



**LTE;
Mission Critical Push To Talk (MCPTT) call control;
Protocol specification
(3GPP TS 24.379 version 15.6.0 Release 15)**



ReferenceRTS/TSGC-0124379vf60

Keywords

LTE

ETSI

650 Route des Lucioles
F-06921 Sophia Antipolis Cedex - FRANCE

Tel.: +33 4 92 94 42 00 Fax: +33 4 93 65 47 16

Siret N° 348 623 562 00017 - NAF 742 C
Association à but non lucratif enregistrée à la
Sous-Préfecture de Grasse (06) N° 7803/88

Important notice

The present document can be downloaded from:

<http://www.etsi.org/standards-search>

The present document may be made available in electronic versions and/or in print. The content of any electronic and/or print versions of the present document shall not be modified without the prior written authorization of ETSI. In case of any existing or perceived difference in contents between such versions and/or in print, the prevailing version of an ETSI deliverable is the one made publicly available in PDF format at www.etsi.org/deliver.

Users of the present document should be aware that the document may be subject to revision or change of status.

Information on the current status of this and other ETSI documents is available at

<https://portal.etsi.org/TB/ETSIDeliverableStatus.aspx>

If you find errors in the present document, please send your comment to one of the following services:

<https://portal.etsi.org/People/CommitteeSupportStaff.aspx>

Copyright Notification

No part may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm except as authorized by written permission of ETSI.

The content of the PDF version shall not be modified without the written authorization of ETSI.

The copyright and the foregoing restriction extend to reproduction in all media.

© ETSI 2019.

All rights reserved.

DECT™, **PLUGTESTS™**, **UMTS™** and the ETSI logo are trademarks of ETSI registered for the benefit of its Members.

3GPP™ and **LTE™** are trademarks of ETSI registered for the benefit of its Members and of the 3GPP Organizational Partners.

oneM2M™ logo is a trademark of ETSI registered for the benefit of its Members and of the oneM2M Partners.

GSM® and the GSM logo are trademarks registered and owned by the GSM Association.

Intellectual Property Rights

Essential patents

IPRs essential or potentially essential to normative deliverables may have been declared to ETSI. The information pertaining to these essential IPRs, if any, is publicly available for **ETSI members and non-members**, and can be found in ETSI SR 000 314: *"Intellectual Property Rights (IPRs); Essential, or potentially Essential, IPRs notified to ETSI in respect of ETSI standards"*, which is available from the ETSI Secretariat. Latest updates are available on the ETSI Web server (<https://ipr.etsi.org/>).

Pursuant to the ETSI IPR Policy, no investigation, including IPR searches, has been carried out by ETSI. No guarantee can be given as to the existence of other IPRs not referenced in ETSI SR 000 314 (or the updates on the ETSI Web server) which are, or may be, or may become, essential to the present document.

Trademarks

The present document may include trademarks and/or tradenames which are asserted and/or registered by their owners. ETSI claims no ownership of these except for any which are indicated as being the property of ETSI, and conveys no right to use or reproduce any trademark and/or tradename. Mention of those trademarks in the present document does not constitute an endorsement by ETSI of products, services or organizations associated with those trademarks.

Legal Notice

This Technical Specification (TS) has been produced by ETSI 3rd Generation Partnership Project (3GPP).

The present document may refer to technical specifications or reports using their 3GPP identities. These shall be interpreted as being references to the corresponding ETSI deliverables.

The cross reference between 3GPP and ETSI identities can be found under <http://webapp.etsi.org/key/queryform.asp>.

Modal verbs terminology

In the present document "**shall**", "**shall not**", "**should**", "**should not**", "**may**", "**need not**", "**will**", "**will not**", "**can**" and "**cannot**" are to be interpreted as described in clause 3.2 of the [ETSI Drafting Rules](#) (Verbal forms for the expression of provisions).

"**must**" and "**must not**" are **NOT** allowed in ETSI deliverables except when used in direct citation.

Contents

Intellectual Property Rights	2
Legal Notice	2
Modal verbs terminology.....	2
Foreword.....	23
1 Scope	24
2 References	24
3 Definitions, symbols and abbreviations	27
3.1 Definitions	27
3.2 Abbreviations	30
4 General	31
4.1 MCPTT overview	31
4.2 URI and address assignments	32
4.3 MCPTT speech.....	32
4.4 Warning Header Field	32
4.4.1 General.....	32
4.4.2 Warning texts.....	32
4.5 MCPTT session identity	37
4.6 MCPTT priority calls and alerts	38
4.6.1 MCPTT emergency group calls	38
4.6.2 MCPTT emergency private calls	39
4.6.3 MCPTT emergency alerts	40
4.6.4 MCPTT imminent peril group call	41
4.7 Communication security.....	42
4.7.1 Media security	42
4.7.2 Signalling security	43
4.8 Protection of sensitive application data	44
4.9 Pre-established session	47
4.10 MCPTT client ID	48
4.11 Off-network MCPTT	48
4.12 Broadcast Group Calls.....	48
5 Functional entities	49
5.1 Introduction	49
5.2 MCPTT client.....	49
5.3 MCPTT server.....	50
5.3.1 General.....	50
5.3.2 Functional connectivity models	51
5.3.3 Failure case	53
5.3.4 Management of MBMS bearers.....	53
5.4 MCPTT UE-to-network relay.....	53
6 Common procedures.....	54
6.1 Introduction	54
6.2 MCPTT client procedures	54
6.2.0 Distinction of requests at the MCPTT client	54
6.2.0.1 SIP MESSAGE request.....	54
6.2.1 SDP offer generation	55
6.2.2 SDP answer generation	56
6.2.3 Commencement modes	57
6.2.3.1 Automatic commencement mode.....	57
6.2.3.1.1 Automatic commencement mode for private calls	57
6.2.3.1.2 Automatic commencement mode for group calls	57
6.2.3.2 Manual commencement mode	57
6.2.3.2.1 Manual commencement mode for private calls	57

6.2.3.2.2	Manual commencement mode for group calls.....	58
6.2.4	Leaving an MCPTT session initiated by MCPTT client.....	58
6.2.4.1	On-demand session case	58
6.2.4.2	Pre-established session case	59
6.2.5	Releasing an MCPTT session initiated by MCPTT client	59
6.2.5.1	On-demand session case	59
6.2.5.2	Pre-established session case	59
6.2.6	Receiving an MCPTT session release request	60
6.2.7	Void	60
6.2.8	Priority call conditions.....	60
6.2.8.0	General	60
6.2.8.1	MCPTT emergency group call conditions	60
6.2.8.1.1	SIP INVITE request or SIP REFER request for originating MCPTT emergency group calls	60
6.2.8.1.2	Resource-Priority header field for MCPTT emergency group calls	61
6.2.8.1.3	SIP re-INVITE request for cancelling MCPTT in-progress emergency group state	62
6.2.8.1.4	Receiving a SIP 2xx response to a SIP request for a priority call	62
6.2.8.1.5	Receiving a SIP 4xx response, SIP 5xx response or SIP 6xx response to a SIP request for a priority group call	63
6.2.8.1.6	Determining authorisation for initiating or cancelling an MCPTT emergency alert	63
6.2.8.1.7	Determining authorisation for cancelling the in-progress emergency state of an MCPTT group.....	64
6.2.8.1.8	Determining authorisation for originating a priority group call	64
6.2.8.1.9	SIP request for originating MCPTT imminent peril group calls	65
6.2.8.1.10	Determining authorisation for cancelling an imminent peril group call	65
6.2.8.1.11	SIP re-INVITE request for cancelling MCPTT in-progress imminent peril group state	66
6.2.8.1.12	Resource-Priority header field for MCPTT imminent peril group calls	66
6.2.8.1.13	Receiving a SIP INFO request in the dialog of a SIP request for a priority group call	66
6.2.8.1.14	SIP re-INVITE request for cancelling the in-progress emergency group state of a group by a third-party	67
6.2.8.1.15	Retrieving Resource-Priority header field values	68
6.2.8.1.16	Handling receipt of a SIP re-INVITE request for priority group call origination status within a pre-established session.....	68
6.2.8.1.17	Priority group call conditions upon receiving call release	69
6.2.8.1.18	Emergency private call conditions upon receiving call release	69
6.2.8.2	Request for an originating broadcast group call.....	70
6.2.8.3	MCPTT emergency private call conditions.....	70
6.2.8.3.1	Authorisations	70
6.2.8.3.1.1	Determining authorisation for initiating an MCPTT emergency private call	70
6.2.8.3.1.2	Determining authorisation for cancelling an MCPTT emergency private call	70
6.2.8.3.1.3	Determining authorisation for initiating or cancelling an MCPTT emergency alert to a MCPTT user	71
6.2.8.3.2	SIP request for originating MCPTT emergency private calls.....	71
6.2.8.3.3	Resource-Priority header field for MCPTT emergency private calls	71
6.2.8.3.4	Receiving a SIP 2xx response to a SIP request for an MCPTT emergency private call.....	72
6.2.8.3.5	Receiving a SIP 4xx response, SIP 5xx response or SIP 6xx response to a SIP request for an MCPTT emergency private call.....	72
6.2.8.3.6	SIP re-INVITE request for cancelling MCPTT emergency private call state.....	72
6.2.8.3.7	Receiving a SIP INFO request in the dialog of a SIP request for a priority private call.....	73
6.2.8.3.8	SIP re-INVITE request for cancelling the MCPTT emergency private call state by a third- party.....	74
6.2.8.3.9	Retrieving a KMS URI associated with an MCPTT ID	74
6.2.9	Location information	75
6.2.9.1	Location information for location reporting.....	75
6.3	MCPTT server procedures	76
6.3.1	Distinction of requests sent to the MCPTT server	76
6.3.1.1	SIP INVITE request	76
6.3.1.2	SIP REFER request	77
6.3.1.3	SIP MESSAGE request.....	77
6.3.1.4	SIP SUBSCRIBE request.....	80
6.3.2	Participating MCPTT Function.....	80
6.3.2.1	Requests initiated by the served MCPTT user	80
6.3.2.1.1	SDP offer generation	80

6.3.2.1.1.1	On-demand session	80
6.3.2.1.1.2	Pre-established session.....	80
6.3.2.1.2	SDP answer generation.....	81
6.3.2.1.2.1	On-demand session	81
6.3.2.1.2.2	Pre-established session establishment.....	81
6.3.2.1.3	Sending an INVITE request on receipt of an INVITE request	81
6.3.2.1.4	Sending an INVITE request on receipt of a REFER request	82
6.3.2.1.5	Response to an INVITE request	84
6.3.2.1.5.1	Provisional responses.....	84
6.3.2.1.5.2	Final response	84
6.3.2.1.6	Sending a SIP BYE request on receipt of a SIP BYE request	85
6.3.2.1.7	Sending a SIP BYE request on receipt of a SIP REFER request.....	85
6.3.2.1.8	Priority call conditions	86
6.3.2.1.8.0	General.....	86
6.3.2.1.8.1	Determining authorisation for originating a priority group call.....	86
6.3.2.1.8.2	Determining authorisation for initiating or cancelling an MCPTT emergency alert.....	87
6.3.2.1.8.3	Validate priority request parameters	87
6.3.2.1.8.4	Retrieving Resource-Priority header field values	87
6.3.2.1.8.5	Generating a SIP re-INVITE request for priority group call origination within a pre-established session	87
6.3.2.1.8.6	Generating a SIP re-INVITE request for emergency private call origination within a pre-established session	88
6.3.2.1.8.7	Generating a SIP re-INVITE request for first-to-answer call origination within a pre-established session	89
6.3.2.1.9	Generating a SIP re-INVITE request on receipt of a SIP re-INVITE request	90
6.3.2.1.10	Sending a SIP INVITE request on receipt of SIP 3xx response	90
6.3.2.2	Requests terminated to the served MCPTT user	91
6.3.2.2.1	SDP offer generation	91
6.3.2.2.2	SDP answer generation.....	91
6.3.2.2.2.1	On-demand session	91
6.3.2.2.2.2	Pre-established session.....	91
6.3.2.2.3	SIP INVITE request towards the terminating MCPTT client.....	91
6.3.2.2.4	Response to a SIP INVITE request	92
6.3.2.2.4.1	Provisional response	92
6.3.2.2.4.2	Final response	92
6.3.2.2.5	Automatic Commencement Mode.....	93
6.3.2.2.5.1	General.....	93
6.3.2.2.5.2	Automatic commencement for On-Demand session.....	93
6.3.2.2.5.3	Automatic commencement for pre-established session	95
6.3.2.2.6	Manual Commencement Mode	96
6.3.2.2.6.1	General.....	96
6.3.2.2.6.2	Manual commencement for On-Demand session	96
6.3.2.2.6.3	Manual commencement for Pre-established session.....	97
6.3.2.2.7	Void.....	99
6.3.2.2.8	SIP BYE request towards the terminating MCPTT client	99
6.3.2.2.8.1	On-demand.....	99
6.3.2.2.8.2	Using pre-established session	99
6.3.2.2.9	Populate MIME bodies.....	100
6.3.2.2.10	Generating a SIP re-INVITE request towards the terminating MCPTT client	100
6.3.2.2.11	Generating a SIP MESSAGE request towards the terminating MCPTT client	100
6.3.2.3	Void.....	101
6.3.3	Controlling MCPTT function	101
6.3.3.1	Request initiated by the controlling MCPTT function	101
6.3.3.1.1	SDP offer generation	101
6.3.3.1.2	Sending an INVITE request	101
6.3.3.1.3	Receipt of a SIP response to a SIP INVITE request	102
6.3.3.1.3.1	Final response	102
6.3.3.1.4	Void.....	102
6.3.3.1.5	Sending a SIP BYE request.....	102
6.3.3.1.6	Sending a SIP re-INVITE request for MCPTT emergency group call	102
6.3.3.1.7	Sending a SIP INVITE request for MCPTT emergency group call	103
6.3.3.1.8	Sending a SIP UPDATE request for Resource-Priority header field correction.....	104

6.3.3.1.9	Generating a SIP re-INVITE request.....	105
6.3.3.1.10	Generating a SIP re-INVITE request to cancel an in-progress emergency	105
6.3.3.1.11	Generating a SIP MESSAGE request for notification of in-progress emergency or imminent peril status change	105
6.3.3.1.12	Populate mcptt-info and location-info MIME bodies for emergency alert.....	106
6.3.3.1.13	Authorisations	106
6.3.3.1.13.1	Determining authorisation for initiating an MCPTT emergency alert	106
6.3.3.1.13.2	Determining authorisation for initiating an MCPTT emergency group or private call.....	107
6.3.3.1.13.3	Determining authorisation for cancelling an MCPTT emergency alert	108
6.3.3.1.13.4	Determining authorisation for cancelling an MCPTT emergency call	109
6.3.3.1.13.5	Determining authorisation for initiating an MCPTT imminent peril call	109
6.3.3.1.13.6	Determining authorisation for cancelling an MCPTT imminent peril call	110
6.3.3.1.13.7	Sending a SIP OPTIONS request to authorise an MCPTT user at a non-controlling MCPTT function of a MCPTT group	110
6.3.3.1.14	Generating a SIP 403 response for priority call request rejection	112
6.3.3.1.15	Sending a SIP re-INVITE request for MCPTT imminent peril group call.....	112
6.3.3.1.16	Handling the expiry of timer TNG2 (in-progress emergency group call timer)	112
6.3.3.1.17	Validate priority request parameters.....	113
6.3.3.1.18	Sending a SIP INFO request in the dialog of a SIP request for a priority call.....	113
6.3.3.1.19	Retrieving Resource-Priority header field values.....	114
6.3.3.1.20	Generating a SIP MESSAGE request to indicate successful receipt of an emergency alert or emergency cancellation	114
6.3.3.1.21	Generating a SIP MESSAGE request for notification of entry into or exit from an emergency alert area	115
6.3.3.1.22	Generating a SIP MESSAGE request for notification of entry into or exit from a group geographic area.....	116
6.3.3.2	Requests terminated by the controlling MCPTT function.....	117
6.3.3.2.1	SDP answer generation.....	117
6.3.3.2.2	Receipt of a SIP INVITE request	117
6.3.3.2.3	Sending a SIP response to a SIP INVITE request	117
6.3.3.2.3.1	Provisional response	117
6.3.3.2.3.2	Final response	117
6.3.3.2.4	Receiving a SIP BYE request.....	118
6.3.3.3	Handling of the acknowledged call setup timer (TNG1)	118
6.3.3.4	Generating a SIP NOTIFY request	120
6.3.3.5	Handling of the group call timer (TNG3)	121
6.3.3.5.1	General	121
6.3.3.5.2	Interaction with the in-progress emergency group call timer (TNG2)	122
6.3.3.6	Void.....	122
6.3.4	Non-controlling MCPTT function of an MCPTT group.....	122
6.3.4.1	Request initiated by the non-controlling MCPTT function of an MCPTT group	122
6.3.4.1.1	SDP offer generation	122
6.3.4.1.2	Sending an INVITE request towards the MCPTT client	123
6.3.4.1.3	Sending a SIP INFO request.....	123
6.3.4.1.4	Sending an INVITE request towards the controlling MCPTT function	124
6.3.4.2	Requests terminated by the non-controlling MCPTT function of an MCPTT group.....	125
6.3.4.2.1	SDP answer generation.....	125
6.3.4.2.2	Sending a SIP response to the SIP INVITE request	125
6.3.4.2.2.1	Sending a SIP 183 (Session Progress) response.....	125
6.3.4.2.2.2	Sending a SIP 200 (OK) response.....	126
6.3.4.3	Generating a SIP NOTIFY request	126
6.3.4.4	Void.....	127
6.3.5	Retrieving and processing a group document	127
6.3.5.1	General	127
6.3.5.2	Rules for retrieving Group Document(s).....	127
6.3.5.3	Rules for joining a group session	131
6.3.5.4	Rules for initiating a prearranged group session	131
6.3.5.5	Determining the group members to invite.....	131
6.3.6	Affiliation check	132
6.3.7	Error handling	132
6.3.7.1	Public service identity does not exist	132
6.3.8	Session release policy	132

6.3.8.1	Session release policy for group call	132
6.3.8.2	Session release policy for private call	133
6.4	Implicit floor request	133
6.5	Handling of MIME bodies in a SIP message	134
6.6	Confidentiality and Integrity Protection	135
6.6.1	General	135
6.6.1.1	Applicability and exclusions	135
6.6.1.2	Performing XML content encryption	135
6.6.1.3	Performing integrity protection on an XML body	135
6.6.1.4	Verifying integrity of an XML body and decrypting XML elements	135
6.6.2	Confidentiality Protection	136
6.6.2.1	General	136
6.6.2.2	Keys used in confidentiality protection procedures	136
6.6.2.3	Procedures for sending confidentiality protected content	136
6.6.2.3.1	MCPTT client	136
6.6.2.3.2	MCPTT server	137
6.6.2.3.3	Content Encryption in XML elements	137
6.6.2.3.4	Attribute URI Encryption	137
6.6.2.4	Procedures for receiving confidentiality protected content	138
6.6.2.4.1	Determination of confidentiality protected content	138
6.6.2.4.2	Decrypting confidentiality protected content in XML elements	138
6.6.2.4.3	Decrypting confidentiality protected URIs in XML attributes	138
6.6.2.5	MCPTT server copying received XML content	138
6.6.3	Integrity Protection of XML documents	139
6.6.3.1	General	139
6.6.3.2	Keys used in integrity protection procedures	141
6.6.3.3	Sending integrity protected content	142
6.6.3.3.1	MCPTT client	142
6.6.3.3.2	MCPTT server	142
6.6.3.3.3	Integrity protection procedure	142
6.6.3.4	Receiving integrity protected content	143
6.6.3.4.1	Determination of integrity protected content	143
6.6.3.4.2	Verification of integrity protected content	143
6.7	Priority sharing	143
7	Registration and service authorisation	143
7.1	General	143
7.2	MCPTT client procedures	144
7.2.1	SIP REGISTER request for service authorisation	144
7.2.1AA	SIP REGISTER request without service authorisation	145
7.2.1A	Common SIP PUBLISH procedure	145
7.2.2	SIP PUBLISH request for service authorisation and MCPTT service settings	146
7.2.3	Sending SIP PUBLISH for MCPTT service settings only	147
7.2.4	Determination of MCPTT service settings	147
7.2.5	Receiving a CSK key download message	148
7.3	MCPTT server procedures	149
7.3.1	General	149
7.3.1A	Confidentiality and Integrity Protection	149
7.3.2	SIP REGISTER request for service authorisation	151
7.3.3	SIP PUBLISH request for service authorisation and service settings	151
7.3.4	Receiving SIP PUBLISH request for MCPTT service settings only	152
7.3.5	Receiving SIP PUBLISH request with "Expires=0"	153
7.3.6	Subscription to and notification of MCPTT service settings	154
7.3.6.1	Receiving subscription to MCPTT service settings	154
7.3.6.2	Sending notification of change of MCPTT service settings	154
7.3.7	Sending a CSK key download message	155
7.4	Coding	155
7.4.1	Extension of MIME types	155
7.4.1.1	General	155
7.4.1.2	Extension of application/poc-settings+xml MIME type	155
7.4.1.2.1	Introduction	155
7.4.1.2.2	Syntax	155

8	Pre-established session	156
8.1	General	156
8.1A	Participating MCPTT function use of resource sharing	157
8.2	Session establishment	157
8.2.1	MCPTT client procedures	157
8.2.2	Participating MCPTT function procedures	158
8.3	Session modification	159
8.3.1	MCPTT client procedures	159
8.3.1.1	MCPTT client initiated	159
8.3.1.2	Participating MCPTT function initiated	160
8.3.2	Participating MCPTT function procedures	160
8.3.2.1	MCPTT client initiated	160
8.3.2.2	Participating MCPTT function initiated	160
8.4	Session release	161
8.4.1	MCPTT client procedures	161
8.4.1.1	MCPTT client initiated	161
8.4.1.2	Participating MCPTT function initiated	161
8.4.2	Participating MCPTT function procedures	161
8.4.2.1	MCPTT client initiated	161
8.4.2.2	Participating MCPTT function initiated	162
9	Affiliation	162
9.1	General	162
9.2	Procedures	163
9.2.1	MCPTT client procedures	163
9.2.1.1	General	163
9.2.1.2	Affiliation status change procedure	163
9.2.1.3	Affiliation status determination procedure	164
9.2.1.4	Procedure for sending affiliation status change request in negotiated mode to target MCPTT user	165
9.2.1.5	Procedure for receiving affiliation status change request in negotiated mode from authorized MCPTT user	166
9.2.1.6	Subscription to group dynamic data	166
9.2.2	MCPTT server procedures	167
9.2.2.1	General	167
9.2.2.2	Procedures of MCPTT server serving the MCPTT user	167
9.2.2.2.1	General	167
9.2.2.2.2	Stored information	167
9.2.2.2.3	Receiving affiliation status change from MCPTT client procedure	168
9.2.2.2.4	Receiving subscription to affiliation status procedure	171
9.2.2.2.5	Sending notification of change of affiliation status procedure	172
9.2.2.2.6	Sending affiliation status change towards MCPTT server owning MCPTT group procedure	172
9.2.2.2.7	Affiliation status determination from MCPTT server owning MCPTT group procedure	174
9.2.2.2.8	Procedure for authorizing affiliation status change request in negotiated mode sent to served MCPTT user	176
9.2.2.2.9	Forwarding affiliation status change towards another MCPTT user procedure	177
9.2.2.2.10	Forwarding subscription to affiliation status towards another MCPTT user procedure	177
9.2.2.2.11	Affiliation status determination	178
9.2.2.2.12	Affiliation status change by implicit affiliation	179
9.2.2.2.13	Implicit affiliation status change completion	180
9.2.2.2.14	Implicit affiliation status change cancellation	180
9.2.2.2.15	Implicit affiliation to configured groups procedure	180
9.2.2.2.16	Forwarding subscription to group dynamic data towards the controlling MCPTT server procedure	182
9.2.2.3	Procedures of MCPTT server owning the MCPTT group	183
9.2.2.3.1	General	183
9.2.2.3.2	Stored information	183
9.2.2.3.3	Receiving group affiliation status change procedure	184
9.2.2.3.4	Receiving subscription to affiliation status procedure	185
9.2.2.3.5	Sending notification of change of affiliation status procedure	186
9.2.2.3.6	Implicit affiliation eligibility check procedure	186
9.2.2.3.7	Affiliation status change by implicit affiliation procedure	187
9.2.2.3.8	Affiliation eligibility check procedure	187

9.2.2.3.9	Receiving subscription to group dynamic data procedure	188
9.2.2.3.9	Sending notification of change of group dynamic data procedure	189
9.3	Coding	189
9.3.1	Extension of application/pidf+xml MIME type	189
9.3.1.1	Introduction	189
9.3.1.2	Syntax	189
9.3.2	Extension of application/simple-filter+xml MIME type	192
9.3.2.1	Introduction	192
9.3.2.2	Syntax	192
9A	Functional Alias	194
9A.1	General	194
9A.2	Procedures	194
9A.2.1	MCPTT client procedures	194
9A.2.1.1	General	194
9A.2.1.2	Functional alias status change procedure	194
9A.2.1.3	Functional alias status determination procedure	195
9A.2.2	MCPTT server procedures	196
9A.2.2.1	General	196
9A.2.2.2	Procedures of MCPTT server serving the MCPTT user	196
9A.2.2.2.1	General	196
9A.2.2.2.2	Stored information	197
9A.2.2.2.3	Receiving functional alias status change from MCPTT client procedure	197
9A.2.2.2.4	Receiving subscription to functional alias status procedure	199
9A.2.2.2.5	Sending notification of change of functional alias status procedure	200
9A.2.2.2.6	Sending functional alias status change towards MCPTT server owning the functional alias procedure	201
9A.2.2.2.7	Functional alias status determination from MCPTT server owning functional alias procedure	202
9A.2.2.3	Procedures of MCPTT server owning the Functional alias	204
9A.2.2.3.1	General	204
9A.2.2.3.2	Stored information	204
9A.2.2.3.3	Receiving functional alias status change procedure	205
9A.2.2.3.4	Receiving subscription to functional alias status procedure	206
9A.2.2.3.5	Sending notification of change of functional alias status procedure	207
9A.3	Coding	208
9A.3.1	Extension of application/pidf+xml MIME type	208
9A.3.1.1	Introduction	208
9A.3.1.2	Syntax	208
9A.3.2	Extension of application/simple-filter+xml MIME type	209
9A.3.2.1	Introduction	209
9A.3.2.2	Syntax	209
10	Group call	210
10.0	General	210
10.1	On-network group call	211
10.1.1	Prearranged group call	211
10.1.1.1	General	211
10.1.1.2	MCPTT client procedures	211
10.1.1.2.1	On-demand prearranged group call	211
10.1.1.2.1.1	Client originating procedures	211
10.1.1.2.1.2	Client terminating procedures	213
10.1.1.2.1.3	MCPTT upgrade to in-progress emergency or imminent peril	214
10.1.1.2.1.4	MCPTT in-progress emergency cancel	215
10.1.1.2.1.5	MCPTT in-progress imminent peril cancel	216
10.1.1.2.1.6	MCPTT client receives SIP re-INVITE request	217
10.1.1.2.2	Prearranged group call using pre-established session	219
10.1.1.2.2.1	Client originating procedures	219
10.1.1.2.2.2	Client terminating procedures	219
10.1.1.2.3	End group call	220
10.1.1.2.3.1	Client originating procedures on-demand	220
10.1.1.2.3.2	Client originating procedures using pre-established session	220
10.1.1.2.3.3	Client terminating procedures	220

10.1.1.2.4	Re-join procedure	220
10.1.1.2.4.1	On demand session establishment.....	220
10.1.1.2.4.2	Pre-established session.....	220
10.1.1.3	Participating MCPTT function procedures	220
10.1.1.3.1	Originating procedures	220
10.1.1.3.1.1	On demand prearranged group call.....	220
10.1.1.3.1.2	Prearranged group call using pre-established session.....	223
10.1.1.3.1.3	Reception of a SIP re-INVITE request from served MCPTT client	227
10.1.1.3.2	Terminating Procedures.....	228
10.1.1.3.3	End group call at the originating participating MCPTT function.....	229
10.1.1.3.3.1	Receipt of SIP BYE request for ending group call on-demand	229
10.1.1.3.3.2	Receipt of SIP REFER "BYE" request for ending group call using pre-established session...	229
10.1.1.3.4	End group call at the terminating participating MCPTT function	229
10.1.1.3.4.1	Receipt of SIP BYE request for private call on-demand	229
10.1.1.3.4.2	Receipt of SIP BYE request when ongoing pre-established session.....	229
10.1.1.3.5	Re-join procedures.....	229
10.1.1.3.5.1	Originating procedures - on demand prearranged group call.....	229
10.1.1.3.5.2	Originating procedures - prearranged group call using pre-established session	229
10.1.1.3.6	Reception of a SIP re-INVITE request for terminating MCPTT client for priority call.....	229
10.1.1.4	Controlling MCPTT function procedures	230
10.1.1.4.1	Originating Procedures.....	230
10.1.1.4.1.1	INVITE targeted to an MCPTT client	230
10.1.1.4.1.2	INVITE targeted to the non-controlling MCPTT function of an MCPTT group.....	231
10.1.1.4.2	Terminating Procedures.....	232
10.1.1.4.3	End group call at the terminating controlling MCPTT function.....	241
10.1.1.4.4	End group call initiated by the controlling MCPTT function.....	241
10.1.1.4.4.1	General.....	241
10.1.1.4.4.2	SIP BYE request for releasing MCPTT session for a group call	241
10.1.1.4.4.3	SIP BYE request toward a MCPTT client	241
10.1.1.4.5	Re-join procedures.....	241
10.1.1.4.5.1	Terminating procedures	241
10.1.1.4.6	Late call entry initiated by controlling MCPTT function.....	242
10.1.1.4.7	Receipt of a SIP re-INVITE request.....	242
10.1.1.4.8	Handling of a SIP re-INVITE request for imminent peril session.....	246
10.1.1.5	Non-controlling function of an MCPTT group procedures.....	247
10.1.1.5.1	Originating procedures	247
10.1.1.5.2	Terminating procedures.....	248
10.1.1.5.2.1	General.....	248
10.1.1.5.2.2	Initiating a prearranged group call	248
10.1.1.5.2.3	Joining an ongoing prearranged group call.....	250
10.1.1.5.2.4	Splitting an ongoing prearranged group call.....	251
10.1.1.5.3	Rejoin procedures	252
10.1.1.5.3.1	Terminating procedures	252
10.1.1.5.3.2	Late call entry initiated by non-controlling MCPTT function	252
10.1.1.5.4	SIP OPTIONS request authorization procedure	252
10.1.1.5.5	Initiating a temporary group session.....	253
10.1.2	Chat group (restricted) call	255
10.1.2.1	General	255
10.1.2.2	MCPTT client procedures	255
10.1.2.2.1	On-demand chat group call.....	255
10.1.2.2.1.1	Procedure for initiating a chat MCPTT group session and procedure for joining a chat MCPTT group session	255
10.1.2.2.1.2	MCPTT client receives SIP re-INVITE request	256
10.1.2.2.1.3	MCPTT in-progress emergency cancel.....	258
10.1.2.2.1.4	MCPTT upgrade to in-progress emergency or imminent peril	259
10.1.2.2.1.5	MCPTT in-progress imminent peril cancel.....	260
10.1.2.2.1.6	MCPTT client receives a SIP INVITE request for an MCPTT group call.....	261
10.1.2.2.2	Chat group call within a pre-established session	263
10.1.2.2.2.1	Procedure for initiating a chat MCPTT group session and procedure for joining a chat MCPTT group session	263
10.1.2.2.3	End group call	265
10.1.2.2.3.1	Client originating procedures on-demand.....	265

10.1.2.2.3.2	Client originating procedures using pre-established session.....	265
10.1.2.2.3.3	Client terminating procedures.....	265
10.1.2.3	Participating MCPTT function procedures	265
10.1.2.3.1	On-demand chat group call.....	265
10.1.2.3.1.1	MCPTT chat session establishment	265
10.1.2.3.1.2	Reception of a SIP re-INVITE request from served MCPTT client	268
10.1.2.3.1.3	Reception of a SIP INVITE request for terminating MCPTT client	269
10.1.2.3.1.4	Reception of a SIP re-INVITE request for terminating MCPTT client	270
10.1.2.3.2	Chat group call within a pre-established session	271
10.1.2.3.2.1	MCPTT chat session establishment	271
10.1.2.3.2.2	MCPTT chat session establishment for terminating user within a pre-established session	274
10.1.2.3.3	End group call at the originating participating MCPTT function.....	274
10.1.2.3.3.1	Receipt of SIP BYE request for ending on-demand chat session	274
10.1.2.3.3.2	Receipt of SIP REFER "BYE" request for ending chat session using pre-established session.....	275
10.1.2.3.4	End group call at the terminating participating MCPTT function	275
10.1.2.3.4.1	Receipt of SIP BYE request for on-demand chat session	275
10.1.2.3.4.2	Receipt of SIP BYE request for ongoing pre-established session.....	275
10.1.2.4	Controlling MCPTT function procedures	275
10.1.2.4.1	On-demand chat group call.....	275
10.1.2.4.1.1	Procedure for establishing an MCPTT chat session and procedure for joining an established MCPTT chat session	275
10.1.2.4.1.2	Receipt of a SIP re-INVITE request	279
10.1.2.4.1.3	Handling of a SIP re-INVITE request for imminent peril session	283
10.1.2.4.2	End group call at the terminating controlling MCPTT function.....	285
10.1.2.4.3	End group call initiated by the controlling MCPTT function.....	285
10.1.2.4.3.1	General.....	285
10.1.2.4.3.2	SIP BYE request for releasing MCPTT session for a group call	285
10.1.2.4.3.3	SIP BYE request toward a MCPTT client	285
10.1.2.5	Non-controlling function of an MCPTT group procedures.....	286
10.1.2.5.1	Terminating procedures.....	286
10.1.2.5.1.1	General.....	286
10.1.2.5.1.2	Initiating a chat group session.....	286
10.1.2.5.1.3	Joining an ongoing chat group call	287
10.1.2.5.1.4	Splitting an ongoing chat group call	287
10.1.2.5.1.5	MCPTT client joining the temporary group chat session.....	288
10.1.2.5.1.6	Receipt of a SIP re-INVITE request from an MCPTT client.....	288
10.1.2.5.1.7	SIP OPTIONS request authorization procedure	288
10.1.2.5.1.8	Initiating a temporary group session.....	288
10.1.3	Subscription to the conference event package	289
10.1.3.1	General	289
10.1.3.2	MCPTT client	290
10.1.3.3	Participating MCPTT function.....	291
10.1.3.4	Controlling MCPTT function.....	292
10.1.3.4.1	Receiving a subscription to the conference event package.....	292
10.1.3.4.2	Sending notifications to the conference event package	292
10.1.3.4.3	Sending subscriptions to the conference event package	293
10.1.3.4.4	Terminating a subscription	294
10.1.3.5	Non-controlling MCPTT function	294
10.1.3.5.1	Receiving subscriptions to the conference event package	294
10.1.3.5.2	Sending notifications to the conference event package	295
10.1.3.5.3	Sending a subscription to the conference event package.....	295
10.1.3.5.4	Terminating a subscription	296
10.1.4	Remote change of an MCPTT user's selected group	296
10.1.4.1	General	296
10.1.4.2	Client procedures	296
10.1.4.2.1	Remote selected group change initiation.....	296
10.1.4.2.2	Target client procedures for handling remote selected group change request	297
10.1.4.3	Participating MCPTT function procedures	298
10.1.4.3.1	Originating procedures.....	298
10.1.4.3.2	Terminating procedures.....	300
10.1.4.4	Controlling MCPTT function procedures	300

10.1.5	Remotely initiated group call.....	301
10.1.5.1	General	301
10.1.5.2	Client procedures	302
10.1.5.2.1	Remotely initiated group call initiation request procedures	302
10.1.5.2.2	Remote client procedures for handling remotely initiated group call request	304
10.1.5.3	Participating MCPTT function procedures	305
10.1.5.3.1	Originating procedures	305
10.1.5.3.2	Terminating procedures	306
10.1.5.4	Controlling MCPTT function procedures	306
10.2	Off-network group call	308
10.2.1	General.....	308
10.2.1.1	Common Procedures	308
10.2.1.1.1	MONP message transport.....	308
10.2.1.1.2	Session description	308
10.2.2	Basic call control	309
10.2.2.1	General	309
10.2.2.2	Basic call control state machine	309
10.2.2.3	Call Control states	310
10.2.2.3.1	S1: start-stop	310
10.2.2.3.2	S2: waiting for call announcement	310
10.2.2.3.3	S3: part of ongoing call	310
10.2.2.3.4	S4: pending user action without confirm indication	310
10.2.2.3.5	S5: pending user action with confirm indication	310
10.2.2.3.6	S6: ignoring incoming call announcements	310
10.2.2.3.7	S7: waiting for call announcement after call release	310
10.2.2.4	Procedures	311
10.2.2.4.1	General	311
10.2.2.4.1.1	Call announcement timer calculation.....	311
10.2.2.4.1.1.1	Periodic call announcement timer calculation	311
10.2.2.4.1.1.2	Call announcement timer calculation after CALL PROBE.....	311
10.2.2.4.1.2	Max duration timer calculation	311
10.2.2.4.2	Call Probe	311
10.2.2.4.2.1	Call probe initiation	311
10.2.2.4.2.2	Call probe retransmission	312
10.2.2.4.2.3	Receiving GROUP CALL PROBE message when participating in the ongoing call	312
10.2.2.4.3	Call setup.....	312
10.2.2.4.3.1	Not receiving any response to GROUP CALL PROBE message	312
10.2.2.4.3.2	Receiving a GROUP CALL ANNOUNCEMENT message	313
10.2.2.4.3.3	Receiving a GROUP CALL ANNOUNCEMENT message when not participating in the ongoing call.....	313
10.2.2.4.3.4	MCPTT user accepts the terminating call with confirm indication	314
10.2.2.4.3.5	MCPTT user accepts the terminating call without confirm indication	315
10.2.2.4.3.6	Receiving GROUP CALL ACCEPT message.....	315
10.2.2.4.3.7	MCPTT user rejects the terminating call	315
10.2.2.4.3.8	MCPTT user does not act on terminating call	315
10.2.2.4.4	Periodic group call announcement.....	316
10.2.2.4.4.1	Sending periodic call announcement	316
10.2.2.4.4.2	Receiving periodic call announcement	316
10.2.2.4.5	Call release	317
10.2.2.4.5.1	MCPTT user leaves the call when GROUP CALL ANNOUNCEMENT was sent or received.....	317
10.2.2.4.5.2	Receiving GROUP CALL ANNOUNCEMENT message for rejected or released call	317
10.2.2.4.5.3	MCPTT user initiates originating call for rejected or released call.....	317
10.2.2.4.5.4	No GROUP CALL ANNOUNCEMENT messages for rejected or released call	318
10.2.2.4.5.5	MCPTT user leaves the call when GROUP CALL PROBE was sent	318
10.2.2.4.5.6	MCPTT user initiates originating call for released call	318
10.2.2.4.5.7	Receiving GROUP CALL ANNOUNCEMENT message for released call	318
10.2.2.4.5.8	No GROUP CALL ANNOUNCEMENT messages for released call.....	319
10.2.2.4.5.9	Max duration reached	319
10.2.2.4.6	Merge of calls.....	319
10.2.2.4.6.1	Merge of two calls	319
10.2.2.4.7	Error handling.....	320