the steps;

6. Otherwise, SHALL accept the SIP INVITE request and then the CPM Client :
  - a. SHALL store the contents of the Contact header as the CPM Group Session Identity, as described in [RFC4579];
  - b. If a Session-Replaces header is received, it SHALL replace the existing 1-1 CPM Session with the new CPM Group Session;
7. SHALL generate a SIP 200 "OK" response to the SIP INVITE request according to the rules and procedures of [RFC3261], with the following clarifications:
  - a. The CPM Client SHALL include an answer SDP as described in section 5.2.1.3 "*SDP Handling at Terminating Nodes*" ;
  - b. The CPM Client MAY include a display name as specified in sub clause 6.3 "*Display Name*";
  - c. The CPM Client SHALL include the Conversation-ID, Contribution-ID and InReplyTo-Contribution-ID headers and values as received in the SIP INVITE request;
8. SHALL send the SIP 200 "OK" response according to the rules and procedures of the SIP/IP core;

Upon receiving a SIP ACK request, the CPM Client:

1. SHALL handle the SIP ACK request according to the rules and procedures of [RFC3261]; and
2. SHALL initiate the Media Plane as in section 7.3.9 "*Media Plane Handling for CPM Sessions*".
3. If a Session-Replaces header is included in the SIP INVITE request, the CPM Client SHALL send a SIP BYE request to end the CPM 1-1 Session identified in the Session-Replaces header.

### 7.3.3 Extending a CPM 1-1 Session to a CPM Group Session

When a Participant in a CPM 1-1 Session wants to add one or more users to the session, the CPM Client SHALL generate an initial SIP INVITE request according to the rules and procedures of [RFC3261]. In this SIP INVITE request the CPM Client:

1. SHALL set the Request-URI of the SIP INVITE request to the URI of the Controlling Function provisioned in the CPM Client;
2. SHALL include an Accept-Contact header with the CPM feature-tag '3gpp-service.ims.icsi.oma.cpm.session', according to the rules and procedures of [RFC3841];
3. SHALL include the CPM feature-tag '3gpp-service.ims.icsi.oma.cpm.session' in the Contact header, according to the rules and procedures of [RFC3841];

4. SHALL include a temporary GRUU of the sending CPM Client in the Contact header if anonymity is requested, and include the public GRUU otherwise.
5. SHALL include the CPM release version in the User-Agent header as specified in Appendix D “*Release Version in User-agent and Server headers*”;
6. If anonymity is requested, SHALL include value "id" in a Privacy header according to the rules and procedures of [RFC3325];
7. SHALL add the invited user(s) in a MIME resource-list body according to [RFC5366], including also the GRUU of the original invited user that was included in the Contact header received from that CPM User in the CPM 1-1 Session establishment;
  - a. SHALL for the originally invited user identity in the MIME resource list, include the Session-Replaces header as defined in Appendix C “*CPM-defined SIP Headers*” with the Contribution-ID corresponding to the original session.
8. SHALL check that the number of Invited CPM Users on the URI-list does not exceed the maximum number of Participants allowed in a CPM Group Session for a CPM Ad-hoc Group as provisioned for the CPM Client. If exceeded, the CPM Client SHALL notify the CPM User.

Otherwise, continue with the rest of the steps;
9. SHALL insert in the SIP INVITE request a Content-Type header with multipart/mixed as specified in [RFC2046];
10. SHALL include the Conversation-ID of the ongoing CPM Session and the InReplyTo-Conversation-ID header used in the initial SIP INVITE request for the CPM 1-1 session and a newly generated Contribution-ID value;
11. SHALL include in the SIP INVITE request a MIME SDP body as a SDP offer as described in section 5.2.1.1 “*SDP Contents when Initiating or Modifying a CPM Session*”. The Media Streams in the SDP offer SHALL be identical to those in the CPM 1-1 Session;
12. SHALL send the SIP INVITE request according to the rules and procedures of SIP/IP core.

On receiving a SIP 200 "OK" response to the SIP INVITE request, the CPM Client SHALL handle the response according to the rules and procedures of [RFC3261], with the following clarifications:

1. The CPM Client SHALL generate and send a SIP ACK request as an acknowledgement of the final response towards the CPM Controlling Function;
2. The CPM Client SHALL store the contents of the Contact header as the CPM Group Session Identity, as described in [RFC4579];
3. The CPM Client SHALL start the SIP Session timer using the value received in the Session-Expires header according to the rules and procedures of [RFC4028];
4. The CPM Client MAY subscribe to the conference state event package as specified in section 7.3.10 “*Participant Information*”;
5. The CPM Client SHALL reconnect the Media Plane to the CPM Controlling Function, instead of the peer CPM Client.

## 7.3.4 Closing a CPM Session

### 7.3.4.1 Closing a CPM 1-1 Session

To close a CPM 1-1 Session, the CPM Client:

1. SHALL generate a SIP BYE request according to the rules and procedures of [RFC3261];
2. SHALL send the SIP BYE request according to the rules and procedures of the SIP/IP core;
3. SHALL release all Media Plane resources corresponding to the CPM Session being closed.

### 7.3.4.2 Leaving a CPM Group Session

When a Participant wants to leave a CPM Group Session the CPM Client:

1. SHALL generate a SIP BYE request according to the rules and procedures of [RFC3261];
2. SHALL set the Request-URI to the CPM Group Session Identity of the CPM Group Session to leave;
3. If anonymity is requested, SHALL include value "id" in the Privacy header according to the rules and procedures of [RFC3325];
4. SHALL send the SIP BYE request according to the rules and procedures of SIP/IP core;
5. MAY store the CPM Group Session Identity for a short period of time to be able to re-join the session. This time period is implementation dependent;
6. SHALL release all Media Plane resources corresponding to the CPM Group Session being closed.

### 7.3.4.3 Receiving a CPM Session Closing Request

Upon receiving a SIP BYE request, the CPM Client:

1. SHALL generate a SIP 200 "OK" response according to the rules and procedures of [RFC3261];
2. SHALL send the SIP 200 "OK" response according to the rules and procedures of the SIP/IP core;
3. SHALL release all Media Plane resources corresponding to the CPM Session being closed;
4. If the received SIP BYE request includes a Reason Header with the text set to 'Call completed elsewhere' as described in [RFC3326], the CPM Client SHALL act according to device settings.

### 7.3.4.4 Receiving a CPM Session Cancellation

Upon receiving a SIP CANCEL request, the CPM Client SHALL follow the actions according to the rules and procedures of [RFC3261];

If the received SIP CANCEL request includes a Reason Header with the text set to 'Call completed elsewhere' as described in [RFC3326], the CPM Client SHALL act according to device settings.

## 7.3.5 Invite other Principals to existing CPM Group Session

To add one or more Principals to an ongoing CPM Group Session, the CPM Client SHALL generate a SIP REFER request according to the rules and procedures of [RFC3515]. In this SIP REFER request, the CPM Client:

1. SHALL set the Request-URI of the SIP REFER request to the CPM Group Session Identity of an ongoing CPM Session;
2. SHALL ensure this SIP REFER request is sent within the scope of the dialog created with the SIP INVITE request for the ongoing CPM Group Session as per [RFC3515];
3. SHALL include an Accept-Contact header with the CPM Feature Tag '3gpp-service.ims.icsi.oma.cpm.session', according to the rules and procedures of [RFC3841];
4. SHALL include a Contact header with the CPM Feature Tag '3gpp-service.ims.icsi.oma.cpm.session', according to the rules and procedures of [RFC38410];
5. SHALL include a User-Agent header to indicate the CPM release version as specified in Appendix D "*Release Version in User-agent and Server headers*";
6. If anonymity is requested, SHALL include value "id" in a Privacy header according to the rules and procedures of [RFC3325];

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

7. If only one Principal is invited SHALL set the Refer-To header of the SIP REFER request to the address of the Principal to be added according to the rules and procedures of [RFC3515];
8. If more than one Principal is invited:
  - a. 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 the rules and procedures of [RFC5368];
  - b. SHALL include a MIME resource-lists body with the list addresses of the Principals to be added according to the rules and procedures of [RFC5368];
  - c. SHALL include the “multiple-refer” option tag in the Require header field of the SIP REFER request according to the rules and procedures of [RFC4488] and [RFC5368].
9. SHALL set the “method” parameter of the Refer-To header to “INVITE” according to the rules and procedures of [RFC3515];
10. SHALL set the Refer-Sub header to “false” according to the rules and procedures of [RFC4488] and [RFC5368];
11. SHALL include the “norefersub” option tag in the Require header field of the SIP REFER request according to the rules and procedures of [RFC4488];
12. If the CPM Client knows the number of Participants in the CPM Group Session via a subscription to Participant Information, it SHALL check that the number added Principals plus the number of the Principals already participating to the CPM Group Session does not exceed the maximum number of Participants allowed in an CPM Group Session for a CPM Ad-hoc Group, as provisioned to the device. If exceeded, the CPM Client SHALL notify the CPM User.  
Otherwise, continue with the rest of the steps;
13. SHALL include the Conversation-ID, Contribution-ID and InReplyTo-Contribution-ID headers set to the values of the ongoing CPM Session;
14. SHALL send the SIP REFER request according to the rules and procedures of the SIP/IP core.

The response to the SIP REFER request SHALL be handled according to the rules and procedures of [RFC3515] and the rules and procedures of the SIP/IP core.

### 7.3.6 Remove Participants from a CPM Group Session

To remove one or more Participants from an ongoing CPM Group Session, the CPM Client SHALL generate a SIP REFER request according to the rules and procedures of [RFC3515]. In this SIP REFER request, the CPM Client:

1. SHALL set the Request-URI of the SIP REFER request to the CPM Group Session Identity of an ongoing CPM Session;
2. SHALL ensure this SIP REFER request is sent within the scope of the dialog created with the SIP INVITE request for the ongoing CPM Group Session as per [RFC3515];
3. SHALL include an Accept-Contact header with the CPM Feature Tag ‘3gpp-service.ims.icsi.oma.cpm.session’, according to the rules and procedures of [RFC3841];
4. SHALL include a Contact header with the CPM Feature Tag ‘3gpp-service.ims.icsi.oma.cpm.session’, according to the rules and procedures of [RFC3840];
5. SHALL include a User-Agent header to indicate the CPM release version as specified in Appendix D “*Release Version in User-agent and Server headers*”;
6. If anonymity is requested, SHALL include value “id” in a Privacy header according to the rules and procedures of [RFC3325];
7. If only one Participant is removed:
  - a. If the Participant to be removed is not an anonymous one, set the Refer-To header of the SIP REFER request to the CPM Address of the removed Participant according to the rules and procedures of [RFC3515].;

- b. Otherwise, if the Participant to be removed is anonymous, set the Refer-To header of the SIP REFER request to the Anonymous CPM Address of the removed Participant.
8. If more than one Participant is removed:
  - a. 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 the rules and procedures of [RFC5368];
  - b. SHALL include a MIME resource-lists body with the list of the CPM Users to be removed according to the rules and procedures of [RFC5368] if a Participant to be removed is anonymous then the anonymous CPM Address SHALL be used in the MIME resource-lists;
  - c. SHALL include the “multiple-refer” option tag to the Require header according to the rules and procedures of [RFC4488] and [RFC5368].
9. SHALL set the “method” parameter of the Refer-To header to “BYE” according to the rules and procedures of [RFC3515];
10. SHALL set the Refer-Sub header to “false” according to the rules and procedures of [RFC4488];
11. SHALL include the “norefersub”\_option-tag in the Require header field of the REFER according to the rules and procedures of [RFC4488];
12. SHALL include the Conversation-ID, Contribution-ID and InReplyTo-Contribution-ID headers set to the values of the ongoing CPM Session;
13. SHALL send the SIP REFER request according to the rules and procedures of the SIP/IP core.

The response to the SIP REFER request SHALL be handled according to the rules and procedures of [RFC3515] and the rules and procedures of the SIP/IP core.

### 7.3.7 Modifying a CPM Session

The CPM Client SHALL generate a SIP re-INVITE request according to section 7.3.1 “*Initiating New CPM Sessions*” with the following additional clarifications:

1. The CPM Client SHALL set the Request-URI to the address in Contact header of SIP INVITE request or SIP 200 "OK" response received during the session establishment;
2. The CPM Client SHALL set each of To header, From header and Call-ID header to the same value as used at the session establishment;
3. The CPM Client SHALL include a modified MIME SDP body as a SDP offer as described in section 5.2.1.1 “*SDP Contents when Initiating or Modifying a CPM Session*”;
4. The CPM Client SHALL send the SIP INVITE request according to the rules and procedures of the SIP/IP core.

On receipt of the SIP 200 "OK" response to the SIP re-INVITE request the CPM Client SHALL handle the response according to the rules and procedures of [RFC3261], with the following clarifications:

1. The CPM Client SHALL generate and send a SIP ACK request according to the rules and procedures of [RFC3261] and the SIP/IP core;
2. The CPM Client SHALL modify the Media Plane according to the re-negotiated SDP.

### 7.3.8 Handling a Received CPM Session Modification Request

Upon receiving a SIP re-INVITE request with a MIME SDP body including a new SDP offer, the CPM Client:

1. SHALL check whether the session to be modified by the received SIP re-INVITE exists. If the session does not exist the CPM Client SHALL reject the request with a SIP 481 “Call/Transaction Does Not Exist” response and SHALL include a Warning header with the warning text set to “123 Session does not exist” in the response according to the rules and procedures of [RFC3261].

Otherwise, continue with the rest of the steps;



2. SHALL validate the media parameters and content types listed in the “accept-types” SDP attribute. If none of the media parameters are acceptable, the CPM Client SHALL reject the request with a SIP 488 "Not Acceptable Here" response and exit this procedure.

Otherwise, the CPM Client SHALL 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;

3. SHALL generate a SIP 200 "OK" response according to the rules and procedures of [RFC3261];
4. SHALL include a Session-Expires header in the SIP 200 "OK" response to the SIP re-INVITE request with the refresher parameter set to 'uas' and SHALL re-start the SIP Session timer according to the rules and procedures specified in [RFC4028];
5. SHALL include the option tag 'timer' in the Supported header;
6. SHALL include a MIME SDP body as the SDP answer as described in section 5.2.1.3 “SDP Handling at Terminating Nodes”;
7. SHALL include the Conversation-ID, Contribution-ID and InReplyTo-Contribution-ID headers and values received in the SIP INVITE request;
8. SHALL send the SIP 200 "OK" response according to the rules and procedures of the SIP/IP core.

Upon receiving a SIP ACK request, the CPM Client:

1. SHALL handle the SIP ACK request according to the rules and procedures of [RFC3261];
2. SHALL change media parameters as specified in [RFC4975] for MSRP based media streams and, respectively, [RFC3550] for RTP/RTCP-based Media Streams.

### 7.3.9 Media Plane Handling for CPM Sessions

CPM Clients MAY support different text and media types (including SMIL) as defined in [3GPP TS 26.141].

When inviting, being invited or joining a CPM Session, a CPM Client SHALL negotiate the media parameters with the invited CPM Client or the CPM Participating and Controlling Function by using SDP within SIP communication.

#### 7.3.9.1 MSRP-based Media Streams

For MSRP-based Media Streams, the Client SHALL follow the rules and procedures defined in [RFC4975] and in [draft-ietf-simple-msrp-sessmatch] for the establishment of sessions and the exchange of CPM Chat Messages, with the following clarification:

1. When sending a CPM Chat Message, the CPM Client SHALL set the “To” header of the CPIM message as follows.
  - a. If the CPM Chat Message is to be sent to one CPM user or to one non-CPM User , the CPM Client SHALL set the “To” header of the CPIM message to the address of the recipient;
  - b. If the CPM Chat Message is to be sent to a CPM Ad-hoc Group, the CPM Client SHALL set the “To” header of the CPIM message to the address of the CPM Controlling Function provisioned to the CPM Client;
  - c. If the CPM Chat Message is to be sent to a CPM Pre-defined Group, the CPM Client SHALL set the “To” header of the CPIM message to the address of the target CPM Pre-defined Group.

#### 7.3.9.2 RTP/RTCP-based Media Streams

For RTP/RTCP-based Media Streams, the CPM Client SHALL follow the rules and procedures defined in [RFC3550] for the establishment of sessions and the exchange of Media.

The CPM Client SHALL establish a RTP session according to the rules and procedures of [RFC3550]. If multiple media are used, then each of them is transmitted as a separate RTP session. That is, separate RTP and RTCP packets are transmitted for each medium using two different UDP port pairs and/or multicast addresses.

When the SIP/IP core corresponds with 3GPP/3GPP2 IMS, the procedures described in [3GPP TS 24.229] / [3GPP2 X.S0013.004] and described in [GSMA IR.92] apply for handling RTP/RTCP sessions.

## 7.3.10 Participant Information

### 7.3.10.1 Subscribe to Receiving CPM Group Session Participant Information

When a CPM Client needs to subscribe to CPM Group Session Participant Information, the CPM Client:

1. SHALL generate a SIP SUBSCRIBE request, according to the rules and procedures of [RFC3265] and [RFC4575];
2. SHALL set the Request-URI of the SIP SUBSCRIBE request to the CPM Group Session Identity;
3. SHALL include an Accept-Contact header with the CPM Feature Tag '3gpp-service.ims.icsi.oma.cpm.session' according to the rules and procedures of [RFC3841];
4. SHALL include a Contact header with the CPM Feature Tag '3gpp-service.ims.icsi.oma.cpm.session' according to the rules and procedures of [RFC38410];
5. SHALL send the SIP SUBSCRIBE request according to the rules and procedures of the SIP/IP core.

The response to the SIP SUBSCRIBE request SHALL be handled according to the rules and procedures of [RFC3265] and [RFC4575], and rules and procedures of the SIP/IP core.

When needed the CPM Client SHALL terminate the subscription according to the rules and procedures of [RFC3265].

### 7.3.10.2 Receive Participant Information Notification

Upon receiving an incoming SIP NOTIFY request that is part of the same SIP dialog as a previously sent SIP SUBSCRIBE request for subscribing to participation information, the CPM Client:

1. SHALL handle the request according to the rules and procedures of [RFC3265] and [RFC4575];
2. MAY display the Participants of the CPM Group Session by that are included in the "oma\_blockedcontacts" URI-list defined in [OMA-XDM-List].

## 7.4 CPM File Transfer

### 7.4.1 CPM File Transfer Session Initiation

When a CPM Client needs to send one or more files, the CPM Client:

1. SHALL follow the procedures defined in 7.3.1.1 "Initiating a CPM 1-1 Session" if the CPM File Transfer is to one recipient or in 7.3.1.2 "Initiating a CPM Group Session for a CPM Ad-hoc Group" if the CPM File Transfer is to a list of recipients, or in 7.3.1.3 "Initiating a CPM Group Session for a CPM Pre-defined Group" if the CPM File Transfer is to a pre-defined group and SHALL follow the rules and procedures of [RFC5547] with the following clarifications:
  - a. SHALL include an Accept-Contact header with the CPM Feature Tag '3gpp-service.ims.icsi.oma.cpm.filetransfer' according to the rules and procedures of [RFC3841] instead of the '3gpp-service.ims.icsi.oma.cpm.session' used in those procedures;
  - b. SHALL include a Contact header with the CPM Feature Tag '3gpp-service.ims.icsi.oma.cpm.filetransfer' according to the rules and procedures of [RFC38410] instead of the '3gpp-service.ims.icsi.oma.cpm.session' used in those procedures;
  - c. SHALL add the relevant media attributes to the SDP as specified in [RFC5547];
  - d. In the case of a CPM File Transfer to a single recipient and more than one file is to be sent, each set of file descriptors SHALL be sent in separate m-lines as described in [RFC5547];

NOTE: If there is more than one recipient, to transfer multiple files is not supported.

2. When the MSRP 200 “OK” response for the last MSRP SEND is received, or when an MSRP REPORT is received when a success report was requested:
  - a. The CPM Client MAY check if there are other files to be transferred to the same destination;
  - b. If there are additional files to be transferred and the CPM Client wants to reuse m-lines for transferring them as described in [RFC5547], the CPM Client SHALL send re-INVITE with the following clarifications:
    - i. The CPM Client SHALL reuse the needed m lines by creating new relevant attributes for the new files according to procedures of [RFC5547];
    - ii. if more m lines were used and are no longer needed, the CPM Client SHALL set the port in the m-line to zero (i.e. m=0) to close the MSRP session for the particular files that has been transferred according to procedures of [RFC5547];
  - c. Otherwise, the CPM Client SHALL follow the procedures defined in 7.4.3 “CPM File Transfer Session Release”;
3. If an MSRP error response or an MSRP REPORT with a failure report is received, the CPM Client SHALL indicate to the CPM User that the CPM File Transfer has failed.

## 7.4.2 Receiving a CPM File Transfer Request

Upon receiving a SIP INVITE request containing a CPM Feature Tag ‘3gpp-service.ims.icsi.oma.cpm.filetransfer’ included in the Accept-Contact header, the CPM Client:

1. SHOULD render to the CPM User the file description parameters received as well as the identity of the original sender of the request if available;
2. SHALL accept from the CPM User input regarding the file(s) he is willing to accept;
3. If the CPM User accepts at least one file, SHALL return a SIP 200 “OK” response with an SDP answer containing the file identities of the files as described in [RFC5547], and otherwise SHALL return a 603 “Decline” response.
4. SHALL execute the Media Plane procedures as described in section 7.3.9.1 “MSRP-based Media Streams” to receive the files.

## 7.4.3 CPM File Transfer Session Release

When a CPM File Transfer session is complete, the sending CPM Client SHALL send a SIP BYE to close the session as described in section 7.3.4.1 “Closing a CPM I-I Session”.

If the file sender or the file receiver wishes to abort the file transfer during the CPM File Transfer, the CPM Client SHALL follow the procedures in [RFC5547].

## 8. Procedures at CPM Participating Function

### 8.1 Registration

In order for the CPM Participating Function to obtain registration information of a CPM Client the CPM Participating Function receives from and/or subscribes to the SIP/IP core as described in this subclause.

The SIP/IP core sends to the CPM Participating Function all SIP REGISTER requests where at least one of the contacts in the SIP REGISTER request includes one of the CPM Feature Identifiers defined in Appendix H.3 “*Proposed Formats for CPM Feature Identifiers*”.

#### 8.1.1 Receive SIP REGISTER Notification

The CPM Participating Function SHALL support receiving 3<sup>rd</sup> party REGISTER from the SIP/IP core according to [3GPP TS 24.229] clause 5.4.1.7.

Upon receiving a SIP REGISTER request the CPM Participating Function:

1. SHALL generate a SIP 200 "OK" response according to the rules and procedures of [RFC3261]; and,
2. SHALL send the SIP 200 "OK" response according to the rules and procedures of SIP/IP core.

If the CPM Participating Function is not already subscribed to the "reg" event package as specified in [RFC3680] for the CPM User Address received in the SIP REGISTER request, the CPM Participating Function:

1. SHALL generate a SIP SUBSCRIBE request according to the rules and procedures of [RFC3265] and [RFC3680];
2. SHALL set the Request-URI of the SIP SUBSCRIBE request to the CPM User Address received in the SIP REGISTER request;
3. MAY set an expiration timer in Expires header with a value according to the rules and procedures of [RFC3903], in the same range as the registration timer recommendations for the SIP/IP core;
4. SHALL send the SUBSCRIBE request according to the rules and procedures of the SIP/IP core.

The responses to the SIP SUBSCRIBE request SHALL be handled according to the rules and procedures of [RFC3265] and [RFC3680], and rules and procedures of the SIP/IP core.

#### 8.1.2 Receive Registration Event Information Notifications

Upon receiving a SIP NOTIFY request as the result of the "reg" event subscription, containing the Registration Event Information as specified in [RFC3680] and [RFC5628], the CPM Participating Function:

1. SHALL generate a SIP 200 "OK" response according to the rules and procedures of [RFC3265] and [RFC3680];
2. SHALL send the SIP 200 "OK" response according to the rules and procedures of SIP/IP core;
3. SHALL store the Registration Event Information, if there is no Registration Event Information already associated with the CPM User address. Otherwise, the CPM Participating Function SHALL replace the old Registration Event Information with the Registration Event Information received in the SIP NOTIFY request.

#### 8.1.3 Terminating the Subscription to Registration Event Information

The CPM Participating Function MAY terminate the subscription at any time, according to the rules and procedures of [RFC3265] and [RFC3680].

#### 8.1.4 Using the Registration Event Information

The Registration Event Information received and stored in the procedure described in section 8.1.2 “*Receive Registration Event Information Notifications*” allows the CPM Participating Function to determine:

1. The registration state of a CPM User; and
2. The registered devices of the CPM User that can be used to deliver the CPM requests to and the GRUU's associated with each of these devices.
3. The device capabilities according to [RFC3840] of each of the devices in Step 2.

Whenever the CPM Participating Function needs to know the registration state or the registered devices of a CPM User, it SHALL use the stored Registration Event Information associated with the CPM address of a CPM User.

NOTE: Only the terminating CPM Participating Function will use this Registration Event Information to decide the handling of incoming CPM Standalone Messages, CPM File Transfers and CPM Session Invitations.

## 8.2 Procedures in the Originating Network

A CPM Participating Function in an originating network handles incoming CPM communications in the following manners:

- Upon receiving a SIP MESSAGE request with the CPM Feature Tag '3gpp-service.ims.icsi.oma.cpm.msg' defined in Appendix H included in the Accept-Contact header, the CPM Participating Function SHALL handle this SIP MESSAGE request as described in section 8.2.1.1 "Handle a Pager Mode".
- Upon receiving a SIP INVITE request with the CPM Feature Tag '3gpp-service.ims.icsi.oma.cpm.largemsg' defined in Appendix H included in the Accept-Contact header, the CPM Participating Function SHALL handle this SIP INVITE request as described in section 8.2.1.2 "Handle a Large Message".
- Upon receiving a SIP INVITE request with the CPM Feature Tag '3gpp-service.ims.icsi.oma.cpm.session' defined in Appendix H included in the Accept-Contact header, the CPM Participating Function SHALL handle this SIP INVITE request as described in section 8.2.2.1 "Handle a CPM Session Invitation".
- Upon receiving a SIP INVITE request with the CPM Feature Tag '3gpp-service.ims.icsi.oma.cpm.filetransfer' defined in Appendix H included in the Accept-Contact header, the CPM Participating Function SHALL handle this SIP INVITE request as described in section 8.2.3.1 "Handle a CPM File Transfer".

### 8.2.1 CPM Standalone Message Handling

#### 8.2.1.1 Handle a Pager Mode CPM Standalone Message

Upon receiving a SIP MESSAGE request with the CPM Feature Tag '3gpp-service.ims.icsi.oma.cpm.msg' included in the Accept-Contact header corresponding to Pager Mode CPM Standalone Message,

1. The CPM Participating Function SHALL check whether the authenticated originator's CPM Address is allowed to send the request and if not, the CPM Participating Function SHALL return a SIP 403 "Forbidden" response and SHALL include a Warning header with the warning text set to "127 Service not authorised" in the response according to the rules and procedures of [RFC3261];  
Otherwise, continue with rest of the steps;
2. If the CPM Participating Function requires a specific User Agent version to be supported, the CPM Participating Function SHALL check the "User Agent" header field to determine if the CPM Participating Function supports the User Agent version and if not, the CPM Participating Function SHALL return a SIP 403 "Forbidden" response and SHALL include a Warning header with the warning text set to "132 Version no supported" in the response according to the rules and procedures of [RFC3261].  
Otherwise, continue with rest of the steps;
3. If the CPM Participating Function does not allow anonymity and anonymity is requested, the CPM Participating Function SHALL return a SIP 403 "Forbidden" response and SHALL include a Warning header with the warning text according to set to "119 Anonymity not allowed" in the response according to the rules and procedures of [RFC3261]  
Otherwise, continue with the rest of the steps;

4. If the “Expires” header is included, the CPM Participating Function SHALL check if the message is still valid. If the message is no longer valid, the message is handled as specified in [RFC3428].

Otherwise continue with the rest of the steps;

5. The CPM Participating Function SHALL check if there are external contents in the MIME body of the message, for each Content-Type header set to the value “message/external-body” and whose access-type is set to the value “URL” and whose URL contains the parameter “action=fetch”, the CPM Participating Function
  - a. SHALL fetch the Media Object, CPM Standalone Message, CPM File Transfer History, CPM Session History or CPM Conversation History indicated by the URL from the Message Storage Server as described in [OMA-CPM\_TS\_MessageStorage].
  - b. SHALL replace the value “message/external-body” in the Content-Type of CPIM body header with an appropriate value depending on the fetched data type.

NOTE: The value in Content-Type header of CPIM body can be obtained from the stored data’s Content-Type value.(e.g. if stored data is a text file whose Content-Type is “text/plain”, the “text/plain” can be copied to the Content-Type header in CPM Standalone Message.)

- c. SHALL include the fetched data in the message/cpim body.
6. The CPM Participating Function SHALL check in the originator’s user preferences retrieved from XDMS as described in 8.4.1 “*Retrieving User Preferences*” if there is a rule in [OMA-XDM-Policy] in which the “enabler” attribute of the ‘<service>’ sub-element inside the ‘<service-list>’ element of the conditions part of the rule is set to “CPM” and the ‘<action>’ element of the rule contains an ‘<allow-offline-storage>’ sub-element set to “true”. If such a rule exists , it SHALL execute the processing described in 8.5 “*Record CPM Conversation History*”;
7. The CPM Participating Function SHALL check the message size. If the maximum size of the message (after insertion of external content in step 5 is not larger than 1300 bytes, the CPM Participating Function:
  - a. If the destination address is neither SIP URI address nor TEL URI address, the CPM Participating Function SHALL forward the SIP MESSAGE directly to the ISF as described in section 6.5 “*Communicating with the ISF*”.
    - i. Otherwise, the CPM Participating Function SHALL forward the SIP MESSAGE request to the SIP/IP core.
    - ii. Upon receiving an error response to the SIP MESSAGE request, e.g. SIP 404 “Not Found”, SIP 488 “Not Acceptable Here” or SIP 606 “Not Acceptable”, the CPM Participating Function:
      1. SHALL check if service provider policy allows to initiate interworking;
      2. If interworking is allowed, it SHALL send the SIP MESSAGE request directly to the ISF as described in section 6.5 “*Communicating with the ISF*”.

Otherwise, continue with the rest of the steps.
  - b. Upon receiving a SIP final response, the CPM Participating Function SHALL use this SIP final response as the final response for the delivery of the CPM Standalone Message.
8. Otherwise, when the message size is larger than 1300 bytes the CPM Participating Function:
  - a. SHALL generate an initial SIP INVITE request according to the rules and procedures of [RFC3261], with the following clarifications:
    - i. SHALL copy the Accept-Contact header included in the incoming SIP MESSAGE request to the outgoing SIP INVITE request, and replace the CPM Feature Tag ‘3gpp-service.ims.icsi.oma.cpm.msg’ by ‘3gpp-service.ims.icsi.oma.cpm.largemsg’;
    - ii. SHALL copy the authenticated originator’s CPM Address to the outgoing SIP INVITE request if it was included in the incoming SIP MESSAGE request;
    - iii. SHALL copy the Reply-To header to the outgoing SIP INVITE request if it was included in the incoming SIP MESSAGE request.

- iv. SHALL include a User-Agent header to indicate the CPM release version as specified in Appendix D “*Release Version in User-agent and Server headers*”;
  - v. SHALL copy the Privacy header to the outgoing SIP INVITE request if it was included in the incoming SIP MESSAGE request;
  - vi. SHALL include the option tag ‘timer’ in the Supported header;
  - vii. SHALL include the “Message-Expires” header in the outgoing SIP INVITE request as defined in Appendix C “*CPM-defined SIP Headers*” using the value from the incoming Expires header if it was included in the incoming SIP MESSAGE request.
  - viii. SHOULD include the Session-Expires header with the refresher parameter set to “uac” according to the rules and procedures of [RFC4028];
  - ix. SHALL copy the Request-URI to the outgoing SIP INVITE request from the incoming SIP MESSAGE request;
  - x. SHALL copy the MIME resource-list body to the outgoing SIP INVITE request if it was included in the incoming SIP MESSAGE request;
  - xi. SHALL copy the Conversation-ID to the outgoing SIP INVITE request from the incoming SIP MESSAGE request;
  - xii. SHALL copy the Contribution-ID to the outgoing SIP INVITE request from the incoming SIP MESSAGE request;
  - xiii. SHALL, if present, copy the InReplyTo-Contribution-ID to the outgoing SIP INVITE request from the incoming SIP MESSAGE request;
  - xiv. SHALL include in the SIP INVITE request a MIME SDP body as an SDP offer according to the rules and procedures of [RFC3264], [RFC4566], [RFC4975] and [draft-ietf-simple-msrp-acm] with the following clarifications:
    1. SHALL set the SDP directional media attribute to a=sendonly;
    2. SHALL set the content type as a=accept-types:message/cpim;
    3. SHALL set MSRP URI for the MSRP connection setup as a=path:MSRP URI;
    4. SHALL set the size as a=file-selector:size:actual message size;
    5. SHALL set the a=setup attribute as “active”;
- b. If the destination address is neither SIP URI address nor TEL URI address, the CPM Participating Function SHALL send the SIP INVITE request directly to the ISF as described in section 6.5 “*Communicating with the ISF*”.
- Otherwise, the CPM Participating Function SHALL send the SIP INVITE request according to the rules and procedures of the SIP/IP core.
- c. Upon receiving a SIP 200 “OK” response to the SIP INVITE request, the CPM Participating Function:
- i. SHALL start the SIP session timer using the value received in the Session-Expires header according to the rules and procedures of [RFC4028];
  - ii. SHALL act as MSRP client according to [draft-ietf-simple-msrp-acm];
  - iii. SHALL act as an “active” endpoint to open the transport connection according to [draft-ietf-simple-msrp-acm];
  - iv. SHALL establish the MSRP connection according to the MSRP connection parameters in the SDP answer received in the SIP 200 “OK” response according to [draft-ietf-simple-msrp-acm];
  - v. SHALL generate and send a SIP ACK request as an acknowledgement of the final response according to the rules and procedures of [RFC3261];
  - vi. SHALL generate one or more MSRP SEND requests (depending on whether chunking is required) according to the rules and procedure of [RFC4975] with the following clarification:

- a. SHALL set To-Path header according to the MSRP URI(s) received in the answer SDP;
  - b. SHALL set the content type as Content-Type = message/cpim;
  - c. If the original SIP MESSAGE request requested for a disposition notification, it SHALL set the disposition notification request in the MSRP SEND request as an extension header as described in section 7.2.4 “Disposition Notification”;
  - d. SHALL send the MSRP SEND request(s) on the established MSRP connection.
- vii. When the last MSRP SEND request (representing the last chunk) has been sent and acknowledged, the CPM Participating Function:
- a. SHALL generate a SIP BYE request according to the rules and procedures of [RFC3261];
  - b. SHALL send the SIP BYE request according to the rules and procedures of SIP/IP core;
  - c. SHALL use the status of the MSRP send request(s) as the final response for the delivery of the CPM Standalone Message.
  - d. Upon receiving an error response from the SIP/IP core, e.g. SIP 404 “Not Found”, SIP 488 “Not Acceptable Here” or SIP 606 “Not Acceptable”, or upon receiving an error response to an MSRP SEND request sent in step c, the CPM Participating Function SHALL, if interworking has not yet been attempted, and if allowed according to service provider policy, send the SIP INVITE request directly to the ISF as described in section 6.5 “Communicating with the ISF”.
9. Upon receiving the final response for the delivery of the CPM Standalone Message to the terminating network, the CPM Participating Function:
- a. If the SIP final response is a SIP 200 OK response, the CPM Participating Function SHALL:
    - i. If the user preference for recording was set to record the CPM Conversation History,
      - a. SHALL store the CPM Standalone Message to the Message Storage Server according to procedures specified in section 6.3.1 “Object Store Operation” of [OMA-CPM\_TS\_MessageStorage] and retrieve an UID from the Message Storage Server;
      - b. If recording was successful, SHALL include in the SIP final response the Message-UID header set to the retrieved UID information as specified in Appendix C.1.6 “Message-UID”;
    - ii. SHALL send a SIP 200 “OK” final response for the received SIP MESSAGE request in accordance with [RFC3428].
  - b. Otherwise, the CPM Participating Function SHALL send an appropriate SIP error response for the received SIP MESSAGE request in accordance with [RFC3428].

### 8.2.1.2 Handle a Large Message Mode CPM Standalone Message

Upon receiving an initial SIP INVITE request with the CPM Feature Tag ‘3gpp-service.ims.icsi.oma.cpm.largemsg’ included in the Accept-Contact header corresponding to Large Message Mode CPM Standalone Message, the CPM Participating Function:

1. SHALL check whether the authenticated originator’s CPM Address is of a CPM User that is allowed to send the request and if not, the CPM Participating Function SHALL return a SIP 403 “Forbidden” response and SHALL include a Warning header with the warning text set to “127 Service not authorised” in the response according to the rules and procedures of [RFC3261];  
 Otherwise, continue with rest of the steps;
2. If the CPM Participating Function requires a specific User Agent version to be supported, the CPM Participating Function SHALL check the “User Agent” header field to determine if the CPM Participating Function supports the User Agent version and if not, the CPM Participating Function SHALL return a SIP 403 “Forbidden” response and SHALL include a Warning header with the warning text set to “132 Version not supported” in the response according to the rules and procedures of [RFC3261].



Otherwise, continue with rest of the steps;

3. If the CPM Participating Function does not allow anonymity and anonymity is requested, the CPM Participating Function SHALL return a SIP 403 “Forbidden” response and SHALL include a Warning header with the warning text set to “119 Anonymity not allowed” in the response according to the rules and procedures of [RFC3261].

Otherwise, continue with the rest of the steps;

4. If the “Message-Expires” header as defined in Appendix C “*CPM-defined SIP Headers*” is included, the CPM Participating Function SHALL check if the message is still valid. If the message is no longer valid, the message is handled in the same way as for an “Expires” header in a SIP MESSAGE as defined in [RFC3428];

Otherwise continue with the rest of the steps;

5. If the “Session-Expires” header is included, the CPM Participating Function SHOULD handle the header according to procedures of [RFC4028];
6. SHALL behave as a B2BUA according to the rules and procedures of [RFC3261] for the duration of the SIP session;
7. SHALL generate a SIP INVITE request according to the rules and procedures of [RFC3261] with the following clarifications:
  - a. The CPM Participating Function SHALL include the Request-URI received in the SIP INVITE request;
  - b. The CPM Participating Function SHALL copy the Accept-Contact header included in the incoming SIP INVITE request to the outgoing SIP INVITE request;
  - c. The CPM Participating Function SHALL copy the Contact header of the incoming SIP INVITE request to the outgoing SIP INVITE request;
  - d. The CPM Participating Function SHALL insert a URI identifying its own address in the Contact header;
  - e. The CPM Participating Function SHALL include a MIME SDP body received in the SIP INVITE request as an SDP offer according to the rules and procedures of [RFC3264], [RFC4566], [RFC4975], [draft-ietf-simple-msrp-acm] and [draft-ietf-simple-msrp-sessmatch] with the following clarification. The CPM Participating Function:
    - i. SHALL include a media line proposing MSRP media parameters;
    - ii. SHALL prepend its own MSRP URI for the MSRP connection setup as a=path:MSRP URI;
    - iii. SHALL set the SDP directional media attribute to a=sendonly;
    - iv. SHALL set the size as a=file-selector:size:actual message size;
    - v. SHALL set the a=setup attribute as “active”.
8. SHALL, if the destination address is neither a SIP URI address nor a TEL URI address, send the SIP INVITE request directly to the ISF as described in section 6.5 “*Communicating with the ISF*”. Otherwise, the CPM Participating Function SHALL send the SIP INVITE request according to the rules and procedures of the SIP/IP core.

Upon receiving a SIP 200 “OK” response to the SIP INVITE request sent in step 8 above, the CPM Participating Function:

1. SHALL generate a SIP 200 “OK” response according to the rules and procedures of [RFC3261];
2. SHALL include a URI identifying its own address in the Contact header;
3. SHALL include a Server header to indicate the CPM release version as specified in Appendix D “*Release Version in User-agent and Server headers*”;
4. SHALL include the SDP received in the response to the SIP INVITE request as answer SDP according to the rules and procedures of [RFC3264], [RFC4566], [RFC4975], [draft-ietf-simple-msrp-acm] and [draft-ietf-simple-msrp-sessmatch] with the following clarifications:
  - a. The CPM Participating Function SHALL include a media line proposing MSRP media parameters;

- b. The CPM Participating Function SHALL prepend its own MSRP URI for the MSRP connection setup as a=path:MSRP URI;
  - c. The CPM Participating Function SHALL set the SDP directional media attribute to a=recvonly.;
  - d. The CPM Participating Function SHALL set the a=setup attribute as "passive".
5. SHALL send the SIP 200 "OK" response according to the rules and procedures of SIP/IP core;
  6. SHALL check in the originator's user preferences retrieved from XDMS as described in 8.4.1 "*Retrieving User Preferences*" if there is a rule in [OMA-XDM-Policy] in which the "enabler" attribute of the '<service>' sub-element inside the '<service-list>' element of the conditions part of the rule is set to "CPM" and the '<action>' element of the rule contains an '<allow-offline-storage>' sub-element set to "true". If such a rule exists, it SHALL execute the processing described in 8.5 "*Record CPM Conversation History*".

Upon receiving an error response from the SIP/IP core, e.g. SIP 404 "Not Found" or SIP 488 "Not Acceptable Here" or SIP 606 "Not Acceptable", the CPM Participating Function SHALL, if allowed according to service provider policy, send the SIP INVITE request generated in step 7 above directly to the ISF as described in section 6.5 "*Communicating with the ISF*".

Upon receiving a SIP CANCEL request, the CPM Participating Function:

1. SHALL act as UAS to handle the SIP CANCEL request according to the rules and procedures of [RFC3261]; and,
2. SHALL act as UAC to cancel the sent SIP INVITE request according to the rules and procedures of [RFC3261].

Upon receiving a SIP ACK request, the CPM Participating Function SHALL forward the SIP ACK request to SIP/IP core according to the rules and procedures of the SIP/IP core.

Upon receiving an MSRP SEND request, the CPM Participating Function:

1. If the MSRP SEND request indicates the use of chunking, SHALL wait until all further MSRP SEND requests for the remaining chunks have been received and SHALL reassemble the entire set of MSRP requests into the CPM Standalone Message,
2. SHALL check if there are external contents in the MIME body of the message, and for each Content-Type header set to the value "message/external-body" and whose access-type is set to the value "URL" and whose URL contains the parameter "action=fetch", the CPM Participating Function:
  - a. SHALL fetch the Media Object, CPM Standalone Message, CPM File Transfer History, CPM Session History or CPM Conversation History indicated by the URL from the Message Storage Server.
  - b. SHALL replace the value "message/external-body" in the Content-Type of CPIM body header with an appropriate value depending on the fetched data type.

NOTE: The value for the Content-Type header of the CPIM body can be obtained from the stored data's Content-Type value (e.g. if stored data is a text file whose Content-Type is "text/plain", the "text/plain" can be copied to the Content-Type header in the CPM Standalone Message).

- c. SHALL include the fetched data in the message/cpim body.
3. SHALL select an existing MSRP connection if available according to the rules and procedures of [RFC4975]; or
4. SHALL act as an "active" endpoint to open the transport connection according to [draft-ietf-simple-msrp-acm]; and
5. SHALL establish the MSRP connection according to the MSRP connection parameters in the SDP answer received in the SIP 200 "OK" response according to [RFC4975];
6. SHALL forward the MSRP SEND request towards the adjacent MSRP node via the established MSRP connection according to the rules and procedures of [RFC4975].

Upon receiving an MSRP 200 "OK" response, the CPM Participating Function SHALL forward the MSRP 200 "OK" response according to the rules and procedures of [RFC4975].

Upon receiving an error MSRP response to the MSRP SEND request, if interworking has not yet been attempted and if allowed according to service provider policy, the CPM Participating Function SHALL send the SIP INVITE request generated in step 7 above directly to the ISF as described in section 6.5 "*Communicating with the ISF*" and once a SIP session is established with an IWF, the CPM Participating Function SHALL transfer the Large Message Mode CPM

Standalone Message using MSRP. If still an error MSRP response is received, the CPM Participating Function SHALL return the error response to the sender.

Upon receiving a SIP BYE request from the originating CPM User, the CPM Participating Function:

1. If MSRP message delivery was successful and if the user preference was set to record the CPM Conversation History, SHALL store the CPM Standalone Message to the Message Storage Server according to procedures specified in section 6.3.1 “*Object Store Operation*” of [OMA-CPM\_TS\_MessageStorage] and retrieve an UID from the Message Storage Server;
2. SHALL respond to the SIP BYE request as described in [RFC3261] and if the message was recorded, SHALL include in the 200 “OK” response the Message-UID header set to the retrieved UID information as specified in Appendix C.1.6 “Message-UID”;
3. SHALL forward the SIP BYE request to the SIP/IP core *according to rules and procedures of the SIP/IP core*.

### 8.2.1.3 Handle a Disposition Notification

When receiving a SIP MESSAGE request containing a delivery notification or a read report, the CPM Participating Function MAY either forward the SIP MESSAGE directly to the original sender of the CPM Standalone Message according to the rules and procedures of the SIP/IP core or MAY execute the following steps depending on service provider policy:

1. SHALL extract the message-id and disposition type from the IMDN in the SIP MESSAGE request;
2. If there are cached message-ids, SHALL check whether the extracted message-id is the same as one of the cached message-ids:
  - a. If the value is the same, the CPM Participating Function SHALL check whether the extracted disposition type is the same as the cached disposition type:
    - i. If a disposition of the same type was already sent, the CPM Participating Function SHALL NOT forward the SIP MESSAGE request towards the original sender of the CPM Standalone Message;
    - ii. Otherwise, the CPM Participating Function SHALL cache the message-id and the disposition type and SHALL forward SIP MESSAGE request to the original sender of the CPM Standalone Message according to the rules and procedures of the SIP/IP core.
  - b. Otherwise, the CPM Participating Function SHALL cache the extracted message-id and the disposition type and SHALL forward the SIP MESSAGE request to the original sender of the CPM Standalone Message according to the rules and procedures of the SIP/IP core;

NOTE: How long message-ids are cached is dependent on service provider policy.

3. If there are no cached message-ids, the CPM Participating Function SHALL cache the extracted message-id and the disposition type and SHALL forward SIP MESSAGE request to the original sender of the CPM Standalone Message according to the rules and procedures of the SIP/IP core.

## 8.2.2 CPM Session Handling

A CPM Participating Function in the originating network may or may not stay in the media path depending on service provider’s policies. The policies may be static such that the CPM Participating Function always stays or always does not stay in the media path, or the policies may depend on parameters such as:

1. If a CPM User has a subscription to the Message Storage Server and a user preference is set to record CPM Conversation History when he sends a CPM Session Invitation;
2. If the CPM Participating Function needs to do charging.

When a CPM Participating Function stays in the media path acting as a back-to-back user agent (B2BUA), the following applies:

1. The CPM Participating Function acts as a user agent for both SIP sessions it connects. The B2BUA behaves as a user agent server for the incoming side and as a user agent client for the outgoing side(s).

2. The CPM Participating Function correlates both sides of the SIP session, by mapping the corresponding SIP session identities of the SIP sessions, and it maintains session state for all SIP sessions it handles, thus enabling end-to-end communication.

### 8.2.2.1 Handle a CPM Session Invitation

Upon receiving a SIP INVITE request for a CPM 1-1 Session or a CPM Group Session:

1. The CPM Participating Function SHALL check whether the authenticated originator's CPM Address is of a CPM User that is allowed to send the request and if not, the CPM Participating Function SHALL return a SIP 403 "Forbidden" response and SHALL include a Warning header with the warning text set to "127 Service not authorised" in the response according to the rules and procedures of [RFC3261].  
Otherwise, continue with rest of the steps;
2. If the CPM Participating Function requires a specific User Agent version to be supported, the CPM Participating Function SHALL check the "User Agent" header field to determine if the CPM Participating Function supports the User Agent version as defined in Appendix D "*Release Version in User-agent and Server headers*" and if not, the CPM Participating Function SHALL return a SIP 403 "Forbidden" response and SHALL include a Warning header with the warning text set to "132 Version not supported" in the response according to the rules and procedures of [RFC3261].  
Otherwise, continue with rest of the steps;
3. If the CPM Participating Function does not allow anonymity and anonymity is requested, the CPM Participating Function SHALL return a SIP 403 "Forbidden" response and SHALL include a Warning header with the warning text set to "119 Anonymity not allowed" in the response according to the rules and procedures of [RFC3261]  
Otherwise, continue with the rest of the steps;
4. If the CPM Participating Function stays in the media path, the CPM Participating Function:
  - a. SHALL copy the received Request-URI;
  - b. SHALL behave as a B2BUA according to the rules and procedures of [RFC3261] for the duration of the CPM Session;
  - c. SHALL generate a SIP INVITE request according to the rules and procedures of [RFC3261];
  - d. SHALL include a User-Agent header to indicate the OMA CPM release version of the CPM Participating Function as specified in Appendix D "*Release Version in User-agent and Server headers*";
  - e. SHALL copy the Contact header and the Accept-Contact header of the incoming SIP INVITE request to the outgoing SIP INVITE request;
  - f. SHALL insert a URI identifying its own address in the Contact header of the SIP INVITE request;
  - g. SHALL include an SDP body as an SDP offer in the SIP INVITE request based on the received SDP from the originating client, as described in section 5.2.1.2 "*SDP Handling at Intermediate Nodes*";
  - h. If the destination address is neither SIP URI address nor TEL URI address, the CPM Participating Function SHALL send the SIP INVITE request directly to the ISF as described in section 6.5 "*Communicating with the ISF*". Otherwise the CPM Participating Function SHALL send the SIP INVITE request according to the rules and procedures of the SIP/IP core.
5. If the CPM Participating Function does not stay in the media path, the CPM Participating Function:
  - a. SHALL act as a SIP proxy according to the rules and procedures of [RFC3261] for the duration of the CPM Session;
  - b. SHALL include a Record-Route header containing a URI identifying its own address; and,
  - c. If the destination address is neither SIP URI address nor TEL URI address, the CPM Participating Function SHALL forward the SIP INVITE request directly to the ISF as described in section 6.5 "*Communicating with the ISF*". Otherwise, the CPM Participating Function SHALL forward the SIP INVITE request according to the rules and procedures of [RFC3261] and the SIP/IP core.

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

1. If the SIP 200 "OK" response was received from the ISF, the CPM Participating Function SHALL check whether the all offered Media Streams have been accepted. If not, the CPM Participating Function MAY attempt to establish a new session for the rejected Media Streams. To establish the new session the CPM Participating Function:
  - a. SHALL check if service provider policy allows to establish a new session for the new Media Stream;
  - b. If allowed, SHALL generate a SIP INVITE request with the following details;
    - i. SHALL perform the above step 4 with the exception of step 4-f and step 4-g;
    - ii. SHALL include SDP parameters about the rejected Media Streams in the SDP body, as described in section 5.2.1.2 "*SDP Handling at Intermediate Nodes*";
    - iii. SHALL send the SIP INVITE request directly to the ISF.

Otherwise, continue with the rest of steps;

2. SHALL generate a SIP 200 "OK" response;
3. SHALL include a Server header to indicate the OMA CPM release version of the CPM Participating Function as specified in Appendix D "*Release Version in User-agent and Server headers*";
4. SHALL include the received SDP body as an SDP answer based on the SDP answer received in the SIP 200 "OK" response as described in section 5.2.1.2 "*SDP Handling at Intermediate Nodes*";
5. SHALL include a SIP URI in the Contact header that can resolve back to the original SIP URI in the received Contact header;
6. SHALL send the SIP 200 "OK" response to the CPM Client according to the rules and procedures of SIP/IP core; and,
7. SHALL check the <actions> element <allow-offline-storage> retrieved from XDMS as described in 8.4.1 "*Retrieving User Preferences*", and if set to "true", it SHALL execute the processing described in 8.5 "*Record CPM Conversation History*".

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

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

Upon receiving an error response, e.g. SIP 404 "Not Found" or SIP 488 "Not Acceptable Here" or SIP 606 "Not Acceptable", based on service provider policies, the CPM Participating Function:

1. SHALL check if service provider policy allows to initiate interworking;
2. If interworking is allowed, it SHALL send the SIP INVITE request directly to the ISF as described in section 6.5 "*Communicating with the ISF*";
3. Otherwise, it SHALL forward the SIP INVITE error response towards the originating CPM Client.

Upon receiving a SIP ACK request, the CPM Participating Function SHALL forward the SIP ACK request to the SIP/IP core according to the rules and procedures of the SIP/IP core.

### 8.2.2.2 Handle a Cancel Request

Upon receiving a SIP CANCEL request, the CPM Participating Function performing as a B2BUA:

1. SHALL act as UAS according to the rules and procedures of [RFC3261];
2. SHALL cancel the SIP INVITE request towards the SIP/IP core according to the rules and procedures of [RFC3261].

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

### 8.2.2.3 Handle a SIP BYE Request

Upon receiving a SIP BYE request associated with an existing CPM Session, a CPM Participating Function that acts as a SIP proxy SHALL forward the received SIP BYE request along the Signalling Path and upon receiving the SIP 200 "OK" response associated with the SIP BYE request, the CPM Participating Function SHALL forward the SIP 200 "OK" response along the same Signalling Path as the SIP BYE request according to the rules and procedures of [RFC3261].

Upon receiving a SIP BYE request associated with an existing CPM Session, a CPM Participating Function that acts as a B2BUA:

1. SHALL release the Media Plane resources associated with the CPM session;
2. If the SIP BYE request was sent by the CPM Client served by the CPM Participating Function, the CPM Participating Function:
  - a. If the affected CPM Session is being interworked, the CPM Participating Function:
    - i. SHALL generate SIP BYE requests for each of the associated IWFs according to the rules and procedures of [RFC3261];
    - ii. SHALL send these SIP BYE requests to the IWFs according to the rules and procedures of [RFC3261].
  - b. Otherwise, when the affected CPM Session is not being interworked, the CPM Participating Function:
    - i. SHALL generate a SIP BYE request for the other CPM entity of the affected CPM Session according to the rules and procedures of [RFC3261];
    - ii. SHALL send the SIP BYE request according to the rules and procedures of [RFC3261].
  - c. Upon receiving a SIP 200 "OK" response from the IWFs or the other CPM entity associated with the SIP BYE request, the CPM Participating Function:
    - i. SHALL generate a SIP 200 "OK" response according to the rules and procedures of [RFC3261];
    - ii. If the action element <allow-offline-storage> is set to true, the CPM Participating Function:
      1. SHALL store the CPM Session History to the Message Storage Server according to procedures specified in section 8.5.2 "Record CPM Session" and retrieve a UID from the Message Storage Server;
      2. SHALL include in the SIP 200 "OK" response a Message-UID header set to the retrieved UID information as defined in Appendix C "CPM-defined SIP Headers".
    - iii. SHALL send the SIP 200 "OK" response according to the rules and procedures of [RFC3261].
3. If the SIP BYE request was sent by the other CPM entity, the CPM Participating Function:
  - a. SHALL generate a SIP BYE request for the CPM Client that it serves according to the rules and procedures of [RFC3261];
  - b. If the action element <allow-offline-storage> is set to true, the CPM Participating Function:
    - i. SHALL store the CPM Session to the Message Storage Server according to procedures specified in section 8.5.2 "Record CPM Session" and retrieve a UID from the Message Storage Server;
    - ii. SHALL include in the SIP BYE request a Message-UID header set to the retrieved UID information as defined in Appendix C "CPM-defined SIP Headers".
  - c. SHALL send the SIP BYE request according to the rules and procedures of [RFC3261].
  - d. Upon receiving a SIP 200 "OK" response from the CPM Client associated with the SIP BYE request, the CPM Participating Function SHALL generate and send a SIP 200 "OK" response towards the other CPM entity according to the rules and procedures of [RFC3261] and the SIP/IP core.
4. If the SIP BYE request was sent by one of the IWFs involved in the interworking of the CPM Session, the CPM Participating Function:

- a. If the CPM Session is interworked towards multiple IWFs and the service provider policies indicate that only the Media Streams associated with the IWF that sent the SIP BYE request are to be closed, the CPM Participating Function SHALL send a SIP re-INVITE request for deleting the Media Streams associated with the IWF that sent the SIP BYE request to the CPM Client, according to the rules and procedures of [RFC3261] and the SIP/IP core.
- b. Otherwise, if the CPM Session is interworked towards multiple IWFs and the service provider policies indicate closure of the entire CPM Session, or the CPM Session is interworked to a single IWF, the CPM Participating Function:
  - i. SHALL generate a SIP BYE request for the CPM Client that it serves according to the rules and procedures of [RFC3261];
  - ii. If the action element <allow-offline-storage> is set to true, the CPM Participating Function:
    1. SHALL store the CPM Session to the Message Storage Server according to procedures specified in section 8.5.2 “Record CPM Session” and retrieve a UID from the Message Storage Server;
    2. SHALL include in the SIP BYE request a Message-UID header set to the retrieved UID information as defined in Appendix C “CPM-defined SIP Headers”.
  - iii. SHALL send the SIP BYE request according to the rules and procedures of [RFC3261].
  - iv. Upon receiving a SIP 200 “OK” response from the CPM Client associated with the SIP BYE request, the CPM Participating Function SHALL generate and send a SIP 200 “OK” response towards the IWF according to the rules and procedures of [RFC3261].

#### 8.2.2.4 SIP Session Timer Expiry

On expiry of the SIP session timer and if the CPM Participating Function is behaving as a B2BUA for the affected CPM Session, the CPM Participating Function:

1. SHALL generate a SIP BYE request for the CPM Client that the CPM Participating Function serves according to the rules and procedures of [RFC3261];
2. If the action element <allow-offline-storage> is set to true, the CPM Participating Function:
  - a. SHALL store the CPM Session History in the Message Storage Server according to procedures specified in section 8.5.2 “Record CPM Session” and retrieve a UID from the Message Storage Server;
  - b. SHALL include in the SIP BYE request the Message-UID header set to the retrieved UID information as defined in Appendix C “CPM-defined SIP Headers”.
3. SHALL send the SIP BYE request according to the rules and procedures of [RFC3261];
4. If the affected CPM Session is being interworked, the CPM Participating Function:
  - a. SHALL generate SIP BYE requests for each of the associated IWFs according to the rules and procedures of [RFC3261];
  - b. SHALL send these SIP BYE requests according to the rules and procedures of [RFC3261].
5. Otherwise, when the affected CPM Session is not being interworked, the CPM Participating Function:
  - a. SHALL generate a SIP BYE request for the other CPM entity of the affected CPM Session according to the rules and procedures of [RFC3261];
  - b. SHALL send the SIP BYE request according to the rules and procedures of [RFC3261].
6. SHALL release all Media Plane resources associated with the CPM Session according to the rules and procedures of [RFC3261] and [RFC4028].

If the CPM Participating Function behaves as a SIP proxy, it SHALL act as specified in [RFC4028].

### 8.2.2.5 Handle a CPM Session Modification Request

Upon receiving a SIP re-INVITE request the CPM Participating Function:

1. SHALL act as specified in section 8.2.2.1 “*Handle a CPM Session Invitation*” except for step 4;
2. If the CPM Participating Function is a B2BUA:
  - a. SHALL generate a SIP re-INVITE request according to the rules and procedures of [RFC3261]
  - b. SHALL include the same URI identifying its own address that was used in the initial SIP INVITE request in the Contact header of the SIP re-INVITE request;
3. If the CPM Participating Function is acting as a SIP proxy, SHALL remove its own address from the Route header in the received SIP re-INVITE request according to the rules and procedures of [RFC3261];
4. If the CPM Session to be modified was established with IWF(s), it SHALL perform the following procedures:
  - a. If the SIP re-INVITE request is removing existing Media Streams or changing characteristics of existing Media Streams, it SHALL send the SIP re-INVITE request to the IWF involved in that Media Stream;
  - b. If the SIP re-INVITE request is adding a new Media Stream, it SHALL sequentially fork the SIP re-INVITE request to IWF(s) involved in the CPM Session until one of the IWFs responds with a SIP 200 “OK” response or all IWFs have been tried.
5. Otherwise, it SHALL send the SIP re-INVITE request according to the rules and procedures of the SIP/IP core.

Upon receiving a SIP final response, the CPM Participating Function SHALL act as specified in section 8.2.2.1 “*Handle a CPM Session Invitation*”.

Upon receiving a SIP 488 "Not Acceptable Here" response from all IWFs that the SIP re-INVITE request for adding a new Media Stream was sent to, the CPM Participating Function responsible for making interworking decision MAY, if service provider policy allows this, establish a new session towards an IWF for the new Media Stream; otherwise, the CPM Participating Function SHALL forward the SIP 488 “Not Acceptable Here” response according to the rules and procedures of the SIP/IP core.

In order to establish a new session towards an IWF for the new Media Stream, the CPM Participating Function SHALL generate a SIP INVITE request according to the rules and procedures of [RFC3261] with the following clarifications:

1. SHALL include a MIME SDP body for the new Media Stream as an SDP offer in the SIP INVITE request.
2. SHALL send the SIP INVITE to the ISF as described in section 6.5 “*Communicating with the ISF*”.

Upon receiving a SIP ACK request, the CPM Participating Function SHALL forward the SIP ACK request to the SIP/IP core according to the rules and procedures of the SIP/IP core for delivery to the entity that accepted the session modification.

## 8.2.3 CPM File Transfer Handling

### 8.2.3.1 Handle a CPM File Transfer

The CPM Participating Function SHALL handle a CPM File Transfer initiation request (i.e. a SIP INVITE request that includes the CPM Feature Tag ‘3gpp-service.ims.icsi.oma.cpm.filetransfer’ in the Accept-Contact header) in exactly the same manner as described for CPM Session Invitations in section 8.2.2.1 “*Handle a CPM Session Invitation*”.

With respect to the SDP contents of outgoing SIP INVITE requests, the CPM Participating Function SHALL follow the rules and procedures of [RFC5547].

### 8.2.3.2 Handle a CPM File Transfer Closing Request

The CPM Participating Function SHALL handle the closing of a CPM File Transfer session in exactly the same manner as defined for CPM Sessions in section 8.2.2.3 “*Handle a SIP BYE Request*”.



## 8.3 Procedures in the Terminating Network

A CPM Participating Function in a terminating network handles incoming CPM communications in the following manners:

- Upon receiving a SIP MESSAGE request with the CPM Feature Tag ‘3gpp-service.ims.icsi.oma.cpm.msg’ defined in Appendix H included in the Accept-Contact header, the CPM Participating Function SHALL handle this SIP MESSAGE request as described in section 8.3.1.1 “*Handle a Pager Mode CPM Standalone Message*”.
- Upon receiving a SIP INVITE request with the CPM Feature Tag ‘3gpp-service.ims.icsi.oma.cpm.largemsg’ defined in Appendix H included in the Accept-Contact header, the CPM Participating Function SHALL handle this SIP INVITE request as described in section 8.3.1.2 “*Handle a Large Message Mode*”.
- Upon receiving a SIP INVITE request with the CPM Feature Tag ‘3gpp-service.ims.icsi.oma.cpm.deferred’ defined in Appendix H included in the Accept-Contact header, the CPM Participating Function SHALL handle this SIP INVITE request as described in section 8.3.1.6.3 “*Sending Notifications and Awaiting CPM Client Action*”.
- Upon receiving a SIP SUBSCRIBE request with the Event header set to ‘deferred-messages’, the CPM Participating Function SHALL handle this SIP SUBSCRIBE request as described in section 8 “*When receiving a SIP ACK request, the CPM Participating Function SHALL ignore this request.*”
  1. When receiving a SIP BYE request, the CPM Participating Function SHALL process this according to the rules and procedures of [RFC3261].
 

NOTE 2: such a SIP ACK or SIP BYE request can arrive at any time after step 2, but must not affect execution of the following steps.
  2. If the CPM Participating Function receives another SIP INVITE request from a different client of the same CPM User addressed to the same CPMDeferredMsgMgmtURI and with the same feature tag as indicated above, the CPM Participating Function SHALL handle such overlapping SIP INVITE requests in a first come first served manner.
- Delivering Deferred CPM Messages to the Message Storage Server”,
- Upon receiving a SIP INVITE request with the CPM Feature Tag ‘3gpp-service.ims.icsi.oma.cpm.session’ defined in Appendix H included in the Accept-Contact header, the CPM Participating Function SHALL handle this SIP INVITE request as described in section 8.3.2.1 “*Handle a CPM Session Invitation*”.
- Upon receiving a SIP INVITE request with the CPM Feature Tag ‘3gpp-service.ims.icsi.oma.cpm.filetransfer’ defined in Appendix H included in the Accept-Contact header, the CPM Participating Function SHALL handle this SIP INVITE request as described in section 8.3.3.1 “*Handle a CPM File Transfer Initiation*”.

### 8.3.1 CPM Message Handling

#### 8.3.1.1 Handle a Pager Mode CPM Standalone Message

Upon receiving a SIP MESSAGE request with the CPM Feature Tag ‘3gpp-service.ims.icsi.oma.cpm.msg’ included in the Accept-Contact header, the CPM Participating Function SHALL execute the following:

1. If the CPM Participating Function requires a specific User Agent version to be supported, the CPM Participating Function SHALL check the “User Agent” header field to determine if the CPM Participating Function supports the User Agent version and if not, the CPM Participating Function SHALL return a SIP 403 “Forbidden” response and SHALL include a Warning header with the warning text set to “132 Version not supported” in the response according to the rules and procedures of [RFC3261].

Otherwise, continue with rest of the steps;

2. If the CPM Participating Function does not allow anonymity and anonymity is requested, the CPM Participating Function SHALL return a SIP 403 “Forbidden” response and SHALL include a Warning header with the warning text set to “119 Anonymity not allowed” in the response according to the rules and procedures of [RFC3261].

Otherwise, continue with the rest of the steps;

3. Check if the Authenticated Originator CPM Address of the SIP MESSAGE request is included in the “oma\_blockedcontacts” URI-list defined in [OMA-XDM-List]. If it is, then the CPM Participating Function SHALL return a SIP 403 “Forbidden” response and SHALL include a Warning header with the warning text set to “122 Function not allowed” according to the rules and procedures of [RFC3261].

Otherwise, continue with the rest of the steps;

4. Check in the recipient’s user preferences retrieved from XDMS as described in 8.4.1 “*Retrieving User Preferences*” and if there is a rule in [OMA-XDM-Policy in which the “enabler” attribute of the ‘<service>’ sub-element inside the ‘<service-list>’ element of the conditions part of the rule is set to “CPM” and the ‘<media-list>’ element of the conditions part of the rule contains the ‘<standalone-message>’ element. If such a rule exists then the CPM Participating Function SHALL handle the value of the ‘<action>’ element as follows:

- a. If the action element includes an ‘<allow-reject-invite>’ sub-element set to “true”, the CPM Participating Function SHALL return a SIP 403 “Forbidden” response to the CPM Client. Also the CPM Participating Function SHALL include a Warning header with the warning text set to “122 Function not allowed” according to the rules and procedures of [RFC3261].

Otherwise, continue with the rest of the steps;

- b. If the action element includes an ‘<allow-interwork>’ sub-element set to “true” or if the action element includes an ‘<allow-delivery-and-interwork>’ sub-element set to “true”, the CPM Participating Function SHALL send the SIP MESSAGE directly to the ISF without as described in section 6.5 “*Communicating with the ISF*”.

- c. If the action element includes an ‘<allow-store>’ sub-element set to “true”, the CPM Participating Function:

- i. SHALL remove the Disposition-Notification Header Field in CPIM header of the received CPM Standalone Message as defined in [RFC5438];  
NOTE: If present, the request for read report is not removed by the CPM Participating Function.
- ii. SHALL store the message in the user’s message store in the Message Storage Server according to procedures specified in section 6.3.1 “*Object Store Operation*” of [OMA-CPM\_TS\_MessageStorage].
- iii. If the originator of the CPM Standalone Message requested a “positive-delivery” disposition notification as defined in [RFC5438], SHALL generate a “positive-delivery” notification as described in section 8.3.1.5 “*Sending a Disposition Notification*”;
- iv. SHALL return a SIP 200 “OK” response.

Otherwise, continue with the rest of the steps;

- d. If the action element includes an ‘<allow-forward>’ sub-element set to “true”, the CPM Participating Function SHALL change the address of the recipient to the one provided in the user preferences and send the CPM Standalone Message to that address through the SIP/IP core.

Otherwise, continue with the rest of the steps;

- e. If the action element includes an ‘<allow-defer>’ sub-element set to “true”, the CPM Participating Function SHALL defer the message as specified in section 8.3.1.6 “*Defer CPM Standalone Messages*” and SHALL return a SIP 202 “Accepted” response;

Otherwise, continue with the rest of the steps;

5. If in step 4 no rule matched or if the action element of the matching rule included an ‘<allow-deliver-and-interwork>’ sub-element set to “true”, the CPM Participating Function SHALL check if there is a rule in [OMA-XDM-Policy] in which the “enabler” attribute of the ‘<service>’ sub-element inside the ‘<service-list>’ element of the conditions part of the rule is set to “CPM” and the ‘<action>’ element of the rule contains an ‘<allow-do-not-disturb>’ sub-element set to “true”. If such a rule exists then the CPM Participating Function SHALL defer the message as specified in section 8.3.1.6 “*Defer CPM Standalone Messages*” and SHALL return a SIP 202 “Accepted” response.

6. If in step 4 no rule matched or if the action element of the matching rule included an ‘<allow-deliver-and-interwork>’ sub-element set to “true” or an ‘<allow-interworking>’ sub-element set to “true”, the CPM Participating Function SHALL if there is a rule in [OMA-XDM-Policy] in which the “enabler” attribute of the ‘<service>’ sub-element inside the ‘<service-list>’ element of the conditions part of the rule is set to “CPM” and the ‘<action>’ element of the rule contains an ‘<allow-offline-storage>’ sub-element set to “true”. If such a rule exists, it SHALL execute the processing described in section 8.5 “*Record CPM Conversation History*”.
  7. If in step 4 no rule matched or if the action element of the matching rule included the ‘<allow-deliver-and-interwork>’ sub-element, the CPM Participating Function SHALL:
    - a. Determine which of the registered CPM Clients are expected to receive the CPM Standalone Message as follows:
      - i. SHALL check for rules in [OMA-XDM-Policy] satisfying the following criteria:
        - The <service-list> element inside the <conditions> element contains a <service> element with the attribute “enabler” set to “CPM”.
        - The <upp-list> element inside the <conditions> element contains the active User Preference Profile name of one of the registered CPM Clients of the recipient CPM User.
        - Other elements inside the <conditions> element evaluate to true for the CPM Standalone Message.
        - The <action> element contains a <allow-reject-invite> element, as defined in [OMA-XDM-Policy], and with its value set to “true”.
      - ii. SHALL exclude each registered CPM Client whose active User Preference Profile is mentioned in one of the rules found as a result of step i from the list of registered CPM Clients that will receive the CPM Standalone Message;
      - iii. MAY evaluate other information sources to determine device connectivity and, if evaluated, SHALL exclude those registered CPM Clients whose connectivity does not allow to receive the CPM Standalone Message.
      - iv. SHALL further exclude those registered CPM Clients whose capabilities (learnt via the registration NOTIFY request as specified in section 8.1.4 “*Using the Registration Event Information*”, or via other information sources) do not allow to receive the CPM Standalone Message.
      - v. SHALL further exclude those registered CPM Clients that should not receive the CPM Standalone Message according to service provider policies.
- NOTE: steps ii, iii, iv, and v implement the notion of a CPM Client being “suitable” (or not) for a request as described in Section 5.2.2.1.3 of [OMA-CPM-SD]. This notion of “suitable” applies equally to other requests, i.e. Large Mode CPM Standalone Message request, CPM Session Invitation request and CPM File Transfer request, see affected sections.
- b. MAY replace each Media Object attached to the CPM Standalone Message with a reference, as described in section 8.3.1.3 “*Replacing Media with a Reference*”
  - c. SHALL generate a SIP MESSAGE request for each registered CPM Client selected in step a according to the rules and procedures of [RFC3428];
  - d. SHALL copy the Accept-Contact header of the incoming SIP MESSAGE request to the outgoing SIP MESSAGE request;
  - e. SHALL include a Request-URI and set its value to the selected CPM Client’s public GRUU obtained in the registration NOTIFY request as specified in the subsection 8.1.2 “*Receive Registration Event Information Notifications*”;
  - f. SHALL include the CPM release version in the User-Agent header as specified in Appendix D “*Release Version in User-agent and Server headers*”;

- g. If the CPM Standalone Message was recorded in step 6, the CPM Participating Function SHALL include the UID information retrieved in section 8.5 “*Record CPM Conversation History*” in the Message-UID header as specified in Appendix C.1.6 “*Message-UID*”;
- h. SHALL send the request via the SIP/IP core towards each user’s selected CPM Client.

If in step 7 no suitable registered CPM Clients are found to receive the request, then the CPM Participating Function SHALL defer the message as specified in section 8.3.1.6 “*Defer CPM Standalone Messages*” and SHALL return a SIP 202 “Accepted” response.

With the exception of message forwarded case upon receiving the first SIP 2xx final response from one of the selected CPM Clients, the CPM Participating Function SHALL send the SIP final response along the signalling path towards the originating CPM Client according to the rules and procedures of [RFC3261];

If none of the suitable CPM Clients, nor, if applicable, the ISF return a SIP 200 “OK” response, the CPM Participating Function SHALL check the service provider policy about handling undelivered messages. If the service provider policy is:

1. To defer the message then the CPM Participating Function SHALL defer the message as specified in section 8.3.1.6 “*Defer CPM Standalone Messages*” and SHALL return a SIP 202 “Accepted” response;
2. To deliver the message using a Non-CPM Communication Service, the CPM Participating Function SHALL send the SIP MESSAGE directly to the ISF as described in section 6.5 “*Communicating with the ISF*”.

If the CPM Standalone Message was recorded but could not be delivered to any CPM Client nor could be interworked, the CPM Participating Function SHALL delete that CPM Standalone Message as described in section 6.3.5 “*Object Remove Operation*” in [OMA-CPM\_TS\_MessageStorage].

### 8.3.1.2 Handle a Large Message Mode CPM Standalone Message

Upon receiving a SIP INVITE request with the CPM Feature Tag ‘3gpp-service.ims.icsi.oma.cpm.largemsg’ included in the Accept-Contact header corresponding to Large Message Mode CPM Standalone Message, the CPM Participating Function SHALL execute the following:

1. If the CPM Participating Function requires a specific User Agent version to be supported, the CPM Participating Function SHALL check the “User Agent” header field to determine if the CPM Participating Function supports the User Agent version and if not, the CPM Participating Function SHALL return a SIP 403 “Forbidden” response and SHALL include a Warning header with the warning text set to “132 Version not supported” in the response according to the rules and procedures of [RFC3261].

Otherwise, continue with rest of the steps;

2. If the CPM Participating Function does not allow anonymity and anonymity is requested, the CPM Participating Function SHALL return a SIP 403 “Forbidden” response and SHALL include a Warning header with the warning text set to “119 Anonymity not allowed” in the response according to the rules and procedures of [RFC3261].

Otherwise, continue with the rest of the steps;

3. If the “Session-Expires” header is included, the CPM Participating Function SHOULD handle the header according to procedures of [RFC4028].
4. SHALL behave as a B2BUA according to the rules and procedures of [RFC3261] for the duration of the session;
5. Check if the Authenticated Originator CPM Address of the SIP INVITE request is included in the “oma\_blockedcontacts” URI-list defined in [OMA-XDM-List]. If it is, then the CPM Participating Function SHALL return a SIP 403 “Forbidden” response and SHALL include a Warning header with the warning text set to “122 Function not allowed” according to the rules and procedures of [RFC3261].

Otherwise, continue with the rest of the steps;

6. Check in the recipient’s user preferences retrieved from XDMS as described in 8.4.1 “*Retrieving User Preferences*” and if there is a rule in [OMA-XDM-Policy] in which the “enabler” attribute of the ‘<service>’ sub-element inside the ‘<service-list>’ element of the conditions part of the rule is set to “CPM” and the ‘<media-list>’ element of the conditions part of the rule contains the ‘<standalone-message>’ element. If such a rule exists then the CPM Participating Function SHALL handle the value of the ‘<action>’ element as follows:

- a. If the action element includes an ‘<allow-reject-invite>’ sub-element set to “true”, the CPM Participating Function SHALL return a SIP 403 “Forbidden” response and SHALL include a Warning header with the warning text set to “122 Function not allowed” in the response according to the rules and procedures of [RFC3261].

Otherwise, continue with the rest of the steps;

- b. If the action element includes an ‘<allow-interwork>’ sub-element set to “true” or if the action element includes an ‘<allow-deliver-and-interwork>’ sub-element set to “true”, the CPM Participating Function:
- i. SHALL generate a SIP INVITE request for the ISF according to the rules and procedures of [RFC3261];
  - ii. SHALL copy the Contact header and Accept-Contact header of the incoming SIP INVITE request to the outgoing SIP INVITE request;
  - iii. SHALL insert a URI identifying its own address in the Contact header;
  - iv. SHALL include a User-Agent header to indicate the OMA CPM release version of the Participating Function as specified in Appendix D “*Release Version in User-agent and Server headers*”;
  - v. SHALL include the MIME SDP body received in the SIP INVITE request as a SDP offer according to the rules and procedures of [RFC3264], [RFC4566], [RFC4975], [draft-ietf-simple-msrp-acm] and [draft-ietf-simple-msrp-sessmatch] with the following clarification, the CPM Participating Function:
    1. SHALL include media line proposing MSRP media parameters;
    2. SHALL prepend its own MSRP URI for the MSRP connection setup as a=path:MSRP URI.
    3. SHALL set the SDP directional media attribute to a=sendonly;
    4. SHALL set the size as a=file-selector:size:actual message size;
    5. SHALL set the a=setup attribute as “active” since interworking with a Non-CPM Communication Service has been chosen.
  - vi. SHALL send the SIP INVITE request directly to the ISF as described in section 6.5 “*Communicating with the ISF*”.
- c. If the action element includes an ‘<allow-store>’ sub-element set to “true”, the CPM Participating Function:
- i. SHALL establish an MSRP session to receive the message as described in 8.3.1.4 “*Establish MSRP Session for Receiving Large Message Mode*”;
  - ii. SHALL remove the Disposition-Notification Header Field in CPIM header of the received CPM Standalone Message as defined in [RFC5438];
- NOTE: If present, the request for read report is not removed by the CPM Participating Function.
- iii. SHALL store the message in the Message Storage Server according to procedures specified in section 6.3.1 “*Object Store Operation*” of [OMA-CPM\_TS\_MessageStorage] and obtain an UID from the Message Storage Server.
  - iv. If the originator of the CPM Standalone Message requested a “positive-delivery” disposition notification as defined in [RFC5438], SHALL generate a “positive-delivery” notification as described in section 8.3.1.5 “*Sending a Disposition Notification*”.

Otherwise, continue with the rest of the steps;

- d. If the action element includes an ‘<allow-forward>’ sub-element set to “true”, the CPM Participating Function SHALL change the address of the recipient to the one provided in the user preferences and send the INVITE to that address through the SIP/IP core.

Otherwise, continue with the rest of the steps;

- e. If the action element includes an ‘<allow-defer>’ sub-element set to “true”, the CPM Participating Function:

- i. SHALL establish an MSRP session to receive the message as described in section 8.3.1.4 “*Establish MSRP Session for Receiving Large Message Mode*”;
- ii. SHALL defer the message as described in section 8.3.1.6 “*Defer CPM Standalone Messages*”.

Otherwise, continue with the rest of the steps;

7. If in step 6 no rule matched or if the action element of the matching rule included an ‘<allow-deliver-and-interwork>’ sub-element set to “true”, the CPM Participating Function SHALL check if there is a rule in [OMA-XDM-Policy] in which the “enabler” attribute of the ‘<service>’ sub-element inside the ‘<service-list>’ element of the conditions part of the rule is set to “CPM” and the ‘<action>’ element of the rule contains an ‘<allow-do-not-disturb>’ sub-element set to “true”. If such a rule exists then the CPM Participating Function SHALL establish an MSRP session to receive the message as described in section 8.3.1.4 “*Establish MSRP Session for Receiving Large Message Mode*” and SHALL defer the message as specified in section 8.3.1.6 “*Defer CPM Standalone Messages*”.

Otherwise, continue with the rest of the steps;

8. If in step 6 no rule matched or if the action element of the matching rule included an ‘<allow-deliver-and-interwork>’ sub-element set to “true”, the CPM Participating Function SHALL:
- a. Determine which of the registered CPM Clients are expected to receive the CPM Standalone Message by evaluating which CPM Clients are suitable, as described in the note of step 7 of section 8.3.1.1 “*Handle a Pager Mode CPM Standalone Message*”
  - b. SHALL generate a SIP INVITE request for each selected CPM Client according to the rules and procedures of [RFC3261];
  - c. SHALL copy the Contact header and Accept-Contact header of the incoming SIP INVITE request to the outgoing SIP INVITE request;
  - d. SHALL insert a URI identifying its own address in the Contact header;
  - e. SHALL include a Request-URI header and set its value to the suitable CPM Client’s public GRUU obtained in the registration NOTIFY request as specified in the subsection 8.1.2 “*Receive Registration Event Information Notifications*”;
  - f. SHALL include the CPM release version in the User-Agent header as specified in Appendix D “*Release Version in User-agent and Server headers*”;
  - g. SHALL include the MIME SDP body received in the SIP INVITE request as a SDP offer according to the rules and procedures of [RFC3264], [RFC4566], [RFC4975], [draft-ietf-simple-msrp-acm] and [draft-ietf-simple-msrp-sessmatch] with the following clarification, the CPM Participating Function:
    - i. SHALL include media line proposing MSRP media parameters;
    - ii. SHALL prepend its own MSRP URI for the MSRP connection setup as a=path:MSRP URI.
    - iii. SHALL set the SDP directional media attribute to a=sendonly.
    - iv. SHALL set the size as a=file-selector:size:actual message size;
    - v. SHALL set the a=setup attribute as “passive”.
  - h. SHALL send the request via the SIP/IP core towards each selected CPM Client.

If no suitable registered CPM Clients are found to receive the request, then the CPM Participating Function SHALL establish an MSRP Session to receive the message as described in 8.3.1.4 “*Establish MSRP Session for Receiving Large Message Mode*” and SHALL defer the message as specified in section 8.3.1.6 “*Defer CPM Standalone Messages*” and stop with this procedure.

Upon receiving the first SIP 200 “OK” response returned from the SIP INVITE requests delivered to the CPM Clients and/or ISF, the CPM Participating Function SHALL establish an MSRP session to receive the message as described in 8.3.1.4 “*Establish MSRP Session for Receiving Large Message Mode CPM Standalone Message*”.

If the recipient's user preferences retrieved from XDMS as described in section 8.4.1 "*Retrieving User Preferences*" contain a rule in [OMA-XDM-Policy] in which the "enabler" attribute of the '<service>' sub-element inside the '<service-list>' element of the conditions part of the rule is set to "CPM" and the '<action>' element of the rule contains an '<allow-offline-storage>' sub-element set to "true", the CPM Participating Function SHALL execute the processing described in section 8.5 "*Record CPM Conversation History*".

Upon receiving a SIP 200 "OK" response from a CPM Client or from the ISF, the CPM Participating Function:

1. SHALL send a SIP ACK request to the sender of the SIP 200 "OK" response according to the rules and procedures of the [RFC3261].
2. SHALL follow the actions according to the rules and procedures of [RFC3261], [RFC4975], [draft-ietf-simple-msrp-acm] and [draft-ietf-simple-msrp-sessmatch] to set up an MSRP session with the sender of the SIP 200 "OK" response;
3. SHALL send one or more MSRP SEND request(s) according to rules and procedures of [RFC4975] to transfer the Large Message Mode CPM Standalone Message;
4. SHALL generate a SIP BYE request and, if user preference was set to store the CPM Conversation History, the CPM Participating Function SHALL include the Message-UID header set to the retrieved UID information as defined in Appendix C "*CPM-defined SIP Headers*".
5. SHALL send a SIP BYE request towards the sender of the SIP 200 "OK" response according to the rules and procedures of the [RFC3261];
6. SHALL release the resources related to the recipient after the delivery.

NOTE: These steps will be performed for each SIP 200 "OK" received by the CPM Participating Function.

If none of the CPM Clients, nor, if applicable, the ISF return a SIP 200 "OK" response, or if an MSRP SEND error response is received from all selected CPM Clients and, if applicable, from the ISF (i.e. if the message was not delivered anywhere), the CPM Participating Function SHALL check the service provider policy about handling undelivered messages. If the service provider policy is:

1. To defer the message, the CPM Participating Function:
  - a. SHALL, if not already done, establish an MSRP session to receive the message as described in 8.3.1.4 "*Establish MSRP Session for Receiving Large Message Mode*";
  - b. SHALL defer the message as described in 8.3.1.6 "*Defer CPM Standalone Messages*";
  - c. If the CPM Standalone Message was recorded, the CPM Participating Function SHALL delete the stored CPM Standalone Message by UID as described in section 6.3.5 "*Object Remove Operation*" in [OMA-CPM-TS\_MessageStorage].
2. To deliver the message using a Non-CPM Communication Service, if <allow-interwork> or <allow-deliver-and-interwork> had not already been selected, the CPM Participating Function:
  - a. SHALL generate a SIP INVITE request for the ISF according to the rules and procedures of [RFC3261];
  - b. SHALL copy the Contact header and Accept-Contact header of the incoming SIP INVITE request to the outgoing SIP INVITE request;
  - c. SHALL insert a URI identifying its own address in the Contact header;
  - d. SHALL include a User-Agent header to indicate the OMA CPM release version of the Participating Function as specified in Appendix D "*Release Version in User-agent and Server headers*";
  - e. SHALL include the MIME SDP body received in the SIP INVITE request as a SDP offer according to the rules and procedures of [RFC3264], [RFC4566], [RFC4975], [draft-ietf-simple-msrp-acm] and [draft-ietf-simple-msrp-sessmatch] with the following clarification, the CPM Participating Function:
    - i. SHALL include media line proposing MSRP media parameters;
    - ii. SHALL prepend its own MSRP URI for the MSRP connection setup as a=path:MSRP URI;
    - iii. SHALL set the SDP directional media attribute to a=sendonly;

- iv. SHALL set the size as a=file-selector:size:actual message size;
  - v. SHALL set the a=setup attribute as “active” since interworking with a Non-CPM Communication Service has been chosen;
  - f. SHALL send the SIP INVITE request directly to the ISF as described in section 6.5 “*Communicating with the ISF*”.
3. To send back the error response if deferring is not an option and interworking had already been selected but returned an error response, then the CPM Participating Function SHALL send back the SIP error response or MSRP SEND error response to the sender of the CPM Standalone Message.

### 8.3.1.3 Replacing Media with a Reference

The CPM Participating Function SHALL replace all Media Objects attached to a CPM Standalone Message with a reference if there exists a rule in [OMA-XDM-Policy] satisfying the following criteria:

1. The <service-list> element inside the <conditions> element contains a <service> element with the attribute “enabler” set to “CPM”;
2. The <action> element contains a <allow-deliver-reference-media> element, as defined in [OMA-XDM-Policy], and with its value set to “true”.

If such a rule is found, the CPM Participating Function:

1. SHALL store the CPM Standalone Message to the Message Storage Server according to procedures specified in section 6.3.1 “*Object Store Operation*” of [OMA-CPM\_TS\_MessageStorage] and obtain an UID from the Message Storage Server;
2. SHALL fetch the body structure for the stored CPM Standalone Message corresponding to the UID from the Message Storage Server according to procedures of [RFC3501];
3. SHALL generate IMAP URL for each Media Object decided to be replaced according to procedures of [RFC5092];

Once references to each Media Object are obtained, the CPM Participating Function

1. SHALL remove the Media Objects to be replaced from the received CPM Standalone Message as indicated in the active User Preference Profile;
2. SHALL include the IMAP URL in the body of the CPM Standalone Message corresponding to each Media Object to be replaced according to procedures of [RFC4483].

NOTE: If there are other Content-Type headers within the CPM Standalone Message, the CPM Participating Function keeps the Content-Type header “multipart/mixed” with the proper boundary value to distinguish the URL part and existing parts as described in [RFC2046].

### 8.3.1.4 Establish MSRP Session for Receiving Large Message Mode CPM Standalone Message

To establish an MSRP session, the CPM Participating Function:

1. SHALL generate a SIP 200 “OK” response according to the rules and procedures of [RFC3261];
2. SHALL include the SDP received in the response of SIP INVITE request as answer SDP according to the rules and procedures of [RFC3264], [RFC4566], [RFC4975], [draft-ietf-simple-msrp-acm] and [draft-ietf-simple-msrp-sessmatch] with the following clarification, CPM Participating Function:
  - a. SHALL include media line proposing MSRP media parameters;
  - b. SHALL include its own MSRP URI for the MSRP connection setup as a=path:MSRP URI;
  - c. SHALL set the SDP directional media attribute to a=recvonly;
  - d. SHALL set the a=setup attribute as “passive”.
3. SHALL include a Server header to indicate the OMA CPM release version of the CPM Participating Function as specified in Appendix D “*Release Version in User-agent and Server headers*”;



4. SHALL include a URI identifying its own address in the Contact header;
5. SHALL send the SIP 200 “OK” response according to procedures of SIP/IP core;

Upon receiving a SIP CANCEL request, the CPM Participating Function SHALL act as a UAS to handle the SIP CANCEL request according to the rules and procedures of [RFC3261].

Upon receiving a SIP ACK request, the CPM Participating Function SHALL act as a "passive" endpoint according to [draft-ietf-simple-msrp-acm] to establish an MSRP connection according to [RFC4975].

Upon receiving an MSRP SEND request, the CPM Participating Function:

1. SHALL wait until all chunks of the message have been received via subsequent MSRP SEND requests and SHALL reassemble the message from these chunks;
2. SHALL generate and send one or more MSRP 200 “OK” responses, one per MSRP SEND request received according to the rules and procedures of [RFC4975].

Upon receiving a SIP BYE request from the originating CPM User, CPM Participating Function SHALL respond to the SIP BYE request as described in [RFC3261].

### 8.3.1.5 Sending a Disposition Notification

The CPM Participating Function SHALL generate and send a disposition notification in the following cases:

1. When failing to deliver a CPM Standalone Message and a “negative-delivery” notification was requested by the originator of the CPM Standalone Message.
2. When storing a CPM Standalone Message in the Message Storage Server and a “positive-delivery” notification was requested by the originator of the CPM Standalone Message.
3. When a Deferred CPM Message is discarded after expiry according to user preferences and a “negative-delivery” notification was requested by the originator of the CPM Standalone Message.

When having to generate and send a disposition notification, the CPM Participating Function SHALL generate a disposition notification according to the rules and procedures of [RFC5438] and with these clarifications:

1. The CPM Participating Function SHALL set the <status> field within the <delivery-notification> element of the IMDN to the correct value (i.e. <delivered/> for a “positive-delivery” notification and <failed/> for a “negative-delivery” notification).
2. If an IMDN-Record-Route header was received in the corresponding CPM Standalone Message, the CPM Participating Function SHALL include in the Request-URI the topmost entry from the IMDN-Route header;
3. If no IMDN-Record-Route header was received in the corresponding CPM Standalone Message, the CPM Participating Function SHALL include in the Request-URI the public GRUU included in the Contact header of the received SIP INVITE request or the authenticated originator’s CPM Address of received SIP MESSAGE request;
4. The CPM Participating Function SHALL set the CPIM To header to the public GRUU included in the Contact header of the received SIP INVITE request or the authenticated originator’s CPM Address of the received SIP MESSAGE request;
5. The CPM Participating Function SHALL send the SIP MESSAGE request carrying the disposition notification to the SIP/IP core according to the rules and procedures of the SIP/IP core.

### 8.3.1.6 Defer CPM Standalone Messages

Each time the CPM Participating Function receives a message that is to be deferred on behalf of the served CPM User, the CPM Participating Function SHALL check if there is a rule in [OMA-XDM-Policy] in which the “enabler” attribute of the ‘<service>’ sub-element inside the ‘<service-list>’ element of the conditions part of the rule is set to “CPM” and the ‘<media-list>’ element of the conditions part of the rule contains an ‘<deferred-messages>’ element. If such a rule exists then the CPM Participating Function SHALL check the value of the ‘<action>’ element of that rule as follows:

1. If the ‘<action>’ element includes an ‘<allow-push>’ sub-element set to “true”, the CPM Participating Function SHALL store the Deferred CPM Message in the Deferred CPM Message queue as described in section 8.3.1.6.1

“*Storing a Deferred CPM Message in the Deferred CPM Message Queue*” and SHALL handle the Deferred CPM Messages as described in section 8.3.1.6.2 “*Pushing Deferred CPM Messages*”.

2. If the ‘<action>’ element includes an ‘<allow-pull>’ sub-element set to “true”, the CPM Participating Function store the Deferred CPM Message in the Deferred CPM Message queue as described in section 8.3.1.6.1 “*Storing a Deferred CPM Message in the Deferred CPM Message Queue*” and SHALL handle the Deferred CPM Messages as described in section 8.3.1.6.3 “*Sending Notifications and Awaiting CPM Client Action*”.
3. If the ‘<action>’ element includes an ‘<allow-store>’ sub-element set to “true”, the CPM Participating Function SHALL handle the Deferred CPM Messages as described in section 10 “*When receiving a SIP ACK request, the CPM Participating Function SHALL ignore this request*”.
3. When receiving a SIP BYE request, the CPM Participating Function SHALL process this according to the rules and procedures of [RFC3261].

NOTE 2: such a SIP ACK or SIP BYE request can arrive at any time after step 2, but must not affect execution of the following steps.

4. If the CPM Participating Function receives another SIP INVITE request from a different client of the same CPM User addressed to the same CPMDerferredMsgMgmtURI and with the same feature tag as indicated above, the CPM Participating Function SHALL handle such overlapping SIP INVITE requests in a first come first served manner.
4. Delivering Deferred CPM Messages to the Message Storage Server”.

NOTE: The behaviour of the CPM Participating Function when none of the three options above have been enabled is implementation specific.

### 8.3.1.6.1 Storing a Deferred CPM Message in the Deferred CPM Message Queue

For each CPM Standalone Message that needs to be stored in the Deferred CPM Message queue, the CPM Participating Function:

1. SHALL, in case of a Pager Mode CPM Standalone Message, store the following information:
  - a. The SIP MESSAGE request start-line, as well the following headers of SIP MESSAGE request:
    - From
    - To
    - P-Asserted-Identity, if there is and only if the sending User did not request anonymity
    - Subject (if present)
    - Date (added with current date and time if not present)
    - Accept-Contact
    - Content-Type (set to Content-Type of the SIP MESSAGE request message body, or to multipart/mixed if there is a recipient-uri-list as well as SIP MESSAGE request message body)
    - Content-Length:<messagesize>
    - Conversation-ID
    - Contribution-ID
    - InReplyTo-Contribution-ID (if present)

NOTE: Some of the header fields shall not be stored, in particular header fields related to charging that are expected to be removed by the network.
  - b. All CPIM headers relevant for IMDN
  - c. body part consisting of all the recipients carried in recipient-uri-list body of the SIP MESSAGE request if present

- d. The complete message body or bodies of the SIP MESSAGE request;
2. SHALL, in the case of Large Message Mode CPM Standalone Message, store the following information:
  - a. The SIP INVITE request start-line, as well as the following headers of SIP INVITE request of the Deferred CPM Message:
    - From
    - To
    - P-Asserted-Identity, if there is and only if the sending User did not request anonymity
    - Subject (if present)
    - Date (added with current date and time if not present)
    - Accept-Contact
    - Contact
    - Referred-By if present
    - Content-Type (set to Content-Type of the MSRP SEND, or to multipart/mixed if there is a recipient-uri-list as well as an MSRP SEND message)
    - Content-Length
    - Conversation-ID
    - Contribution-ID
    - InReplyTo-Contribution-ID (if present)
  - b. body part consisting of all the recipients carried in recipient-uri-list body of the SIP INVITE request if present
  - c. The MSRP request start-line, as well as the relevant headers of the MSRP SEND request:
    - Message-ID,
    - Success-Report and Failure-Report if present, and
    - Content-Type
    - Byte-Range: 1-\*/<messagesize>.
    - Content-Disposition
    - The complete message body. If the message arrives in more than one MSRP SEND request since it had been sent in chunks as defined in [RFC4975], then the CPM Participating Function shall assemble the message and store it as one message.
3. SHALL assign a unique message-URI-ID for each Deferred CPM Message whose general format is messageURI-ID="sip:String@hostname" with the following clarification:
  - a. The CPM Participating Function generates the unique string by itself
4. SHALL store the Deferred CPM Message in the Deferred CPM Message queue;
5. SHALL associate an expiry time value with the Deferred CPM Message:
  - a. In case of a Pager Mode CPM Standalone Message,
    - If the SIP MESSAGE request contains an Expires header as defined in Appendix C "*CPM-defined SIP Headers*" [RFC3428], and the value is below the maximum expiry time value per service provider policy, the CPM Participating Function SHALL set the expiry time value to the value contained in the SIP MESSAGE request Expires header field; otherwise the CPM Participating Function SHALL set the expiry time value to the maximum expiry time value per service provider policy.

- b. In case of a Large Message Mode CPM Standalone Message,
- If the SIP INVITE request contains a Message-Expires header as defined in Appendix C “*CPM-defined SIP Headers*” and the value is below the maximum expiry time value per service provider policy, the CPM Participating Function SHALL set the expiry time value to the value contained in the SIP INVITE request Message-Expires header field; otherwise the CPM Participating Function SHALL set the expiry time value to the maximum expiry time value per service provider policy.

When a Deferred CPM Message reaches its associated expiry time value, the CPM Participating Function SHALL handle that Deferred CPM Message as described in section 8.3.1.6.8 “*Handling Deferred CPM Messages on Expiry Time*”.

### 8.3.1.6.2 Pushing Deferred CPM Messages

The CPM Participating Function SHALL check if there is a rule in [OMA-XDM-Policy] in which the “enabler” attribute of the ‘<service>’ sub-element inside the ‘<service-list>’ element of the conditions part of the rule is set to “CPM” and the ‘<action>’ element of the rule contains a ‘<allow-do-not-disturb>’ sub-element set to “true”.

If no such rule exists, then the CPM Participating Function MAY send an out-of-band notification as described in Appendix I.1.1 “*Out-of-band Deferred CPM Message Notification Format*”.

Otherwise, if such a rule does exist, then the CPM Participating Function SHALL wait for the rule to be no longer present, and MAY then send an out-of-band notification as described in Appendix I.1.1 “*Out-of-band Deferred CPM Message Notification Format*”.

NOTE: If more than one Deferred CPM Message awaits delivery, the above mentioned out-of-band notifications may only include summary information, as per Appendix I.1.1 “*Out-of-band Deferred CPM Message Notification Format*” and Appendix J.1 “*Deferred Messages Metadata*”.

The CPM Participating Function SHALL wait until at least one CPM Client of the CPM User registers. When that happens, and the do-not-disturb flag in the user preferences is not set (determined as per above check in [OMA-XDM-Policy]), the CPM Participating Function SHALL handle each Deferred CPM Message as follows:

1. If the Deferred CPM Message is a Pager Mode CPM Standalone Message, the CPM Participating Function SHALL evaluate which of the registered CPM Clients are suitable to receive the Deferred Pager Mode CPM Standalone Message (see the note in step 7 of section 8.3.1.1 “*Handle a Pager Mode CPM Standalone Message*” for a description of what it means for a CPM client to be suitable) and delivers the message to those CPM Clients as described in section 8.3.1.6.6 “*Sending a Pager Mode Deferred CPM Message*”, and removes the message from the Deferred CPM Message queue. If no CPM Client is suitable, the CPM Participating Function keeps the message in the Deferred CPM Message queue.
2. If the Deferred CPM Message is a Large Message Mode CPM Standalone Message, the CPM Participating Function SHALL evaluate which of the registered CPM Clients are suitable to receive the Deferred Large Message Mode CPM Standalone Message (see the note in step 7 of section 8.3.1.1 “*Handle a Pager Mode CPM Standalone Message*” for a description of what it means for a CPM client to be suitable) and delivers the message to those CPM Clients as described in section 8.3.1.6.7 “*Sending a Large Message Mode Deferred CPM Message*”. If no CPM Client is suitable, the CPM Participating Function keeps the message in the Deferred CPM Message queue.

### 8.3.1.6.3 Sending Notifications and Awaiting CPM Client Action

The CPM Participating Function SHALL check if there is a rule in [OMA-XDM-Policy] in which the “enabler” attribute of the ‘<service>’ sub-element inside the ‘<service-list>’ element of the conditions part of the rule is set to “CPM” and the ‘<action>’ element of the rule contains an ‘<allow-do-not-disturb>’ sub-element set to “true”.

If such a rule does exist, then the CPM Participating Function SHALL wait for the rule to be no longer present, and SHALL then send a notification as described below.

When the rule on do-not-disturb does not exist (anymore), the CPM Participating Function SHALL determine which notification method to use based on the status of the CPM Clients of the recipient as follows by executing the following steps for each registered CPM Client:

1. If the user's registered CPM Client is suitable to receive at least one of the Deferred CPM Messages present in the Deferred CPM Message queue (see the note in step 7 of section 8.3.1.1 "*Handle a Pager Mode CPM Standalone Message*" for a description of what it means for a CPM client to be suitable, the CPM Participating Function :
  - a. SHALL generate a SIP MESSAGE request according to the rules and procedures of [RFC3428];
  - b. SHALL include an Accept-Contact header field with the feature-tag set to '3gpp-service.ims.icsi.oma.cpm.systemmsg' to indicate that the SIP MESSAGE request is a system message;
  - c. SHALL set the Request-URI(s) to the address of this CPM Client;
  - d. SHALL include the CPMDeferredMsgMgmtURI as the authenticated originator's CPM Address;
  - e. SHALL include the User Agent header to indicate the CPM release version as specified in Appendix D "*Release Version in User-agent and Server headers*";
  - f. SHALL include information about all Deferred CPM Message(s) in the message body, including the unique message-URI-ID assigned to the message when it was deferred;
  - g. SHALL include metadata about the Deferred CPM Message(s) as described in Appendix I.1.2 "*In-band Deferred CPM Message Notification Format*";
  - h. SHALL send the SIP MESSAGE request towards this CPM Client along the signalling path.

If none of the registered CPM Clients is suitable for at least one of the Deferred CPM Messages and if service provider policies allow retrieval of deferred messages (e.g. retrieval might be paused in roaming scenarios), the CPM Participating Function SHALL send an out-of-band notification as described in Appendix I.1.1 "*Out-of-band Deferred CPM Message Notification Format*" to all or selected known devices of the recipient.

NOTE 1: If more than one Deferred CPM Message awaits delivery, the above mentioned out-of-band notifications may only include summary information, as per Appendix I.1.1 "*Out-of-band Deferred CPM Message Notification Format*" and Appendix J.1 "*Deferred Messages Metadata*", i.e. restrict itself to only send the "number" attribute indicating the number of Deferred Messages currently stored in the CPM Participating Function. For in-band notifications, it may happen that not all metadata about waiting messages will fit into one SIP MESSAGE request. In this case, the CPM Participating Function will send multiple SIP MESSAGE requests.

The CPM Participating Function SHALL take no further action with regards to these Deferred CPM Messages (except for handling them when they reach their associated expiry time value as described in section 8.3.1.6.8 "*Handling Deferred CPM Messages on Expiry Time*") until one CPM Client takes the initiative to decide what to do with the Deferred CPM Messages.

Upon receiving a SIP INVITE request with the CPM Feature Tag '3gpp-service.ims.icsi.oma.cpm.deferred' included in the Accept-Contact header targeted to Request-URI CPMDeferredMsgMgmtURI:

5. If the CPM Participating Function determines that there are no Deferred CPM Messages to be managed, it SHALL send a SIP 488 "Not Acceptable Here" response and SHALL include a Warning header with the warning text set to "125 No messages" in the response according to the rules and procedures of [RFC3261].  
Otherwise continue with the rest of the steps;
6. The CPM Participating Function SHALL send a SIP 200 "OK" response, accepting the SDP received;
7. For each Deferred CPM Message identified in the URI list of the SIP INVITE request with the "cpm\_action" parameter set to "delete", the CPM Participating Function SHALL delete the Deferred CPM Message from the Deferred CPM Message queue and SHALL send a delivery notification message as described in section 8.3.1.5 "*Sending a Disposition Notification*" to inform the sender of the CPM Message that the message was not delivered if a negative delivery notification was requested by the sender.
8. For each Deferred CPM Message identified in the URI list of the SIP INVITE request with the "cpm\_action" parameter set to "interwork", the CPM Participating Function SHALL send the Deferred CPM Message towards the ISF as described in section 6.5 "*Communicating with the ISF*".
9. For each Deferred CPM Message identified in the URI-list of the SIP INVITE request with the "cpm\_action" parameter set to "store", the CPM Participating Function SHALL store the message in the CPM User's message store as described in [OMA-CPM\_TS\_MessageStorage] and SHALL send a delivery notification message as

described in section 8.3.1.5 “*Sending a Disposition Notification*” to inform the sender of the CPM Message that the message was delivered if a positive delivery notification was requested by the sender.

10. For each Deferred CPM Message identified in the URI list of the SIP INVITE request with the “cpm\_action” parameter set to “deliver”, or for all Deferred CPM Messages if there is no URI list in the SIP INVITE request at all:
  - a. If the deferred message is a Pager Mode CPM Standalone Message, the CPM Participating Function SHALL send the Deferred CPM Message to the CPM Client as described in section 8.3.1.6.6 “*Sending a Pager Mode Deferred CPM Message*”.
  - b. If the deferred message is a Large Message Mode CPM Standalone Message, the CPM Participating Function SHALL send the Deferred CPM Message to the CPM Client as described in section 8.3.1.6.7 “*Sending a Large Message Mode Deferred CPM Message*”.
11. Any Deferred CPM Message not identified in the URI list of the SIP INVITE request is left deferred, and will be added to the next Deferred CPM Message notification to the CPM User. Conversely, handling instructions for any Deferred CPM Message identified in the URI list, but not present in the Deferred CPM Message queue anymore, SHALL be ignored.
12. When receiving a SIP ACK request, the CPM Participating Function SHALL ignore this request.
13. When receiving a SIP BYE request, the CPM Participating Function SHALL process this according to the rules and procedures of [RFC3261].

NOTE 2: such a SIP ACK or SIP BYE request can arrive at any time after step 2, but must not affect execution of the following steps.

14. If the CPM Participating Function receives another SIP INVITE request from a different client of the same CPM User addressed to the same CPMDeferredMsgMgmtURI and with the same feature tag as indicated above, the CPM Participating Function SHALL handle such overlapping SIP INVITE requests in a first come first served manner.

#### 8.3.1.6.4 Delivering Deferred CPM Messages to the Message Storage Server

The CPM Participating Function SHALL:

1. In case of a Pager Mode CPM Standalone Message,
  - a. SHALL remove the Disposition-Notification Header Field in CPIM header of the received CPM Standalone Message as defined in [RFC5438];

NOTE: If present, the request for read report is not removed by the CPM Participating Function.

  - b. If the SIP MESSAGE request contains an Expires header as defined in Appendix C “CPM-defined SIP Headers” [RFC3428], and the value is below the maximum expiry time value per service provider policy, the CPM Participating Function SHALL set the Expires header to the value contained in the SIP MESSAGE request Expires header field; otherwise the CPM Participating Function SHALL set the Expires header to the maximum expiry time value per service provider policy.
2. In case of Large Message Mode CPM Standalone Message,
  - a. SHALL remove the Disposition-Notification Header Field in CPIM header of the received CPM Standalone Message as defined in [RFC5438];

NOTE: If present, the request for read report is not removed by the CPM Participating Function.

  - b. If the SIP INVITE request contains a Message-Expires header as defined in Appendix C “CPM-defined SIP Headers” and the value is below the maximum expiry time value per service provider policy, the CPM Participating Function SHALL set the Expires header to the value contained in the SIP INVITE request Message-Expires header field; otherwise the CPM Participating Function SHALL set the Expires header to the maximum expiry time value per service provider policy.
3. SHALL hand over the message to the Message Storage Server according to procedures specified in section 6.3.1 “*Object Store Operation*” of [OMA-CPM\_TS\_MessageStorage];

4. If the originator of the CPM Standalone Message requested a “positive-delivery” disposition notification as defined in [RFC5438], SHALL generate a “positive-delivery” notification as described in section 8.3.1.5 “*Sending a Disposition Notification*”.

NOTE: If Deferred CPM Messages are handed over to the Message Storage Server as described in this section, advanced functionality of the CPM Participating Function on Deferred CPM Messages (e.g. do-not-disturb or selective notifications with or without delivery to CPM Clients) will not be available.

### 8.3.1.6.5 Handle a Deferred CPM Message Information Request

NOTE: The Deferred CPM Message information request is handled as an originating network service.

Upon receiving a SIP SUBSCRIBE request with the Event header set to 'deferred-messages', the CPM Participating Function:

1. SHALL perform the actions to verify the authenticated originator's CPM Address and authorize the request and if it is not authorized the CPM Participating Function SHALL return a SIP 403 "Forbidden" response and SHALL include an Warning header with the warning text set to “127 Service not authorised” in the response according to the rules and procedures of [RFC3261];  
Otherwise, continue with the rest of the steps;
2. SHALL generate a SIP 200 "OK" response to the SIP SUBSCRIBE request according to the rules and procedures of [RFC3265];
3. SHALL set the Contact header of the SIP response to the address of the CPM Participating Function;
4. SHALL send the SIP response towards the CPM Client according to the rules and procedures of the SIP/IP core;
5. SHALL generate an initial SIP NOTIFY request according to the rules and procedures of [RFC3265] with the clarifications in this section;

The CPM Participating Function SHALL include a MIME msginfo+xml body as follows:

- a. SHALL include a <message-list> element;
- b. SHALL include a <message> element for each of the deferred messages:
  - i. SHALL include the <message> attribute containing the elements defined in Appendix J “*Deferred Messages event package definition*”.
6. SHALL send the NOTIFY request according to the rules and procedures of the SIP/IP core.
7. SHALL terminate the subscription for this event.

### 8.3.1.6.6 Sending a Pager Mode Deferred CPM Message

When the CPM Participating Function wants to send a Pager Mode Deferred CPM Message, the CPM Participating Function SHALL generate a SIP MESSAGE request according to the rules and procedures of [RFC3428]. The CPM Participating Function:

1. SHALL include an Accept-Contact header with the CPM Feature Tag ‘3gpp-service.ims.icsi.oma.cpm.deferred’ according to the rules and procedures of [RFC3841];
2. SHALL include the authenticated originator’s CPM Address in the original SIP MESSAGE request as the authenticated originator’s CPM Address of the Pager Mode Deferred CPM Message;
3. SHALL include the Request-URI with the recipient CPM Address;
4. SHALL include a User-Agent header to indicate the OMA CPM release version of the Participating Function as specified in the Appendix D “*Release Version in User-agent and Server headers*”;
5. SHALL include the stored information of the Deferred CPM Message as defined in section 8.3.1.6 “*Defer CPM Standalone Messages*” in the SIP MESSAGE request.
6. SHALL check if the CPM User preferences for history recording <allow-offline-storage> is set to true and if so, it SHALL execute the processing described in 8.5 “*Record CPM Conversation History*”;

7. MAY replace each Media Object attached to the CPM Standalone Message with a reference, as described in section 8.3.1.3 “*Replacing Media with a Reference*”;
8. If recording is successful, SHALL include the UID information retrieved in section 8.5 “*Record CPM Conversation History*” in the Message-UID header of the SIP MESSAGE request;
9. SHALL send the SIP MESSAGE request according to the rules and procedures of the SIP/IP core.

Upon receiving a SIP 200 “OK” response to the sent SIP MESSAGE request, the CPM Participating Function SHALL remove the Deferred CPM Message from the Deferred CPM Message queue.

If an error response is received during the delivery of the Deferred CPM Message and the Deferred CPM Message was recorded to the Message Storage Server in step 6 above, the CPM Participating Function SHALL remove the message from the CPM User’s Message Store as described in [OMA-CPM\_TS\_MessageStorage] and SHALL keep the message in the Deferred CPM Message queue.

### 8.3.1.6.7 Sending a Large Message Mode Deferred CPM Message

When the CPM Participating Function wants to send a Deferred Large Message Mode CPM Message, the CPM Participating Function SHALL generate an initial SIP INVITE request according to the rules and procedures of [RFC3261]. The CPM Participating Function:

1. SHALL include an Accept-Contact header with the CPM Feature Tag ‘3gpp-service.ims.icsi.oma.cpm.deferred’ according to the rules and procedures of [RFC3841];
2. SHALL include a Contact header with the CPM Feature Tag ‘3gpp-service.ims.icsi.oma.cpm.deferred’ according to the rules and procedures of [RFC38410];
3. SHALL include the authenticated originator’s CPM Address in the original SIP INVITE request as the authenticated originator’s CPM Address of the Deferred Large Message Mode CPM Message;
4. SHALL include the Request-URI with the recipient CPM Address;
5. SHALL include a User-Agent header to indicate the OMA CPM release version of the Participating Function as specified in the Appendix D “*Release Version in User-agent and Server headers*”;
6. SHALL include the option tag 'timer' in the Supported header;
7. SHALL include the Session-Expires header with the refresher parameter set to "uac" according to the rules and procedures of [RFC4028];
8. SHALL include in the SIP INVITE request a MIME SDP body as a SDP offer according to the rules and procedures of [RFC3264], [RFC4566],[RFC4975] ,[draft-ietf-simple-msrp-acm] and [draft-ietf-simple-msrp-sessmatch] with the following clarification:
  - a. SHALL set the SDP directional media attribute to a=sendonly;
  - b. SHALL set the content type as a=accept-types:message/cpim;
  - c. SHALL set MSRP URI for the MSRP connection setup as a=path:MSRP URI;
  - d. SHALL set the size as a=file-selector:size:actual message size;
  - e. SHALL set the a=setup attribute as “passive”.
9. SHALL send the SIP INVITE request according to the rules and procedures of the SIP/IP core.

Upon receiving a SIP 200 “OK” response to the SIP INVITE request, the CPM Participating Function:

1. SHALL start the SIP session timer using the value received in the Session-Expires header according to the rules and procedures of [RFC4028];
2. SHALL generate and send a SIP ACK request as an acknowledgement of the final response according to the rules and procedures of [RFC3261];
3. SHALL act as a “passive” endpoint according to [draft-ietf-simple-msrp-acm] to establish the MSRP connection according to [RFC4975];



4. MAY replace each Media Object attached to the CPM Standalone Message with a reference, as described in section 8.3.1.3 “*Replacing Media with a Reference*”;
5. SHALL generate one or more MSRP SEND requests (depending on whether chunking is used) according to the rules and procedures of [RFC4975] with the following clarifications:
  - a. SHALL set To-Path header according to the MSRP URI(s) received in the answer SDP;
  - b. SHALL set the content type as Content-Type = message/cpim as described in [RFC3862];
  - c. SHALL set “From” header to the authenticated originator’s CPM Address in the original SIP INVITE request ;
6. SHALL send the MSRP SEND request(s) on the established MSRP connection.

Once the Deferred CPM Message has been successfully transferred via MSRP, the CPM Participating Function:

1. if user preference was set to store the CPM Conversation History, the CPM Participating Function SHALL execute the processing described in section 8.5 “*Record CPM Conversation History*”;
2. SHALL generate and send a SIP BYE request according to the rules and procedures of [RFC3261] and SHALL include the UID information retrieved in section 8.5 “*Record CPM Conversation History*” in the Message-UID header of the SIP BYE request;
3. SHALL remove the Deferred CPM Message from the Deferred CPM Message queue.

### 8.3.1.6.8 Handling Deferred CPM Messages on Expiry Time

On expiry of a Deferred CPM Message, the CPM Participating Function:

1. SHALL check the user preference <expired> retrieved from XDMS as described in 8.4.1 “*Retrieving User Preferences*”;
2. SHALL determine which procedure to use based on the user preferences setting.
  - a. if set to “discard”,
    - i. SHALL discard the expired Deferred CPM Message in the Deferred CPM Message queue;
    - ii. MAY generate a notification to notify Deferred CPM Message was discarded after expiry.
      1. If at least one of the user’s CPM Clients is registered, the CPM Participating Function:
        - a. SHALL generate a SIP MESSAGE request to each registered CPM Client according to the rules and procedures of [RFC3428];
        - b. SHALL include an Accept-Contact header field with the feature-tag set to ‘3gpp-service.ims.icsi.oma.cpm.systemmsg’ to indicate that the SIP MESSAGE request is a system message;
        - c. SHALL set the Request-URI(s) to registered CPM Address(es) of the intended recipient;
        - d. SHALL include the address of the CPM Participating Function in the authenticated originator’s CPM Address;
        - e. SHALL include the User Agent header to indicate the CPM release version as specified in Appendix D “*Release Version in User-agent and Server headers*”;
        - f. SHALL include information as described in Appendix I.2 “*Notification Format of Deferred CPM Message After Expiry*”
      2. Otherwise, the CPM Participating Function SHALL send an out-of-band notification as described in Appendix I.2 “*Notification Format of Deferred CPM Message After Expiry*”.
    - iii. SHALL send a delivery notification message as described in section 8.3.1.5 “*Sending a Disposition Notification*” to inform the sender of the CPM Standalone Message that the message was not delivered if a negative delivery notification was requested by the sender;
  - b. if set to “store”,

- i. SHALL send the request to store the expired message to the Message Storage Server as described in section 6.3 “*Message and History Operations*” in [OMA-CPM\_TS\_MessageStorage] and retrieve the information (e.g. UID) of stored headers from Message Storage Server as described in section 6.3 “*Message and History Operations*” in [OMA-CPM\_TS\_MessageStorage];
- ii. MAY generate a notification to notify the Deferred CPM Message was stored to the Message Storage Server after expiry.
  1. If at least one of the user’s CPM Clients is registered, the CPM Participating Function:
    - a. SHALL generate a SIP MESSAGE request to each registered CPM Client according to the rules and procedures of [RFC3428];
    - b. SHALL include an Accept-Contact header field with the feature-tag set to ‘3gpp-service.ims.icsi.oma.cpm.systemmsg’ to indicate that the SIP MESSAGE request is a system message;
    - c. SHALL set the Request-URI(s) to registered CPM Address(es) of the intended recipient;
    - d. SHALL include the address of the CPM Participating Function in the authenticated originator’s CPM Address;
    - e. SHALL include the User Agent header to indicate the CPM release version as specified in Appendix D “*Release Version in User-agent and Server headers*”;
    - f. SHALL include information as described in Appendix I.2 “*Notification Format of Deferred CPM Message After Expiry*”.
  2. Otherwise, the CPM Participating Function SHALL send an out-of-band notification as described in Appendix I.2 “*Notification Format of Deferred CPM Message After Expiry*”.
- iii. SHALL send a delivery notification message as described in section 8.3.1.5 “*Sending a Disposition Notification*” to inform the sender of the CPM Standalone Message that the message was delivered if a positive deliver notification was requested by the sender;

## 8.3.2 CPM Session Handling

A CPM Participating Function in the terminating network may or may not stay in the media path depending on service provider’s policies. These policies may be static such that the CPM Participating Function always stays or always does not stay in the media path, or the policies may depend on parameters such as:

1. If a CPM User has a subscription to the Message Storage Server and a user preference is set to record CPM Conversation History when he receives a CPM Session Invitation;
2. If the CPM Participating Function needs to do charging.

When the CPM Participating Function stays in the media path acting as a back-to-back user agent (B2BUA), the following applies:

1. The CPM Participating Function acts as a user agent for both SIP sessions it connects. The B2BUA behaves as a user agent server for the incoming side and as a user agent client for the outgoing side(s).
2. The CPM Participating Function correlates both sides of the SIP session, by mapping the corresponding SIP session identities of the SIP sessions, and it maintains call state for all SIP sessions it handles, thus enabling end-to-end communication.

### 8.3.2.1 Handle a CPM Session Invitation

Upon receiving a SIP INVITE request of a CPM 1-1 Session or a CPM Group Session, the CPM Participating Function:

1. If the CPM Participating Function requires a specific User Agent version to be supported, the CPM Participating Function SHALL check the “User Agent” header field to determine if the CPM Participating Function supports the User Agent version and if not, the CPM Participating Function SHALL return a SIP 403 “Forbidden” response and

SHALL include a Warning header with the warning text set to “132 Version not supported” in the response according to the rules and procedures of [RFC3261].

Otherwise, continue with rest of the steps;

2. If the CPM Participating Function does not allow anonymity and anonymity is requested, the CPM Participating Function SHALL return a SIP 403 “Forbidden” response and SHALL include a Warning header with the warning text set to “119 Anonymity not allowed” in the response according to the rules and procedures of [RFC3261].

Otherwise, continue with the rest of the steps;

3. SHALL check if the Authenticated Originator CPM Address of the SIP INVITE request is included in the “oma\_blockedcontacts” URI-list defined in [OMA-XDM-List]. If it is, then the CPM Participating Function SHALL return a SIP 403 “Forbidden” response and SHALL include a Warning header with the warning text set to “122 Function not allowed” according to the rules and procedures of [RFC3261].

Otherwise, continue with the rest of the steps.

4. SHALL check if there is a rule in [OMA-XDM-Policy] in which the “enabler” attribute of the ‘<service>’ sub-element inside the ‘<service-list>’ element of the conditions part of the rule is set to “CPM” and the ‘<action>’ element of the rule contains a ‘<allow-do-not-disturb>’ sub-element set to “true”. If such a rule exists then the CPM Participating Function SHALL return a SIP 480 “Temporarily Unavailable” response according to the rules and procedures of [RFC3261];
5. SHALL check the SIP INVITE request SDP attributes against service provider’s policies specified for the service and for the CPM User. If media types of SDP do not conform to the service provider’s policies, the CPM Participating Function SHALL return a SIP 488 “Not Acceptable Here” response according to the rules and procedures of [RFC3261].

Otherwise, continue with the rest of the steps;

6. SHALL check that there is at least one CPM Client registered for the CPM User. If there are no suitable registered CPM Clients for the CPM User (see the note in step 7 of section 8.3.1.1 “*Handle a Pager Mode CPM Standalone Message*” for a description of what it means for a CPM client to be suitable), the CPM Participating Function SHALL check the service provider policy. If the service provider policy is:
  - a. To reject the CPM Session Invitation, then the CPM Participating Function SHALL return a SIP 480 “Temporarily Unavailable” response according to the rules and procedures of [RFC3261];
  - b. To deliver the CPM Session Invitation using a non-CPM service the CPM Participating Function SHALL send the SIP INVITE request directly to the ISF as described in section 6.5 “*Communicating with the ISF*”;

Otherwise, continue with the rest of the steps;

7. If the CPM Participating Function stays in the media path, the CPM Participating Function:
  - a. SHALL copy the received Request-URI;
  - b. SHALL behave as a B2BUA according to the rules and procedures of [RFC3261] for the duration of the CPM Session;
  - c. SHALL generate a SIP INVITE request according to the rules and procedures of [RFC3261] with the following details:
    - i. SHALL copy the Contact header and Accept-Contact header of the incoming SIP INVITE request to the outgoing SIP INVITE request;
    - ii. SHALL insert a URI identifying its own address in the Contact header;
    - iii. SHALL include a SDP body as a SDP offer in the SIP INVITE request based on the received in the SDP as described in as described in section 5.2.1.2 “*SDP Handling at Intermediate Nodes*”;
    - iv. if the SIP INVITE request contains a Session-Replaces header (as defined in Appendix C “*CPM-defined SIP Headers*”), the CPM Participating Function SHALL forward the SIP INVITE request to the CPM Client on which the CPM Session is being extended according to rules *and procedures of the SIP/IP core*.

- v. If the SIP INVITE request does not contain a Session-Replaces header, SHALL check the offered Media Streams in the request and which ones of the user's registered CPM Clients are suitable to receive the request, then the CPM Participating Function:
- If at least one CPM Client is suitable to receive the request:
    - a. SHALL include in the Reject-Contact header the instance ID in the +sip.instance feature tag as described in [RFC3841] and [RFC5626] for those CPM Clients that are not suitable to receive the request; and
    - b. SHALL set in the Request-Disposition header the fork-directive attribute as "fork" and the parallel-directive attribute as "parallel"; and
    - c. SHALL send the SIP INVITE request to the SIP/IP core which will fork the request to the appropriate user's registered CPM Clients according to the rules and procedures of the SIP/IP core.
  - If no CPM Client is suitable to receive the request and interworking is determined by user preference and/or service provider policy the CPM Participating Function SHALL send the SIP INVITE request directly to the ISF without routing the SIP request via the SIP/IP core.
  - Otherwise, SHALL respond to the SIP INVITE with a SIP 480 "Temporarily Unavailable" response.
8. If the CPM Participating Function does not stay in the media path, the CPM Participating Function:
- a. SHALL act as a SIP proxy according to the rules and procedures of [RFC3261] for the duration of the CPM Session;
  - b. SHALL include a Record-Route header containing a URI identifying its own address; and,
    - i. If the SIP INVITE request contains a Session-Replaces header (as defined in Appendix C "*CPM-defined SIP Headers*"), SHALL forward the SIP INVITE request to the CPM Client on which the CPM Session is being extended according to rules and procedures of the SIP/IP core.
    - ii. If the SIP INVITE request does not contain a Session-Replaces header, SHALL check the offered Media Streams in the request and which ones of the user's registered CPM Clients are suitable to receive the request. Then the CPM Participating Function:
      - If at least one CPM Client is suitable to receive the request:
        - a. SHALL include in the Reject-Contact header the instance ID in the +sip.instance feature tag as described in [RFC3841] and [RFC5626] for those CPM Clients that are not suitable to receive the request;
        - b. SHALL set in the Request-Disposition header the fork-directive attribute as "fork" and the parallel-directive attribute as "parallel".
        - c. SHALL forward the SIP INVITE request to the SIP/IP core which will fork the request to the appropriate user's registered CPM Clients according to the rules and procedures of [RFC3261] and SIP/IP core.
      - Otherwise, SHALL respond to the SIP INVITE with a SIP 480 "Temporarily Unavailable" response.

Upon receiving the first SIP 200 "OK" response from one of those appropriate CPM Clients, if the CPM Participating Function is acting as a B2BUA, the CPM Participating Function:

1. SHALL generate a SIP 200 "OK" response;
2. SHALL include an SDP body as a SDP answer based on the SDP answer received in the SIP 200 "OK" response as described in as described in section 5.2.1.2 "*SDP Handling at Intermediate Nodes*";
3. SHALL include a SIP URI in the Contact header that can resolve back to the original SIP URI in the received Contact header;

4. SHALL send the SIP 200 "OK" response according to the rules and procedures of SIP/IP core;
5. SHALL check the action element <allow-offline-storage> and if set to true, it SHALL start recording the CPM Conversation as described in section 8.5 "*Record CPM Conversation History*".

Upon receiving the first SIP 200 "OK" response from one of those appropriate CPM Clients, and when the CPM Participating Function is acting as a SIP proxy, the CPM Participating Function:

1. SHALL forward the SIP 200 "OK" response according to the rules and procedures of [RFC3261] and SIP/IP core;
2. SHALL continue to act as a SIP proxy for the duration of the CPM Session.

Upon receiving a SIP final response other than a SIP 200 "OK" response from all the appropriate CPM Clients, the CPM Participating Function SHALL

1. If a SIP 302 "Temporarily Moved" response was received, the CPM Participating Function SHALL send the CPM Session Invitation towards the address received in the Contact header of the response according to rules and procedures of [RFC3261];
2. Otherwise, the CPM Participating Function SHALL check the service provider policy;
  - a. If the service provider policy is to deliver the session invitation using another non-CPM service, the CPM Participating Function SHALL send the SIP INVITE request directly to the ISF as described in section 6.5 "*Communicating with the ISF*";
  - b. Otherwise, the CPM Participating Function SHALL forward one of the error responses along the signalling path according to [RFC3261].

Upon receiving a SIP ACK request, the CPM Participating Function SHALL forward the SIP ACK request to the SIP/IP core according to the rules and procedures of the SIP/IP core for delivery to the first CPM Client that sent a SIP 200 "OK" response.

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

1. SHALL check whether the all offered Media Streams have been accepted;
2. If not, the CPM Participating Function MAY attempt to establish a new session for the rejected Media Streams. To establish the new session the CPM Participating Function:
  - a. SHALL check if service provider policy allows to establish a new session for the new Media Stream;
  - b. If allowed, SHALL generate a SIP INVITE request according to the rules and procedures of [RFC3261] with the following clarifications;
    - i. SHALL include SDP parameters about the rejected Media Streams in the SDP body as described in section 5.2.1.2 "*SDP Handling at Intermediate Nodes*" and information received in the SDP from the originating client;
    - ii. SHALL send the SIP INVITE request directly to the ISF as described in section 6.5 "*Communicating with the ISF*".
3. Otherwise, SHALL perform the same procedures as receiving a SIP 200 "OK" response from a CPM Client.

### 8.3.2.2 Handle a Cancel Request

The CPM Participating Function SHALL handle a received SIP CANCEL request in exactly the same manner as when operating in the originating network, as described in section 8.2.2.2 "*Handling a Cancel Request*".

### 8.3.2.3 Handle a SIP BYE Request

Upon receiving a SIP BYE request associated with an existing CPM Session, a CPM Participating Function that acts as a SIP proxy SHALL forward the received SIP BYE request along the Signalling Path and upon receiving the SIP 200 "OK" response associated with the SIP BYE request, the CPM Participating Function SHALL forward the SIP 200 "OK" response along the same Signalling Path as the SIP BYE request according to the rules and procedures of [RFC3261].

Upon receiving a SIP BYE request associated with an existing CPM Session, a CPM Participating Function that acts as a B2BUA:

1. SHALL release the Media Plane resources associated with the CPM session;
2. If the SIP BYE request was sent by the CPM Client served by the CPM Participating Function, the CPM Participating Function:
  - a. SHALL generate a SIP BYE request for the other CPM entity of the affected CPM Session according to the rules and procedures of [RFC3261];
  - b. SHALL send the SIP BYE request according to the rules and procedures of [RFC3261].
  - c. Upon receiving a SIP 200 "OK" response from the other CPM entity associated with the SIP BYE request, the CPM Participating Function:
    - i. SHALL generate a SIP 200 "OK" response according to the rules and procedures of [RFC3261];
    - ii. If the action element <allow-offline-storage> is set to true, the CPM Participating Function:
      1. SHALL store the CPM Session History to the Message Storage Server according to procedures specified in section 8.5.2 "Record CPM Session" and retrieve a UID from the Message Storage Server;
      2. SHALL include in the SIP 200 "OK" response a Message-UID header set to the retrieved UID information as defined in Appendix C "CPM-defined SIP Headers".
    - iii. SHALL send the SIP 200 "OK" response according to the rules and procedures of [RFC3261].
3. If the SIP BYE request was sent by the other CPM entity, the CPM Participating Function:
  - a. If the action element <allow-offline-storage> is set to true, the CPM Participating Function SHALL store the CPM Session to the Message Storage Server according to procedures specified in section 8.5.2 "Record CPM Session" and retrieve a UID from the Message Storage Server;
  - b. If the affected CPM Session is being interworked, the CPM Participating Function:
    - i. SHALL generate SIP BYE requests for each of the associated IWFs according to the rules and procedures of [RFC3261];
    - ii. SHALL send these SIP BYE requests to the IWFs according to the rules and procedures of [RFC3261].
  - c. Otherwise, when the affected CPM Session is not being interworked, the CPM Participating Function:
    - i. SHALL generate a SIP BYE request for the CPM Client it serves according to the rules and procedures of [RFC3261];
    - ii. SHALL include in the SIP BYE request a Message-UID header set to the retrieved UID information as defined in Appendix C "CPM-defined SIP Headers".
    - iii. SHALL send the SIP BYE request according to the rules and procedures of [RFC3261].
  - d. Upon receiving a SIP 200 "OK" response from the CPM Client or the IWFs associated with the SIP BYE request, the CPM Participating Function SHALL generate and send a SIP 200 "OK" response towards the other CPM entity according to the rules and procedures of [RFC3261] and the SIP/IP core.
4. If the SIP BYE request was sent by one of the IWFs involved in the interworking of the CPM Session, the CPM Participating Function:
  - a. If the CPM Session is interworked towards multiple IWFs and the service provider policies indicate that only the Media Streams associated with the IWF that sent the SIP BYE request are to be closed, the CPM Participating Function SHALL send a SIP re-INVITE request for deleting the Media Streams associated with the IWF that sent the SIP BYE request to the other CPM entity, according to the rules and procedures of [RFC3261] and the SIP/IP core.

- b. Otherwise, if the CPM Session is interworked towards multiple IWFs and the service provider policies indicate closure of the entire CPM Session, or the CPM Session is interworked to a single IWF, the CPM Participating Function:
  - i. If the action element <allow-offline-storage> is set to true, the CPM Participating Function SHALL store the CPM Session to the Message Storage Server according to procedures specified in section 8.5.2 “*Record CPM Session*” and retrieve a UID from the Message Storage Server;
  - ii. SHALL generate a SIP BYE request for the other CPM entity according to the rules and procedures of [RFC3261];
  - iii. SHALL send the SIP BYE request according to the rules and procedures of [RFC3261].
  - iv. Upon receiving a SIP 200 “OK” response from the CPM Client associated with the SIP BYE request, the CPM Participating Function SHALL generate and send a SIP 200 “OK” response towards the IWF according to the rules and procedures of [RFC3261].

#### 8.3.2.4 SIP Session Timer Expiry

On expiry of the SIP session timer and if the CPM Participating Function is behaving as a B2BUA for the affected CPM Session, the CPM Participating Function:

1. if the action element <allow-offline-storage> is set to true, the CPM Participating Function SHALL store the CPM Session History in the Message Storage Server according to procedures specified in section 8.5.2 “*Record CPM Session*” and retrieve a UID from the Message Storage Server;
2. If the affected CPM Session is being interworked, the CPM Participating Function:
  - a. SHALL generate SIP BYE requests for each of the associated IWFs according to the rules and procedures of [RFC3261];
  - b. SHALL send these SIP BYE requests according to the rules and procedures of [RFC3261].
3. Otherwise, when the affected CPM Session is not being interworked, the CPM Participating Function:
  - a. SHALL generate a SIP BYE request for the CPM Client that the CPM Participating Function serves according to the rules and procedures of [RFC3261];
  - b. SHALL include in the SIP BYE request the Message-UID header set to the retrieved UID information as defined in Appendix C “*CPM-defined SIP Headers*”.
  - c. SHALL send the SIP BYE request according to the rules and procedures of [RFC3261];
4. SHALL generate a SIP BYE request for the other CPM entity of the affected CPM Session according to the rules and procedures of [RFC3261];
5. SHALL send the SIP BYE request according to the rules and procedures of [RFC3261];
6. SHALL release all Media Plane resources associated with the CPM Session according to the rules and procedures of [RFC3261] and [RFC4028].

If the CPM Participating Function behaves as a SIP proxy, it SHALL act as specified in [RFC4028].

#### 8.3.2.5 Handling a CPM Session Modification Request

The CPM Participating Function SHALL handle a received CPM Session modification request (i.e. a SIP re-INVITE request) in exactly the same manner as when operating in the originating network, as described in section 8.2.2.5 “*Handle a CPM Session Modification Request*”.

## 8.3.3 CPM File Transfer Handling

### 8.3.3.1 Handle a CPM File Transfer Initiation

The CPM Participating Function SHALL handle a CPM File Transfer initiation request (i.e. a SIP INVITE request that includes the CPM Feature Tag '3gpp-service.ims.icsi.oma.cpm.filetransfer' in the Accept-Contact header) in exactly the same manner as described for CPM Session Invitations in section 8.3.2.1 "Handle a CPM Session Invitation".

With respect to the SDP contents of outgoing SIP INVITE requests the CPM Participating Function SHALL follow the rules and procedures of [RFC5547].

### 8.3.3.2 Handle a CPM File Transfer Closing Request

The CPM Participating Function SHALL handle the closing of a CPM File Transfer session in exactly the same manner as defined for CPM Sessions in section 8.3.2.3 "Handle a SIP BYE Request".

## 8.4 User Preferences

The CPM User preferences stored in [OMA-XDM-Policy], User Preferences Profiles stored in [OMA-XDM-Policy] and active User Preference Profile indication stored in [OMA-XDM-UPP] can be accessed and managed according to procedures as specified in [OMA-XDM-Core].

### 8.4.1 Retrieving User Preferences

For retrieving the user preferences corresponding to the CPM User being served, the CPM Participating Function:

1. SHALL access the User Access Policy document specified in [OMA-XDM-Policy], according to procedures specified in [OMA-XDM-Core], to retrieve the user preferences including the user preferences of any User Preferences Profile;
2. When the CPM Participating Function needs to evaluate device-specific preferences, it SHALL access the UPP Directory document specified in [OMA-XDM-UPP], according to procedures in [OMA-XDM-Core], to identify the active User Preferences Profile specified in <active-upp> element for each CPM User's registered device(s).

## 8.5 Record CPM Conversation History

NOTE: The object that is being stored in CPM User's Message Storage Server and the device local storage, SHALL be according to the data format as described in section 5.2 "Storage Objects" in [OMA-CPM\_TS\_MessageStorage]

### 8.5.1 Record CPM Standalone Message

Upon receiving a SIP MESSAGE request, the CPM Participating Function:

1. If the SIP MESSAGE request is not for disposition notification as defined in [RFC5438], continue with the rest of steps.
2. SHALL request to store the complete message including all the header fields and bodies of the SIP MESSAGE request to Message Storage Server as described in section 6.3 "Message and History Operations" in [OMA-CPM\_TS\_MessageStorage];
3. SHALL retrieve the information (e.g. UID) of stored messages from Message Storage Server as described in section 6.3 "Message and History Operations" in [OMA-CPM\_TS\_MessageStorage];

Upon receiving a SIP INVITE request, the CPM Participating Function:

1. SHALL extract relevant headers of the request:
  - a. From header;



- b. To header;
- c. Date header, if it exists;
- d. Conversation Identity and Contribution Identity and if there is, Contribution Identity being replied to.

After receiving an MSRP SEND request, the CPM Participating Function:

1. SHALL wait until all chunks of the message have been received via subsequent MSRP SEND requests and SHALL reassemble the CPM Standalone Message from these chunks;
2. SHALL send a request to store the CPM Standalone Message including all headers and headers extracted from the SIP INVITE or SIP REFER request as described in section 6.3 “*Message and History Operations*” in [OMA-CPM\_TS\_MessageStorage];
3. SHALL receive the information (e.g. UID) of stored messages from Message Storage as described in section 6.3 “*Message and History Operations*” in [OMA-CPM\_TS\_MessageStorage].

## 8.5.2 Record CPM Session

The general process of recording a CPM Session is as follows: the CPM Participating Function SHALL extract and store locally the content received through the signaling plane and Media Plane during the CPM Session. Upon termination of the CPM Session, the CPM Participating SHALL create a message formatted according to [RFC2822] containing all the locally stored data and upload this message to the Message Storage Server.

Upon receiving a SIP INVITE or a SIP REFER request whose method is set to INVITE, the CPM Participating Function

1. SHALL extract and locally store the following headers of the request:
  - a. From header;
  - b. To header;
  - c. Date header, if it exists;
  - d. Conversation Identity and Contribution Identity and if there is, Contribution Identity being replied to.
2. In addition, if the request includes SDP content describing media streams, the CPM Participating Function MAY extract and locally store some of the SDP attributes associated with those media streams.

Upon receiving an MSRP SEND request, the CPM Participating Function:

1. SHALL wait until all chunks of the CPM Chat Message have been received via subsequent MSRP SEND requests and SHALL reassemble the CPM Chat Message from these chunks.
2. SHALL store the CPM Chat Message locally.

Upon receiving real-time media, the CPM Participating Function, for each media stream:

1. SHALL store locally the media received in RTP packets, and,
2. SHALL store the received media as a single MIME object when the media stream is closed (i.e. when the media stream is removed from the CPM Session, or when the CPM Session is terminated).

Upon termination of the CPM Session, as described in 8.3.2.3 “*Handle a SIP BYE Request*”, the Participating Function:

1. SHALL construct a CPM Session History object containing the CPM Session information, the received Media and CPM Chat Messages according to section 5.2.3 “*Session History Object*” of [OMA-CPM\_TS\_MessageStorage], and,
2. SHALL store the CPM Session History object to the Message Storage Server and retrieve its UID as described in section 6.3 “*Message and History Operations*” of [OMA-CPM\_TS\_MessageStorage].

## 8.5.3 Record CPM File Transfer

The general process of recording a CPM File Transfer is as follows: the CPM Participating Function SHALL extract and store locally the content received through the signaling plane and Media Plane during the CPM File Transfer. Upon

termination of the CPM File Transfer, the CPM Participating SHALL create a message formatted according to [RFC2822] containing all the locally stored data and upload this message to the Message Storage Server.

Upon receiving a SIP INVITE or a SIP REFER request whose method is set to INVITE, the CPM Participating Function

1. SHALL extract and locally store the following headers of the request:
  - a. From header;
  - b. To header;
  - c. Date header, if it exists;
  - d. Conversation Identity and Contribution Identity and if there is, Contribution Identity being replied to.
2. In addition, the CPM Participating Function MAY extract and locally store some of the SDP attributes associated with the files transferred.

Upon receiving an MSRP SEND request, the CPM Participating Function:

1. SHALL wait until all chunks of the file have been received via subsequent MSRP SEND requests and SHALL reassemble the file from these chunks, and,
2. SHALL store the file locally.

Upon termination of the CPM File Transfer, the Participating Function:

1. SHALL construct a CPM File Transfer History object containing the CPM File Transfer information, the received files according to section 5.2.4 “*File Transfer History Object*” of [OMA-CPM\_TS\_MessageStorage], and,
2. SHALL upload the CPM File Transfer History object to the Message Storage Server and retrieve its UID as described in section 6.3 “*Message and History Operations*” of [OMA-CPM\_TS\_MessageStorage].

## 9. Procedures at CPM Controlling Function

The CPM Controlling Function handles incoming requests in the following manner:

- Upon receiving a Pager Mode CPM Standalone Message (i.e. a SIP MESSAGE request with the CPM Feature Tag ‘3gpp-service.ims.icsi.oma.cpm.msg’ included in the Accept-Contact header), it SHALL handle this Pager Mode CPM Standalone Message as defined in section 9.1.1 “*Pager Mode CPM Standalone Message Handling*”.
- Upon receiving a Large Message Mode CPM Standalone Message (i.e. a SIP INVITE request with the CPM Feature Tag ‘3gpp-service.ims.icsi.oma.cpm.largemsg’ included in the Accept-Contact header), it SHALL handle this Large Message Mode CPM Standalone Message as defined in section 9.1.2 “*Large Message Mode CPM Standalone Message Handling*”.
- When the IWF receives a CPM Session Invitation (i.e. a SIP INVITE request with the CPM Feature Tag ‘3gpp-service.ims.icsi.oma.cpm.session’ included in the Accept-Contact header), it SHALL handle this CPM Session as defined in section 9.2 “*CPM Group Session Handling*”.
- When the IWF receives a CPM File Transfer initiation request (i.e. a SIP INVITE request with the CPM Feature Tag ‘3gpp-service.ims.icsi.oma.cpm.filetransfer’ included in the Accept-Contact header), it SHALL handle this CPM File Transfer as defined in section 9.3 “*CPM File Transfer Handling*”.

### 9.1 CPM Standalone Message Handling

#### 9.1.1 Pager Mode CPM Standalone Message Handling

Upon receiving a SIP MESSAGE request with the CPM Feature Tag ‘3gpp-service.ims.icsi.oma.cpm.msg’ included in the Accept-Contact header the CPM Controlling Function:

1. SHALL check if the authenticated originator's CPM Address is an authorized address to use functionalities of the CPM Controlling Function and if not authorized the CPM Controlling Function SHALL return a SIP 403 “Forbidden” response and SHALL include a Warning header with the warning text set to “127 Service not authorised” in the response according to the rules and procedures of [RFC3261].

Otherwise, continue with the rest of the steps;

2. If the CPM Controlling Function requires a specific User Agent version to be supported, the CPM Controlling Function SHALL check the User-Agent header field to determine if the CPM Controlling Function supports the User Agent version and if not, the CPM Controlling Function SHALL return a SIP 403 “Forbidden” response and SHALL include a Warning header with the warning text set to “132 Version not supported” according to rules and procedures of [RFC3261].

Otherwise, continue with rest of the steps;

3. If the Request-URI of the SIP INVITE request is set to the address of the CPM Controlling Function, the CPM Controlling Function:
  - a. SHALL check if the SIP MESSAGE request received for a CPM Ad-hoc Group has anonymity requested and whether anonymity is allowed for the authenticated originator's CPM Address. If not allowed, the CPM Controlling Function SHALL return a SIP 403 "Forbidden" error response and SHALL include a Warning header with the warning text set to “119 Anonymity not allowed” in the response according to the rules and procedures of [RFC3261].

Otherwise, continue with the rest of the steps.

- b. SHALL check if the number of recipients exceeds the maximum allowed by service provider policy. If it does, then the CPM Controlling Function SHALL return a SIP 486 “Busy Here” response and SHALL include a Warning header with the warning text set to “102 Too many recipients” in the response according to the rules and procedures of [RFC3261].

Otherwise, continue with the rest of the steps;

- c. SHALL check if the MIME resource-list body includes an empty URI list. If the URI list is empty, the CPM Controlling Function SHALL return a SIP 403 "Forbidden" response and SHALL include a Warning

header with the warning text set to “129 No destinations” in the response according to the rules and procedures of [RFC3261].

Otherwise, continue with the rest of the steps;

- d. SHALL fetch the member list contained in MIME <resource-lists> body according to procedures specified in [RFC5365].

4. Otherwise, the CPM Controlling Function:

- a. SHALL check if the authenticated originator's CPM Address is authorized to send a CPM Standalone Message to the Pre-defined Group by the group policy. If not authorized the CPM Controlling Function SHALL return a SIP 403 "Forbidden" response and SHALL include a Warning header with the warning text set to “127 Service not authorised” in the response according to the rules and procedures of [RFC3261].

Otherwise, continue with the rest of the steps;

- b. SHALL check if the CPM Pre-defined Group address in the Request-URI exists in [OMA-XDM-Group]. If the CPM Pre-defined Group address does not exist, then the CPM Controlling Function SHALL return a SIP 404 "Not found" response according to the rules and procedures of [RFC3261].

Otherwise, continue with the rest of the steps;

- c. SHALL check if the CPM Pre-defined Group address in the Request-URI is specified to support the CPM service by evaluating if the <supported-services> element indicates support for the CPM service. If the CPM Pre-defined Group address does not support the CPM service, then the CPM Controlling Function SHALL return a SIP 488 "Not Acceptable" response according to the rules and procedures of [RFC3261].

Otherwise, continue with the rest of the steps;

- d. SHALL check if the SIP MESSAGE request received for a CPM Pre-defined Group has anonymity requested and whether privacy is allowed for the authenticated originator's CPM Address. Allowing privacy for a specific authenticated originator's CPM Address is defined using <allow-anonymity> element of the CPM Group's authorization rules as specified in [OMA-XDM-Group]. If not allowed, the CPM Controlling Function SHALL return a SIP 403 "Forbidden" response and SHALL include a Warning header with the warning text set to “119 Anonymity not allowed” in the response according to the rules and procedures of [RFC3261].

Otherwise, continue with the rest of the steps;

- e. If the CPM Controlling Function requires a specific User Agent version to be supported, the CPM Controlling Function SHALL check the User-Agent header field to determine if the CPM Controlling Function supports the User Agent version and if not, the CPM Controlling Function SHALL return a SIP 403 “Forbidden” response and SHALL include a Warning header with the warning text set to “132 Version not supported” in the response according to rules and procedures of [RFC3261].

Otherwise, continue with rest of the steps;

- f. SHALL check if the Request-URI identifies a CPM Pre-defined Group with empty Group List. If the Group List is empty, the CPM Controlling Function SHALL return a SIP 403 "Forbidden" response and SHALL include a Warning header with the warning text set to “129 No destinations” in the response according to the rules and procedures of [RFC3261].

Otherwise, continue with the rest of the steps;

- g. SHALL retrieve the members belonging to the CPM Pre-defined Group by interacting with [OMA-XDM-Group].

5. SHALL send a SIP MESSAGE request towards each CPM Group member, the CPM Controlling Function;

- a. SHALL generate a SIP MESSAGE request according to the rules and procedures of [RFC3428];
- b. SHALL copy the values in Accept-Contact header from the received SIP MESSAGE request in the outgoing SIP MESSAGE request, if any Accept-Contact header was received;
- c. SHALL set the Request-URI to the CPM Address or non-CPM Address of the CPM Group member;

- d. If the received SIP MESSAGE request was sent to a CPM Ad-hoc Group, the CPM Controlling Function SHALL include in the authenticated originator's CPM Address, the address of the sending CPM User;
  - e. If the received SIP MESSAGE request was sent to a CPM Pre-defined Group, the CPM Controlling Function SHALL include the authenticated originator's CPM Address with the following clarification:
    - i. SHALL set the authenticated originator's CPM Address to the CPM Pre-defined Group address;
    - ii. If privacy was requested by the sending CPM User, the CPM Controlling Function SHALL include a Referred-By header with anonymous URI;
    - iii. Otherwise, SHALL include a Referred-By header with the authenticated originator's CPM Address of the received SIP INVITE request.
  - f. SHALL include a User-Agent header to indicate the OMA CPM release version of the CPM Controlling Function as specified in Appendix D "Release Version in User-agent and Server headers";
  - g. SHALL include all the other received SIP headers as well as the body of the received SIP MESSAGE request in each outgoing SIP MESSAGE request;
  - h. SHALL send the SIP MESSAGE request towards the SIP/IP core according to the rules and procedures of the SIP/IP core.
6. SHALL send a SIP 202 "Accepted" response along the Signalling Path according to [RFC3261].

If an error response is received when attempting to deliver the SIP MESSAGE request to a CPM Address, the CPM Controlling Function SHALL check service provider policies to determine if interworking is allowed, and if it is, SHALL send the CPM Standalone Message request to the ISF as described in section 6.5 "Communicating with the ISF".

CPM Standalone Messages with a request for disposition notifications are additionally handled according to section 9.1.3 "Disposition Notification".

## 9.1.2 Large Message Mode CPM Standalone Message Handling

Upon receiving an initial SIP INVITE request with the CPM Feature Tag '3gpp-service.ims.icsi.oma.cpm.largemsg' corresponding to Large Message Mode CPM Standalone Message included in the Accept-Contact header, the CPM Controlling Function:

1. SHALL check the authenticated originator's CPM Address and authorize the request, and if not authorized, the CPM Controlling Function SHALL return a SIP 403 "Forbidden" response and SHALL include a Warning header with the warning text set to "127 Service not authorised" in the response according to the rules and procedures of [RFC3261];  
Otherwise, continue with rest of the steps;
2. If the CPM Controlling Function requires a specific User Agent version to be supported, the CPM Controlling Function SHALL check the User-Agent header field to determine if the CPM Controlling Function supports the User Agent version and if not, the CPM Controlling Function SHALL return a SIP 403 "Forbidden" response and SHALL include a Warning header with the warning text set to "132 Version not supported" in the response according to the rules and procedures of [RFC3261].  
Otherwise, continue with rest of the steps;
3. If the Request-URI of the SIP INVITE request is set to the address of the CPM Controlling Function, the CPM Controlling Function:
  - a. SHALL check if the SIP INVITE request received for a CPM Ad-hoc Group has anonymity requested and whether anonymity is allowed as per the service provider's policy. If not allowed, the CPM Controlling Function SHALL return a SIP 403 "Forbidden" response and SHALL include a Warning header with the warning text set to "119 Anonymity not allowed" in the response according to the rules and procedures of [RFC3261];  
Otherwise, continue with the rest of the steps;
  - b. SHALL check from the MIME <resource-lists> body that the maximum number of receivers allowed in a CPM Ad-hoc Group is not exceeded. If exceeded, the CPM Controlling Function SHALL return a SIP 486

“Busy Here” response and SHALL include a Warning header with the warning text set to “102 Too many participants” in the response according to the rules and procedures of [RFC3261].

Otherwise, continue with the rest of the steps;

- c. SHALL check if the MIME <resource-lists> body includes an empty URI list. If the URI list is empty, the CPM Controlling Function SHALL return a SIP 403 “Forbidden” response and SHALL include a Warning header with the warning text set to “No destinations” in the response according to the rules and procedures of [RFC3261].

Otherwise, continue with the rest of the steps;

- d. SHALL fetch the member list contained in MIME <resource-lists> body according to procedures specified in [RFC5366].

4. Otherwise, the CPM Controlling Function:

- a. SHALL check that the CPM Pre-defined Group address in the Request-URI, identifying a CPM Pre-defined Group as defined in [OMA-XDM-Group], is specified to support the CPM service by evaluating if the <supported-services> element indicates support for the CPM service. If the CPM service is not supported then the CPM Controlling Function SHALL return a SIP 404 “Not found” response according to the rules and procedures of [RFC3261].

Otherwise, continue with the rest of the steps;

- b. SHALL check if anonymity is requested and whether anonymity is allowed for the authenticated originator’s CPM Address. Allowing anonymity for a specific authenticated originator’s CPM Address is defined using <allow-anonymity> element of the CPM Group’s authorization rules as specified in [OMA-XDM-Group]. If not allowed, the CPM Controlling Function SHALL return a SIP 403 “Forbidden” response and SHALL include a Warning header with the warning text set to “119 Anonymity not allowed” in the response according to the rules and procedures of [RFC3261].

Otherwise, continue with the rest of the steps;

- 5. If the “Session-Expires” header is included, the CPM Controlling Function SHOULD handle the header according to procedures of [RFC4028];
- 6. SHALL behave as a B2BUA according to the rules and procedures of [RFC3261] for the duration of the SIP session;
- 7. SHALL send a SIP INVITE request towards each CPM Group member as follows:
  - a. SHALL generate a SIP INVITE request according to the rules and procedures of [RFC3261];
  - b. SHALL copy the values in Contact header and Accept-Contact header from the received SIP INVITE request in the outgoing SIP INVITE request;
  - c. SHALL set the Request-URI to the CPM Address or non-CPM Address of the CPM Group member;
  - d. SHALL insert in the Contact header the URI identifying its own address, including the “isfocus” feature parameter;
  - e. SHOULD include the Session-Expires header with the refresher parameter set to ‘uas’ according to the rules and procedures of [RFC4028];
  - f. SHALL include the Supported header set to “timer”;
  - g. SHALL include a User-Agent header to indicate the OMA CPM release version of the CPM Controlling Function as specified in Appendix D “*Release Version in User-agent and Server headers*”;
  - h. SHALL copy the values of the Privacy header from the received SIP INVITE request received in the outgoing SIP INVITE request, if any Privacy header was received;
  - i. SHALL copy the MIME SDP body from the received SIP INVITE request in the outgoing SIP INVITE request as an SDP offer according to the rules and procedures of [RFC3264], [RFC4566], [RFC4975], [draft-ietf-simple-msrp-acm] and [draft-ietf-simple-msrp-sessmatch] with the following clarifications:
    - i. SHALL include a media line proposing MSRP media parameters;

- ii. SHALL include its own MSRP URI for the MSRP connection setup as a=path:MSRP URI;
  - iii. SHALL set the SDP directional media attribute to a=sendonly;
  - iv. SHALL set the size as a=file-selector:size:actual message size.
  - v. SHALL set a=setup attribute as “active”.
- j. If the received SIP INVITE request was sent to a CPM Ad-hoc Group, the CPM Controlling Function SHALL include the authenticated originator’s CPM Address as specified in section 6.1 “*Authenticated Originator’s CPM Address*” with the following clarifications:
- i. The URI in the authenticated originator’s CPM Address SHALL be set to the CPM Group Session Identity for this particular CPM Ad-hoc Group assigned by the CPM Controlling Function, according to [RFC5366];
  - ii. SHALL include a Referred-By header with the authenticated originator's CPM Address of the sending CPM User, unless privacy was requested by the sending CPM User, and in that case it SHALL include an anonymous URI in the Referred-By header.
- k. If the received SIP INVITE request was sent to a CPM Pre-defined Group, the CPM Controlling Function SHALL include the authenticated originator’s CPM Address as specified in section 6.1 “*Authenticated Originator’s CPM Address*” with the following clarifications:
- i. SHALL set the authenticated originator’s CPM Address to the CPM Pre-defined Group address;
  - ii. SHALL include a Referred-By header with the authenticated originator's CPM Address of the received SIP INVITE request, or SHALL include a Referred-By header with anonymous URI, if privacy was requested by the sending CPM User.
- l. SHALL send the SIP INVITE request to SIP/IP core according to the rules and procedures of the SIP/IP core.

Upon receiving the first SIP 200 “OK” response, the CPM Controlling Function:

1. SHALL generate SIP 200 “OK” response for the received SIP INVITE request according to the rules and procedures of [RFC3261];
2. SHALL include the SDP received in the response of SIP INVITE request as an answer SDP according to the rules and procedures of [RFC3264], [RFC4566], [RFC4975], [draft-ietf-simple-msrp-acm] and [draft-ietf-simple-msrp-ressmatch] with the following clarifications:
  - a. SHALL include a media line proposing MSRP media parameters;
  - b. SHALL include its own MSRP URI for the MSRP connection setup as a=path:MSRP URI;
  - c. SHALL set the SDP directional media attribute to a=recvonly;
  - d. SHALL set the a=setup attribute as “passive”.
3. SHALL include a Server header to indicate the OMA CPM release version of the CPM Controlling Function as specified in Appendix D “*Release Version in User-agent and Server headers*”;
4. SHALL include a URI identifying its own address in the Contact header;
5. SHALL send the SIP 200 “OK” response according to the rules and procedures of SIP/IP core.

Upon receiving a SIP CANCEL request, the CPM Controlling Function:

1. SHALL act as UAS to handle the SIP CANCEL request according to the rules and procedures of [RFC3261]; and,
2. SHALL act as UAC to cancel the SIP INVITE request towards each CPM Pre-defined Group member via the SIP/IP core according to the rules and procedures of [RFC3261].

Upon receiving a SIP ACK request, the CPM Controlling Function:

1. SHALL forward the SIP ACK request towards each CPM Group member that sent a SIP 200 “OK” response according to the rules and procedures of SIP/IP core.
2. SHALL initiate an MSRP session with each CPM Group Member that sent a SIP 200 “OK” response as follows:

- a. The CPM Controlling Function SHALL act as an MSRP client for sending MSRP SEND requests according to [draft-ietf-simple-msrp-acm];
- b. The CPM Controlling Function SHALL act as an "active" endpoint to open the transport connection according to [draft-ietf-simple-msrp-acm];
- c. The CPM Controlling Function SHALL establish the MSRP connection according to the MSRP connection parameters in the SDP answer received from each CPM Group member in the SIP 200 "OK" response according to [RFC4975].

Upon receiving an MSRP SEND request, the CPM Controlling Function:

1. SHALL generate and send an MSRP 200 OK response to the MSRP SEND request;
2. SHALL duplicate the MSRP SEND request for each CPM Group member with the following modifications according to the rules and procedures of [RFC4975]:

NOTE: The CPM Controlling Function may have to store the received MSRP SEND request to be able to deliver it to the CPM Group members.

- a. SHALL modify the To-Path header according to the MSRP URI(s) received in the answer SDP from the CPM Group member in accordance with rules and procedures of [draft-ietf-simple-msrp-sessmatch];
  - b. SHALL modify the From-Path header to the CPM Controlling Function's own MSRP URI, according to the rules and procedures of [draft-ietf-simple-msrp-sessmatch].
3. SHALL send the MSRP SEND requests towards each CPM Group member (both CPM Users and/or non-CPM Users) via the established MSRP connections.

Upon receiving a SIP BYE request from the sending CPM User, the CPM Controlling Function:

1. SHALL respond to the SIP BYE request as described in [RFC3261];
2. SHALL send a SIP BYE request towards each CPM Group member; and
3. SHALL release the resources related to the CPM Group Session.

Upon receiving an error response indicating a failure to deliver the SIP INVITE request or an MSRP SEND request to a CPM Address, the CPM Controlling Function SHALL check service provider policies to determine if interworking is allowed, and if it is, SHALL send the SIP INVITE request to the ISF as described in section 6.5 "Communicating with the ISF".

CPM Standalone Messages with a request for disposition notifications are additionally handled according to section 9.1.3 "Disposition Notification".

### 9.1.3 Disposition Notification

When the CPM Controlling Function receives a CPM Standalone Message containing a disposition notification request, the CPM Controlling Function SHALL act as intermediary according to the rules and procedures of [RFC5438] with the following clarifications:

- In case the CPM Controlling Function needs to stay on the path of IMDN to aggregate IMDNs according to service provider policy, it SHALL insert in the CPM Standalone Message a CPIM IMDN-Record-Route header with its own address;
- The CPM Controlling Function SHALL insert in the CPM Standalone Message a CPIM Original-To header with the value of the original CPIM To header;
- In case the CPM Controlling Function receives an error response to a CPM Standalone Message containing a "negative-delivery" notification request, the CPM Controlling Function MAY construct and send a "negative-delivery" notification according to service provider policy.

When staying on the path of IMDN to aggregate IMDNs, upon receiving the initial IMDN, the CPM Controlling Function SHALL await for any remaining IMDNs, aggregate them and send the aggregated IMDN according to rules and procedures of [RFC5438].



## 9.2 CPM Group Session Handling

### 9.2.1 CPM Group Session Initiation

Upon receiving an initial SIP INVITE request with the CPM Feature Tag '3gpp-service.ims.icsi.oma.cpm.session' included in the Accept-Contact header, the CPM Controlling Function:

1. SHALL check whether the authenticated originator's CPM Address is of a CPM User that is allowed to send the request and if not, the CPM Controlling Function SHALL return a SIP 403 "Forbidden" response and SHALL include a Warning header with the warning text set to "127 Service not authorized" in the response according to the rules and procedures of [RFC3261].  
Otherwise, continue with 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 CPM Controlling Function SHALL reject the request with a SIP 403 "Forbidden" response and SHALL include a Warning header with the warning text set to "105 isfocus already assigned" in the response according to the rules and procedures of [RFC3261].  
Otherwise, continue with the rest of the steps;
3. SHALL check if the SDP parameters in the SDP offer are allowed and supported by the CPM Controlling Function according to service provider policy. If the received SDP parameters are not allowed, the CPM Controlling Function SHALL return a SIP 488 "Not Acceptable here" with a description of the supported SDP parameters by the CPM Controlling Function.  
Otherwise continue with the rest of the steps;
4. If the Request-URI of the SIP INVITE request is set to the address of the CPM Controlling Function, the CPM Controlling Function:
  - a. SHALL check if the SIP INVITE request received for a CPM Ad-hoc Group has anonymity requested and whether anonymity is allowed by service provider policy. If not allowed, the CPM Controlling Function SHALL return a SIP 403 "Forbidden" response and SHALL include a Warning header with the warning text set to "119 Anonymity not allowed" in the response according to the rules and procedures of [RFC3261].  
Otherwise, continue with the rest of the steps;
  - b. SHALL check from the MIME resource-lists body that the maximum number of Participants allowed in a CPM Ad-hoc Group is not exceeded. If exceeded, the CPM Controlling Function SHALL return a SIP 486 "Busy Here" response and SHALL include a Warning header with the warning text set to "102 Too many participants" in the response according to the rules and procedures of [RFC3261].  
Otherwise, continue with the rest of the steps;
  - c. SHALL check if the MIME resource-list body includes an empty URI list. If the URI list is empty, the CPM Controlling Function SHALL return a SIP 403 "Forbidden" response and SHALL include a Warning header with the warning text set to "129 No destinations" in the response according to the rules and procedures of [RFC3261].  
Otherwise, continue with the rest of the steps;
  - d. SHALL fetch the member list contained in MIME <resource-lists> body according to procedures specified in [RFC5366]. This list is used as the set of CPM Group members that have to be invited to the CPM Group Session;
5. Otherwise, the CPM Controlling Function:
  - a. SHALL check that the CPM Pre-defined Group address in the Request-URI, identifying a CPM Pre-defined Group as defined in [OMA-XDM-Group], is specified to support the CPM service by evaluating if the <supported-services> element indicates support for the CPM service. If the CPM service is not supported then the CPM Controlling Function SHALL return a SIP 404 "Not found" response" according to the rules and procedures of [RFC3261].

Otherwise, continue with the rest of the steps;

- b. SHALL check if the SIP INVITE request received for a CPM Pre-defined Group has anonymity requested and whether privacy is allowed for the authenticated originator's CPM Address. Allowing privacy for a specific authenticated originator's CPM Address is defined using <allow-anonymity> element of the CPM Group's authorization rules as specified in [OMA-XDM-Group]. If not allowed, the CPM Controlling Function SHALL return a SIP 403 "Forbidden" response and SHALL include a Warning header with the warning text set to "Anonymity not allowed" in the response according to the rules and procedures of [RFC3261].

Otherwise, continue with the rest of the steps;

- c. SHALL determine if the authenticated originator's CPM Address is allowed the action <allow-initiate-conference> as specified in [OMA-XDM-Group]. If the policy does not allow session initiation, then the CPM Controlling Function SHALL return a SIP 403 "Forbidden" response and SHALL include a Warning header with the warning text set to "122 Function not allowed" in the response according to the rules and procedures of [RFC3261];

Otherwise, continue with the rest of the steps.

- d. SHALL validate that the media parameters are acceptable for the CPM Pre-defined Group. If not acceptable, then the CPM Controlling Function SHALL reject the request with a SIP 488 "Not Acceptable Here" response according to the rules and procedures of [RFC3261].

Otherwise, continue with the rest of the steps;

- e. SHALL check if a CPM Group Session is active for the CPM Pre-defined Group. If there is already an active CPM Group Session, then the CPM Controlling Function SHALL process the request as described in section 9.2.3 "Participant Joining a CPM Group Session".

Otherwise, continue with the rest of the steps;

- f. SHALL determine if the members of the CPM Pre-defined Group have to be invited to the CPM Group Session by checking if the value of the <invite-members> element is 'true'. If the value is set to 'true', then use the members of the CPM Pre-defined Group as the set of CPM Group members that have to be invited to the CPM Group Session.

6. SHALL use the display name described in section 6.3 "Display Name";
7. SHALL establish a CPM Group Session and allocate a CPM Group Session Identity as described in [RFC4353] and [RFC4579];
8. SHALL invite each of the users listed as the CPM Group members that have to be invited to the CPM Group Session as specified in section 9.2.10 "Create Session with a Participant". If a Session-Replaces header (as defined in Appendix C "CPM-defined SIP Headers") is included in one of the entries in the MIME resource-lists body (when the CPM Group Session is set up for a CPM Ad-hoc Group), the CPM Controlling Function SHALL ensure that the header is added into the SIP INVITE request sent to that entry.

In the case that the CPM Group did not have an active CPM Group Session yet, the CPM Controlling Function SHALL handle the responses from the invited group members as follows:

- Upon receiving a SIP final response other than 2xx from an invited CPM Group member, the CPM Controlling Function SHALL remove the inviting CPM Group member from the CPM Group Session as specified in section 9.2.11 "Participant Removing Request".
- When all invited group members have responded with a SIP final response other than 2xx, the CPM Controlling Function SHALL send an error response along the incoming signalling path.
- Upon receiving the first SIP 200 "OK" response for the SIP INVITE request from one of the invited group members, the CPM Controlling Function:
  1. SHALL generate a SIP 200 "OK" response to the SIP INVITE request according to the rules and procedures of [RFC3261] with the following clarifications:
    - a. SHALL include the Session-Expires header with the refresher parameter set to 'uac' and start supervising the SIP Session according to the rules and procedures of [RFC4028];

- b. SHALL include the CPM Group Session Identity with the feature-tag 'isfocus' as described in [RFC4579] and the CPM Feature Tag '3gpp-service.ims.icsi.oma.cpm.session' corresponding to CPM Session in the Contact header;
  - c. SHALL include a User-Agent header to indicate the OMA CPM release version of the CPM Controlling Function as specified in Appendix D "*Release Version in User-agent and Server headers*";
  - d. SHALL include the authenticated originator's CPM Address as specified in section 6.1 "*Authenticated Originator's CPM Address*" set to the CPM Controlling Function;
2. SHALL include in the SIP 200 "OK" response a SDP body as a SDP answer based on the received SDP answer in the SIP 200 "OK" response, as described in section 5.2.1.2 "*SDP Handling at Intermediate Nodes*".

NOTE: Service provider policy determines how to handle the sessions when different participants accept different media types

3. SHALL send a SIP 200 "OK" response along the incoming signalling path.
4. SHALL NOT forward any further responses from the remaining group members that had not responded yet.

Upon receiving a SIP ACK request, the CPM Controlling Function:

1. SHALL forward the SIP ACK request towards all Participants that sent a SIP 200 "OK" response.
2. SHALL initiate the Media Plane as in section 9.2.12 "*Media Plane Handling*".

## 9.2.2 Session Cancellation Request

When the CPM Controlling Function receives a SIP CANCEL request to cancel a CPM Group Session and when it has not received a SIP final response from one of the Participants yet, the CPM Controlling Function SHALL cancel all SIP INVITE requests it sent out according to the rules and procedures of [RFC3261]. When the CPM Controlling Function has received at least one SIP final response from any of the invited Participants, it SHALL ignore the SIP CANCEL request.

## 9.2.3 Participant Joining a CPM Group Session for a CPM Pre-defined Group

Upon receiving an initial SIP INVITE request with the CPM Feature Tag '3gpp-service.ims.icsi.oma.cpm.session' included in the Accept-Contact header, that includes a CPM Pre-defined Group address in the Request-URI, which identifies the CPM Pre-defined Group that is owned by the CPM Controlling Function and it has been determined (as per procedure in section 9.2.1 "*CPM Group Session Initiation*") that the sender of the SIP INVITE request is joining an already existing CPM Group Session for a CPM Pre-defined Group, the CPM Controlling Function

1. SHALL determine if the authenticated originator's CPM Address is allowed by the <join-handling> action of the Group's authorization rules as specified in [OMA-XDM-Group] and if not, then the CPM Controlling Function SHALL return a SIP 403 "Forbidden" response and SHALL include a Warning header with the warning text set to "127 Service not authorised" in the response according to the rules and procedures of [RFC3261];

Otherwise, continue with the rest of the steps;

2. SHALL accept the SIP request and generate a SIP 200 "OK" response to the SIP INVITE request as follows:
  - a. The CPM Controlling Function SHALL include the stored CPM Conversation Identity, CPM Contribution Identity and, if stored, the CPM Contribution being replied to in the headers defined in Appendix C "*CPM-defined SIP Headers*" in the SIP 200 "OK" response;
  - b. The CPM Controlling Function SHALL include a SDP body in the SIP 200 "OK" response as a SDP answer as described in section 5.2.1.2 "*SDP Handling at Intermediate Nodes*";
  - c. The CPM Controlling Function SHALL include in the 'accept types' SDP media attribute the selected 'mime types' supported by the CPM Controlling Function from those contained in the SDP offer in the incoming SIP INVITE request.

Upon receiving a SIP ACK request, the CPM Controlling Function:

1. SHALL initiate the Media Plane as described in section 9.2.12 “*Media Plane Handling*” for this Participant;
2. SHALL send a notification to the Participants that have subscribed to the Participant information, that a CPM User has joined in the CPM Group Session, as specified in section 9.2.14.2 “*Sending Participant Information Notifications*”.

## 9.2.4 Rejoining CPM Group Session Request

Upon receipt of a SIP INVITE request that includes an Accept-Contact header with the CPM Feature Tag ‘3gpp-service.ims.icsi.oma.cpm.session’ and a CPM Group Session Identity in the Request-URI, the CPM Controlling Function:

1. SHALL check whether this CPM Group Session Identity exists. If it does not exist, the CPM Controlling Function SHALL return a SIP 404 “Not Found” response and SHALL include a Warning header with the warning text set to “123 Session does not exist” in the response according to the rules and procedures of [RFC3261].  
Otherwise, continue with the rest of the steps;
2. SHALL check CPM Group rules as specified in [OMA-XDM-Group] whether the authenticated originator's CPM Address of the joining CPM User is allowed to join. If it is not allowed to join the CPM Controlling Function SHALL return a SIP 403 “Forbidden” response and SHALL include a Warning header with the warning text set to “122 Function not allowed” in the response according to the rules and procedures of [RFC3261].  
Otherwise, continue with the rest of the steps;
3. SHALL, in the case of a CPM Group Session for a CPM Pre-defined Group, check if the <max-participant-count> as specified in [OMA-XDM-Group] is already reached. If reached, the CPM Controlling Function SHALL return a SIP 486 “Busy Here” response and SHALL include a Warning header with the text set to “102 Too many participants” in the response according to the rules and procedures of [RFC3261].  
Otherwise, continue with the rest of the steps;
4. SHALL use the display name, if a display name is included, according to the priority specified in section 6.3 “*Display Name and Anonymity*”;
5. SHALL accept the SIP request and generate a SIP 200 “OK” response;
6. SHALL include the stored CPM Conversation Identity, CPM Contribution Identity and InReplyTo-Contribution-ID in the SIP 200 “OK” response;
7. SHALL send the SIP 200 “OK” response according to the rules and procedures of SIP/IP core;
8. SHALL generate and send a SIP NOTIFY request to the CPM Clients, which have subscribed to the Participant Information as specified in section 9.2.14.2 “*Sending Participant Information Notifications*”.

Upon receiving a SIP ACK request, the CPM Controlling Function SHALL initiate the Media Plane as specified in section 9.2.12 “*Media Plane Handling*” for this CPM Client.

## 9.2.5 Adding Participants Request

Upon receiving a SIP REFER request that includes an Accept-Contact header with the CPM Feature Tag ‘3gpp-service.ims.icsi.oma.cpm.session’ and the “method” parameter set to “INVITE” in the Refer-To header, the CPM Controlling Function:

1. SHALL if the Refer-Sub header is not present or is set to “true” in the SIP REFER request, generate and send a SIP 421 “Extension Required” response including a Require header with the option tag “norefersub”.
2. In case of CPM Pre-defined Group, SHALL perform actions to verify that the authenticated originator’s CPM Address of the inviting CPM User is allowed to invite other users by checking the <allow-invite-users-dynamically> action as specified in [OMA-XDM-Group] and if not authorized, the CPM Controlling Function SHALL return a SIP 403 “Forbidden” response and SHALL include a Warning header with the warning text set to “127 Service not authorised” in the response according to the rules and procedures of [RFC3261].  
Otherwise, continue with the rest of steps;

3. SHALL check whether privacy is allowed for the authenticated originator's CPM Address, when anonymity is requested with the Privacy header containing the tag 'id'. If not allowed, the CPM Controlling Function SHALL return a SIP 403 "Forbidden" response and SHALL include a Warning header with the warning text set to "119 Anonymity not allowed" in the response according to the rules and procedures of [RFC3261].

Otherwise, continue with the rest of steps;

4. SHALL extract the address(es) of the users from the SIP REFER request to be invited either:
  - a. from the Refer-To header according to the rules and procedures of [RFC3515] for inviting one user; or
  - b. from the MIME resource-list body according to the rules and procedures of [RFC5368] for inviting multiple users.
5. SHALL generate a SIP 202 "Accepted" final response to the SIP REFER request according to the rules and procedures of [RFC3515];
6. SHALL include in the response to the SIP REFER request a Refer-Sub header set to "false" according to the rules and procedures of [RFC4488];
7. SHALL include in the response to the SIP REFER request a Supported header with the option tag "norefersub" according to the rules and procedures of [RFC4488];
8. SHALL follow the actions described in section 9.2.10 "Create Session with a Participant" for each address.

## 9.2.6 Removing Participant Request

Upon receiving a SIP REFER request that includes an Accept-Contact header with the CPM Feature Tag '3gpp-service.ims.icsi.oma.cpm.session' and the "method" parameter set to "BYE" in the Refer-To header, the CPM Controlling Function:

1. SHALL if the Refer-Sub header is not present or is set to "true" in the SIP REFER request, generate and send a SIP 421 "Extension Required" response including a Require header with the option tag "norefersub".
2. In case of CPM Pre-defined Group, SHALL perform actions to verify that the authenticated originator's CPM Address of the CPM User who initiated the request is authorized for the request by checking the <allow-expelling> element as defined in [OMA-XDM-Group] and if not authorized, the CPM Controlling Function SHALL return a SIP 403 "Forbidden" response and SHALL include a Warning header with the warning text set to "122 Function not allowed" in the response according to the rules and procedures of [RFC3261].

Otherwise, continue with the rest of steps;

3. SHALL check whether privacy is allowed for the authenticated originator's CPM Address, when anonymity is requested with the Privacy header containing the tag 'id'. If not allowed, the CPM Controlling Function SHALL return a SIP 403 "Forbidden" response and SHALL include a Warning header with the warning text set to "119 Anonymity not allowed" in the response according to the rules and procedures of [RFC3261].

Otherwise, continue with the rest of steps;

4. SHALL extract the address(es) of the users from the SIP REFER request to be removed either:
  - a. from the Refer-To header according to the rules and procedures of [RFC3515] for removing one user; or
  - b. from the MIME resource-list body according to the rules and procedures of [RFC5368] for removing multiple users.
5. SHALL generate a SIP 202 "Accepted" response to the SIP REFER request according to the rules and procedures of [RFC3515];
6. SHALL include in the response to the SIP REFER request a Refer-Sub header set to "false" according to the rules and procedures of [RFC4488];
7. SHALL include in the response to the SIP REFER request a Supported header with the option tag "norefersub" according to the rules and procedures of [RFC4488];
8. SHALL follow the actions described in section 9.2.11 "Participant Removing Request" for each address;

## 9.2.7 Session Leaving Request

Upon receiving a SIP BYE request, the CPM Controlling Function:

1. SHALL return a SIP 200 "OK" response according to the rules and procedures of the SIP/IP core;
2. SHALL release all Media Plane resources corresponding to the CPM Session being closed;
3. SHALL terminate the subscription to Participant Information of this CPM Group Session if the CPM Client requesting to leave the CPM Group Session has such a subscription;
4. SHALL check CPM Group Session release policy as specified below:
  - a. if a CPM Group Session for a CPM Pre-defined Group or a CPM Ad-hoc Group has as many as or less than specified Participants left the CPM Controlling Function SHALL remove any remaining Participant from the CPM Session according to Section 9.2.11 "*Participant Removing Request*" and release the CPM Session. The possible values should be 0 or 1.
  - b. If the CPM Session is an CPM Group Session for a CPM Ad-hoc Group and the originator of the CPM Session leaves the CPM Session then the CPM Controlling Function SHALL remove the rest of the Participants from the CPM Session it hosts according to Section 9.2.11 "*Participant Removing Request*" and release the CPM Session;

## 9.2.8 CPM Group Session Modification

Upon receiving a SIP re-INVITE request (i.e. an INVITE request with an existing session-id in the Request-URI, including a new SDP offer) the CPM Controlling Function:

1. SHALL validate that the new media parameters in the SIP re-INVITE request are acceptable by the CPM Controlling Function according to service provider policy. If not acceptable SHALL return a SIP 488 "Not Acceptable Here" response according to the rules and procedures of [RFC3261].  
Otherwise, continue with the rest of the steps;
2. In case the CPM Group Session has been established on behalf of a CPM Pre-defined Group, SHALL perform actions to verify that the authenticated originator's CPM Address of the CPM User who initiated the request is authorized for the request by checking the <allow-media-handling> element as defined in [OMA-XDM-Group] according to CPM Pre-defined Group policy. If not authorized, the CPM Controlling Function SHALL return a SIP 403 "Forbidden" response and SHALL include a Warning header with the warning text set to "122 Function not allowed" in the response according to the rules and procedures of [RFC3261].  
Otherwise, continue with the rest of steps;
3. SHALL send a session modification request to the other Participants of the CPM Group Session. The CPM Controlling Function:
  - a. SHALL generate a SIP re-INVITE request according to the rules and procedures of [RFC3261];
  - b. SHALL include a MIME SDP body based on the received SDP offer, as described in section 5.2.1.2 "*SDP Handling at Intermediate Nodes*";
  - c. SHALL send the SIP re-INVITE request towards the CPM Group Session Participants according to the rules and procedures of SIP/IP core.
4. SHALL determine based on service provider policy the minimum number of Participants that must accept the session modification in order to allow the modification to proceed:
  - a. If enough Participants have agreed to the session modification, SHALL generate a SIP 200 "OK" response as follows:
    - i. Include a MIME SDP body as a SDP answer as described in section 5.2.1.3 "*SDP Handling at Terminating Nodes*" ; and,
    - ii. Send the SIP 200 "OK" response to the SIP/IP core along the signalling path.

- b. If not enough Participants have accepted the session modification, SHALL send a 488 “Not Acceptable Here” response and send a SIP re-INVITE request to those Participants that had accepted the session modification, in order to bring the session back to the original session media parameters.

NOTE: Service provider policy determines how to handle the sessions when different participants accept different media types.

Upon receiving a SIP ACK request, the CPM Controlling Function SHALL modify the Media Plane for all CPM Group Session Participants who accepted the CPM Session modification as specified in section 9.2.12 “*Media Plane Handling*”;

## 9.2.9 Group Session Ending Request

When the CPM Controlling Function finds that the CPM Group Session SHOULD be released based on the CPM release policy described below, the CPM Controlling Function SHALL remove all the Participants in the CPM Group Session as specified in section 9.2.11 “*Participant Removing Request*”.

The CPM Controlling Function SHALL support the following operator configurable variables as defined in [OMA-XDM-Policy] together with the possible values shown in parentheses:

auto-release (true/false)

1. When the initiator leaves the CPM Session and auto-release is true the CPM Controlling Function SHALL remove the rest of the Participants from the CPM Group Session for a CPM Pre-defined Group and release the CPM Session;
2. If false the CPM Controlling Function SHALL NOT remove the rest of the Participants from the CPM Group Session for a CPM Pre-defined Group nor release the CPM Group Session when the initiator leaves the CPM Session.

session-max-length (seconds)

1. If the CPM Group Session has lasted the specified amount of seconds the CPM Controlling Function SHALL release the CPM Group Session.

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

1. If a CPM Group Session for a CPM Pre-defined Group or a CPM Ad-hoc Group has as many as or less than the specified Participants left the CPM Controlling Function SHALL release the CPM Group Session. The possible values are 0 or 1.

NOTE: Service provider policy defines the values of these variables for CPM Ad-Hoc Group Sessions.

The release policy SHALL include the following:

1. The CPM Controlling Function SHALL remove the rest of the Participants from the CPM Group Session it hosts and release the CPM Group Session:
  - a. If the CPM Group Session is an Ad-hoc Group Session and the initiator of the CPM Group Session leaves according to service provider policy;
  - b. If the CPM Group Session is a CPM Pre-defined Group Session and the initiator of the CPM Group Session leaves and the auto-release has the value "true";
  - c. If the CPM Group Session is a CPM Pre-defined or Ad-hoc Group Session and there are as many as or less than the "number-of-remaining-participants" Participants in the CPM Group Session; or
  - d. If the CPM Group Session has lasted longer than the session-max-length variable specifies;

## 9.2.10 Create Session with a Participant

When the CPM Controlling Function needs to set up a session with a CPM Group Session Participant, CPM Controlling Function:

1. SHALL generate an initial SIP INVITE request according to the rules and procedures of [RFC3261] with the following clarifications:

2. SHALL include an Accept-Contact header with the CPM Feature Tag '3gpp-service.ims.icsi.oma.cpm.session' if an Accept-Contact header has been received in the incoming CPM Session Invitation to start the CPM Group Session but does not contain a '3gpp-service.ims.icsi.oma.cpm.session' CPM Feature Tag, according to the rules and procedures of [RFC3841];
3. SHALL copy the values received in each Accept-Contact header of the incoming CPM Session Invitation to start the CPM Group Session to a corresponding Accept-Contact header in the SIP INVITE request, if any Accept-Contact headers are received;
4. SHALL include in the Contact header of the SIP INVITE request as CPM Group Session Identity the contact address of the conference and the CPM feature-tag '3gpp-service.ims.icsi.oma.cpm.session' and the "isfocus" feature parameter;
5. SHOULD include the Session-Expires header with the refresher parameter set to 'uas' according to the rules and procedures of [RFC4028];
6. SHALL include the Supported header set to "timer";
7. SHALL include value 'id' in a Privacy header according to the rules and procedures of [RFC3325], if anonymity is requested with the "Privacy: id" header in the incoming CPM Session Invitation to start the CPM Group Session;
8. SHALL include a MIME SDP body as a SDP offer based on the received SDP offer as described in section 5.2.1.2 "SDP Handling at Intermediate Nodes"
9. SHALL include the authenticated originator's CPM Address as specified in section 6.1 "Authenticated Originator's CPM Address" as follows:
  - a. with the URI and Display name set to the CPM Group Session Identity in the case of a CPM Group Session for a CPM Ad-hoc Group Session; or,
  - b. with the URI and Display name set to the CPM Pre-defined Group address in the case of a CPM Group Session for a CPM Pre-defined Group;
10. SHALL set the Request-URI to the CPM Address of the Participant to be invited;

NOTE: If the request is extending an existing CPM 1-1 Session to a CPM Group Session, the Request-URI will contain the public GRUU of the CPM Client on which the CPM Session is being extended.

11. SHALL include a Referred-By header with the authenticated originator's CPM Address present in the incoming CPM Session Invitation to start the CPM Group Session;
  12. SHALL include the Conversation-ID, Contribution-ID and InReplyTo-Contribution-ID headers and values received in the incoming CPM Session Invitation to start the CPM Group Session;
  13. MAY include the "Subject" header associated with the group if it is a CPM Pre-defined Group;
- NOTE: The Subject header of the CPM Pre-defined Group has precedence over the Subject header received in the incoming CPM Session Invitation to start the CPM Group Session.

14. SHALL send the SIP INVITE request towards the SIP/IP core according to the rules and procedures of the SIP/IP core.

Upon receiving an error response that indicates that the recipient is not a CPM subscriber, e.g. a SIP 488 "Not Acceptable Here" response, the CPM Controlling Function SHALL send the SIP INVITE request to the ISF as described in section 6.5 "Communicating with the ISF". Responses coming from the IWF are treated the same way as responses coming from CPM Participants.

Upon receiving SIP 200 "OK" response for the SIP INVITE request the CPM Controlling Function SHALL check whether privacy is allowed in this CPM Group, when anonymity is requested with the Privacy header containing the tag "id". If not allowed, the CPM Controlling Function SHOULD release the CPM Client from the CPM Session immediately as specified in 9.2.11 "Participant Removing Request". Allowing privacy in the group is defined using <allow-anonymity> element as specified in [OMA-XDM-Group]. If allowed, provide anonymization according to [RFC3323] and [RFC3325] and continue with the rest of the steps;

Upon receiving a SIP ACK request for the SIP INVITE request the CPM Controlling Function:



1. SHALL interact with the Media Plane as specified in 9.2.12 “Media Plane Handling”;
2. SHALL send a notification to the CPM Clients, which have subscribed to the Participant information that an invited CPM User has joined in the CPM Group Session, as specified in section 9.2.14.2 “Sending Participant Information Notifications”.

## 9.2.11 Participant Removing Request

When a Participant needs to be removed from the CPM Group Session, the CPM Controlling Function:

1. SHALL generate a SIP BYE request according to the rules and procedures of [RFC3261];
2. SHALL send the SIP BYE request towards the Participant according to the rules and procedures of the SIP/IP core;
3. SHALL release the Media Plane resources associated with the Participant being removed.

Upon receiving a SIP 200 "OK" for the SIP BYE request, the CPM Controlling Function SHALL send a notification to the Participants that have subscribed to the Group Session information, to indicate that a CPM User has left the CPM Group Session, as specified in section 9.2.14.2 “Sending Participant Information Notifications”.

## 9.2.12 Media Plane Handling

The CPM Controlling Function bridges Media Streams for CPM Group Session Participants.

### 9.2.12.1 Media Plane Handling for MSRP Sessions

The CPM Controlling Function relays MSRP Media Streams between originating network and terminating networks. In general, the CPM Controlling Function:

1. SHALL maintain a MSRP session for each participant who accepted the MSRP session;
2. SHALL distribute received MSRP messages to each participant who accepted the MSRP session.

To establish the MSRP connection, the CPM Controlling Function:

1. SHALL act as MSRP client for sending MSRP SEND request according to [draft-ietf-simple-msrp-acm];
2. SHALL act as an "active" or “passive” endpoint according to [draft-ietf-simple-msrp-acm]; and
3. SHALL establish the MSRP connection towards each participant who accepted the MSRP session according to the MSRP connection parameters in the SDP answer received in the 200 “OK” response according to [draft-ietf-simple-msrp-acm];

Upon receiving an MSRP SEND request, the CPM Controlling Function:

1. SHALL generate and send MSRP 200 OK response to the MSRP SEND request;
2. SHALL duplicate the MSRP SEND request for each CPM Group member with the following modifications according to the rules and procedures of [RFC4975]:
  - a. SHALL modify the To-Path header according to the MSRP URI(s) received in the answer SDP from the CPM Group member in accordance with rules and procedures of [RFC4975];
  - b. SHALL modify the From-Path header to the CPM Controlling Function’s own MSRP URI, according to the rules and procedures of [RFC4975];
3. SHALL send the MSRP SEND requests towards each participant who accepted the MSRP session (both CPM Users and/or non-CPM Users) excluding the one that sent the MSRP SEND request via established MSRP connections.

### 9.2.12.2 Media Plane Handling for RTP/RTSP Sessions

The CPM Controlling Function SHALL establish RTP sessions and relay RTP and RTCP packets between originating network and terminating networks according to the rules and procedures of [RFC3550]. In general, the CPM Controlling Function:

1. SHALL maintain a RTP session for each CPM Group member who accepted the RTP session;
2. SHALL relay or distribute received RTP and RTCP to each CPM Group member who accepted the RTP session.

### 9.2.13 Pseudonyms in a CPM Group Session

The CPM Controlling Function maintains information about Pseudonyms of all the Participants in a session. The purpose is to guarantee that a Pseudonym is unique in a session.

When the CPM Controlling Function receives a SIP INVITE request and the CPM User requests anonymity by adding privacy type "id" to the Privacy header as defined in [RFC3325] or the CPM Controlling Function 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 CPM User requests anonymity by adding privacy type "id" to the Privacy header as defined in [RFC3325], the CPM Controlling Function SHALL check the 'From' header field values against the entries in the CPM Controlling Function mapping for the session and

1. If the 'From' header field values are unique, the CPM Controlling Function SHALL store the 'From' header field values for the joining User.
2. If the 'From' header field is NOT unique, the CPM Controlling Function SHALL assign a modified/changed values of the 'From' header field to make it unique for the joining User.

NOTE: When an CPM Controlling Function checks the 'From' header field e.g. <bob><sip:anonymous@anonymous.invalid>" and this field is not unique in the CPM Group Session, then the CPM Controlling Function could modify it to <bob-X><sip:anonymousX@anonymous.invalid>, where X could be any value. This is an example and the exact form of modified Pseudonym is a matter of service provider policy.

If the CPM user is subscribed to the Participant Information notification, the CPM Controlling Function:

1. SHALL insert in the Participant Information 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.

### 9.2.14 Participant Information

#### 9.2.14.1 CPM Group Session Participant Information Request

Upon receiving a SIP SUBSCRIBE request with the Event header set to "conference" according to the rules and procedures of [RFC4575], the CPM Controlling Function:

1. SHALL, if the Request-URI contains a CPM Group Session Identity, check whether the CPM Group Session Identity in the Request-URI is owned by the CPM Controlling Function. If not, the CPM Controlling Function SHALL return a SIP 404 "Not found" response;  
Otherwise continue with the rest of the step;
2. SHALL verify the authenticated originator's CPM Address and authorize the request according to CPM Pre-defined Group policy and/or service provider policy and if it is not authorized the CPM Controlling Function SHALL return a SIP 403 "Forbidden" response and SHALL include a Warning header with the warning text set to "127 Service not authorised" in the response according to the rules and procedures of [RFC3261].

Otherwise, continue with the rest of the steps;

NOTE: Service provider policy, e.g. number of simultaneous subscriptions exceeded, may cause the CPM Controlling Function to reject the subscription request.

3. In case of CPM Ad-hoc Group, SHALL check if the requesting CPM User is a Participant. If not, the CPM Controlling Function SHALL return a SIP 403 "Forbidden" response and SHALL include an Warning header with the warning text set to "122 Function not allowed" in the response according to the rules and procedures of [RFC3261].

Otherwise, continue with the rest of the steps;

4. In case of CPM Pre-defined Group, SHALL check whether the authenticated originator's CPM Address is allowed to subscribe to Participant information according to the <allow-conference-state> action as specified in [OMA-XDM-Group] and if user is a Participant in the CPM Group Session. If it is not allowed or if the requesting CPM User is not a Participant, the CPM Controlling Function SHALL return a SIP 403 "Forbidden" response and SHALL include an Warning header with the warning text set to "122 Function not allowed" in the response according to the rules and procedures of [RFC3261].

Otherwise, continue with the rest of the steps;

5. SHALL create a subscription to the conference state of the CPM Group Session according to the rules and procedures of [RFC3265] and [RFC4575] and SHALL generate a SIP 200 "OK" response to the SIP SUBSCRIBE request according to the rules and procedures of [RFC3265] and [RFC4575];
6. SHALL set the Contact header of the SIP response to the address of the CPM Controlling Function;
7. SHALL send the SIP response according to the rules and procedures of the SIP/IP core;
8. SHALL generate an initial SIP NOTIFY request as specified in section 9.2.14.2 "*Sending Participant Information Notifications*";
9. SHALL send the SIP NOTIFY request to the CPM Client according to the rules and procedure of the SIP/IP core.

When a change in the subscribed state occurs, the CPM Controlling Function SHOULD generate and send a SIP NOTIFY request as specified in section 9.2.14.2 "*Sending Participant Information Notifications*" and according to the rules and procedures of SIP/IP core respectively.

When needed the CPM Controlling Function SHALL terminate the subscription and indicate it to the CPM Client as described in the section 9.2.14.3 "*Terminating the Subscription*".

### 9.2.14.2 Sending Participant Information Notifications

When the CPM Controlling Function needs to notify a Participant of changes to the Participant Information, it SHALL generate a SIP NOTIFY request according to the rules and procedures of [RFC3265] with the following clarifications:

1. When reporting changes in the Participant information, the CPM Controlling Function SHALL use partial notification according to the rules and procedures of [RFC4575];
2. The CPM Controlling Function SHALL include a MIME application/conference-info+xml body according to the rules and procedures of [RFC4575] with the following limitations:
  - a. The CPM Controlling Function SHALL include the CPM Group Session Identity in the <entity> attribute of the <conference-info> element;
  - b. The CPM Controlling Function SHALL include a <user> element. The "user" element:
    - i. SHALL include the <entity> attribute. The <entity> attribute:
      - SHALL for the originating CPM Client include the authenticated originator's CPM Address of the initial SIP INVITE request, if the Participant has not requested privacy; or,
      - SHALL for the originating CPM Client include the from header, if the Participant has requested privacy; and,
      - SHALL for an invited CPM Client include the identity used in the URI-list for the Invited CPM Client to a CPM Ad-hoc Group Session or the identity used in the CPM Group definition in case of a Predefined Group Session, if the Participant has not requested privacy; or,

- SHALL for an invited CPM Client include an anonymous identity as specified in [RFC4575], if the Participant has requested privacy;
  - 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 of [OMA-SIMPLE-IM].
- ii. 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 step a;
  - iii. SHALL include a single <endpoint> element. The <endpoint> element
    - SHALL include the <entity> attribute;
    - SHALL include the <status> element. The <status> element SHOULD have one of the following values:
      - a. "connected", when the Participant has joined to the CPM Group Session; or,
      - b. "disconnected", when the Participant has left the CPM Group Session since the last SIP NOTIFY request was sent.

Next, The CPM Controlling Function SHALL send the SIP NOTIFY request according to the rules and procedures of the SIP/IP core.

The CPM Controlling Function SHOULD limit the rate of SIP NOTIFY requests sent towards a Participant.

NOTE: How a CPM Controlling Function limits the rate of SIP NOTIFY requests sent towards the CPM Client is out of scope of this specification.

### 9.2.14.3 Terminating the Subscription

The CPM Controlling Function:

1. SHALL terminate all subscriptions for Participant information for the CPM Group Session when the CPM Group Session is released and not accept any re-subscriptions;
2. MAY terminate the subscription for an CPM Client when it leaves the CPM Session;
3. For each subscription that shall be terminated the CPM Controlling Function:
  - a. SHALL generate a SIP NOTIFY request according to the 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 CPM Client according to the rules and procedures of SIP/IP core.

## 9.3 CPM File Transfer Handling

When the CPM Controlling Function receives a SIP INVITE request with the CPM Feature Tag '3gpp-service.ims.icsi.oma.cpm.filetransfer', it SHALL execute the processing in section 9.1.2 "*Large Message Mode CPM Standalone Message*".

NOTE: The SDP for Large Message Mode CPM Standalone Message and CPM File Transfer is different but the processing in the CPM Controlling Function is the same.

## Appendix A. Change History

(Informative)

### A.1 Approved Version 1.0 History

Reference	Date	Description
OMA-TS-CPM_Conv_Funct-V1_0-20120612-A	12 Jun 2012	Status changed to Approved by TP: OMA-TP-2012-0221R01-INP_CPM_V1_0_ERP_for_Final_Approval

## Appendix B. Static Conformance Requirements (Normative)

The notation used in this appendix is specified in [OMA-SCRRULES].

### B.1 SCR for CPM Client

Item	Function	Reference	Requirement
CPM-CF-C-001-M	Registering	7.1	
CPM-CF-C-002-M	Sending a Pager Mode CPM Standalone Message to one recipient	7.2.1.1	
CPM-CF-C-003-M	Sending a Pager Mode CPM Standalone Message to a CPM Ad-hoc Group	7.2.1.1	
CPM-CF-C-004-M	Sending a Pager Mode CPM Standalone Message to a CPM Pre-defined Group	7.2.1.1	
CPM-CF-C-005-M	Sending a Large Message Mode CPM Standalone Message to one recipient	7.2.1.2	
CPM-CF-C-006-M	Sending a Large Message Mode CPM Standalone Message to a CPM Ad-hoc Group	7.2.1.2	
CPM-CF-C-007-M	Sending a Large Message Mode CPM Standalone Message to a CPM Pre-defined Group	7.2.1.2	
CPM-CF-C-008-O	Forwarding/Including Stored Data without Downloading to the CPM Client – Pager Mode	7.2.1.4	
CPM-CF-C-009-O	Forwarding/Including Stored Data without Downloading to the CPM Client – Large Message Mode	7.2.1.4	
CPM-CF-C-010-M	Receiving Pager Mode CPM Standalone Message	7.2.2.1	
CPM-CF-C-011-M	Receiving Large Message Mode CPM Standalone Message	7.2.2.2	
CPM-CF-C-012-M	Subscribing to Deferred CPM Message Information	7.2.3.1	
CPM-CF-C-013-M	Handling selected Deferred CPM Messages before expiry	7.2.3.2.1	
CPM-CF-C-014-M	Retrieving all Deferred CPM Messages before expiry	7.2.3.2.1	
CPM-CF-C-015-O	Retrieving CPM Standalone Messages after expiry	7.2.3.2.2	
CPM-CF-C-016-O	Handling expiry notifications for Deferred CPM Messages	7.2.3.3	
CPM-CF-C-017-M	Out-of-band notification handling	7.2.3.4.1	
CPM-CF-C-018-M	In-band notification handling	7.2.3.4.2	

Item	Function	Reference	Requirement
CPM-CF-C-019-M	Generate Delivery Notification	7.2.4.1	
CPM-CF-C-020-M	Generate Read Report	7.2.4.2	
CPM-CF-C-021-M	Receive Delivery Notification	7.2.4.3	
CPM-CF-C-022-M	Receive Read Report	7.2.4.4	
CPM-CF-C-023-M	Initiating a CPM 1-1 Session	7.3.1.1	
CPM-CF-C-021-M	Initiating a CPM Group Session for a CPM Ad-hoc Group	7.3.1.2	
CPM-CF-C-022-M	Initiating a CPM Group Session for a CPM Pre-defined Group	7.3.1.3	
CPM-CF-C-023-M	Join a CPM Group Session for a Join-in Group	7.3.1.4	
CPM-CF-C-024-M	Receiving a CPM Session Initiation	7.3.2	
CPM-CF-C-025-M	Extending a CPM 1-1 Session to a CPM Group Session	7.3.3	
CPM-CF-C-026-M	Sending a CPM 1-1 Session Closure	7.3.4.1	
CPM-CF-C-027-M	Leaving a CPM Group Session	7.3.4.2	
CPM-CF-C-028-M	Receiving a CPM Session Closure	7.3.4.3	
CPM-CF-C-029-M	Inviting one User to existing CPM Group Session	7.3.5	
CPM-CF-C-030-M	Inviting more than one User to existing CPM Group Session	7.3.5	
CPM-CF-C-031-M	Removing one Participant from a CPM Group Session	7.3.6	
CPM-CF-C-032-O	Removing more than one Participant from a CPM Group Session	7.3.6	
CPM-CF-C-033-M	Modifying a CPM Session	7.3.7	
CPM-CF-C-034-M	CPM Client receiving an CPM Session modification request	7.3.8	
CPM-CF-C-035-M	CPM Session Media Plane Handling – MSRP	7.3.9.1	
CPM-CF-C-036-M	CPM Session Media Plane Handling – RTP/RTCP	7.3.9.2	
CPM-CF-C-037-M	Subscribe to Receiving Participant Information	7.3.10.1	
CPM-CF-C-038-M	Receive Participant Information Notification	7.3.10.2	
CPM-CF-C-039-M	Initiating a CPM File Transfer to a single recipient	7.4.1	
CPM-CF-C-040-M	Initiating a CPM File Transfer to a CPM Ad-hoc Group	7.4.1	
CPM-CF-C-041-M	Initiating a CPM File Transfer to a CPM Pre-defined Group	7.4.1	

Item	Function	Reference	Requirement
CPM-CF-C-042-M	Receiving a CPM File Transfer	7.4.2	
CPM-CF-C-043-M	Releasing a CPM File Transfer	7.4.3	

## B.2 SCR for CPM Participating Function

Item	Function	Reference	Requirement
CPM-CF-PF-S-001-M	Handle registration events	8.1	
CPM-CF-PF-S-002-M	Handle Pager Mode CPM Standalone Message in originating network	8.2.1.1	
CPM-CF-PF-S-003-O	Fetch and include objects from Message Storage Server	8.2.1.1	
CPM-CF-PF-S-004-O	Extend Pager Mode to Large Message Mode	8.2.1.1	
CPM-CF-PF-S-005-M	Handle Large Message Mode CPM Standalone Message in the originating network	8.2.1.2	
CPM-CF-PF-S-006-O	Fetch and include objects from Message Storage Server	8.2.1.2	
CPM-CF-PF-S-007-M	Handle Disposition Notification in the originating network	8.2.1.3	
CPM-CF-PF-S-008-M	Handle a CPM Session Invitation in the originating network	8.2.2.1	
CPM-CF-PF-S-009-M	Handle a SIP CANCEL request in the originating network	8.2.2.2	
CPM-CF-PF-S-010-M	Handle a SIP BYE request in the originating network	8.2.2.3	
CPM-CF-PF-S-011-M	Handle SIP session expiry in the originating network	8.2.2.4	
CPM-CF-PF-S-012-M	Handle CPM Session modification request in the originating network	8.2.2.5	
CPM-CF-PF-S-013-M	Handle CPM File Transfer initiation in the originating network	8.2.3.1	
CPM-CF-PF-S-014-M	Handle CPM File Transfer closing in the originating network	8.2.3.2	
CPM-CF-PF-S-015-M	Handle Pager Mode CPM Standalone Message in the terminating network	8.3.1.1	
CPM-CF-PF-S-016-M	Handle Large Message Mode CPM Standalone Message in the terminating network	8.3.1.2	
CPM-CF-PF-S-017-O	Replacing Media with a reference	8.3.1.3	
CPM-CF-PF-S-018-M	Sending disposition	8.3.1.5	



Item	Function	Reference	Requirement
	notifications		
CPM-CF-PF-S-019-M	Defer CPM Standalone Messages	8.3.1.6	CPM-CF-PF-S-020-O OR CPM-CF-PF-S-021-O OR CPM-CF-PF-S-022-O
CPM-CF-PF-S-020-O	Pushing Deferred CPM Messages	8.3.1.6.2	
CPM-CF-PF-S-021-O	Sending notifications and awaiting CPM Client action	8.3.1.6.3	
CPM-CF-PF-S-022-O	Delivering Deferred CPM Message to the Message Storage Server	12	
CPM-CF-PF-S-023-M	Handle Deferred Message Information Request	8.3.1.6.5	
CPM-CF-PF-S-024-M	Handling Deferred CPM Messages on expiry time	8.3.1.6.8	
CPM-CF-PF-S-025-O	Sending expiry notifications	8.3.1.6.8	
CPM-CF-PF-S-026-M	Handle a CPM Session Invitation in the terminating network	8.3.2.1	
CPM-CF-PF-S-027-M	Handle a SIP CANCEL request in the terminating network	8.3.2.2	
CPM-CF-PF-S-028-M	Handle a SIP BYE request in the terminating network	8.3.2.3	
CPM-CF-PF-S-029-M	Handle SIP session expiry in the terminating network	8.3.2.4	
CPM-CF-PF-S-030-M	Handle CPM Session modification request in the terminating network	8.3.2.5	
CPM-CF-PF-S-031-M	Handle CPM File Transfer initiation in the terminating network	8.3.3.1	
CPM-CF-PF-S-032-M	Handle CPM File Transfer closing in the terminating network	8.3.3.2	
CPM-CF-PF-S-033-O	Record CPM Standalone Message	8.5.1	
CPM-CF-PF-S-034-O	Record CPM Session	8.5.2	
CPM-CF-PF-S-035-O	Record CPM File Transfer	8.5.3	

### B.3 SCR for CPM Controlling Function

Item	Function	Reference	Requirement
CPM-CF-CF-S-001-M	Pager Mode CPM Message to CPM Ad-Hoc Group	9.1.1	
CPM-CF-CF-S-002-M	Pager Mode CPM Message to CPM Pre-defined Group	9.1.1	
CPM-CF-CF-S-003-M	Large Message Mode CPM Message to CPM Ad-Hoc Group	9.1.2	
CPM-CF-CF-S-004-M	Large Message Mode CPM Message to CPM Pre-defined	9.1.2	

Item	Function	Reference	Requirement
	Group		
CPM-CF-CF-S-005-M	Disposition Notification Handling	9.1.3	
CPM-CF-CF-S-006-M	Ad-hoc Session Invitation Request	9.2.1	
CPM-CF-CF-S-007-M	Pre-defined Group Session Invitation Request	9.2.1	
CPM-CF-CF-S-008-M	Session Cancellation Request	9.2.2	
CPM-CF-CF-S-009-M	Joining Pre-defined Group Session Request	9.2.3	
CPM-CF-CF-S-010-M	Rejoining Group Session Request	9.2.4	
CPM-CF-CF-S-011-M	Adding Participants Request	9.2.5	
CPM-CF-CF-S-012-M	Removing Participant Request	9.2.6	
CPM-CF-CF-S-013-M	Session Leaving Request	9.2.7	
CPM-CF-CF-S-014-M	Group Session Modification	9.2.8	
CPM-CF-CF-S-015-M	Group Session Ending Request	9.2.9	
CPM-CF-CF-S-016-M	Group Session Media Plane Handling – MSRP	9.2.12.1	
CPM-CF-CF-S-017-M	Group Session Media Plane Handling – RTP/RTCP	9.2.12.2	
CPM-CF-CF-S-018-O	Pseudonyms in a CPM Group Session	9.2.13	
CPM-CF-CF-S-019-M	CPM Group Session Information Request	9.2.14.1	
CPM-CF-CF-S-020-M	Sending Participant Information notifications	9.2.14.2	
CPM-CF-CF-S-021-M	Terminating the subscription	9.2.14.3	
CPM-CF-CF-S-022-M	CPM File Transfer Handling	9.3	

## Appendix C. CPM-defined SIP Headers

### C.1 Header Definitions

#### C.1.1 Conversation-ID

A Conversation-ID header in a SIP MESSAGE request or SIP INVITE request indicates the CPM Conversation Identity associated with a CPM Standalone Message, CPM File Transfer, or CPM Session.

A sending CPM functional component MUST include a Conversation-ID header in each SIP MESSAGE request or SIP INVITE request that are associated with a CPM Standalone Message, a CPM File Transfer, or a CPM Session. The sending CPM functional component MUST ensure that the included CPM Conversation Identity is globally unique. Use of cryptographically random identifiers ([RFC4086]) in the generation of Conversation-IDs is RECOMMENDED. Conversation-IDs are case-sensitive and are simply compared byte-by-byte.

Examples:

```
Conversation-ID: f81d4fae-7dec-11d0-a765-00a0c91e6bf6
```

#### C.1.2 Contribution-ID

A Contribution-ID header in a SIP MESSAGE request or SIP INVITE request indicates the CPM Contribution Identity associated with a CPM Standalone Message, CPM File Transfer, or CPM Session.

A sending CPM functional component MUST include a Contribution-ID header in each SIP MESSAGE request or SIP INVITE request that are associated with a CPM Standalone Message, a CPM File Transfer, or a CPM Session. The sending CPM functional component MUST ensure that the included CPM Contribution Identity is unique within the context of the encompassing CPM Conversation. The algorithm to be used for creating a Contribution-ID SHALL follow the recommendations in [draft-session-id].

Example:

```
Contribution-ID: abcdef-1234-5678-90ab-cdef01234567
```

#### C.1.3 InReplyTo-Contribution-ID

An InReplyTo-Contribution-ID header in a SIP MESSAGE request or SIP INVITE request indicates the CPM Contribution Identity associated with a CPM Standalone Message, CPM File Transfer, or CPM Session, to which this request is a reply to.

When a CPM User replies to a CPM Standalone Message, CPM File Transfer, or CPM Session, the replying CPM Client MUST include a InReplyTo-Contribution-ID header in the SIP MESSAGE request or SIP INVITE request associated with the reply CPM Standalone Message, the reply CPM File Transfer or the reply CPM Session, and populate it with the CPM Contribution Identity of the CPM Standalone Message, CPM File Transfer or CPM Session being replied to.

Example:

```
InReplyTo-Contribution-ID: 01234567-89ab-cdef-0123-456789abcdef
```

#### C.1.4 Session-Replaces

A Session-Replaces header in a SIP INVITE request carries the same CPM Contribution Identity associated with a previously established CPM 1-1 Session that should be replaced by the new CPM Session Invitation.

A sending CPM Client MUST include a Session-Replaces header in the SIP INVITE request that extends a CPM 1-1 Session into a CPM Group Session. This header will contain the value of the Contribution-ID sent in the original CPM 1-1 Session. The receiving CPM Client uses this value to end the previous session if it accepts the new session invitation.

Example:

```
Session-Replaces: abcdef-1234-5678-90ab-cdef01234567
```

## C.1.5 Message-Expires

A Message-Expires header in a SIP INVITE request to initiate a Large Message Mode CPM Standalone Message transfer carries the expiry time associated with the Large Message Mode CPM Standalone Message. It functions in the same manner as the Expires header for MESSAGE requests.

NOTE: A Message-Expires header in a SIP INVITE request that is not meant to initiate a Large Message Mode CPM Standalone Message transfer is to be ignored by the SIP UAS.

A sending CPM Client MUST include a Message-Expires header in each SIP INVITE request that starts the transfer of a Large Message Mode CPM Standalone Message if it wants to associate an expiry time with that Large Message Mode CPM Standalone Message. This header will contain the relative time after which the Large Message Mode CPM Standalone Message expires.

Example:

```
Message-Expires: 259200
```

## C.1.6 Message-UID

A Message-UID header in a SIP MESSAGE request, 200 OK SIP response or SIP BYE request indicates the Unique Identifier value as described in [OMA-CPM\_TS\_MessageStorage] of the associated CPM Standalone Message, CPM File Transfer History, or CPM Session History that is stored in the CPM User's network-based Message Storage.

When a CPM Standalone Message, CPM File Transfer History, or CPM Session History is stored by the CPM Participating Function in the CPM User's network-based Message Storage, the delivering CPM Participating Function MUST include a Message-UID header in each SIP MESSAGE request, 200 OK response or SIP BYE request associated with a CPM Standalone Message, a CPM File Transfer History, or a CPM Session History.

Examples:

```
Message-UID: 4392
```

When a CPM Standalone Message includes this header, the CPM Client SHALL store the value of this Message-UID header in conjunction with the received CPM Standalone Message, CPM File Transfer History or CPM Session History in a local storage. When synchronizing the messages on the locally stored in a device with the CPM User's Message Storage Server, the CPM Standalone Message having this value will not be retrieved again.

## C.2 ABNF for the CPM-defined SIP Headers

```
CPM-Headers = (Conversation-ID
               / Contribution-ID
               / InReplyTo-Contribution-ID
               / Session-Replaces
               / Message-Expires
               / Message-UID) CRLF
```

```
Conversation-ID = "Conversation-ID" HCOLON conversationid
conversationid = word
```

```
Contribution-ID = "Contribution-ID" HCOLON contributionid
contributionid = word
```

```
InReplyTo-Contribution-ID = "InReplyTo-Contribution-ID" HCOLON
                             contributionid
```

```
Session-Replaces = "Session-Replaces" HCOLON sessionreplaces
sessionreplaces = word
```

```
Message-Expires = "Message-Expires" HCOLON delta-seconds
```

Message-UID = "Message-UID" HCOLON uniqueid

NOTE 1: The tokens "CRLF", "HCOLON", "word" and "delta-seconds" are defined in [RFC3261].

NOTE 2: The token "uniqueid" is defined in [RFC3501].

## Appendix D. 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 CPM Client, the CPM Participating Function and the CPM Controlling Function.

The CPM Client, the CPM Participating Function and the CPM Controlling Function shall implement the User-Agent and Server headers, according to the rules and procedures of [RFC3261] with the clarifications in this subclause specific for CPM.

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 = CPM-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:

```
CPM-product = "CPM-" cpm-device-token (SLASH cpm-product-version)
CPM-device-token = "client" | "serv" token
CPM-product-version = "OMA1.0"
```

Example 1:

In this example CPM Client acting as UAC and the CPM Participating Function acting as UAS are OMA CPM release version 1.0 products. The CPM Client has inserted its own company and product name and version "Arena-Messaging1000/v1.01".

```
User-Agent: CPM-client/OMA1.0 Arena-Messaging1000/v1.01
```

```
Server: CPM-serv/OMA1.0
```

Example 2:

In this example both the CPM Participating Function acting as UAC and the CPM Client acting as UAS are OMA CPM release version 1.0 products.

```
User-Agent: CPM-serv/OMA1.0
```

```
Server: CPM-client/OMA1.0
```

## Appendix E. Examples of CPM-based Services

This appendix lists several examples of CPM-based Services. This list is not exhaustive and not intended to limit the development of further CPM-based Services.

### E.1 Video Share Service along with a pre-existing Voice Call

The video share service along with pre-existing voice call allows a User to share a video continuous media stream with another user, along with a pre-existing voice-call (CS-voice or VOIP).

The CPM User can decide to share pre-recorded or live video with his contact.

The video share CPM-based Service uses the `+g.3gpp.cs-voice` feature tag to identify itself and the service is defined in [GSMA IR.74], and, with some extensions to [GSMA IR.74], in [GSMA IR 84].

The video share CPM-based Service uses the following facilities offered by CPM:

- Registration services as described in sections 7.1 “*Registering at the SIP/IP Core*” and 8.1 “*Registration*”.
- CPM Session services as described in sections 7.3 “*CPM Session Handling*”, 7.3.9 “*Media Plane Handling for CPM Sessions*”, and 8.3.2 “*CPM Session Handling*”, with the following restrictions:
  - The CPM Client sends a SIP INVITE request and establishes a half duplex RTP session as described in [GSMA IR.74] including CPM Conversation Identity as describe in 7.3.1.1 “*Initiating a CPM I-1 Session*”
  - Only uni-directional video streams are supported.

A client uses SIP OPTIONS method to query video share service capability of terminating-party client(s), as described in [GSMA IR.74].

### E.2 Video Share Service without a pre-existing Voice Call

The video share service without a pre-existing voice call allows a User to share a video continuous media stream with another user without a pre-existing voice-call.

The CPM User can decide to share pre-recorded or live video with his contact.

The video share CPM-based Service uses the ICSI(s) and IARI(s) defined in [GSMA IR 84] to identify itself and the service is defined in [GSMA IR 84].

The video share CPM-based Service uses the following facilities offered by CPM:

- Registration services as described in sections 7.1 “*Registering at the SIP/IP Core*” and 8.1 “*Registration*”.
- CPM Session services as described in sections 7.3 “*CPM Session Handling*”, 7.3.9 “*Media Plane Handling for CPM Sessions*”, and 8.3.2 “*CPM Session Handling*”, with the following restrictions:
  - The CPM Client sends a SIP INVITE request and establishes a half duplex RTP session as described in [GSMA IR 84]including CPM Conversation Identity as describe in 7.3.1.1 “*Initiating a CPM I-1 Session*”
  - Only uni-directional video streams are supported.

A client uses SIP OPTIONS method to query video share service capability of terminating-party client(s), as described in [GSMA IR 84].

## Appendix F. The Parameters to be provisioned the CPM Service (Normative )

### F.1 OMA CPM Device Management general

This appendix describes the parameters that are needed for initiation of the CPM service, as well as continuous provisioning by service providers. These parameters are specified in a Client Provisioning Application Characteristics document (AC file) and a Device Management Object (DM MO). The bootstrap function specified in [OMA Client Provisioning] and [OMA DM] SHALL be used to enforce the security of provisioning. Existing parameters in [OMA Provisioning Content] and [OMA DM] are re-used; those without corresponding parameters are defined in this specification and to be registered in OMNA through OMA official registration procedures.

1. APPID (Application ID): The application characteristics name for this application, to be used by the DM Client to uniquely identify the application.
2. NAME: Application name. To be displayed on the client side. This parameter is specific for each service provider.
3. PROVIDER-ID: provides an identifier for the application service access point.
4. TO-NAPID: allows an application to refer to a network access point with a matching NAPID parameter. It is only possible to refer to network access points defined within the same provisioning document.
5. TO-APPREF: parameter links the APPLICATION characteristics to another secondary APPLICATION characteristic with a matching APPREF parameter.
6. Max Ad-hoc Group size: Maximum number of Participants allowed for a CPM Group Session for a CPM Ad-hoc Group.
7. Controlling Function URI: A SIP URI used for setting up a CPM Group Session for a CPM Ad-hoc Group or for sending a Pager Mode or Large Message Mode CPM Standalone Message to a CPM Ad-hoc Group.
8. Message Storage Server URI: A URI for CPM user's message store.
9. CPMDeferredMsgMgmtURI: A SIP URI for CPM user's Deferred CPM Message function

These parameters are to be registered in OMNA.

These parameters SHALL be obtained via the DM-1 reference point, from the data which is provisioned to the DM Client as specified in [OMA Provisioning Content] and [OMA DM].



## Appendix G. Interoperability with OMA SIMPLE IM Clients

The CPM Participating Function MAY support interoperability with OMA SIMPLE IM clients, in order to support operators in deployments where an operator wants to support OMA SIMPLE IM clients with the CPM Enabler. In that case the CPM Participating Function SHALL act in the following manner:

- When delivering a CPM request to an OMA SIMPLE IM Client, the terminating CPM Participating Function SHALL change in the CPM request the CPM Feature Tags so that it contains the IM Enabler identifier (i.e. +g.oma.sip-im), and for Large Message Mode CPM Standalone Messages, the +g.oma.sip-im.large-message feature tag. The CPM Participating Function SHALL NOT fetch the IM user preferences or apply any IM services to the incoming request, but shall only deliver the request towards the IM Client.
- When receiving an OMA SIMPLE IM request, a CPM Participating Function SHALL change in the OMA SIMPLE IM request the IM Enabler identifier to the CPM Enabler identifier and appropriate CPM Enabler feature tags before routing the request. The CPM Participating Function SHALL also add Conversation-ID and Contribution-ID headers as defined in section 5.2.3.1 of [OMA-CPM-SD].

NOTE 1: Only interoperability with online OMA SIMPLE IM clients is supported. This means that OMA SIMPLE IM clients can receive CPM requests and that online OMA SIMPLE IM clients can submit OMA SIMPLE IM requests towards the CPM Enabler. More advanced OMA SIMPLE IM functionalities, such as messages deferral for OMA SIMPLE IM clients, is not possible with the CPM Enabler.

NOTE 2: The above bullets require functionality in the SIP/IP core to send incoming CPM Standalone Messages, CPM Standalone Message disposition notifications, CPM File Transfers and CPM Sessions destined towards an OMA SIMPLE IM Client and incoming IM Messages, IM File Transfers and IM Sessions destined to a CPM Client to the CPM Participating Function.

NOTE 3: A network which deployed OMA SIMPLE IM only and which is to interoperate with CPM, is assumed to be able to deliver CPM requests to OMA SIMPLE IM Clients

**Table 2: SIMPLE IM Enabler Feature Tags Mapping to/from OMA CPM Enabler Identifiers**

OMA SIMPLE IM based services	Format and values of OMA IM Enabler Identifiers	Format and values of OMA CPM Enabler Identifier and Features Tags
SIMPLE IM Pager Mode, File Transfer, IM Session	In Contact and Accept-Contact headers: +g.oma.sip-im	In Contact and Accept-Contact headers: +g.3gpp.icsi-ref="urn:urn-7:3gpp-service.ims.icsi.oma.cpm.msg" or +g.3gpp.icsi-ref="urn:urn-7:3gpp-service.ims.icsi.oma.cpm.filetransfer" or +g.3gpp.icsi-ref="urn:urn-7:3gpp-service.ims.icsi.oma.cpm.session"  In the P-Asserted-Service header: urn:urn-7:3gpp-service.ims.icsi.oma.cpm.msg or urn:urn-7:3gpp-service.ims.icsi.oma.cpm.filetransfer or urn:urn-7:3gpp-service.ims.icsi.oma.cpm.session
SIMPLE IM Large Message Mode	In Contact and Accept-Contact headers: +g.oma.sip-im; +g.oma.sip-im.large-message	In Contact and Accept-Contact headers: +g.3gpp.icsi-ref="urn:urn-7:3gpp-service.ims.icsi.oma.cpm.largemsg"  In the P-Asserted-Service header:

		urn:urn-7:3gpp-service.ims.icsi.oma.cpm.largemsg
--	--	--

## Appendix H. CPM Feature Tags

This Appendix describes the CPM Feature identifiers used in this Technical Specification.

### H.1 CPM Feature Identifiers

The CPM Feature identifiers allow the SIP/IP core to immediately recognize the enabler being invoked in order to route the request to the right application server. CPM Feature identifiers are carried in feature tags as described in section H.3 “*Proposed Formats for CPM Feature Identifiers*”.

The CPM Enabler needs several identifiers in order to identify the signalling related to the CPM Enabler as it is processed by the CPM Client and the SIP/IP core as well as by the CPM Participating and Controlling Functions and to identify all the different features supported by the CPM Enabler.

The CPM Feature identifiers identify which CPM Feature the CPM Client is using or willing to use.

If the SIP/IP core corresponds to 3GPP/3GPP2 IMS, the CPM Feature identifiers are referred to as IMS Communication Service Identifiers, or ICSI.

When the 3GPP/3GPP2 IMS core receives the P-Preferred-Service header value, it verifies the value of this field and creates the P-Asserted-Service header value, as described in [3GPP TS 24.229] and deletes the P-Preferred-Service header value.

### H.2 CPM Client Behaviour

The CPM Client SHALL identify all the CPM Features it supports and the CPM-based Services it supports by including the feature tags identifying them in the **Contact header** when it registers as described in [RFC3840].

It SHALL also include the feature tag being used for a particular feature in the **Contact header** when it issues any other SIP request except in the SIP MESSAGE request which does not contain a Contact header.

The CPM Client SHALL also identify the particular CPM Feature as well as any CPM-based Service it wishes to use during a particular communication by including the feature tags identifying them in the **Accept-Contact** header as described in [RFC3841].

The CPM Client SHALL identify the particular CPM Feature it is using when it issues specific SIP requests by including the particular CPM Feature in the **P-Preferred-Service** header as described in [3GPP TS 24.229].

### H.3 Proposed Formats for CPM Feature Identifiers

When the SIP/IP core corresponds to 3GPP/3GPP2 IMS according to the rules and procedures of [3GPP TS 24.229]/[3GPP2 X.S0013.004], the CPM Feature identifier SHALL be set to:

1. +g.3gpp.icsi-ref="urn%3Aurn-7%3A3gpp-service.ims.icsi.oma.cpm.<cpm-feature>" when it is carried as a feature tag in a Contact or Accept-Contact header; and,
2. urn:urn-7:3gpp-service.ims.icsi.oma.cpm.<cpm-feature> when it is carried as a URN in a P-Preferred-Service or P-Asserted-Service header as described in [3GPP TS 24.229].

When the SIP/IP core is not 3GPP/3GPP2, it is recommended that the same values of the CPM Features identifiers be used as when the SIP/IP core corresponds to 3GPP/3GPP2 IMS in order to facilitate interoperability.

The CPM Feature identifier carried as a feature tag SHALL be used by CPM Clients and CPM Participating and Controlling Functions, as specified in the procedures in this document.

The CPM Feature identifier carried as a URN in a P-Preferred-Service header SHALL be used by CPM Clients and carried as a URN in a P-Asserted-Service header SHALL be used by CPM Participating and Controlling Functions, as specified in the procedures in this document, when the SIP/IP core corresponds to 3GPP/3GPP2 IMS.

The *<cpm-feature>* value in the CPM Feature identifier further identifies the CPM Feature being invoked as described in Table 3 below.

**Table 3: Formats for CPM Feature identifiers**

CPM Features	Format and values for Accept-Contact and Contact	Format and values for P-Preferred-Service and P-Asserted-Service
Pager Mode CPM Message	+g.3gpp.icsi-ref="urn%3Aurn-7%3A3gpp-service.ims.icsi.oma.cpm.msg"	urn:urn-7:3gpp-service.ims.icsi.oma.cpm.msg
Large Message Mode CPM Message	+g.3gpp.icsi-ref="urn%3Aurn-7%3A3gpp-service.ims.icsi.oma.cpm.largemsg"	urn:urn-7:3gpp-service.ims.icsi.oma.cpm.largemsg
CPM File Transfer	+g.3gpp.icsi-ref="urn%3Aurn-7%3A3gpp-service.ims.icsi.oma.cpm.filetransfer"	urn:urn-7:3gpp-service.ims.icsi.oma.cpm.filetransfer
CPM Session	+g.3gpp.icsi-ref="urn%3Aurn-7%3A3gpp-service.ims.icsi.oma.cpm.session"	urn:urn-7:3gpp-service.ims.icsi.oma.cpm.session
Deferred CPM Message	+g.3gpp.icsi-ref="urn%3Aurn-7%3A3gpp-service.ims.icsi.oma.cpm.deferred"	urn:urn-7:3gpp-service.ims.icsi.oma.cpm.deferred
CPM Notification	+g.3gpp.icsi-ref="urn%3Aurn-7%3A3gpp-service.ims.icsi.oma.cpm.systemmsg"	urn:urn-7:3gpp-service.ims.icsi.oma.cpm.systemmsg

## H.4 Client CPM-based Service Identification

A CPM-based Service SHALL be identified by its own feature tag. If the SIP/IP core corresponds to 3GPP/3GPP2 IMS, the IMS Application Reference Identifier, or IARI is used to carry this CPM-based Service identifier in the Accept-Contact header according to the rules and procedures of [3GPP TS 24.229]/[3GPP2 X.S0013.004]

**Table 4: CPM-based Service identifiers**

CPM-based Service	Format and values for Accept-Contact and Contact
CPM-based Service	+g.3gpp.iari-ref="urn%3Aurn-7%3A3gpp-application.ims.iari.oma.cpm.<iari-value>"

## Appendix I. CPM Notification Formats

### I.1 Deferred CPM Message Notification Format

#### I.1.1 Out-of-band Deferred CPM Message Notification Format

The purpose of the out-of-band notification is to inform the CPM Client that one or more Deferred CPM Messages are stored in the CPM Participating Function. Based on this information, the CPM Client or the CPM User MAY decide to register for the CPM service in order to retrieve the deferred messages.

The out-of-band Deferred CPM Message Notification is sent using the Push enabler. The CPM Participating Function SHALL submit a Push message as described in section 5.1 of [OMA-PAP]. The message SHALL contain:

- A control entity, as defined in [OMA-PAP] section 8.2, and
- A content entity carrying metadata about the deferred CPM Message formatted according to the “application/msginfo+xml” MIME type defined in Appendix J.1 “*Deferred Messages Metadata*”. When the notification is to be sent via an SMS, the CPM Participating Function SHALL ensure that the size of the content entity is at most 140 bytes.

The Push message SHALL be formatted according to [OMA-Push-Message] and the parameters of the message are described in [OMA-Push-OTA].

NOTE: a new application identifier “X-Wap-Application-Id” must be assigned by and registered with OMNA for identifying the CPM enabler.

#### I.1.2 In-band Deferred CPM Message Notification Format

The in-band Deferred CPM Message notification is sent in a SIP MESSAGE request as specified in section 8.3.1.6.3 “*Sending Notifications and Awaiting CPM Client Action*”.

The body of the message SHALL be an XML document carrying metadata about the Deferred CPM Message.

The metadata is the same as the metadata defined for the <deferred-messages> event package in Appendix J.1 “*Deferred Messages Metadata*” with the stipulation that only one <message> element is included.

### I.2 Notification Format of Deferred CPM Message After Expiry

The purpose of this notification is to let the CPM Client know how a Deferred CPM Message was handled upon expiry. This notification is handled as described in section 7.2.3.3 “*Receiving a notification for Expiry of Deferred CPM Message*”.

#### I.2.1 Out-of-band Notification

The out-of-band notification of Deferred CPM Message after expiry is sent using the Push enabler.

The CPM Participating Function SHALL submit a Push message as described in section 5.1 of [OMA-PAP]. The message SHALL contain:

- a control entity, as defined in [OMA-PAP] section 8.2, and
- a content entity carrying information about the deferred CPM Message after expiry, formatted according to the “application/msginfo+xml” MIME type defined in Appendix K “*Format of Notification for Deferred CPM Message after Expiry*”.

The Push message SHALL be formatted according to [OMA-Push-Message] and the parameters of the message are described in [OMA-Push-OTA].

## I.2.2 In-band notification

The in -band Deferred CPM Message Notification is sent in a SIP MESSAGE request as specified in section 8.3.1.6.8 “*Handling Deferred CPM Messages on Expiry Time*”.

The body of the message SHALL be an XML document carrying information defined in Appendix K “*Format of Notification for Deferred CPM Message after Expiry*”.

## Appendix J. Deferred Messages event package definition

A new event package is defined for deferred messages. The CPM Client subscribes to this event to receive information about deferred messages at registration. The CPM Participating Function sends metadata about the deferred messages using this new event package.

NOTE: This event package needs to be registered with IANA and a new draft will be written and presented to IETF.

This section fills in the information required for all event packages by [RFC3265].

### - Package Name

The name of this package is "deferred-messages"

As specified in [RFC3265], this value appears in the Event header field present in SUBSCRIBE and NOTIFY requests.

Example:

Event: deferred-messages

### - Event Package Parameters

The SIP event framework allows event packages to define additional parameters carried in the Event header field. This package, deferred-messages, does not define any additional parameters.

### - SUBSCRIBE Bodies

There is no body for the SUBSCRIBE to this event package

### - Subscription duration

Only subscriptions with an Expires header of zero "0" are supported;

### - NOTIFY body

The body of the NOTIFY will consist of an XML body containing the deferred messages metadata as described below.

The namespace URI for elements defined in this proposed event package is a URN, using the namespace identifier 'ietf'. This URN is:

urn:ietf:params:xml:ns:msginfo

A new MIME type, application/msginfo+xml is defined for this event package:

MIME media type name: application

MIME subtype name: msginfo+xml

## J.1 Deferred Messages Metadata

### J.1.1 Structure

The root element of the Deferred Messages Metadata document is a <message-list> element.

The <message-list> element:

1. MAY contain a "number" attribute indicating the number of deferred messages currently stored in the CPM Participating Function;
2. MAY contain one or more <message> elements containing descriptive information regarding each deferred message;
3. MAY include any other attributes from any other namespaces for the purposes of extensibility.

The <message> element:

1. MAY include a "date-time" attribute representing the date and time when the message was stored by the Deferred Function.
2. MAY include a "message-reference" attribute representing the complete path that uniquely identifies the message;

NOTE: The "message-reference" attribute is expected to be used only within in-band notifications.

3. MAY include a <size> element representing the size of the stored content;
4. MAY include an <expiry> element representing the date at which the message expires;
5. MAY include a <subject> element representing the Subject header field of the SIP request;
6. MAY include a <UPP-ID-list> element indicating the list of identifiers of User Preference Profiles of the CPM User for which no rule containing the action element <allow-reject-invite> with the value set to "true" is matching for the deferred message;

NOTE: The content of this element can be used by the CPM Client to decide how to handle the notification by comparing it with his active User Preference Profile.

7. MAY include an <info> element, containing:
  - a. a mandatory <from> element taken from the "From" header field of the SIP request;
  - b. optionally, one of the following elements, indicating the recipient(s) of the message
    - i. the <to> element containing the "To" header field of the SIP request if the message is sent to one CPM User; or
    - ii. the <recipient-list> element if the message is aimed to multiple users. This element contains a copy of intended recipients, e.g. the group session participants or the URIs listed in the URI-list case as described in [RFC5365] or [RFC5368] ;
  - c. an optional <auth-id> element representing the Authenticated Originator's CPMAddress as defined in section 6.1 "*Authenticated Originator's CPM Address*" if Privacy setting allows;
  - d. optionally any other attributes from any other namespaces for the purposes of extensibility.
8. MAY include any other attributes from any other namespaces for the purposes of extensibility;

The <recipient-list> element SHALL contain one or more <entry> elements. Each <entry> element:

1. SHALL include a "uri" attribute representing the URI of a recipient for the message;



2. MAY include a <display-name> element, containing a human-readable name corresponding to the message recipient.

In case of pre-defined groups, the <recipient-list> element SHALL contain the “group-uri” and MAY contain the “group-display-name” attributes.

## Appendix K. Format of Notification for Deferred CPM Message after Expiry

The root element is <message-expired> that includes the attributes below.

1. SHALL include a "message-reference" attribute representing the complete path that uniquely identifies the message (i.e. message-URI-ID);
2. If the Deferred CPM Message was stored to Message Storage Server on expiry, SHALL include a "UID" attribute set to the UID value retrieved from the Message Storage Server.