ETSI TS 124 281 V17.6.0 (2022-05)

LTE;
Mission Critical Video (MCVideo) signalling control;
Protocol specification
(3GPP TS 24.281 version 17.6.0 Release 17)

Reference
RTS/TSGC-0124281vh60

Keywords
LTE

ETSI

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Siret N° 348 623 562 00017 - APE 7112B
Association à but non lucratif enregistrée à la
Sous-Préfecture de Grasse (06) N° w061004871

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Foreword

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

The contents of the present document are subject to continuing work within the TSG and may change following formal TSG approval. Should the TSG modify the contents of the present document, it will be re-released by the TSG with an identifying change of release date and an increase in version number as follows:

Version x.y.z

where:

x the first digit:

1 presented to TSG for information;

2 presented to TSG for approval;

3 or greater indicates TSG approved document under change control.

y the second digit is incremented for all changes of substance, i.e. technical enhancements, corrections, updates, etc.

z the third digit is incremented when editorial only changes have been incorporated in the document.

1 Scope

The present document specifies the signalling control needed to support Mission Critical Video (MCVideo) service.

The MCVideo service and its associated media plane control protocols can be used for public safety applications and also for general commercial applications (e.g., utility companies and railways).

The present document is applicable to User Equipment (UE) supporting MCVideo client, and MCVideo server.

2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies. In the case of a reference to a 3GPP document (including a GSM document), a non-specific reference implicitly refers to the latest version of that document *in the same Release as the present document*.

[1] 3GPP TR 21.905: "Vocabulary for 3GPP Specifications".

[2] IETF RFC 4566 (July 2006): "Session Description Protocol".

[3] IETF RFC 3605 (October 2003): "Real Time Control Protocol (RTCP) attribute in Session Description Protocol (SDP)".

[4] 3GPP TS 24.483: "Mission Critical Services (MCS) Management Object (MO)".

[5] 3GPP TS 24.581: "Mission Critical Video (MCVideo) media plane control Protocol specification".

[6] IETF RFC 4567 (July 2006): "Key Management Extensions for Session Description Protocol (SDP) and Real Time Streaming Protocol (RTSP)".

[7] IETF RFC 3264 (June 2002): "An Offer/Answer Model with the Session Description Protocol (SDP)".

[8] 3GPP TS 33.180: "Security of the mission critical service".

[9] 3GPP TS 29.199-9: "Open Service Access (OSA); Parlay X Web Services; Part 9: Terminal location".

[10] 3GPP TS 24.007: "Mobile radio interface signalling layer 3; General aspects".

[11] 3GPP TS 24.229: "IP multimedia call control protocol based on Session Initiation Protocol (SIP) and Session Description Protocol (SDP); Stage 3".

[12] IETF RFC 3903 (October 2004): "Session Initiation Protocol (SIP) Extension for Event State Publication".

[13] IETF RFC 3856 (August 2004): "A Presence Event Package for the Session Initiation Protocol (SIP)".

[14] IETF RFC 6050 (November 2010): "A Session Initiation Protocol (SIP) Extension for the Identification of Services".

[15] IETF RFC 3261 (June 2002): "SIP: Session Initiation Protocol".

[16] IETF RFC 6665 (July 2012): "SIP-Specific Event Notification".

[17] IETF RFC 3428 (December 2002): "Session Initiation Protocol (SIP) Extension for Instant Messaging".

[18] IETF RFC 3863 (August 2004): "Presence Information Data Format (PIDF)".

[19] IETF RFC 4661 (September 2006): "An Extensible Markup Language (XML)-Based Format for Event Notification Filtering".

[20] IETF RFC 3841 (August 2004): "Caller Preferences for the Session Initiation Protocol (SIP)".

[21] IETF RFC 6086 (January 2011): "Session Initiation Protocol (SIP) INFO Method and Package Framework".

[22] IETF RFC 3840 (August 2004): "Indicating User Agent Capabilities in the Session Initiation Protocol (SIP)".

[23] IETF RFC 4028 (April 2005): "Session Timers in the Session Initiation Protocol (SIP)".

[24] 3GPP TS 24.481: "Mission Critical Services (MCS) group management; Protocol specification".

[25] 3GPP TS 24.484: "Mission Critical Services (MCS) configuration management; Protocol specification".

[26] 3GPP TS 23.281: "Functional architecture and information flows to support Mission Critical Video (MCVideo); Stage 2".

[27] IETF RFC 5373 (November 2008): " Requesting Answering Modes for the Session Initiation Protocol (SIP)".

[28] IETF RFC 5318 (December 2008): "The Session Initiation Protocol (SIP) P-Refused-URI-List Private-Header (P-Header)".

[29] IETF RFC 4483 (May 2006): "A Mechanism for Content Indirection in Session Initiation Protocol (SIP) Messages".

[30] IETF RFC 4964 (September 2007): "The P-Answer-State Header Extension to the Session Initiation Protocol for the Open Mobile Alliance Push to Talk over Cellular".

[31] IETF RFC 4488 (May 2006): "Suppression of Session Initiation Protocol (SIP) REFER Method Implicit Subscription".

[32] IETF RFC 4538 (June 2006): " Request Authorization through Dialog Identification in the Session Initiation Protocol (SIP)".

[33] IETF RFC 4412 (February 2006): "Communications Resource Priority for the Session Initiation Protocol (SIP)".

[34] IETF RFC 4567 (July 2006): "Key Management Extensions for Session Description Protocol (SDP) and Real Time Streaming Protocol (RTSP)".

[35] IETF RFC 5626 (October 2009): "Managing Client-Initiated Connections in the Session Initiation Protocol (SIP)".

[36] 3GPP TS 22.281: "Mission Critical Video over LTE".

[37] IETF RFC 5366 (October 2008): "Conference Establishment Using Request-Contained Lists in the Session Initiation Protocol (SIP)".

[38] IETF RFC 8101 (March 2017): "IANA Registration of New Session Initiation Protocol (SIP) Resource-Priority Namespace for Mission Critical Push To Talk Service".

[39] 3GPP TS 23.032: "Universal Geographical Area Description (GAD)".

[40] 3GPP TS 24.379: "Mission Critical Push To Talk (MCPTT) call control Protocol specification".

[41] IETF RFC 5627 (October 2009): "Obtaining and Using Globally Routable User Agent URIs (GRUUs) in the Session Initiation Protocol (SIP)".

[42] 3GPP TS 24.581: "Mission Critical Video (MCVideo) media plane control; Protocol specification".

[43] IETF RFC 8101 (March 2017): "IANA Registration of New Session Initiation Protocol (SIP) Resource-Priority Namespace for Mission Critical Push To Talk Service".

[44] 3GPP TS 29.468 "Group Communication System Enablers for LTE (GCSE_LTE); MB2 reference point; Stage 3".

[45] W3C: "XML Encryption Syntax and Processing Version 1.1", https://www.w3.org/TR/xmlenc-core1/.

[46] IETF RFC 4648 (October 2006): "The Base16, Base32, and Base64 Data Encodings".

[47] 3GPP TS 23.003: "Numbering, addressing and identification".

[48] IETF RFC 2045 (November 1996): "Multipurpose Internet Mail Extensions (MIME) Part One: Format of Internet Message Bodies".

[49] IETF RFC 2392 (August 1998): "Content-ID and Message-ID Uniform Resource Locators".

[50] W3C: "XML Signature Syntax and Processing (Second Edition)", http://www.w3.org/TR/xmldsig-core/

[51] (Void)

[52] 3GPP TS 24.482: "Mission Critical Services (MCS) identity management Protocol specification".

[53] IETF RFC 4354 (January 2006): "A Session Initiation Protocol (SIP) Event Package and Data Format for Various Settings in Support for the Push-to-Talk over Cellular (PoC) Service".

[54] 3GPP TS 29.283: "Diameter Data Management Applications".

[55] IETF RFC 6509 (February 2012): "MIKEY-SAKKE: Sakai-Kasahara Key Encryption in Multimedia Internet KEYing (MIKEY)".

[56] IETF RFC 4567 (July 2006): "Key Management Extensions for Session Description Protocol (SDP) and Real Time Streaming Protocol (RTSP)".

[57] IETF RFC 4575 (August 2006): "A Session Initiation Protocol (SIP) Event Package for Conference State".

[58] IETF RFC 4122 (July 2005): "A Universally Unique IDentifier (UUID) URN Namespace".

[59] 3GPP TS 24.334: "Proximity-services (ProSe) User Equipment (UE) to ProSe function protocol aspects".

[60] 3GPP TS 24.237: "IP Multimedia (IM) Core Network (CN) subsystem IP Multimedia Subsystem (IMS) service continuity".

[61] 3GPP TS 26.281: "Mission Critical Video (MCVideo); Codecs and media handling".

[62] 3GPP TS 24.301: "Non-Access-Stratum (NAS) protocol for Evolved Packet System (EPS)".

[63] IETF RFC 6809 (November 2012): "Mechanism to Indicate Support of Features and Capabilities in the Session Initiation Protocol (SIP)".

[64] IETF RFC 3515 (April 2003): "The Session Initiation Protocol (SIP) Refer Method".

[65] IETF RFC 7647 (September 2015): "Clarifications for the Use of REFER with RFC 6665".

[66] IETF RFC 7462 (March 2015): "URNs for the Alert-Info Header Field of the Session Initiation Protocol (SIP)".

[67] 3GPP TS 26.346: " Multimedia Broadcast/Multicast Service (MBMS); Protocols and codecs".[68] 3GPP TS 24.008: "Mobile Radio Interface Layer 3 specification; Core Network Protocols; Stage 3".

[69] 3GPP TS 23.203: "Policy and charging control architecture".

[70] 3GPP TS 29.061: "Interworking between the Public Land Mobile Network (PLMN) supporting packet based services and Packet Data Networks (PDN)".

[71] IETF RFC 5368 (October 2008): "Referring to Multiple Resources in the Session Initiation Protocol (SIP)".

[72] IETF RFC 5761 (April 2010): "Multiplexing RTP Data and Control Packets on a Single Port".

[73] 3GPP TS 24.216: "Communication continuity managed object".

[74] 3GPP TS 23.280: " Technical Specification Group Services and System Aspects; Common functional architecture to support mission critical services; Stage 2".

[75] 3GPP TS 22.280: "Mission Critical Services Common Requirements (MCCoRe); Stage 1".

[76] 3GPP TS 24.501: "Non-Access-Stratum (NAS) protocol for 5G System (5GS); Stage 3".

3 Definitions, symbols and abbreviations

3.1 Definitions

For the purposes of the present document, the terms and definitions given in 3GPP TR 21.905 [1] and the following apply. A term defined in the present document takes precedence over the definition of the same term, if any, in 3GPP TR 21.905 [1].

An MCVideo user is affiliated to an MCVideo group: The MCVideo user is listed as a member of the MCVideo group in the MCVideo group document, the MCVideo server owning the MCVideo group has authorised the MCVideo user's interest in the MCVideo group and the MCVideo server serving the MCVideo user has authorised the MCVideo user's interest in the MCVideo group.

An MCVideo user is affiliated to an MCVideo group at an MCVideo client: The MCVideo user is affiliated to the MCVideo group, the MCVideo client has a registered IP address for an IMPU related to the MCVideo ID, and the MCVideo server serving the MCVideo user has authorised the MCVideo user's interest in the MCVideo group at the MCVideo client.

Affiliation status: Applies for an MCVideo user to an MCVideo group and has one of the following states:

a) the "not-affiliated" state indicating that the MCVideo user is not interested in the MCVideo group and the MCVideo user is not affiliated to the MCVideo group;

b) the "affiliating" state indicating that the MCVideo user is interested in the MCVideo group but the MCVideo user is not affiliated to the MCVideo group yet;

c) the "affiliated" state indicating that the MCVideo user is affiliated to the MCVideo group and there was no indication that MCVideo user is no longer interested in the MCVideo group; and

d) the "deaffiliating" state indicating that the MCVideo user is no longer interested in the MCVideo group but the MCVideo user is still affiliated to the MCVideo group.

Ambient viewing call: a call type allowing an authorized MCVideo user to cause an MCVideo client to initiate a communication which results in no indication on the MCVideo UE that it is transmitting. Ambient viewing can be initiated by an authorized MCVideo user who wants to be viewed to by another authorized MCVideo user or can be initiated by an authorized MCVideo user who wants to view to another MCVideo user.

Ambient viewing client role: the role of an MCVideo client in an ambient viewing call, which can be that of:

a) the "viewing MCVideo user"; or

b) the "viewed-to MCVideo user".

Ambient viewing type: the type of an ambient viewing call from the perspective of the relationship of the initiator of the call to the user being viewed to. The two types of ambient viewing call are:

a) "remote-init", indicating that the viewing MCVideo user initiated the call; and

b) "local-init", indicating that the viewed-to MCVideo user initiated the call.

Functional alias status: Applies for the status of a functional alias for an MCVideo user and has one of the following states:

a) the "not-activated" state indicating that the MCVideo user has not activated the functional alias;

b) the "activating" state indicating that the MCVideo user is interested in using the functional alias but the functional alias is not yet activated for the MCVideo user;

c) the "activated" state indicating that the MCVideo user has activated the functional alias;

d) the "deactivating" state indicating that the MCVideo user is no longer interested in using the functional alias but the functional alias is still activated for the MCVideo user; and

e) the "take-over-possible" state indicating that the MCVideo user is interested in using the functional alias but the functional alias is already activated and used by another MCVideo user.

Group document: when the group is not a regroup based on a preconfigured regroup, the term "group document" used within the present document refers to the group document for that group within the GMS as specified in 3GPP TS 24.481 [24]; when the group is a regroup based on a preconfigured group, the term "group document" used within the present document refers to the group document for the preconfigured group as specified in 3GPP TS 24.481 [24] restricted to the users or groups included in the regroup stored by the MCVideo server at the time of the regroup creation, see clause 21.

Group identity: An MCVideo group identity or a temporary MCVideo group identity.

For the purpose of the present document, the following terms and definitions given in 3GPP TS 24.581 [5] apply:

MBMS bearer
MBMS subchannel

MCVideo client ID: is a globally unique identification of a specific MCVideo client instance. MCVideo client ID is a UUID URN as specified in IETF RFC 4122 [67].

MCVideo emergency alert state: MCVideo client internal perspective of the state of an MCVideo emergency alert.

MCVideo emergency group state: MCVideo client internal perspective of the in-progress emergency state of an MCVideo group maintained by the controlling MCVideo function.

MCVideo emergency group call state: MCVideo client internal perspective of the state of an MCVideo emergency group call.

MCVideo emergency private call: MCVideo emergency call between two MCVideo users that is initiated as a private call or a first-to-answer call with emergency indication, or without emergency indication when the MCVideo emergency state is already set,

MCVideo emergency private call state: MCVideo client internal perspective of the state of an MCVideo emergency private call.

MCVideo emergency private priority state: MCVideo client internal perspective of the in-progress emergency private call state of the two participants of an MCVideo emergency private call maintained by the controlling MCVideo function.

MCVideo imminent peril group call state: MCVideo client internal perspective of the state of an MCVideo imminent peril group call.

MCVideo imminent peril group state: MCVideo client internal perspective of the state of an MCVideo imminent peril group.

MCVideo private call: MCVideo call between two MCVideo users that is initiated as a private call or a first-to-answer call.

MCVideo private emergency alert state: MCVideo client internal perspective of the state of an MCVideo private emergency alert targeted to an MCVideo user.

MCVideo video media: streaming video and audio media used in mission critical video systems as defined by 3GPP TS 22.179 [2] and 3GPP TS 23.281 [3].

Media-transmission control entity: A media control resource shared by participants in an MCVideo session, controlled by a state machine to ensure that participants can access the media resource at the same time.

N2: The maximum number of simultaneous affiliations to MCVideo groups that the MCVideo client may have. The value of N2 is specified in the <MaxAffiliationsN2> element of the <Common> element of the MCVideo user profile and corresponds to the parameter Nc2 specified in 3GPP TS 22.280 [75].

Private call: A call initiated by one user towards one other user with the intention to establish an MCVideo private call or MCVideo emergency private call.

Remote change of an MCVideo user's selected group: A mechanism allowing an authorised user to remotely change the selected group of another MCVideo user.

Temporary MCVideo group identity: A group identity representing a temporary grouping of MCVideo group identities formed by the group regrouping operation as specified in 3GPP TS 24.481 [24].

Trusted mutual aid: A business relationship whereby the Partner MCVideo system is willing to share the details of the members of an MCVideo group that it owns with the Primary MCVideo system.

Untrusted mutual aid: A business relationship whereby the Partner MCVideo system is not willing to share the details of the members of an MCVideo group that it owns with the Primary MCVideo system.

Viewing MCVideo user: the MCVideo user in an ambient viewing call receiving the media transmission from the viewed-to MCVideo user;

Viewed-to MCVideo user: the MCVideo user in an ambient viewing call who is being viewed to, may or may not be aware of being viewed to depending on ambient viewing type of the call.

For the purposes of the present document, the following terms and definitions given in 3GPP TS 22.179 [2] apply:

In-progress emergency
MCVideo emergency alert
MCVideo emergency group call
MCVideo emergency state
Partner MCVideo system
Primary MCVideo system

For the purpose of the present document, the following terms and definitions given in 3GPP TS 23.281 [3] apply:

Pre-selected MCVideo user profile
Selected MCVideo user profile

For the purpose of the present document, the following terms and definitions given in 3GPP TS 33.180 [8] apply:

Client Server Key (CSK)
Multicast Floor Control Key (MKFC)
Multicast Signalling Key (MuSiK)
Multicast Signalling Key Identifier (MuSiK-ID)
MBMS subchannel control key (MSCCK)
MBMS subchannel control key identifier (MSCCK-ID)
Private Call Key (PCK)
Signalling Protection Key (SPK)
XML Protection Key (XPK)

Functional alias status: Applies for the status of a functional alias for an MCVideo user and has one of the following states:

a) the "not-activated" state indicating that the MCVideo user has not activated the functional alias;

b) the "activating" state indicating that the MCVideo user is interested in using the functional alias but the functional alias is not yet activated for the MCVideo user;

c) the "activated" state indicating that the MCVideo user has activated the functional alias; and

d) the "deactivating" state indicating that the MCVideo user is no longer interested in using the functional alias but the functional alias is still activated for the MCVideo user.

For the purpose of the present document, the following terms and definitions given in 3GPP TS 22.280 [75] apply:

Functional alias

3.2 Symbols

3.3 Abbreviations

For the purposes of the present document, the abbreviations given in 3GPP TR 21.905 [1] and the following apply. An abbreviation defined in the present document takes precedence over the definition of the same abbreviation, if any, in 3GPP TR 21.905 [1].

CSK	Client-Server Key
ECGI	E-UTRAN Cell Global Identification
IPEG	In-Progress Emergency Group
IPEPC	In-Progress Emergency Private Call
IPIG	In-Progress Imminent peril Group
MBMS	Multimedia Broadcast and Multicast Service
MBSFN	Multimedia Broadcast multicast service Single Frequency Network
MC	Mission Critical
MCS	Mission Critical Service
MCVideo	Mission Critical Video
MCVideo group ID	MCVideo group Identity
MVEA	MCVideo Emergency Alert
MVEG	MCVideo Emergency Group
MVEGC	MCVideo Emergency Group Call
MVEPC	MCVideo Emergency Private Call
MVEPP	MCVideo Emergency Private Priority
MVES	MCVideo Emergency State
MIME	Multipurpose Internet Mail Extensions
MVIG	MCVideo Imminent peril Group
MVIGC	MCVideo Imminent peril Group Call
MONP	MCPTT Off-Network Protocol
MVPEA	MCVideo Private Emergency Alert
NAT	Network Address Translation
PCC	Policy and Charging Control
PCCB	Private Call Call-Back
PLMN	Public Land Mobile Network
QCI	QoS Class Identifier
RTP	Real-time Transport Protocol
SAI	Service Area Identifier
SDP	Session Description Protocol
SIP	Session Initiation Protocol
SPK	Signalling Protection Key
SSRC	Synchronization SouRCe
TGI	Temporary MCVideo Group Identity
TMGI	Temporary Mobile Group Identity
UE	User Equipment
URI	Uniform Resource Identifier
XPK	XML Protection Key

4 General

4.1 MCVideo overview

The MCVideo service supports communication between several users (i.e. group call), where each user has the ability to send and receive video media. The MCVideo service also supports private calls between two users. Group calls and private calls can be provided on-network and off-network.

The present document provides the call control protocol to support the MCVideo architectural procedures specified in 3GPP TS 23.281 [26].

For on-network calls, the present document makes use of the existing IMS procedures specified in 3GPP TS 24.229 [11]. For on-network group calls, the procedures in the present document allow the use of unicast bearers.

The on-network procedures in this document allow an MCVideo user to:

- initiate a new MCVideo group session;
- join an MCVideo group session that has already been established;
- leave an established MCVideo group session and then re-join the same MCVideo group session if still established; and
- use a functional alias to identify the MCVideo user.

For off-network calls, the present document utilises the procedures for ProSe direct discovery for public safety and the procedures for one-to-one ProSe direct communication for Public Safety, as specified in 3GPP TS 24.334 [59] . ProSe is only supported in EPS. The present document specifies the MCVideo Off-Network Protocol (MVONP) and the MVONP application procedures.

For on-network and off-network calls, the present document provides support for MCVideo emergency calls, MCVideo imminent-peril calls and MCVideo emergency alerts.

NOTE: MCVideo emergency calls do not utilise emergency bearers. Instead the EPS bearer priority of a normal bearer is adjusted.

The MCVideo procedures provided by the present document refer to:

- the transmission-control procedures defined in 3GPP TS 24.581[5];
- the group management procedures defined in 3GPP TS 24.481 [24];
- the identity management procedures defined in 3GPP TS 24.482 [52];
- the security procedures defined in 3GPP TS 33.180 [8]; and

  the PS-PS access transfer procedures defined in 3GPP TS 24.237 [60].

The MCVideo procedures provided by the present document access the configuration parameters provided by 3GPP TS 24.483 [4] and 3GPP TS 24.484 [25].

Codecs and media handling for MCVideo are specified in 3GPP TS 26.281 [61];

The following procedures are provided within this document:

- common procedures are specified in clause 6;
- procedures for registration in the IM CN subsystem and service authorisation are specified in clause 7;
- procedures for affiliation are specified in clause 8;
- procedures for on-network and off-network group call are specified in clause 9;
- procedures for on-network and off-network private call are specified in clause 10;

- procedures for on-network and off-network emergency alert are specified in clause 11; and
- procedures for management of functional alias in clause 20;

The MCVideo UE primarily obtains access to the MCVideo service via E-UTRAN or NG-RAN, using the procedures defined in 3GPP TS 24.301 [62] and 3GPP TS 24.501 [76].

4.2 URI and address assignments

In order to support MCVideo, the following URI and address assignments are assumed:

1) the participating MCVideo function is configured to be reachable using:
   a) the public service identity of the participating MCVideo function serving the MCVideo user.

4.3 MCVideo media

A session that contains MCVideo media is either a full-duplex session or a half-duplex session with an SDP media component containing an MCVideo media type with a codec suitable that exists between an MCVideo client and an MCVideo server.

If the MCVideo media session is a half-duplex session, it additionally contains a media component that describes the characteristics of the media-transmission control entity.

4.4 Warning header field

4.4.1 General

The MCVideo server can include a free text string in a SIP response to a SIP request. When the MCVideo server includes a text string in a response to a SIP INVITE request the text string is included in a Warning header field as specified in IETF RFC 3261 [15]. The MCVideo server includes the Warning code set to 399 (miscellaneous warning) and includes the host name set to the host name of the MCVideo server.

EXAMPLE: Warning: 399 "100 User not authorised to make group calls"

4.4.2 Warning texts

The text string included in a Warning header field consists of an explanatory text preceded by a 3-digit text code, according to the following format in Table 4.4.2-1.

Table 4.4.2-1 ABNF for the Warning text

```
warn-text      =/  DQUOTE mcvideo-warn-code SP mcvideo-warn-text DQUOTE
mcvideo-warn-code = DIGIT DIGIT DIGIT
mcvideo-warn-text = *( qdtext | quoted-pair )
```

Table 4.4.2-2 defines the warning texts that are defined for the Warning header field when a Warning header field is included in a response to a SIP INVITE request as specified in clause 4.4.1.

Table 4.4.2-2: Warning texts defined for the Warning header field

Code	Explanatory text	Description
100	function not allowed due to <detailed reason>	The function is not allowed to this user. The <detailed reason> will be either "group definition", "access policy", "local policy", or "user authorisation", or can be a free text string.
101	service authorisation failed	The service authorisation of the MCVideo ID against the IMPU failed at the MCVideo server.
102	too many simultaneous affiliations	The MCVideo user already has N2 maximum number of simultaneous affiliations (see <MaxAffiliationsN2> element of user profile configuration document).
103	maximum simultaneous MCVideo group calls reached	The number of maximum simultaneous MCVideo group calls supported for the MCVideo user has been exceeded.
104	isfocus not assigned	A controlling MCVideo function has not been assigned to the MCVideo session.
105	subscription not allowed in a broadcast group call	Subscription to the conference event package rejected during a group call initiated as a broadcast group call.
106	user not authorised to join chat group	The MCVideo user is not authorised to join this chat group.
107	user not authorised to make private calls	The MCVideo user is not authorised to make private calls.
108	user not authorised to make chat group calls	The MCVideo user is not authorised to make chat group calls.
109	user not authorised to make prearranged group calls	The MCVideo user is not authorised to make group calls to a prearranged group.
110	user declined the call invitation	The MCVideo user declined to accept the call.
111	group call proceeded without all required group members	The required members of the group did not respond within the acknowledged call time, but the call still went ahead.
112	group call abandoned due to required group members not part of the group session	The group call was abandoned, as the required members of the group did not respond within the acknowledged call time.
113	group document does not exist	The group document requested from the group management server does not exist.
114	unable to retrieve group document	The group document exists on the group management server but the MCVideo server was unable to retrieve it.
115	group is disabled	The group has the <disabled> element set to "true" in the group management server.
116	user is not part of the MCVideo group	The group exists on the group management server but the requesting user is not part of this group.
117	the group identity indicated in the request is a prearranged group	The group id that is indicated in the request is for a prearranged group, but did not match the request from the MCVideo user.
118	the group identity indicated in the request is a chat group	The group id that is indicated in the request is for a chat group, but did not match the request from the MCVideo user,
119	user is not authorised to initiate the group call	The MCVideo user identified by the MCVideo ID is not authorised to initiate the group call.
120	user is not affiliated to this group	The MCVideo user is not affiliated to the group.
121	user is not authorised to join the group call	The MCVideo user identified by the MCVideo ID is not authorised to join the group call.
122	too many participants	The group call has reached its maximum number of participants.

123	MCVideo session already exists	Inform the MCVideo user that the group call is currently ongoing.
124	maximum number of private calls reached	The maximum number of private calls allowed at the MCVideo server for the MCVideo user has been reached.
125	user not authorised to make private call with automatic commencement	The MCVideo user is not authorised to make a private call with automatic commencement.
126	user not authorised to make private call with manual commencement	The MCVideo user is not authorised to make a private call with manual commencement.
127	user not authorised to be called in private call	The called MCVideo user is not allowed to be part of a private call.
128	isfocus already assigned	The MCVideo server owning an MCVideo group received a SIP INVITE request destined to the MCVideo group from another MCVideo server already assigned as the controlling MCVideo function and the MCVideo server owning the MCVideo group does not support mutual aid or supports trusted mutual aid but does not authorise trusted mutual aid.
137	the indicated group call does not exist	The participating MCVideo function cannot find an ongoing group session associated with the received MCVideo session identity.
138	subscription of conference events not allowed	The controlling MCVideo function could not allow the MCVideo user to subscribe to the conference event package.
139	integrity protection check failed	The integrity protection of an XML MIME body failed.
140	unable to decrypt XML content	The XML content cannot be decrypted.
141	user unknown to the participating function	The participating function is unable to associate the public user identity with an MCVideo ID.
142	unable to determine the controlling function	The participating function is unable to determine the controlling function for the group call or private call.
143	not authorised to force auto answer	The calling user is not authorised to force auto answer on the called user.
144	user not authorised to call this particular user	The calling user is not authorised to call this particular called user.
145	unable to determine called party	The participating function was unable to determine the called party from the information received in the SIP request.
146	T-PF unable to determine the service settings for the called user	The service settings have not been uploaded by the terminating client to the terminating participating server.
147	user is authorized to initiate a temporary group call	The non-controlling MCVideo function has authorized a request from the controlling MCVideo function to authorize a user to initiate an temporary group session.
148	group is regrouped	The MCVideo group hosted by a non-controlling MCVideo function is part of a temporary group session as the result of the group regroup function.
149	SIP-INFO request pending	The MCVideo client needs to wait for a SIP-INFO request with specific content, before taking further action.
150	invalid combinations of data received in MIME body	The MCVideo client included invalid combinations of data in the SIP request.
154	user not authorised to make ambient viewing call	The MCVideo user is not authorised to make an ambient viewing call.
159	user not authorised to be called by this originating user	The called user is not authorised to receive a call by this originating user.
160	user not authorised to request creation of a regroup	The user is not authorised to request creation of a regroup.

161	user not authorised to request removal of a regroup	The user is not authorised to request removal of a regroup.
162	group call abandoned due to required group members not affiliated	The group call was abandoned as the required number of affiliated group members is not met or some required members are not affiliated.
163	the group identity indicated in the request does not exist	The server determines that the group identity indicates a user or group regroup based on a preconfigured group that does not exist.
165	group ID for regroup already in use	The group ID proposed by the client for the user/group regroup based on a preconfigured group is already in use.
166	maximum number of service authorizations reached	The number of maximum simultaneous service authorizations for the MCVideo user has been reached.
167	call is not allowed on the preconfigured group	Calls are not allowed on this group that is administratively designated for preconfigured group use only.
168	alert is not allowed on the preconfigured group	Alerts are not allowed on this group that is administratively designated for preconfigured group use only.
176	user not authorized to request for binding/unbinding of a functional alias with the MCVideo group(s) for the MCVideo user	The function is not allowed to this user.
177	unable to determine target functional alias or group for creating/removing a binding information for the MCVideo user	The MCVideo server is unable to determine the targeted functional alias or group for creating/removing an binding information for the MCVideo user
178	MCVideo group binding already exists with other functional alias for the MCVideo user	The requested functional alias binding with MCVideo group already exist with other functional alias for the MCVideo user
179	service not authorized with the interconnected system	The MCVideo service is not authorized between the local and the interconnected system and is rejected in the local system
180	service not authorized by the interconnected system	The MCVideo service is not authorized between the local and the interconnected system and is rejected by the interconnected system

4.5 MCVideo session identity

The MCVideo session identity is a SIP URI, which identifies the MCVideo session between:

- the MCVideo client and the participating MCVideo function; and
- the participating MCVideo function and the controlling MCVideo function;

The MCVideo session identity shall be a GRUU as defined in IETF RFC 5627 [41] assigned by the MCVideo server as per 3GPP TS 24.229 [11].

The MCVideo session identity identifies the MCVideo session in such a way that e.g.:

- the MCVideo user is able to subscribe to the participant information of the ongoing MCVideo session;
- the MCVideo user is able to re-join an ongoing MCVideo session; and
- the IM CN subsystem is able to route an initial SIP request to the controlling MCVideo function.

The controlling MCVideo function allocates a unique MCVideo session identity hosted at the controlling MCVideo function for the MCVideo session at the time of session establishment.

When protection of sensitive application data is required by the MCVideo operator, the MCVideo session identity cannot contain identity information that is classed as sensitive such as the MCVideo ID or the MCVideo Group ID, as specified in clause 4.8.

The controlling MCVideo function sends the MCVideo session identity towards the MCVideo client during MCVideo session establishment by including it in the Contact header field of the final SIP response to a session initiation request.

The participating MCVideo function allocates a unique MCVideo session identity hosted at the participating MCVideo function for the MCVideo session when it receives a MCVideo session identity in the Contact header field of a SIP request or a SIP response from the controlling MCVideo function and includes it in the Contact header field of the SIP request or SIP response sent towards the MCVideo client. The participating MCVideo function maintains a mapping of the MCVideo session identities it sends to the MCVideo client to the corresponding MCVideo session identities received from the controlling MCVideo function.

The MCVideo client can cache the MCVideo session identity until a time when it is no longer needed.

The MCVideo session identity is also used in transmission control requests and responses as specified in 3GPP TS 24.581 [42].

4.6 MCVideo priority calls and alerts

4.6.1 MCVideo emergency group calls

MCVideo emergency group calls as defined by 3GPP TS 23.281 [26] are supported by the procedures in this specification. The following MCVideo emergency group call functionalities are described:

- MCVideo emergency group call origination;
- upgrade of an MCVideo group call to an MCVideo emergency group call; and
- in-progress group emergency cancel.

NOTE 1: In-progress group emergency cancel means the cancellation of the in-progress emergency state of the group, which is managed by the controlling MCVideo function.

The above functionalities are supported using both MCVideo prearranged group calls and MCVideo chat group calls.

Key aspects of MCVideo emergency group calls include:

- adjusted EPS bearer priority for all participants whether or not they themselves are in an emergency condition (i.e. have their MCVideo emergency state set). For unicast bearers this is achieved by using the Resource-Priority header field as specified in IETF RFC 4412 [33] with namespaces defined for use by MCVideo specified in IETF RFC 8101 [43], and for MBMS bearers this is achieved by having the participating MCVideo function adjust the ARP (priority, PVI, PCI) and executing the Modify MBMS Bearer Procedure per 3GPP TS 29.468 [44];
- pre-emptive transmission control priority over MCVideo users in MCVideo emergency group calls who themselves do not have their MCVideo emergency state set;
- restoration of normal EPS bearer priority to the call participants when the in-progress emergency group state is cancelled;
- restoration of normal transmission control priority participants when the in-progress emergency group state is cancelled;
- requires the MCVideo user to be authorised to either originate or cancel an MCVideo emergency group call;
- requests to originate MCVideo emergency group calls may also include an indication of an MCVideo emergency alert; and
- requests to cancel MCVideo emergency group calls may also include an indication of cancelling a previously issued MCVideo emergency alert.

There are a number of states that are key in managing these aspects of MCVideo emergency group calls, which include:

- **MCVideo emergency state:** as defined in 3GPP TS 22.281 [36] and 3GPP TS 23.281 [26], indicates that the MCVideo user is in a life-threatening situation. Managed by the MCVideo user of the device or an authorised

MCVideo user. While the MCVideo emergency state is set on the client, all calls originated by the client will be MCVideo emergency calls, assuming the MCVideo user is authorised for MCVideo emergency calls on them.

- **in-progress emergency group state:** as defined in 3GPP TS 22.281 [36] and 3GPP TS 23.281 [26], indicates whether or not there is an MCVideo emergency group call ongoing on the specified group. This state is managed by the controlling MCVideo function. All group calls originated on this MCVideo group when in an in-progress emergency state are MCVideo emergency group calls until this state is cancelled, whether or not the originator is themselves in an MCVideo emergency state.

- **MCVideo emergency group (MVEG) state:** this is an internal state managed by the MCVideo client which tracks the in-progress emergency state of the group as defined in 3GPP TS 22.281 [36] and 3GPP TS 23.281 [26] and managed by the controlling MCVideo function. Ideally, the MCVideo client would not need to track the in-progress emergency group state, but doing so enables the MCVideo client to request MCVideo emergency-level priority earlier than otherwise possible. For example, if the MCVideo user wishes to join an MCVideo emergency group call and is not in MCVideo emergency state itself, the MCVideo client should have emergency level priority. If it has knowledge of the in-progress emergency state of the group, it can request priority by including a Resource-Priority header field set to the MCVideo namespace specified in IETF RFC 8101 [38], and appropriate priority level in the SIP INVITE request (or SIP re-INVITE request).

- **MCVideo emergency group call (MVEGC) state**: this is an internal state managed by the MCVideo client which in conjunction with the MCVideo emergency alert state aids in managing the MCVideo emergency state and related actions.

- **MCVideo emergency alert (MEA) state**: this is also an internal state of the MCVideo client which in conjunction with the MCVideo emergency group call state aids in managing the MCVideo emergency state and related actions.

NOTE 2: The above states and their transitions are described in Annex G.

4.6.2 MCVideo emergency private calls

MCVideo emergency private calls as defined by 3GPP TS 23.281 [26] are supported by the procedures in this specification. The following MCVideo emergency private call functionalities are specified in the present document:

- MCVideo emergency private call origination with optional MCVideo emergency alert initiation;

- upgrade of an MCVideo private call to an MCVideo emergency private; and

- cancellation of the MCVideo emergency private call priority.

Key aspects of MCVideo emergency private calls include:

- adjusted EPS bearer priority for both participants whether or not they are both in an emergency condition (i.e. both have their MCVideo emergency state set). This is achieved by using the Resource-Priority header field as specified in IETF RFC 4412 [33] with namespaces defined for use by MCVideo specified in IETF RFC 8101 [43];

- the initiator of the MCVideo emergency private call can override the other MCVideo user in the MCVideo emergency private call unless that user also has their MCVideo emergency state set;

- restoration of normal EPS bearer priority to the call according to system policy (e.g., configured time limit for the emergency priority of an MCVideo emergency private call or cancellation of the emergency condition of the private call);

- restoration of normal transmission control priority participants when the emergency elevated priority is cancelled;

- requires the MCVideo user to be authorised to either originate or cancel an MCVideo emergency private call;

- requires the targeted MCVideo user to be authorised to receive an MCVideo emergency private call;

- requests to originate MCVideo emergency private calls may also include an indication of an MCVideo emergency alert; and

- the originator of the MCVideo emergency private call can request that the call use either manaual or automatic commencement mode.

There are a number of states that are key in managing these aspects of MCVideo emergency private calls, which include:

- **MCVideo emergency state (MVES):** as defined in 3GPP TS 22.281 [36] and 3GPP TS 23.281 [26], indicates that the MCVideo user is in a life-threatening situation. Managed by the MCVideo user of the device or an authorised MCVideo user. While the MCVideo emergency state is set on the client, all MCVideo group and private calls originated by the client will be MCVideo emergency calls, assuming the MCVideo user is authorised for MCVideo emergency calls on them.

- **MCVideo private emergency alert (MVPEA) state**: this is an internal state of the MCVideo client which in conjunction with the MCVideo emergency private call state aids in managing the MCVideo emergency state and related actions.

- **MCVideo emergency private call (MVEPC) state**: this is an internal state managed by the MCVideo client which in conjunction with the MCVideo emergency alert state aids in managing the MCVideo emergency state and related actions.

- **In-progress emergency private call (IPEPC) state:** indicates whether or not there is an MCVideo emergency private call in-progress for the two participants. This state is managed by the controlling MCVideo function. All private calls originated between these two participants when in an in-progress emergency private call state are MCVideo emergency private calls until this state is cancelled, whether or not the originator is in an MCVideo emergency state.

- **MCVideo emergency private priority (MVEPP) state:** this is an internal state managed by the MCVideo client which tracks the in-progress emergency private call state of the private call managed by the controlling MCVideo function. Ideally, the MCVideo client would not need to track the in-progress emergency private priority state, but doing so enables the MCVideo client to request MCVideo emergency-level priority earlier than otherwise possible. For example, if the MCVideo user wishes to join an MCVideo emergency private call and is not in the MCVideo emergency state, the MCVideo client should have emergency level priority. If it has knowledge of the in-progress emergency private priority state of the private call (i.e., the two participants), it can request priority by including a Resource-Priority header field set to the MCVideo namespace specified in IETF RFC 8101 [38], and appropriate priority level in the SIP INVITE request (or SIP re-INVITE request).

NOTE: The above states and their transitions are described in Annex G.

4.6.3 MCVideo emergency alerts

MCVideo emergency alerts as defined by 3GPP TS 23.281 [26] are supported by the procedures in this specification. The following MCVideo emergency group call functionalities are specified in the present document:

- MCVideo emergency alert origination; and

- MCVideo emergency alert cancellation.

MCVideo emergency alerts are supported procedurally by two general mechanisms. One mechanism is embedded within the MCVideo emergency call (both emergency private call and emergency group call using both prearranged and chat session models) signalling procedures documented in clause 9 and clause 10 of this specification. The other mechanism utilizes SIP MESSAGE requests and is documented in clause 11.

MCVideo emergency alerts can be initiated or cancelled as options in the following signalling procedures documented in clause 9 and clause 10:

- MCVideo emergency group call initiation;

- MCVideo group call upgraded to MCVideo emergency call;

- MCVideo emergency group call cancellation (i.e., in-progress emergency state of the group set to false);

- MCVideo emergency private call initiation; and

- MCVideo private call upgrade to MCVideo emergency private call.

MCVideo emergency alerts can also be initiated or cancelled as described in the procedures of clause 11 which include:

- MCVideo emergency alert initiation; and
- MCVideo emergency alert cancellation (with optional cancelling of the in-progress emergency state of a group).

When MCVideo emergency alerts are initiated as an option in initiating or upgrading to an MCVideo emergency group call or are initiated using SIP MESSAGE requests, they are targeted to an MCVideo group, and, if not already affiliated, will result in the initiator being implicitly affiliated to the MCVideo group. When initiated as an option in initiating or upgrading to an MCVideo emergency private call, an MCVideo emergency alert is targeted to an individual MCVideo user, not to an MCVideo group.

Key aspects of MCVideo emergency alerts include:

- **MCVideo emergency (MVES) state:** the MCVideo client's MCVideo emergency state as described in clause G.1 is set upon initiation of an MCVideo emergency alert. While the MCVideo emergency state is set, assuming the MCVideo user has the needed authorisations, if the user initiates a private call and is authorised to do so, the MCVideo private call will be an MCVideo emergency private call. Similarly, assuming the needed authorisations, any subsequent MCVideo group call initiated by an MCVideo user with the MCVideo emergency state set will be an MCVideo emergency group call.
- **MCVideo emergency alert (MVEA) state:** the MCVideo client maintains the internal MCVideo emergency alert state (MVEA) which aids in the management of the MCVideo emergency state as described in clause G.5.
- **MCVideo private emergency alert (MVPEA) state**: the MCVideo client maintains the MCVideo private emergency alert state of an MCVideo emergency alert targeted to an MCVideo user which aids in the management of the MCVideo emergency state.
- **In-progress emergency group (IPEG) state :** MCVideo emergency alert initiation or cancellation in and of itself does not impact the in-progress emergency state of the targeted group, which is maintained by the controlling MCVideo function, nor does it impact the priority of the EPS bearers. However, in setting the MCVideo emergency state, assuming an MCVideo user is authorised to make MCVideo emergency calls on the targeted group, any subsequent MCVideo group call the MCVideo user initiates on the group will cause the in-progress emergency state of the group to be set as described in clause G.2 and will result in upgraded priority of the EPS bearers used in the MCVideo emergency call.
- **Authorisations for emergency alerts:** MCVideo users need to be authorised to initiate MCVideo emergency alerts and additionally need to be authorised to cancel MCVideo emergency alerts. The parameters related to these authorisations are specified in 3GPP TS 24.483 [4] and 3GPP TS 24.484 [25].

4.6.4 MCVideo imminent peril group call

MCVideo imminent peril group calls as defined by 3GPP TS 23.281 [26] are supported by the procedures in this specification. The following MCVideo imminent peril group calls functionalities are specified in the present document:

- MCVideo imminent peril group calls origination;
- upgrade of an MCVideo group call to an MCVideo imminent peril group call;
- upgrade from an MCVideo imminent peril group call to an MCVideo emergency group call; and
- cancellation of the in-progress imminent peril state of the group.

Key aspects of MCVideo imminent peril include:

- adjusted EPS bearer priority for all participants when the in-progress imminent peril state of the group is set whether or not they themselves initiated an imminent peril group call. For unicast bearers this is achieved by using the Resource-Priority header field as specified in IETF RFC 4412 [33] with namespaces defined for use by MCVideo specified in IETF RFC 8101 [43], and for MBMS bearers this is achieved by having the participating MCVideo function adjust the ARP (priority, PVI, PCI) and executing the Modify MBMS Bearer Procedure per 3GPP TS 29.468 [44];
- restoration of normal EPS bearer priority to the call when the in-progress imminent peril group state is cancelled; and

- requires the MCVideo user to be authorised to either originate or cancel an MCVideo imminent peril group call.

Relationship to other MCVideo priority group call types:

- A normal MCVideo group call can be upgraded to an MCVideo imminent peril group call;
- An MCVideo imminent peril group call can be upgraded to an MCVideo emergency group call;
- When either an MCVideo imminent peril group call or an MCVideo emergency group call (i.e., their respective "in-progress" states) the group call returns to the priority designated for normal group calls, i.e., their is no direct transition from an MCVideo emergency group call to an MCVideo imminent peril group call;
- MCVideo imminent peril functionality is only applicable to MCVideo group calls, not MCVideo private calls; and
- MCVideo imminent peril group calls have no associated alert capabilities such as the MCVideo emergency alert capability which is associated with MCVideo emergency group calls.

There are a number of states that are key in managing these aspects of MCVideo imminent peril group calls, which include:

- **MCVideo imminent peril group (MVIG) state**: this is an internal state of the MCVideo client which in conjunction with the MCVideo imminent peril group call state aids the client in managing the use of the Resource-Priority header field and related actions.
- **MCVideo imminent peril group call (MVIGC) state**: this is an internal state managed by the MCVideo client which in conjunction with the MCVideo imminent peril group state aids the client in managing the use of the Resource-Priority header field and related actions.
- **In-progress imminent peril group (IPIG) state:** this a state of the MCVideo group which is managed by the controlling MCVideo function. While an MCVideo group is in an in-progress imminent peril group state, all participants in group calls using this group will receive elevated priority.

The above states and their transitions are described in Annex G.

4.7 Communication security

4.7.1 Media security

If a mission critical organisation requires MCVideo users to communicate using end-to-end security, a security context needs to be established between the initiator of the call and the recipient(s) of the call, prior to the establishment of media, or transmission control signalling. This provides assurance to MCVideo users that no unauthorised access to communications is taking place within the MCVideo network. An MCVideo key management server (KMS) manages the security domain. For any end-point to use or access end-to-end secure communications, it needs to be provisioned with keying material associated to its identity by the KMS as specified in 3GPP TS 33.180 [8].

The MIKEY-SAKKE message in the SIP INVITE/REFER provides a single PCK/PCK-ID, which is used to derive the SRTP session key for both the video and audio streams. For floor and media control, the SRTCP key is different depending on which interface the SRTCP key is currently traversing (see 3GPP TS 33.180 [8]). For unicast uplink and downlink between the client and the server, the SRTCP key is the appropriate CSK/CSK-ID. Between two MCVideo servers, the SRTCP key is the SPK/SPK-ID. For multicast (when used), the SRTCP key is the MuSiK/MuSiK-ID. For a more complete description of media plane security for MCVideo see clause 13 of 3GPP TS 24.581 [5].

For group calls, the security context is set up at the time of creation of the group. The group management server creates group call keying material associated with the group and distributes it to all members of the group, in advance of the initiation of a group call as specified in 3GPP TS 24.481 [24] and 3GPP TS 33.180 [8]. The establishment of a security context for group calls has no impact on this specification.

For private calls, the security context is initiated at call setup. An end-to-end security context is established that is unique to the pair of users involved in the call. The procedure involves transferral of an encapsulated private call key (PCK) and private call key id (PCK-ID) from the initiator to the terminator. The PCK is encrypted using the terminator's MCVideo ID and domain-specific material provided from the terminating user's KMS. The domain-specific key material of the terminator's KMS is identified by a KMS URI stored in the terminating user profile. The domain-

specific key material for all KMSs is downloaded in advance from the initiator's home KMS as described in 3GPP TS 33.180 [8]. The PCK and PCK-ID are distributed within a MIKEY payload within the SDP offer of the private call request. This payload is called a MIKEY-SAKKE I_MESSAGE, as defined in IETF RFC 6509 [55], which ensures the confidentiality, integrity and authenticity of the payload. The encoding of the MIKEY payload in the SDP offer is described in IETF RFC 4567 [56] using an "a=key-mgmt" attribute. The payload is signed using a key associated to the identity of the initiating user. At the terminating side, the signature is validated. If valid, the UE extracts and decrypts the encapsulated PCK. The MCVideo UE also extracts the PCK-ID. This process is described in 3GPP TS 33.180 [8]. With the PCK successfully shared between the two MCVideo UEs, the UEs are able to use SRTP/SRTCP to create an end-to-end secure session.

End-to-end security is independent of the transmission path and hence is applicable to both on and off-network communications. With a security context established, the group call key and private call key can be used to encrypt media and, if required, transmission control traffic between the end-points as described in 3GPP TS 24.581 [5].

4.7.2 Signalling security

Signalling security is established between the participating MCVideo function and the MCVideo client. This allows the following signalling to be integrity and confidentiality protected through the SIP core:

- Sensitive application data (as described in clause 4.8)
- Transmission control messages sent using unicast
- Media control messages

For unicast signalling between the participating MCVideo function and the MCVideo client, the signalling is protected using the Client-Server Key (CSK), identified by a Client-Server Key Identifer (CSK-ID). The CSK and CSK-ID are uploaded from the MCVideo client to the MCVideo server within a MIKEY MIME payload within a SIP REGISTER message for service authorisation or a SIP PUBLISH message for service authorisation. The CSK is confidentiality and integrity protected to the public service identity identifying the participating MCVideo function serving the MCVideo user and signed by the MCVideo ID of the MCVideo user.

The CSK and CSK-ID may also be updated by the participating MCVideo function. The procedure involves the participating MCVideo function generating a new CSK and CSK-ID and distributing the new key to the MCVideo client using a CSK 'key download' SIP MESSAGE. The message contains a MIKEY MIME payload containing the CSK and CSK-ID. The CSK is confidentiality and integrity protected to the public service identity identifying the participating MCVideo function serving the MCVideo user and signed by the MCVideo ID of the MCVideo user. The client only uses a single CSK at any one time and discards the previously established CSK on receiving a new CSK.

4.8 Protection of sensitive application data.

In certain deployments, for example, in the case that the MCVideo operator uses the underlying SIP core infrastructure from the carrier operator, the MCVideo operator can prevent certain sensitive application data from being visible in the clear to the SIP layer. The following data are classed as sensitive application data:

- MCVideo ID;
- MCVideo group ID;
- user location information;
- emergency, alert and imminent-peril indicators;
- access token (containing the MCVideo ID);
- MCVideo client ID; and
- functional alias.

The above data is transported as XML content in SIP messages. in XML elements or XML attributes.

Data is transported in attributes in the following circumstances in the procedures in the present document:

- an MCVideo ID, an MCVideo Group ID, and an MCVideo client ID in an XML document published in SIP PUBLISH request for affiliation according to IETF RFC 3856 [13];

- an MCVideo ID or an MCVideo Group ID in XML document notified in a SIP NOTIFY request for affiliation according to IETF RFC 3856 [13];

- an MCVideo ID in application/resource-lists+xml document included in an SIP INVITE request setting up a private call according to IETF RFC 5366 [37]; and

- an MCVideo ID in XML document provided in SIP NOTIFY request of a conference event package according to IETF RFC 4575 [57];

- an MCVideo ID and functional alias in an XML document published in SIP PUBLISH request for functional alias management according to IETF RFC 3856 [13]; and

- an MCVideo ID and functional alias in an XML document notified in a SIP NOTIFY request for functional alias management according to IETF RFC 3856 [13].

3GPP TS 33.180 [8] describes a method to provide confidentiality protection of sensitive application data in elements by using XML encryption (i.e. xmlenc) and in attributes by using an attribute confidentiality protection scheme described in clause 6.6.2.3 of the present document. Integrity protection can also be provided by using XML signatures (i.e. xmlsig).

Protection of the data relies on a shared XML protection key (XPK) used to encrypt and sign data:

- between the MCVideo client and the MCVideo server, the XPK is a client-server key (CSK); and

- between MCVideo servers and between MCVideo domains, the XPK is a signalling protection key (SPK).

The CSK (XPK) and a key-id CSK-ID (XPK-ID) are generated from keying material provided by the key management server. Identity based public key encryption based on MIKEY-SAKKE is used to transport the CSK between SIP end-points. The encrypted CSK is transported from the MCVideo client to the MCVideo server when the MCVideo client performs service authorisation as described in clause 7 and is also used during service authorisation to protect the access token.

The SPK (XPK) and a key-id SPK-ID (XPK-ID) are directly provisioned in the MCVideo servers.

Configuration in the MCVideo client and MCVideo server is used to determine whether one or both of confidentiality protection and integrity protection are required.

4.9 MCVideo client ID

The MCVideo client assigns the MCVideo client ID when the MCVideo client is used for the first time. The MCVideo client generates the MCVideo client ID as specified in clause 4.2 of IETF RFC 4122 [58].

The MCVideo client preserves the MCVideo client ID:

- while the MCVideo client is SIP registered as specified in 3GPP TS 24.229 [11];

- while the MCVideo client is not SIP registered as specified in 3GPP TS 24.229 [11] and the UE serving the MCVideo client is switched on;

- while the UE serving the MCVideo client is switched off; and

- while the UE serving the MCVideo client is power-cycled.

NOTE: MCVideo client ID is not preserved when the UE is reset to factory settings.

4.10 Off-network MCVideo

Off-network services are available for the user if the value of "/<*x*>/<*x*>/OffNetwork/Authorised" leaf node present in the MCVideo user profile as specified in 3GPP TS 24.483 [4] is set to "true".

5 Functional entities

5.1 General

This clause associates the functional entities with the MCVideo roles described in the stage 2 architecture document (see 3GPP TS 23.281 [26]).

5.2 MCVideo client

To be compliant with the procedures in the present document, an MCVideo client shall:

- act as the user agent for all MCVideo application transactions (e.g. initiation of a group call); and
- support handling of the MCVideo client ID as described in clause 4.10.

To be compliant with the on-network procedures in the present document, an MCVideo client shall:

- support the MCVideo client on-network procedures defined in 3GPP TS 23.281 [6];
- support the GCS UE procedures defined in 3GPP TS 23.468 [63] for unicast delivery, MBMS delivery and service continuity;
- act as a SIP UA as defined in 3GPP TS 24.229 [11];
- generate SDP offer and SDP answer in accordance with 3GPP TS 24.229 [11] and clause 6.2;
- act as a transmission control participant responsible for transmission control requests and implement the on-network procedures for transmission and reception control requests as specified in 3GPP TS 24.581 [5];
- for registration and service authorisation, implement the procedures specified in clause 7.2;
- for affiliation, implement the procedures specified in clause 8.2;
- for group call functionality (including emergency and imminent peril), implement the MCVideo client procedures specified in clause 9.2; and
- for private call functionality (including emergency), implement the MCVideo client procedures specified in clause 10.2;
- for emergency alert, implement the procedures specified in clause 11.2; and
- for functional alias management, implement the procedures specified in clause 20.2.1.

To be compliant with the off-network procedures in the present document, an MCVideo client shall:

- support the off-network procedures defined in 3GPP TS 23.281 [26];
- support the MONP MCVideo messages specified in clause 17;
- act as a transmission control participant for transmission and reception control requests and implement the off-network procedures for transmission and reception control requests as specified in 3GPP TS 24.581 [5];
- act as a transmission control server providing distributed transmission and reception control and implement the off-network procedures for transmission and reception control as specified in 3GPP TS 24.581 [5];
- implement the procedures for ProSe direct discovery for public safety use as specified in 3GPP TS 24.334 [59];
- implement the procedures for one-to-one ProSe direct communication for Public Safety use as specified in 3GPP TS 24.334 [28];
- for group call functionality (including emergency and imminent peril), implement the MCVideo client procedures specified in clause 9.3; and

- for private call functionality, implement the MCVideo client procedures specified in clause 10.3.

To be compliant with the on-network and off-network procedures in the present document requiring end-to-end private call security key distribution, an MCVideo client shall support the procedures specified in 3GPP TS 33.180 [8].

To be compliant with the procedures for confidentiality protection of XML elements in the present document, the MCVideo client shall implement the procedures specified in clause 6.6.2.

To be compliant with the procedures for integrity protection of XML MIME bodies in the present document, the MCVideo client shall implement the procedures specified in clause 6.6.3.

5.3 MCVideo server

5.3.1 General

An MCVideo server can perform the controlling role for group calls and private calls as defined in 3GPP TS 23.281 [26].

An MCVideo server can perform the participating role for group calls and private calls as defined in 3GPP TS 23.281 [26].

An MCVideo server performing the participating role can serve an originating MCVideo user.

An MCVideo server performing the participating role can serve a terminating MCVideo user.

The same MCVideo server can perform the participating role and controlling role for the same group session.

When referring to the procedures in the present document for the MCVideo server acting in a participating role for the served user, the term, "participating MCVideo function" is used.

When referring to the procedures in the present document for the MCVideo server acting in a controlling role for the served user, the term "controlling MCVideo function" is used.

To be compliant with the procedures in the present document, an MCVideo server shall:

- support the MCVideo server procedures defined in 3GPP TS 23.281 [26];
- implement the role of an AS performing 3rd party call control acting as a routing B2BUA as defined in 3GPP TS 24.229 [4];
- support the GCS AS procedures defined in 3GPP TS 23.468 [57] for unicast delivery, MBMS delivery and service continuity;
- generate SDP offer and SDP answer in accordance with 3GPP TS 24.229 [4] and clause 6.3;
- implement the role of a centralised transmission control server and implement the on-network procedures for transmission and reception control as specified in 3GPP TS 24.581 [42];
- for registration and service authorisation, implement the procedures specified in clause 7.3;
- for affiliation, implement the procedures specified in clause 8.2.2;
- for group call functionality (including emergency and imminent peril), implement the MCVideo server procedures specified in clause 9.2;
- for private call functionality, implement the MCVideo server procedures specified in clause 10.2;
- for priority sharing, implement the MCVideo server procedures in clause 6.7; and
- for functional alias management, implement the procedures specified in clause 20.2.2.

To be compliant with the procedures in the present document requiring the distribution of private call keying material between MCVideo clients as specified in 3GPP TS 33.180 [8], an MCVideo server shall ensure that the keying material is copied from incoming SIP messages into the outgoing SIP messages.

To be compliant with the procedures for confidentiality protection of XML elements in the present document, the MCVideo server shall implement the procedures specified in clause 6.6.2.

To be compliant with the procedures for integrity protection of XML MIME bodies in the present document, the MCVideo server shall implement the procedures specified in clause 6.6.3.

5.3.2 Functional connectivity models

The following figures give an overview of the connectivity between the different functions of the MCVideo server as described in clause 5.3.1.

NOTE: Separate boxes are shown for each of the functions of the MCVideo server. In each MC system, these functions can be physically combined into one MCVideo server or can be implemented on more than one MCVideo server. For example, there could be an instantiation of an MCVideo server that only serves as a controlling MCVideo function, but not as a participating MCVideo function for any MCVideo clients. When an MCVideo server supports more than one function, then sending requests from one function to another does not incur a traversal of the underlying IMS SIP core network.

Figure 5.3.2-1 shows the basic functions of the MCVideo server when operating within the primary MCVideo system.

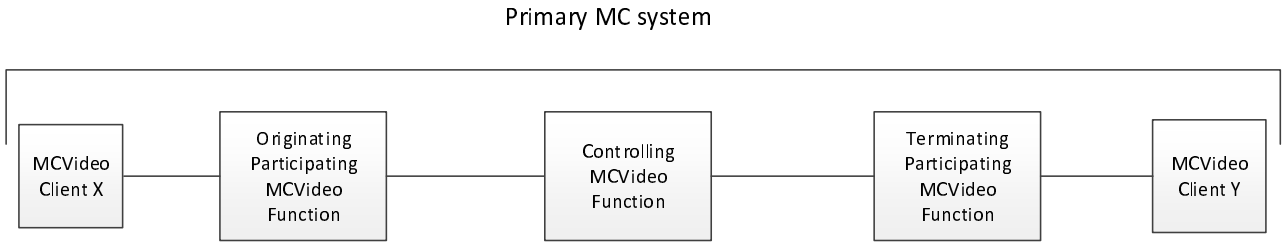

Figure 5.3.2-1: Functions of the MCVideo server in the primary MC system

Figure 5.3.2-2 shows the roles of the MCVideo server in a mutual aid relationship between a primary MC system and a partner MC system. Here, the controlling MCVideo function is in the primary MC system and the called user is homed in a partner MC system.

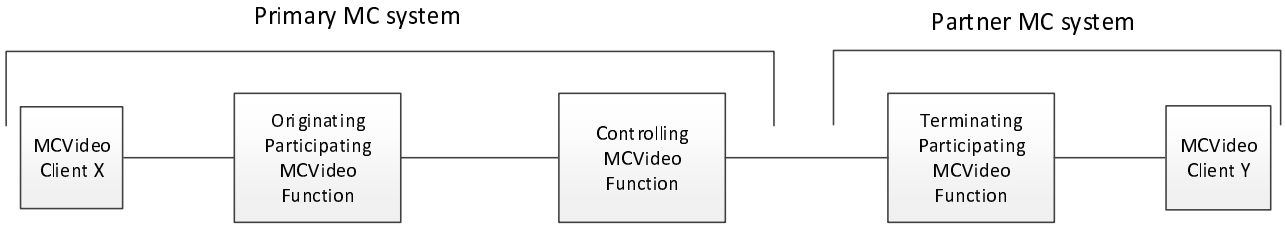

Figure 5.3.2-2: Mutual aid relationship between the primary MC system and a partner MC system with the controlling MCVideo function in the primary MC system

Figure 5.3.2-3 shows the roles of the MCVideo server in a mutual aid relationship between a primary MC system and a partner MC system. Here, the controlling MCVideo function is in the partner MC system.

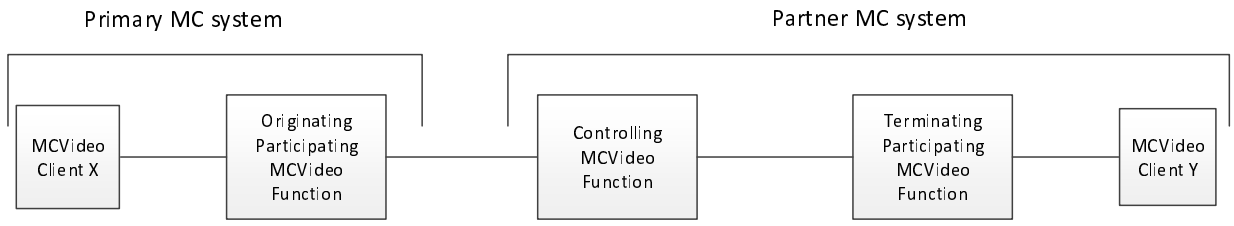

Figure 5.3.2-3: Mutual aid relationship between the primary MC system and a partner MC system with the controlling MCVideo function in the partner MC system

Figure 5.3.2-4 illustrates a functional connectivity model involving multiple partner systems where the partner system that owns the group does not home any of the group members.

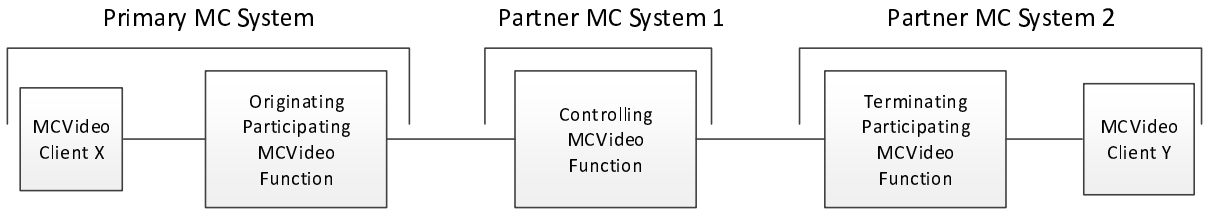

Figure 5.3.2-4: : Mutual aid relationship between the primary MC system and more than one partner MC system for MCVideo service

Other functional connectivity models can exist.

5.3.3 Failure case

When initiating a failure response to any received request, depending on operator policy, the MCVideo server may insert a SIP Response-Source header field with an "fe" header field parameter constructed with the URN namespace "urn:3gpp:fe", the fe-id part of the URN set to "as" and the "role" header field parameter set to "pf-mcvideo-server", "cf-mcvideo-server" or "ncf-mcvideo-server" depending on the current role endorsed by the MCVideo server and in accordance with clause 7.2.17 of 3GPP TS 24.229 [11].

5.4 MCVideo UE-to-network relay

To be compliant with the procedures in the present document for service continuity, an MCVideo UE-to-network relay shall support the UE-to-network relay procedures as specified in 3GPP TS 24.334 [59] and 3GPP TS 23.281 [26].

5.5 MCVideo gateway server

5.5.1 General

To allow interconnection between MCVideo systems in different trust domains, MC Gateway Servers can be optionally added on the path between controlling and participating MCVideo functions and between controlling and non-controlling MCVideo functions.

An MCVideo gateway server acts as a SIP and HTTP proxy for signalling with an interconnected MCVideo system in a different trust domain.

An MCVideo gateway server acts as an application and security gateway with an interconnected MCVideo system in a different trust domain.

An MCVideo gateway server provides topology hiding to the interconnected MCVideo system in a different trust domain.

An MCVideo gateway server enforces local policies and local security.

An MCVideo gateway server can be an exit point from the local MCVideo system to an interconnected MCVideo system in a different trust domain, an entry point to the MCVideo system from an interconnected MCVideo system in a different trust domain, or both.

An MCVideo gateway server is transparent to controlling and participating MCVideo functions and to controlling and non-controlling MCVideo functions. When required for interconnection, MC gateway server URIs are known and used by MCVideo servers in place of the PSIs of the interconnected MCVideo server. The MCVideo server does not need to know if it finally addresses directly a controlling MCVideo function or an intermediate MCVideo gateway server.

To be compliant with the procedures in the present document, an MCVideo gateway server shall:

- support the MC gateway server procedures defined in 3GPP TS 23.280 [74] and 3GPP TS 23.281 [26]; and

- support the MC gateway server procedures defined in 3GPP TS 33.180 [8];
- implement the procedures specified in clause 6.9.

To be compliant with the procedures for confidentiality protection in the present document, the MCVideo gateway server shall implement the procedures specified in clause 6.6.2, acting on behalf of the MCVideo server when sending or receiving confidentiality protected content to or from an MCVideo server in another trust domain.

To be compliant with the procedures for integrity protection of XML MIME bodies in the present document, the MCVideo gateway server shall implement the procedures specified in clause 6.6.3, acting on behalf of the MCVideo server when sending or receiving integrity protected content to or from an MCVideo server in another trust domain.

6 Common procedures

Editor's Note: simultaneous session for MCVideo calls and support for multiple devices could also be added in this section.

6.1 Introduction

This clause describes the common procedures for each functional entity as specified.

6.2 MCVideo client procedures

6.2.0 Distinction of requests at the MCVideo client

6.2.0.1 SIP MESSAGE request

The MCVideo client needs to distinguish between the following SIP MESSAGE requests:

- SIP MESSAGE request routed to the MCVideo client containing a Content-Type header field set to "application/vnd.3gpp.mcvideo-location-info+xml" and includes an XML body containing a Location root element containing a Configuration element. Such requests are known as "SIP MESSAGE request for location report configuration" in the present document;
- SIP MESSAGE request routed to the MCVideo client containing a Content-Type header field set to "application/vnd.3gpp.mcvideo-location-info+xml" and includes an XML body containing a Location root element containing a Request element. Such requests are known as "SIP MESSAGE request for location report request" in the present document.
- SIP MESSAGE request routed to the MCVideo client containing a Content-Type header field set to "application/vnd.3gpp.mcvideo -info+xml" and includes an XML body containing a <mcvideo-info> root element containing the <mcvideo-Params> element and an <anyExt> element containing the <request-type> element set to a value of "group-selection-change-request". Such requests are known as "SIP MESSAGE request for group selection change request for terminating client";
- SIP MESSAGE request routed to the MCVideo client containing a Content-Type header field set to "application/vnd.3gpp.mcvideo -info+xml" and includes an XML body containing a <mcvideo-info> root element containing the <mcvideo-Params> element and an <anyExt> element containing the <response-type> element set to a value of "group-selection-change-response". Such requests are known as "SIP MESSAGE request for group selection change response for terminating client";
- SIP MESSAGE request routed to the MCVideo client containing a Content-Type header field set to "application/mikey" and a CSB-ID containing a CSK-ID. Such requests are known as "SIP MESSAGE request for CSK download for terminating client";
- SIP MESSAGE requests routed to the MCVideo client with the Request-URI set to a public user identity of the MCVideo user that contains a <preconfigured-group> element in an application/vnd.3gpp.mcvideo-regroup+xml MIME body and a <regroup-action> element set to "create". Such requests are known as "SIP MESSAGE

request to the MCVideo client to request creation of a regroup using preconfigured group" in the procedures in the present document;

- SIP MESSAGE requests routed to the MCVideo client with the Request-URI set to a public user identity of the MCVideo user that contains a <preconfigured-group> element in an application/vnd.3gpp.mcvideo-regroup+xml MIME body and a <regroup-action> element set to "remove". Such requests are known as "SIP MESSAGE request to the MCVideo client to request removal of a regroup using preconfigured group" in the procedures in the present document.

- SIP MESSAGE requests routed to the MCVideo client containing a Content-Type header field set to "application/vnd.3gpp.mcvideo-info+xml" and including an XML body containing a <mcvideo-info> root element containing the <mcvideo-Params> element and an <emergency-alert-area-ind> element. Such requests are known as "SIP MESSAGE request for notification of entry into or exit from an emergency alert area"; and

- SIP MESSAGE requests routed to the MCVideo client containing a Content-Type header field set to "application/vnd.3gpp.mcvideo-info+xml" and including an XML body containing a <mcvideo-info> root element containing the <mcvideo-Params> element and an <group-geo-area-ind> element. Such requests are known as "SIP MESSAGE request for notification of entry into or exit from a group geographic area".

6.2.1 SDP offer generation

The SDP offer shall contain two SDP media-level sections for MCVideo video media according to 3GPP TS 24.229 [11] and, if transmission control shall be used during the session, shall contain one SDP media-level section for a media- transmission control entity according to 3GPP TS 24.581 [5].

When composing an SDP offer according to 3GPP TS 24.229 [11] the MCVideo client:

1) shall set the IP address of the MCVideo client for the offered MCVideo video media stream and, if transmission control shall be used, for the offered media-transmission control entity;

NOTE: If the MCVideo client is behind a NAT the IP address and port included in the SDP offer can be a different IP address and port than the actual IP address and port of the MCVideo client depending on the NAT traversal method used by the SIP/IP Core.

2) shall include an "m=audio" media-level section for the MCVideo media stream consisting of:

   a) the port number for the media stream selected; and

   b) the codec(s) and media parameters and attributes with the following clarification:

      i) if the MCVideo client is initiating a call to a group identity;

      ii) if the <preferred-voice-encodings> element is present in the group document retrieved by the group management client as specified in 3GPP TS 24.481 [24] containing an <encoding> element with a "name" attribute; and

      iii) if the MCVideo client supports the encoding name indicated in the value of the "name" attribute;

      then the MCVideo client:

      i) shall insert the value of the "name" attribute in the <encoding name> field of the "a=rtpmap" attribute as defined in IETF RFC 4566 [2]; and

   c) "i=" field set to "audio component of MCVideo" according to 3GPP TS 24.229 [11];

3) shall include an "m=video" media-level section for the MCVideo media stream consisting of:

   a) the port number for the media stream selected; and

   b) the codec(s) and media parameters and attributes with the following clarification:

      i) if the MCVideo client is initiating a call to a group identity;

ii) if the <preferred-video-encodings> element is present in the group document retrieved by the group management client as specified in 3GPP TS 24.481 [24] containing an <encoding> element with a "name" attribute; and

iii) if the MCVideo client supports the encoding name indicated in the value of the "name" attribute;

then the MCVideo client:

i) shall insert the value of the "name" attribute in the <encoding name> field of the "a=rtpmap" attribute as defined in IETF RFC 4566 [2];

c) if the SDP offer is for an ambient viewing call:

i) if this is a remotely initiated ambient viewing call, include an "a=recvonly" attribute; or

ii) if this is a locally initiated ambient viewing call, include an "a=sendonly" attribute; and

d) "i=" field set to "video component of MCVideo" according to 3GPP TS 24.229 [11];

4) if transmission control shall be used during the session, shall include an "m=application" media-level section as specified in 3GPP TS 24.581 [5] clause 12 for a media-transmission control entity, consisting of:

a) the port number for the media-transmission control entity selected as specified in 3GPP TS 24.581 [5]; and

b) the 'fmtp' attributes as specified in 3GPP TS 24.581 [5] clause 14; and

5) if end-to-end security is required for a private call and the SDP offer is not for establishing a pre-established session, shall include the MIKEY-SAKKE I_MESSAGE in an "a=key-mgmt" attribute as a "mikey" attribute value in the SDP offer as specified in IETF RFC 4567 [34].

6.2.2 SDP answer generation

When the MCVideo client receives an initial SDP offer for an MCVideo session, the MCVideo client shall process the SDP offer and shall compose an SDP answer according to 3GPP TS 24.229 [11].

When composing an SDP answer, the MCVideo client:

1) shall accept the MCVideo video media stream in the SDP offer;

2) shall set the IP address of the MCVideo client for the accepted MCVideo video media stream and, if included in the SDP offer, for the accepted media- transmission control entity;

NOTE: If the MCVideo client is behind a NAT the IP address and port included in the SDP answer can be a different IP address and port than the actual IP address and port of the MCVideo client depending on the NAT traversal method used by the SIP/IP Core.

3) shall include an "m=audio" media-level section for the accepted MCVideo video media stream consisting of:

a) the port number for the media stream;

b) media-level attributes as specified in 3GPP TS 24.229 [11]; and

c) "i=" field set to "audio component of MCVideo" according to 3GPP TS 24.229 [11]; and

4) shall include an "m=video" media-level section for the accepted MCVideo video media stream consisting of:

a) the port number for the media stream;

b) media-level attributes as specified in 3GPP TS 24.229 [11]; and

c) "i=" field set to "video component of MCVideo" according to 3GPP TS 24.229 [11]; and

5) if included in the SDP offer, shall include the media-level section of the offered media-transmission control entity consisting of:

a) an "m=application" media-level section as specified in 3GPP TS 24.581 [5] clause 12; and

b) 'fmtp' attributes as specified in 3GPP TS 24.581 [5] clause 14.

6.2.3 Commencement modes

6.2.3.1 Automatic commencement mode

6.2.3.1.1 Automatic commencement mode for private calls

When performing the automatic commencement mode procedures, the MCVideo client:

1) shall accept the SIP INVITE request and generate a SIP 200 (OK) response according to rules and procedures of 3GPP TS 24.229 [11];

2) shall include the option tag "timer" in a Require header field of the SIP 200 (OK) response;

3) shall include the g.3gpp.mcvideo media feature tag in the Contact header field of the SIP 200 (OK) response;

4) shall include the g.3gpp.icsi-ref media feature tag containing the value of "urn:urn-7:3gpp-service.ims.icsi.mcvideo" in the Contact header field of the SIP 200 (OK) response;

5) shall include the Session-Expires header field in the SIP 200 (OK) response and start the SIP session timer according to IETF RFC 4028 [23]. The "refresher" parameter in the Session-Expires header field shall be set to "uas";

6) shall, if the incoming SIP INVITE request contains a Replaces header field, include in the SDP answer in the SIP 200 (OK) response to the SDP offer the parameters used for the pre-established session identified by the contents of the Replaces header field;

7) shall, if the incoming SIP INVITE request does not contain a Replaces header field, include an SDP answer in the SIP 200 (OK) response to the SDP offer in the incoming SIP INVITE request according to 3GPP TS 24.229 [11] with the clarifications given in clause 6.2.2;

NOTE: In the case of a new emergency call where the terminating client is using a pre-established session, the SIP INVITE request containing a Replaces header is used to replace the pre-established session.

8) shall send the SIP 200 (OK) response towards the MCVideo server according to rules and procedures of 3GPP TS 24.229 [11];

9) shall, if the incoming SIP INVITE request contains a Replaces header field, release the pre-established session identified by the contents of the Replaces header field; and

10) shall interact with the media plane as specified in 3GPP TS 24.581 [5].

When NAT traversal is supported by the MCVideo client and when the MCVideo client is behind a NAT, generation of SIP responses is done as specified in this clause and as specified in IETF RFC 5626 [35].

6.2.3.1.2 Automatic commencement mode for group calls

When performing the automatic commencement mode procedures, the MCVideo client shall follow the procedures in clause 6.2.3.1.1 with the following clarification:

- The MCVideo client may include a P-Answer-State header field with the value "Confirmed" as specified in IETF RFC 4964 [30] in the SIP 200 (OK) response.

6.2.3.2 Manual commencement mode

6.2.3.2.1 Manual commencement mode for private calls

When performing the manual commencement mode procedures:

1) if the MCVideo user declines the MCVideo session invitation the MCVideo client shall send a SIP 480 (Temporarily Unavailable) response towards the MCVideo server with the warning text set to: "110 user declined the call invitation" in a Warning header field as specified in clause 4.4, and not continue with the rest of the steps in this clause.

The MCVideo client:

1) shall accept the SIP INVITE request and generate a SIP 180 (Ringing) response according to rules and procedures of 3GPP TS 24.229 [11];

2) shall include the option tag "timer" in a Require header field of the SIP 180 (Ringing) response;

3) shall include the g.3gpp.mcvideo media feature tag in the Contact header field of the SIP 180 (Ringing) response;

4) shall include the g.3gpp.icsi-ref media feature tag containing the value of "urn:urn-7:3gpp-service.ims.icsi.mcvideo" in the Contact header field of the SIP 180 (Ringing) response; and

5) shall send the SIP 180 (Ringing) response to the MCVideo server.

When sending the SIP 200 (OK) response to the incoming SIP INVITE request, the MCVideo client shall follow the procedures in clause 6.2.3.1.1.

When NAT traversal is supported by the MCVideo client and when the MCVideo client is behind a NAT, generation of SIP responses is done as specified in this clause and as specified in IETF RFC 5626 [35].

6.2.3.2.2 Manual commencement mode for group calls

When performing the manual commencement mode procedures:

1) the terminating MCVideo client may automatically generate a SIP 183 (Session Progress) in accordance with 3GPP TS 24.229 [11], prior to the MCVideo user's acknowledgement; and

2) if the MCVideo user declines the MCVideo session invitation the MCVideo client shall send a SIP 480 (Temporarily Unavailable) response towards the MCVideo server with the warning text set to: "110 user declined the call invitation" in a Warning header field as specified in clause 4.4, and not continue with the rest of the steps in this clause.

When generating a SIP 183 (Session Progress) response, the MCVideo client:

1) shall include the following in the Contact header field:

   a) the g.3gpp.mcvideo media feature tag; and

   b) the g.3gpp.icsi-ref media feature tag containing the value of "urn:urn-7:3gpp-service.ims.icsi.mcvideo"; and

2) may include a P-Answer-State header field with the value "Unconfirmed" as specified in IETF RFC 4964 [30];

When sending the SIP 200 (OK) response to the incoming SIP INVITE request, the MCVideo client shall follow the procedures in clause 6.2.3.1.2.

When NAT traversal is supported by the MCVideo client and when the MCVideo client is behind a NAT, generation of SIP responses is done as specified in this clause and as specified in IETF RFC 5626 [35]

6.2.4 Leaving an MCVideo session initiated by MCVideo client

6.2.4.1 On-demand session case

Upon receiving a request from an MCVideo user to leave an MCVideo session established using on-demand session signalling, the MCVideo client:

1) shall interact with the media plane as specified in 3GPP TS 24.581 [5];

2) shall generate a SIP BYE request according to 3GPP TS 24.229 [11];

3) shall set the Request-URI to the MCVideo session identity to leave; and

4) shall send a SIP BYE request towards MCVideo server according to 3GPP TS 24.229 [11].

Upon receiving a SIP 200 (OK) response to the SIP BYE request, the MCVideo client shall interact with the media plane as specified in 3GPP TS 24.581 [5].

6.2.5 Releasing an MCVideo session initiated by MCVideo client

6.2.5.1 On-demand session case

When the MCVideo client wants to release an MCVideo session established using on-demand session signalling, the MCVideo client:

1) shall interact with the media plane as specified in 3GPP TS 24.581 [5];

2) shall generate a SIP BYE request according to 3GPP TS 24.229 [11];

3) shall set the Request-URI to the MCVideo session identity to release; and

4) shall send a SIP BYE request towards MCVideo server according to 3GPP TS 24.229 [11].

Upon receiving a SIP 200 (OK) response to the SIP BYE request, the MCVideo client shall interact with the media plane as specified in 3GPP TS 24.581 [5].

6.2.6 Receiving an MCVideo session release request

Upon receiving a SIP BYE request, the MCVideo client:

1) shall interact with the media plane as specified in 3GPP TS 24.581[5]; and

2) shall send SIP 200 (OK) response towards MCVideo server according to 3GPP TS 24.229 [11].

6.2.7 Void

6.2.8 Priority call conditions

6.2.8.0 General

This clause contains common procedures to be used for MCVideo emergency group calls and MCVideo imminent peril group calls.

6.2.8.1 MCVideo emergency group call conditions

6.2.8.1.1 SIP INVITE request for originating MCVideo emergency group calls

This clause is referenced from other procedures.

When the MCVideo emergency state is set and this MCVideo user and MCVideo group are authorised to initiate MCVideo emergency group calls as determined by the procedures of clause 6.2.8.1.8, the MCVideo client:

1) shall include in the application/vnd.3gpp.mcvideo-info+xml MIME body in the SIP INVITE request, an <emergency-ind> element set to "true" and if the MCVideo emergency group call state is set to "MVEGC 1: emergency-gc-capable", shall set the MCVideo emergency group call state to "MVEGC 2: emergency-call-requested";

2) if the MCVideo user has also requested an MCVideo emergency alert to be sent and this is an authorised request for MCVideo emergency alert as determined by the procedures of clause 6.2.8.1.6, and the MCVideo emergency alert state is set to "MVEA 1: no-alert", shall:

a) set the <alert-ind> element of the application/vnd.3gpp.mcvideo-info+xml MIME body to "true" and set the MCVideo emergency alert state to "MVEA 2: emergency-alert-confirm-pending"; and

b) perform the procedures specified in clause 6.2.9.1 for the MCVideo emergency alert trigger;

3) if the MCVideo user has not requested an MCVideo emergency alert to be sent and the MCVideo emergency alert state is set to "MVEA 1: no-alert", shall set the <alert-ind> element of the application/vnd.3gpp.mcvideo-info+xml MIME body to "false"; and

4) if the MCVideo client emergency group state of the group is set to a value other than "MVEG 2: in-progress" set the MCVideo client emergency group state of the MCVideo group to "MVEG 3: confirm-pending".

NOTE 1: This is the case of an MCVideo user already being in the MCVideo emergency state it initiated previously while originating an MCVideo emergency group call or MCVideo emergency alert. All group calls the MCVideo user originates while in MCVideo emergency state will be MCVideo emergency group calls.

When the MCVideo emergency state is clear and the MCVideo emergency group call state is set to "MVEGC 1: emergency-gc-capable" and the MCVideo user is authorised to initiate an MCVideo emergency group call on the targetted MCVideo group as determined by the procedures of clause 6.2.8.1.8, the MCVideo client shall set the MCVideo emergency state and perform the following actions:

1) shall include in the application/vnd.3gpp.mcvideo-info+xml MIME body in the SIP INVITE request an <emergency-ind> element set to "true" and set the MCVideo emergency group call state to "MVEGC 2: emergency-call-requested" state;

2) if the MCVideo user has also requested an MCVideo emergency alert to be sent and this is an authorised request for MCVideo emergency alert as determined by the procedures of clause 6.2.8.1.6, shall:

a) include in the application/vnd.3gpp.mcvideo-info+xml MIME body the <alert-ind> element set to "true" and set the MCVideo emergency alert state to "MVEA 2: emergency-alert-confirm-pending"; and

b) perform the procedures specified in clause 6.2.9.1 for the MCVideo emergency alert trigger;

3) if the MCVideo user has not requested an MCVideo emergency alert to be sent, shall set the <alert-ind> element of the application/vnd.3gpp.mcvideo-info+xml MIME body to "false"; and

4) if the MCVideo client emergency group state of the group is set to a value other than "MVEG 2: in-progress" shall set the MCVideo client emergency group state of the MCVideo group to "MVEG 3: confirm-pending".

NOTE 2: This is the case of an initial MCVideo emergency group call and optionally an MCVideo emergency alert being sent. As the MCVideo emergency state is not sent, there is no MCVideo emergency alert outstanding.

NOTE 3: An MCVideo group call originated by an affiliated member of an MCVideo group which is in an in-progress emergency state (as tracked on the MCVideo client by the MCVideo client emergency group state) but is not in an MCVideo emergency state of their own will also be an MCVideo emergency group call. The <emergency-ind> and <alert-ind> elements of the application/vnd.3gpp.mcvideo-info+xml MIME body do not need to be included in this case and hence no action needs to be taken in this clause.

6.2.8.1.2 Resource-Priority header field for MCVideo emergency group calls

This clause is referenced from other procedures.

If the MCVideo emergency group call state is set to either "MVEGC 2: emergency-call-requested" or "MVEGC 3: emergency-call-granted" and this is an authorised request for an MCVideo emergency group call as determined by the procedures of clause 6.2.8.1.8, or the MCVideo client emergency group state of the group is set to "MVEG 2: in-progress", the MCVideo client shall include in the SIP INVITE request a Resource-Priority header field populated with the values for an MCVideo emergency group call as specified in clause 6.2.8.1.15.

NOTE: The MCVideo client ideally would not need to maintain knowledge of the in-progress emergency state of the group (as tracked on the MCVideo client by the MCVideo client emergency group state) but can use this knowledge to provide a Resource-Priority header field set to emergency level priority, which starts the infrastructure priority adjustment process sooner than otherwise would be the case.

If this is an authorised request to cancel the MCVideo emergency group call as determined by the procedures of clause 6.2.8.1.7, and the MCVideo client emergency group state of the group is "no-emergency" or "cancel-pending", the MCVideo client shall include in the SIP INVITE request a Resource-Priority header field populated with the values for a normal MCVideo group call as specified in clause 6.2.8.1.15.

6.2.8.1.3 SIP re-INVITE request for cancelling MCVideo in-progress emergency group state

This clause is referenced from other procedures.

If the MCVideo emergency group call state is set to "MVEGC 3: emergency-call-granted" and the MCVideo emergency alert state is set to "MVEA 1: no-alert", the MCVideo client shall generate a SIP re-INVITE request according to 3GPP TS 24.229 [11] with the clarifications given below.

NOTE 1: This procedure assumes that the calling procedure has verified that the MCVideo user has made an authorised request for cancelling MCVideo in-progress emergency group state of the group.

The MCVideo client:

1) shall include in the SIP re-INVITE request an application/vnd.3gpp.mcvideo-info+xml MIME body as defined in clause F.1 with the <emergency-ind> element set to "false";

2) shall clear the MCVideo emergency state; and

3) shall set MCVideo emergency group state of the MCVideo group to "MVEG 3: cancel-pending"

NOTE 2: This is the case of an MCVideo user who has initiated an MCVideo emergency group call and wants to cancel it.

If the MCVideo emergency group call state is set to "MVEGC 3: emergency-call-granted" and the MCVideo emergency alert state is set to a value other than "MVEA 1: no-alert" and the MCVideo user has indicated only the MCVideo emergency group call should be cancelled, the MCVideo client:

1) shall include in the SIP re-INVITE request an application/vnd.3gpp.mcvideo-info+xml MIME body as defined in clause F.1 with the <emergency-ind> element set to "false"; and

2) shall set the MCVideo emergency group state of the MCVideo group to "MVEG 3: cancel-pending".

NOTE 3: This is the case of an MCVideo user has initiated both an MCVideo emergency group call and an MCVideo emergency alert and wishes to only cancel the MCVideo emergency group call. This leaves the MCVideo emergency state set.

If the MCVideo emergency group call state is set to "MVEGC 3: emergency-call-granted" and the MCVideo emergency alert state is set to a value other than "MVEA 1: no-alert" and the MCVideo user has indicated that the MCVideo emergency alert on the MCVideo group should be cancelled in addition to the MCVideo emergency group call, the MCVideo client:

1) shall include in the SIP re-INVITE request an application/vnd.3gpp.mcvideo-info+xml MIME body as defined in clause F.1 with the <emergency-ind> element set to "false";

2) shall if this is an authorised request to cancel an MCVideo emergency alert as determined by the procedures of clause 6.2.8.1.6:

   a) include in the application/vnd.3gpp.mcvideo-info+xml MIME body an <alert-ind> element set to "false";

   b) set the MCVideo emergency alert state to "MVEA 4: Emergency-alert-cancel-pending"; and

   c) clear the MCVideo emergency state;

3) should, if this is not an authorised request to cancel an MCVideo emergency alert as determined by the procedures of clause 6.2.8.1.6, indicate to the MCVideo user that they are not authorised to cancel the MCVideo emergency alert; and

4) shall set the MCVideo emergency group state of the MCVideo group to "MVEG 3: cancel-pending".

NOTE 4: This is the case of an MCVideo user that has initiated both an MCVideo emergency group call and an MCVideo emergency alert and wishes to cancel both.

6.2.8.1.4 Receiving a SIP 2xx response to a SIP request for a priority call

In the procedures in this clause, a priority group call refers to an MCVideo emergency group call or an MCVideo imminent peril group call.

On receiving a SIP 2xx response to a SIP request for a priority group call, the MCVideo client:

1) if the MCVideo emergency group call state is set to "MVEGC 2: emergency-call-requested" or "MVEGC 3: emergency-call-granted":

   a) shall set the MCVideo client emergency group state of the group to "MVEG 2: in-progress" if it was not already set;

   b) if the MCVideo emergency alert state is set to "MVEA 2: emergency-alert-confirm-pending" and the SIP 2xx response to the SIP request for a priority group call does not contain a Warning header field as specified in clause 4.4 with the warning text containing the mcvideo-warn-code set to "149", shall set the MCVideo emergency alert state to "MVEA 3: emergency-alert-initiated;

   c) shall set the MCVideo emergency group call state to "MVEGC 3: emergency-call-granted"; and

   d) shall set the MCVideo imminent peril group call state to "MVIGC 1: imminent-peril-capable" and the MCVideo imminent peril group state to "MVIG 1: no-imminent-peril"; or

2) if the MCVideo imminent peril group call state is set to "MVIGC 2: imminent-peril-call-requested" or "MVIGC 3: imminent-peril-call-granted" and the SIP 2xx response to the SIP request for an imminent peril group call does not contain a Warning header field as specified in clause 4.4 with the warning text containing the mcvideo-warn-code set to "149":

   a) set the MCVideo imminent peril group call state to "MVIGC 3: imminent-peril-call-granted"; and

   b) set the MCVideo imminent peril group state to "MVIG 2: in-progress".

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

In the procedures in this clause, a priority group call refers to an MCVideo emergency group call or an MCVideo imminent peril group call.

Upon receiving a SIP 4xx response, SIP 5xx response or a SIP 6xx response to a SIP request for a priority group call the MCVideo client:

1) if the MCVideo emergency group call state is set to "MVEGC 2: emergency-call-requested" or "MVEGC 3: emergency-call-granted":

   a) shall set the MCVideo emergency group call state to "MVEGC 1: emergency-gc-capable";

   b) if the MCVideo client emergency group state of the group is "MVEG 3: confirm-pending" shall set the MCVideo client emergency group state of the group to "MVEG 1: no-emergency"; and

   c) if the sent SIP request for a priority group call contained an application/vnd.3gpp.mcvideo-info+xml MIME body with an <alert-ind> element set to a value of "true", shall set the MCVideo emergency alert state to "MVEA 1: "no-alert"; and

2) if the MCVideo imminent peril group call state is set to "MVIGC 2: imminent-peril-call-requested" or "MVIGC 3: imminent-peril-call-granted":

   a) shall set the MCVideo imminent peril group state to "MVIG 1: no-imminent-peril"; and

   b) shall set the MCVideo imminent peril group call state to "MVIGC 1: imminent-peril-capable".

6.2.8.1.6 Determining authorisation for initiating or cancelling an MCVideo emergency alert

If the MCVideo client receives a request from the MCVideo user to send an MCVideo emergency alert and:

1) if the <allow-activate-emergency-alert> element of the <actions> element of a <rule> element of the <ruleset> element of the MCVideo user profile document identified by the MCVideo ID of the calling MCVideo user (see the MCVideo user profile document in 3GPP TS 24.484 [25]) is set to a value of "true"; and

2) if the "entry-info" attribute of the <entry> element of the <EmergencyAlert> element contained within the <MCVideo-group-call> element of the MCVideo user profile document is set to a value of:

   a) "DedicatedGroup", and if the <uri-entry> element of the <entry> element of the <EmergencyAlert> element of the <MCVideo-group-call> element of the MCVideo user profile document (see the MCVideo user profile document in 3GPP TS 24.484 [25]) contains the MCVideo group identity of the MCVideo group targeted by the calling MCVideo user; or

   b) "UseCurrentlySelectedGroup" and the <MCVideo-allow-emergency-alert> element of the <actions> element of a <rule> element of the <ruleset> element of the <list-service> element of the group document identified by the MCVideo group identity targeted for the emergency alert is set to a value of "true" as specified in 3GPP TS 24.481 [24];

then the MCVideo emergency alert request shall be considered to be an authorised request for an MCVideo emergency alert. In all other cases, it shall be considered to be an unauthorised request for an MCVideo emergency alert.

If the MCVideo client receives a request from the MCVideo user to cancel an MCVideo emergency alert to an MCVideo group, and if the <allow-cancel-emergency-alert> element of the <actions> element of a <rule> element of the <ruleset> element of the MCVideo user profile document identified by the MCVideo ID of the calling MCVideo user (see the MCVideo user profile document in 3GPP TS 24.484 [25]) is set to a value of "true", then the MCVideo emergency alert cancellation request shall be considered to be an authorised request to cancel an MCVideo emergency alert. In all other cases, it shall be considered to be an unauthorised request to cancel an MCVideo emergency alert.

6.2.8.1.7 Determining authorisation for cancelling the in-progress emergency state of an MCVideo group

When the MCVideo client receives a request from the MCVideo user to cancel the in-progress emergency state of a group the MCVideo client and:

1) if the <allow-cancel-group-emergency> element of the <ruleset> element of the MCVideo user profile document identified by the MCVideo ID of the calling MCVideo user (see the MCVideo user profile document in 3GPP TS 24.484 [25]) is set to a value of "true", then the in-progress emergency group state cancel request shall be considered to be an authorised request for in-progress emergency group state cancellation; or

2) if the <allow-cancel-group-emergency> element of the <ruleset> element of the MCVideo user profile document identified by the MCVideo ID of the calling MCVideo user (see the MCVideo user profile document in 3GPP TS 24.484 [25]) is set to a value of "false", then the in-progress emergency group state cancel request shall be considered to be an unauthorised request for in-progress emergency group state cancellation.

6.2.8.1.8 Determining authorisation for originating a priority group call

When the MCVideo client receives a request from the MCVideo user to originate an MCVideo emergency group call the MCVideo client shall check the following:

1) if the <allow-emergency-group-call> element of the <ruleset> element of the MCVideo user profile document identified by the MCVideo ID of the calling user (see the MCVideo user profile document in 3GPP TS 24.484 [25]) is set to a value of "true" and

   a) if the "entry-info" attribute of the <entry> element of the <MCVideoGroupInitiation> element of the <EmergencyCall> element contained within the <MCVideo-group-call> element of the MCVideo user profile document (see the MCVideo user profile document in 3GPP TS 24.484 [25]) is set to a value of "DedicatedGroup" and if the <uri-entry> element of the <entry> element of the <MCVideoGroupInitiation> element contains the identity of the MCVideo group targeted by the calling MCVideo user; or

   b) if the "entry-info" attribute of the <entry> element of the <MCVideoGroupInitiation> element of the <EmergencyCall> contained within the <MCVideo-group-call> element of the MCVideo user profile

document (see the MCVideo user profile document in 3GPP TS 24.484 [25]) is set to a value of "UseCurrentlySelectedGroup";

then the MCVideo emergency group call request shall be considered to be an authorised request for an MCVideo emergency group call;

In all other cases, the request to originate an MCVideo emergency group call shall be considered to be an unauthorised request to originate an MCVideo emergency group call.

When the MCVideo client receives a request from the MCVideo user to originate an MCVideo imminent peril group call the MCVideo client shall check the following:

1 if the <allow-imminent-peril-call> element of <ruleset> element of the MCVideo user profile document identified by the MCVideo ID of the calling user (see the MCVideo user profile document in 3GPP TS 24.484 [25]) is set to a value of "true" and:

a) if the "entry-info" attribute of the <entry> element of the <MCVideoGroupInitiation> element contained within the <ImminentPerilCall> element of the MCVideo user profile document (see the MCVideo user profile document in 3GPP TS 24.484 [25]) is set to a value of "DedicatedGroup" and if the <MCVideoGroupInitiation> element contains the identity of the MCVideo group targeted by the calling MCVideo user; or

b) if the "entry-info" attribute of the <entry> element of the <MCVideoGroupInitiation> element contained within the <ImminentPerilCall> element of the MCVideo user profile document (see the MCVideo user profile document in 3GPP TS 24.484 [25]) is set to a value of "UseCurrentlySelectedGroup";

then the MCVideo imminent peril group call request shall be considered to be an authorised request for an MCVideo imminent peril group call;

In all other cases, the request to originate an MCVideo imminent peril group call shall be considered to be an unauthorised request to originate an MCVideo imminent peril group call.

6.2.8.1.9 SIP request for originating MCVideo imminent peril group calls

This clause is referenced from other procedures.

When the MCVideo client receives a request from the MCVideo user to originate an MCVideo imminent peril group call, and this is an authorised request for an MCVideo imminent peril group call as determined by the procedures of clause 6.2.8.1.8, the MCVideo client:

1) if the MCVideo client imminent peril group state is set to "MVIGC 1: imminent-peril-capable" and the in-progress emergency state of the group is set to a value of "false":

a) shall include in the SIP request a MIME mcvideoinfo body as defined in Annex F.1 with the <imminentperil-ind> element set to "true" and set the MCVideo emergency group call state to "MVIGC 2: imminent-peril-call-requested" state; and

b) if the MCVideo client imminent peril group state of the group is set to a value other than "MVIG 2: in-progress" shall set the MCVideo client emergency group state of the MCVideo group to "MVIG 3: confirm-pending".

NOTE: An MCVideo group call originated by an affiliated member of an MCVideo group which is in an in-progress imminent peril state (as tracked on the MCVideo client by the MCVideo client imminent peril group state) will also have the priority associated with MCVideo imminent peril group calls. The <imminentperil-ind> element of the MIME mcvideoinfo body does not need to be included in this case, nor do any state changes result and hence no action needs to be taken in this clause.

6.2.8.1.10 Determining authorisation for cancelling an imminent peril group call

When the MCVideo client receives a request from the MCVideo user to cancel an MCVideo imminent peril group call the MCVideo client shall:

1) if the <allow-cancel-imminent-peril> element of the <ruleset> element of the MCVideo user profile document identified by the MCVideo ID of the calling user (see the MCVideo user profile document in

3GPP TS 24.484 [25]) is set to a value of "true" the MCVideo imminent peril call cancellation request shall be considered to be an authorised request to cancel the MCVideo imminent peril group call; or

2) if the <allow-cancel-imminent-peril> element of the <ruleset> element of the MCVideo user profile document identified by the MCVideo ID of the calling user (see the MCVideo user profile document in 3GPP TS 24.484 [25]) is set to a value of "false" the MCVideo imminent peril call cancellation request shall be considered to be an unauthorised request to cancel the MCVideo imminent peril group call.

6.2.8.1.11 SIP re-INVITE request for cancelling MCVideo in-progress imminent peril group state

This clause is referenced from other procedures.

If the MCVideo imminent peril group call state is set to "MVIGC 3: imminent-peril-call-granted" or the MCVideo imminent peril group state of the MCVideo group is set to "MVIG 2: in-progress", the MCVideo client shall generate a SIP re-INVITE request according to 3GPP TS 24.229 [11] with the clarifications given below.

NOTE 1: This procedure assumes that the calling procedure has verified that the MCVideo user has made an authorised request for cancelling the in-progress imminent peril group state of the group.

The MCVideo client:

1) shall include in the SIP re-INVITE request an application/vnd.3gpp.mcvideo-info+xml MIME body as defined in clause F.1 with the <imminentperil-ind> element set to "false"; and

2) shall set MCVideo imminent peril group state of the MCVideo group to "MVIG 3: cancel-pending".

NOTE 2: This is the case of an MCVideo user who has initiated an MCVideo imminent peril group call and wants to cancel it, or another authorised member of the group who wishes to cancel the in-progress imminent peril state of the group.

6.2.8.1.12 Resource-Priority header field for MCVideo imminent peril group calls

This clause is referenced from other procedures.

When the MCVideo imminent peril group call state is set "MVIGC 2: imminent-peril-call-requested" or "MVIGC 3: imminent-peril-call-granted" and this MCVideo user and group is authorised to originate MCVideo imminent peril group calls as determined by the procedures of clause 6.2.8.1.8, or the MCVideo client imminent peril state of the group is set to "MVIG 2: in-progress", the MCVideo client:

1) shall include in the SIP INVITE request a Resource-Priority header field populated with the values for an MCVideo imminent peril group call as specified in clause 6.2.8.1.15.

NOTE: The MCVideo client ideally would not need to maintain knowledge of the in-progress imminent peril state of the group (as tracked on the MCVideo client by the MCVideo client imminent peril group state) but can use this knowledge to provide a Resource-Priority header field set to imminent peril level priority, which starts the infrastructure priority adjustment process sooner than otherwise would be the case.

When the MCVideo imminent peril group call state is set to "MVIGC 1: imminent-peril-gc-capable" and the MCVideo user is authorised to cancel MCVideo imminent peril group calls as determined by the procedures of clause 6.2.8.1.10, or the MCVideo client imminent peril group state of the group is "MVIG 1: no-imminent-peril" or "MVIG 3: cancel-pending", the MCVideo client:

1) shall include in the SIP INVITE request a Resource-Priority header field populated with the values for a normal MCVideo group call as specified in clause 6.2.8.1.15.

6.2.8.1.13 Receiving a SIP INFO request in the dialog of a SIP request for a priority group call

This clause is referenced from other procedures.

Upon receiving a SIP INFO request within the dialog of the SIP request for a priority group call:

- with the Info-Package header field containing the g.3gpp.mcvideo-info package name;

- with the application/vnd.3gpp.mcvideo-info+xml MIME body associated with the info package according to IETF RFC 6086 [54]; and

- with one or more of the <alert-ind>, <imminentperil-ind> and <emergency-ind> elements set in the application/vnd.3gpp.mcvideo-info+xml MIME body;

the MCVideo client:

1) shall send a SIP 200 (OK) response to the SIP INFO request as specified in 3GPP TS 24.229 [4];

2) if the MCVideo emergency group call state is set to "MVEGC 3: emergency-call-granted":

   a) if the MCVideo emergency alert state is set to "MVEA 2: emergency-alert-confirm-pending":

      i) if the <alert-ind> element is set to a value of "false", shall set the MCVideo emergency alert state to "MVEA 1: no-alert"; and

      ii) if the <alert-ind> element is set to a value of "true", shall set the MCVideo emergency alert state to "MVEA 3: emergency-alert-initiated";

3) if the MCVideo imminent peril group call state is set to "MVIGC 2: imminent-peril-call-requested" or "MVIGC 3: imminent-peril-call-granted":

   a) if the <imminentperil-ind> element is set to a value of "false" and an <emergency-ind> element is set to a value of "true", shall:

      i) set the MCVideo imminent peril group state to "MVIG 1: no-imminent-peril";

      ii) set the MCVideo imminent peril group call state to "MVIGC 1: imminent-peril-capable"; and

      iii) set the MCVideo client emergency group state of the group to "MVEG 2: in-progress"; and

NOTE 1: This is the case of an MCVideo client attempting to make an imminent peril group call when the group is in an in-progress emergency group state. The MCVideo client will then receive a notification that the imminent peril call request was denied, however they will be participating at the emergency level priority of the group. This could occur for example when an MCVideo client requests an imminent peril call to a group that they are not currently affiliated with.

NOTE 2: the MCVideo client emergency group state above is the MCVideo client's view of the in-progress emergency state of the group.

4) if the SIP request for a priority group call sent by the MCVideo client did not contain an <originated-by> element and if the MCVideo emergency alert state is set to "MVEA 4: Emergency-alert-cancel-pending":

   a) if the <alert-ind> element contained in the SIP INFO request is set to a value of "true", shall set the MCVideo emergency alert state to "MVEA 3: emergency-alert-initiated"; and

   b) if the <alert-ind> element contained in the SIP INFO request is set to a value of "false", shall set the MCVideo emergency alert state to "MVEA 1: no-alert".

6.2.8.1.14 SIP re-INVITE request for cancelling the in-progress emergency group state of a group by a third-party

This clause is referenced from other procedures.

Upon receiving an authorised request to cancel an in-progress emergency group state of a group as determined by the procedures of clause 6.2.8.1.7 from an MCVideo user, the MCVideo client shall generate a SIP re-INVITE request according to 3GPP TS 24.229 [11] with the clarifications given below.

The MCVideo client:

1) shall include in the SIP re-INVITE request an application/vnd.3gpp.mcvideo-info+xml MIME body as defined in clause F.1 with the <emergency-ind> element set to "false";

2) shall set MCVideo emergency group state of the MCVideo group to "MVEG 3: cancel-pending"; and

3) if the MCVideo user has indicated that an MCVideo emergency alert on the MCVideo group originated by another MCVideo user should be cancelled and this is an authorised request for an MCVideo emergency alert cancellation as determined by the procedures of clause 6.2.8.1.6:

   a) shall include in the application/vnd.3gpp.mcvideo-info+xml MIME body an <alert-ind> element set a value of "false"; and

   b) shall include in the application/vnd.3gpp.mcvideo-info+xml MIME body an <originated-by> element set to the MCVideo ID of the MCVideo user who originated the MCVideo emergency alert.

NOTE: When an MCVideo emergency alert is cancelled by a MCVideo user other than its originator, the <originated-by> element is needed to identify which MCVideo emergency alert is being cancelled, as more than one MCVideo user could have originated emergency alerts to the same group.

6.2.8.1.15 Retrieving Resource-Priority header field values

This clause is referenced from other procedures.

When determining the Resource-Priority header field namespace and priority values as specified in IETF RFC 8101 [38] for an MCVideo emergency group call or MCVideo emergency private call the MCVideo client:

1) shall retrieve the value of the <resource-priority-namespace> element contained in the <emergency-resource-priority> element contained in the <OnNetwork> element of the MCVideo service configuration document ; and

2) shall retrieve the value of the <resource-priority-priority> element contained in the <emergency-resource-priority> element contained in the <OnNetwork> element of the MCVideo service configuration document .

When determining the Resource-Priority header field namespace and priority values as specified in IETF RFC 8101 [38] for an MCVideo imminent peril group call the MCVideo client:

1) shall retrieve the value of the <resource-priority-namespace> element contained in the <imminent-peril-resource-priority> element contained in the <OnNetwork> element of the MCVideo service configuration document; and

2) shall retrieve the value of the <resource-priority-priority> element contained in the <imminent-peril-resource-priority> element contained in the <OnNetwork> element of the MCVideo service configuration document.

When determining the Resource-Priority header field namespace and priority values as specified in IETF RFC 8101 [38] for a normal MCVideo group or private call the MCVideo client:

1) shall retrieve the value of the <resource-priority-namespace> element contained in the <normal-resource-priority> element contained in the <OnNetwork> element of the MCVideo service configuration document ; and

2) shall retrieve the value of the <resource-priority-priority> element contained in the <normal-resource-priority> element contained in the <OnNetwork> element of the MCVideo service configuration document .

NOTE: The "normal" Resource-Priority header field value is needed to return to a normal priority value from a priority value adjusted for an MCVideo emergency group or private call or an MCVideo imminent peril group call. The "normal" priority received from the EPS by use of the "normal" Resource-Priority header field value is expected to be the same as the "normal" priority received from the EPS when initiating a call with no Resource-Priority header field included.

6.2.8.1.16 Resource-priority header field namespaces for MCVideo

The Resource-Priority header field is specified as per IETF RFC 4412 [33]. The Resource-Priority namespace for MCVideo emergency group call, MCVideo emergency private call, MCVideo imminent peril group call, normal MCVideo group or private call, shall reuse the namespace for Mission Critical Push-to-Talk, which is specified in IETF RFC 8101 [38].

6.2.8.1.17 Priority group call conditions upon receiving call release

This clause is referenced from other procedures.

Upon receiving a request to release the MCVideo emergency group call or an MCVideo imminent peril group call in an MCVideo group session is in-progress or is in the process of being established:

1) if the MCVideo emergency group call state is set to "MVEGC 2: emergency-call-requested":

   a) shall set the MCVideo emergency group call state to "MVEGC 1: emergency-gc-capable";

   b) if the MCVideo client emergency group state of the group is "MVEG 3: confirm-pending" shall set the MCVideo client emergency group state of the group to "MVEG 1: no-emergency"; and

   c) if the MCVideo emergency alert state is set to "MVEA 2: emergency-alert-confirm-pending" shall set the MCVideo emergency alert state to "MVEA 1: "no-alert"; and

2) if the MCVideo imminent peril group call state is set to "MVIGC 2: imminent-peril-call-requested":

   a) if the MCVideo imminent peril group call state of the group is "MVIG 3: confirm-pending", shall set the MCVideo imminent peril group state to "MVIG 1: no-imminent-peril"; and

   b) shall set the MCVideo imminent peril group call state to "MVIGC 1: imminent-peril-capable".

6.2.8.1.18 Emergency private call conditions upon receiving call release

This clause is referenced from other procedures.

Upon receiving a request to release the MCVideo session when an MCVideo emergency private call is in-progress or is in the process of being established:

1) if the MCVideo emergency private call state is set to "MVEPC 2: emergency-call-requested":

   a) shall set the MCVideo emergency private call state to "MVEPC 1: emergency-pc-capable";

   b) if the MCVideo emergency private priority state of the private call is "MVEPP 3: confirm-pending" shall set the MCVideo emergency private priority state of the private call to "MVEPP 1: no-emergency"; and

   c) if the MCVideo private emergency alert state is set to "MVPEA 2: emergency-alert-confirm-pending shall set the MCVideo private emergency alert state to "MVPEA 1: no-alert".

6.2.8.2 Request for an originating broadcast group call

NOTE: This clause is referenced from other procedures.

When the MCVideo user initiates a broadcast group call, the MCVideo client:

1) in the case of the prearranged group call is initiated on-demand, shall include in the application/vnd.3gpp.mcvideo-info+xml MIME body the <broadcast-ind> element set to "true" as defined in clause F.1; and

2) in the case the prearranged group call is initiated using a pre-established session, shall include in the application/vnd.3gpp.mcvideo-info+xml MIME body in the hname "body" parameter in the headers portion of the SIP URI in the Refer-To header field the <broadcast-ind> element set to "true" as defined in clause F.1.

6.2.8.3 MCVideo emergency private call conditions

6.2.8.3.1 Authorisations

6.2.8.3.1.1 Determining authorisation for initiating an MCVideo emergency private call

If the MCVideo client receives a request from the MCVideo user to originate an MCVideo emergency private call and:

1) if the <allow-emergency-private-call> element of the <ruleset> element of the MCVideo user profile document identified by the MCVideo ID of the calling user (see the MCVideo user profile document in 3GPP TS 24.484 [50]) is set to a value of "true"; and

a) if the "entry-info" attribute of the <entry> element of the <MCVideoPrivateRecipient> element of the <EmergencyCall> element contained within the <PrivateCall> element of the MCVideo user profile document (see the MCVideo user profile document in 3GPP TS 24.484 [50]) is set to a value of "UsePreConfigured" and if the <uri-entry> element of the <entry> element of the <MCVideoPrivateRecipient> element contains the MCVideo ID of the MCVideo user targeted by the calling MCVideo user; or

b) if the "entry-info" attribute of the <entry> element of the <MCVideoPrivateRecipient> element of the <EmergencyCall> element contained within the <PrivateCall> element of the MCVideo user profile document (see the MCVideo user profile document in 3GPP TS 24.484 [50]) is set to a value of "LocallyDetermined";

then the MCVideo client shall consider the MCVideo emergency private call request to be an authorised request for an MCVideo emergency private call. In all other cases the MCVideo client shall consider the MCVideo emergency private call request to be an unauthorised request for an MCVideo emergency private call.

6.2.8.3.1.2 Determining authorisation for cancelling an MCVideo emergency private call

If the MCVideo client receives a request from the MCVideo user to cancel an MCVideo emergency private call and if the <allow-cancel-private-emergency-call> element of the <ruleset> element of the MCVideo user profile document identified by the MCVideo ID of the calling user (see the MCVideo user profile document in 3GPP TS 24.484 [50]) is set to a value of "true", then the MCVideo emergency private call cancellation request shall be considered to be an authorised request for an MCVideo emergency private call cancellation.

In all other cases, the MCVideo emergency private call cancellation request shall be considered to be an unauthorised request for an MCVideo emergency private call cancellation.

6.2.8.3.1.3 Determining authorisation for initiating or cancelling an MCVideo emergency alert to a MCVideo user

If the MCVideo client receives a request from the MCVideo user to send an MCVideo emergency alert to an MCVideo user and:

1) if the <allow-activate-emergency-alert> element of the <ruleset> element of the MCVideo user profile document identified by the MCVideo ID of the calling MCVideo user as specified in 3GPP TS 24.484 [50] is set to a value of "true"; and

2) if the "entry-info" attribute of the <entry> element of the <PrivateEmergencyAlert> element contained within the <OnNetwork> element of the MCVideo user profile document (see the MCVideo user profile document in 3GPP TS 24.484 [50]) is set to a value of:

   a) "UsePreConfigured", and if the <uri-entry> element of the <entry> element of the <PrivateEmergencyAlert> element of the <OnNetwork> element of the MCVideo user profile document (see the MCVideo user profile document in 3GPP TS 24.484 [50]) contains the MCVideo ID of the targeted MCVideo user; or

   b) "LocallyDetermined";

then the MCVideo emergency alert request shall be considered to be an authorised request for an MCVideo emergency alert. In all other cases, it shall be considered to be an unauthorised request for an MCVideo emergency alert.

If the MCVideo client receives a request from the MCVideo user to cancel an MCVideo emergency alert to an MCVideo user, and if the <allow-cancel-emergency-alert> element of the <ruleset> element of the MCVideo user profile document identified by the MCVideo ID of the calling MCVideo user as specified in 3GPP TS 24.484 [50] is set to a value of "true", then the MCVideo emergency alert cancellation request shall be considered to be an authorised request to cancel an MCVideo emergency alert. In all other cases, it shall be considered to be an unauthorised request to cancel an MCVideo emergency alert.

6.2.8.3.2 SIP request for originating MCVideo emergency private calls

This clause is referenced from other procedures.

When the MCVideo emergency private call state is set to "MVEPC 1: emergency-pc-capable" and this is an authorised request for an MCVideo emergency private call as determined by the procedures of clause 6.2.8.3.1.1, the MCVideo client:

1) shall set the MCVideo emergency state if not already set;

2) shall include in the application/vnd.3gpp.mcvideo-info+xml MIME body in the SIP request an <emergency-ind> element set to "true" and set the MCVideo emergency private call state to "MVEPC 2: emergency-pc-requested";

3) if the MCVideo user has also requested an MCVideo emergency alert to be sent and this is an authorised request for MCVideo emergency alert as determined by the procedures of clause 6.2.8.3.1.3, shall:

   a) include in the application/vnd.3gpp.mcvideo-info+xml MIME body the <alert-ind> element set to "true" and set the MCVideo private emergency alert state to "MVPEA 2: emergency-alert-confirm-pending"; and

   b) perform the procedures specified in clause 6.2.9.1 for the MCVideo emergency alert trigger;

4) if the MCVideo user has not requested an MCVideo emergency alert to be sent, shall set the <alert-ind> element of the application/vnd.3gpp.mcvideo-info+xml MIME body to "false"; and

5) if the MCVideo emergency private priority state of this private call is set to a value other than "MVEPP 2: in-progress" shall set the MCVideo emergency private priority state to "MVEPP 3: confirm-pending".

6.2.8.3.3 Resource-Priority header field for MCVideo emergency private calls

This clause is referenced from other procedures.

If the MCVideo emergency private call state is set to either "MVEPC 2: emergency-pc-requested" or "MVEPC 3: emergency-pc-granted" and this is an authorised request for an MCVideo emergency private call as determined by the procedures of clause 6.2.8.3.1.1, or the MCVideo emergency private priority state of the call is set to "MVEPP 2: in-progress", the MCVideo client shall include in the SIP request a Resource-Priority header field populated with the values for an MCVideo emergency private call as specified in clause 6.2.8.1.15.

NOTE: The MCVideo client ideally would not need to maintain knowledge of the in-progress emergency state of the call (as tracked on the MCVideo client by the MCVideo client emergency private state) but can use this knowledge to provide a Resource-Priority header field set to emergency level priority, which starts the infrastructure priority adjustment process sooner than otherwise would be the case.

If this is an authorised request to cancel the MCVideo emergency private call as determined by the procedures of clause 6.2.8.3.1.2, or the MCVideo emergency private priority state of the private call is "MVEPP 1: no-emergency" or "MVEPP 3: cancel-pending", the MCVideo client shall include in the SIP request a Resource-Priority header field populated with the values for a normal MCVideo private call as specified in clause 6.2.8.1.15.

6.2.8.3.4 Receiving a SIP 2xx response to a SIP request for an MCVideo emergency private call

This clause is referenced from other procedures.

On receiving a SIP 2xx response to a SIP request for an MCVideo emergency private call and if the MCVideo emergency private call state is set to "MVEPC 2: emergency-pc-requested" or "MVEPC 3: emergency-pc-granted", the MCVideo client:

1) shall set the MCVideo emergency private priority state of the call to "MVEPP 2: in-progress" if it was not already set;

2) shall set the MCVideo emergency private call state to "MVEPC 3: emergency-pc-granted"; and

3) if the MCVideo private emergency alert state is set to "MVPEA 2: emergency-alert-confirm-pending" and the SIP 2xx response to the SIP request for a priority private call does not contain a Warning header field as specified in clause 4.4 with the warning text containing the mcvideo-warn-code set to "149", shall set the MCVideo private emergency alert state to "MVPEA 3: emergency-alert-initiated".

6.2.8.3.5 Receiving a SIP 4xx response, SIP 5xx response or SIP 6xx response to a SIP request for an MCVideo emergency private call

Upon receiving a SIP 4xx response, SIP 5xx response or a SIP 6xx response to a SIP request for an MCVideo emergency private call and if the MCVideo emergency private call state is set to "MVEPC 2: emergency-pc-requested" or "MVEPC 3: emergency-pc-granted", the MCVideo client:

1) shall set the MCVideo emergency private call state to "MVEPC 1: emergency-pc-capable";

2) if the MCVideo emergency private priority state of the private call is "MVEPP 3: confirm-pending" shall set the MCVideo emergency private priority state of the private call to "MVEPP 1: no-emergency"; and

3) if the sent SIP request for an MCVideo emergency private call contained an application/vnd.3gpp.mcvideo-info+xml MIME body with an <alert-ind> element set to a value of "true", shall set the MCVideo private emergency alert state to "MVPEA 1: no-alert".

6.2.8.3.6 SIP re-INVITE request for cancelling MCVideo emergency private call state

This clause is referenced from other procedures.

When the MCVideo emergency private call state is set to "MVEPC 3: emergency-pc-granted" and the MCVideo emergency alert state is set to "MVPEA 1: no-alert", the MCVideo client shall generate a SIP re-INVITE request according to 3GPP TS 24.229 [4] with the clarifications given below.

NOTE 1: This procedure assumes that the MCVideo client in the calling procedure has verified that the MCVideo user has made an authorised request for cancelling MCVideo the in-progress emergency private call state of the call.

The MCVideo client:

1) shall include in the SIP re-INVITE request an application/vnd.3gpp.mcvideo-info+xml MIME body as defined in clause F.1 with the <emergency-ind> element set to "false";

2) shall clear the MCVideo emergency state; and

3) shall set MCVideo emergency private priority state of the MCVideo emergency private call to "MVEPP 3: cancel-pending".

NOTE 2: This is the case of an MCVideo user who has initiated an MCVideo emergency private call and wants to cancel it.

When the MCVideo emergency private call state is set to "MVEPPC 3: emergency-pc-granted" and the MCVideo emergency alert state is set to a value other than "MVPEA 1: no-alert" and the MCVideo user has indicated only the MCVideo emergency private call should be cancelled, the MCVideo client:

1) shall include in the SIP re-INVITE request an application/vnd.3gpp.mcvideo-info+xml MIME body as defined in clause F.1 with the <emergency-ind> element set to "false"; and

2) shall set the MCVideo emergency private priority state of the MCVideo emergency private call to "MVEPP 3: cancel-pending";

NOTE 3: This is the case of an MCVideo user has initiated both an MCVideo emergency private call and an MCVideo emergency alert and wishes to only cancel the MCVideo emergency private call. This leaves the MCVideo emergency state set.

When the MCVideo emergency private call state is set to "MVEPC 3: emergency-pc-granted" and the MCVideo emergency alert state is set to a value other than "MVPEA 1: no-alert" and the MCVideo user has indicated that the MCVideo emergency alert on the MCVideo private call should be cancelled in addition to the MCVideo emergency private call, the MCVideo client:

1) shall include in the SIP re-INVITE request an application/vnd.3gpp.mcvideo-info+xml MIME body as defined in annex F.1 with the <emergency-ind> element set to "false";

2) shall, if this is an authorised request to cancel an MCVideo emergency alert as determined by the procedures of clause 6.2.8.3.1.3:

a) include in the application/vnd.3gpp.mcvideo-info+xml MIME body an <alert-ind> element set to "false"; and

b) set the MCVideo private emergency alert state to "MVPEA 4: emergency-alert-cancel-pending";

3) if this is not an authorised request to cancel an MCVideo emergency alert as determined by the procedures of clause 6.2.8.3.1.3, should indicate to the MCVideo user they are not authorised to cancel the MCVideo emergency alert;

4) shall set the MCVideo emergency private priority state of the MCVideo to "MVEPP 3: cancel-pending"; and

5) shall clear the MCVideo emergency state.

NOTE 4: This is the case of an MCVideo user that has initiated both an MCVideo emergency private call and an MCVideo emergency alert and wishes to cancel both.

6.2.8.3.7 Receiving a SIP INFO request in the dialog of a SIP request for a priority private call

This clause is referenced from other procedures.

Upon receiving a SIP INFO request within the dialog of the SIP request for a priority private call:

- with the Info-Package header field containing the g.3gpp.mcvideo-info package name;
- with the application/vnd.3gpp.mcvideo-info+xml MIME body associated with the info package according to IETF RFC 6086 [54]; and
- with one or more of the <alert-ind>, <imminentperil-ind> and <emergency-ind> elements set in the application/vnd.3gpp.mcvideo-info+xml MIME body;

the MCVideo client:

1) if the MCVideo private emergency alert state is set to "MVPEA 2: emergency-alert-confirm-pending":

   a) if the <alert-ind> element is set to a value of "false", shall set the MCVideo private emergency alert state to "MVPEA 1: no-alert"; and

   b) if the <alert-ind> element set to a value of "true", shall set the MCVideo private emergency alert state to "MVPEA 3: emergency-alert-initiated"; and

2) if the MCVideo private emergency alert state is set to "MVPEA 4: Emergency-alert-cancel-pending":

   a) if the <alert-ind> element is set to a value of "true", shall set the MCVideo private emergency alert state to "MVPEA 3: emergency-alert-initiated"; and

   b) if the <alert-ind> element is set to a value of "false", shall set the MCVideo private emergency alert state to "MVPEA 1: no-alert".

6.2.8.3.8 SIP re-INVITE request for cancelling the MCVideo emergency private call state by a third-party

This clause is referenced from other procedures.

Upon receiving a request to cancel the MCVideo emergency private call state from an MCVideo user other than the originator of the MCVideo emergency private call, the MCVideo client shall generate a SIP re-INVITE request according to 3GPP TS 24.229 [4] with the clarifications given below.

The MCVideo client:

NOTE 1: This procedure assumes that the calling procedure has verified that the MCVideo user has made an authorised request for cancelling the MCVideo emergency private call state of the call.

1) shall include in the SIP re-INVITE request an application/vnd.3gpp.mcvideo-info+xml MIME body as defined in clause F.1 with the <emergency-ind> element set to "false";

2) shall set the MCVideo emergency private priority state of the MCVideo emergency private call to "MVEPP 3: cancel-pending"; and

3) if the MCVideo user has indicated that an MCVideo emergency alert associated with the MCVideo emergency private call originated by another MCVideo user should be cancelled and this is an authorised request for an MCVideo emergency alert cancellation as determined by the procedures of clause 6.2.8.3.1.3:

   a) shall include in the application/vnd.3gpp.mcvideo-info+xml MIME body an <alert-ind> element set to a value of "false"; and

   b) shall include in the application/vnd.3gpp.mcvideo-info+xml MIME body an <originated-by> element set to the MCVideo ID of the MCVideo user who originated the MCVideo emergency alert.

NOTE 2: When an MCVideo emergency alert is cancelled by a MCVideo user other than its originator, the <originated-by> element is needed to identify which MCVideo emergency alert is being cancelled, as conceivably each participant in the MCVideo emergency private call could have originated an MCVideo emergency alert.

6.2.8.3.9 Retrieving a KMS URI associated with an MCVideo ID

If the MCVideo client needs to retrieve a KMS URI associated to an identified MCVideo ID for on network operation, the MCVideo client:

1) shall search for the <entry> element of the <PrivateCallURI> element of the <PrivateCallOnNetwork> element of the <PrivateCallList> element entry of the <Common> element of the MCVideo user profile document (see the MCVideo user profile document in 3GPP TS 24.484 [50]) containing the identified MCVideo ID;

   a) if the identified MCVideo ID is found and if the <entry> element of the <PrivateCallKMSURI> element of the <PrivateCallOnNetwork> element of the <PrivateCallList> element entry identified is not empty, shall retrieve the KMS URI contained therein; or

b) if the identified MCVideo ID is not found or the <entry> element of the <PrivateCallKMSURI> element is empty, shall retrieve the <kms> element of the <App-Server-Info> element of the <on-network> element of the MCVideo UE initial configuration document (see the MCVideo UE initial configuration document in 3GPP TS 24.484 [50]) and consider that to be the KMS URI associated with the MCVideo ID.

If the MCVideo client needs to retrieve a KMS URI associated to an identified MCVideo ID for off network operation, the MCVideo client:

1) shall search for /<*x*>/<x>/Common/PrivateCall/UserList/<x>/Entry/MCVideoID leaf node containing the identified MCVideo ID (see the MCVideo user profile MO in 3GPP TS 24.483 [45]);

   a) if the identified MCVideo ID is found:

      i) shall retrieve the /<*x*>/<x>/Common/PrivateCall/UserList/<x>/Entry/PrivateCallKMSURI leaf node (see the MCVideo user profile MO in 3GPP TS 24.483 [45]); and

      ii) if the PrivateCallKMSURI leaf node in the same /<x>/<x>/Common/PrivateCall/UserList/<x>/Entry/ interior node as the MCVideoID leaf node containing the identified MCVideo ID is not empty, shall consider its value to be the KMS URI associated with the MCVideo ID; and

   b) if the identified MCVideo ID is not found or if the /<*x*>/<x>/Common/PrivateCall/UserList/<x>/Entry/PrivateCallKMSURI leaf node is empty:

      i) shall retrieve /<*x*>/OnNetwork/AppServerInfo/KMS leaf node (see the MCVideo UE initial configuration document in 3GPP TS 24.483 [45]); and

      ii) shall consider the value of the /<*x*>/OnNetwork/AppServerInfo/KMS leaf node to be the KMS URI associated with the MCVideo ID.

6.2.9 Location information

6.2.9.1 Location information for location reporting

This procedure is initiated by the MCVideo client when it is including location report information as part of a SIP request for a specified location trigger.

The MCVideo client:

1) shall include an application/vnd.3gpp.location-info+xml MIME body as specified in Annex F.3 with a <Report> element included in the <location-info> root element; and

2) shall include in the <Report> element the specific location information configured for the specified location trigger.

6.3 MCVideo server procedures

6.3.1 Distinction of requests sent to the MCVideo server

6.3.1.1 SIP INVITE request

The MCVideo server needs to distinguish between the following initial SIP INVITE requests for originations and terminations:

- SIP INVITE requests routed to the participating MCVideo function and the Request-URI is set to a public service identity of the participating MCVideo function that does not identify the pre-established session set-up. Such requests are known as "SIP INVITE request for originating participating MCVideo function" in the procedures in the present document;

- SIP INVITE requests routed to the participating MCVideo function and the Request-URI contains a PSI of the terminating participating MCVideo function. Such requests are known as "SIP INVITE request for terminating participating MCVideo function" in the procedures in the present document;

- SIP INVITE requests routed to the controlling MCVideo function, the Request-URI is set to a public service identity for MCVideo private call and the Contact header field does not contain the isfocus media feature tag specified in IETF RFC 3840 [16]. Such requests are known as "SIP INVITE request for controlling MCVideo function of a private call" in the procedures in the present document;

- SIP INVITE requests routed to the controlling MCVideo function, the Request-URI is set to a public service identity serving an MCVideo group and the Contact header field does not contain the isfocus media feature tag specified in IETF RFC 3840 [16]. Such requests are known as "SIP INVITE request for controlling MCVideo function of an MCVideo group" in the procedures in the present document; and

- SIP INVITE requests routed to the controlling MCVideo function, the Request-URI is set to a public service identity for MCVideo ambient viewing call and the Contact header field does not contain the isfocus media feature tag specified in IETF RFC 3840 [22]. Such requests are known as "SIP INVITE request for controlling MCVideo function of an ambient viewing call" in the procedures in the present document.

6.3.1.2 SIP MESSAGE request

The MCVideo server needs to distinguish between the following SIP MESSAGE request for originations and terminations:

- SIP MESSAGE requests routed to the participating MCVideo function with the Request-URI set to the MBMS public service identity of the participating MCVideo function. Such requests are known as "SIP MESSAGE request for an MBMS listening status update" in the procedures in the present document;

- SIP MESSAGE request routed to the participating MCVideo function containing a Content-Type header field set to "application/vnd.3gpp.mcvideo-location-info+xml" and includes an XML body containing a Location root element containing a Report element. Such requests are known as "SIP MESSAGE request for location reporting" in the present document;

- SIP MESSAGE requests routed to the originating participating MCVideo function with the Request-URI set to the public service identity of the participating MCVideo function and containing a Content-Type header field set to "application/vnd.3gpp.mcvideo-info+xml" and includes an XML body containing a <mcvideoinfo> root element containing a <mcvideo-Params> element containing an <emergency-ind> element or an <alert-ind> element. Such requests are known as "SIP MESSAGE requests for emergency notification for originating participating MCVideo function" in the procedures in the present document;

- SIP MESSAGE requests routed to the terminating participating MCVideo function with the Request-URI set to the public service identity of the terminating participating MCVideo function and containing a Content-Type header field set to "application/vnd.3gpp.mcvideo-info+xml" and includes an XML body containing a <mcvideoinfo> root element containing a <mcvideo-Params> element containing an <emergency-ind> element or an <alert-ind> element. Such requests are known as "SIP MESSAGE requests for emergency notification for terminating participating MCVideo function" in the procedures in the present document;

- SIP MESSAGE requests routed to the controlling MCVideo function with the Request-URI set to the public service identity of the controlling MCVideo function and containing a Content-Type header field set to "application/vnd.3gpp.mcvideo-info+xml" and includes an XML body containing a <mcvideoinfo> root element containing a <mcvideo-Params> element containing an <emergency-ind> element or an <alert-ind> element. Such requests are known as "SIP MESSAGE requests for emergency notification for controlling MCVideo function" in the procedures in the present document;

- SIP MESSAGE request routed to the MCVideo client containing a Content-Type header field set to "application/vnd.3gpp.mcvideo-location-info+xml" and includes an XML body containing a Location root element containing a Configuration element. Such requests are known as "SIP MESSAGE request for location report configuration" in the present document; and

- SIP MESSAGE request routed to the MCVideo client containing a Content-Type header field set to "application/vnd.3gpp.mcvideo-location-info+xml" and includes an XML body containing a Location root element containing a Request element. Such requests are known as "SIP MESSAGE request for location report request" in the present document.

- SIP MESSAGE requests routed to the originating participating MCVideo function with the Request-URI set to the public service identity of the participating MCVideo function and containing a Content-Type header field set to "application/vnd.3gpp.mcvideo-info+xml" and includes an XML body containing a <mcvideoinfo> root element with a <mcvideo-Params> element containing an <anyExt> element with the <request-type> element set to a value of "group-selection-change-request" or with the <response-type> element set to a value of "group-selection-change-response". Such requests are known as "SIP MESSAGE request for group-selection-change for originating participating MCVideo function";

- SIP MESSAGE requests routed to the terminating participating MCVideo function with the Request-URI set to the public service identity of the participating MCVideo function and containing a Content-Type header field set to "application/vnd.3gpp.mcvideo-info+xml" and includes an XML body containing a <mcvideoinfo> root element with a <mcvideo-Params> element containing an <anyExt> element with the <request-type> element set to a value of "group-selection-change-request" or with the <response-type> element set to a value of "group-selection-change -response". Such requests are known as "SIP MESSAGE request for group-selection-change for terminating participating MCVideo function";

- SIP MESSAGE requests routed to the controlling MCVideo function with the Request-URI set to the public service identity of the controlling MCVideo function and containing a Content-Type header field set to "application/vnd.3gpp.mcvideo-info+xml" and includes an XML body containing a <mcvideoinfo> root element with a <mcvideo-Params> element containing an <anyExt> element with the <request-type> element set to a value of "group-selection-change-request". Such requests are known as "SIP MESSAGE request for group selection change request for controlling MCVideo function";

- SIP MESSAGE requests routed to the controlling MCVideo function with the Request-URI set to the public service identity of the controlling MCVideo function and containing a Content-Type header field set to "application/vnd.3gpp.mcvideo-info+xml" and includes an XML body containing a <mcvideoinfo> root element with a <mcvideo-Params> element containing an <anyExt> element with the <response-type> element set to a value of "group-selection-change-response". Such requests are known as "SIP MESSAGE request for group selection change response for controlling MCVideo function";

- SIP MESSAGE requests routed to the originating participating MCVideo function and the Request-URI is set to a public service identity of the originating participating MCVideo function that contains a <preconfigured-group> element in an application/vnd.3gpp.mcvideo-regroup+xml MIME body, a <regroup-action> element set

to "create", and a non-empty <groups-for-regroup> element. Such requests are known as "SIP MESSAGE request to the originating participating MCVideo function to request creation of a group regroup using preconfigured group" in the procedures in the present document;

- SIP MESSAGE requests routed to the originating participating MCVideo function and the Request-URI is set to a public service identity of the originating participating MCVideo function that contains a <preconfigured-group> element in an application/vnd.3gpp.mcvideo-regroup+xml MIME body, a <regroup-action> element set to "create", and a non-empty <users-for-regroup> element. Such requests are known as "SIP MESSAGE request to the originating participating MCVideo function to request creation of a user regroup using preconfigured group" in the procedures in the present document;

- SIP MESSAGE requests routed to the originating participating MCVideo function and the Request-URI is set to a public service identity of the originating participating MCVideo function that contains a <preconfigured-group> element in an application/vnd.3gpp.mcvideo-regroup+xml MIME body and a <regroup-action> element set to "remove". Such requests are known as "SIP MESSAGE request to the originating participating MCVideo function to remove a regroup using preconfigured group" in the procedures in the present document;

- SIP MESSAGE requests routed to the terminating participating MCVideo function and the Request-URI is set to a public service identity of the participating MCVideo function that contains a <preconfigured-group> element in an application/vnd.3gpp.mcvideo-regroup+xml MIME body, a <regroup-action> element set to "create", and a non-empty <groups-for-regroup> element. Such requests are known as "SIP MESSAGE request to the terminating participating MCVideo function to create a group regroup using preconfigured group" in the procedures in the present document;

- SIP MESSAGE requests routed to the terminating participating MCVideo function and the Request-URI is set to a public service identity of the terminating participating MCVideo function that contains a <preconfigured-group> element in an application/vnd.3gpp.mcvideo-regroup+xml MIME body, a <regroup-action> element set to "create"and a non-empty <users-for-regroup> element. Such requests are known as "SIP MESSAGE request to the terminating participating MCVideo function to create a user regroup using preconfigured group" in the procedures in the present document;

- SIP MESSAGE requests routed to the terminating participating MCVideo function and the Request-URI is set to a public service identity of the terminating participating MCVideo function that contains a <preconfigured-group> element in an application/vnd.3gpp.mcvideo-info+xml MIME body and a <regroup-action> element set to "remove". Such requests are known as "SIP MESSAGE request to the terminating participating MCVideo function to remove a regroup using preconfigured group" in the procedures in the present document;

- SIP MESSAGE requests routed to the controlling MCVideo function and the Request-URI is set to a public service identity of the controlling MCVideo function that contains a <preconfigured-group> element in an application/vnd.3gpp.mcvideo-regroup+xml MIME body, a <regroup-action> element set to "create", and a non-empty <groups-for-regroup> element. Such requests are known as "SIP MESSAGE request to the controlling MCVideo function to request creation of a group regroup using preconfigured group" in the procedures in the present document;

- SIP MESSAGE requests routed to the controlling MCVideo function and the Request-URI is set to a public service identity of the controlling MCVideo function that contains a <preconfigured-group> element in an application/vnd.3gpp.mcvideo-regroup+xml MIME body, a <regroup-action> element set to "create", and a non-empty <users-for-regroup> element. Such requests are known as "SIP MESSAGE request to the controlling MCVideo function to request creation of a user regroup using preconfigured group" in the procedures in the present document;

- SIP MESSAGE requests routed to the controlling MCVideo function and the Request-URI is set to a public service identity of the controlling MCVideo function that contains a <preconfigured-group> element in an application/vnd.3gpp.mcvideo-regroup +xml MIME body and a <regroup-action> element set to "remove". Such requests are known as "SIP MESSAGE request to the controlling MCVideo function to remove a regroup using preconfigured group" in the procedures in the present document;

- SIP MESSAGE requests routed to a non-controlling MCVideo function and the Request-URI is set to a public service identity of the non-controlling MCVideo function that contains a <preconfigured-group> element in an application/vnd.3gpp.mcvideo-regroup+xml MIME body, a <regroup-action> element set to "create", and a non-empty <groups-for-regroup> element. Such requests are known as "SIP MESSAGE request to a non-controlling MCVideo function to request creation of a group regroup using preconfigured group" in the procedures in the present document;

- SIP MESSAGE requests routed to the non-controlling MCVideo function and the Request-URI is set to a public service identity of the non-controlling MCVideo function that contains a <preconfigured-group> element in an application/vnd.3gpp.mcvideo-regroup+xml MIME body and a <regroup-action> element set to "remove". Such requests are known as "SIP MESSAGE request to the non-controlling MCVideo function to remove a group regroup using preconfigured group" in the procedures in the present document;

- SIP MESSAGE requests routed to the originating participating MCVideo function with the Request-URI set to the public service identity of the participating MCVideo function and containing a Content-Type header field set to "application/vnd.3gpp.mcvideo-info+xml" and including an XML body containing a <mcvideoinfo> root element containing a <mcvideo-Params> element containing an <anyExt> element with the <request-type> element set to a value of "fa-group-binding-req". Such requests are known as "SIP MESSAGE request for binding of a functional alias with the MCVideo group(s) for the MCVideo user for originating participating MCVideo function" in the procedures in the present document; and

- SIP MESSAGE requests routed to the controlling participating MCVideo function with the Request-URI set to the public service identity of the participating MCVideo function and containing a Content-Type header field set to "application/vnd.3gpp.mcvideo-info+xml" and including an XML body containing a <mcvideoinfo> root element containing a <mcvideo-Params> element containing an <anyExt> element with the <request-type> element set to a value of "fa-group-binding-req". Such requests are known as "SIP MESSAGE request for binding of a functional alias with the MCVideo group(s) for the MCVideo user for controlling MCVideo function" in the procedures in the present document.

If a SIP MESSAGE request is received at an MCVideo server that is not in accordance with the SIP MESSAGE requests listed above, then the MCVideo server shall reject the SIP MESSAGE request with a SIP 403 (Forbidden) response.

6.3.1.3 SIP SUBSCRIBE request

The MCVideo server needs to distinguish between the following SIP SUBSCRIBE request for originations and terminations:

- SIP SUBSCRIBE requests routed to the participating MCVideo function with the Request-URI set to the MCVideo session identity identifying the participating MCVideo function and the Event header field set to "conference". Such requests are known as "SIP SUBSCRIBE request for conference event status subscription in the participating MCVideo function" in the procedures in the present document;

- SIP SUBSCRIBE requests routed to the controlling MCVideo function with the Request-URI set to the MCVideo session identity identifying the controlling MCVideo function and containing an Event header field set to "conference". Such requests are known as "SIP SUBSCRIBE request for conference event status subscription in the controlling MCVideo function" in the procedures in the present document; and

- SIP SUBSCRIBE requests routed to the non-controlling MCVideo function with the Request-URI set to the MCVideo session identity identifying the non-controlling MCVideo function and containing an Event header field set to "conference". Such requests are known as "SIP SUBSCRIBE request for conference event status subscription in the non-controlling MCVideo function" in the procedures in the present document.

6.3.2 Participating MCVideo Function

6.3.2.1 Requests initiated by the served MCVideo user

6.3.2.1.1 SDP offer generation

6.3.2.1.1.1 On-demand session

This clause is referenced from other clauses.

The SDP offer is generated based on the received SDP offer. The SDP offer generated by the participating MCVideo function:

1) shall contain two SDP media-level sections for MCVideo video media as contained in the received SDP offer; and

2) shall contain an SDP media-level section for one media-transmission control entity, if present in the received SDP offer.

When composing the SDP offer according to 3GPP TS 24.229 [11], the participating MCVideo function:

1) shall replace the IP address and port number for the offered media stream in the received SDP offer with the IP address and port number of the participating MCVideo function, if required;

NOTE 1: Requirements can exist for the participating MCVideo function to be always included in the path of the offered media stream, for example: for the support of features such as MBMS, lawful interception and recording. Other examples can exist.

2) shall replace the IP address and port number for the offered media transmission control entity, if any, in the received SDP offer with the IP address and port number of the participating MCVideo function; and

NOTE 2: If the participating MCVideo function and the controlling MCVideo function are in the same MCVideo server, and the participating MCVideo function does not have a dedicated IP address or a dedicated port number for media transmission control or media stream, the replacement of the IP address or the port number is omitted.

3) shall contain an "a=key-mgmt" attribute field with a "mikey" attribute value, if present in the received SDP offer.

6.3.2.1.2 SDP answer generation

6.3.2.1.2.1 On-demand session

When composing the SDP answer according to 3GPP TS 24.229 [11], the participating MCVideo function:

1) shall replace the IP address and port number in the received SDP answer with the IP address and port number of the participating MCVideo function, for the accepted media stream in the received SDP offer, if required; and

NOTE 1: Requirements can exist for the participating MCVideo function to be always included in the path of the offered media stream, for example: for the support of features such as MBMS, lawful interception and recording. Other examples can exist.

2) shall replace the IP address and port number in the received SDP answer with the IP address and port number of the participating MCVideo function, for the accepted media-transmission control entity, if present in the received SDP offer.

NOTE 2: If the participating MCVideo function and the controlling MCVideo function are in the same MCVideo server, and the participating MCVideo function does not have a dedicated IP address or a dedicated port number for media transmission control or media stream, the replacement of the IP address or the port number is omitted.

6.3.2.1.3 Sending an INVITE request on receipt of an INVITE request

This clause is referenced from other procedures.

When generating an initial SIP INVITE request according to 3GPP TS 24.229 [11], on receipt of an incoming SIP INVITE request, the participating MCVideo function:

1) shall include in the SIP INVITE request all Accept-Contact header fields and all Reject-Contact header fields, with their feature tags and their corresponding values along with parameters according to rules and procedures of IETF RFC 3841 [20] if included in the incoming SIP INVITE request;

2) should include the Session-Expires header field according to IETF RFC 4028 [23]. It is recommended that the "refresher" header field parameter is omitted. If included, the "refresher" header field parameter shall be set to "uac";

3) shall include the option tag "timer" in the Supported header field;

4) shall copy the contents of the P-Asserted-Identity header field of the incoming SIP INVITE request to the P-Asserted-Identity header field of the outgoing SIP INVITE request;

5) shall include the g.3gpp.mcvideo media feature tag into the Contact header field of the outgoing SIP INVITE request;

6) shall include the ICSI value "urn:urn-7:3gpp-service.ims.icsi.mcvideo" (coded as specified in 3GPP TS 24.229 [11]), into the P-Asserted-Service header field of the outgoing SIP INVITE request;

7) if the incoming SIP INVITE request contained a MIME resource-lists body with the MCVideo ID of the invited MCVideo user, shall copy the MIME resource-lists body, according to rules and procedures of IETF RFC 5366 [37];

8) if the incoming SIP INVITE request contained an application/vnd.3gpp.mcvideo-info+xml MIME body, shall copy the contents of the application/vnd.3gpp.mcvideo-info+xml MIME body of the incoming SIP INVITE request to the outgoing SIP INVITE request; and

9) if the incoming SIP INVITE request contained an application/vnd.3gpp.location-info+xml MIME body, shall copy the contents of the application/vnd.3gpp.location-info+xml MIME body of the incoming SIP INVITE request to the outgoing SIP INVITE request.

6.3.2.1.4 Response to an INVITE request

6.3.2.1.4.1 Provisional responses

NOTE: This clause is referenced from other procedures

When sending SIP provisional responses other than the SIP 100 (Trying) response, the participating MCVideo function shall generate a SIP provisional response according to 3GPP TS 24.229 [11] and:

1) shall include the following in the Contact header field:

   a) the g.3gpp.mcvideo media feature tag;

   b) the g.3gpp.icsi-ref media feature tag containing the value of "urn:urn-7:3gpp-service.ims.icsi.mcvideo";

   c) the isfocus media feature tag; and

   d) an MCVideo session identity mapped to the MCVideo session identity if provided in the Contact header field of the incoming provisional response;

2) shall include the "norefersub" option tag in a Supported header field in accordance with 3GPP TS 24.229 [11];

3) may include a Resource-Share header field in accordance with clause 5.7.1.20.2 in 3GPP TS 24.229 [11]; and

4) if the incoming SIP provisional response contained an application/vnd.3gpp.mcvideo-info+xml MIME body, shall copy the application/vnd.3gpp.mcvideo-info+xml MIME body to the outgoing SIP provisional response.

6.3.2.1.4.2 Final response

This clause is referenced from other procedures.

When sending SIP 200 (OK) responses, the participating MCVideo function shall generate a SIP 200 (OK) response according to 3GPP TS 24.229 [11] and:

1) shall include the option tag "timer" in a Require header field;

2) shall include the Session-Expires header field according to rules and procedures of IETF RFC 4028 [23], "UAS Behavior". If the "refresher" parameter is not included in the received request, the "refresher" parameter in the Session-Expires header field shall be set to "uac";

3) shall include the following in the Contact header field:

   a) the g.3gpp.mcvideo media feature tag;

   b) the g.3gpp.icsi-ref media feature tag containing the value of "urn:urn-7:3gpp-service.ims.icsi.mcvideo"; and

   c) the isfocus media feature tag;

4) shall include the option tag "tdialog" in a Supported header field according to rules and procedures of IETF RFC 4538 [32];

5) shall include the option tag "norefersub" in a Supported header field according to rules and procedures of IETF RFC 4488 [31];

6) may include a Resource-Share header field in accordance with clause 5.7.1.20.2 in 3GPP TS 24.229 [11]; and

7) if the incoming SIP 200 (OK) response contained an application/vnd.3gpp.mcvideo-info+xml MIME body, shall copy the application/vnd.3gpp.mcvideo-info+xml MIME body to the outgoing SIP 200 (OK) response.

6.3.2.1.5 Sending a SIP BYE request on receipt of a SIP BYE request

Upon receiving a SIP BYE request from the MCVideo client, the participating MCVideo function:

1) shall interact with the media plane as specified in 3GPP TS 24.581 [5];

2) shall generate a SIP BYE request as specified in 3GPP TS 24.229 [11];

3) shall set the Request-URI to the MCVideo session identity as included in the received SIP BYE request;

4) shall copy the contents of the P-Asserted-Identity header field of the incoming SIP BYE request to the P-Asserted-Identity header field of the outgoing SIP BYE request;

5) if the received SIP BYE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body, shall copy the application/vnd.3gpp.mcvideo-info+xml MIME body into the outgoing SIP BYE request; and

6) shall send the SIP BYE request toward the controlling MCVideo function, according to 3GPP TS 24.229 [11].

Upon receiving a SIP 200 (OK) response to the SIP BYE request the terminating MCVideo function shall forward a SIP 200 (OK) response to the MCVideo client and shall interact with the media plane as specified in 3GPP TS 24.581 [5] for releasing media plane resources associated with the SIP session with the controlling MCVideo function.

6.3.2.1.6 Priority call conditions

6.3.2.1.6.0 General

This clause contains common procedures to be used for MCVideo emergency group calls and MCVideo imminent peril group calls.

6.3.2.1.6.1 Determining authorisation for originating a priority group call

When the participating MCVideo function receives a request from the MCVideo client to originate an MCVideo emergency group call and needs to determine if the request is an authorised request for an MCVideo emergency call, the participating MCVideo function shall check the following:

1) if the <allow-emergency-group-call> element of the <ruleset> element of the MCVideo user profile document identified by the MCVideo ID of the calling user (see the MCVideo user profile document in 3GPP TS 24.484 [25]) is set to a value of "true" and:

   a) if the "entry-info" attribute of the <entry> element of the <MCVideoGroupInitiation> element of the <EmergencyCall> element contained within the <MCVideo-group-call> element of the MCVideo user profile document (see the MCVideo user profile document in 3GPP TS 24.484 [25]) is set to a value of "DedicatedGroup" and if the <uri-entry> element of the <entry> element of the <MCVideoGroupInitiation> element contains the identity of the MCVideo group targeted by the calling MCVideo user; or

   b) if the "entry-info" attribute of the <entry> element of the <MCVideoGroupInitiation> element of the <EmergencyCall> contained within the <MCVideo-group-call> element of the MCVideo user profile document (see the MCVideo user profile document in 3GPP TS 24.484 [25]) is set to a value of "UseCurrentlySelectedGroup";

   then the participating MCVideo function shall consider the MCVideo emergency group call request to be an authorised request for an MCVideo emergency group call;

In all other cases, the participating MCVideo function shall consider the request to originate an MCVideo emergency group call to be an unauthorised request to originate an MCVideo emergency group call.

When the participating MCVideo function receives a request from the MCVideo client to originate an MCVideo imminent peril group call and needs to determine if the request is an authorised request for an MCVideo imminent peril group call the participating MCVideo function shall check the following:

1) if the <allow-imminent-peril-call> element of <ruleset> element of the MCVideo user profile document identified by the MCVideo ID of the calling user (see the MCVideo user profile document in 3GPP TS 24.484 [25]) is set to a value of "true"; and

   a) if the "entry-info" attribute of the <MCVideoGroupInitiation> element contained within the <ImminentPerilCall> element of the MCVideo user profile document (see the MCVideo user profile document in 3GPP TS 24.484 [25]) is set to a value of "DedicatedGroup" and if the <uri-entry> element of the <entry> element of the <MCVideoGroupInitiation> element contains the identity of the MCVideo group targeted by the calling MCVideo user; or

   b) if the "entry-info" attribute of the <entry> element of the <MCVideoGroupInitiation> element contained within the <ImminentPerilCall> element of the MCVideo user profile document (see the MCVideo user profile document in 3GPP TS 24.484 [25]) is set to a value of "UseCurrentlySelectedGroup";

   then the participating MCVideo function shall consider the MCVideo imminent peril group call request to be an authorised request for an MCVideo emergency group call;

In all other cases, the participating MCVideo function shall consider the request to originate an MCVideo imminent peril group call to be an unauthorised request to originate an MCVideo imminent peril call.

6.3.2.1.6.2 Determining authorisation for initiating or cancelling an MCVideo emergency alert

If the participating MCVideo function receives a SIP request from the MCVideo client including a request for an MCVideo emergency alert and:

1) if the <allow-activate-emergency-alert> element of the <actions> element of the <rule> element of the <ruleset> element of the MCVideo user profile document identified by the MCVideo ID of the calling MCVideo user (see the MCVideo user profile document in 3GPP TS 24.484 [25]) is set to a value of "true"; and

2) if the "entry-info" attribute of the <entry> element of the <EmergencyAlert> element contained within the <MCVideo-group-call> element of the MCVideo user profile document (see the MCVideo user profile document in 3GPP TS 24.484 [25]) is set to a value of:

   a) "DedicatedGroup", and if the <uri-entry> element of the <entry> element of the <EmergencyAlert> element of the <MCVideo-group-call> element of the MCVideo user profile document (see the MCVideo user profile document in 3GPP TS 24.484 [25]) contains the MCVideo group identity of the MCVideo group targeted by the calling MCVideo user; or

   b) "UseCurrentlySelectedGroup" and the <MCVideo-allow-emergency-alert> element of the <actions> element of a <rule> element of the <ruleset> element of the <list-service> element of the group document identified by the MCVideo group identity targeted for the emergency alert is set to a value of "true" as specified in 3GPP TS 24.481 [24].

then the MCVideo emergency alert request shall be considered to be an authorised request for an MCVideo emergency alert. In all other cases, it shall be considered to be an unauthorised request for an MCVideo emergency alert.

If the participating MCVideo function receives a SIP request from the MCVideo client including a request to cancel an MCVideo emergency alert to an MCVideo group, and if the <allow-cancel-emergency-alert> element of the <actions> element of a <rule> element of the <ruleset> element of the MCVideo user profile document identified by the MCVideo ID of the calling MCVideo user (see the MCVideo user profile document in 3GPP TS 24.484 [25]) is set to a value of "true", then the MCVideo emergency alert cancellation request shall be considered to be an authorised request to cancel an MCVideo emergency alert. In all other cases, it shall be considered to be an unauthorised request to cancel an MCVideo emergency alert.

6.3.2.1.6.3 Validate priority request parameters

This clause is referenced from other procedures.

To validate the combinations of <emergency-ind>, <imminentperil-ind> and <alert-ind> which are received in SIP requests, the participating MCVideo function shall follow the procedures specified in clause 6.3.3.1.17.

6.3.2.1.6.4 Retrieving Resource-Priority header field values

This clause is referenced from other procedures.

The participating MCVideo function shall follow the procedures specified in clause 6.3.3.1.19 with the clarification that references in that procedure to the controlling MCVideo function should be replaced with references to the participating MCVideo function.

6.3.2.1.7 Generating a SIP re-INVITE request on receipt of a SIP re-INVITE request

This clause is referenced from other procedures.

When generating a SIP re-INVITE request according to 3GPP TS 24.229 [11] on receipt of an incoming SIP re-INVITE request, the participating MCVideo function:

1) if the incoming SIP re-INVITE request contained a MIME resource-lists body with the MCVideo ID of the invited MCVideo user, shall copy the MIME resource-lists body, according to rules and procedures of IETF RFC 5366 [37];

2) if the incoming SIP re-INVITE request contained an application/vnd.3gpp.mcvideo-info+xml MIME body, shall copy the application/vnd.3gpp.mcvideo-info+xml MIME body; and

3) if the incoming SIP re-INVITE request contained an application/vnd.3gpp.location-info+xml MIME body, shall copy the application/vnd.3gpp.location-info+xml MIME body.

6.3.2.1.8 Sending a SIP INVITE request on receipt of SIP 3xx response

This clause is referenced from other procedures.

Upon:

1) receipt of a SIP INVITE request from the MCVideo client;

2) having sent a SIP INVITE request to the controlling MCVideo function; and

3) having received a SIP 302 (Moved Temporarily) response from the controlling MCVideo function with:

   a) a Contact header field containing a SIP URI; and

   b) an application/vnd.3gpp.mcvideo-info+xml MIME body with an <mcvideo-request-uri> element;

the participating MCVideo function:

1) shall generate a SIP INVITE request with the Request-URI set to the contents of the Contact header field of the SIP 302 (Moved Temporarily) response;

2) shall include in the SIP INVITE request all Accept-Contact header fields and all Reject-Contact header fields, with their feature tags and their corresponding values along with parameters according to rules and procedures of IETF RFC 3841 [20] if included in the original incoming SIP INVITE request from the MCVideo client;

3) should include the Session-Expires header field according to IETF RFC 4028 [23]. It is recommended that the "refresher" header field parameter is omitted. If included, the "refresher" header field parameter shall be set to "uac";

4) shall include the option tag "timer" in the Supported header field;

5) shall copy the contents of the P-Asserted-Identity header field of the incoming SIP INVITE request from the client to the P-Asserted-Identity header field of the outgoing SIP INVITE request;

6) shall include the g.3gpp.mcvideo media feature tag into the Contact header field of the outgoing SIP INVITE request;

7) shall include the g.3gpp.icsi-ref media feature tag containing the value of "urn:urn-7:3gpp-service.ims.icsi.mcvideo" in the Contact header field of the outgoing SIP INVITE request;

8) shall include the ICSI value "urn:urn-7:3gpp-service.ims.icsi.mcvideo" (coded as specified in 3GPP TS 24.229 [11]), into the P-Asserted-Service header field of the outgoing SIP INVITE request;

9) if an SIP INVITE request was received from the client containing an application/vnd.3gpp.mcvideo-info+xml MIME body, shall copy the contents of the application/vnd.3gpp.mcvideo-info+xml MIME body of the original incoming SIP INVITE request to the outgoing SIP INVITE request;

10) shall copy the contents of the <mcvideo-request-uri> element of the application/vnd.3gpp.mcvideo-info+xml MIME body received in the SIP 302 (Moved Temporarily) response, to the <mcvideo-request-uri> element of the application/vnd.3gpp.mcvideo-info+xml MIME body of the outgoing SIP INVITE request;

11) shall set the <mcvideo-calling-user-id> element of the application/vnd.3gpp.mcvideo-info+xml MIME body of the SIP INVITE request to the MCVideo ID of the calling user that was determined when the participating MCVideo function received the SIP INVITE request request from the client; and

12) if the <session-type> element is received in the application/vnd.3gpp.mcvideo-info+xml MIME body of the SIP 3xx response, shall set the <session-type> element of the application/vnd.3gpp.mcvideo-info+xml MIME body of the SIP INVITE request to the value of the <session-type> element received in the SIP 3xx response.

6.3.2.2 Requests terminated to the served MCVideo user

6.3.2.2.1 SDP offer generation

The participating MCVideo function shall follow the procedures in clause 6.3.2.1.1.

6.3.2.2.2 SDP answer generation

6.3.2.2.2.1 On-demand session

The participating MCVideo function shall follow the procedures in clause 6.3.2.1.2.1.

6.3.2.2.3 SIP INVITE request towards the terminating MCVideo client

The participating MCVideo function shall generate an initial SIP INVITE request according to 3GPP TS 24.229 [11] and:

1) shall include in the SIP INVITE request all Accept-Contact header fields and all Reject-Contact header fields, with their feature tags and their corresponding values along with parameters according to rules and procedures of IETF RFC 3841 [20] if included in the incoming SIP INVITE request;

2) should include the Session-Expires header field according to IETF RFC 4028 [23]. It is recommended that the "refresher" header field parameter is omitted. If included, the "refresher" header field parameter shall be set to "uac";

3) shall include the option tag "timer" in the Supported header field;

4) shall include the following in the Contact header field:

   a) the g.3gpp.mcvideo media feature tag;

   b) the g.3gpp.icsi-ref media feature tag containing the value of "urn:urn-7:3gpp-service.ims.icsi.mcvideo";

   c) the isfocus media feature tag;

   d) an MCVideo session identity mapped to the MCVideo session identity provided in the Contact header field of the incoming SIP INVITE request; and

   e) any other uri-parameter provided in the Contact header field of the incoming SIP INVITE request;

5) shall include the option tag "tdialog" in a Supported header field according to rules and procedures of IETF RFC 4538 [32];

6) shall include the option tag "norefersub" in a Supported header field according to rules and procedures of IETF RFC 4488 [31];

7) may include a Resource-Share header field in accordance with clause 5.7.1.20.3 in 3GPP TS 24.229 [11]; and

8) if the incoming SIP INVITE request contained an application/vnd.3gpp.mcvideo-info+xml MIME body, shall copy the application/vnd.3gpp.mcvideo-info+xml MIME body to the outgoing SIP INVITE request.

6.3.2.2.4 Response to a SIP INVITE request

6.3.2.2.4.1 Provisional response

This clause is referenced from other procedures.

When sending a SIP provisional response other than the SIP 100 (Trying) response to the SIP INVITE request, the participating MCVideo function shall generate a SIP provisional response according to 3GPP TS 24.229 [11] and:

1) shall include the following in the Contact header field:

   a) the g.3gpp.mcvideo media feature tag; and

   b) the g.3gpp.icsi-ref media feature tag containing the value of "urn:urn-7:3gpp-service.ims.icsi.mcvideo";

2) if the outgoing SIP provisional response is to be sent in response to the receipt of a SIP provisional response and the response contains an application/vnd.3gpp.mcvideo-info+xml MIME body, shall copy the application/vnd.3gpp.mcvideo-info+xml MIME body to the outgoing SIP provisional response; and

3) if the incoming SIP INVITE request included the Supported header field with the value "100rel" and according to local policy, may include the Require header field with the value "100rel".

6.3.2.2.4.2 Final response

This clause is referenced from other procedures.

When sending SIP 200 (OK) responses, the participating MCVideo function shall generate a SIP 200 (OK) response according to 3GPP TS 24.229 [11] and:

1) shall include the option tag "timer" in a Require header field;

2) shall include the Session-Expires header field according to rules and procedures of IETF RFC 4028 [23], "UAS Behavior". If no "refresher" parameter was included in the SIP INVITE request, the "refresher" parameter in the Session-Expires header field shall be set to "uas";

3) shall include the following in the Contact header field:

   a) the g.3gpp.mcvideo media feature tag;

   b) the g.3gpp.icsi-ref media feature tag containing the value of "urn:urn-7:3gpp-service.ims.icsi.mcvideo"; and

   c) an MCVideo session identity mapped to the MCVideo session identity provided in the Contact header field of the received SIP INVITE request from the controlling MCVideo function;

4) shall include the option tag "tdialog" in a Supported header field according to rules and procedures of IETF RFC 4538 [32]; and

5) if the incoming SIP response contained an application/vnd.3gpp.mcvideo-info+xml MIME body, shall copy the application/vnd.3gpp.mcvideo-info+xml MIME body to the outgoing SIP 200 (OK) response.

6.3.2.2.5 Automatic Commencement Mode

6.3.2.2.5.1 General

When receiving a "SIP INVITE request for terminating participating MCVideo function" that requires automatic commencement mode:

1) if:

   a) the invited MCVideo client has one or more pre-established sessions without an associated MCVideo session;

   b) the media-level sections for the offered MCVideo video media stream are the same as the media-level sections for MCVideo video media stream in an existing pre-established session; and

   c) the media-level section of the offered media-transmission control entity is the same as the media-level section for media-transmission control entity in an existing pre-established session;

   then the participating MCVideo function shall perform the actions specified in clause 6.3.2.2.5.3; or

2) otherwise the participating MCVideo function shall perform the actions specified in clause 6.3.2.2.5.2.

6.3.2.2.5.2 Automatic commencement for On-Demand session

When receiving a "SIP INVITE request for terminating participating MCVideo function" for an on-demand session that requires automatic commencement mode the participating MCVideo function:

1) if:

   a) the incoming SIP INVITE request contained a Priv-Answer-Mode header field set to the value of "Auto";

   b) no Answer-Mode header field or Priv-Answer-Mode header field were received in the incoming SIP INVITE request and the Answer-Mode Indication received in the application/poc-settings+xml MIME body received from the invited MCVideo client as defined in clause 7.3.3 or clause 7.3.4 is set to "auto-answer"; or

   c) the incoming SIP INVITE request contained an Answer-Mode header field set to "Auto" and the Answer-Mode Indication received in the application/poc-settings+xml MIME body received from the invited MCVideo client as defined in clause 7.3.3 or clause 7.3.4 is set to "auto-answer";

   then:

   a) shall generate a SIP 183 (Session Progress) response to the "SIP INVITE request for terminating participating MCVideo function" as specified in clause 6.3.2.2.4.1; and

NOTE: The SIP 183 (session Progress) response can be sent reliably or unreliably depending on the content of the received SIP INVITE request. Regardless of if the SIP 183 (Session Progress) response is sent reliably or unreliably, SDP is not included in the SIP 183 (Session Progress) response.

   b) shall set the P-Answer-State header field to "Unconfirmed" in the SIP 183 (Session Progress) response;

2) shall copy the public user identity contained in the Request-URI of the incoming "SIP INVITE request for terminating participating MCVideo function" to the P-Asserted-Identity header field of the SIP 183 (Session Progress) response;

3) shall generate a SIP INVITE request as specified in clause 6.3.2.2.3;

4) shall set the Request-URI to the public user identity associated to the MCVideo ID of the MCVideo user to be invited;

5) shall perform the procedures specified in clause 6.3.2.2.9 to include any MIME bodies in the received SIP INVITE request, into the outgoing SIP INVITE request;

6) shall copy the contents of the P-Asserted-Identity header field of the incoming "SIP INVITE request for terminating participating MCVideo function" to the P-Asserted-Identity header field of the outgoing SIP INVITE request;

7) if the Priv-Answer-Mode header field is present in the incoming SIP INVITE request with a value of "Auto", shall include a Priv-Answer-Mode header field with the value "Auto" in the outgoing SIP INVITE request. Otherwise, if the Answer-Mode header field is present in the incoming SIP INVITE request, the participating MCVideo function shall include an Answer-Mode header field with the value "Auto" in the outgoing SIP INVITE request;

8) if no Answer-Mode header field or Priv-Answer-Mode header field were received in the incoming SIP INVITE request and the Answer-Mode Indication received in the application/poc-settings+xml MIME body received from the invited MCVideo client as defined in clause 7.3.3 or clause 7.3.4 is set to "auto-answer", shall set the Answer-Mode header field to "Auto" in the outgoing SIP INVITE request;

9) shall include in the SIP INVITE request an SDP offer based on the SDP offer in the received "SIP INVITE request for terminating participating MCVideo function" as specified in clause 6.3.2.2.1;

10) if the received SIP INVITE request contains a Resource-Priority header field, shall include a Resource-Priority header field with the contents set as in the received Resource-Priority header field; and

11) shall send the SIP INVITE request towards the MCVideo client according to 3GPP TS 24.229 [11].

If the SIP 183 (Session Progress) response was sent reliably, then upon receiving a SIP PRACK request, the participating MCVideo function shall generate a SIP 200 (OK) response to the SIP PRACK request and forward the SIP 200 (OK) response, according to 3GPP TS 24.229 [11].

Upon receiving a SIP 200 (OK) response to the above SIP INVITE request sent to the MCVideo client, the participating MCVideo function:

1) if the SIP 183 (Session Progress) was sent unreliably, shall send the SIP 200 (OK) response immediately; and

2) if the SIP 183 (Session Progress) was sent reliably and,

   a) if the SIP PRACK request to the SIP 183 (Session Progress) response has been received by the participating MCVideo function and the SIP 200 (OK) response to the SIP PRACK request has been sent, shall send the SIP 200 (OK) response immediately;

   b) if the SIP PRACK request to the SIP 183 (Session Progress) response has not yet been received, then upon receipt of the SIP PRACK request, the participating MCVideo function shall generate a SIP 200 (OK) response to the SIP PRACK request and forward the SIP 200 (OK) response, according to 3GPP TS 24.229 [11], before sending the SIP 200 (OK) response to the "SIP INVITE request for terminating participating MCVideo function".

When the participating MCVideo function sends the SIP 200 (OK) response to the "SIP INVITE request for terminating participating MCVideo function", the participating MCVideo function:

1) shall generate a SIP 200 (OK) response as described in the clause 6.3.2.2.4.2;

2) shall include in the SIP 200 (OK) response an SDP answer based on the SDP answer in the received SIP 200 (OK) response as specified in clause 6.3.2.2.2.1;

3) shall copy the P-Asserted-Identity header field from the incoming SIP 200 (OK) response to the outgoing SIP 200 (OK) response;

4) shall interact with the media plane as specified in 3GPP TS 24.581 [5]; and

5) shall forward the SIP 200 (OK) response according to 3GPP TS 24.229 [11].

The participating MCVideo function shall forward any other SIP response that does not contain SDP along the signalling path to the originating network according to 3GPP TS 24.229 [11].

6.3.2.2.6 Manual Commencement Mode

6.3.2.2.6.1 General

When receiving a "SIP INVITE request for terminating participating MCVideo function" that requires manual commencement mode:

1) if:

   a) the invited MCVideo client has one or more pre-established sessions without an associated MCVideo session;

b) the media-level sections for the offered MCVideo video media stream are the same as the media-level section for MCVideo video media stream in the existing pre-established session; and

c) the media-level section of the offered media-transmission control entity is the same as the media-level section for media-transmission control entity in the existing pre-established session;

then the participating MCVideo function shall perform the actions specified in clause 6.3.2.2.6.3; or

2) otherwise the participating MCVideo function shall perform the actions specified in clause 6.3.2.2.6.2.

6.3.2.2.6.2 Manual commencement for On-Demand session

When receiving a "SIP INVITE request for terminating participating MCVideo function" for an on-demand session that requires manual commencement mode the participating MCVideo function:

1) shall generate a SIP INVITE request as specified in clause 6.3.2.2.3;

2) shall set the Request-URI to the public user identity associated to the MCVideo ID of the MCVideo user to be invited;

3) shall perform the procedures specified in clause 6.3.2.2.9 to include any MIME bodies in the received SIP INVITE request;

4) if the Answer-Mode header field is present in the incoming SIP INVITE request, participating MCVideo function, shall include an Answer-Mode header field with the value "Manual";

5) if no Answer-Mode header field was received in the incoming SIP INVITE request and the Answer-Mode Indication received in the application/poc-settings+xml MIME body received from the invited MCVideo client as defined in clause 7.3.3 or clause 7.3.4 is set to "manual-answer", shall set the Answer-Mode header field to "Manual" in the outgoing SIP INVITE request;

6) if the Priv-Answer-Mode header field is present in the incoming SIP INVITE request, the participating MCVideo function shall include a Priv-Answer-Mode header field with the value "Manual";

7) shall copy the contents of the P-Asserted-Identity header field of the incoming "SIP INVITE request for terminating participating MCVideo function" to the P-Asserted-Identity header field of the outgoing SIP INVITE request;

8) shall include in the SIP INVITE request an SDP offer based on the SDP offer in the received "SIP INVITE request for terminating participating MCVideo function" as specified in clause 6.3.2.2.1;

9) if the received SIP INVITE request contains a Resource-Priority header field, shall include a Resource-Priority header field with the contents set as in the received Resource-Priority header field; and

10) shall send the SIP INVITE request towards the MCVideo client according to 3GPP TS 24.229 [11].

Upon receiving a SIP 180 (Ringing) response to the above SIP INVITE request, the participating MCVideo function:

NOTE 1: A SIP 180 (Ringing) response is received from a terminating MCVideo client in the case of a private call.

1) shall generate a SIP 180 (Ringing) response as specified in clause 6.3.2.2.4.1;

2) shall include the P-Asserted-Identity header field as received in the incoming SIP 180 (Ringing) response; and

3) shall forward the SIP 180 (Ringing) response according to 3GPP TS 24.229 [11].

Upon receiving a SIP 183 (Session Progress) response to the above SIP INVITE request, the participating MCVideo function:

NOTE 2: A SIP 183 (Session Progress) response can be received from a terminating MCVideo client in the case of a group call.

1) shall generate a SIP 183 (Session Progress) response as specified in clause 6.3.2.2.4.1;

2) shall include the P-Asserted-Identity header field as received in the incoming SIP 183 (Session Progress) response;

3) shall include the P-Answer-State header field if received in the incoming SIP 183 (Session Progress) request; and

4) shall forward the SIP 183 (Session Progress) response according to 3GPP TS 24.229 [11].

Upon receiving a SIP 200 (OK) response to the SIP INVITE request sent to the MCVideo client, the participating MCVideo function:

When the participating MCVideo function sends the SIP 200 (OK) response the participating MCVideo function:

1) shall generate a SIP 200 (OK) response as described in the clause 6.3.2.2.4.2;

2) shall include in the SIP 200 (OK) response an SDP answer based on the SDP answer in the received SIP 200 (OK) response as specified in clause 6.3.2.2.2.1;

3) shall copy the P-Asserted-Identity header field from the incoming SIP 200 (OK) response to the outgoing SIP 200 (OK) response;

4) shall interact with the media plane as specified in 3GPP TS 24.581 [5]; and

5) shall forward the SIP 200 (OK) response according to 3GPP TS 24.229 [11].

The participating MCVideo function shall forward any other SIP response that does not contain SDP along the signalling path to the originating network according to 3GPP TS 24.229 [11].

6.3.2.2.7 Void

6.3.2.2.8 SIP BYE request towards the terminating MCVideo client

6.3.2.2.8.1 On-demand

Upon receiving a SIP BYE request from the controlling MCVideo function, the participating MCVideo function:

1) shall interact with the media plane as specified in clause 6.4 in 3GPP TS 24.581 [5] for releasing media plane resource associated with the SIP session with the controlling MCVideo function;

2) shall generate a SIP BYE request according to 3GPP TS 24.229 [11];

3) shall copy the contents of the P-Asserted-Identity header field of the incoming SIP BYE request to the P-Asserted-Identity header field of the outgoing SIP BYE request;

4) if the received SIP BYE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body, shall copy the application/vnd.3gpp.mcvideo-info+xml MIME body into the outgoing SIP BYE request; and

5) shall send the SIP BYE request to the MCVideo client according to 3GPP TS 24.229 [11].

Upon receiving a SIP 200 (OK) response to the SIP BYE request the participating MCVideo function:

1) shall send a SIP 200 (OK) response to the SIP BYE request received from the controlling MCVideo function according to 3GPP TS 24.229 [11]; and

2) shall interact with the media plane as specified in 3GPP TS 24.581 [5] for releasing media plane resources associated with the SIP session with the MCVideo client.

6.3.2.2.9 Populate MIME bodies

This clause is referenced from other procedures.

If the incoming SIP request contains an application/vnd.3gpp.mcvideo-info+xml MIME body, the participating MCVideo function:

1) if not already copied, shall copy the contents of the application/vnd.3gpp.mcvideo-info+xml MIME body received in the SIP request into an application/vnd.3gpp.mcvideo-info+xml MIME body included in the outgoing SIP request.

If the received SIP request contains an application/vnd.3gpp.location-info+xml MIME body as specified in Annex F.3:

1) if not already copied, shall copy the contents of the application/vnd.3gpp.location-info+xml MIME body received in the SIP request into an application/vnd.3gpp.location-info+xml MIME body included in the outgoing SIP request.

If the received SIP request contains an application/resource-lists+xml MIME body:

1) if not already copied, shall copy the contents of the application/resource-lists+xml MIME body received in the SIP request into an application/resource-lists+xml MIME body included in the outgoing SIP request.

6.3.2.2.10 Generating a SIP re-INVITE request towards the terminating MCVideo client

This clause is referenced from other procedures.

The participating MCVideo function shall generate a SIP re-INVITE request according to 3GPP TS 24.229 [11] and:

1) shall include the option tag "tdialog" in a Supported header field according to rules and procedures of IETF RFC 4538 [32];

2) may include a Resource-Share header field in accordance with clause 5.7.1.20.3 in 3GPP TS 24.229 [11];

3) shall perform the procedures specified in clause 6.3.2.2.9 to copy any MIME bodies in the received SIP re-INVITE request to the outgoing SIP re-INVITE request; and

4) if the received SIP re-INVITE request contains a Resource-Priority header field, shall include a Resource-Priority header field with the contents set as in the received Resource-Priority header field.

6.3.2.2.11 Generating a SIP MESSAGE request towards the terminating MCVideo client

This clause is referenced from other procedures.

The participating MCVideo function shall generate a SIP MESSAGE request in accordance with 3GPP TS 24.229 [11] and IETF RFC 3428 [17] and:

1) shall include in the SIP MESSAGE request all Accept-Contact header fields and all Reject-Contact header fields, with their feature tags and their corresponding values along with parameters according to rules and procedures of IETF RFC 3841 [20] that were received (if any) in the incoming SIP MESSAGE request;

2) shall set the Request-URI of the outgoing SIP MESSAGE request to the public user identity associated to the MCVideo ID of the MCVideo user that was in the Request-URI of the incoming SIP MESSAGE request;

3) shall populate the outgoing SIP MESSAGE request MIME bodies as specified in clause 6.3.2.2.9; and

4) shall copy the contents of the P-Asserted-Identity header field of the incoming SIP MESSAGE request to the P-Asserted-Identity header field of the outgoing SIP MESSAGE request.

6.3.2.3 Processing I_MESSAGEs containing MKFC and MKFC-ID

6.3.2.3.1 General

The procedures in this clause are executed by:

- the originating participating MCVideo function as a result of receiving a SIP 200 (OK) response to a SIP INVITE request targeted to a group identity, where the SIP 200 (OK) response contains an application/vnd.3gpp.mcvideo-info+xml MIME body containing an <MKFC-GKTPs> element; and

- the terminating participating MCVideo function as a result of receiving a SIP INVITE requested targeted to an MCVideo ID as part of a group call, where the SIP INVITE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body containing an <MKFC-GKTPs> element.

The <MKFC-GKTPs> element contains one or more <GKTP> elements where each <GKTP> element represents an I_MESSAGE(s) containing an MKFC and MKFC-ID, as specified in 3GPP TS 24.481 [24].

The participating MCVideo function validates each I_MESSAGE and if validation is successful, decrypts the I_MESSAGE, extracts the MKFC and MKFC-ID and transfers the MKFC and MKFC-ID to the media-transmission control entity.

6.3.2.3.2 Processing an I_MESSAGE containing MKFC and MKFC-ID

The participating MCVideo function:

1) shall extract the URI from the initiator field (IDRi) of the I_MESSAGE and use it together with the timer related parameter to check the signature of the I_MESSAGE as described in 3GPP TS 33.180 [8];

NOTE: If the terminating participating MCVideo function receives the SIP INVITE request from a controlling MCVideo function, then the URI in the IDRi is the controlling MCVideo function URI. If the terminating participating MCVideo function receives the SIP INVITE request from a non-controlling MCVideo function, then the URI in the IDRi is the non-controlling MCVideo function URI.

2) if the signature is not valid, shall exit this procedure. Otherwise shall validate that the contents of the recipient field (IDRr) of the I_MESSAGE to ensure it matches to the URI of the participating MCVideo function; and

3) if the contents of the IDRr do not match to the participating MCVideo function URI, shall exit this procedure. Otherwise, shall use the contents of the IDRr to decrypt the I_MESSAGE and extract the MKFC and MKFC-ID.

After the MKFC(s) and MKFC-ID(s) have been extracted from the I_MESSAGE(s), the participating MCVideo function shall provide the media-transmission control entity with the MKFC(s) and MKFC-ID(s), by interacting with the media plane as specified in 3GPP TS 24.581 [5].

6.3.3 Controlling MCVideo function

6.3.3.1 Request initiated by the controlling MCVideo function

6.3.3.1.1 SDP offer generation

The SDP offer is generated based on the received SDP offer. The SDP offer generated by the controlling MCVideo function:

1) when initiating a new MCVideo session the SDP offer;

   a) shall contain only one SDP media-level section for MCVideo video media stream as contained in the received SDP offer; and

   b) shall contain an SDP media-level section for one media-transmission control entity, if present in the received SDP offer; and

2) when adding a new MCVideo user to an existing MCVideo Session, the SDP offer shall contain the media stream currently used in the MCVideo session.

When composing the SDP offer according to 3GPP TS 24.229 [11], the controlling MCVideo function:

1) shall replace the IP address and port number for the offered media stream in the received SDP offer with the IP address and port number of the controlling MCVideo function;

2) for the MCVideo video media stream, shall include all media-level attributes from the received SDP offer;

3) shall replace the IP address and port number for the offered media transmission control entity, if any, in the received SDP offer with the IP address and port number of the controlling MCVideo function; and

4) for the offered media transmission control entity, shall include the offered media transmission control entity 'fmtp' attributes as specified in 3GPP TS 24.581 [5] clause 14.

6.3.3.1.2 Sending an INVITE request

This clause is referenced from other procedures.

The controlling MCVideo function shall generate an initial SIP INVITE request according to 3GPP TS 24.229 [11].

The controlling MCVideo function:

1) shall include in the Contact header field an MCVideo session identity for the MCVideo session with the g.3gpp.mcvideo media feature tag, the isfocus media feature tag and the g.3gpp.icsi-ref media feature tag with the value of "urn:urn-7:3gpp-service.ims.icsi.mcvideo" according to IETF RFC 3840 [22];

2) shall include an Accept-Contact header field containing the g.3gpp.mcvideo media feature tag along with the "require" and "explicit" header field parameters according to IETF RFC 3841 [20];

3) shall include the ICSI value "urn:urn-7:3gpp-service.ims.icsi.mcvideo" (coded as specified in 3GPP TS 24.229 [11]), in a P-Asserted-Service-Id header field according to IETF RFC 6050 [14] in the SIP INVITE request;

4) shall include an Accept-Contact header field with the media feature tag g.3gpp.icsi-ref with the value of "urn:urn-7:3gpp-service.ims.icsi.mcvideo" along with parameters "require" and "explicit" according to IETF RFC 3841 [20];

5) shall include a Referred-By header field with the public user identity of the inviting MCVideo client;

6) should include the Session-Expires header field according to rules and procedures of IETF RFC 4028 [7]. The refresher parameter shall be omitted;

7) shall include the Supported header field set to "timer";

8) if the incoming SIP INVITE request contained an application/vnd.3gpp.mcvideo-info+xml MIME body, shall copy the application/vnd.3gpp.mcvideo-info+xml MIME body to the outgoing INVITE request;

9) if the received SIP INVITE request contained an application/vnd.3gpp.mcvideo-info+xml MIME body containing an <ambient-viewing-type> element and:

   a) if the Priv-Answer-Mode header field specified in IETF RFC 5373 [27] was included in the received SIP INVITE request with a value of "Auto" or if no Priv-Answer-Mode header field was received in the received SIP INVITE request; or

   b) a Priv-Answer-Mode header field was received containing a value other than "Auto";

   shall include a Priv-Answer-Mode header field set to a value of "Auto" in the outgoing SIP INVITE request; and

10) if the received SIP INVITE request did not contain an application/vnd.3gpp.mcvideo-info+xml MIME body containing an <ambient-viewing-type> element, shall include an unmodified Answer-Mode header field if present in the incoming SIP INVITE request.

6.3.3.1.3 Receipt of a SIP response to a SIP INVITE request

6.3.3.1.3.1 Final response

On receipt of the SIP 200 (OK) response to the initial outgoing SIP INVITE request the controlling MCVideo function:

1) shall start the SIP session timer according to rules and procedures of IETF RFC 4028 [23]; and

2) shall cache SIP feature tags, if received in the Contact header field, and if the specific feature tags are supported.

6.3.3.1.4 Sending a SIP BYE request

When a participant needs to be removed from the MCVideo session, the controlling MCVideo function:

1) shall interact with the media plane as specified in 3GPP TS 24.581 [5] for the MCVideo session release;

2) shall generate a SIP BYE request according to 3GPP TS 24.229 [11]; and

3) shall send the SIP BYE request to the MCVideo clients according to3GPP TS 24.229 [11].

If timer TNG3 (group call timer) has not expired, then when the last MCVideo client is removed from the MCVideo session, the controlling MCVideo function shall stop timer TNG3 (group call timer).

When the MCVideo group session needs to be released, the controlling MCVideo function shall send SIP BYE requests as described in this clause, to all participants of the group session.

Upon receiving a SIP 200 (OK) response to a SIP BYE request the controlling MCVideo function shall interact with the media plane as specified in clause 6.3 in 3GPP TS 24.581 [5] for releasing media plane resources associated with the SIP session with the MCVideo clients.

6.3.3.1.5 Sending a SIP re-INVITE request for MCVideo emergency group call

This clause is referenced from other procedures.

The controlling MCVideo function shall generate a SIP re-INVITE request according to 3GPP TS 24.229 [11].

The controlling MCVideo function:

1) shall include an SDP offer with the media parameters as currently established with the terminating MCVideo client according to 3GPP TS 24.229 [11];

2) shall include an application/vnd.3gpp.mcvideo-info+xml MIME body with the <mcvideo-calling-user-id> element set to the MCVideo ID of the initiating MCVideo user;

3) if the in-progress emergency group state of the group is set to a value of "true" the controlling MCVideo function:

   a) shall include a Resource-Priority header field with the namespace populated with the values for an MCVideo emergency group call as specified in clause 6.3.3.1.18;

   b) shall include in the application/vnd.3gpp.mcvideo-info+xml MIME body the <emergency-ind> element set to a value of "true";

   c) if the <alert-ind> element is set to "true" in the received SIP re-INVITE request and MCVideo emergency alerts are authorised for this group and MCVideo user as determined by the procedures of clause 6.3.3.1.12.1, shall populate the application/vnd.3gpp.mcvideo-info+xml MIME body and application/vnd.3gpp.mcvideo-location-info+xml MIME body as specified in clause 6.3.3.1.11. Otherwise, shall set the <alert-ind> element to a value of "false" in the application/vnd.3gpp.mcvideo-info+xml MIME body; and

   d) if the in-progress imminent peril state of the group is set to a value of "true" shall include in the application/vnd.3gpp.mcvideo-info+xml MIME body an <imminentperil-ind> element set to a value of "false"; and

NOTE: If the imminent peril state of the group is true at this point, the controlling function will be setting it to false as part of the calling procedure. This is in effect an upgrade of an MCVideo imminent peril group call to an MCVideo emergency group call.

4) if the in-progress emergency group state of the group is set to a value of "false":

   a) shall include a Resource-Priority header field populated with the values for a normal MCVideo group call as specified in clause 6.3.3.1.18; and

   b) if the received SIP re-INVITE request contained an application/vnd.3gpp.mcvideo-info+xml MIME body with the <emergency-ind> element set to a value of "false" and this is an authorised request to cancel an MCVideo emergency group call as determined by the procedures of clause 6.3.3.1.12.4:

      i) shall include an application/vnd.3gpp.mcvideo-info+xml MIME body with the <emergency-ind> element set to a value of "false"; and

      ii) if the received SIP re-INVITE request contained an application/vnd.3gpp.mcvideo-info+xml MIME body with the <alert-ind> element set to a value of "false" and this is an authorised request to cancel an MCVideo emergency alert as determined by the procedures of clause 6.3.3.1.14, shall:

         A) include in the application/vnd.3gpp.mcvideo-info+xml MIME body an <alert-ind> element set to a value of "false"; and

B) if the received SIP request contains an <originated-by> element in the application/vnd.3gpp.mcvideo-info+xml MIME body, copy the contents of the received <originated-by> element to an <originated-by> element in the application/vnd.3gpp.mcvideo-info+xml MIME body in the outgoing SIP re-INVITE request.

6.3.3.1.6 Sending a SIP INVITE request for MCVideo emergency group call

This clause is referenced from other procedures.

This clause describes the procedures for inviting an MCVideo user to an MCVideo session associated with an MCVideo emergency group call or MCVideo imminent peril group call. The procedure is initiated by the controlling MCVideo function as the result of an action in clause 9.2.2.4.1.1.

The controlling MCVideo function:

1) shall generate a SIP INVITE request as specified in clause 6.3.3.1.2;

2) shall set the Request-URI to the public service identity of the terminating participating MCVideo function associated with the MCVideo ID of the targeted MCVideo user;

NOTE 1: The public service identity can identify the terminating participating MCVideo function in the local MCVideo system or in an interconnected MCVideo system.

NOTE 2: If the terminating participating MCVideo function is in an interconnected MCVideo system in a different trust domain, then the public service identity can identify the MCVideo gateway server that acts as an entry point in the interconnected MCVideo system from the local MCVideo system.

NOTE 3: If the terminating participating MCVideo function is in an interconnected MCVideo system in a different trust domain, then the local MCVideo system can route the SIP request through an MCVideo gateway server that acts as an exit point from the local MCVideo system to the interconnected MCVideo system.

NOTE 4: How the controlling MCVideo function determines the public service identity of the terminating participating MCVideo function associated with the targeted MCVideo user or of the MCVideo gateway server in the interconnected MCVideo system is out of the scope of the present document.

NOTE 5: How the local MCVideo system routes the SIP request through an exit MCVideo gateway server is out of the scope of the present document.

3) shall include an application/vnd.3gpp.mcvideo-info+xml MIME body with the <mcvideoinfo> element containing the <mcvideo-Params> element populated as follows:

   a) the <mcvideo-request-uri> element set to the value of the MCVideo ID of the targeted MCVideo user;

   b) the <mcvideo-calling-user-id> element set to the value of the MCVideo ID of the calling MCVideo user; and

   c) the <mcvideo-calling-group-id> element set to the value of the MCVideo group ID of the emergency group call.

4) shall include in the P-Asserted-Identity header field the public service identity of the controlling MCVideo function;

5) shall include in the SIP INVITE request an SDP offer based on the SDP offer in the received SIP INVITE request from the originating network according to the procedures specified in clause 6.3.3.1.1; and

6) if the in-progress emergency group state of the group is set to a value of "true" the controlling MCVideo function:

   a) shall include a Resource-Priority header field populated with the values for an MCVideo emergency group call as specified in clause 6.3.3.1.18;

   b) shall include in the application/vnd.3gpp.mcvideo-info+xml MIME body an <emergency-ind> element set to a value of "true";

   c) if the <alert-ind> element is set to "true" in the received SIP INVITE request and the requesting MCVideo user and MCVideo group are authorised for the initiation of MCVideo emergency alerts as determined by the procedures of clause 6.3.3.1.12.1, shall populate the application/vnd.3gpp.mcvideo-info+xml MIME body

and the application/vnd.3gpp.mcvideo-location-info+xml MIME body as specified in clause 6.3.3.1.11. Otherwise, shall set the <alert-ind> element to a value of "false" in the application/vnd.3gpp.mcvideo-info+xml MIME body; and

d) if the in-progress imminent peril state of the group is set to a value of "true" shall include in the application/vnd.3gpp.mcvideo-info+xml MIME body an <imminentperil-ind> element set to a value of "false";

NOTE 6: If the imminent peril state of the group is true at this point, the controlling function will set it to false as part of the calling procedure.

7) if the in-progress emergency state of the group is set to a value of "false" and the in-progress imminent peril state of the group is set to a value of "true", the controlling MCVideo function:

a) shall include a Resource-Priority header field populated with the values for an MCVideo imminent peril group call as specified in clause 6.3.3.1.18; and

b) shall include in the application/vnd.3gpp.mcvideo-info+xml MIME body with the <imminentperil-ind> element set to a value of "true"; and

8) if:

a) an MCVideo GKTP document exists for the group identity contained in the <mcvideo-request-uri> element in the application/vnd.3gpp.mcvideo-info+xml MIME body of the incoming SIP INVITE request; and

b) the MCVideo GKTP document contains an <MKFC-GKTPs> element;

then:

a) for each instance of <GKTP> element of the <MKFC-GKTPs> element of the MCVideo GKTP document:

i) shall perform the procedure in clause 6.3.3.6.2 to re-generate an I_MESSAGE; and

ii) if the procedure in clause 6.3.3.6.2 was successful, shall include the I_MESSAGE in a <GKTP> element of the <MKFC-GKTPs> element of an application/vnd.3gpp.mcvideo-info+xml MIME body included in the outgoing SIP INVITE request.

6.3.3.1.7 Sending a SIP UPDATE request for Resource-Priority header field correction

This clause is referenced from other procedures.

This clause describes the procedures for updating an MCVideo session associated with an MCVideo emergency group call or MCVideo imminent peril group call when the received SIP INVITE request did not include a correctly populated Resource-Priority header field. The procedure is initiated by the controlling MCVideo function for the purpose of providing the correct Resource-Priority header field.

1) shall generate a SIP 183 (Session Progress) response according to 3GPP TS 24.229 [11] with the clarifications provided specified in clause 6.3.3.2.3.1;

2) shall include the option tag "100rel" in a Require header field in the SIP 183 (Session Progress) response;

3) shall include in the SIP 183 (Session Progress) response an SDP answer to the SDP offer in the incoming SIP INVITE request as specified in the clause 6.3.3.2.1; and

4) shall send the SIP 183 (Session Progress) response towards the MCVideo client according to 3GPP TS 24.229 [11].

Upon receiving a SIP PRACK request to the SIP 183 (Session Progress) response the controlling MCVideo function:

1) shall send the SIP 200 (OK) response to the SIP PRACK request according to 3GPP TS 24.229 [11].

2) shall generate a SIP UPDATE request according to 3GPP TS 24.229 [11] with the following clarifications:

3) shall include in the SIP UPDATE request an SDP offer based on the SDP offer in the received SIP INVITE request from the originating network according to the procedures specified in clause 6.3.3.1.1;

4) if the in-progress emergency group state of the group is set to a value of "true" the controlling MCVideo function shall include a Resource-Priority header field populated for an MCVideo emergency group call as specified in clause 6.3.3.1.18; and

NOTE 1: This is the case when the sending MCVideo client did not send a Resource-Priority header field populated appropriately to receive emergency-level priority. In this case, the Resource-Priority header field is populated appropriately to provide emergency-level priority.

5) if the in-progress emergency group state of the group is set to a value of "false" the controlling MCVideo function:

   a) if the in-progress imminent peril state of the group is set to a value of "false", shall include a Resource-Priority header field populated for a normal priority MCVideo group call as specified in clause 6.3.3.1.18; and

   b) if the in-progress imminent peril state of the group is set to a value of "true", shall include a Resource-Priority header field populated for an MCVideo imminent peril group call as specified in clause 6.3.3.1.18.

NOTE 2: This is the case when the sending MCVideo client incorrectly populated a Resource-Priority header field for emergency-level or imminent peril-level priority and the controlling MCVideo function re-populates it as appropriate to an imminent peril level priority or normal priority level.

6.3.3.1.8 Generating a SIP re-INVITE request

This clause is referenced from other procedures.

This clause describes the procedures for generating a SIP re-INVITE request to be sent by the controlling MCVideo function.

The controlling MCVideo function:

1) shall generate an SIP re-INVITE request according to 3GPP TS 24.229 [11]; and

2) shall include an SDP offer with the media parameters as currently established with the terminating MCVideo client according to 3GPP TS 24.229 [11] with the clarifications specified in clause 6.3.3.1.1.

6.3.3.1.9 Generating a SIP re-INVITE request to cancel an in-progress emergency

This clause is referenced from other procedures.

This clause describes the procedures for generating a SIP re-INVITE request to cancel the in-progress emergency state of an MCVideo group. The procedure is initiated by the controlling MCVideo function when it determines the cancellation of the in-progress emergency state of an MCVideo group is required.

The controlling MCVideo function:

1) shall generate a SIP re-INVITE request as specified in 3GPP TS 24.229 [11] with the clarifications specified in clause 6.3.3.1.8;

2) shall include a Resource-Priority header field populated with the values for a normal MCVideo group call as specified in clause 6.3.3.1.18; and

3) shall include an application/vnd.3gpp.mcvideo-info+xml MIME body with the <emergency-ind> element set to a value of "false".

6.3.3.1.10 Generating a SIP MESSAGE request for notification of in-progress emergency or imminent peril status change

This clause is referenced from other procedures.

This clause describes the procedures for generating a SIP MESSAGE request to notify affiliated but not participating members of an MCVideo group of the change of status of the in-progress emergency state, imminent peril state or emergency alert status of an MCVideo group. The procedure is initiated by the controlling MCVideo function when

there has been a change of in-progress imminent peril, in-progress emergency or the emergency alert status of an MCVideo group.

The controlling MCVideo function:

1) shall generate a SIP MESSAGE request in accordance with 3GPP TS 24.229 [11] and IETF RFC 3428 [17];

2) shall include an Accept-Contact header field containing the g.3gpp.mcvideo media feature tag along with the "require" and "explicit" header field parameters according to IETF RFC 3841 [20];

3) shall include an Accept-Contact header field with the media feature tag g.3gpp.icsi-ref with the value of "urn:urn-7:3gpp-service.ims.icsi.mcvideo" along with parameters "require" and "explicit" according to IETF RFC 3841 [20];

4) shall set the Request-URI to the public service identity of the terminating participating function associated with the MCVideo ID of the targeted MCVideo user;

NOTE 1: The public service identity can identify the terminating participating MCVideo function in the local MCVideo system or in an interconnected MCVideo system.

NOTE 2: If the terminating participating MCVideo function is in an interconnected MCVideo system in a different trust domain, then the public service identity can identify the MCVideo gateway server that acts as an entry point in the interconnected MCVideo system from the local MCVideo system.

NOTE 3: If the terminating participating MCVideo function is in an interconnected MCVideo system in a different trust domain, then the local MCVideo system can route the SIP request through an MCVideo gateway server that acts as an exit point from the local MCVideo system to the interconnected MCVideo system.

NOTE 4: How the controlling MCVideo function determines the public service identity of the terminating participating MCVideo function associated with the targeted MCVideo user or of the MCVideo gateway server in the interconnected MCVideo system is out of the scope of the present document.

NOTE 5: How the local MCVideo system routes the SIP request through an exit MCVideo gateway server is out of the scope of the present document.

5) shall include a P-Asserted-Identity header field set to the public service identity of controlling MCVideo function;

6) shall include the ICSI value "urn:urn-7:3gpp-service.ims.icsi.mcvideo" (coded as specified in 3GPP TS 24.229 [11]), in a P-Asserted-Service-Id header field according to IETF RFC 6050 [14];

7) shall include an application/vnd.3gpp.mcvideo-info+xml MIME body with the <mcvideoinfo> element containing the <mcvideo-Params> element with the <mcvideo-request-uri> element set to the value of the MCVideo ID of the targeted MCVideo user; and

8) shall include in the application/vnd.3gpp.mcvideo-info+xml MIME body an <mcvideo-calling-group-id> element set to the MCVideo group ID of the MCVideo group on which the MCVideo emergency call, imminent peril call or the emergency alert state has changed.

6.3.3.1.11 Populate mcvideo-info and location-info MIME bodies for emergency alert

This clause is referenced from other procedures.

This clause describes the procedures for populating the application/vnd.3gpp.mcvideo-info+xml and application/vnd.3gpp.mcvideo-location-info+xml MIME bodies for an MCVideo emergency alert. The procedure is initiated by the controlling MCVideo function when it has received a SIP request initiating an MCVideo emergency alert and generates a message containing the MCVideo emergency alert information required by 3GPP TS 23.281 [26].

The controlling MCVideo function:

1) shall include, if not already present, an application/vnd.3gpp.mcvideo-info+xml MIME body as specified in Annex F.1, and set the <alert-ind> element to a value of "true";

2) shall determine the value of the MCVideo user's Mission Critical Organization from the <MissionCriticalOrganization> element, of the MCVideo user profile document (see the MCVideo user profile document in 3GPP TS 24.484 [25]);

3) shall include in the <mcvideoinfo> element containing the <mcvideo-Params> element containing an <mc-org> element set to the value of the MCVideo user's Mission Critical Organization; and

4) shall copy the contents of the application/vnd.3gpp.mcvideo-location-info+xml MIME body in the received SIP request into an application/vnd.3gpp.mcvideo-location-info+xml MIME body included in the outgoing SIP request.

6.3.3.1.12 Authorisations

6.3.3.1.12.1 Determining authorisation for initiating an MCVideo emergency alert

If the controlling MCVideo function has received a SIP request targeted to an MCVideo group with the <alert-ind> element of the application/vnd.3gpp.mcvideo-info+xml MIME body set to a value of "true", the controlling MCVideo function shall check the following conditions:

1) if the <allow-activate-emergency-alert> element of the <actions> element of a <rule> element of the <ruleset> element of the MCVideo user profile document identified by the MCVideo ID of the calling user (see the MCVideo user profile document in 3GPP TS 24.484 [25]) is set to a value of "true";

   a) if the "entry-info" attribute of the <entry> element of the <EmergencyAlert> element contained within the <MCVideo-group-call> element of the MCVideo user profile document (see the MCVideo user profile document in 3GPP TS 24.484 [25]) is set to a value of "DedicatedGroup" and:

      i) if the MCVideo group identity targeted for the emergency alert is contained in the <uri-entry> element of the <entry> element of the <EmergencyAlert> element contained within the <MCVideo-group-call> element of the MCVideo user profile document (see the MCVideo user profile document in 3GPP TS 24.484 [25]); and

      ii) if the <MCVideo-allow-emergency-alert> element of the <actions> element of a <rule> element of the <ruleset> element of the <list-service> element of the group document identified by the MCVideo group identity is set to a value of "true" as specified in 3GPP TS 24.481 [24]; or

   b) if the "entry-info" attribute of the <entry> element of the <EmergencyAlert> element contained within the <MCVideo-group-call> element of the MCVideo user profile (see the MCVideo user profile document in 3GPP TS 24.484 [25]) is set to a value of "UseCurrentlySelectedGroup" and the <MCVideo-allow-emergency-alert> element of the <actions> element of a <rule> element of the <ruleset> element of the <list-service> element of the group document identified by the MCVideo group identity targeted for the emergency alert is set to a value of "true" as specified in 3GPP TS 24.481 [24].

then the MCVideo emergency alert request shall be considered to be an authorised request for an MCVideo emergency alert targeted to a MCVideo group. In all other cases, the MCVideo emergency alert request shall be considered to be an unauthorised request for an MCVideo emergency alert targeted to an MCVideo group.

If the controlling MCVideo function has received a SIP request targeted to an MCVideo user with the <alert-ind> element of the application/vnd.3gpp.mcvideo-info+xml MIME body set to a value of "true", the controlling MCVideo function shall check the following conditions:

1) if the <allow-activate-emergency-alert> element of the <actions> element of the <rule> element of the <ruleset> element of the MCVideo user profile document identified by the MCVideo ID of the calling user (see the MCVideo user profile document in 3GPP TS 24.484 [25]) is set to a value of "true"; and

   a) if the "entry-info" attribute of the <entry> element of the <PrivateEmergencyAlert> element contained within the <OnNetwork> element of the MCVideo user profile document (see the MCVideo user profile document in 3GPP TS 24.484 [25]) is set to a value of "UsePreConfigured" and the MCVideo ID of the MCVideo user targeted for the call is contained in the <uri-entry> element of the <entry> element of the <PrivateEmergencyAlert> element contained within the <OnNetwork> element (see the MCVideo user profile document in 3GPP TS 24.484 [25]); or

b) if the "entry-info" attribute of the <entry> element of the <PrivateEmergencyAlert> element contained within the <OnNetwork> element of the MCVideo user profile document (see the MCVideo user profile document in 3GPP TS 24.484 [25]) is set to a value of "LocallyDetermined";

then the MCVideo emergency alert request shall be considered to be an authorised request for an MCVideo emergency alert targeted to an MCVideo user. In all other cases, it shall be considered to be an unauthorised request for an MCVideo emergency alert targeted to an MCVideo user.

6.3.3.1.12.2 Determining authorisation for initiating an MCVideo emergency group or private call

If the controlling MCVideo function has received a SIP request for an MCVideo group call with the <emergency-ind> element of the application/vnd.3gpp.mcvideo-info+xml MIME body set to a value of "true" and:

1) if the <allow-emergency-group-call> element of the <ruleset> element of the MCVideo user profile document identified by the MCVideo ID of the calling user (see the MCVideo user profile document in 3GPP TS 24.484 [25]) is set to a value of "true" and:

   a) if the "entry-info" attribute of the <entry> element of the <MCVideoGroupInitiation> element of the <EmergencyCall> element contained within the <MCVideo-group-call> element of the MCVideo user profile document (see the MCVideo user profile document in 3GPP TS 24.484 [25]) is set to a value of "DedicatedGroup" and:

      i) if the <uri-entry> element of the <entry> element of the <MCVideoGroupInitiation> element of the <EmergencyCall> contained within the <MCVideo-group-call> element of the MCVideo user profile document (see the MCVideo user profile document in 3GPP TS 24.484 [25]) contains the identity of the MCVideo group targeted by the calling MCVideo user; and

      ii) if the <allow-MCVideo-emergency-call> element of the <list-service> element of the group document identified by the targeted MCVideo group identity is set to a value of "true" as specified in 3GPP TS 24.481 [24];

   then the controlling MCVideo function shall consider the MCVideo emergency group call request to be an authorised request for an MCVideo emergency group call and skip the remaining steps; or;

   b) if the "entry-info" attribute of the <entry> element of the <MCVideoGroupInitiation> element of the <EmergencyCall> element contained within the <MCVideo-group-call> element of the MCVideo user profile document (see the MCVideo user profile document in 3GPP TS 24.484 [25]) is set to a value of "UseCurrentlySelectedGroup" and if the <allow-MCVideo-emergency-call> element of the <list-service> element of the group document identified by the targeted MCVideo group identity is set to a value of "true" as specified in 3GPP TS 24.481 [24];

   then the controlling MCVideo function shall consider the MCVideo emergency group call request to be an authorised request for an MCVideo emergency group call and skip the remaining steps; or

2) if the controlling MCVideo function does not consider the MCVideo emergency group call request to be an authorised request for an MCVideo emergency group call by step 1) above, then the controlling MCVideo function shall consider the MCVideo emergency group call request to be an unauthorised request for an MCVideo emergency group call.

If the controlling MCVideo function has received a SIP request for an MCVideo private call with the <emergency-ind> element of the application/vnd.3gpp.mcvideo-info+xml MIME body set to a value of "true" and:

1) if the <allow-emergency-private-call> element of the <ruleset> element of the MCVideo user profile document identified by the MCVideo ID of the calling user (see the MCVideo user profile document in 3GPP TS 24.484 [25]) is set to a value of "true"; and

   a) if the "entry-info" attribute of the <entry> element of the <MCVideoPrivateRecipient> element of the <EmergencyCall> element contained within the <PrivateCall> element of the MCVideo user profile document (see the MCVideo user profile document in 3GPP TS 24.484 [25]) is set to a value of "UsePreConfigured" and if the MCVideo ID targeted for the call is contained in the <uri-entry> element of the <entry> element of the <MCVideoPrivateRecipient> element of the <EmergencyCall> element contained within the <PrivateCall> element (see the MCVideo user profile document in 3GPP TS 24.484 [25]); or

b) if the "entry-info" attribute of the <entry> element of the <MCVideoPrivateRecipient> element of the <EmergencyCall> element contained within the <PrivateCall> element of the MCVideo user profile document (see the MCVideo user profile document in 3GPP TS 24.484 [25]) is set to a value of "LocallyDetermined";

then the controlling MCVideo function shall consider the MCVideo emergency private call request to be an authorised request for an MCVideo emergency private call and skip step 2) below; or

2) if the controlling MCVideo function does not consider the MCVideo emergency private call request to be an authorised request for an MCVideo emergency private call by step 1) above, then the controlling MCVideo function shall consider the MCVideo emergency private call request to be an unauthorised request for an MCVideo emergency private call.

6.3.3.1.12.3 Determining authorisation for cancelling an MCVideo emergency alert

If the controlling MCVideo function has received a SIP request with the <alert-ind> element of the application/vnd.3gpp.mcvideo-info+xml MIME body set to a value of "false" and:

1) if the <allow-cancel-emergency-alert> element of the <ruleset> element of the MCVideo user profile document identified by the MCVideo ID of the calling user (see the MCVideo user profile document in 3GPP TS 24.484 [25]) is set to a value of "true", then the MCVideo emergency alert cancellation request shall be considered to be an authorised request for an MCVideo emergency alert cancellation; and

2) if the <allow-cancel-emergency-alert> element of the <ruleset> element of the MCVideo user profile document identified by the MCVideo ID of the calling user (see the MCVideo user profile document in 3GPP TS 24.484 [25]) is set to a value of "false", then the MCVideo emergency alert cancellation request shall be considered to be an unauthorised request for an MCVideo emergency alert cancellation.

6.3.3.1.12.4 Determining authorisation for cancelling an MCVideo emergency call

If the controlling MCVideo function has received a SIP request for an MCVideo group call with the <emergency-ind> element of the application/vnd.3gpp.mcvideo-info+xml MIME body set to a value of "false" and:

1) if the <allow-cancel-group-emergency> element of the <ruleset> element of the MCVideo user profile document identified by the MCVideo ID of the calling user (see the MCVideo user profile document in 3GPP TS 24.484 [25]) is set to a value of "true", then the MCVideo emergency call cancellation request shall be considered to be an authorised request for an MCVideo emergency group call cancellation; and

2) If the <allow-cancel-group-emergency> element of the <ruleset> element of the MCVideo user profile document identified by the MCVideo ID of the calling user (see the MCVideo user profile document in 3GPP TS 24.484 [25]) is set to a value of "false", then the MCVideo emergency group call cancellation request shall be considered to be an unauthorised request for an MCVideo emergency group call cancellation.

If the controlling MCVideo function has received a SIP request for an MCVideo private call with the <emergency-ind> element of the application/vnd.3gpp.mcvideo-info+xml MIME body set to a value of "false" and:

1) if the <allow-cancel-private-emergency-call> element of the <ruleset> element of the MCVideo user profile document identified by the MCVideo ID of the calling user (see the MCVideo user profile document in 3GPP TS 24.484 [25]) is set to a value of "true", then the MCVideo emergency private call cancellation request shall be considered to be an authorised request for an MCVideo emergency private call cancellation; and

2) if the <allow-cancel-private-emergency-call> element of the <ruleset> element of the MCVideo user profile document identified by the MCVideo ID of the calling user (see the MCVideo user profile document in 3GPP TS 24.484 [25]) is set to a value of "false" or not present, then the MCVideo emergency private call cancellation request shall be considered to be an unauthorised request for an MCVideo emergency private call cancellation.

6.3.3.1.12.5 Determining authorisation for initiating an MCVideo imminent peril call

If the controlling MCVideo function has received a SIP request with the <imminentperil-ind> element of the application/vnd.3gpp.mcvideo-info+xml MIME body set to a value of "true" and:

1) if the <allow-imminent-peril-call> element of the <ruleset> element of the MCVideo user profile document identified by the MCVideo ID of the calling user (see the MCVideo user profile document in

3GPP TS 24.484 [25]) is set to a value other than "true" the request for initiating an MCVideo imminent peril call shall be considered to be an unauthorised request for an MCVideo imminent peril call and skip the remaining steps;

2) if the <allow-imminent-peril-call> element of the <list-service> element of the group document identified by the targeted MCVideo group identity is set to a value other than "true" as specified in 3GPP TS 24.481 [24], the request for initiating an MCVideo imminent peril call shall be considered to be an unauthorised request for an MCVideo imminent peril call and skip the remaining steps;

3) if the "entry-info" attribute of the <entry> element of the <MCVideoGroupInitiation> element contained within the <ImminentPerilCall> element of the MCVideo user profile document (see the MCVideo user profile document in 3GPP TS 24.484 [25]) is set to a value of "DedicatedGroup" and if the MCVideo group identity targeted for the call is contained in the <uri-entry> element of the <entry> element of the <MCVideoGroupInitiation> element contained within the <ImminentPerilCall> element (see the MCVideo user profile document in 3GPP TS 24.484 [25]); or

4) if the "entry-info" attribute of the <entry> element of the <MCVideoGroupInitiation> element contained within the <ImminentPerilCall> element of the MCVideo user profile document (see the MCVideo user profile document in 3GPP TS 24.484 [25]) is set to a value of "UseCurrentlySelectedGroup".

then the MCVideo imminent peril call request shall be considered to be an authorised request for an MCVideo imminent peril call. In all other cases, it shall be considered to be an unauthorised request for an MCVideo imminent peril call.

6.3.3.1.12.6 Determining authorisation for cancelling an MCVideo imminent peril call

If the controlling MCVideo function has received a SIP request with the <imminentperil-ind> element of the application/vnd.3gpp.mcvideo-info+xml MIME body set to a value of "false" and:

1) if the <allow-cancel-imminent-peril> element of the <ruleset> element of the MCVideo user profile document identified by the MCVideo ID of the calling user (see the MCVideo user profile document in 3GPP TS 24.484 [25]) is set to a value of "true", then the MCVideo emergency call cancellation request shall be considered to be an authorised request for an MCVideo imminent peril call cancellation; and

2) if the <allow-cancel-imminent-peril> element of the <ruleset> element of the MCVideo user profile document identified by the MCVideo ID of the calling user (see the MCVideo user profile document in 3GPP TS 24.484 [25]) is set to a value of "false" or not present, then the MCVideo emergency call cancellation request shall be considered to be an unauthorised request for an MCVideo imminent peril call cancellation.

6.3.3.1.13 Generating a SIP 403 response for priority call request rejection

If the controlling MCVideo function has received a SIP request with the <emergency-ind> element of the application/vnd.3gpp.mcvideo-info+xml MIME body is set to "true" and this is an unauthorised request for an MCVideo emergency call as determined by the procedures of clause 6.3.3.1.12.2, the controlling MCVideo function shall:

1) include in the SIP 403 (Forbidden) response an application/vnd.3gpp.mcvideo-info+xml MIME body as specified in Annex F.1 with the <mcvideoinfo> element containing the <mcvideo-Params> element with the <emergency-ind> element set to a value of "false" and the <alert-ind> element set to a value of "false".

6.3.3.1.14 Sending a SIP re-INVITE request for MCVideo imminent peril group call

This clause is referenced from other procedures.

The controlling MCVideo function shall generate a SIP re-INVITE request according to 3GPP TS 24.229 [11].

The controlling MCVideo function:

1) shall include in the Contact header field an MCVideo session identity for the MCVideo session with the g.3gpp.mcvideo media feature tag and the isfocus media feature tag according to IETF RFC 3840 [22];

2) shall include an SDP offer with the media parameters as currently established with the terminating MCVideo client according to 3GPP TS 24.229 [11];

3) shall include an application/vnd.3gpp.mcvideo-info+xml MIME body with the <mcvideo-calling-user-id> element set to the MCVideo ID of the initiating MCVideo user;

4) if the in-progress imminent peril state of the group is set to a value of "true" the controlling MCVideo function:

   a) shall include a Resource-Priority header field populated with the values for an MCVideo imminent peril group call as specified in clause 6.3.3.1.18; and

   b) shall include in the application/vnd.3gpp.mcvideo-info+xml MIME body an <imminentperil-ind> element set to a value of "true"; and

5) if the in-progress imminent peril state of the group is set to a value of "false":

   a) shall include a Resource-Priority header field populated with the values for a normal MCVideo group call as specified in clause 6.3.3.1.18; and

   b) shall include in the application/vnd.3gpp.mcvideo-info+xml MIME body an <emergency-ind> element set to a value of "false" and the <imminentperil-ind> element set to a value of "false".

6.3.3.1.15 Handling the expiry of timer TNG2 (in-progress emergency group call timer)

Upon expiry of timer TNG2 (in-progress emergency group call timer) for an MCVideo group, the controlling MCVideo function:

1) shall set the in-progress emergency state of the group to a value of "false";

2) shall, if an MCVideo group call or MCVideo group session is in progress on the indicated group, for each of the participating members:

   a) generate a SIP re-INVITE request as specified in clause 6.3.3.1.9; and

   b) send the SIP re-INVITE request towards the MCVideo client according to 3GPP TS 24.229 [11]; and

3) shall for each affiliated but non-participating members member of the group:

   a) generate a SIP MESSAGE request according to clause 6.3.3.1.10 and include in the application/vnd.3gpp.mcvideo-info+xml MIME body an <emergency-ind> element set to a value of "false";

   b) shall include in the P-Asserted-Identity header field the public service identity of the controlling MCVideo function;

   c) include the ICSI value "urn:urn-7:3gpp-service.ims.icsi.mcvideo" (coded as specified in 3GPP TS 24.229 [11]), in a P-Asserted-Service-Id header field according to IETF RFC 6050 [14]; and

   d) send the SIP MESSAGE request towards the MCVideo client according to rules and procedures of 3GPP TS 24.229 [11].

Upon receiving a SIP 200 (OK) response to a re-SIP INVITE request the controlling MCVideo function shall interact with the media plane as specified in 3GPP TS 24.581 [5].

6.3.3.1.16 Validate priority request parameters

This clause is referenced from other procedures. This procedure validates the combinations of <emergency-ind>, <imminentperil-ind> and <alert-ind> in the application/vnd.3gpp.mcvideo-info+xml MIME body included in:

1) a SIP INVITE request or SIP re-INVITE request; or

2) the body "URI" header field of the SIP URI included in the application/resource-lists MIME body which is pointed to by a "cid" URL located in the Refer-To header of a SIP REFER request;

Upon receiving a SIP request as specified above with the <emergency-ind> element set to a value of "true", the controlling MCVideo function shall only consider the following as valid combinations:

1) <imminentperil-ind> not included and <alert-ind> included.

Upon receiving a SIP request as specified above with the <emergency-ind> element set to a value of "false", the controlling MCVideo function shall only consider the following as valid combinations:

1) <imminentperil-ind> not included and <alert-ind> not included; or

2) <imminentperil-ind> not included and <alert-ind> included.

Upon receiving a SIP request as specified above with the <imminentperil-ind> element included the controlling MCVideo function shall only consider the request as valid if both the <emergency-ind> and <alert-ind> are not included.

If the combination of the <emergency-ind>, <imminentperil-ind> or <alert-ind> indicators is invalid, the controlling MCVideo function shall send a SIP 403 (Forbidden) response with the warning text set to "150 invalid combinations of data received in MIME body" in a Warning header field as specified in clause 4.4.

6.3.3.1.17 Sending a SIP INFO request in the dialog of a SIP request for a priority call

This clause is referenced from other procedures and describes how the controlling MCVideo function generates a SIP INFO request due to the receipt of a SIP request for a priority call.

The controlling MCVideo function:

1) shall generate a SIP INFO request according to rules and procedures of 3GPP TS 24.229 [11] and IETF RFC 6086 [21];

2) shall include the Info-Package header field set to g.3gpp.mcvideo-info in the SIP INFO request;

3) shall include an application/vnd.3gpp.mcvideo-info+xml MIME body in the SIP INFO request and:

   a) if the received SIP request contained application/vnd.3gpp.mcvideo-info+xml MIME body with the <alert-ind> element set to a value of "true" and this is an unauthorised request for an MCVideo emergency alert as specified in clause 6.3.3.1.12.1, shall set the <emergency-ind> element to a value of "true" and the <alert-ind> element to a value of "false";

   b) if the received SIP request contains an application/vnd.3gpp.mcvideo-info+xml MIME body with the <alert-ind> element set to a value of "false" and if this is an unauthorised request for an MCVideo emergency alert cancellation, shall set <alert-ind> element to a value of "true"; and

   c) if the received SIP request contains an application/vnd.3gpp.mcvideo-info+xml MIME body with the <imminentperil-ind> element set to a value of "true", this is an authorised request for an MCVideo imminent peril group call and the in-progress emergency state of the group is set to a value of "true", shall set the <imminentperil-ind> element to a value of "false" and the <emergency-ind> element set to a value of "true"; and

4) shall send the SIP INFO request towards the inviting MCVideo client in the dialog created by the SIP request from the inviting MCVideo client, as specified in 3GPP TS 24.229 [11].

6.3.3.1.18 Retrieving Resource-Priority header field values

This clause is referenced from other procedures.

When determining the Resource-Priority header field namespace and priority values as specified in IETF RFC 8101 [38] for an MCVideo emergency group call or MCVideo emergency private call the controlling MCVideo function:

1) shall retrieve the value of the <resource-priority-namespace> element contained in the <emergency-resource-priority> element contained in the <OnNetwork> element of the MCVideo service configuration document (see the service configuration document in 3GPP TS 24.484 [25]); and

2) shall retrieve the value of the <resource-priority-priority> element contained in the <emergency-resource-priority> element contained in the <OnNetwork> element of the MCVideo service configuration document (see the service configuration document in 3GPP TS 24.484 [25]).

When determining the Resource-Priority header field namespace and priority values as specified in IETF RFC 8101 [38] for an MCVideo imminent peril group call the controlling MCVideo function:

1) shall retrieve the value of the <resource-priority-namespace> element contained in the <imminent-peril-resource-priority> element contained in the <OnNetwork> element of the MCVideo service configuration document (see the service configuration document in 3GPP TS 24.484 [25]); and

2) shall retrieve the value of the <resource-priority-priority> element contained in the <imminent-peril-resource-priority> element contained in the <OnNetwork> element of the MCVideo service configuration document (see the service configuration document in 3GPP TS 24.484 [25])

When determining the Resource-Priority header field namespace and priority values as specified in IETF RFC 8101 [38] for a normal MCVideo group or private call the controlling MCVideo function:

1) shall retrieve the value of the <resource-priority-namespace> element contained in the <normal-resource-priority> element contained in the <OnNetwork> element of the MCVideo service configuration document (see the service configuration document in 3GPP TS 24.484 [25]); and

2) shall retrieve the value of the <resource-priority-priority> element contained in the <normal-resource-priority> element contained in the <OnNetwork> element of the MCVideo service configuration document (see the service configuration document in 3GPP TS 24.484 [25]).

NOTE: The "normal" Resource-Priority header field value is needed to return to a normal priority value from a priority value adjusted for an MCVideo emergency group or private call or an MCVideo imminent peril group call. The "normal" priority received from the EPS by use of the "normal" Resource-Priority header field value is expected to be the same as the "normal" priority received from the EPS when initiating a call with no Resource-Priority header field included.

6.3.3.1.19 Generating a SIP MESSAGE request to indicate successful receipt of an emergency alert or emergency cancellation

This clause is referenced from other procedures.

This clause describes the procedures for generating a SIP MESSAGE request to notify the originator of an emergency alert or emergency cancellation that the request was successfully received.

The controlling MCVideo function:

1) shall generate a SIP MESSAGE request in accordance with 3GPP TS 24.229 [11] and IETF RFC 3428 [17];

2) shall include an Accept-Contact header field containing the g.3gpp.mcvideo media feature tag along with the "require" and "explicit" header field parameters according to IETF RFC 3841 [20];

3) shall include an Accept-Contact header field with the media feature tag g.3gpp.icsi-ref with the value of "urn:urn-7:3gpp-service.ims.icsi.mcvideo" along with parameters "require" and "explicit" according to IETF RFC 3841 [20];

4) shall set the Request-URI to the public service identity of the terminating participating function associated with the MCVideo ID of the targeted MCVideo user;

NOTE 1: The public service identity can identify the terminating participating MCVideo function in the local MCVideo system or in an interconnected MCVideo system.

NOTE 2: If the terminating participating MCVideo function is in an interconnected MCVideo system in a different trust domain, then the public service identity can identify the MCVideo gateway server that acts as an entry point in the interconnected MCVideo system from the local MCVideo system.

NOTE 3: If the terminating participating MCVideo function is in an interconnected MCVideo system in a different trust domain, then the local MCVideo system can route the SIP request through an MCVideo gateway server that acts as an exit point from the local MCVideo system to the interconnected MCVideo system.

NOTE 4: How the controlling MCVideo function determines the public service identity of the terminating participating MCVideo function associated with the targeted MCVideo user or of the MCVideo gateway server in the interconnected MCVideo system is out of the scope of the present document.

NOTE 5: How the local MCVideo system routes the SIP request through an exit MCVideo gateway server is out of the scope of the present document.

5) shall include a P-Asserted-Identity header field set to the public service identity of controlling MCVideo function; and

6) shall include an application/vnd.3gpp.mcvideo-info+xml MIME body with the <mcvideoinfo> element containing the <mcvideo-Params> element with the <mcvideo-request-uri> element set to the value of the MCVideo ID of the targeted MCVideo user.

6.3.3.1.20 Generating a SIP MESSAGE request for notification of entry into or exit from an emergency alert area

This clause describes the procedures for generating a SIP MESSAGE request to notify an MCVideo client that it has entered a pre-defined emergency alert area or exited from a pre-defined emergency alert area. The procedure is initiated by the participating MCVideo function when the participating MCVideo function determines that the MCVideo client has entered a pre-defined emergency alert area or exited from a pre-defined emergency alert area.

The participating MCVideo function:

1) shall generate a SIP MESSAGE request in accordance with 3GPP TS 24.229 [11] and IETF RFC 3428 [17];

2) shall include an Accept-Contact header field containing the g.3gpp.mcvideo media feature tag along with the "require" and "explicit" header field parameters according to IETF RFC 3841 [20];

3) shall include an Accept-Contact header field with the media feature tag g.3gpp.icsi-ref with the value of "urn:urn-7:3gpp-service.ims.icsi.mcvideo" along with parameters "require" and "explicit" according to IETF RFC 3841 [20];

4) shall set the Request-URI to the public user identity associated to the MCVideo ID of the targeted MCVideo user;

5) shall include a P-Asserted-Identity header field set to the public service identity of the participating MCVideo function;

6) shall include the ICSI value "urn:urn-7:3gpp-service.ims.icsi.mcvideo" (coded as specified in 3GPP TS 24.229 [11]), in a P-Asserted-Service-Id header field according to IETF RFC 6050 [14];

7) shall include an application/vnd.3gpp.mcvideo-info+xml MIME body with the <mcvideoinfo> element containing the <mcvideo-Params> element with the <mcvideo-request-uri> element set to the value of the MCVideo ID of the targeted MCVideo user;

8) shall include in the application/vnd.3gpp.mcvideo-info+xml MIME body an <emergency-alert-area-ind> element:

   a) set to a value of "true", if the MCVideo client has entered a pre-defined emergency alert area; or

   b) set to a value of "false", if the MCVideo client has exited from a pre-defined emergency alert area; and

9) shall send the SIP MESSAGE request towards the MCVideo client according to the rules and procedures of 3GPP TS 24.229 [11].

Upon receiving a SIP 200 (OK) response to the SIP MESSAGE request, if the <emergency-alert-area-ind> element of the application/vnd.3gpp.mcvideo-info+xml MIME body in the SIP MESSAGE request was:

1) set to a value of "true", shall record that the MCVideo client has received the notification that it has entered the pre-defined emergency alert area; and

2) set to a value of "false", shall record that the MCVideo client has received the notification that it has exited the pre-defined emergency alert area.

6.3.3.1.21 Generating a SIP MESSAGE request for notification of entry into or exit from a group geographic area

This clause describes the procedures for generating a SIP MESSAGE request to notify an MCVideo client that it has entered a pre-defined group geographic area or exited from a pre-defined group geographic area requiring affiliation to or de-affiliation from a group. The procedure is initiated by the participating MCVideo function when the participating

MCVideo function determines that the MCVideo client has entered a pre-defined group geographic area or exited from a pre-defined group geographic area.

The participating MCVideo function:

1) shall generate a SIP MESSAGE request in accordance with 3GPP TS 24.229 [11] and IETF RFC 3428 [17];

2) shall include an Accept-Contact header field containing the g.3gpp.mcvideo media feature tag along with the "require" and "explicit" header field parameters according to IETF RFC 3841 [20];

3) shall include an Accept-Contact header field with the media feature tag g.3gpp.icsi-ref with the value of "urn:urn-7:3gpp-service.ims.icsi.mcvideo" along with parameters "require" and "explicit" according to IETF RFC 3841 [20];

4) shall set the Request-URI to the public user identity associated to the MCVideo ID of the targeted MCVideo user;

5) shall include a P-Asserted-Identity header field set to the public service identity of the participating MCVideo function;

6) shall include the ICSI value "urn:urn-7:3gpp-service.ims.icsi.mcvideo" (coded as specified in 3GPP TS 24.229 [11]), in a P-Asserted-Service-Id header field according to IETF RFC 6050 [14];

7) void;

8) shall include an application/vnd.3gpp.mcvideo-info+xml MIME body with an <mcvideoinfo> element containing the <mcvideo-Params> element with:

   a) an <mcvideo-request-uri> element set to the value of the MCVideo ID of the targeted MCVideo user;

   b) an <associated-group-id> element set to the MCVideo group ID of the group for which a pre-defined group geographic area has been entered or exited; and

   c) a <group-geo-area-ind> element:

      i) set to a value of "true", if the MCVideo client has entered a pre-defined group geographic area; or

      ii) set to a value of "false", if the MCVideo client has exited from a pre-defined group geographic area; and

9) shall send the SIP MESSAGE request towards the MCVideo client according to the rules and procedures of 3GPP TS 24.229 [11].

Upon receiving a SIP 200 (OK) response to the SIP MESSAGE request, if the <group-geo-area-ind> element of the application/vnd.3gpp.mcvideo-info+xml MIME body in the SIP MESSAGE request was:

1) set to a value of "true", shall record that the MCVideo client has received the notification that it has entered the pre-defined group geographic area; and

2) set to a value of "false", shall record that the MCVideo client has received the notification that it has exited the pre-defined group geographic area.

6.3.3.2 Requests terminated by the controlling MCVideo function

6.3.3.2.1 SDP answer generation

When composing the SDP answer according to 3GPP TS 24.229 [11], the controlling MCVideo function:

1) for the accepted media stream in the received SDP offer:

   a) shall replace the IP address and port number in the received SDP offer with the IP address and port number of the controlling MCVideo function; and

2) for the accepted media-transmission control entity, if present in the received SDP offer:

a) shall replace the IP address and port number in the received SDP offer with the IP address and port number of the controlling MCVideo function, for the accepted media-transmission control entity, if present in the received SDP offer; and

b) shall include 'fmtp' attributes as specified in 3GPP TS 24.581 clause 14.

6.3.3.2.2 Receipt of a SIP INVITE request

On receipt of an initial SIP INVITE request the controlling MCVideo function shall cache SIP feature tags, if received in the Contact header field and if the specific feature tags are supported.

6.3.3.2.3 Sending a SIP response to a SIP INVITE request

6.3.3.2.3.1 Provisional response

When sending SIP provisional responses with the exception of the SIP 100 (Trying) response to the SIP INVITE request the controlling MCVideo function:

1) shall generate the SIP provisional response;

2) shall include a P-Asserted-Identity header field with the public service identity of the controlling MCVideo function;

3) shall include an MCVideo session identity in the Contact header field; and

4) shall include the following in the Contact header field:

   a) the g.3gpp.mcvideo media feature tag;

   b) the g.3gpp.icsi-ref media feature tag containing the value of "urn:urn-7:3gpp-service.ims.icsi.mcvideo"; and

   c) the isfocus media feature tag.

6.3.3.2.3.2 Final response

When sending a SIP 200 (OK) response to the initial SIP INVITE request, the controlling MCVideo function:

1) shall generate the SIP 200 (OK) response according to rules and procedures of 3GPP TS 24.229 [11];

2) shall include the Session-Expires header field and start supervising the SIP session according to rules and procedures of IETF RFC 4028 [23], "UAS Behavior". The "refresher" parameter in the Session-Expires header field shall be set to "uac";

3) shall include the option tag "timer" in a Require header field;

4) shall include a P-Asserted-Identity header field with the public service identity of the controlling MCVideo function;

5) shall include a SIP URI for the MCVideo session identity in the Contact header field identifying the MCVideo session at the controlling MCVideo function;

6) shall include the following in the Contact header field:

   a) the g.3gpp.mcvideo media feature tag;

   b) the g.3gpp.icsi-ref media feature tag containing the value of "urn:urn-7:3gpp-service.ims.icsi.mcvideo"; and

   c) the isfocus media feature tag;

7) shall include Warning header field(s) received in incoming responses to the SIP INVITE request;

8) shall include the option tag "tdialog" in a Supported header field according to rules and procedures of IETF RFC 4538 [32];

9) shall include the "norefersub" option tag in a Supported header field according to IETF RFC 4488 [31];

10) shall include the "explicitsub" and "nosub" option tags in a Supported header field according to IETF RFC 7614 [64];

11) if:

a) an MCVideo GKTP document exists for the group identity contained in the <mcvideo-request-uri> element in the application/vnd.3gpp.mcvideo-info+xml MIME body of the initial SIP INVITE request; and

b) the MCVideo GKTP document contains an <MKFC-GKTPs> element;

then:

a) for each instance of <GKTP> element of the <MKFC-GKTPs> element of the MCVideo GKTP document:

i) shall perform the procedure in clause 6.3.3.6.2 to re-generate an I_MESSAGE; and

ii) if the procedure in clause 6.3.3.6.2 was successful, shall include the I_MESSAGE in a <GKTP> element of the <MKFC-GKTPs> element of an application/vnd.3gpp.mcvideo-info+xml MIME body included in a SIP 200 (OK) response; and

12) shall interact with the media plane as specified in 3GPP TS 24.581 [5].

6.3.3.2.4 Receiving a SIP BYE request

Upon receiving a SIP BYE request the controlling MCVideo function:

1) shall interact with the media plane as specified in clause 6.3 in 3GPP TS 24.581 [5] for releasing the media plane resource associated with the SIP session towards the MCVideo client;

NOTE: The non-controlling MCVideo function is also regarded as a MCVideo client in a temporary MCVideo group session.

2) shall generate a SIP 200 (OK) response and send the SIP response towards the MCVideo client according to 3GPP TS 24.229 [11];

3) shall check the MCVideo session release policy as specified in clause 6.3.8.1 and clause 6.3.8.2 whether the MCVideo session needs to be released for each participant of the MCVideo session;

4) if release of the MCVideo session is required:

a) shall perform the procedures as specified in the clause 6.3.3.1.4 with the clarification that if the received SIP BYE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body, copy the application/vnd.3gpp.mcvideo-info+xml MIME body into the outgoing SIP BYE request; and

5) if a release of the MCVideo session is not required, shall send a SIP NOTIFY request to all remaining MCVideo clients in the MCVideo session with a subscription to the conference event package as specified in clause 9.2.3.4.2.

Upon receiving a SIP 200 (OK) response to the SIP BYE request the controlling MCVideo function shall interact with the media plane as specified in clause 6.3 in 3GPP TS 24.581 [5] for releasing media plane resources associated with the SIP session with the MCVideo participant.

6.3.3.3 Handling of the acknowledged call setup timer (TNG1)

When the controlling MCVideo function receives a SIP INVITE request to initiate a group session and there are members of the group document retrieved from the group management server that are affiliated and are marked as <on-network-required> as specified in 3GPP TS 24.481 [24], then the controlling MCVideo function shall start timer TNG1 (acknowledged call setup timer) with a timer value as described in Annex B.2.1, prior to sending out SIP INVITE requests inviting group members to the group session.

When the controlling MCVideo function receives all SIP 200 (OK) responses to the SIP INVITE requests, from all affiliated and <on-network-required> members then the controlling MCVideo function shall stop timer TNG1 (acknowledged call setup timer) and if the local counter of the number of SIP 200 (OK) responses received from invited members is greater than or equal to the value of the <on-network-minimum-number-to-start> element of the group document, the controlling MCVideo function shall send a SIP 200 (OK) response to the initiating MCVideo client.

NOTE 1: MCVideo clients that are affiliated but are not <on-network-required> members that have not yet responded will be considered as joining an ongoing session when the controlling MCVideo function receives SIP 200 (OK) responses from these MCVideo clients.

After expiry of timer TNG1 (acknowledged call setup timer) and the local counter of the number of SIP 200 (OK) responses received from invited members is less than the value of the <on-network-minimum-number-to-start> element of the group document, then the controlling MCVideo function shall wait until further responses have been received from invited clients and the value of the local counter of the number of SIP 200 (OK) responses received from invited members is equal to the <on-network-minimum-number-to-start>, before continuing with the timer TNG1 expiry procedures in this clause.

After expiry of timer TNG1 (acknowledged call setup timer) and the local counter of the number of SIP 200 (OK) responses received from invited members is greater or equal to the value of the <on-network-minimum-number-to-start> element of the group document, the controlling MCVideo function shall execute the steps described below:

1) if the <on-network-action-upon-expiration-of-timeout-for-acknowledgement-of-required-members> element configured in the group document for the action on expiry of the timer is set to "proceed" indicating that the controlling MCVideo function should proceed with the setup of the group call, then the controlling MCVideo function:

   a) shall perform the following actions:

      i) generate a SIP 200 (OK) response to the SIP INVITE request as specified in the clause 6.3.3.2.2 before continuing with the rest of the steps;

      ii) include in the SIP 200 (OK) response the warning text set to "111 group call proceeded without all required group members" in a Warning header field as specified in clause 4.4;

      iii) include in the SIP 200 (OK) response an SDP answer to the SDP offer in the incoming SIP INVITE request as specified in the clause 6.3.3.2.1;

      iv) interact with the media plane as specified in 3GPP TS 24.581 [5]; and

NOTE 2: Resulting media plane processing is completed before the next step is performed.

      v) send a SIP 200 (OK) response to the inviting MCVideo client according to 3GPP TS 24.229 [11];

   b) when a SIP 200 (OK) response to a SIP INVITE request is received from an invited MCVideo client the controlling MCVideo function may send an in-dialog SIP MESSAGE request to the MCVideo client that originated the group session with the text "group call proceeded without all required group members";

   c) when the controlling MCVideo function receives a SIP BYE request from an invited MCVideo client, shall take the actions specified in clause 6.3.3.2.4 and may send an in-dialog SIP MESSAGE request to the MCVideo client that originated the group session with the text "group call proceeded without all required group members"; and

   d) shall generate a notification package as specified in clause 6.3.3.4 and send a SIP NOTIFY request according to 3GPP TS 24.229 [11] to the MCVideo clients which have subscribed to the conference state event; and

2) if the <on-network-action-upon-expiration-of-timeout-for-acknowledgement-of-required-members> element configured in the group document for the action on expiry of the timer is set to "abandon" indicating that the controlling MCVideo function should abandon the setup of the group call, then the controlling MCVideo function shall:

   a) send a SIP 480 (Temporarily Unavailable) response to the MCVideo client that originated the group session with the warning text set to "112 group call abandoned due to required group members not part of the group session" in a Warning header field as specified in clause 4.4;

   b) for each confirmed dialog at the controlling MCVideo function, send a SIP BYE request towards the MCVideo clients invited to the group session in accordance with 3GPP TS 24.229 [11] and interact with the media plane as specified in 3GPP TS 24.581 [5]; and

   c) for each non-confirmed dialog at the controlling MCVideo function, send a SIP CANCEL request towards the MCVideo clients invited to the group session in accordance with 3GPP TS 24.229 [11].

If the controlling MCVideo function receives a final SIP 4xx, 5xx or 6xx response from an affiliated and <on-network-required> group member prior to expiry of timer TNG1 (acknowledged call setup timer) and based on policy, the controlling MCVideo function decides not to continue with the establishment of the group call without the affiliated and <on-network-required> group member, then the controlling MCVideo function:

NOTE 3: It is expected that this action is taken if the policy is to abandon the call on expiry of timer TNG1 (acknowledged call setup timer).

1) shall stop timer TNG1 (acknowledged call setup timer); and

2) shall forward the final SIP 4xx, 5xx or 6xx response towards the inviting MCVideo client with the warning text set to "112 group call abandoned due to required group member not part of the group session" in a Warning header field as specified in clause 4.4.

If:

1) the controlling MCVideo function receives a final SIP 4xx, 5xx or 6xx response from an affiliated and <on-network-required> group member prior to expiry of timer TNG1 (acknowledged call setup timer);

2) the local counter of the number of SIP 200 (OK) responses received from invited members is greater than or equal to the value of the <on-network-minimum-number-to-start> element of the group document; and

3) based on policy, the controlling MCVideo function decides to continue with the establishment of the group call without the affiliated and <on-network-required> group member;

then the controlling MCVideo function:

NOTE 4: It is expected that this action is taken if the policy is to proceed with the call on expiry of timer TNG1 (acknowledged call setup timer).

1) if all other invited clients have not yet responded, shall continue running timer TNG1 (acknowledged call setup timer); and

2) if all other invited clients have responded with SIP 200 (OK) responses, shall

   a) stop timer TNG1 (acknowledged call setup timer);

   b) generate SIP 200 (OK) response to the SIP INVITE request as specified in the clause 6.3.3.2.2 before continuing with the rest of the steps;

   c) include in the SIP 200 (OK) response the warning text set to "111 group call proceeded without all required group members" in a Warning header field as specified in clause 4.4;

   d) include in the SIP 200 (OK) response an SDP answer to the SDP offer in the incoming SIP INVITE request as specified in the clause 6.3.3.2.1;

   e) interact with the media plane as specified in 3GPP TS 24.581 [5]; and

NOTE 5: Resulting media plane processing is completed before the next step is performed.

   f) send a SIP 200 (OK) response to the inviting MCVideo client according to 3GPP TS 24.229 [11].

6.3.3.4 Generating a SIP NOTIFY request

The controlling MCVideo function shall generate a SIP NOTIFY request according to 3GPP TS 24.229 [11] with the clarification in this clause.

In the SIP NOTIFY request, the controlling MCVideo function:

1) shall set the P-Asserted-Identity header field to the public service identity of the controlling MCVideo function;

2) shall include an Event header field set to the "conference" event package;

3) shall include an Expires header field set to 3600 seconds according to IETF RFC 4575 [57], as default value;

4) shall include the ICSI value "urn:urn-7:3gpp-service.ims.icsi.mcvideo" (coded as specified in 3GPP TS 24.229 [11]), in a P-Preferred-Service header field according to IETF RFC 6050 [14]; and

5) shall include an application/vnd.3gpp.mcvideo-info+xml MIME body with the <mcvideoinfo> element containing the <mcvideo-Params> element with:

   a) the <mcvideo-calling-group-id> set to the value of the MCVideo group ID;

   b) if the target is a MCVideo user, the value of <mcvideo-request-uri> element set to the value of MCVideo ID of the targeted MCVideo user; and

   c) if the target is the non-controlling MCVideo function, the value of <mcvideo-request-uri> element set to the constituent MCVideo group ID.

In the SIP NOTIFY request, the controlling MCVideo function shall include an application/conference-info+xml MIME body according to IETF RFC 4575 [57] with the following limitations:

1) the controlling MCVideo function shall include the MCVideo group ID of the MCVideo group in the "entity" attribute of the <conference-info> element;

2) for each participant in the MCVideo session with the exception of non-controlling MCVideo functions, the controlling MCVideo function shall include a <user> element. The <user> element shall:

NOTE: Non-controlling MCVideo functions will appear as a participant in temporary group sessions.

   a) include the "entity" attribute. The "entity" attribute:

      i) shall for the MCVideo client, which initiated, joined or re-joined an MCVideo session, include the MCVideo ID of the MCVideo user which originates SIP INVITE request; and

      ii) shall for an invited MCVideo client include the MCVideo ID of the invited MCVideo user in case of a prearranged group call or chat group call;

   b) shall include a single <endpoint> element. The <endpoint> element:

      i) shall include the "entity" attribute;

      ii) shall include the <status> element indicating the status of the MCVideo session according to IETF RFC 4575 [57]; and

      iii) may include one <functional-alias> element indicating the functional alias bound by the MCVideo user with the MCVideo group for which the notification is being sent as defined in the XML schema of clause 9.2.3.6.1; and

NOTE 1: The functional alias binding by the MCVideo user with the MCVideo group is done through either using an explicit procedure or as a part of call setup procedure.

   c) may include <roles> element.

NOTE: The usage of <roles> is only applicable for human consumption.

6.3.3.5 Handling of the group call timer (TNG3)

6.3.3.5.1 General

When the controlling MCVideo function receives a SIP INVITE request to initiate a group session, then after an MCVideo session identity has been allocated for the group session and if the <on-network-maximum-duration> element is present in the group document as specified in 3GPP TS 24.481 [24], the controlling MCVideo function: shall start timer TNG3 (group call timer) with the value obtained from the <on-network-maximum-duration> element of the group document as specified in 3GPP TS 24.481 [24].

If the <on-network-maximum-duration> element is not present in the group document as specified in 3GPP TS 24.481 [24], then the controlling MCVideo function shall not start timer TNG3 (group call timer).

NOTE 1: The configuration of <on-network-maximum-duration> element in 3GPP TS 24.481 [24] is mandated for a pre-arranged group and is optional for a chat group.

When merging two or more active group calls into a temporary group call, the controlling MCVideo function(s) hosting the active group calls shall stop timer TNG3 (group call timer) for each group call, and the controlling MCVideo function hosting the temporary group call shall start timer TNG3 (group call timer) for the temporary group call.

NOTE 2: If the MCVideo server(s) hosting the independent active group calls are different to the MCVideo server that will host the temporary group call, then the MCVideo server(s) hosting the independent active group calls become non-controlling MCVideo function(s) of an MCVideo group, for the temporary group call.

When splitting a temporary group call into independent group calls, the controlling MCVideo function hosting the temporary group call shall stop timer TNG3 (group call timer) and the controlling MCVideo function(s) hosting the independent group calls shall start TNG3 (group call timer) for each group call.

When the last MCVideo client leaves the MCVideo session, the controlling MCVideo function shall stop timer TNG3 (group call timer).

On expiry of timer (group call timer), the controlling MCVideo function shall release the MCVideo session by following the procedures in clause 6.3.3.1.4;

6.3.3.5.2 Interaction with the in-progress emergency group call timer (TNG2)

If the controlling MCVideo function starts timer TNG2 (in-progress emergency group call timer), it shall not start timer TNG3 (group call timer).

If timer TNG3 (group call timer) is running and the MCVideo group call is upgraded to an MCVideo emergency group call, then the controlling MCVideo function shall stop timer TNG3 (group call timer) and shall start timer TNG2 (in-progress emergency group call timer) with the value obtained from the <group-time-limit> element of the <emergency-call> element of the <on-network> element of the service configuration document as specified in 3GPP TS 24.484 [25].If timer TNG2 (in-progress emergency group call timer) is running and the MCVideo emergency group call is cancelled, then the controlling MCVideo function shall stop timer TNG2 (in-progress emergency group call timer) and shall start timer TNG3 (group call timer) with the value obtained from the <on-network-maximum-duration> element of the group document as specified in 3GPP TS 24.481 [24].

If timer TNG2 (in-progress emergency group call timer) is running and subsequently expires, then the controlling MCVideo function shall start timer TNG3 (group call timer) with the value obtained from the <on-network-maximum-duration> element of the group document as specified in 3GPP TS 24.481 [24].

NOTE: The above conditions for starting timer TNG2 (in-progress emergency group call timer) and timer TNG3 (group call timer) also apply in the case that these timers are re-started. For example: the case where the timer TNG3 was initially running, the MCVideo group call is upgraded to an MCVideo emergency group call and then the MCVideo emergency group call is cancelled.

6.3.3.6 Generation of I_MESSAGEs containing MKFC and MKFC-ID

6.3.3.6.1 General

This procedures in this clause are executed by the controlling MCVideo function as a result of receiving SIP INVITE requests targeted to a group identity, where the controlling MCVideo function has subscribed to the MCVideo group key transport payloads (GKTP) document as specified in 3GPP TS 24.481 [24] for the group identity and the controlling MCVideo function has been notified of the GKTP document for the group identity containing a <MKFC-GKTPs> element.

The <MKFC-GKTPs> element contains one or more <GKTP> elements where each <GKTP> element represents an I_MESSAGE(s) containing an MKFC and MKFC-ID, as specified in 3GPP TS 24.481 [24].

6.3.3.6.2 Creation of an I_MESSAGE containing MKFC

The controlling MCVideo function:

1) shall extract the GMS URI from the initiator field (IDRi) of the I_MESSAGE and use it together with the timer related parameter to check the signature of the I_MESSAGE as described in 3GPP TS 33.180 [8];

2) if the signature is not valid, shall exit this procedure. Otherwise shall validate that the contents of the recipient field (IDRr) of the I_MESSAGE to ensure it matches to the URI of the controlling MCVideo function;

3) if the contents of the IDRr do not match to the controlling MCVideo function URI, shall exit this procedure. Otherwise, shall use the contents of the IDRr to decrypt the I_MESSAGE and extract the MKFC and MKFC-ID;

4) shall re-generate the I_MESSAGE containing a common header payload, a timestamp payload, an IDRi payload, an IDRr payload, an IDRkmsi payload, an IDRkmsr payload, a SAKKE payload, a SIGN payload, a security policy payload and a general extension payload containing the MKFC and MKFC-ID, as specified in the group key transport payload structure in clause 7.4.2 in 3GPP TS 24.481 [24], but with the following clarifications:

NOTE: The MKFC is treated as a GMK for transport, using the security procedures defined in clause 7.3.1 of 3GPP TS 33.180 [8] and the encapsulation procedures of Annex E.2 of 3GPP TS 33.180 [8].

   a) the IDRi payload (or ID payload with ID role field set to the 'IDRuidi') contains the URI of the controlling MCVideo function;

   b) if the I_MESSAGE is to be sent to the participating MCVideo function, the IDRr payload (or ID payload with ID role fields set to 'IDRuidr') contains the URI of the participating MCVideo function;

   c) if the I_MESSAGE is to be sent to the non-controlling MCVideo function, the IDRr payload (or ID payload with ID role fields set to 'IDRuidr') contains the URI of the non-controlling MCVideo function;

   d) the ID data field of the IDRkmsi payload is set to the URI of the MCVideo KMS used by the controlling MCVideo function;

   e) if the I_MESSAGE is to be sent to the participating MCVideo function, then the ID data field of the IDRkmsr is set to URI of the MCVideo KMS used by the participating MCVideo function; and

   f) if the I_MESSAGE is to be sent to the non-controlling MCVideo function, then the ID data field of the IDRkmsr is set to URI of the MCVideo KMS used by the participating MCVideo function;

5) shall sign the I_MESSAGE using the controlling MCVideo function URI;

6) if the I_MESSAGE is to be sent to the participating MCVideo function, shall encrypt the I_MESSAGE using the participating MCVideo function URI; and

7) if the I_MESSAGE is to be sent to the non-controlling MCVideo function, shall encrypt the I_MESSAGE using the non-controlling MCVideo function URI.

6.3.4 Non-controlling MCVideo function of an MCVideo group

6.3.4.1 Request initiated by the non-controlling MCVideo function of an MCVideo group

6.3.4.1.1 SDP offer generation

The SDP offer is generated based on the received SDP offer. The SDP offer generated by the non-controlling MCVideo function of an MCVideo group:

1) shall include only one SDP media-level section for the MCVideo video media stream according to 3GPP TS 24.229 [11], as contained in the received SDP offer;

2) shall include only one SDP media-level section for the MCVideo audio media stream according to 3GPP TS 24.229 [11], as contained in the received SDP offer; and

3) shall contain one SDP media-level section for a media transmission control entity according to 3GPP TS 24.229 [11], if present in the received SDP offer.

When composing the SDP offer according to 3GPP TS 24.229 [4], the non-controlling MCVideo function of an MCVideo group:

1) shall replace the IP address and port number for the offered audio media stream in the "m=audio" media-level section with an IP address and port number of the non-controlling MCVideo function;

2) for the MCVideo audio media stream, shall include all media-level attributes from the received SDP offer;

3) shall replace the IP address and port number for the offered video media stream in the "m=video" media-level section with an IP address and port number of the non-controlling MCVideo function;

4) for the MCVideo video media stream, shall include all media-level attributes from the received SDP offer;

5) shall replace the IP address and port number for the offered media transmission control entity, if any, in the received SDP offer with an IP address and port number of the non-controlling MCVideo function; and

6) shall include the offered media transmission control entity 'fmtp' attributes as specified in 3GPP TS 24.581 [5].

6.3.4.1.2 Sending an INVITE request towards the MCVideo client

This clause is referenced from other procedures.

The non-controlling MCVideo function of an MCVideo group shall generate initial SIP INVITE requests according to 3GPP TS 24.229 [11].

For each SIP INVITE request, the non-controlling MCVideo function of an MCVideo group:

1) shall generate a new MCVideo session identity for the MCVideo session with the invited MCVideo client and include it in the Contact header field together with the g.3gpp.mcvideo media feature tag, the g.3gpp.icsi-ref media feature tag with the value of "urn:urn-7:3gpp-service.ims.icsi.mcvideo", and the isfocus media feature tag according to IETF RFC 3840 [22];

2) shall include an Accept-Contact header field containing the g.3gpp.mcvideo media feature tag along with the "require" and "explicit" header field parameters according to IETF RFC 3841 [20];

3) shall include the ICSI value "urn:urn-7:3gpp-service.ims.icsi.mcvideo" (coded as specified in 3GPP TS 24.229 [11]), in a P-Asserted-Service-Id header field according to IETF RFC 6050 [14] in the SIP INVITE request;

4) shall include an Accept-Contact header field with the media feature tag g.3gpp.icsi-ref with the value of "urn:urn-7:3gpp-service.ims.icsi.mcvideo" along with parameters "require" and "explicit" according to IETF RFC 3841 [20];

5) shall set the Request-URI to the public service identity of the terminating participating MCVideo function associated to the MCVideo ID of the MCVideo user to be invited;

NOTE 1: The public service identity can identify the terminating participating MCVideo function in the local MCVideo system or in an interconnected MCVideo system.

NOTE 2: If the terminating participating MCVideo function is in an interconnected MCVideo system in a different trust domain, then the public service identity can identify the MCVideo gateway server that acts as an entry point in the interconnected MCVideo system from the local MCVideo system.

NOTE 3: If the terminating participating MCVideo function is in an interconnected MCVideo system in a different trust domain, then the local MCVideo system can route the SIP request through an MCVideo gateway server that acts as an exit point from the local MCVideo system to the interconnected MCVideo system.

NOTE 4: How the non-controlling MCVideo function determines the public service identity of the terminating participating MCVideo function associated with the MCVideo ID of the MCVideo user to be invited or of the MCVideo gateway server in the interconnected MCVideo system is out of the scope of the present document.

NOTE 5: How the local MCVideo system routes the SIP request through an exit MCVideo gateway server is out of the scope of the present document.

6) shall copy the application/vnd.3gpp.mcvideo-info+xml MIME body in the received SIP INVITE request to the outgoing SIP INVITE request;

7) shall update the application/vnd.3gpp.mcvideo-info+xml MIME body with: an <mcvideo-request-uri> element set to the MCVideo ID of the invited MCVideo user;

8) shall include the public service identity of the non-controlling MCVideo function in the P-Asserted-Identity header field;

9) shall include the received Referred-By header field with the public user identity of the inviting MCVideo client;

10) should include the Session-Expires header field according to rules and procedures of IETF RFC 4028 [23]. The refresher parameter shall be omitted;

11) shall include the Supported header field set to "timer";

12) shall include an unmodified Answer-Mode header field, if present in the incoming SIP INVITE request; and

13) void.

6.3.4.1.3 Sending a SIP INFO request

This clause is referenced from other procedures.

The non-controlling MCVideo function shall generate a SIP INFO request according to rules and procedures of 3GPP TS 24.229 [11] and IETF RFC 6086 [54].

The non-controlling MCVideo function:

1) shall include the Info-Package header field set to "g.3gpp.mcvideo-transmission-request";

2) shall include an application/vnd.3gpp.mcvideo-info+xml MIME body with the <mcvideo-request-uri> set to the temporary MCVideo group ID and the <mcvideo-calling-group-id> element with the constituent MCVideo group ID;

3) shall include an application/vnd.3gpp.mcvideo-transmission-request+xml MIME body with the Content-Disposition header field set to "Info-Package". For each currently transmitting MCVideo client the application/vnd.3gpp.mcvideo-transmission-request+xml MIME body shall be populated as follows:

   a) the SSRC of the MCVideo client with the permission to send media in the <ssrc> element;

   b) the actual transmission priority in the <transmission-priority> element;

   c) the MCVideo ID of the MCVideo user with the permission to send media in the <user-id> element;

   d) the queueing capability in the <queueing-capability> element of the <track-info> element;

   e) the participant type in the <participant-type> in the <track-info> element;

   f) one or more <transmission-participant-reference> elements in the <track-info> element in the same order as the would appear in the Track Info field as specified in 3GPP TS 24.581 [5] clause 9.2.3.13; and

   g) if available, additional information in the <transmission-indicator> element.

6.3.4.1.4 Sending an INVITE request towards the controlling MCVideo function

This clause is referenced from other procedures.

The non-controlling MCVideo function shall generate a SIP INVITE request according to rules and procedures of 3GPP TS 24.229 [11].

The non-controlling MCVideo function:

1) shall include in the Contact header field the g.3gpp.mcvideo media feature tag, the g.3gpp.icsi-ref media feature tag with the value of "urn:urn-7:3gpp-service.ims.icsi.mcvideo", and the isfocus media feature tag according to IETF RFC 3840 [22];

2) shall include the ICSI value "urn:urn-7:3gpp-service.ims.icsi.MCVideo" (coded as specified in 3GPP TS 24.229 [11]), in a P-Asserted-Service-Id header field according to IETF RFC 6050 [14] in the SIP INVITE request;

3) shall set the Request-URI to the public service identity of the controlling MCVideo function based on the <mcvideo-request-uri> element received in the "SIP INVITE request for controlling MCVideo function of an MCVideo group";

NOTE 1: The public service identity can identify the controling MCVideo function in the local MCVideo system or in an interconnected MCVideo system.

NOTE 2: If the controlling MCVideo function is in an interconnected MCVideo system in a different trust domain, then the public service identity can identify the MCVideo gateway server that acts as an entry point in the interconnected MCVideo system from the local MCVideo system.

NOTE 3: If the controlling MCVideo function is in an interconnected MCVideo system in a different trust domain, then the local MCVideo system can route the SIP request through an MCVideo gateway server that acts as an exit point from the local MCVideo system to the interconnected MCVideo system.

NOTE 4: How the non-controlling MCVideo function determines the public service identity of the controlling MCVideo function based on the <mcvideo-request-uri> element received in the "SIP INVITE request for controlling MCVideo function of an MCVideo group" or of the MCVideo gateway server in the interconnected MCVideo system is out of the scope of the present document.

NOTE 5: How the local MCVideo system routes the SIP request through an exit MCVideo gateway server is out of the scope of the present document.

4) shall include an application/vnd.3gpp.mcvideo-info+xml MIME body with:

   a) the <session-type> element set to "prearranged";

NOTE 6: The <session-type> element is set to "prearranged" regardless of which type of group the constituent MCVideo group is.

   b) the <mcvideo-request-uri> element set to the TGI retrieved from the <on-network-regrouped> element in the group document;

   c) the <MCVideo-calling-user-id> element set to the constituent MCVideo group ID; and

   d the <required> element set to "true", if the group document retrieved from the group management server contains <on-network-required> group members as specified in 3GPP TS 24.481 [24];

5) shall include the public service identity of the non-controlling MCVideo function in the P-Asserted-Identity header field;

6) should include the Session-Expires header field according to rules and procedures of IETF RFC 4028 [23]. The refresher parameter shall be omitted; and

7) shall include the Supported header field set to "timer".

6.3.4.2 Requests terminated by the non-controlling MCVideo function of an MCVideo group

6.3.4.2.1 SDP answer generation

When composing the SDP answer according to 3GPP TS 24.229 [4], the non-controlling MCVideo function of an MCVideo group:

1) for the accepted audio media stream in the received SDP offer:

   a) shall set the IP address and port number to the IP address and port number of the non-controlling MCVideo function;

2) for the accepted video media stream in the received SDP offer:

   a) shall set the IP address and port number to the IP address and port number of the non-controlling MCVideo function; and

3) for the accepted media transmission control entity, if present in the received SDP offer:

a) shall set the IP address and port number to the IP address and port number of the non-controlling MCVideo function; and

b) shall include 'fmtp' attributes as specified in 3GPP TS 24.581 [5].

6.3.4.2.2 Sending a SIP response to the SIP INVITE request

6.3.4.2.2.1 Sending a SIP 183 (Session Progress) response

When sending a SIP 183 (Session Progress) the non-controlling MCVideo function of an MCVideo group:

1) shall generate a SIP 183 (Session Progress) response according to 3GPP TS 24.229 [11];

2) shall include the following in the Contact header field:

   a) the g.3gpp.mcvideo media feature tag; and

   b) the g.3gpp.icsi-ref media feature tag containing the value of "urn:urn-7:3gpp-service.ims.icsi.mcvideo";

3) shall include the public service identity of the non-controlling MCVideo function in the P-Asserted-Identity header field; and

4) shall include the option tag "tdialog" in a Supported header field according to rules and procedures of IETF RFC 4538 [32];

6.3.4.2.2.2 Sending a SIP 200 (OK) response

When sending a SIP 200 (OK) response, the non-controlling MCVideo function of an MCVideo group:

1) shall generate the SIP 200 (OK) response according to rules and procedures of 3GPP TS 24.229 [11];

2) shall include the Session-Expires header field and start supervising the SIP session according to rules and procedures of IETF RFC 4028 [23], "UAS Behavior". The "refresher" parameter in the Session-Expires header field shall be set to "uac";

3) shall include the option tag "timer" in a Require header field;

4) shall include the public service identity of the non-controlling MCVideo function in the P-Asserted-Identity header field;

5) shall include a SIP URI for the MCVideo session identity in the Contact header field identifying the MCVideo session at the non-controlling MCVideo function;

6) shall include the following in the Contact header field:

   a) the g.3gpp.mcvideo media feature tag; and

   b) the g.3gpp.icsi-ref media feature tag containing the value of "urn:urn-7:3gpp-service.ims.icsi.mcvideo";

7) shall include Warning header field(s) received in incoming responses to the SIP INVITE request;

8) shall include the option tag "tdialog" in a Supported header field according to rules and procedures of IETF RFC 4538 [32];

9) shall include an application/vnd.3gpp.mcvideo-info+xml MIME body with the <mcvideo-called-party-id> element set to the constituent MCVideo group ID and the <transmission-state> element set to the state of the transmission; and

10) shall interact with the media plane as specified in 3GPP TS 24.581 [5].

6.3.4.3 Generating a SIP NOTIFY request

The non-controlling MCVideo function shall generate a SIP NOTIFY request according to 3GPP TS 24.229 [11] with the clarification in this clause.

In the SIP NOTIFY request, the non-controlling MCVideo function:

1) shall set the P-Asserted-Identity header field to the public service identity of the non-controlling MCVideo function;

2) shall include an Event header field set to "conference";

3) shall include an Expires header field set to 3600 seconds according to IETF RFC 4575 [57], as default value;

4) shall include the ICSI value "urn:urn-7:3gpp-service.ims.icsi.mcvideo" (coded as specified in 3GPP TS 24.229 [11]), in a P-Preferred-Service header field according to IETF RFC 6050 [14]; and

5) shall include an application/vnd.3gpp.mcvideo-info+xml MIME body with the <mcvideoinfo> element containing the <mcvideo-Params> element with:

   a) the <mcvideo-calling-group-id> set to the value of the constituent MCVideo group ID;

   b) if the target is an MCVideo user, the value of <mcvideo-request-uri> element set to the MCVideo ID of the targeted MCVideo user; and

   c) if the target is the controlling MCVideo function the value of <mcvideo-request-uri> element set to the temporary MCVideo group ID.

In the SIP NOTIFY request, the non-controlling MCVideo function shall include application/conference-info+xml MIME body according to IETF RFC 4575 [57] as specified in clause 6.3.3.4 with the following exceptions:

1) the non-controlling MCVideo function shall not regard the controlling MCVideo function as a participant and not include the controlling MCVideo function in a <user> element; and

NOTE: The controlling MCVideo function initiated the temporary group call and will appear as a participant in the group session.

2) the non-controlling MCVideo function shall include stored conference status information received in SIP NOTIFY requests from the controlling MCVideo function in clause 9.2.3.5.3 and status information about own participants.

6.3.5 Retrieving and processing a group document

6.3.5.1 General

This clause describes how an MCVideo server accesses a group document from a group management server.

NOTE 1: The group document for a user or group regroup based on a preconfigured group is the group document for the preconfigured group restricted to the users or groups included in the regroup stored by the MCVideo server at the time of the regroup creation and does not include a <preconfigured-group-use-only> element.

The MCVideo server which accesses a group document performs the role of a controlling MCVideo function or performs the role of a non-controlling MCVideo function of an MCVideo group when accessing a group document. In such cases, for a group call:

- the controlling MCVideo function and group management server are both located in the primary MCVideo system;

- the controlling MCVideo function and group management server are both located in a partner MCVideo system;

- the controlling MCVideo function is located in the primary MCVideo system and accesses a group management server in the primary MCVideo system and a non-controlling MCVideo function of an MCVideo group is located in a partner MCVideo system and accesses a group management server in the partner MCVideo system; or

- the controlling MCVideo function and non-controlling MCVideo function(s) of an MCVideo group are located in the primary MCVideo system and access group management servers in the primary MCVideo system.

When the MCVideo server receives a SIP INVITE request that requires it to access a group document, it uses an MCVideo group ID or a temporary MCVideo group identity (TGI) which was created by the group regrouping operation as specified in 3GPP TS 24.481 [24].

The MCVideo server can cache the group document associated with an MCVideo group or temporary group, and can subscribe to be notified of changes to the group document associated with an MCVideo group or temporary group as specified in 3GPP TS 24.481 [24].

NOTE 2: During the group regrouping operation as specified in 3GPP TS 24.481 [24], the controlling MCVideo function is notified of the constituent MCVideo group identities associated with the TGI.

If the group data associated with an MCVideo group ID or TGI cached in the MCVideo server is removed, the MCVideo server re-subscribes for changes in the group information associated with the MCVideo group ID or TGI.

NOTE 3: Re-subscription can occur prior to the receipt of an SIP INVITE request containing an MCVideo group ID or TGI of a group document which is no longer cached on the MCVideo server.

6.3.5.2 Rules for retrieving Group Document(s)

NOTE 1: In this clause, "MCVideo server" can refer to either the controlling MCVideo function of an MCVideo group or the non-controlling MCVideo function of an MCVideo group.

Upon receipt of a SIP INVITE request:

1) if the MCVideo server is not yet subscribed to the group document for the group identity in the <mcvideo-request-uri> element of the application/vnd.3gpp.mcvideo-info+xml MIME body of the SIP INVITE request, the MCVideo server shall subscribe to the "xcap-diff" event-package for the group document of this group identity as specified in 3GPP TS 24.481 [24];

NOTE 2: The group identity in the <mcvideo-request-uri> element is either an MCVideo group ID or a temporary MCVideo group identity (TGI).

NOTE 3: As a group document can potentially have a large content, the controlling MCVideo function of an MCVideo group can subscribe to the group document indicating support of content-indirection as defined in IETF RFC 4483 [29], by following the procedures in 3GPP TS 24.481 [24].

2) upon receipt of a SIP 404 (Not Found) response as a result of attempting to subscribe to the "xcap-diff" event-package for the group document of the group identity in the <mcvideo-request-uri> element of the application/vnd.3gpp.mcvideo-info+xml MIME body of the SIP INVITE request as specified in 3GPP TS 24.481 [24], the MCVideo server shall send the SIP 404 (Not Found) response with the warning text set to "113 group document does not exist" in a Warning header field as specified in clause 4.4. Otherwise, continue with the rest of the steps;

3) upon receipt of any other SIP 4xx, SIP 5xx or SIP 6xx response as a result of attempting to subscribe to the "xcap-diff" event-package for the group document of the group identity in the <mcvideo-request-uri> element of the application/vnd.3gpp.mcvideo-info+xml MIME body of the SIP INVITE request as specified in 3GPP TS 24.481 [24], the MCVideo server shall send the SIP final response with the warning text set to "114 unable to retrieve group document" in a Warning header field as specified in clause 4.4 and shall not continue with the rest of the steps;

4) upon receipt of a notification from the group management server containing the group document for the group identity in the <mcvideo-request-uri> element of the application/vnd.3gpp.mcvideo-info MIME body of the SIP INVITE request, or if the group document is already cached:

   a) if the MCVideo server is a non-controlling function of an MCVideo group, then the MCVideo server shall exit this clause; and

   b) if the MCVideo server is a controlling function of an MCVideo group, then the MCVideo server shall determine if the group document is for a TGI or an MCVideo group ID as follows:

      i) if the group document includes an <on-network-temporary> element, then the group document is associated with a TGI;

ii) if the group document does not include an <on-network-temporary> element or an <on-network-regrouped> element, then the group document is associated with an MCVideo ID that has not been regrouped; and

iii) if the group document does not include an <on-network-temporary> element but includes an <on-network-regrouped> element, then the group document is associated with an MCVideo ID that has been regrouped;

5) if the SIP INVITE request is a "SIP INVITE request for controlling function of an MCVideo group" and the group identity in the <mcvideo-request-uri> element of the application/vnd.3gpp.mcvideo-info+xml MIME body of the SIP-INVITE request is an MCVideo group ID that has not been re-grouped, the MCVideo server shall access the following elements from the group document as specified in 3GPP TS 24.481 [24]:

a) if the <on-network-disabled> element is present in the group document, shall send a SIP 403 (Forbidden) response with the warning text set to "115 group is disabled" in a Warning header field as specified in clause 4.4 and shall not continue with the rest of the steps;

b) if the <list> element of the <list-service> element does not contain an entry matching the MCVideo ID of the user in the SIP INVITE request, shall send a SIP 403 (Forbidden) response with the warning text set to "116 user is not part of the MCVideo group" in a Warning header field as specified in clause 4.4 and shall not continue with the rest of the steps;

c) if the <on-network-invite-members> element is set to "true" and if the SIP INVITE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body with the <session-type> element containing a value not set to "prearranged", shall return a SIP 404 (Not Found) response with the warning text set to "117 the group identity indicated in the request is a prearranged group" as specified in clause 4.4 "Warning header field" and shall not continue with the rest of the steps; and

d) if the <on-network-invite-members> element is set to "false" and if the SIP INVITE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body with the <session-type> element containing a value not set to "chat" shall return a SIP 404 (Not Found) response with the warning text set to "118 the group identity indicated in the request is a chat group" as specified in clause 4.4 "Warning header field" and shall not continue with the rest of the steps;

6) if the SIP INVITE request is a "SIP INVITE request for controlling function of an MCVideo group" and the group document for the group identity in the <mcvideo-request-uri> element of the application/vnd.3gpp.mcvideo-info MIME body of the SIP INVITE request is associated with an MCVideo group ID that has been regrouped, the MCVideo server:

a) shall obtain the TGI associated with the regrouped group, by accessing the "temporary-MCVideo-group-ID" attribute of the <regrouped> element of the group document associated with the MCVideo ID in the <mcvideo-request-uri> element of the application/vnd.3gpp.mcvideo-info MIME body of the SIP INVITE request;

b) if not hosting the TGI, shall:

i) stop processing the SIP INVITE request; and

ii) return a SIP 302 (Moved Temporarily) response with:

A) a Contact header field set to the PSI of the MCVideo server hosting the TGI; and

B) an application/vnd.3gpp.mcvideo-info MIME body with a <mcvideo-request-uri> element set to the TGI; and

c) if hosting the TGI, and the call to the temporary group is in progress, shall:

i) associate the MCVideo ID of the calling user with the temporary group call;

ii) interact with the media plane as specified in 3GPP TS 24.581 [5]; and

iii) exit this clause;

d) if hosting the TGI and the call to the temporary group is not in progress, shall subscribe to the "xcap-diff" event-package for the group document of the TGI as specified in 3GPP TS 24.481 [24], if not already subscribed;

e) upon receipt of a SIP 404 (Not Found) response as a result of attempting to subscribing to the "xcap-diff" event-package for the group document(s) for the MCVideo group ID(s) associated to the TGI as specified in 3GPP TS 24.481 [24], shall send the SIP 404 (Not Found) response with the warning text set to "113 group document does not exist" in a Warning header field as specified in clause 4.4 and shall not continue with the rest of the steps;

f) upon receipt of any other SIP 4xx, SIP 5xx or SIP 6xx response as a result of attempting to subscribe to the "xcap-diff" event-package for the group document(s) for the MCVideo group ID(s) associated to the TGI as specified in 3GPP TS 24.481 [24], shall send the SIP final response with the warning text set to "114 unable to retrieve group document" in a Warning header field as specified in clause 4.4 and shall not continue with the rest of the steps;

g) upon receipt of a notification containing the group document for the TGI, or if the group document is already cached, shall obtain the MCVideo IDs of the constituent groups by accessing the <constituent-MCVideo-group-ID> element(s) of the group document for the TGI; and

h) if:

i) the <associated-group-id> element with an MCVideo ID is included in the application/vnd.3gpp.mcvideo-info MIME body;

ii) the MCVideo ID is present in one of the instances of the <constituent-MCVideo-group-ID> element in the group document; and

iii) the group is not homed by the MCVideo server;

shall exit this procedure and authorize the MCVideo user at a non-controlling MCVideo function of a MCVideo group;

NOTE 4: The non-controlling function of an MCVideo group can be located in the primary MCVideo system or a partner MCVideo system.

7) for the MCVideo ID of each constituent group, shall follow the actions below in step 8); and

8) if the SIP INVITE request is a "SIP INVITE request for controlling function of an MCVideo group" and the group document for the group identity in the <mcvideo-request-uri> element of the application/vnd.3gpp.mcvideo-info MIME body of the SIP INVITE request retrieved is associated with a TGI and if:

a) the application/vnd.3gpp.mcvideo-info+xml includes an <associated-group-id> element, determine if the constituent MCVideo group identified by the <associated-group-id> element is homed at the MCVideo server and if that is the case:

i) shall subscribe to the "xcap-diff" event-package for the group document for the constituent MCVideo group ID as specified in 3GPP TS 24.481 [24], if not already subscribed;

ii) upon receipt of a SIP 404 (Not Found) response as a result of attempting to subscribing to the "xcap-diff" event-package for the group document for the MCVideo group ID associated to the TGI as specified in 3GPP TS 24.481 [24], shall send the SIP 404 (Not Found) response with the warning text set to "113 group document does not exist" in a Warning header field as specified in clause 4.4 and shall not continue with the rest of the steps; and

iii) upon receipt of any other SIP 4xx, SIP 5xx or SIP 6xx response as a result of attempting to subscribe to the "xcap-diff" event-package for the group document for the MCVideo group ID associated to the TGI as specified in 3GPP TS 24.481 [24], shall send the SIP final response with the warning text set to "114 unable to retrieve group document" in a Warning header field as specified in clause 4.4 and shall not continue with the rest of the steps; and

b) the application/vnd.3gpp.mcvideo-info+xml does not include an <associated-group-id> element, for each MCVideo ID contained in each instance of the <constituent-MCVideo-group-ID> element of the group document for the TGI:

i) shall determine if the group identity is homed on the controlling MCVideo function of an MCVideo group or homed on a non-controlling MCVideo function of an MCVideo group;

NOTE 5: The non-controlling function of an MCVideo group can be located in the primary MCVideo system or a partner MCVideo system.

ii) for each constituent MCVideo group ID that is homed on the controlling MCVideo function of an MCVideo group shall subscribe to the "xcap-diff" event-package for the group document for the constituent MCVideo group ID as specified in 3GPP TS 24.481 [24], if not already subscribed;

NOTE 6: As soon as an error occurs when subscribing for a group document of a constituent MCVideo group ID, the controlling MCVideo function of an MCVideo group stops subscribing to any further group documents of constituent MCVideo group IDs.

iii) upon receipt of a SIP 404 (Not Found) response as a result of attempting to subscribing to the "xcap-diff" event-package for the group document(s) for the MCVideo group ID(s) associated to the TGI as specified in 3GPP TS 24.481 [24], shall send the SIP 404 (Not Found) response with the warning text set to "113 group document does not exist" in a Warning header field as specified in clause 4.4 and shall not continue with the rest of the steps;

iv) upon receipt of any other SIP 4xx, SIP 5xx or SIP 6xx response as a result of attempting to subscribe to the "xcap-diff" event-package for the group document(s) for the MCVideo group ID(s) associated to the TGI as specified in 3GPP TS 24.481 [24], shall send the SIP final response with the warning text set to "114 unable to retrieve group document" in a Warning header field as specified in clause 4.4 and shall not continue with the rest of the steps; and

c) when all group document(s) for all constituent groups homed at the MCVideo server have been retrieved and if the MCVideo ID of the user identified in the <mcvideo-calling-user-id> element of the application/vnd.3gpp.mcvideo-info+xml MIME body:

i) is a member of one the retrieved constituent MCVideo groups, received, shall exit this procedure; and

ii) is not a member of any of the retrieved constituent group documents, shall determine that the MCVideo ID of the MCVideo user needs to be authorised by a non-controlling MCVideo function of an MCVideo group and exit this procedure.

6.3.5.3 Rules for joining a group session

The following conditions shall be met for the controlling MCVideo function to allow an MCVideo user to join an existing group session:

1) an <entry> element exists in the <list> element of the group document for the MCVideo user;

2) a <rule> exists in the group document with:

a) the <is-list-member> element of the <conditions> element present and with the <join-handling> element of the corresponding <actions> element set to "true"; or

b) the <identity> element of the <conditions> element containing an entry matching the MCVideo ID in the SIP INVITE request, with the <join-handling> element of the <actions> element set to "true"; and

3) if the <supported-services> element is present, it contains:

a) a <service> element containing an "enabler" attribute which is set to the MCVideo ICSI; and

b) if a <group-media> element is present, an entry set to "MCVideo video media".

If all of the above conditions are not met, then the MCVideo user shall not be authorised to join the group session.

6.3.5.4 Rules for initiating a prearranged group session

The following conditions shall be met for a controlling MCVideo function or non-controlling MCVideo function of an MCVideo group to initiate a group session for the requesting MCVideo user:

1) if the <on-network-regrouped> element in the <list-service> element is present in the group document and if the MCVideo ID indicated in the incoming INVITE request is the same as the MCVideo group ID in the "temporary-MCVideo-group-ID" attribute of the <on-network-regrouped> element; or

2) if the <on-network-regrouped> element in the <list-service> element of the MCVideo group document is not present in the group document;

and:

1) an <entry> element exists in the <list> element of the group document for the MCVideo user;

2) a <rule> exists in the group document with:

   a) the <is-list-member> element of the <conditions> element present and with the <allow-initiate-conference> element of the corresponding <actions> element set to "true"; or

   b) the <identity> element of the <conditions> element containing an entry matching the MCVideo ID in the SIP INVITE request, with the <allow-initiate-conference> element of the <actions> element is set to "true"; and

3) if the <supported-services> element is present, it contains:

   a) a <service> element containing an "enabler" attribute which is set to the MCVideo ICSI; and

   b) if a <group-media> element is present, an entry set to "MCVideo video media".

then the MCVideo user shall not be authorised to initiate the group session.

6.3.5.5 Determining the group members to invite

The MCVideo server shall only invite affiliated group members to a group session. The MCVideo server determines the affiliated members from the entries contained in the <list> element of the group document by following the procedures specified in clause 6.3.6.

If the group is not a regroup based on a preconfigured group, the MCVideo server determines the affiliated members from the entries contained in the <list> element of the group document by following the procedures specified in clause 6.3.6.

If the group is a regroup based on a preconfigured group, the MCVideo server determines the affiliated members from the list of users that was stored during successful processing of the creation of the regroup per clause 21 by following the procedures specified in clause 6.3.6.

NOTE 1: The term "affiliated group members" used above also includes those members that are implicitly affiliated by the controlling MCVideo function.

If the number of members of the MCVideo group exceeds the value contained in the <on-network-max-participant-count> element the MCVideo server shall invite only <on-network-max-participant-count> members from the list, but shall prioritise inviting those group members to the group session that have an <entry> element in the <list> element with a <on-network-required> element present.

NOTE 2: The <on-network-max-participant-count> element indicates the maximum number of participants allowed in the group session. The <on-network-required> element is used to determine which group members need to acknowledge the group call before audio transmission can proceed.

NOTE 3: Other requirements for how the controlling MCVideo function selects which of the <on-network-max-participant-count> members to invite is outside the scope of this specification.

NOTE 4: It is assumed that validation checks are performed at the group management server to ensure that the <on-network-max-participant-count> cannot be less than the number of <on-network-required> users.

6.3.6 Affiliation check

The MCVideo server checks if an MCVideo user is affiliated to an MCVideo group at an MCVideo client by following the procedures specified below:

1. the MCVideo server shall find the applicable MCVideo group information entry as an MCVideo group information entry of the list of MCVideo group information entries described in clause 8.2.2.3.2, such that the MCVideo group ID of the MCVideo group information entry is equal to the MCVideo group identity of the MCVideo group. If the applicable MCVideo group information entry cannot be found, then the MCVideo server

shall determine that the MCVideo user is not affiliated to the MCVideo group at the MCVideo client and the MCVideo server shall not continue with rest of the steps;

2. the MCVideo server shall find the applicable MCVideo user information entry as an MCVideo user information entry of the list of MCVideo user information entries of the applicable MCVideo group information entry, such that the MCVideo ID of the MCVideo user information entry is equal to the MCVideo ID of the MCVideo user. If the applicable MCVideo user information entry cannot be found, then the MCVideo server shall determine that the MCVideo user is not affiliated to the MCVideo group at the MCVideo client and the MCVideo server shall not continue with rest of the steps;

3. if the MCVideo client ID of the MCVideo client cannot be found in the list of MCVideo client information entries of the applicable MCVideo user information entry, then the MCVideo server shall determine that the MCVideo user is not affiliated to the MCVideo group at the MCVideo client and the MCVideo server shall not continue with rest of the steps;

NOTE: the MCVideo client ID of the originating MCVideo client can be found in the <mcvideo-client-id> element contained in the application/vnd.3gpp.mcvideo-info+xml MIME body of a SIP INVITE request, SIP REFER request or SIP MESSAGE request originated by the MCVideo client.

4. if the expiration time of the applicable MCVideo user information entry has been reached, then the MCVideo server shall determine that the MCVideo user is not affiliated to the MCVideo group at the MCVideo client and the MCVideo server shall not continue with rest of the steps; and

5. the MCVideo server shall determine that the MCVideo user is affiliated to the MCVideo group at the MCVideo client.

6.3.7 Error handling

6.3.7.1 Public service identity does not exist

Upon receiving a request that includes the Request-URI set to a public service identity that is not allocated in the participating or the controlling MCVideo function, the participating or the controlling MCVideo function shall return a SIP 404 (Not Found) response.

6.3.8 Session release policy

6.3.8.1 Session release policy for group call

If:

1) the call is a pre-arranged group call and if the controlling MCVideo function receives an indication from the media plane that the T4 (Inactivity) timer specified in 3GPP TS 24.581 [5] expired;

2) there are only one or no participants in the MCVideo session;

3) if the call is a pre-arranged group call and if it is according to local policy, the initiator of the group call leaves the MCVideo session;

4) the minimum number of affiliated MCVideo group members is not present; or

5) timer TNG3 (group call timer) expires;

the controlling MCVideo function shall release the MCVideo session for the group call.

6.3.8.2 Session release policy for private call

If:

1) the controlling MCVideo function receives an indication from the media plane that the T4 (Inactivity) timer specified in 3GPP TS 24.581 [5] expired;

2) the MCVideo session has lasted longer than the maximum of duration of private call; or

3) there are only one or no participants in the MCVideo session;

the controlling MCVideo function shall release the MCVideo session for a private call.

6.4 Implicit transmit media request

An initial SIP INVITE request fulfilling the following criteria shall be regarded by the MCVideo server as an implicit transmit media request by the originating MCVideo client when the MCVideo client:

1) initiates an MCVideo session that is not used for a remotely initiated ambient viewing call; and

2) includes the "mc_implicit_request" 'fmtp' attribute in the associated UDP stream for the transmission control in the SDP offer/answer as specified in 3GPP TS 24.581 [5] clause 12.

An initial SIP INVITE request fulfilling the following criteria shall be regarded by the MCVideo server as an implicit request to grant permission to send media to the terminating MCVideo client when the originating MCVideo client:

1) initiates an MCVideo session that is a remotely initiated ambient viewing call; and

2) includes the "mc_implicit_request" 'fmtp' attribute in the associated UDP stream for the transmission control in the SDP offer/answer as specified in 3GPP TS 24.581 [5] clause 12.

A SIP re-INVITE request fulfilling the following criteria shall be regarded by the MCVideo server as an implicit transmit media request when the MCVideo client:

1) performs an upgrade of:

   a) an MCVideo group call to an emergency MCVideo group call;

   b) an MCVideo group call to an imminent peril MCVideo group call; and

2) includes the "mc_implicit_request" 'fmtp' attribute in the associated UDP stream for the transmission control in the SDP offer/answer as specified in 3GPP TS 24.581 [5] clause 12.

In all other cases the SIP (re-)INVITE request shall be regarded as received without an implicit transmit media request.

6.5 Handling of MIME bodies in a SIP message

The MCVideo client and the MCVideo server shall support several MIME bodies in SIP request and SIP responses.

When the MCVideo client or the MCVideo server sends a SIP message and the SIP message contains more than one MIME body, the MCVideo client or the MCVideo server:

1) shall, as specified in IETF RFC 2046 [65], include one Content-Type header field with the value set to multipart/mixed and with a boundary delimiter parameter set to any chosen value;

2) for each MIME body:

   a) shall insert the boundary delimiter;

   b) shall insert the Content-Type header field with the MIME type of the MIME body; and

   c) shall insert the content of the MIME body;

3) shall insert a final boundary delimiter; and

4) if an SDP offer or an SDP answer is one of the MIME bodies, shall insert the application/sdp MIME body as the first MIME body.

NOTE: The reason for inserting the application/sdp MIME body as the first body is that if a functional entity in the underlying SIP core does not understand multiple MIME bodies, the functional entity will ignore all MIME bodies with the exception of the first MIME body. The order of multiple MCVideo application MIME bodies in a SIP message is irrelevant.

When the MCVideo client or the MCVideo server sends a SIP message and the SIP message contains only one MIME body, the MCVideo client or the MCVideo server:

1) shall include a Content-Type header field set to the MIME type of the MIME body; and

2) shall insert the content of the MIME body.

6.6 Confidentiality and Integrity Protection

6.6.1 General

6.6.1.1 Applicability and exclusions

The procedures in clauses 6.6 apply in general to all procedures described in clause 8, clause 9, clause 10 and clause 11 with the exception that the confidentiality and integrity protection procedures for the registration and service authorisation procedures are described in clause 7.

6.6.1.2 Performing XML content encryption

Whenever the MCVideo UE includes XML elements or attributes pertaining to the data specified in clause 4.8 in SIP requests or SIP responses, the MCVideo UE shall perform the procedures in clause 6.6.2.3.1.

Whenever the MCVideo server includes XML elements or attributes pertaining to the data specified in clause 4.8 in SIP requests or SIP responses, the MCVideo server shall perform the procedures in clause 6.6.2.3.2, with the exception that when the MCVideo server receives a SIP request with XML elements or attributes in an MIME body that need to be copied from the incoming SIP request to an outgoing SIP request without modification, the MCVideo server shall perform the procedures specified in clause 6.6.2.5.

NOTE: The procedures in clause 6.6.2.3.1 and clause 6.6.2.3.2 first determine (by referring to configuration) if confidentiality protection is enabled and then call the necessary procedures to encrypt the contents of the XML elements if confidentiality protection is enabled.

6.6.1.3 Performing integrity protection on an XML body

The functional entity shall perform the procedures in the clause just prior to sending a SIP request or SIP response.

1) The MCVideo UE shall perform the procedures in clause 6.6.3.3.1; and

2) The MCVideo server shall perform the procedures in clause 6.6.3.3.2.

NOTE: The procedures in clause 6.6.3.3.1 and clause 6.6.3.3.2 first determine if integrity protection of XML MIME bodies is required and then calls the necessary procedures to integrity protect each XML MIME body if integrity protection is required. Each XML MIME body has its own signature.

6.6.1.4 Verifying integrity of an XML body and decrypting XML elements

Whenever the functional entity (i.e. MCVideo UE or MCVideo server) receives a SIP request or a SIP response, the functional entity shall perform the following procedures before performing any other procedures.

1) The functional entity shall determine if integrity protection has been applied to an XML MIME body by following the procedures in clause 6.6.3.4.1 and if integrity protection has been applied:

   a) shall use the keying information described in clause 6.6.3.2 and the procedures described in clause 6.6.3.4.2 to verify the integrity of the XML MIME body; and

   b) if the integrity protection checks fail shall not perform any further procedures in this clause;

2) The functional entity shall determine whether confidentiality protection has been applied to XML elements in XML MIME bodies in a SIP request or SIP response, pertaining to the data specified in clause 4.8, by following the procedures in clause 6.6.2.4.1, and if confidentiality protection has been applied:

a) shall use the keying information described in clause 6.6.2.2 along with the procedures described in clause 6.6.2.4.2 to decrypt the received values; and

b) if any decryption procedures fail, shall not perform any further procedures in this clause.

6.6.2 Confidentiality Protection

6.6.2.1 General

In general, confidentiality protection is applied to specific XML elements and attributes in XML MIME bodies in SIP requests and responses as specified in clause 4.8.

Configuration for applying confidentiality protection is not selective to a specific XML element or attribute of the data described in clause 4.8. If configuration for confidentiality protection is turned on, then all XML elements and attributes described in clause 4.8 are confidentiality protected. If configuration for confidentiality protection is turned off, then no XML content in SIP requests and SIP responses are confidentiality protected.

6.6.2.2 Keys used in confidentiality protection procedures

Confidentiality protection uses an XPK to encrypt the data which (depending on who is the sender and who is the receiver of the encrypted information) can be a CSK or an SPK as specified in clause 4.8. An XPK-ID (CSK-ID/SPK-ID) is used to key the XPK (CSK/SPK). It is assumed that before the procedures in this clause are called, the CSK/CSK-ID and/or SPK/SPK-ID are available on the sender and recipient of the encrypted content as described in clause 4.8.

The procedures in clause 6.6.2.3 and clause 6.6.2.4 are used with a XPK equal to the CSK and a XPK-ID equal to the CSK-ID in the following circumstances as described in 3GPP TS 33.180 [8]:

1) MCVideo client sends confidentiality protected content to an MCVideo server; and

2) MCVideo server sends confidentiality protected content to an MCVideo client.

The procedure in clause 6.6.2.3 and clause 6.6.2.4 are used with a XPK equal to the SPK and a XPK-ID equal to the SPK-ID in the following circumstances as described in 3GPP TS 33.180 [8]:

1) MCVideo server sends confidentiality protected content to an MCVideo server in the same domain; and

2) MCVideo server sends confidentiality protected content to an MCVideo server in another domain.

6.6.2.3 Procedures for sending confidentiality protected content

6.6.2.3.1 MCVideo client

If the <confidentiality-protection> element in the Service Configuration document as specified in 3GPP TS 24.484 [25] is set to "true" or no <confidentiality-protection> element is present in the Service Configuration document, then sending confidentiality protected content from the MCVideo client to the MCVideo server is enabled, and the MCVideo client:

1) shall use the appropriate keying information specified in clause 6.6.2.2;

2) shall perform the procedures in clause 6.6.2.3.3 to confidentiality protect XML elements containing the content described in clause 4.8; and

3) shall perform the procedures in clause 6.6.2.3.4 to confidentiality protect URIs in XML attributes for URIs described in clause 4.8.

If the <confidentiality-protection> element in the Service Configuration document as specified in 3GPP TS 24.484 [25] is set to "false", then sending confidentiality protected content from the MCVideo client to the MCVideo server is disabled, and content is included in XML elements and attributes without encryption.

6.6.2.3.2 MCVideo server

If the <confidentiality-protection> element in the Service Configuration document as specified in 3GPP TS 24.484 [25] is set to "true" or no <confidentiality-protection> element is present in the Service Configuration document, then sending confidentiality protected content from the MCVideo server to the MCVideo client is enabled. If the <allow-signalling-protection> element of the <protection-between-mcvideo-servers> element is set to "true" in the Service Configuration document as specified in 3GPP TS 24.484 [25] or no <allow-signalling-protection> element is present in the Service Configuration document, then sending confidentiality protected content between MCVideo servers is enabled.

When sending confidentiality protected content, the MCVideo server:

1) shall use the appropriate keying information specified in clause 6.6.2.2;

2) shall perform the procedures in clause 6.6.2.3.3 to confidentiality protect XML elements containing the content described in clause 4.8, and

3) shall perform the procedures in clause 6.6.2.3.4 to confidentiality protect URIs in XML attributes for URIs described in clause 4.8.

If the <confidentiality-protection> element in the Service Configuration document as specified in 3GPP TS 24.484 [25] is set to "false", then sending confidentiality protected content from the MCVideo server to the MCVideo client is disabled, and then content is included in XML elements and attributes without encryption.

If the <allow-signalling-protection> element of the <protection-between-mcvideo-servers> element in the Service Configuration document as specified in 3GPP TS 24.484 [25] is set to "false", then sending confidentiality protected content between MCVideo servers is disabled, and content is included in XML elements and attributes without encryption.

6.6.2.3.3 Content Encryption in XML elements

The following procedures shall be performed by an MCVideo client or an MCVideo server:

1) perform encryption as specified in W3C: "XML Encryption Syntax and Processing Version 1.1", https://www.w3.org/TR/xmlenc-core1/ [45] clause 4.3, using the "AES-128-GCM algorithm HMAC" as the encryption algorithm and the XPK as the key; and

2) follow the semantic for the element of the MIME body as described in Annex F of the present document, to include the encrypted content in the MIME body ensuring that the necessary XML elements required for confidentiality protection are included as specified in 3GPP TS 33.180 [8].

6.6.2.3.4 Attribute URI Encryption

The following procedures shall be performed by an MCVideo client or an MCVideo server:

1) perform encryption as specified in [aes-gcm], using the "AES-128-GCM algorithm HMAC" as the encryption algorithm and the XPK as the key, with a 96 bit randomly selected IV; and

2) replace the URI to be protected in the attribute by a URI constructed as follows:

   a) the URI schema is "sip:";

   b) the first part of the userinfo part is the base64 encoded result of the encryption of the original attribute value;

   c) the string ";iv=" is appended to the result of step b);

   d) the base64 encoding of the IV (section 5 of IETF RFC 4648 [46]) is appended to the result of step c);

   e) the string ";key-id=" is appended to the result of step d);

   f) the base64 encoding of the XPK-ID according to 3GPP 33.180 [8] is appended to the result of step e);

   g) the string ";alg=128-aes-gcm" is appended to the result of step f); and

h) the string "@" followed by the domain name for MC Services confidentiality protection as specified in 3GPP TS 23.003 [47] is appended to the result of step g).

6.6.2.4 Procedures for receiving confidentiality protected content

6.6.2.4.1 Determination of confidentiality protected content

The following procedure is used by the MCVideo client or MCVideo server to determine if an XML element is confidentiality protected.

1) if an XML element contains the <EncryptedData> XML element, then the content of the XML element is confidentiality protected; and

2) if an XML element does not contain the <EncryptedData> XML element, then the content of the XML element is.not confidentiality protected.

The following procedure is used by the MCVideo client or MCVideo server to determine if a URI in the XML attribute is confidentiality protected.

1) if an XML attribute is a URI with the domain name for MC Services confidentiality protection as specified in the 3GPP TS 23.003 [47], then the URI is confidentiality protected; and

2) if an XML attribute is a URI without the domain name for MC Services confidentiality protection as specified in the 3GPP TS 23.003 [47], then the URI is not confidentiality protected.

6.6.2.4.2 Decrypting confidentiality protected content in XML elements

The following procedure shall be performed by an MCVideo client or an MCVideo server to decrypt an individual XML element that has a type of "encrypted" within an XML MIME body:

1) if the <EncryptedData> XML element or any of its sub-elements as described in 3GPP TS 33.180 [8] are not present in the MIME body then send a SIP 403 (Forbidden) response with the warning text set to "140 unable to decrypt XML content" in a Warning header field as specified in clause 4.4, and exit this procedure. Otherwise continue with the rest of the steps;

2) perform decryption on the <EncryptedData> element as specified in W3C: "XML Encryption Syntax and Processing Version 1.1", https://www.w3.org/TR/xmlenc-core1/ [45] clause 4.4 to decrypt the contents of the <CipherValue> element contained within the <CipherData> element;

3) if the decryption procedure fails, then send a SIP 403 (Forbidden) response with the warning text set to "140 unable to decrypt XML content" in a Warning header field as specified in clause 4.4. Otherwise continue with the rest of the steps; and

4) return success of this procedure together with the decrypted XML element.

6.6.2.4.3 Decrypting confidentiality protected URIs in XML attributes

The following procedure shall be performed by an MCVideo client or an MCVideo server to decrypt a URI in an attribute in a XML document:

1) the value between ";iv=" and the next ";" provides the base64 encoded value of the 96 bit IV and the value between ";=key-id" and the next ";" defines the key which has been used for encryption, i.e. "CSK" or "SPK"; and

2) the original URI is obtained by decrypting the base64 encoded string between the "sip:" URI prefix and the next ";" using the "AES-128-GCM algorithm HMAC" as the decryption algorithm with IV and key as determined in step 1). This value replaces the encrypted URI as the value of the XML attribute.

6.6.2.5 MCVideo server copying received XML content

The following procedure is executed when an MCVideo server receives a SIP request containing XML MIME bodies, where the content needs to be copied from the incoming SIP request to the outgoing SIP request.

The MCVideo server:

1) shall copy the XML elements from the XML MIME body of the incoming SIP request that do not contain a <EncryptedData> XML element, to the same XML body in the outgoing SIP request;

2) for each encrypted XML element in the XML MIME body of the incoming SIP request as determined by clause 6.6.2.4.1:

   a) shall use the keying information described in clause 6.6.2.2 to decrypt the content within the XML element by following the procedures specified in clause 6.6.2.4.2, and shall continue with the steps below if the encrypted XML element was successfully decrypted;

   b) if confidentiality protection is enabled as specified in clause 6.6.2.3.2, then for each decrypted XML element:

      i) shall re-encrypt the content within the XML element using the keying information described in clause 6.6.2.2 and by following the procedures specified in clause 6.6.2.3.3; and

      ii) shall include the re-encrypted content into the same XML MIME body of the outgoing SIP request; and

   c) if confidentiality protection is disabled as specified in clause 6.6.2.3.2, shall include the decrypted content in the same XML MIME body of the outgoing SIP request.

3) for each encrypted XML URI attribute in the XML MIME body of the incoming SIP request as determined by clause 6.6.2.4.1:

   a) shall use the keying information described in clause 6.6.2.2 to decrypt the URI value of the XML attribute by following the procedures specified in clause 6.6.2.4.3, and shall continue with the steps below if the encrypted XML attribute value was successfully decrypted;

   b) if confidentiality protection is enabled as specified in clause 6.6.2.3.2, then for each decrypted XML element:

      i) shall re-encrypt the URI value of the XML attribute using the keying information described in clause 6.6.2.2 and by following the procedures specified in clause 6.6.2.3.4; and

      ii) shall include the re-encrypted attribute value into the same XML MIME body of the outgoing SIP request; and

   c) if confidentiality protection is disabled as specified in clause 6.6.2.3.2, shall include the decrypted value in the same XML MIME body of the outgoing SIP request.

6.6.3 Integrity Protection of XML documents

6.6.3.1 General

Integrity protection can be applied to a whole XML MIME body. When integrity protection is enabled, all XML MIME bodies transported in SIP requests and responses are integrity protected. The following XML MIME bodies used in the present specification in SIP signalling can be integrity protected:

- application/vnd.3gpp.mcvideo-info+xml;
- application/vnd.3gpp.mcvideo-location-info+xml;
- application/vnd.3gpp.mcvideo-affiliation-command+xml;
- application/conference-info+xml;
- application/pidf+xml; and
- application/xcap-diff+xml.

If integrity protection is enabled, and one or more of the XML MIME bodies complying to the types listed above are included in a SIP request or SIP response, then a MIME body of type application/vnd.3gpp.mcptt-signed+xml specified in 3GPP TS 24.379 [40] is included in the SIP request or SIP response containing one or more signatures pointing to those XML MIME bodies as illustrated in figure 6.6.3.1-1.

In order to integrity protect the XML MIME bodies listed above in this clause in SIP requests and SIP responses, the MCVideo client and MCVideo server shall for each MIME body, include the Content-ID header field as specified in IETF RFC 2045 [48] containing a Content-ID ("cid") Uniform Resource Locator (URL) as specified in IETF RFC 2392 [49].

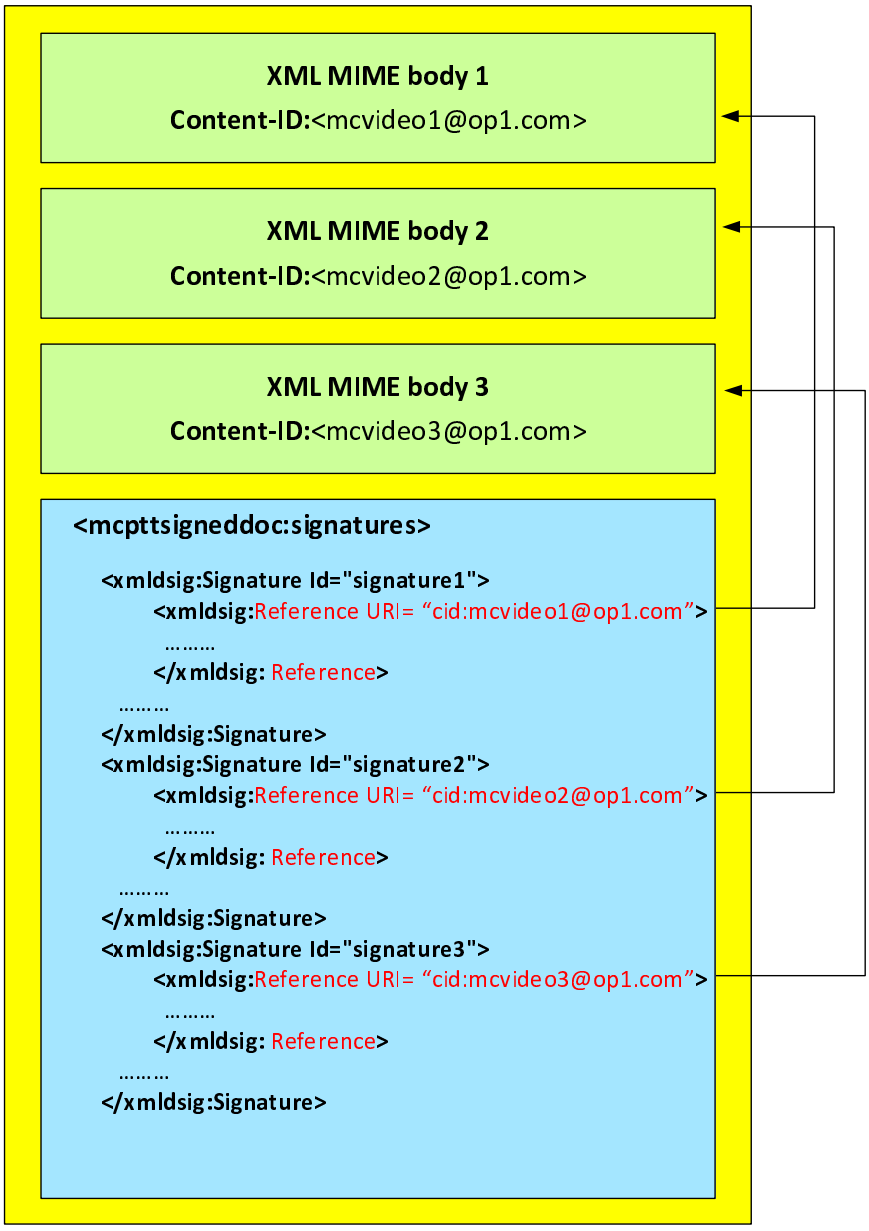

Figure 6.6.3.1-1: Integrity Protection of XML MIME bodies in SIP requests and SIP responses

Each MIME body that is integrity protected is assigned a unique signature.

Configuration for applying integrity protection is not selective to a specific MIME body. If configuration for integrity protection is turned on, then all XML MIME bodies in SIP requests and responses are integrity protected. If configuration for integrity protection is turned off, then no XML MIME bodies in SIP requests and SIP responses are integrity protected.

6.6.3.2 Keys used in integrity protection procedures

Integrity protection uses an XPK to sign the data which (depending on who is the sender and who is the receiver of the signed information) can be a CSK or an SPK as specified in clause 4.8. An XPK-ID (CSK-ID/SPK-ID) is used to key the XPK (CSK/SPK). It is assumed that before the procedures in clause 6.6.3.3 and clause 6.6.3.4 are called, the CSK/CSK-ID and/or SPK/SPK-ID are available on the sender and recipient of the integrity protected content, as described in clause 4.8.

The procedures in clause 6.6.3.3 and clause 6.6.3.4 shall be used with a XPK equal to the CSK and a XPK-ID equal to the CSK-ID in the following circumstances as described in 3GPP TS 33.180 [8]:

1) MCVideo client sends integrity protected content to an MCVideo server; and

2) MCVideo server sends integrity protected content to an MCVideo client.

The procedure in clause 6.6.3.3 and clause 6.6.3.4 shall be used with a XPK equal to the SPK and a XPK-ID equal to the SPK-ID in the following circumstances as described in 3GPP TS 33.180 [8]:

1) MCVideo server sends integrity protected content to an MCVideo server in the same domain; and

2) MCVideo server sends integrity protected content to an MCVideo server in another domain.

6.6.3.3 Sending integrity protected content

6.6.3.3.1 MCVideo client

If the <integrity-protection> element in the Service Configuration document as specified in 3GPP TS 24.484 [25] is set to "true" or no <integrity-protection> element is present in the Service Configuration document, then sending integrity protected content from the MCVideo client to the MCVideo server is enabled, and the MCVideo client shall use the appropriate keying information specified in clause 6.6.3.2 and shall perform the procedures in clause 6.6.3.3.3 to integrity protect XML MIME bodies.

NOTE: Each XML MIME body is integrity protected separately.

If the <integrity-protection> element in the Service Configuration document as specified in 3GPP TS 24.484 [25] is set to "false", then sending integrity protected content from the MCVideo client to the MCVideo server is disabled, and all XML MIME bodies are sent without integrity protection.

6.6.3.3.2 MCVideo server

If the <integrity-protection> element in the Service Configuration document as specified in 3GPP TS 24.484 [25] is set to "true", or no <integrity-protection> element is present in the Service Configuration document, then sending integrity protected content from the MCVideo server to the MCVideo client is enabled. If the <allow-signalling-protection> element of the <protection-between-mcvideo-servers> element is set to "true" in the Service Configuration document as specified in 3GPP TS 24.484 [25] or no <allow-signalling-protection> element is present in the Service Configuration document, then sending integrity protected content between MCVideo servers is enabled.

When sending integrity protected content, the MCVideo server shall use the appropriate keying information specified in clause 6.6.3.2 and shall perform the procedures in clause 6.6.3.3.3 to integrity protect XML MIME bodies.

NOTE: Each XML MIME body is integrity protected separately.

If the <integrity-protection> element in the Service Configuration document as specified in 3GPP TS 24.484 [25] is set to "false", then sending integrity protected content from the MCVideo server to the MCVideo client is disabled, and all XML MIME bodies are sent without integrity protection.

If the <allow-signalling-protection> element of the <protection-between-mcvideo-servers> element in the Service Configuration document as specified in 3GPP TS 24.484 [25] is set to "false", then sending integrity protected content between MCVideo servers is disabled, and content is included in XML elements without encryption.

6.6.3.3.3 Integrity protection procedure

The following procedure shall be performed by the MCVideo client and MCVideo server to integrity protect the XML bodies defined by the MIME types listed in clause 6.6.3.1:

1) include a Content-Type header field set to "application/vnd.3gpp.mcptt-signed+xml" defined in 3GPP TS 24.379 [40];

2) for each of the MIME types defined in clause 6.6.3.1 where the content defined by these MIME types is to be integrity protected:

a) perform reference generation as specified in W3C: "XML Signature Syntax and Processing (Second Edition)", http://www.w3.org/TR/xmldsig-core [50] clause 3.1.1 using the SHA256 algorithm to produce a hash of the MIME body and continue with the procedures below if reference generation is successful;

b) perform signature generation as specified in W3C: "XML Signature Syntax and Processing (Second Edition)", http://www.w3.org/TR/xmldsig-core [50] clause 3.1.2 using the HMAC-SHA256 signature method and the XPK as the key and continue with the procedures below if signature generation is successful; and

3) follow the schema defined in Annex F.6.2 and the semantic described in Annex F.6.3 to create the application/vnd.3gpp.mcptt-signed+xml MIME body, defined in 3GPP TS 24.379 [40] containing signatures referring to the XML MIME bodies included in the SIP request or SIP response.

6.6.3.4 Receiving integrity protected content

6.6.3.4.1 Determination of integrity protected content

The following procedure is used by the MCVideo client or MCVideo server to determine if an XML MIME body is integrity protected.

1) if the <Signature> XML element is not present in the XML MIME body, then the content is not integrity protected; and

2) if the <Signature> XML element is present in the XML MIME body, then the content is integrity protected.

6.6.3.4.2 Verification of integrity protected content

The following procedure is used by the MCVideo client or MCVideo server to verify the integrity of an XML MIME body:

1) if the required sub-elements of the <Signature> as described in 3GPP TS 33.180 [8] are not present in the MIME body and if not present, are not known to the sender and recipient by other means, then the integrity protection procedure fails and exit this procedure. Otherwise continue with the rest of the steps;

2) perform reference validation on the <Reference> element as specified in W3C: "XML Signature Syntax and Processing (Second Edition)", http://www.w3.org/TR/xmldsig-core [50] clause 3.2.1;

3) if reference validation fails, then send a SIP 403 (Forbidden) response towards the functional entity with the warning text set to: "139 integrity protection check failed" in a Warning header field as specified in clause 4.4, and do not continue with the rest of the steps in this clause;

4) obtain the XPK using the XPK-ID in the received XML body and use it to perform signature validation of the value of the <SignatureValue> element as specified in W3C: "XML Signature Syntax and Processing (Second Edition)", http://www.w3.org/TR/xmldsig-core [50] clause 3.2.2;

5) if signature validation fails, then send a SIP 403 (Forbidden) response towards the functional entity with the warning text set to: "139 integrity protection check failed" in a Warning header field as specified in clause 4.4, and do not continue with the rest of the steps in this clause; and

6) return success of the integrity protection of the XML document passes the integrity protection procedure.

6.7 Priority sharing

The participating MCVideo function shall enable or disable priority sharing as specified in 3GPP TS 24.229 [11].

6.8 Support for multiple devices

An MCVideo user may be authorized to use the MCVideo service from multiple MCVideo clients as per the procedure in clause 7.

If an MCVideo server receives a service authorization request for an MCVideo user who is previously MCVideo service authorized on another MCVideo client, then the MCVideo server shall process this service authorization request as described in clause 7. In the MCVideo service authorization response to the MCVideo user, the MCVideo server shall also indicate that the MCVideo user is already MCVideo service authorized from another MCVideo client.

6.9 Procedures at the MCVideo gateway

6.9.1 General

As described in clause 5.5, the MCVideo gateway servers are inserted in the path between MCVideo functions that reside in MCVideo systems from different trust domains.

This clause specifies the behavior of an MCVideo gateway server that acts as an exit point from an MCVideo system or as an entry point in an MCVideo system.

Local policies enforcement covers a wide variety of actions that are left to implementation. An example of local policies enforcement is given in clause 6.9.4.

6.9.2 MCVideo gateway server acting as an exit point from an MCVideo system

When acting as an exit point from a local MCVideo system to an interconnected MCVideo system, the MCVideo gateway server receives SIP requests and SIP responses intended for the controlling, non-controlling or participating function in the interconnected MCVideo system.

When receiving an outgoing SIP message, the MCVideo gateway server acting as an exit point:

1) shall identify the MCVideo system identity of the interconnected MCVideo system from the information elements in the outgoing SIP message, e.g. Request-URI;

2) may enforce local policy, and if local policy enforcement results in rejecting a SIP request (e.g. not having a mutual aid relationship), the MCVideo gateway shall reject the request by sending back a SIP 403 (Forbidden) response including a warning text "1xx service not authorized with the interconnected system", and the MCVideo gateway server shall not continue with the rest of the steps;

3) may replace in the outgoing SIP message any addressing information linked to the local MCVideo system topology with its own addressing information. This includes;

   a) the P-Asserted-Identity header field may be set to the MCVideo gateway server's own URI; and

   b) the Request-URI may be set to the public service identity of the targeted function in the interconnected MCVideo system, or to the URI of the MCVideo gateway server that acts as an entry point in the interconnected MCVideo system; and

NOTE: How the MCVideo gateway server determines the public service identity of the targeted MCVideo function in the interconnected MCVideo system or the URI of the MCVideo gateway server in the interconnected MCVideo system is out of the scope of the present document.

4) shall forward the outgoing SIP message according to 3GPP TS 24.229 [4].

6.9.3 MCVideo gateway server acting as an entry point in an MCVideo system

When acting as an entry point in an MCVideo system from an interconnected MCVideo system, the MCVideo gateway receives SIP requests and SIP responses intended for the controlling, non-controlling or participating function in the local MCVideo system.

When receiving an incoming SIP message, the MCVideo gateway server acting as an entry point:

1) shall identify the MCVideo system identity of the interconnected MCVideo system from the P-Asserted-Identity header field of the incoming SIP messages;

2) may enforce local policy and. if local policy enforcement results in rejecting a SIP request (e.g. not having a mutual aid relationship), the MCVideo gateway shall reject the request by sending back a SIP 403 (Forbidden) response including a warning text "180 service not authorized by the interconnected system", and the MCVideo gateway server shall not continue with the rest of the steps;

3) should replace in the incoming SIP message its own addressing information with the addressing information of the targeted MCVideo function in the local MCVideo system:

   a) the Request-URI should be set to the public service identity of the targeted MCVideo function in the local MCVideo system; and

NOTE: How the MCVideo gateway server determines the public service identity of the targeted MCVideo function in the local MCVideo system is out of the scope of the present document.

4) shall forward the incoming SIP message according to 3GPP TS 24.229 [4].

6.9.4 Local policies enforcement

Below is one example of local policy enforcement that can be handled by an MCVideo gateway server.

If an MCVideo gateway server acting as an exit point receives a SIP request or a SIP response that contains sensitive information that cannot be exposed to the targeted interconnected system based on local policies but does not prevent the service from being delivered (e.g. a functional alias), the MCVideo gateway server can remove that information from the outgoing SIP message before forwarding it.

7 Registration and service authorisation

7.1 General

This clause describes the procedures for SIP registration and MCVideo service authorization for the MCVideo client and the MCVideo service. The MCVideo UE can use SIP REGISTER or SIP PUBLISH for MCVideo service settings to perform service authorization for MCVideo. The decision which method to use is based on implementation and on availability of an access-token received as outcome of the user authentication procedure as described in 3GPP TS 24.482 [52].

If another MC service client (e.g. MCPTT, MCData) is operating at the same time on the same MC UE as the MCVideo client, then the MCVideo client shares the same SIP registration as the other MC service clients. The SIP REGISTER procedures in this clause are combined with the SIP REGISTER procedures for the other operating MC service clients to create a single SIP REGISTER request. If other MC service clients are already operating when the MCVideo client registers, then a re-registration is performed containing the parameters for the other operating MC services.

Although the access-token can be the same for the MCVideo service as for other MC services when performing service authorization for MCVideo along with other MC services using SIP REGISTER multipart MIME bodies for each MC service are included in the SIP REGISTER request. The MCVideo server can therefore receive multipart MIME bodies in the SIP REGISTER request. Multiple contact addresses (one per MC service client) can be included in a SIP REGISTER request provided they all contain the same IP address and port number (see 3GPP TS 24.229 [4] for further details of including multiple contact addresses in a single SIP REGISTER request).

If the MCVideo client logs off from the MCVideo service but other MC service clients are to remain registered the MC UE performs a re-registration as specified in 3GPP TS 24.229 [4] without the g.3gpp.mcvideo media feature tag and the g.3gpp.icsi-ref media feature tag containing the value of "urn:urn-7:3gpp-service.ims.icsi.mcvideo" in the Contact header field of the SIP REGISTER request but with the parameters for the remaining operating MC service clients.

7.2 MCVideo client procedures

7.2.1 SIP REGISTER request for service authorisation

When the MCVideo client performs SIP registration for service authorization the MCVideo client shall perform the registration procedures as specified in 3GPP TS 24.229 [11].

The MCVideo client shall include the following media feature tags in the Contact header field of the SIP REGISTER request:

1) the g.3gpp.mcvideo media feature tag; and

2) the g.3gpp.icsi-ref media feature tag containing the value of "urn:urn-7:3gpp-service.ims.icsi.mcvideo".

NOTE 1: If the MCVideo client logs off from the MCVideo service but the MCVideo UE remains registered the MCVideo UE performs a re-registration as specified in 3GPP TS 24.229 [11] without both the g.3gpp.mcvideo media feature tag and the g.3gpp.icsi-ref media feature tag containing the value of "urn:urn-7:3gpp-service.ims.icsi.mcvideo" in the Contact header field of the SIP REGISTER request.

If the MCVideo client, upon performing SIP registration:

1) has successfully finished the user authentication procedure as described in 3GPP TS 24.482 [52];

2) has available an access-token;

3) based on implementation decides to use SIP REGISTER for service authorization;

4) confidentiality protection is disabled as specified in clause 6.6.2.3.1; and

5) integrity protection is disabled as specified in clause 6.6.3.3.1;

then the MCVideo client shall include in the SIP REGISTER request an application/vnd.3gpp.mcvideo-info+xml MIME body as defined in Annex F.1 with:

1) the <mcvideo-access-token> element set to the value of the access token received during the user authentication procedures; and

2) the <mcvideo-client-id> element set to the value of the MCVideo client ID of the originating MCVideo client.

NOTE 2: the access-token contains the MCVideo ID of the user.

If the MCVideo client, upon performing SIP registration:

1) has successfully finished the user authentication procedure as described in 3GPP TS 24.482 [52];

2) has an available access-token;

3) based on implementation decides to use SIP REGISTER for service authorization; and

4) either confidentiality protection is enabled as specified in clause 6.6.2.3.1 or integrity protection is enabled as specified in clause 6.6.3.3.1;

then the MCVideo client:

1) shall include an application/mikey MIME body with the CSK as MIKEY-SAKKE I_MESSAGE as specified in 3GPP TS 33.180 [8] in the body of the SIP REGISTER request;

2) if confidentiality protection is enabled as specified in clause 6.6.2.3.1, shall include in the body of the SIP REGISTER request, an application/vnd.3gpp.mcvideo-info+xml MIME body with the following clarifications:

   a) shall encrypt the received access-token using the client server key (CSK) and include the <mcvideo-access-token> element set to the encrypted access-token, as specified in clause 6.6.2.3.3; and

   b) shall encrypt the MCVideo client ID of the originating MCVideo client and include the <mcvideo-client-id> element set to the encrypted MCVideo client ID;

3) if confidentiality protection is disabled as specified in clause 6.6.2.3.1, shall include an application/vnd.3gpp.mcvideo-info+xml MIME body as defined in Annex F.1 with:

   a) the <mcvideo-access-token> element set to the value of the access token received during the user authentication procedures; and

   b) the <mcvideo-client-id> element set to the value of the MCVideo client ID of the originating MCVideo client; and

4) if integrity protection is enabled as specified in clause 6.6.3.3.1, shall use the CSK to integrity protect the application/vnd.3gpp.mcvideo-info+xml MIME body by following the procedures in clause 6.6.3.3.3.

7.2.1AA SIP REGISTER request without service authorisation

When the MCVideo client performs SIP registration without service authorisation the MCVideo client shall perform the registration procedures as specified in 3GPP TS 24.229 [4].

The MCVideo client shall include the following media feature tags in the Contact header field of the SIP REGISTER request:

1) the g.3gpp.mcvideo media feature tag; and

2) the g.3gpp.icsi-ref media feature tag containing the value of "urn:urn-7:3gpp-service.ims.icsi.mcvideo".

NOTE: If the MCVideo client logs off from the MCVideo service but the MCVideo UE remains registered the MCVideo UE performs a re-registration as specified in 3GPP TS 24.229 [4] without both the g.3gpp.mcvideo media feature tag and the g.3gpp.icsi-ref media feature tag containing the value of "urn:urn-7:3gpp-service.ims.icsi.mcvideo" in the Contact header field of the SIP REGISTER request.

If the MCVideo client supports MCVideo service continuity, then the MCVideo client shall follow the IMS registraton procedures for PS to PS service continuity as specified in clause 6.2.2 of 3GPP TS 24.237 [58].

7.2.1A Common SIP PUBLISH procedure

This procedure is only referenced from other procedures.

When populating the SIP PUBLISH request, the MCVideo client shall:

1) shall set the Request-URI to the public service identity identifying the participating MCVideo function serving the MCVideo user;

2) shall include the ICSI value "urn:urn-7:3gpp-service.ims.icsi.mcvideo" (coded as specified in 3GPP TS 24.229 [11]), in a P-Preferred-Service header field according to IETF RFC 6050 [14];

3) shall set the Event header field to the "poc-settings" value; and

4) shall set the Expires header field according to IETF RFC 3903 [12], to 4294967295, if the MCVideo user is not removing the MCVideo service settings, otherwise to remove the MCVideo service settings the MCVideo client shall set the Expires header field to zero.

NOTE 1: 4294967295, which is equal to 2^{32}-1, is the highest value defined for Expires header field in IETF RFC 3261 [15].

NOTE 2: The expiration timer of the MCVideo client service settings is only applicable for the MCVideo client service settings from the MCVideo client that matches the Instance Identifier URN. The expiration timer of MCVideo user service settings is also updated in the MCVideo server if expiration timer of MCVideo client service settings is updated in the MCVideo server.

NOTE 3: Removing the MCVideo service settings by setting the Expires header field to zero, logs off the MCVideo client from the MCVideo service.

7.2.2 SIP PUBLISH request for service authorisation and MCVideo service settings

If based on implementation the MCVideo client decides to use SIP PUBLISH for MCVideo server settings to also perform service authorization and

1) has successfully finished the user authentication procedure as described in 3GPP TS 24.482 [52]; and

2) has available an access-token;

then the MCVideo client:

1) shall perform the procedures in clause 7.2.1A;

2) if confidentiality protection is disabled as specified in clause 6.6.2.3.1 and integrity protection is disabled, shall include in the body of the SIP PUBLISH request, an application/vnd.3gpp.mcvideo-info+xml MIME body as specified in Annex F.1 with the <mcvideo-access-token> element set to the value of the access token received during the user authentication procedures;

3) if either confidentiality protection is enabled as specified in clause 6.6.2.3.1 or integrity protection is enabled as specified in clause 6.6.3.3.1 shall include an application/mikey MIME body with the CSK as MIKEY-SAKKE I_MESSAGE as specified in 3GPP TS 33.180 [8] in the body of the SIP PUBLISH request;

4) if confidentiality protection is enabled as specified in clause 6.6.2.3.1, shall include in the body of the SIP PUBLISH request an application/vnd.3gpp.mcvideo-info+xml MIME body with:

   a) the <mcvideo-access-token> element set to the received access-token encrypted using the CSK, as specified in clause 6.6.2.3.3; and

   b) the <mcvideo-client-id> element set to the encrypted MCVideo client ID of the originating MCVideo client, as specified in clause 6.6.2.3.3;

5) if confidentiality protection is disabled as specified in clause 6.6.2.3.1, shall include in the body of the SIP PUBLISH request, an application/vnd.3gpp.mcvideo-info+xml MIME body as specified in Annex F.1 with:

   a) the <mcvideo-access-token> element set to the value of the access token received during the user authentication procedures in the body of the SIP PUBLISH request; and

   b) the <mcvideo-client-id> element set to the value of the MCVideo client ID of the originating MCVideo client;

6) shall include an application/poc-settings+xml MIME body as defined in 3GPP TS 24.379 [40] containing:

   a) the Answer-Mode Indication setting in the <am-settings> element of the poc-settings event package set to the current answer mode setting ("auto-answer" or "manual-answer") of the MCVideo client according to IETF RFC 4354 [53]; and

   b) the <selected-user-profile-index> element set to the value contained in the "user-profile-index" attribute of the selected MCVideo user profile as defined in 3GPP TS 24.484 [25]; and

7) if integrity protection is enabled as specified in clause 6.6.3.3.1, shall use the CSK to integrity protect the application/vnd.3gpp.mcvideo-info+xml MIME body and application/poc-settings+xml MIME body by following the procedures in clause 6.6.3.3.3.

The MCVideo client shall send the SIP PUBLISH request according to 3GPP TS 24.229 [11].

7.2.3 Sending SIP PUBLISH for MCVideo service settings only

To set, update, remove or refresh the MCVideo service settings, the MCVideo client shall generate a SIP PUBLISH request according 3GPP TS 24.229 [11], IETF RFC 3903 [12] and IETF RFC 4354 [53]. In the SIP PUBLISH request, the MCVideo client:

1) shall perform the procedures in clause 7.2.1A;

2) if confidentiality protection is enabled as specified in clause 6.6.2.3.1, shall include in the body of the SIP PUBLISH request, an application/vnd.3gpp.mcvideo-info+xml MIME body with:

   a) the <mcvideo-request-uri> element set to the targeted MCVideo ID encrypted using the CSK, as specified in clause 6.6.2.3.3; and

   b) the <mcvideo-client-id> element set to the encrypted MCVideo client ID of the originating MCVideo client, as specified in clause 6.6.2.3.3;

3) if confidentiality protection is disabled as specified in clause 6.6.2.3.1, shall include an application/vnd.3gpp.mcvideo-info+xml MIME body as specified in Annex F.1 with:

   a) the <mcvideo-request-uri> set to the cleartext targeted MCVideo ID; and

   b) the <mcvideo-client-id> element set to the value of the MCVideo client ID of the originating MCVideo client;

4) shall include an application/poc-settings+xml MIME body as defined in 3GPP TS 24.379 [40] containing:

   a) the Answer-Mode Indication setting in the <am-settings> element of the poc-settings event package set to the current answer mode setting ("auto-answer" or "manual-answer") of the MCVideo client according to IETF RFC 4354 [53]; and

   b) the <selected-user-profile-index> element set to the value contained in the "user-profile-index" attribute of the selected MCVideo user profile as defined in 3GPP TS 24.484 [25]; and

5) if integrity protection is enabled as specified in clause 6.6.3.3.1, shall use the CSK to integrity protect the application/vnd.3gpp.mcvideo-info+xml MIME body and application/poc-settings+xml MIME body by following the procedures in clause 6.6.3.3.3.

The MCVideo client shall send the SIP PUBLISH request according to 3GPP TS 24.229 [11].

On receiving the SIP 200 (OK) response to the SIP PUBLISH request the MCVideo client may indicate to the MCVideo User the successful communication of the MCVideo service settings to the MCVideo server.

7.2.4 Determination of MCVideo service settings

In order to discover MCVideo service settings of another MCVideo client of the same MCVideo user or to verify the currently active MCVideo service settings of this MCVideo client, the MCVideo client shall generate an initial SIP SUBSCRIBE request according to 3GPP TS 24.229 [11], IETF RFC 6665 [16], and IETF RFC 4354 [53].

In the SIP SUBSCRIBE request, the MCVideo client:

1) shall set the Request-URI to the public service identity identifying the originating participating MCVideo function serving the MCVideo user;

2) shall include an application/vnd.3gpp.mcvideo-info+xml MIME body. In the application/vnd.3gpp.mcvideo-info+xml MIME body, the MCVideo client shall include the <mcvideo-request-uri> element set to the MCVideo ID of the MCVideo user;

3) shall include the ICSI value "urn:urn-7:3gpp-service.ims.icsi.mcvideo" (coded as specified in 3GPP TS 24.229 [11]), in a P-Preferred-Service header field according to IETF RFC 6050 [14];

4) shall set the Event header field to the 'poc-settings' value;

5) shall include an Accept header field containing the "application/poc-settings+xml" MIME type;

6) if the MCVideo client wants to receive the current status and later notification, shall set the Expires header field according to IETF RFC 6665 [16], to 4294967295; and

NOTE 1: 4294967295, which is equal to 2^{32}-1, is the highest value defined for Expires header field in IETF RFC 3261 [15].

7) if the MCVideo client wants to fetch the current state only, shall set the Expires header field according to IETF RFC 6665 [16], to zero.

In order to re-subscribe or de-subscribe, the MCVideo client shall generate an in-dialog SIP SUBSCRIBE request according to 3GPP TS 24.229 [11], IETF RFC 6665 [16], IETF RFC 4354 [53]. In the SIP SUBSCRIBE request, the MCVideo client:

1) shall set the Event header field to the 'poc-settings' value;

2) shall include an Accept header field containing the "application/poc-settings+xml" MIME type;

3) if the MCVideo client wants to receive the current status and later notification, shall set the Expires header field according to IETF RFC 6665 [16], to 4294967295; and

NOTE 2: 4294967295, which is equal to 2^{32}-1, is the highest value defined for Expires header field in IETF RFC 3261 [15].

4) if the MCVideo client wants to de-subscribe, shall set the Expires header field according to IETF RFC 6665 [16], to zero.

Upon receiving a SIP NOTIFY request according to 3GPP TS 24.229 [11], IETF RFC 6665 [16] and IETF RFC 4354 [53], that contains an application/poc-settings+xml MIME body the MCVideo client shall cache:

1) the <am-settings> element of the poc-settings+xml MIME body for each MCVideo client identified by the "id" attribute according to IETF RFC 4354 [53] as the current Answer-mode indication of that MCVideo client; and

2) the <selected-user-profile-index> element of the poc-settings+xml MIME body for each MCVideo client identified by the "id" attribute according to IETF RFC 4354 [53] as the active MCVideo user profile of that MCVideo client.

7.2.5 Receiving a CSK key download message

When the MCVideo client receives a SIP MESSAGE request containing:

1) a P-Asserted-Service header field containing the "urn:urn-7:3gpp-service.ims.icsi.mcvideo"; and

2) an application/mikey MIME body;

then, if the key identifier within the CSB-ID of the MIKEY payload is a CSK-ID (4 most-significant bits have the value '2'), the MCVideo client:

1) shall follow the security procedures in clause 9.2.1 of 3GPP TS 33.180 [8] to extract the CSK. The client:

   a) if the initiator field (IDRi) has type 'URI' (identity hiding is not used), the client:

      i) shall extract the initiator URI from the initiator field (IDRi) of the I_MESSAGE as described in 3GPP TS 33.180 [8]. If the initiator URI deviates from the public service identity of the participating MCVideo function serving the MCVideo user, shall reject the SIP MESSAGE request with a SIP 488 (Not Acceptable Here) response as specified in IETF RFC 4567 [34], and include warning text set to "136 authentication of the MIKEY-SAKKE I_MESSAGE failed" in a Warning header field as specified in clause 4.4 and shall not continue with the rest of the steps;

      ii) shall convert the initiator URI to a UID as described in 3GPP TS 33.180 [8];

   b) if the initiator field (IDRi) has type 'UID' (identity hiding in use), the client:

      i) shall convert the public service identity of participating MCVideo function serving the MCVideo user to a UID as described in 3GPP TS 33.180 [8];

      ii) shall compare the generated UID with the UID in the initiator field (IDRi) of the I_MESSAGE as described in 3GPP TS 33.180 [8]. If the two initiator UIDs deviate from each other, shall reject the SIP MESSAGE request with a SIP 488 (Not Acceptable Here) response as specified in IETF RFC 4567 [34], and include warning text set to "136 authentication of the MIKEY-SAKKE I_MESSAGE failed" in a Warning header field as specified in clause 4.4 and shall not continue with the rest of the steps;

   c) shall use the UID to validate the signature of the I_MESSAGE as described in 3GPP TS 33.180 [8];

d) if authentication verification of the I_MESSAGE fails, shall reject the SIP MESSAGE request with a SIP 488 (Not Acceptable Here) response as specified in IETF RFC 4567 [34], and include warning text set to "136 authentication of the MIKEY-SAKKE I_MESSAGE failed" in a Warning header field as specified in clause 4.4 and shall not continue with the rest of the steps;

e) shall extract and decrypt the encapsulated CSK using the participating MCVideo function's (KMS provisioned) UID key as described in 3GPP TS 33.180 [8]; and

f) shall extract the CSK-ID, from the payload as specified in 3GPP TS 33.180 [8]; and

2) upon successful extraction, the client shall replace the existing CSK and CSK-ID associated with the participating MCVideo function, with the extracted CSK and CSK-ID in the 'key download' message.

7.3 MCVideo server procedures

7.3.1 General

The MCVideo server obtains information that it needs to implement service authorization specific requirements from:

a) any received third-party SIP REGISTER request (e.g. including information contained in the body of the third-party SIP REGISTER request) as specified in 3GPP TS 24.229 [11]. The body will carry the SIP REGISTER request as sent by the MCVideo client and may contain information needed for service authorization; or

b) any received SIP PUBLISH request for MCVideo server settings containing the g.3gpp.mcvideo media feature tag along with the "require" and "explicit" header field parameters. The body of the SIP PUBLISH request will contain information needed for service authorization.

7.3.1A Confidentiality and Integrity Protection

When the MCVideo server receives a SIP REGISTER request sent from the MCVideo client contained within a message/sip MIME body of a received third-party SIP REGISTER request or a SIP PUBLISH request, it first determines whether XML MIME bodies included in the request are integrity protected. If XML MIME bodies are integrity protected the MCVideo server validates the signature of each of the XML MIME bodies. If the integrity protection check(s) pass or the XML MIME bodies are not integrity protected, the MCVideo server then determines whether the content in specific XML elements is confidentiality protected. If XML content is confidentiality protected, the MCVideo server decrypts the protected content.

Upon receiving:

- a SIP REGISTER request containing an application/vnd.3gpp.mcvideo-info+xml MIME body within a message/sip MIME body of the SIP REGISTER request sent from the MCVideo client; or

- a SIP PUBLISH request containing an application/vnd.3gpp.mcvideo-info+xml MIME body and an application/poc-settings+xml MIME body;

the MCVideo server:

1) shall determine if integrity protection has been applied to XML MIME bodies in the SIP request by following the procedures in clause 6.6.3.4.1 for each XML MIME body;

2) if integrity protection has been applied, shall use the keying data described in clause 6.6.3.2 and the procedures described in clause 6.6.3.4.2 to verify the integrity of each of the XML MIME bodies; and

3) if all integrity protection checks succeed, shall continue with the remaining steps of this clause.

Upon receiving:

- a SIP REGISTER request containing an application/vnd.3gpp.mcvideo-info+xml MIME body with an <mcvideo-access-token> element and an <mcvideo-client-id> element within a message/sip MIME body of the SIP REGISTER request sent from the MCVideo client; or

- a SIP PUBLISH request containing an application/vnd.3gpp.mcvideo-info+xml MIME body with an <mcvideo-access-token> element and an <mcvideo-client-id> element, and an application/poc-settings+xml MIME body;

the MCVideo server:

1) shall determine if confidentiality protection has been applied to the <mcvideo-access-token> element and the <mcvideo-client-id> element in the application/vnd.3gpp.mcvideo-info+xml MIME body, by following the procedures in clause 6.6.2.4.1;

2) if confidentiality protection has been applied to the <mcvideo-access-token> element and <mcvideo-client-id> element:

   a) shall use the keying information received in the MIKEY-SAKKE I_MESSAGE as specified in 3GPP TS 33.180 [8], along with the procedures described in clause 6.6.2.4.2 to:

      i) decrypt the received access token in the <mcvideo-access-token> element in the application/vnd.3gpp.mcvideo-info+xml MIME body; and

      ii) decrypt the received MCVideo client ID in the <mcvideo-client-id> element in the application/vnd.3gpp.mcvideo-info+xml MIME body;

   b) if the decryption procedure succeeds, shall identify the MCVideo ID and the MCVideo client ID from the decrypted values; and

   c) if the decryption procedure fails, shall determine that confidentiality protection has not been successful;

3) if confidentiality protection has been applied to only one of the <mcvideo-access-token> element or the <mcvideo-client-id> element:

   a) shall determine that confidentiality protection has not been successful;

4) if confidentiality protection has not been applied:

   a) shall identify the MCVideo ID from <mcvideo-access-token> element received in the application/vnd.3gpp.mcvideo-info+xml MIME body; and

   b) shall identify the MCVideo client ID from the <mcvideo-client-id> element received in the application/vnd.3gpp.mcvideo-info+xml MIME body.

Upon receiving a SIP PUBLISH request containing an application/vnd.3gpp.mcvideo-info+xml MIME body with an <mcvideo-request-uri> element, an <mcvideo-client-id> element, and an application/poc-settings+xml MIME body, the MCVideo server:

1) shall determine if confidentiality protection has been applied to the <mcvideo-request-uri> element and the <mcvideo-client-id> element in the application/vnd.3gpp.mcvideo-info+xml MIME body by following the procedures in clause 6.6.2.4.1;

2) if confidentiality protection has been applied to the <mcvideo-request-uri> element and the <mcvideo-client-id> element:

   a) shall use the keying information described in clause 6.6.2.2 along with the procedures described in clause 6.6.2.4.2 to:

      i) decrypt the received encrypted MCVideo ID in the <mcvideo-request-uri> element in the application/vnd.3gpp.mcvideo-info+xml MIME body; and

      ii) decrypt the received encrypted MCVideo client ID in the <mcvideo-client-id> element in the application/vnd.3gpp.mcvideo-info+xml MIME body;

   b) if all decryption procedures succeed, shall identify the MCVideo ID and MCVideo client ID from the decrypted values; and

   c) if the decryption procedure fails, shall determine that confidentiality protection has not been successful;

3) if confidentiality protection has been applied to only one of the <mcvideo-request-uri> element or <mcvideo-client-id> element:

   a) shall determine that confidentiality protection has not been successful;

4) if confidentiality protection has not been applied:

a) shall identify the MCVideo ID from the contents of the <mcvideo-request-uri> element in the application/vnd.3gpp.mcvideo-info+xml MIME body;and

b) shall identify the MCVideo client ID from the <mcvideo-client-id> element received in the application/vnd.3gpp.mcvideo-info+xml MIME body.

7.3.2 SIP REGISTER request for service authorisation

The MCVideo server shall support obtaining service authorization specific information from the SIP REGISTER request sent from the MCVideo client and included in the body of a third-party SIP REGISTER request.

NOTE 1: 3GPP TS 24.229 [11] defines how based on initial filter criteria the SIP REGISTER request sent from the UE is included in the body of the third-party SIP REGISTER request.

Upon receiving a third party SIP REGISTER request with a message/sip MIME body containing the SIP REGISTER request sent from the MCVideo client containing an application/vnd.3gpp.mcvideo-info+xml MIME body with an <mcvideo-access-token> element and an <mcvideo-client-id> element within a message/sip MIME body of the SIP REGISTER request sent from the MCVideo client, the MCVideo server:

1) shall identify the IMS public user identity from the third-party SIP REGISTER request;

2) shall identify the MCVideo ID from the SIP REGISTER request sent from the MCVideo client and included in the message/sip MIME body of the third-party SIP REGISTER request by following the procedures in clause 7.3.1A;

2a) shall check if the number of maximum simultaneous authorizations supported for the MCVideo user is specified in the <user-max-simultaneous-authorizations> element of the <anyExt> element contained in the <OnNetwork> element of the MCVideo user profile (see the user profile configuration document in 3GPP TS 24.484 [25]) and if present shall check whether it has been reached. If the number of maximum simultaneous authorizations has been reached, the MCVideo server shall not continue with the rest of the steps in this clause;

2b) if the <user-max-simultaneous-authorizations> element of the <anyExt> element is not present in the <OnNetwork> element of the MCVideo user profile (see the user profile configuration document in 3GPP TS 24.484 [25]), shall check if the number of maximum simultaneous authorizations supported for any MCVideo user as specified in the <max-simultaneous-authorizations> element of the <anyExt> element contained in the <OnNetwork> element of the MCVideo service configuration document (see the service configuration document in 3GPP TS 24.484 [25]) has been reached. If the number of maximum simultaneous authorizations has been reached, the MCVideo server shall not continue with the rest of the steps in this clause;

3) shall perform service authorization for the identified MCVideo ID as described in 3GPP TS 33.180 [8];

4) if service authorization was successful, shall bind the MCVideo ID and the MCVideo client ID to the IMS public user identity;

4a) if service authorization was successful and if, the service authorization request was from an MCVideo user who is previously MCVideo service authorized on another MCVideo client (as determined by a comparison of the received MCVideo client ID with the MCVideo client ID of existing bindings), keep the current bindings and create a new binding between the MCVideo ID and the IMS public user identity;

NOTE 2: The MCVideo server will store the binding MCVideo ID, MCVideo client ID, IMS public user identity and an identifier addressing the MCVideo server in an external database.

5) if a Resource-Share header field with the value "supported" is contained in the "message/sip" MIME body of the third-party REGISTER request, shall bind the MCVideo ID and the MCVideo client ID to the identity of the MCVideo UE contained in the "+g.3gpp.registration-token" header field parameter in the Contact header field of the incoming third-party REGISTER request; and

6) if more than one binding exists for the MCVideo ID, shall include in the SIP 200 (OK) response an application/vnd.3gpp.mcvideo-info+xml MIME body as specified in annex F.1 with an <multiple-devices-ind> element set to a value of "true".

7.3.3 SIP PUBLISH request for service authorisation and service settings

The MCVideo server shall support obtaining service authorization specific information from a SIP PUBLISH request for MCVideo server settings.

Upon receiving a SIP PUBLISH request containing:

1) an Event header field set to the "poc-settings" value;

2) an application/poc-settings+xml MIME body; and

3) an application/vnd.3gpp.mcvideo-info+xml MIME body containing an <mcvideo-access-token> element and an <mcvideo-client-id> element;

the MCVideo server:

1) shall identify the IMS public user identity from the P-Asserted-Identity header field;

2) shall perform the procedures in clause 7.3.1A;

3) if the procedures in clause 7.3.1A were not successful shall send a SIP 403 (Forbidden) response towards the MCVideo client with the warning text set to: "140 unable to decrypt XML content " in a Warning header field as specified in clause 4.4, and not continue with the rest of the steps in this clause;

3a) shall check if the number of maximum simultaneous authorizations supported for the MCVideo user is specified in the <user-max-simultaneous-authorizations> element of the <anyExt> element contained in the <OnNetwork> element of the MCVideo user profile (see the user profile configuration document in 3GPP TS 24.484 [25]) if present shall check whether it has been reached. If reached, the MCVideo server shall send a SIP 486 (Busy Here) response towards the MCVideo client with the warning text set to: "166 maximum number of service authorizations reached" in a Warning header field as specified in clause 4.4, and shall not continue with the rest of the steps in this clause;

3b) if the <user-max-simultaneous-authorizations> element of the <anyExt> element is not present in the <OnNetwork> element of the MCVideo user profile (see the user profile configuration document in 3GPP TS 24.484 [25]), shall check if the number of maximum simultaneous authorizations supported for any MCVideo user as specified in the <max-simultaneous-authorizations> element of the <anyExt> element contained in the <OnNetwork> element of the MCVideo service configuration document (see the service configuration document in 3GPP TS 24.484 [25]) has been reached. If reached, the MCVideo server shall send a SIP 486 (Busy Here) response towards the MCVideo client with the warning text set to: "166 maximum number of service authorizations reached" in a Warning header field as specified in clause 4.4, and shall not continue with the rest of the steps in this clause;

4) shall perform service authorization for the identified MCVideo ID as described in 3GPP TS 33.180 [8];

5) if service authorization was successful:

   a) shall bind the MCVideo ID and MCVideo client ID to the IMS public user identity;

   b) if the service authorization request was from an MCVideo user who is previously MCVideo service authorized on another MCVideo client (as determined by a comparison of the received MCVideo client ID with the MCVideo client ID of existing bindings), keep the current bindings and create a new binding between the MCVideo ID, MCVideo client ID and the IMS public user identity; and

   c) if a Resource-Share header field with the value "supported" was included in the "message/sip" MIME body of the third-party REGISTER request, shall bind the MCVideo ID to the identity of the MCVideo UE contained in the "+g.3gpp.registration-token" header field parameter in the Contact header field of the third-party REGISTER request that contained this IMS public user identity;

NOTE 1: The MCVideo server will store the binding MCVideo ID, MCVideo client ID, IMS public user identity and an identifier addressing the MCVideo server in an external database.

6) if service authorization was not successful, shall send a SIP 403 (Forbidden) response towards the MCVideo client with the warning text set to: "101 service authorisation failed" in a Warning header field as specified in clause 4.4, and not continue with the rest of the steps in this clause;

7) shall process the SIP PUBLISH request according to rules and procedures of IETF RFC 3903 [12] and if processing of the SIP request was not successful, do not continue with the rest of the steps;

8) shall cache the received MCVideo service settings until the MCVideo service settings expiration timer expires;

9) shall send a SIP 200 (OK) response according to 3GPP TS 24.229 [11] with:

   a) if more than one binding exists for the MCVideo ID, an application/vnd.3gpp.mcvideo-info+xml MIME body as specified in annex F.1 with an <multiple-devices-ind> element set to the value "true";

10) shall use the Answer-Mode Indication setting in the <am-settings> element of the poc-settings event package as the current Answer-Mode Indication of the MCVideo client.

11) shall download the MCVideo user profile from the MCVideo user database as defined in 3GPP TS 29.283 [54] if not already stored at the MCVideo server and use the <selected-user-profile-index> element of the poc-settings event package if included to identify the active MCVideo user profile for the MCVideo client;

NOTE 2: If the <selected-user-profile-index> element of the poc-settings event package is included then only that MCVideo user profile is needed to be downloaded from the MCVideo user database.

12) if there is no <selected-user-profile-index> element included in the poc-settings event package then if multiple MCVideo user profiles are stored at the MCVideo server or downloaded for the MCVideo user from the MCVideo user database, shall determine the pre-selected MCVideo user profile to be used as the active MCVideo user profile by identifying the MCVideo user profile (see the MCVideo user profile document in 3GPP TS 24.484 [25]) in the collection of MCVideo user profiles that contains a <Pre-selected-indication> element; and

NOTE 3: If only one MCVideo user profile is stored at the MCVideo server or only one MCVideo user profile is downloaded from the MCVideo user database, then by default this MCVideo user profile is the pre-selected MCVideo user profile.

13) if an <ImplicitAffiliations> element is contained in the <OnNetwork> element of the MCVideo user profile document with one or more <entry> elements containing an MCVideo group ID (see the MCVideo user profile document in 3GPP TS 24.484 [25]) for the served MCVideo ID, shall perform implicit affiliation as specified in clause 8.2.2.2.15.

7.3.4 Receiving SIP PUBLISH request for MCVideo service settings only

Upon receiving a SIP PUBLISH request containing:

1) an Event header field set to the "poc-settings" value;

2) an application/poc-settings+xml MIME body; and

3) an application/vnd.3gpp.mcvideo-info+xml MIME body containing an <mcvideo-request-uri> element and an <mcvideo-client-id> element;

The MCVideo server:

1) shall identify the IMS public user identity from the P-Asserted-Identity header field;

2) shall perform the procedures in clause 7.3.1A;

3) if the procedures in clause 7.3.1A were not successful, shall send a SIP 403 (Forbidden) response towards the MCVideo client with the warning text set to: "140 unable to decrypt XML content" in a Warning header field as specified in clause 4.4, and not continue with the rest of the steps in this clause;

4) shall verify that a binding between the IMS public user identity in the Request-URI and the MCVideo ID in the <mcvideo-request-uri> element of the application/vnd.3gpp.mcvideo-info+xml exists at the MCVideo server;

5) if a binding exists between the IMS public user identity and the MCVideo ID in the request and the validity period of the binding has not expired shall download the MCVideo user profile from the MCVideo user database as defined in 3GPP TS 29.283 [54] if not already stored at the MCVideo server;

6) if a binding does not exist between the IMS public user identity and the MCVideo ID in the request or the binding exists, but the validity period of the binding has expired, shall reject the SIP PUBLISH request with a SIP 404 (Not Found) response and not continue with any of the remaining steps;

7) shall process the SIP PUBLISH request according to rules and procedures of IETF RFC 3903 [12] and if processing of the SIP request was not successful, do not continue with the rest of the steps;

8) shall cache the received MCVideo service settings until the MCVideo service settings expiration timer expires;

9) shall send a SIP 200 (OK) response according 3GPP TS 24.229 [11];

10) shall use the Answer-Mode Indication setting in the <am-settings> element of the poc-settings event package as the current Answer-Mode Indication of the MCVideo client.

11) shall download the MCVideo user profile from the MCVideo user database as defined in 3GPP TS 29.283 [54] if not already stored at the MCVideo server and use the <selected-user-profile-index> element of the poc-settings event package if included to identify the active MCVideo user profile for the MCVideo client;

NOTE 1: If the <selected-user-profile-index> element of the poc-settings event package is included then only that MCVideo user profile is needed to be downloaded from the MCVideo user database.

12) if there is no <selected-user-profile-index> element included in the poc-settings event package then if multiple MCVideo user profiles are stored at the MCVideo server or downloaded for the MCVideo user from the MCVideo user database, shall determine the pre-selected MCVideo user profile to be used as the active MCVideo user profile by identifying the MCVideo user profile (see the MCVideo user profile document in 3GPP TS 24.484 [25]) in the collection of MCVideo user profiles that contains a <Pre-selected-indication> element; and

NOTE 2: If only one MCVideo user profile is stored at the MCVideo server or only one MCVideo user profile is downloaded from the MCVideo user database, then by default this MCVideo user profile is the pre-selected MCVideo user profile.

13) if an <ImplicitAffiliations> element is contained in the <OnNetwork> element of the MCVideo user profile document with one or more <entry> elements containing an MCVideo group ID (see the MCVideo user profile document in 3GPP TS 24.484 [25]) for the served MCVideo ID, shall perform implicit affiliation as specified in clause 8.2.2.2.15.

7.3.5 Receiving SIP PUBLISH request with "Expires=0"

Upon receiving a SIP PUBLISH request containing:

1) an Event header field set to the "poc-settings" value; and

2) an Expires header field set to 0;

the MCVideo server:

1) shall identify the IMS public user identity from the P-Asserted-Identity header field;

2) shall process the SIP PUBLISH request according to rules and procedures of IETF RFC 3903 [12] and if processing of the SIP request was successful, continue with the rest of the steps;

3) shall remove the MCVideo service settings;

NOTE: Removal of MCVideo service settings includes removal of all group affiliations.

4) shall remove the binding between the MCVideo ID and public user identity; and

5) shall send a SIP 200 (OK) response according to 3GPP TS 24.229 [11].

7.3.6 Subscription to and notification of MCVideo service settings

7.3.6.1 Receiving subscription to MCVideo service settings

Upon receiving a SIP SUBSCRIBE request such that:

1) Request-URI of the SIP SUBSCRIBE request contains the public service identity identifying the participating MCVideo function of the served MCVideo user;

2) the SIP SUBSCRIBE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body containing the<mcvideo-request-uri> element which identifies an MCVideo ID served by the MCVideo server;

3) the ICSI value "urn:urn-7:3gpp-service.ims.icsi.mcvideo" (coded as specified in 3GPP TS 24.229 [11]), in a P-Asserted-Service header field according to IETF RFC 6050 [14]; and

3) the Event header field of the SIP SUBSCRIBE request contains the 'poc-settings' event type.

the MCVideo server:

1) shall identify the served MCVideo ID in the <mcvideo-request-uri> element of the application/vnd.3gpp.mcvideo-info+xml MIME body of the SIP SUBSCRIBE request;

2) if the Request-URI of the SIP SUBSCRIBE request contains the public service identity identifying the participating MCVideo function serving the MCVideo user, shall identify the originating MCVideo ID from public user identity in the P-Asserted-Identity header field of the SIP SUBSCRIBE request;

3) if the originating MCVideo ID is different than the served MCVideo ID, shall send a 403 (Forbidden) response and shall not continue with the rest of the steps; and

4) shall generate a 200 (OK) response to the SIP SUBSCRIBE request according to 3GPP TS 24.229 [11], IETF RFC 6665 [16] and IETF RFC 4354 [53].

For the duration of the subscription, the MCVideo server shall notify subscriber about changes of the MCVideo service settings of the subscribed MCVideo user, as described in clause 7.3.6.2.

7.3.6.2 Sending notification of change of MCVideo service settings

In order to notify the subscriber about changes of the MCVideo service settings of the subscribed MCVideo client of the subscribed MCVideo user, the MCVideo server:

1) shall generate an application/poc-settings+xml MIME body as defined in 3GPP TS 24.379 [40] containing:

   a) the <am-settings> element of the poc-settings event package set to the current answer mode setting of the MCVideo client according to IETF RFC 4354 [53]; and

   b) the <selected-user-profile-index> element as defined in clause 7.4.1.2 identifying the active MCVideo user profile; and

2) send a SIP NOTIFY request according to 3GPP TS 24.229 [11], IETF RFC 6665 [16] and IETF RFC 4354 [53] with the constructed application/poc-settings+xml MIME body.

7.3.7 Sending a CSK key download message

If confidentiality protection is enabled as specified in clause 6.6.2.3.1, and if the participating MCVideo function received a Client Server Key (CSK) within a SIP REGISTER request for service authorisation or SIP PUBLISH request for service authorisation, the participating MCVideo function may decide to update the CSK. In this case, the participating MCVideo function shall perform a key download procedure for the CSK. The participating MCVideo function:

1) shall generate an SIP MESSAGE request in accordance with 3GPP TS 24.229 [11] and IETF RFC 3428 [17];

2) shall set the Request-URI to the URI received in the To header field in a third-party SIP REGISTER request;

3) shall include an Accept-Contact header field with the g.3gpp.icsi-ref media-feature tag with the value of "urn:urn-7:3gpp-service.ims.icsi.mcvideo" along with parameters "require" and "explicit" according to IETF RFC 3841 [20];

4) shall include a P-Asserted-Service header field with the value "urn:urn-7:3gpp-service.ims.icsi.mcvideo";

5) shall include an application/mikey MIME body containing the CSK-ID and the CSK encrypted within a MIKEY message to the MC client as specified in clause 9.2.1 of 3GPP TS 33.180 [8] in the body of the SIP MESSAGE request;

6) shall send the SIP MESSAGE request towards the MCVideo client according to 3GPP TS 24.229 [11].

7.4 Coding

7.4.1 Extension of MIME types

7.4.1.1 General

The parent clause of this clause defines extensions of MIME type defined in other documents.

7.4.1.2 Extension of application/poc-settings+xml MIME type

7.4.1.2.1 Introduction

The parent clause of this clause describes extension of the application/poc-settings+xml MIME body specified in IETF RFC 4354 [53]. The extension is used to indicate the selected MCS user profile at an MC client.

7.4.1.2.2 Syntax

The application/poc-settings+xml MIME body indicating the selected MCS user profile at an MC client is constructed according to IETF RFC 4354 [53] and:

1) contains a <poc-settings> root element according to IETF RFC 4354 [53];

2) contains one or more <entity> child element according to IETF RFC 4354 [53] of the <poc-settings> element;

3) contains one <selected-user-profile-index> child element defined in the XML schema defined in table 7.4.1.2.2-2, of the <entity> element;

NOTE: The <selected-user-profile-index> element is validated by the <xs:any namespace="##any" processContents="lax" minOccurs="0" maxOccurs="unbounded"/> particle of the <entity> element.

The application/poc-settings+xml MIME body refers to namespaces using prefixes specified in table 7.4.1.2.2-1.

Table 7.4.1.2.2-1: Assignment of prefixes to namespace names in the application/poc-settings+xml MIME body

Prefix	Namespace
PoC1Set	urn:oma:params:xml:ns:poc:poc-settings
mcs10Set	urn:3gpp:mcsSettings:1.0

Table 7.4.1.2.2-2: XML schema with elements and attributes extending the application/poc-settings+xml MIME body

```
<?xml version="1.0" encoding="UTF-8"?>
<xs:schema
  targetNamespace="urn:3gpp:mcsSettings:1.0"
  xmlns:xs="http://www.w3.org/2001/XMLSchema"
  xmlns:mcs10Set="urn:3gpp:mcsSettings:1.0"
  elementFormDefault="qualified" attributeFormDefault="unqualified">
```

```
  <!-- MCS specific "entity" child elements -->
  <xs:element name="selected-user-profile-index" type="mcs10Set:selected-user-profile-indexType"/>

  <xs:complexType name="selected-user-profile-indexType">
    <xs:sequence>
      <xs:element name="user-profile-index" type="xs:nonNegativeInteger"/>
      <xs:any namespace="##any" processContents="lax" minOccurs="0" maxOccurs="unbounded"/>
    </xs:sequence>
    <xs:anyAttribute namespace="##any" processContents="lax"/>
  </xs:complexType>

</xs:schema>
```

An example application/poc-settings+xml MIME body showing the MC service settings for two MC clients as might be included in the body of a SIP NOTIFY request is shown in table 7.4.1.2.2-3.

Table 7.4.1.2.2-3: Example application/poc-settings+xml MIME body showing the MC service settings for two MC clients as might be included in the body of a SIP NOTIFY request

```
<?xml version="1.0" encoding="UTF-8"?>
   <poc-settings xmlns="urn:oma:params:xml:ns:poc:poc-settings">
     <entity id="urn:uuuid:do39s8zksn2d98x">
        <am-settings>
          <answer-mode>automatic</answer-mode>
        </am-settings>
        <selected-user-profile-index>
          <user-profile-index>1</user-profile-index>
        </selected-user-profile-index>
     </entity>
     <entity id="urn:uuuid:ksn2d98xdo39s8z">
        <am-settings>
          <answer-mode>manual</answer-mode>
        </am-settings>
        <selected-user-profile-index>
          <user-profile-index>2</user-profile-index>
        </selected-user-profile-index>
     </entity>
   </poc-settings>
```

8 Affiliation

8.1 General

Clause 8.2 contains the procedures for explicit affiliation at the MCVideo client, the MCVideo server serving the MCVideo user and the MCVideo server owning the MCVideo group.

Clause 8.2 contains the procedures for implicit affiliation at the MCVideo server serving the MCVideo user and the MCVideo server owning the MCVideo group.

Clause 8.3 describes the coding used for explicit affiliation.

The procedures for implicit affiliation in this clause are triggered at the MCVideo server serving the MCVideo user in the following circumstances:

- on receipt of a SIP INVITE request or a SIP REFER request from an MCVideo client to join an MCVideo chat group, where the MCVideo client is not already affiliated to the MCVideo group;
- on receipt of a SIP INVITE request or a SIP REFER request from an MCVideo client when attempting to initiate an MCVideo emergency group call or MCVideo imminent peril group call and the MCVideo client is not already affiliated to the MCVideo group;
- on receipt of a SIP MESSAGE request from an MCVideo client when initiating an MCVideo emergency alert targeted to an MCVideo group and the MCVideo client is not already affiliated to the MCVideo group; and

- on receipt of a SIP REGISTER request for service authorisation (as described in clause 7.3.2) or SIP PUBLISH request for service authorisation and service settings (as described in clause 7.3.2), as determined by configuration in the MCVideo user profile document as specified in 3GPP TS 24.484 [25].

The procedures for implicit affiliation in this clause are triggered at the MCVideo server owning the MCVideo group in the following circumstances:

- on receipt of a SIP INVITE request from the MCVideo server serving the MCVideo user where an MCVideo user wants to join an MCVideo chat group and the MCVideo client is not already affiliated to the MCVideo group;

- on receipt of a SIP INVITE request from the MCVideo server serving the MCVideo user where an MCVideo user initiates an MCVideo emergency group call or MCVideo imminent peril group call and the MCVideo client is not already affiliated to the MCVideo group; and

- on receipt of a SIP MESSAGE request from the MCVideo server serving the MCVideo user when the MCVideo user initiates an MCVideo emergency alert targeted to an MCVideo group and the MCVideo client is not already affiliated to the MCVideo group.

8.2 Procedures

8.2.1 MCVideo client procedures

8.2.1.1 General

The MCVideo client procedures consist of:

- an affiliation status change procedure;

- an affiliation status determination procedure;

- a procedure for sending affiliation status change request in negotiated mode to target MCVideo user;

- a procedure for receiving affiliation status change request in negotiated mode from authorized MCVideo user; and

- a rules based affiliation status change procedure.

In order to obtain information about success or rejection of changes triggered by the affiliation status change procedure for an MCVideo user, the MCVideo client needs to initiate the affiliation status determination procedure for the MCVideo user before starting the affiliation status change procedure for the MCVideo user.

8.2.1.2 Affiliation status change procedure

In order:

- to indicate that an MCVideo user is interested in one or more MCVideo group(s) at an MCVideo client;

- to indicate that the MCVideo user is no longer interested in one or more MCVideo group(s) at the MCVideo client;

- to refresh indication of an MCVideo user interest in one or more MCVideo group(s) at an MCVideo client due to near expiration of the expiration time of an MCVideo group with the affiliation status set to the "affiliated" state received in a SIP NOTIFY request in clause 8.2.1.3;

- to send an affiliation status change request in mandatory mode to another MCVideo user;

- to indicate that an MCVideo user is interested in one or more MCVideo group(s) at an MCVideo client triggered by functional alias activation criteria;

- to indicate that the MCVideo user is no longer interested in one or more MCVideo group(s) at the MCVideo client client triggered functional alias deactivation criteria; or

- any combination of the above;

the MCVideo client shall generate a SIP PUBLISH request according to 3GPP TS 24.229 [11], IETF RFC 3903 [12], and IETF RFC 3856 [13].

When the MCVideo user indicates that he is no longer interested in one or more MCVideo group(s) at the MCVideo client, the MCVideo client shall first check value of the <manual-deaffiliation-not-allowed-if-affiliation-rules-are-met> element if present within the MCVideo user profile document (see the MCVideo user profile document specified in 3GPP TS 24.484 [25]). If the affiliation to the group has been activated due to a rule being fulfilled and the <manual-deaffiliation-not-allowed-if-affiliation-rules-are-met> element is present and is set to a value of "true", the MCVideo client shall suppress the MCVideo user's request.

NOTE 1: If the request is suppressed, a notification message can be displayed to the user

In the SIP PUBLISH request, the MCVideo client:

1) shall set the Request-URI to the public service identity identifying the originating participating MCVideo function serving the MCVideo user;

2) shall include an application/vnd.3gpp.mcvideo-info+xml MIME body. In the application/vnd.3gpp.mcvideo-info+xml MIME body, the MCVideo client shall include the <mcvideo-request-uri> element set to the MCVideo ID of the MCVideo user;

3) shall include the ICSI value "urn:urn-7:3gpp-service.ims.icsi.mcvideo" (coded as specified in 3GPP TS 24.229 [11]), in a P-Preferred-Service header field according to IETF RFC 6050 [14];

4) if the targeted MCVideo user is interested in at least one MCVideo group at the targeted MCVideo client, shall set the Expires header field according to IETF RFC 3903 [12], to 4294967295;

NOTE 2: 4294967295, which is equal to 2^{32}-1, is the highest value defined for Expires header field in IETF RFC 3261 [15].

5) if the targeted MCVideo user is no longer interested in any MCVideo group at the targeted MCVideo client, shall set the Expires header field according to IETF RFC 3903 [12], to zero; and

6) shall include an application/pidf+xml MIME body indicating per-user affiliation information according to clause 8.3.1. In the MIME body, the MCVideo client:

   a) shall include all MCVideo groups where the targeted MCVideo user indicates its interest at the targeted MCVideo client;

   b) shall include the MCVideo client ID of the targeted MCVideo client;

   c) shall not include the "status" attribute and the "expires" attribute in the <affiliation> element; and

   d) shall set the <p-id> child element of the <presence> root element to a globally unique value.

The MCVideo client shall send the SIP PUBLISH request according to 3GPP TS 24.229 [11].

8.2.1.3 Affiliation status determination procedure

NOTE 1: The MCVideo UE also uses this procedure to determine which MCVideo groups the MCVideo user successfully affiliated to.

In order to discover MCVideo groups:

1) which the MCVideo user at an MCVideo client is affiliated to; or

2) which another MCVideo user is affiliated to;

the MCVideo client shall generate an initial SIP SUBSCRIBE request according to 3GPP TS 24.229 [11], IETF RFC 3856 [13], and IETF RFC 6665 [16].

In the SIP SUBSCRIBE request, the MCVideo client:

1) shall set the Request-URI to the public service identity identifying the originating participating MCVideo function serving the MCVideo user;

2) shall include an application/vnd.3gpp.mcvideo-info+xml MIME body. In the application/vnd.3gpp.mcvideo-info+xml MIME body, the MCVideo client shall include the <mcvideo-request-uri> element set to the MCVideo ID of the targeted MCVideo user;

3) shall include the ICSI value "urn:urn-7:3gpp-service.ims.icsi.mcvideo" (coded as specified in 3GPP TS 24.229 [11]), in a P-Preferred-Service header field according to IETF RFC 6050 [14];

4) if the MCVideo client wants to receive the current status and later notification, shall set the Expires header field according to IETF RFC 6665 [16], to 4294967295;

NOTE 2: 4294967295, which is equal to 2^{32}-1, is the highest value defined for Expires header field in IETF RFC 3261 [15].

5) if the MCVideo client wants to fetch the current state only, shall set the Expires header field according to IETF RFC 6665 [16], to zero; and

6) shall include an Accept header field containing the application/pidf+xml MIME type; and

7) if requesting MCVideo groups where the MCVideo user is affiliated to at the MCVideo client, shall include an application/simple-filter+xml MIME body indicating per client restrictions of presence event package notification information according to clause 8.3.2.

In order to re-subscribe or de-subscribe, the MCVideo client shall generate an in-dialog SIP SUBSCRIBE request according to 3GPP TS 24.229 [11], IETF RFC 3856 [13], and IETF RFC 6665 [16]. In the SIP SUBSCRIBE request, the MCVideo client:

1) if the MCVideo client wants to receive the current status and later notification, shall set the Expires header field according to IETF RFC 6665 [16], to 4294967295;

NOTE 3: 4294967295, which is equal to 2^{32}-1, is the highest value defined for Expires header field in IETF RFC 3261 [15].

2) if the MCVideo client wants to de-subscribe, shall set the Expires header field according to IETF RFC 6665 [16], to zero; and

3) shall include an Accept header field containing the application/pidf+xml MIME type.

Upon receiving a SIP NOTIFY request according to 3GPP TS 24.229 [11], IETF RFC 3856 [13], and IETF RFC 6665 [16], if SIP NOTIFY request contains an application/pidf+xml MIME body indicating per-user affiliation information constructed according to clause 8.3.1, then the MCVideo client shall determine affiliation status of the MCVideo user for each MCVideo group at the MCVideo client(s) in the MIME body. If the <p-id> child element of the <presence> root element of the application/pidf+xml MIME body of the SIP NOTIFY request is included, the <p-id> element value indicates the SIP PUBLISH request which triggered sending of the SIP NOTIFY request.

8.2.1.4 Procedure for sending affiliation status change request in negotiated mode to target MCVideo user

NOTE: Procedure for sending affiliation status change request in negotiated mode to several target MCVideo users is not supported in this version of the specification.

Upon receiving a request from the MCVideo user to send an affiliation status change request in negotiated mode to a target MCVideo user, the MCVideo client shall generate a SIP MESSAGE request in accordance with 3GPP TS 24.229 [11] and IETF RFC 3428 [17]. In the SIP MESSAGE request, the MCVideo client:

1) shall set the Request-URI to the public service identity identifying the originating participating MCVideo function serving the MCVideo user;

2) shall include an application/vnd.3gpp.mcvideo-info+xml MIME body. In the application/vnd.3gpp.mcvideo-info+xml MIME body, the MCVideo client shall include the <mcvideo-request-uri> element set to the MCVideo ID of the target MCVideo user;

3) shall include the ICSI value "urn:urn-7:3gpp-service.ims.icsi.mcvideo" (coded as specified in 3GPP TS 24.229 [11]), in a P-Preferred-Service header field according to IETF RFC 6050 [14] in the SIP MESSAGE request;

4) shall include an application/vnd.3gpp.mcvideo-affiliation-command+xml MIME body as specified in Annex F.4; and

5) shall send the SIP MESSAGE request according to rules and procedures of 3GPP TS 24.229 [11].

On receiving a SIP 2xx response to the SIP MESSAGE request, the MCVideo client shall indicate to the user that the request has been delivered to an MCVideo client of the target MCVideo user.

8.2.1.5 Procedure for receiving affiliation status change request in negotiated mode from authorized MCVideo user

Upon receiving a SIP MESSAGE request containing:

1) the ICSI value "urn:urn-7:3gpp-service.ims.icsi.mcvideo" (coded as specified in 3GPP TS 24.229 [11]), in a P-Asserted-Service header field according to IETF RFC 6050 [14]; and

2) an application/vnd.3gpp.mcvideo-affiliation-command+xml MIME body with a list of MCVideo groups for affiliation under the <affiliate> element and a list of MCVideo groups for de-affiliation under the <de-affiliate> element;

then the MCVideo client:

1) shall send a 200 (OK) response to the SIP MESSAGE request;

2) shall seek confirmation of the list of MCVideo groups for affiliation and the list of MCVideo groups for de-affiliation, resulting in an accepted list of MCVideo groups for affiliation and an accepted list of MCVideo groups for de-affiliation; and

3) if the user accepts the request:

   a) shall perform affiliation for each entry in the accepted list of MCVideo groups for affiliation for which the MCVideo client is not affiliated, as specified in clause 8.2.1.2; and

   b) shall perform de-affiliation for each entry in the accepted list of MCVideo groups for de-affiliation for which the MCVideo client is affiliated, as specified in clause 8.2.1.2.

8.2.1.6 Subscription to group dynamic data

In order to subscribe to changes in per-group dynamic data, the MCVideo client shall generate an initial SIP SUBSCRIBE request specified in 3GPP TS 24.229 [11], IETF RFC 3856 [51], and IETF RFC 6665 [26].

In the SIP SUBSCRIBE request, the MCVideo client:

1) shall set the Request-URI to the public service identity identifying the originating participating MCVideo function serving the MCVideo user;

2) shall include an application/vnd.3gpp.mcvideo-info+xml MIME body. In the application/vnd.3gpp.mcvideo-info+xml MIME body, the MCVideo client shall include the <mcvideo-request-uri> element set to the MCVideo group ID of the targeted MCVideo group;

3) shall include the ICSI value "urn:urn-7:3gpp-service.ims.icsi.mcvideo" (coded as specified in 3GPP TS 24.229 [11]), in a P-Preferred-Service header field specified in IETF RFC 6050 [9];

4) if the MCVideo client wants to receive the current status and later notification, shall set the Expires header field specified in IETF RFC 6665 [26], to 4294967295;

NOTE 1: 4294967295, which is equal to 2^{32}-1, is the highest value defined for Expires header field in IETF RFC 3261 [24].

5) if the MCVideo client wants to fetch the current state only, shall set the Expires header field specified in IETF RFC 6665 [26], to zero;

6) shall include an Accept header field containing the application/pidf+xml MIME type; and

7) shall include an application/simple-filter+xml MIME body indicating per-group restrictions of presence event package notification information specified in clause 8.3.2, indicating the MCVideo group ID.

In order to re-subscribe or de-subscribe, the MCVideo client shall generate an in-dialog SIP SUBSCRIBE request specified in 3GPP TS 24.229 [11], IETF RFC 3856 [51], and IETF RFC 6665 [26]. In the SIP SUBSCRIBE request, the MCVideo client:

1) if the MCVideo client wants to receive the current status and later notification, shall set the Expires header field specified in IETF RFC 6665 [26], to 4294967295;

NOTE 2: 4294967295, which is equal to 2^{32}-1, is the highest value defined for Expires header field in IETF RFC 3261 [24].

2) if the MCVideo client wants to de-subscribe, shall set the Expires header field specified in IETF RFC 6665 [26], to zero; and

3) shall include an Accept header field containing the application/pidf+xml MIME type.

Upon receiving a SIP NOTIFY request specified in 3GPP TS 24.229 [11], IETF RFC 3856 [51], and IETF RFC 6665 [26], if the SIP NOTIFY request contains an application/pidf+xml MIME body indicating per-group dynamic data information constructed according to clause 8.3.1, then the MCVideo client shall determine per-group dynamic data of the MCVideo group in the MIME body.

8.2.1.7 Rules based affiliation status change procedure

Rules based affiliation is controlled by the elements <RulesForAffiliation> or <RulesForDeaffiliation> of the MCVideo user profile document identified by the MCVideo ID of the MCVideo user (see the MCVideo user profile document specified in 3GPP TS 24.484 [25]). The rules can be composed of functional alias based criteria. A rule is fulfilled if any of the functional alias based criteria are met. These rules are evaluated whenever a functional alias is activated or deactivated. If, any defined rule is fulfilled, the MCVideo client shall initiate the affiliation status change procedure as specified in clause 8.2.1.2.

8.2.2 MCVideo server procedures

8.2.2.1 General

The MCVideo server procedures consist of:

- procedures of MCVideo server serving the MCVideo user; and
- procedures of MCVideo server owning the MCVideo group.

8.2.2.2 Procedures of MCVideo server serving the MCVideo user

8.2.2.2.1 General

The procedures of MCVideo server serving the MCVideo user consist of:

- a receiving affiliation status change from MCVideo client procedure;
- a receiving subscription to affiliation status procedure;
- a sending notification of change of affiliation status procedure;
- a sending affiliation status change towards MCVideo server owning MCVideo group procedure;
- an affiliation status determination from MCVideo server owning MCVideo group procedure;
- a procedure for authorizing affiliation status change request in negotiated mode sent to served MCVideo user;
- a forwarding affiliation status change towards another MCVideo user procedure;

- a forwarding subscription to affiliation status towards another MCVideo user procedure
- an affiliation status determination procedure;
- an affiliation status change by implicit affiliation procedure;
- an implicit affiliation status change completion procedure;
- an implicit affiliation status change cancellation procedure; and
- an implicit affiliation to configured groups procedure.
- forwarding subscription to group dynamic data towards the controlling MCVideo server procedure.

8.2.2.2.2 Stored information

The MCVideo server shall maintain a list of MCVideo user information entries. The list of the MCVideo user information entries contains one MCVideo user information entry for each served MCVideo ID.

In each MCVideo user information entry, the MCVideo server shall maintain:

1) an MCVideo ID. This field uniquely identifies the MCVideo user information entry in the list of the MCVideo user information entries; and
2) a list of MCVideo client information entries.

In each MCVideo client information entry, the MCVideo server shall maintain:

1) an MCVideo client ID. This field uniquely identifies the MCVideo client information entry in the list of the MCVideo client information entries; and
2) a list of MCVideo group information entries.

In each MCVideo group information, the MCVideo server shall maintain:

1) an MCVideo group ID. This field uniquely identifies the MCVideo group information entry in the list of the MCVideo group information entries;
2) an affiliation status;
3) an expiration time;
4) an affiliating p-id; and
5) a next publishing time.

8.2.2.2.3 Receiving affiliation status change from MCVideo client procedure

Upon receiving a SIP PUBLISH request such that:

1) Request-URI of the SIP PUBLISH request contains either the public service identity identifying the originating participating MCVideo function serving the MCVideo user, or the public service identity identifying the terminating participating MCVideo function serving the MCVideo user;
2) the SIP PUBLISH request contains an application/vnd.3gpp.mcvideo-info+xml MIME body containing the<mcvideo-request-uri> element which identifies an MCVideo ID served by the MCVideo server;
3) the ICSI value "urn:urn-7:3gpp-service.ims.icsi.mcvideo" (coded as specified in 3GPP TS 24.229 [11]), in a P-Asserted-Service header field according to IETF RFC 6050 [14];
4) the Event header field of the SIP PUBLISH request contains the "presence" event type; and
5) SIP PUBLISH request contains an application/pidf+xml MIME body indicating per-user affiliation information according to clause 8.3.1;

then the MCVideo server:

1) shall identify the served MCVideo ID in the <mcvideo-request-uri> element of the application/vnd.3gpp.mcvideo-info+xml MIME body of the SIP PUBLISH request;

2) if the Request-URI of the SIP PUBLISH request contains the public service identity identifying the originating participating MCVideo function serving the MCVideo user, shall identify the originating MCVideo ID from public user identity in the P-Asserted-Identity header field of the SIP PUBLISH request;

3) if the Request-URI of the SIP PUBLISH request contains the public service identity identifying the terminating participating MCVideo function serving the MCVideo user, shall identify the originating MCVideo ID in the <mcvideo-calling-user-id> element of the application/vnd.3gpp.mcvideo-info+xml MIME body of the SIP PUBLISH request;

4) if the originating MCVideo ID is different than the served MCVideo ID and the originating MCVideo ID is not authorized to modify affiliation status of the served MCVideo ID, shall send a 403 (Forbidden) response and shall not continue with the rest of the steps;

5) if the Expires header field of the SIP PUBLISH request is not included or has nonzero value lower than 4294967295, shall send a SIP 423 (Interval Too Brief) response to the SIP PUBLISH request, where the SIP 423 (Interval Too Brief) response contains a Min-Expires header field set to 4294967295, and shall not continue with the rest of the steps;

6) if the Expires header field of the SIP PUBLISH request has nonzero value, shall determine the candidate expiration interval to according to IETF RFC 3903 [12];

7) if the Expires header field of the SIP PUBLISH request has zero value, shall set the candidate expiration interval to zero;

8) shall respond with SIP 200 (OK) response to the SIP PUBLISH request according to 3GPP TS 24.229 [11], IETF RFC 3903 [12]. In the SIP 200 (OK) response, the MCVideo server:

   a) shall set the Expires header field according to IETF RFC 3903 [12], to the candidate expiration time;

9) if the "entity" attribute of the <presence> element of the application/pidf+xml MIME body of the SIP PUBLISH request is different than the served MCVideo ID, shall not continue with the rest of the steps;

10) shall identify the served MCVideo client ID in the "id" attribute of the <tuple> element of the <presence> element of the application/pidf+xml MIME body of the SIP PUBLISH request;

11) shall consider an MCVideo user information entry such that:

   a) the MCVideo user information entry is in the list of MCVideo user information entries described in clause 8.2.2.2.2; and

   b) the MCVideo ID of the MCVideo user information entry is equal to the served MCVideo ID;

   as the served MCVideo user information entry;

12) shall consider an MCVideo client information entry such that:

   a) the MCVideo client information entry is in the list of MCVideo client information entries of the served MCVideo user information entry; and

   b) the MCVideo client ID of the MCVideo client information entry is equal to the served MCVideo client ID;

   as the served MCVideo client information entry;

13) shall consider a copy of the list of the MCVideo group information entries of the served MCVideo client information entry as the served list of the MCVideo group information entries;

14) if the candidate expiration interval is nonzero:

   a) shall construct the candidate list of the MCVideo group information entries as follows:

      i) for each MCVideo group ID which has an MCVideo group information entry in the served list of the MCVideo group information entries, such that the expiration time of the MCVideo group information entry has not expired yet, and which is indicated in a "group" attribute of an <affiliation> element of the

<status> element of the <tuple> element of the <presence> root element of the application/pidf+xml MIME body of the SIP PUBLISH request:

A) shall copy the MCVideo group information entry into a new MCVideo group information entry of the candidate list of the MCVideo group information entries;

B) if the affiliation status of the MCVideo group information entry is "deaffiliating" or "deaffiliated", shall set the affiliation status of the new MCVideo group information entry to the "affiliating" state and shall set the affiliating p-id of the new MCVideo group information entry to the value of the <p-id> element of the <presence> root element of the application/pidf+xml MIME body of the SIP PUBLISH request; and

C) shall set the expiration time of the new MCVideo group information entry to the current time increased with the candidate expiration interval;

ii) for each MCVideo group ID which has an MCVideo group information entry in the served list of the MCVideo group information entries, such that the expiration time of the MCVideo group information entry has not expired yet, and which is not indicated in any "group" attribute of the <affiliation> element of the <status> element of the <tuple> element of the <presence> root element of the application/pidf+xml MIME body of the SIP PUBLISH request:

A) shall copy the MCVideo group information entry into a new MCVideo group information entry of the candidate list of the MCVideo group information entries; and

B) if the affiliation status of the MCVideo group information entry is "affiliated" or "affiliating":

- shall set the affiliation status of the new MCVideo group information entry to the "de-affiliating" state; and

- shall set the expiration time of the new MCVideo group information entry to the current time increased with twice the value of timer F; and

iii) for each MCVideo group ID:

A) which does not have an MCVideo group information entry in the served list of the MCVideo group information entries; or

B) which has an MCVideo group information entry in the served list of the MCVideo group information entries, such that the expiration time of the MCVideo group information entry has already expired;

and which is indicated in a "group" element of the <affiliation> element of the <status> element of the <tuple> element of the <presence> root element of the application/pidf+xml MIME body of the SIP PUBLISH request:

A) shall add a new MCVideo group information entry in the candidate list of the MCVideo group information list for the MCVideo group ID;

B) shall set the affiliation status of the new MCVideo group information entry to the "affiliating" state;

C) shall set the expiration time of the new MCVideo group information entry to the current time increased with the candidate expiration interval; and

D) shall set the affiliating p-id of the new MCVideo group information entry to the value of the <p-id> element of the <presence> root element of the application/pidf+xml MIME body of the SIP PUBLISH request;

b) determine the candidate number of MCVideo group IDs as number of different MCVideo group IDs which have an MCVideo group information entry:

i) in the candidate list of the MCVideo group information entries; or

ii) in the list of the MCVideo group information entries of an MCVideo client information entry such that:

A) the MCVideo client information entry is in the list of the MCVideo client information entries of the served MCVideo user information entry; and

B) the MCVideo client ID of the MCVideo client information entry is not equal to the served MCVideo client ID;

with the affiliation status set to the "affiliating" state or the "affiliated" state and with the expiration time which has not expired yet; and

c) if the candidate number of MCVideo group IDs is bigger than N2 value of the served MCVideo ID (specified in the <MaxAffiliationsN2> element of the <Common> element of the corresponding MCVideo user profile), shall based on MCVideo service provider policy reduce the candidate MCVideo group IDs to that equal to N2;

NOTE: The MCVideo service provider policy can determine to remove an MCVideo group ID based on the order it appeared in the PUBLISH request or based on the importance or priority of the MCVideo group or some other policy to determine which MCVideo groups are preferred.

15) if the candidate expiration interval is zero, constructs the candidate list of the MCVideo group information entries as follows:

a) for each MCVideo group ID which has an entry in the served list of the MCVideo group information entries:

i) shall copy the MCVideo group entry of the served list of the MCVideo group information into a new MCVideo group information entry of the candidate list of the MCVideo group information entries;

ii) shall set the affiliation status of the new MCVideo group information entry to the "de-affiliating" state; and

iii) shall set the expiration time of the new MCVideo group information entry to the current time increased with twice the value of timer F;

16) shall replace the list of the MCVideo group information entries stored in the served MCVideo client information entry with the candidate list of the MCVideo group information entries;

17) shall perform the procedures specified in clause 8.2.2.2.6 for the served MCVideo ID and each MCVideo group ID:

a) which does not have an MCVideo group information entry in the served list of the MCVideo group information entries and which has an MCVideo group information entry in the candidate list of the MCVideo group information entries with the affiliation status set to the "affiliating" state;

b) which has an MCVideo group information entry in the served list of the MCVideo group information entries with the expiration time already expired, and which has an MCVideo group information entry in the candidate list of the MCVideo group information entries with the affiliation status set to the "affiliating" state;

c) which has an MCVideo group information entry in the served list of the MCVideo group information entries with the affiliation status set to the "deaffiliating" state or the "deaffiliated" state and with the expiration time not expired yet, and which has an MCVideo group information entry in the candidate list of the MCVideo group information entries with the affiliation status set to the "affiliating" state; or

d) which has an MCVideo group information entry in the served list of the MCVideo group information entries with the affiliation status set to the "affiliated" state and with the expiration time not expired yet, and which has an MCVideo group information entry in the candidate list of the MCVideo group information entries with the affiliation status set to the "de-affiliating" state;

18) shall identify the handled p-id in the <p-id> child element of the <presence> root element of the application/pidf+xml MIME body of the SIP PUBLISH request; and

19) shall perform the procedures specified in clause 8.2.2.2.5 for the served MCVideo ID.

8.2.2.2.4 Receiving subscription to affiliation status procedure

Upon receiving a SIP SUBSCRIBE request such that:

1) Request-URI of the SIP SUBSCRIBE request contains either the public service identity identifying the originating participating MCVideo function serving the MCVideo user, or the public service identity identifying the terminating participating MCVideo function serving the MCVideo user;

2) the SIP SUBSCRIBE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body containing the<mcvideo-request-uri> element which identifies an MCVideo ID served by the MCVideo server;

3) the ICSI value "urn:urn-7:3gpp-service.ims.icsi.mcvideo" (coded as specified in 3GPP TS 24.229 [11]), in a P-Asserted-Service header field according to IETF RFC 6050 [14]; and

4) the Event header field of the SIP SUBSCRIBE request contains the "presence" event type;

the MCVideo server:

1) shall identify the served MCVideo ID in the <mcvideo-request-uri> element of the application/vnd.3gpp.mcvideo-info+xml MIME body of the SIP PUBLISH request;

2) if the Request-URI of the SIP SUBSCRIBE request contains the public service identity identifying the originating participating MCVideo function serving the MCVideo user, shall identify the originating MCVideo ID from public user identity in the P-Asserted-Identity header field of the SIP SUBSCRIBE request;

3) if the Request-URI of the SIP SUBSCRIBE request contains the public service identity identifying the terminating participating MCVideo function serving the MCVideo user, shall identify the originating MCVideo ID in the <mcvideo-calling-user-id> element of the application/vnd.3gpp.mcvideo-info+xml MIME body of the SIP SUBSCRIBE request;

4) if the originating MCVideo ID is different than the served MCVideo ID and the originating MCVideo ID is not authorized to modify affiliation status of the served MCVideo ID, shall send a 403 (Forbidden) response and shall not continue with the rest of the steps; and

5) shall generate a 200 (OK) response to the SIP SUBSCRIBE request according to 3GPP TS 24.229 [11], IETF RFC 6665 [16].

For the duration of the subscription, the MCVideo server shall notify the subscriber about changes of the information of the served MCVideo ID, as described in clause 8.2.2.2.5.

8.2.2.2.5 Sending notification of change of affiliation status procedure

In order to notify the subscriber about changes of the served MCVideo ID, the MCVideo server:

1) shall consider an MCVideo user information entry such that:

   a) the MCVideo user information entry is in the list of MCVideo user information entries described in clause 8.2.2.2.2; and

   b) the MCVideo ID of the MCVideo user information entry is equal to the served MCVideo ID;

   as the served MCVideo user information entry;

2) shall consider the list of the MCVideo client information entries of the served MCVideo user information entry as the served list of the MCVideo client information entries;

3) shall generate an application/pidf+xml MIME body indicating per-user affiliation information according to clause 9.3.1 and the served list of the MCVideo client information entries with the following clarifications:

   a) the MCVideo server shall not include information from an MCVideo group information entry with the expiration time already expired;

   b) the MCVideo server shall not include information from an MCVideo group information entry with the affiliation status set to the "deaffiliated" state;

   c) if the SIP SUBSCRIBE request creating the subscription of this notification contains an application/simple-filter+xml MIME body according to clause 8.3.2, the MCVideo server shall restrict the application/pidf+xml MIME body according to the application/simple-filter+xml MIME body; and

d) if this procedures is invoked by procedure in clause 8.2.2.2.3 where the handled p-id value was identified, the MCVideo server shall set the <p-id> child element of the <presence> root element of the application/pidf+xml MIME body of the SIP NOTIFY request to the handled p-id value; and

4) send a SIP NOTIFY request according to 3GPP TS 24.229 [11], and IETF RFC 6665 [16] with the MIME body. In the SIP NOTIFY request, the MCVideo server shall include the generated application/pidf+xml MIME body indicating per-user affiliation information.

8.2.2.2.6 Sending affiliation status change towards MCVideo server owning MCVideo group procedure

NOTE 1: Usage of one SIP PUBLISH request to carry information about change of affiliation state of several MCVideo users served by the same MCVideo server is not supported in this version of the specification.

In order:

- to send an affiliation request of a served MCVideo ID to a handled MCVideo group ID;
- to send an de-affiliation request of a served MCVideo ID from a handled MCVideo group ID; or
- to send an affiliation request of a served MCVideo ID to a handled MCVideo group ID due to near expiration of the previously published information;

the MCVideo server shall generate a SIP PUBLISH request according to 3GPP TS 24.229 [11], IETF RFC 3903 [12] and IETF RFC 3856 [13]. In the SIP PUBLISH request, the MCVideo server:

1) shall set the Request-URI to the public service identity of the controlling MCVideo function associated with the handled MCVideo group ID;

NOTE 2: The public service identity can identify the controlling MCVideo function in the local MCVideo system or in an interconnected MCVideo system.

NOTE 3: If the controlling MCVideo function is in an interconnected MCVideo system in a different trust domain, then the public service identity can identify the MCVideo gateway server that acts as an entry point in the interconnected MCVideo system from the local MCVideo system.

NOTE 4: If the controlling MCVideo function is in an interconnected MCVideo system in a different trust domain, then the local MCVideo system can route the SIP request through an MCVideo gateway server that acts as an exit point from the local MCVideo system to the interconnected MCVideo system.

NOTE 5: How the participating MCVideo function determines the public service identity of the controlling MCVideo function associated with the handled MCVideo group ID or of the MCVideo gateway server in the interconnected MCVideo system is out of the scope of the present document.

NOTE 6: How the local MCVideo system routes the SIP request through an exit MCVideo gateway server is out of the scope of the present document.

2) shall include an application/vnd.3gpp.mcvideo-info+xml MIME body. In the application/vnd.3gpp.mcvideo-info+xml MIME body, the MCVideo server:

   a) shall include the <mcvideo-request-uri> element set to the handled MCVideo group ID; and

   b) shall include the <mcvideo-calling-user-id> element set to the served MCVideo ID;

3) shall include the ICSI value "urn:urn-7:3gpp-service.ims.icsi.mcvideo" (coded as specified in 3GPP TS 24.229 [11]), in a P-Asserted-Service header field according to IETF RFC 6050 [14];

4) if sending an affiliation request, shall set the Expires header field according to IETF RFC 3903 [12], to 4294967295;

NOTE 7: 4294967295, which is equal to 2^{32}-1, is the highest value defined for Expires header field in IETF RFC 3261 [15].

5) if sending an de-affiliation request, shall set the Expires header field according to IETF RFC 3903 [12], to zero;

6) shall include an P-Asserted-Identity header field set to the public service identity of the MCVideo server according to 3GPP TS 24.229 [11];

7) shall set the current p-id to a globally unique value;

8) shall consider an MCVideo user information entry such that:

   a) the MCVideo user information entry is in the list of MCVideo user information entries described in clause 8.2.2.2.2; and

   b) the MCVideo ID of the MCVideo user information entry is equal to the served MCVideo ID;

   as the served MCVideo user information entry;

9) for each MCVideo group information entry such that:

   a) the MCVideo group information entry has the "affiliating" affiliation status, the MCVideo group ID set to the handled MCVideo group ID, the expiration time has not expired yet and the affiliating p-id is not set;

   b) the MCVideo group information entry is in the list of the MCVideo group information entries of an MCVideo client information entry; and

   c) the MCVideo client information entry is in the list of the MCVideo client information entries of the served MCVideo user information entry;

   shall set the affiliating p-id of the MCVideo group information entry to the current p-id; and

10) shall include an application/pidf+xml MIME body indicating per-group affiliation information constructed according to clause 8.2.3.2. The MCVideo server shall indicate all served MCVideo client IDs, such that:

   a) the affiliation status is set to "affiliating" or "affiliated", and the expiration time has not expired yet in an MCVideo group information entry with the MCVideo group ID set to the handled MCVideo group;

   b) the MCVideo group information entry is in the list of the MCVideo group information entries of an MCVideo client information entry;

   c) the MCVideo client information entry has the MCVideo client ID set to the served MCVideo client ID; and

   d) the MCVideo client information entry is in the list of the MCVideo client information entries of the served MCVideo user information entry.

   The MCVideo server shall set the <p-id> child element of the <presence> root element to the current p-id.

   The MCVideo server shall not include the "expires" attribute in the <affiliation> element.

The MCVideo server shall send the SIP PUBLISH request according to 3GPP TS 24.229 [11].

If timer F expires for the SIP PUBLISH request sent for a (de)affiliation request of served MCVideo ID to the MCVideo group ID or upon receiving a SIP 3xx, 4xx, 5xx or 6xx response to the SIP PUBLISH request, the MCVideo server:

1) shall remove each MCVideo group ID entry such that:

   a) the MCVideo group information entry has the MCVideo group ID set to the handled MCVideo group ID;

   b) the MCVideo group information entry is in the list of the MCVideo group information entries of an MCVideo client information entry; and

   c) the MCVideo client information entry is in the list of the MCVideo client information entries of the served MCVideo user information entry.

8.2.2.2.7 Affiliation status determination from MCVideo server owning MCVideo group procedure

NOTE 1: Usage of one SIP SUBSCRIBE request to subscribe for notification about change of affiliation state of several MCVideo users served by the same MCVideo server is not supported in this version of the specification.

In order to discover whether a served MCVideo user was successfully affiliated to a handled MCVideo group in the MCVideo server owning the handled MCVideo group, the MCVideo server shall generate an initial SIP SUBSCRIBE request according to 3GPP TS 24.229 [11], IETF RFC 3856 [13], and IETF RFC 6665 [16].

In the SIP SUBSCRIBE request, the MCVideo server:

1) shall set the Request-URI to the public service identity of the controlling MCVideo function associated with the handled MCVideo group ID;

NOTE 2: The public service identity can identify the controlling MCVideo function in the local MCVideo system or in an interconnected MCVideo system.

NOTE 3: If the controlling MCVideo function is in an interconnected MCVideo system in a different trust domain, then the public service identity can identify the MCVideo gateway server that acts as an entry point in the interconnected MCVideo system from the local MCVideo system.

NOTE 4: If the controlling MCVideo function is in an interconnected MCVideo system in a different trust domain, then the local MCVideo system can route the SIP request through an MCVideo gateway server that acts as an exit point from the local MCVideo system to the interconnected MCVideo system.

NOTE 5: How the participating MCVideo function determines the public service identity of the controlling MCVideo function associated with the handled MCVideo group ID or of the MCVideo gateway server in the interconnected MCVideo system is out of the scope of the present document.

NOTE 6: How the local MCVideo system routes the SIP request through an exit MCVideo gateway server is out of the scope of the present document.

2) shall include an application/vnd.3gpp.mcvideo-info+xml MIME body. In the application/vnd.3gpp.mcvideo-info+xml MIME body, the MCVideo server:

   a) shall include the <mcvideo-request-uri> element set to the handled MCVideo group ID; and

   b) shall include the <mcvideo-calling-user-id> element set to the served MCVideo ID;

3) shall include the ICSI value "urn:urn-7:3gpp-service.ims.icsi.mcvideo" (coded as specified in 3GPP TS 24.229 [11]), in a P-Asserted-Service header field according to IETF RFC 6050 [14];

4) if the MCVideo server wants to receive the current status and later notification, shall set the Expires header field according to IETF RFC 6665 [16], to 4294967295;

NOTE 7: 4294967295, which is equal to 2^{32}-1, is the highest value defined for Expires header field in IETF RFC 3261 [15].

5) if the MCVideo server wants to fetch the current state only, shall set the Expires header field according to IETF RFC 6665 [16], to zero;

6) shall include an Accept header field containing the application/pidf+xml MIME type; and

7) shall include an application/simple-filter+xml MIME body indicating per-user restrictions of presence event package notification information according to clause 8.3.2, indicating the served MCVideo ID.

In order to re-subscribe or de-subscribe, the MCVideo server shall generate an in-dialog SIP SUBSCRIBE request according to 3GPP TS 24.229 [11], IETF RFC 3856 [13], and IETF RFC 6665 [16]. In the SIP SUBSCRIBE request, the MCVideo server:

1) if the MCVideo server wants to receive the current status and later notification, shall set the Expires header field according to IETF RFC 6665 [16], to 4294967295;

NOTE 8: 4294967295, which is equal to 2^{32}-1, is the highest value defined for Expires header field in IETF RFC 3261 [15].

2) if the MCVideo server wants to de-subscribe, shall set the Expires header field according to IETF RFC 6665 [16], to zero; and

3) shall include an Accept header field containing the application/pidf+xml MIME type.

Upon receiving a SIP NOTIFY request according to 3GPP TS 24.229 [11], IETF RFC 3856 [13], and IETF RFC 6665 [16], if SIP NOTIFY request contains an application/pidf+xml MIME body indicating per-group affiliation information constructed according to clause 8.3.1, then the MCVideo server:

1) for each served MCVideo ID and served MCVideo client ID such that the application/pidf+xml MIME body of SIP NOTIFY request contains:

   a) a <tuple> element of the root <presence> element;

   b) the "id" attribute of the <tuple> element indicating the served MCVideo ID;

   c) an <affiliation> child element of the <status> element of the <tuple> element;

   d) the "client" attribute of the <affiliation> element indicating the served MCVideo client ID; and

   e) the "expires" attribute of the <affiliation> element indicating expiration of affiliation;

   perform the following:

   a) if an MCVideo group information entry exists such that:

      i) the MCVideo group information entry has the "affiliating" affiliation status, the MCVideo group ID set to the handled MCVideo group ID, and the expiration time has not expired yet;

      ii) the MCVideo group information entry is in the list of the MCVideo group information entries of an MCVideo client information entry with the MCVideo client ID set to the served MCVideo client ID;

      iii) the MCVideo client information entry is in the list of the MCVideo client information entries of a served MCVideo user information entry with the MCVideo ID set to the served MCVideo ID; and

      iv) the MCVideo user information entry is in the list of MCVideo user information entries described in clause 8.2.2.2.2; and

      shall set the affiliation status of the MCVideo group information entry to "affiliated"; and

      shall set the next publishing time of the MCVideo group information entry to the current time and half of the time between the current time and the expiration of affiliation; and

2) for each MCVideo group information entry such that:

   a) the MCVideo group information entry has the "affiliated" affiliation status or the "deaffiliating" affiliation status, the MCVideo group ID set to the handled MCVideo group ID, and the expiration time has not expired yet;

   b) the MCVideo group information entry is in the list of the MCVideo group information entries of an MCVideo client information entry with the MCVideo client ID set to a served MCVideo client ID;

   c) the MCVideo client information entry is in the list of the MCVideo client information entries of the served MCVideo user information entry with the MCVideo ID set to a served MCVideo ID; and

   d) the MCVideo user information entry is in the list of MCVideo user information entries described in clause 8.2.2.2.2; and

   for which the application/pidf+xml MIME body of SIP NOTIFY request does not contain:

   a) a <tuple> element of the root <presence> element;

   b) the "id" attribute of the <tuple> element indicating the served MCVideo ID;

c) an <affiliation> child element of the <status> child element of the <tuple> element; and

d) the "client" attribute of the <affiliation> element indicating the served MCVideo client ID.

perform the following:

a) shall set the affiliation status of the MCVideo group information entry to "deaffiliated"; and

b) shall set the expiration time of the MCVideo group information entry to the current time; and

3) if a <p-id> element is included in the <presence> root element of the application/pidf+xml MIME body of the SIP NOTIFY request, then for each MCVideo group information entry such that:

a) the MCVideo group information entry has the "affiliating" affiliation status, the MCVideo group ID set to the handled MCVideo group ID, the expiration time has not expired yet and with the affiliating p-id set to the value of the <p-id> element;

b) the MCVideo group information entry is in the list of the MCVideo group information entries of an MCVideo client information entry with the MCVideo client ID set to a served MCVideo client ID;

c) the MCVideo client information entry is in the list of the MCVideo client information entries of the served MCVideo user information entry with the MCVideo ID set to a served MCVideo ID; and

d) the MCVideo user information entry is in the list of MCVideo user information entries described in clause 8.2.2.2.2; and

for which the application/pidf+xml MIME body of SIP NOTIFY request does not contain:

a) a <tuple> element of the root <presence> element;

b) the "id" attribute of the <tuple> element indicating the served MCVideo ID;

c) an <affiliation> child element of the <status> child element of the <tuple> element; and

d) the "client" attribute of the <affiliation> element indicating the served MCVideo client ID;

perform the following:

a) shall set the affiliation status of the MCVideo group information entry to "deaffiliated"; and

b) shall set the expiration time of the MCVideo group information entry to the current time.

8.2.2.2.8 Procedure for authorizing affiliation status change request in negotiated mode sent to served MCVideo user

Upon receiving a SIP MESSAGE request such that:

1) Request-URI of the SIP MESSAGE request contains the public service identity identifying the terminating participating MCVideo function serving the MCVideo user;

2) the SIP MESSAGE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body containing the<mcvideo-request-uri> element and the <mcvideo-calling-user-id> element;

3) the ICSI value "urn:urn-7:3gpp-service.ims.icsi.mcvideo" (coded as specified in 3GPP TS 24.229 [11]), in a P-Asserted-Service header field according to IETF RFC 6050 [14]; and

4) the SIP MESSAGE request contains an application/vnd.3gpp.mcvideo-affiliation-command+xml MIME body;

then the MCVideo server:

1) shall identify the served MCVideo ID in the <mcvideo-request-uri> element of the application/vnd.3gpp.mcvideo-info+xml MIME body of the SIP MESSAGE request;

2) shall identify the originating MCVideo ID in the <mcvideo-calling-user-id> element of the application/vnd.3gpp.mcvideo-info+xml MIME body of the SIP MESSAGE request;

3) if the originating MCVideo ID is not authorized to send an affiliation status change request in negotiated mode to the served MCVideo ID, shall send a 403 (Forbidden) response and shall not continue with the rest of the steps;

4) shall set the Request-URI of the SIP MESSAGE request to the public user identity bound to the served MCVideo ID in the MCVideo server; and

5) shall include an Accept-Contact header field with the g.3gpp.icsi-ref media feature tag containing the value of "urn:urn-7:3gpp-service.ims.icsi.mcvideo" along with the "require" and "explicit" header field parameters according to IETF RFC 3841 [20];

before forwarding the SIP MESSAGE request further.

8.2.2.2.9 Forwarding affiliation status change towards another MCVideo user procedure

Upon receiving a SIP PUBLISH request such that:

1) Request-URI of the SIP PUBLISH request contains the public service identity identifying the originating participating MCVideo function serving the MCVideo user;

2) the SIP PUBLISH request contains an application/vnd.3gpp.mcvideo-info MIME body containing the<mcvideo-request-uri> element which identifies an MCVideo ID not served by the MCVideo server;

3) the ICSI value "urn:urn-7:3gpp-service.ims.icsi.mcvideo" (coded as specified in 3GPP TS 24.229 [11]), in a P-Asserted-Service header field according to IETF RFC 6050 [14];

4) the Event header field of the SIP PUBLISH request contains the "presence" event type; and

5) SIP PUBLISH request contains an application/pidf+xml MIME body indicating per-user affiliation information according to clause 8.3.1;

then the MCVideo server:

1) shall identify the target MCVideo ID in the <mcvideo-request-uri> element of the application/vnd.3gpp.mcvideo-info MIME body of the SIP PUBLISH request;

2) shall identify the originating MCVideo ID from public user identity in the P-Asserted-Identity header field of the SIP PUBLISH request;

3) shall generate a SIP PUBLISH request from the received SIP PUBLISH request. In the generated SIP PUBLISH request, the MCVideo server:

   a) shall set the Request-URI to the public service identity identifying the terminating participating MCVideo function serving the target MCVideo ID;

NOTE 1: The public service identity can identify the terminating participating MCVideo function in the local MCVideo system or in an interconnected MCVideo system.

NOTE 2: If the terminating participating MCVideo function is in an interconnected MCVideo system in a different trust domain, then the public service identity can identify the MCVideo gateway server that acts as an entry point in the interconnected MCVideo system from the local MCVideo system.

NOTE 3: If the terminating participating MCVideo function is in an interconnected MCVideo system in a different trust domain, then the local MCVideo system can route the SIP request through an MCVideo gateway server that acts as an exit point from the local MCVideo system to the interconnected MCVideo system.

NOTE 4: How the originating participating MCVideo function determines the public service identity of the terminating participating MCVideo function serving the target MCVideo ID or of the MCVideo gateway server in the interconnected MCVideo system is out of the scope of the present document.

NOTE 5: How the local MCVideo system routes the SIP request through an exit MCVideo gateway server is out of the scope of the present document.

   b) shall include a P-Asserted-Identity header field containing the public service identity identifying the originating participating MCVideo function serving the MCVideo user;

c) shall include an application/vnd.3gpp.mcvideo-info+xml MIME body. In the application/vnd.3gpp.mcvideo-info+xml MIME body, the MCVideo server:

A) shall include the <mcvideo-request-uri> element set to the target MCVideo ID; and

B) shall include the <mcvideo-calling-user-id> element set to the originating MCVideo ID; and

d) shall include other signalling elements from the received SIP PUBLISH request; and

4) shall send the generated SIP PUBLISH request according to 3GPP TS 24.229 [11].

The MCVideo server shall forward received SIP responses to the SIP PUBLISH request.

8.2.2.2.10 Forwarding subscription to affiliation status towards another MCVideo user procedure

Upon receiving a SIP SUBSCRIBE request such that:

1) Request-URI of the SIP PUBLISH request contains the public service identity identifying the originating participating MCVideo function serving the MCVideo user;

2) the SIP PUBLISH request contains an application/vnd.3gpp.mcvideo-info MIME body containing the<mcvideo-request-uri> element which identifies an MCVideo ID not served by MCVideo server;

3) the ICSI value "urn:urn-7:3gpp-service.ims.icsi.mcvideo" (coded as specified in 3GPP TS 24.229 [11]), in a P-Asserted-Service header field according to IETF RFC 6050 [14]; and

4) the Event header field of the SIP SUBSCRIBE request contains the "presence" event type;

then the MCVideo server:

1) shall identify the target MCVideo ID in the <mcvideo-request-uri> element of the application/vnd.3gpp.mcvideo-info MIME body of the SIP SUBSCRIBE request;

2) shall identify the originating MCVideo ID from public user identity in the P-Asserted-Identity header field of the SIP SUBSCRIBE request;

3) shall generate a SIP SUBSCRIBE request from the received SIP SUBSCRIBE request. In the generated SIP SUBSCRIBE request, the MCVideo server:

a) shall set the Request-URI to the public service identity identifying the terminating participating MCVideo function serving the target MCVideo ID;

NOTE 1: The public service identity can identify the terminating participating MCVideo function in the local MCVideo system or in an interconnected MCVideo system.

NOTE 2: If the terminating participating MCVideo function is in an interconnected MCVideo system in a different trust domain, then the public service identity can identify the MCVideo gateway server that acts as an entry point in the interconnected MCVideo system from the local MCVideo system.

NOTE 3: If the terminating participating MCVideo function is in an interconnected MCVideo system in a different trust domain, then the local MCVideo system can route the SIP request through an MCVideo gateway server that acts as an exit point from the local MCVideo system to the interconnected MCVideo system.

NOTE 4: How the originating participating MCVideo function determines the public service identity of the terminating participating MCVideo function serving the target MCVideo ID or of the MCVideo gateway server in the interconnected MCVideo system is out of the scope of the present document.

NOTE 5: How the local MCVideo system routes the SIP request through an exit MCVideo gateway server is out of the scope of the present document.

b) shall include a P-Asserted-Identity header field containing the public service identity identifying the originating participating MCVideo function serving the MCVideo user;

c) shall include an application/vnd.3gpp.mcvideo-info+xml MIME body. In the application/vnd.3gpp.mcvideo-info+xml MIME body, the MCVideo server:

A) shall include the <mcvideo-request-uri> element set to the target MCVideo ID; and

B) shall include the <mcvideo-calling-user-id> element set to the originating MCVideo ID; and

d) shall include other signalling elements from the received SIP SUBSCRIBE request; and

4) shall send the generated SIP SUBSCRIBE request according to 3GPP TS 24.229 [11].

The MCVideo server shall forward any received SIP responses to the SIP SUBSCRIBE request, any received SIP NOTIFY request and any received SIP responses to the SIP NOTIFY request.

8.2.2.2.11 Affiliation status determination

This clause is referenced from other procedures.

If the participating MCVideo function needs to determine the affiliation status of an MCVideo user to an MCVideo group, the participating function:

1) shall find the user information entry in the list of MCVideo user information entries described in clause 9.2.2.2.2 such that the MCVideo ID of the MCVideo user information entry is equal to the MCVideo ID of the originator of the received SIP request;

   a) if the applicable MCVideo group information entry cannot be found, then the participating MCVideo function shall determine that the MCVideo user is not affiliated to the MCVideo group at the MCVideo client and the skip the rest of the steps;

2) shall find the MCVideo client information entry in the list of MCVideo client information entries of MCVideo user information entry found in step 1) in which the MCVideo client ID matches the value of the <mcvideo-client-id> element contained in the application/vnd.3gpp.mcvideo-info+xml MIME body in the received SIP request;

   a) if the applicable MCVideo client information entry cannot be found, then the participating MCVideo function shall determine that the MCVideo user is not affiliated to the MCVideo group at the MCVideo client and the skip the rest of the steps;

3) shall find the MCVideo group information entry in the list of MCVideo group information entries of MCVideo client information entry found in step 2 such that the MCVideo group identity matches the value of the identity of the targeted MCVideo group;

   a) if the applicable MCVideo group information entry was found in step 3) and the affiliation status of the MCVideo group information entry is "affiliating" or "affiliated", shall determine that the MCVideo user at the MCVideo client to be affiliated to the targeted MCVideo group and skip the rest of the steps;

   b) if the applicable MCVideo group information entry was found in step 3) and the affiliation status of the MCVideo group information entry is "deaffiliating" or "deaffiliated", shall determine that the MCVideo user at the MCVideo client to not be affiliated to the targeted MCVideo group and skip the rest of the steps; or

   c) if the applicable MCVideo group information entry was not found in step 3), shall determine that the MCVideo user at the MCVideo client is not affiliated to the targeted MCVideo group.

8.2.2.2.12 Affiliation status change by implicit affiliation

This clause is referenced from other procedures.

Upon receiving a SIP request that requires implicit affiliation of the sending MCVideo client to an MCVideo group, the participating MCVideo function:

1) shall determine the served MCVideo client ID from the <mcvideo-client-id> element of the application/vnd.3gpp.mcvideo-info+xml MIME body in the received SIP request;

2) shall determine the MCVideo group ID from the <mcvideo-request-uri> element of the application/vnd.3gpp.mcvideo-info+xml MIME body in the received SIP request;

3) shall determine the served MCVideo ID by using the public user identity in the P-Asserted-Identity header field of the SIP request;

NOTE 1: The MCVideo ID of the calling user is bound to the public user identity at the time of service authorisation.

4) shall consider an MCVideo user information entry such that:

   a) the MCVideo user information entry is in the list of MCVideo user information entries described in clause 8.2.2.2.2; and

   b) the MCVideo ID of the MCVideo user information entry is equal to the served MCVideo ID;

   as the served MCVideo user information entry;

5) shall consider an MCVideo client information entry such that:

   a) the MCVideo client information entry is in the list of MCVideo client information entries of the served MCVideo user information entry; and

   b) the MCVideo client ID of the MCVideo client information entry is equal to the served MCVideo client ID;

   as the served MCVideo client information entry;

6) shall consider a copy of the list of the MCVideo group information entries of the served MCVideo client information entry as the served list of the MCVideo group information entries;

7) shall construct the candidate list of the MCVideo group information entries as follows:

   a) for each MCVideo group ID which has an MCVideo group information entry in the served list of the MCVideo group information entries shall copy the MCVideo group information entry into a new MCVideo group information entry of the candidate list of the MCVideo group information entries; and

   b) if the determined MCVideo group ID does not have an MCVideo group information entry in the served list of the MCVideo group information entries or has an MCVideo group information entry in the served list of the MCVideo group information entries, such that the expiration time of the MCVideo group information entry has already expired:

      i) shall add a new MCVideo group information entry in the candidate list of the MCVideo group information list for the determined MCVideo group ID;

      ii) shall set the affiliation status of the new MCVideo group information entry to the "affiliating" state; and

      iii) shall set the expiration time of the new MCVideo group information entry to the current time increased with the candidate expiration interval;

8) determine the candidate number of MCVideo group IDs as the number of different MCVideo group IDs which have an MCVideo group information entry:

   a) in the candidate list of the MCVideo group information entries; or

   b) in the list of the MCVideo group information entries of an MCVideo client information entry such that:

      i) the MCVideo client information entry is in the list of the MCVideo client information entries of the served MCVideo user information entry; and

      ii) the MCVideo client ID of the MCVideo client information entry is not equal to the served MCVideo client ID;

   with the affiliation status set to the "affiliating" state or the "affiliated" state and with the expiration time which has not expired yet; and

9) if the candidate number of MCVideo group IDs is bigger than the N2 value of the served MCVideo ID (specified in the <MaxAffiliationsN2> element of the <Common> element of the corresponding MCVideo user profile), shall based on MCVideo service provider policy reduce the candidate MCVideo group IDs to that equal to N2;

NOTE 2: The MCVideo service provider policy can determine to remove an MCVideo group ID based on the importance or priority of other MCVideo groups, received SIP requests containing an authorised request for originating a priority call or other policy to determine which MCVideo groups are preferred.

10) if the determined MCVideo group ID cannot be added to the the candidate list of the MCVideo group information entries due to exceeding the MCVideo user's N2 limit (specified in the <MaxAffiliationsN2> element of the <Common> element of the corresponding MCVideo user profile of the served MCVideo ID), shall discard the candidate list of the MCVideo group information entries and skip the remaining steps of the current procedure; and

11) shall replace the list of the MCVideo group information entries stored in the served MCVideo client information entry with the candidate list of the MCVideo group information entries.

8.2.2.2.13 Implicit affiliation status change completion

This clause is referenced from other procedures.

If the participating MCVideo function has received a SIP 2xx response from the controlling MCVideo function to a SIP request that had triggered performing the procedures of clause 8.2.2.2.12, the participating MCVideo function:

1) shall set the affiliation status of the MCVideo group information entry added to the candidate list of the MCVideo group information entries by the procedures of clause 8.2.2.2.12 to "affiliated"; and

2) shall perform the procedures specified in clause 8.2.2.2.5 for the served MCVideo ID.

8.2.2.2.14 Implicit affiliation status change cancellation

This clause is referenced from other procedures.

If the participating MCVideo function determines that a received SIP request that had triggered performing the procedures of clause 8.2.2.2.12 needs to be rejected or if the participating MCVideo function receives a SIP 4xx, 5xx or 6xx response from the controlling MCVideo function for the received SIP request, the participating MCVideo function:

1) shall remove the MCVideo group ID entry added by the procedures of clause 8.2.2.2.12 such that:

   a) the MCVideo group information entry has the MCVideo group ID set to the MCVideo group ID of the MCVideo group targeted by the received SIP request;

   b) the MCVideo group information entry is in the list of the MCVideo group information entries of an MCVideo client information entry containing the MCVideo client ID included in the received SIP request; and

   c) the MCVideo client information entry is in the list of the MCVideo client information entries of the MCVideo user information entry containing the MCVideo ID of the sender of the received SIP request.

8.2.2.2.15 Implicit affiliation to configured groups procedure

This clause is referenced from other procedures.

If the participating MCVideo function has successfully performed service authorisation for the MCVideo ID identified in the service authorisation procedure, the participating MCVideo function:

1) shall identify the MCVideo ID included in the SIP request received for service authorisation procedure as the served MCVideo ID;

2) shall identify the MCVideo client ID from the <mcvideo-client-id> element contained in the application/vnd.3gpp.mcvideo-info+xml MIME body included in the SIP request received for service authorisation as the served MCVideo client ID;

3) shall download the MCVideo user profile from the MCVideo user database if not already stored at the participating MCVideo function;

4) if no <ImplicitAffiliations> element is contained in the <OnNetwork> element of the MCVideo user profile document (see the MCVideo user profile document in 3GPP TS 24.484 [25]) for the served MCVideo ID or the <ImplicitAffiliations> element contains no <entry> elements containing an MCVideo group ID, shall skip the remaining steps;

5) shall consider an MCVideo user information entry such that:

a) the MCVideo user information entry is in the list of MCVideo user information entries described in clause 8.2.2.2.2; and

b) the MCVideo ID of the MCVideo user information entry is equal to the served MCVideo ID;

as the served MCVideo user information entry;

6) shall consider an MCVideo client information entry such that:

a) the MCVideo client information entry is in the list of MCVideo client information entries of the served MCVideo user information entry; and

b) the MCVideo client ID of the MCVideo client information entry is equal to the served MCVideo client ID;

as the served MCVideo client information entry;

7) shall consider a copy of the list of the MCVideo group information entries of the served MCVideo client information entry as the served list of the MCVideo group information entries;

8) shall construct the candidate list of the MCVideo group information entries as follows:

a) for each MCVideo group ID which has an MCVideo group information entry in the served list of the MCVideo group information entries shall copy the MCVideo group information entry into a new MCVideo group information entry of the candidate list of the MCVideo group information entries;

b) for each MCVideo group ID contained in an <entry> element of the <ImplicitAffiliations> element in the <OnNetwork> element of the MCVideo user profile document (see the MCVideo user profile document in 3GPP TS 24.484 [25]) for the served MCVideo ID that does not have an MCVideo group information entry in the served list of the MCVideo group information entries or has an MCVideo group information entry in the served list of the MCVideo group information entries such that the expiration time of the MCVideo group information entry has already expired:

i) shall add a new MCVideo group information entry in the candidate list of the MCVideo group information list for the MCVideo group ID;

ii) shall set the affiliation status of the new MCVideo group information entry to the "affiliating" state; and

iii) shall set the expiration time of the new MCVideo group information entry to the current time increased with the candidate expiration interval;

c) if in step b) above, no new MCVideo group information entries were added to the candidate list of the MCVideo group information list for the MCVideo group ID:

i) shall discard the candidate list; and

ii) shall skip the remaining steps;

9) determine the candidate number of MCVideo group IDs as the number of different MCVideo group IDs which have an MCVideo group information entry:

a) in the candidate list of the MCVideo group information entries; or

b) in the list of the MCVideo group information entries of an MCVideo client information entry such that:

i) the MCVideo client information entry is in the list of the MCVideo client information entries of the served MCVideo user information entry; and

ii) the MCVideo client ID of the MCVideo client information entry is not equal to the served MCVideo client ID;

with the affiliation status set to the "affiliating" state or the "affiliated" state and with the expiration time which has not expired yet; and

c) if the candidate number of MCVideo group IDs is bigger than the N2 value of the served MCVideo ID (specified in the <MaxAffiliationsN2> element of the <Common> element of the corresponding MCVideo user profile), shall based on MCVideo service provider policy reduce the candidate MCVideo group IDs to that equal to N2;

NOTE 1: The MCVideo service provider policy can determine to remove an MCVideo group ID based on the importance or priority of other MCVideo groups, received SIP requests containing an authorised request for originating a priority call or other policy to determine which MCVideo groups are preferred.

10) shall replace the list of the MCVideo group information entries stored in the served MCVideo client information entry with the candidate list of the MCVideo group information entries; and

11) for each MCVideo group ID contained in an <entry> element of the <ImplicitAffiliations> element in the <OnNetwork> element of the MCVideo user profile document (see the MCVideo user profile document in 3GPP TS 24.484 [25]) for the served MCVideo ID and which has an MCVideo group information entry in the candidate list of the MCVideo group information entries with an affiliation status of "affiliating", shall perform the procedures specified in clause 8.2.2.2.6 for the served MCVideo ID and each MCVideo group ID.

NOTE 2: To learn of the MCVideo groups successfully affiliated to, the MCVideo client can subscribe to that information by the procedures specified in clause 8.2.1.3.

8.2.2.2.16 Forwarding subscription to group dynamic data towards the controlling MCVideo server procedure

Upon receiving a SIP SUBSCRIBE request such that:

1) Request-URI of the SIP SUBSCRIBE request contains the public service identity identifying the originating participating MCVideo function serving the MCVideo user;

2) the SIP SUBCRIBE request contains an application/vnd.3gpp.mcvideo-info MIME body containing the<mcvideo-request-uri> element which identifies an MCVideo group ID not served by the MCVideo server;

3) the ICSI value "urn:urn-7:3gpp-service.ims.icsi.mcvideo" (coded as specified in 3GPP TS 24.229 [11]), in a P-Asserted-Service header field according to IETF RFC 6050 [9]; and

4) the Event header field of the SIP SUBSCRIBE request contains the "presence" event type;

then the MCVideo server:

1) shall identify the target MCVideo group ID in the <mcvideo-request-uri> element of the application/vnd.3gpp.mcvideo-info MIME body of the SIP SUBSCRIBE request;

2) shall identify the originating MCVideo ID from public user identity in the P-Asserted-Identity header field of the SIP SUBSCRIBE request;

3) shall if the originating MCVideo ID is not authorized for this subscription reject the SIP SUBSCRIBE request with SIP 403 (Forbidden) response to the SIP SUBSCRIBE request according to 3GPP TS 24.229 [11], IETF RFC 3903 [37] and IETF RFC 3856 [51] and skip the rest of the steps;

4) shall generate a SIP SUBSCRIBE request from the received SIP SUBSCRIBE request. In the generated SIP SUBSCRIBE request, the MCVideo server:

   a) shall set the Request-URI to the public service identity identifying the controlling MCVideo function serving the target MCVideo group ID;

NOTE 1: The public service identity can identify the terminating participating MCVideo function in the local MCVideo system or in an interconnected MCVideo system.

NOTE 2: If the terminating participating MCVideo function is in an interconnected MCVideo system in a different trust domain, then the public service identity can identify the MCVideo gateway server that acts as an entry point in the interconnected MCVideo system from the local MCVideo system.

NOTE 3: If the terminating participating MCVideo function is in an interconnected MCVideo system in a different trust domain, then the local MCVideo system can route the SIP request through an MCVideo gateway server that acts as an exit point from the local MCVideo system to the interconnected MCVideo system.

NOTE 4: How the originating participating MCVideo function determines the public service identity of the terminating participating MCVideo function serving the target MCVideo ID or of the MCVideo gateway server in the interconnected MCVideo system is out of the scope of the present document.

NOTE 5: How the local MCVideo system routes the SIP request through an exit MCVideo gateway server is out of the scope of the present document.

b) shall include a P-Asserted-Identity header field containing the public service identity identifying the originating participating MCVideo function serving the MCVideo user;

c) shall include an application/vnd.3gpp.mcvideo-info+xml MIME body. In the application/vnd.3gpp.mcvideo-info+xml MIME body, the MCVideo server:

A) shall include the <mcvideo-request-uri> element set to the target MCVideo group ID; and

B) shall include the <mcvideo-calling-user-id> element set to the originating MCVideo ID; and

d) shall include other signalling elements from the received SIP SUBSCRIBE request; and

4) shall send the generated SIP SUBSCRIBE request according to 3GPP TS 24.229 [11].

The MCVideo server shall forward any received SIP responses to the SIP SUBSCRIBE request, any received SIP NOTIFY requests and any received SIP responses to the SIP NOTIFY request.

8.2.2.3 Procedures of MCVideo server owning the MCVideo group

8.2.2.3.1 General

The procedures of MCVideo server owning the MCVideo group consist of:

- receiving group affiliation status change procedure;
- receiving subscription to affiliation status procedure;
- sending notification of change of affiliation status procedure;
- affiliation eligibility check procedure;
- implicit affiliation eligibility check procedure; and
- affiliation status change by implicit affiliation procedure.
- receiving subscription to group dynamic data procedure and;
- sending notification of change of group dynamic data procedure.

NOTE: Usage of CSC-3 part of MCVideo group affiliation procedure and of CSC-3 part of MCVideo group de-affiliation procedure is not specified in this version of the specification.

8.2.2.3.2 Stored information

The MCVideo server shall maintain a list of MCVideo group information entries.

In each MCVideo group information entry, the MCVideo server shall maintain:

1) an MCVideo group ID. This field uniquely identifies the MCVideo group information entry in the list of the MCVideo group information entries;

2) the status of the MCVideo group as defined in clause 10.1.5.5 of 3GPP TS 23.280 [74], along with the MCVideo ID of the user that last changed the status; and

3) a list of MCVideo user information entries.

In each MCVideo user information entry, the MCVideo server shall maintain:

1) an MCVideo ID. This field uniquely identifies the MCVideo user information entry in the list of the MCVideo user information entries;

2) a list of MCVideo client information entries; and

3) an expiration time.

In each MCVideo client information entry, the MCVideo server shall maintain:

1) an MCVideo client ID. This field uniquely identifies the MCVideo client information entry in the list of the MCVideo client information entries.

8.2.2.3.3 Receiving group affiliation status change procedure

Upon receiving a SIP PUBLISH request such that:

1) Request-URI of the SIP PUBLISH request contains the public service identity of the controlling MCVideo function associated with the served MCVideo group;

2) the SIP PUBLISH request contains an application/vnd.3gpp.mcvideo-info+xml MIME body containing the <mcvideo-request-uri> element and the <mcvideo-calling-user-id> element;

3) the ICSI value "urn:urn-7:3gpp-service.ims.icsi.mcvideo" (coded as specified in 3GPP TS 24.229 [11]), in a P-Asserted-Service header field according to IETF RFC 6050 [14];

4) the Event header field of the SIP PUBLISH request contains the "presence" event type; and

5) SIP PUBLISH request contains an application/pidf+xml MIME body indicating per-group affiliation information constructed according to clause 8.2.3.2;

then the MCVideo server:

1) shall identify the served MCVideo group ID in the <mcvideo-request-uri> element of the application/vnd.3gpp.mcvideo-info+xml MIME body of the SIP PUBLISH request;

2) shall identify the handled MCVideo ID in the <mcvideo-calling-user-id> element of the application/vnd.3gpp.mcvideo-info+xml MIME body of the SIP PUBLISH request;

3) if the Expires header field of the SIP PUBLISH request is not included or has nonzero value lower than 4294967295, shall send a SIP 423 (Interval Too Brief) response to the SIP PUBLISH request, where the SIP 423 (Interval Too Brief) response contains a Min-Expires header field set to 4294967295, and shall not continue with the rest of the steps;

4) if an MCVideo group for the served MCVideo group ID does not exist in the group management server according to 3GPP TS 24.481 [24], shall reject the SIP PUBLISH request with SIP 403 (Forbidden) response to the SIP PUBLISH request according to 3GPP TS 24.229 [11], IETF RFC 3903 [12] and IETF RFC 3856 [13] and skip the rest of the steps;

5) if the handled MCVideo ID is not a member of the MCVideo group identified by the served MCVideo group ID, shall reject the SIP PUBLISH request with SIP 403 (Forbidden) response to the SIP PUBLISH request according to 3GPP TS 24.229 [11], IETF RFC 3903 [12] and IETF RFC 3856 [13] and skip the rest of the steps;

6) shall respond with SIP 200 (OK) response to the SIP PUBLISH request according to 3GPP TS 24.229 [11], IETF RFC 3903 [12]. In the SIP 200 (OK) response, the MCVideo server:

   a) shall set the Expires header field according to IETF RFC 3903 [12], to the selected expiration time;

7) if the "entity" attribute of the <presence> element of the application/pidf+xml MIME body of the SIP PUBLISH request is different than the served MCVideo group ID, shall not continue with the rest of the steps;

8) if the handled MCVideo ID is different from the MCVideo ID in the "id" attribute of the <tuple> element of the <presence> root element of the application/pidf+xml MIME body of the SIP PUBLISH request, shall not continue with the rest of the steps;

9) shall consider an MCVideo group information entry such that:

   a) the MCVideo group information entry is in the list of MCVideo group information entries described in clause 8.2.2.3.2; and

   b) the MCVideo group ID of the MCVideo group information entry is equal to the served MCVideo group ID;

as the served MCVideo group information entry;

10) if the selected expiration time is zero:

a) shall remove the MCVideo user information entry such that:

i) the MCVideo user information entry is in the list of the MCVideo user information entries of the served MCVideo group information entry; and

ii) the MCVideo user information entry has the MCVideo ID set to the served MCVideo ID;

11) if the selected expiration time is not zero:

a) shall consider an MCVideo user information entry such that:

i) the MCVideo user information entry is in the list of the MCVideo user information entries of the served MCVideo group information entry; and

ii) the MCVideo ID of the MCVideo user information entry is equal to the handled MCVideo ID;

as the served MCVideo user information entry;

b) if the MCVideo user information entry does not exist:

i) shall insert an MCVideo user information entry with the MCVideo ID set to the handled MCVideo ID into the list of the MCVideo user information entries of the served MCVideo group information entry; and

ii) shall consider the inserted MCVideo user information entry as the served MCVideo user information entry; and

c) shall set the following information in the served MCVideo user information entry:

i) set the MCVideo client ID list according to the "client" attributes of the <affiliation> elements of the <status> element of the <tuple> element of the <presence> root element of the application/pidf+xml MIME body of the SIP PUBLISH request; and

ii) set the expiration time according to the selected expiration time;

12) shall identify the handled p-id in the <p-id> child element of the <presence> root element of the application/pidf+xml MIME body of the SIP PUBLISH request; and

13) shall perform the procedures specified in clause 8.2.2.3.5 for the served MCVideo group ID.

8.2.2.3.4 Receiving subscription to affiliation status procedure

NOTE: Usage of one SIP SUBSCRIBE request to subscribe for notification about change of affiliation state of several MCVideo users served by the same MCVideo server is not supported in this version of the specification.

Upon receiving a SIP SUBSCRIBE request such that:

1) Request-URI of the SIP SUBSCRIBE request contains the public service identity of the controlling MCVideo function associated with the served MCVideo group;

2) the SIP SUBSCRIBE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body containing the<mcvideo-request-uri> element and the <mcvideo-calling-user-id> element;

3) the ICSI value "urn:urn-7:3gpp-service.ims.icsi.mcvideo" (coded as specified in 3GPP TS 24.229 [11]), in a P-Asserted-Service header field according to IETF RFC 6050 [14];

4) the Event header field of the SIP SUBSCRIBE request contains the "presence" event type; and

5) the SIP SUBSCRIBE request contains an application/simple-filter+xml MIME body indicating per-user restrictions of presence event package notification information according to clause 8.3.2 indicating the same

MCVideo ID as in the <mcvideo-calling-user-id> element of the application/vnd.3gpp.mcvideo-info+xml MIME body of the SIP SUBSCRIBE request;

then the MCVideo server:

1) shall identify the served MCVideo group ID in the <mcvideo-request-uri> element of the application/vnd.3gpp.mcvideo-info+xml MIME body of the SIP SUBSCRIBE request;

2) shall identify the handled MCVideo ID in the <mcvideo-calling-user-id> element of the application/vnd.3gpp.mcvideo-info+xml MIME body of the SIP SUBSCRIBE request;

3) if the Expires header field of the SIP SUBSCRIBE request is not included or has nonzero value lower than 4294967295, shall send a SIP 423 (Interval Too Brief) response to the SIP SUBSCRIBE request, where the SIP 423 (Interval Too Brief) response contains a Min-Expires header field set to 4294967295, and shall not continue with the rest of the steps;

4) if an MCVideo group for the served MCVideo group ID does not exist in the group management server, shall reject the SIP SUBSCRIBE request with SIP 403 (Forbidden) response to the SIP SUBSCRIBE request according to 3GPP TS 24.229 [11], IETF RFC 3903 [12] and IETF RFC 3856 [13] and skip the rest of the steps;

5) if the handled MCVideo ID is not a member of the MCVideo group identified by the served MCVideo group ID, shall reject the SIP SUBSCRIBE request with SIP 403 (Forbidden) response to the SIP SUBSCRIBE request according to 3GPP TS 24.229 [11], IETF RFC 3903 [12] and IETF RFC 3856 [13] and skip the rest of the steps; and

6) shall generate a SIP 200 (OK) response to the SIP SUBSCRIBE request according to 3GPP TS 24.229 [11], IETF RFC 6665 [16].

For the duration of the subscription, the MCVideo server shall notify subscriber about changes of the information of the served MCVideo ID, as described in clause 8.2.2.2.5.

8.2.2.3.5 Sending notification of change of affiliation status procedure

In order to notify the subscriber identified by the handled MCVideo ID about changes of the affiliation status of the served MCVideo group ID, the MCVideo server:

1) shall consider an MCVideo group information entry such that:

   a) the MCVideo group information entry is in the list of MCVideo group information entries described in clause 8.2.2.3.2; and

   b) the MCVideo group ID of the MCVideo group information entry is equal to the served MCVideo group ID;

2) shall consider an MCVideo user information entry such:

   a) the MCVideo user information entry is in the list of the MCVideo user information entries of the served MCVideo group information entry; and

   b) the MCVideo ID of the MCVideo user information entry is equal to the handled MCVideo ID;

   as the served MCVideo user information entry;

3) shall generate an application/pidf+xml MIME body indicating per-group affiliation information according to clause 9.3.1 and the served list of the served MCVideo user information entry of the MCVideo group information entry with following clarifications:

   a) the MCVideo server shall include the "expires" attribute in the <affiliation> element; and

   b) if this procedures is invoked by procedure in clause 8.2.2.3.3 where the handled p-id was identified, the MCVideo server shall set the <p-id> child element of the <presence> root element of the application/pidf+xml MIME body of the SIP NOTIFY request to the handled p-id value; and

4) send a SIP NOTIFY request according to 3GPP TS 24.229 [11], and IETF RFC 6665 [16]. In the SIP NOTIFY request, the MCVideo server shall include the generated application/pidf+xml MIME body indicating per-group affiliation information.

8.2.2.3.6 Implicit affiliation eligibility check procedure

This clause is referenced from other procedures.

Upon receiving a SIP request for an MCVideo group that the MCVideo user is not currently affiliated to and that requires the controlling MCVideo function to check on the eligibility of the MCVideo user to be implicitly affiliated to the MCVideo group, the controlling MCVideo function:

1) shall perform the procedures of clause 8.2.2.3.8 to determine if the MCVideo user is eligible to be affiliated to the MCVideo group; and

2) if the MCVideo user was determined eligible to be affiliated to the MCVideo group by the procedures of clause 8.2.2.3.8, shall consider the MCVideo user to be eligible for implicit affiliation to the MCVideo group.

8.2.2.3.7 Affiliation status change by implicit affiliation procedure

This clause is referenced from other procedures.

Upon receiving a SIP request for an MCVideo group that the MCVideo user is not currently affiliated to and that requires the controlling MCVideo function to perform an implicit affiliation to, the controlling MCVideo function:

1) shall identify the served MCVideo group ID in the <mcvideo-request-uri> element of the application/vnd.3gpp.mcvideo-info+xml MIME body of the SIP request;

2) shall identify the handled MCVideo ID in the <mcvideo-calling-user-id> element of the application/vnd.3gpp.mcvideo-info+xml MIME body of the SIP request;

3) shall consider an MCVideo group information entry such that:

   a) the MCVideo group information entry is in the list of MCVideo group information entries described in clause 8.2.2.3.2; and

   b) the MCVideo group ID of the MCVideo group information entry is equal to the served MCVideo group ID;

   as the served MCVideo group information entry;

4) shall consider an MCVideo user information entry such that:

   a) the MCVideo user information entry is in the list of the MCVideo user information entries of the served MCVideo group information entry; and

   b) the MCVideo ID of the MCVideo user information entry is equal to the handled MCVideo ID;

   as the served MCVideo user information entry;

   c) if the MCVideo user information entry does not exist:

      i) shall insert an MCVideo user information entry with the MCVideo ID set to the handled MCVideo ID into the list of the MCVideo user information entries of the served MCVideo group information entry; and

      ii) shall consider the inserted MCVideo user information entry as the served MCVideo user information entry; and

   d) shall make the following modifications in the served MCVideo user information entry:

      i) add the MCVideo client ID derived from the received SIP request to the MCVideo client ID list if not already present; and

      ii) set the expiration time as determined by local policy;

5) shall perform the procedures specified in clause 8.2.2.3.5 for the served MCVideo group ID.

8.2.2.3.8 Affiliation eligibility check procedure

This clause is referenced from other procedures.

Upon receiving a SIP request for an MCVideo group that the MCVideo user is not currently affiliated to and that requires the controlling MCVideo function to check on the eligibility of the MCVideo user to be affiliated to the MCVideo group, the controlling MCVideo function shall:

1) shall identify the served MCVideo group ID in the <mcvideo-request-uri> element of the application/vnd.3gpp.mcvideo-info+xml MIME body of the SIP request;

2) shall identify the handled MCVideo ID in the <mcvideo-calling-user-id> element of the application/vnd.3gpp.mcvideo-info+xml MIME body of the SIP request;

3) if an MCVideo group for the served MCVideo group ID does not exist in the group management server according to 3GPP TS 24.481 [24], shall consider the MCVideo user to be ineligible for affiliation and skip the rest of the steps;

4) if the handled MCVideo ID is not a member of the MCVideo group identified by the served MCVideo group ID, shall consider the MCVideo user to be ineligible for affiliation and skip the rest of the steps;

5) if there is no MCVideo group information entry in the list of MCVideo group information entries described in clause 8.2.2.3.2 with an MCVideo group identity matching the served MCVideo group ID, then shall consider the MCVideo user to be ineligible for affiliation and skip the rest of the steps; or

6) shall consider the MCVideo user to be eligible for affiliation.

8.2.2.3.9 Receiving subscription to group dynamic data procedure

Upon receiving a SIP SUBSCRIBE request such that:

1) Request-URI of the SIP SUBSCRIBE request contains the public service identity of the controlling MCVideo function associated with the served MCVideo group;

2) the SIP SUBSCRIBE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body containing the<mcvideo-request-uri> element and the <mcvideo-calling-user-id> element;

3) the ICSI value "urn:urn-7:3gpp-service.ims.icsi.mcvideo" (coded as specified in 3GPP TS 24.229 [11]), in a P-Asserted-Service header field according to IETF RFC 6050 [9];

4) the Event header field of the SIP SUBSCRIBE request contains the "presence" event type; and

5) the SIP SUBSCRIBE request contains an application/simple-filter+xml MIME body indicating per-group dynamic data of presence event package notification information according to clause 8.3.2 indicating the same MCVideo group ID as in the <mcvideo-calling-user-id> element of the application/vnd.3gpp.mcvideo-info+xml MIME body of the SIP SUBSCRIBE request;

then the MCVideo server:

1) shall identify the served MCVideo group ID in the <mcvideo-request-uri> element of the application/vnd.3gpp.mcvideo-info+xml MIME body of the SIP SUBSCRIBE request;

2) shall identify the handled MCVideo ID in the <mcvideo-calling-user-id> element of the application/vnd.3gpp.mcvideo-info+xml MIME body of the SIP SUBSCRIBE request;

3) if the Expires header field of the SIP SUBSCRIBE request is not included or has nonzero value lower than 4294967295, shall send a SIP 423 (Interval Too Brief) response to the SIP SUBSCRIBE request, where the SIP 423 (Interval Too Brief) response contains a Min-Expires header field set to 4294967295, and shall not continue with the rest of the steps;

4) if an MCVideo group for the served MCVideo group ID does not exist in the group management server according to 3GPP TS 24.481 [31], shall reject the SIP SUBSCRIBE request with SIP 403 (Forbidden) response to the SIP SUBSCRIBE request according to 3GPP TS 24.229 [11], IETF RFC 3903 [37] and IETF RFC 3856 [51] and skip the rest of the steps;

5) if the handled MCVideo ID is not authorized to subscribe to group dynamic data of the MCVideo group identified by the served MCVideo group ID, shall reject the SIP SUBSCRIBE request with SIP 403 (Forbidden) response to the SIP SUBSCRIBE request according to 3GPP TS 24.229 [11], IETF RFC 3903 [37] and IETF RFC 3856 [51] and skip the rest of the steps; and

6) shall generate a SIP 200 (OK) response to the SIP SUBSCRIBE request according to 3GPP TS 24.229 [11], IETF RFC 6665 [26].

For the duration of the subscription, the MCVideo server shall notify subscriber about changes of the information of the served MCVideo ID, as described in clause 8.2.2.3.10.

8.2.2.3.10 Sending notification of change of group dynamic data procedure

In order to notify the subscriber identified by the handled MCVideo ID about changes of the per-group dynamic data of the served MCVideo group ID, the MCVideo server:

1) shall consider an MCVideo group information entry such that:

   a) the MCVideo group information entry is in the list of MCVideo group information entries described in clause 8.2.2.3.2; and

   b) the MCVideo group ID of the MCVideo group information entry is equal to the served MCVideo group ID;

2) shall generate an application/pidf+xml MIME body indicating per-group dynamic data according to clause 8.3.1 with the following clarifications:

   a) the MCVideo server shall include the "expires" attribute in the <affiliation> element; and

3) shall send a SIP NOTIFY request according to 3GPP TS 24.229 [11], and IETF RFC 6665 [26] for the subscription created in clause 8.2.2.3.9. In the SIP NOTIFY request, the MCVideo server shall include the generated application/pidf+xml MIME body indicating per-group dynamic data.

8.3 Coding

8.3.1 Extension of application/pidf+xml MIME type

8.3.1.1 Introduction

The parent clause of this clause describes an extension of the application/pidf+xml MIME body specified in IETF RFC 3863 [18]. The extension is used to indicate:

- per-user affiliation information;
- per-group affiliation information; and
- per-group dynamic data information.

8.3.1.2 Syntax

The application/pidf+xml MIME body indicating per-user affiliation information is constructed according to IETF RFC 3863 [18] and:

1) contains a <presence> root element according to IETF RFC 3863 [18];

2) contains an "entity" attribute of the <presence> element set to the MCVideo ID of the MCVideo user;

3) contains one <tuple> child element according to IETF RFC 3863 [18] per each MCVideo client of the <presence> element;

4) can contain a <p-id> child element defined in the XML schema defined in table 8.3.1.2-1, of the <presence> element set to an identifier of a SIP PUBLISH request;

5) contains an "id" attribute of the <tuple> element set to the MCVideo client ID;

6) contains one <status> child element of each <tuple> element;

7) contains one <affiliation> child element defined in the XML schema defined in table 8.3.1.2-1, of the <status> element, for each MCVideo group in which the MCVideo user is interested at the MCVideo client;

8) contains a "group" attribute of each <affiliation> element set to the MCVideo group ID of the MCVideo group in which the MCVideo user is interested at the MCVideo client;

9) can contain a "status" attribute of each <affiliation> element indicating the affiliation status of the MCVideo user to MCVideo group at the MCVideo client; and

10) can contain an "expires" attribute of each <affiliation> element indicating expiration of affiliation of the MCVideo user to MCVideo group at the MCVideo client.

The application/pidf+xml MIME body indicating per-group affiliation information is constructed according to IETF RFC 3856 [13] and:

1) contains the <presence> root element according to IETF RFC 3863 [18];

2) contains an "entity" attribute of the <presence> element set to the MCVideo group ID of the MCVideo group;

3) contains one <tuple> child element according to IETF RFC 3863 [18] of the <presence> element;

4) can contain a <p-id> child element defined in the XML schema defined in table 8.3.1.2-1, of the <presence> element set to an identifier of a SIP PUBLISH request;

5) contains an "id" attribute of the <tuple> element set to the MCVideo ID of the MCVideo user;

6) contains one <status> child element of each <tuple> element;

7) contains one <affiliation> child element defined in the XML schema defined in table 8.3.1.2-1, of the <status> element, for each MCVideo client at which the MCVideo user is interested in the MCVideo group;

8) contains one "client" attribute defined in the XML schema defined in table 8.3.1.2-2, of the <affiliation> element set to the MCVideo client ID; and

9) can contain an "expires" attribute defined in the XML schema defined in table 8.3.1.2-2, of the <affiliation> element indicating expiration of affiliation of the MCVideo user to MCVideo group at the MCVideo client.

The application/pidf+xml MIME body indicating per-group dynamic data information is constructed according to IETF RFC 3856 [51] and:

1) contains the <presence> root element according to IETF RFC 3863 [52];

2) contains an "entity" attribute of the <presence> element set to the MCVideo group ID of the MCVideo group;

3) can contain a <groupStatus> child element defined in the XML schema , of the <presence> element set to an appropriate value specified in Table 8.3.1.2-3;

4) can contain a "ModifiedBy" attribute of the <groupStatus> element;

5) can contain an <additionalData> child element definied in the XML schema defined in table 8.3.1.2-1, of the <presence> element;

6) can contain a <groupBroadcastAlias> attribute defined in the XML schema defined in table 8.3.1.2-1 of the <additionalData> element;

7) can contain a <groupRegroupAlias> attribute defined in the XML schema defined in table 8.3.1.2-1 of the <additionalData> element;

8) can contain a <groupCallOnoing> attribute defined in the XML schema defined in table 8.3.1.2-1 of the <additionalData> element;

9) contains one <tuple> child element per affiliated MCVideo ID of the MCVideo group, according to IETF RFC 3863 [52] of the <presence> element;

10) contains an "id" attribute of the <tuple> element set to the MCVideo ID of the group member;

11) contains one <status> child element of each <tuple> element;

12) contains one <affiliation> child element defined in the XML schema defined in table 8.3.1.2-1, of the <status> element, for each MCVideo client at which the MCVideo user is interested in the MCVideo group;

13) contains one "client" attribute defined in the XML schema defined in table 8.3.1.2-1, of the <affiliation> element set to the MCVideo client ID; and

14) can contain an "expires" attribute defined in the XML schema defined in table 8.3.1.2-1, of the <affiliation> element indicating expiration of affiliation of the MCVideo user to MCVideo group at the MCVideo client;

Table 8.3.1.2-1: XML schema with elements and attributes extending the application/pidf+xml MIME body

```
<?xml version="1.0" encoding="UTF-8"?>
<xs:schema
  targetNamespace="urn:3gpp:ns:mcvideoPresInfo:1.0"
  xmlns:xs="http://www.w3.org/2001/XMLSchema"
  xmlns:mcvideoPI10="urn:3gpp:ns:mcvideoPresInfo:1.0"
  elementFormDefault="qualified" attributeFormDefault="unqualified">

  <!-- MCVideo specific child elements of presence element -->
  <xs:element name="p-id" type="xs:string"/>
  <xs:element name="groupStatus" type="mcvideoPI10:groupStatusType"/>
  <xs:element name="additionalData" type="mcvideoPI10:additionalDataType"/>

  <!-- MCVideo specific child elements of tuple element -->
  <xs:element name="affiliation" type="mcvideoPI10:affiliationType"/>
  <xs:complexType name="affiliationType">
    <xs:sequence>
      <xs:any namespace="##any" processContents="lax" minOccurs="0" maxOccurs="unbounded"/>
    </xs:sequence>
    <xs:attribute name="group" type="xs:anyURI" use="optional"/>
    <xs:attribute name="client" type="xs:anyURI" use="optional"/>
    <xs:attribute name="status" type="mcvideoPI10:statusType" use="optional"/>
    <xs:attribute name="expires" type="xs:dateTime" use="optional"/>
    <xs:anyAttribute namespace="##any" processContents="lax"/>
  </xs:complexType>

  <xs:simpleType name="statusType">
    <xs:restriction base="xs:string">
      <xs:enumeration value="affiliating"/>
      <xs:enumeration value="affiliated"/>
      <xs:enumeration value="deaffiliating"/>
    </xs:restriction>
  </xs:simpleType>

  <xs:complexType name="groupStatusType">
    <xs:simpleContent>
      <xs:extension base="xs:string">
        <xs:attribute name="ModifiedBy" type="xs:anyURI" use="optional"/>
        <xs:anyAttribute namespace="##any" processContents="lax"/>
      </xs:extension>
    </xs:simpleContent>
  </xs:complexType>

  <xs:complexType name="emptyType"/>
  <xs:complexType name="additionalDataType">
    <xs:complexContent>
      <xs:extension base="mcvideoPI10:emptyType">
        <xs:attribute name="groupBroadcastAlias" type="xs:anyURI" use="optional"/>
        <xs:attribute name="groupRegroupAlias" type="xs:anyURI" use="optional"/>
        <xs:attribute name="groupCallOngoing" type="xs:boolean" use="optional"/>
<xs:anyAttribute namespace="##any" processContents="lax"/>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  </xs:schema>
```

The application/pidf+xml MIME body refers to namespaces using prefixes specified in table 8.3.1.2-2.

Table 8.3.1.2-2: Assignment of prefixes to namespace names in the application/pidf+xml MIME body

Prefix	Namespace
mcvideoPI10	urn:3gpp:ns:mcvideoPresInfo:1.0
NOTE: The "urn:ietf:params:xml:ns:pidf" namespace is the default namespace so no prefix is used for it in the application/pidf+xml MIME body.	

Table 8.3.1.2-3 ABNF syntax of values of the <groupStatus> element

```
in-peril-value = %x69.6E.2D.70.65.72.69.6C ; "in-peril"
emergency-value = %x65.6D.65.72.67.65.6E.63.79 ; "emergency"
```

8.3.2 Extension of application/simple-filter+xml MIME type

8.3.2.1 Introduction

The parent clause of this clause describes extension of the application/simple-filter+xml MIME body specified in IETF RFC 4661 [19].

The extension is used to indicate per-client restrictions of presence event package notification information, per-user restrictions of presence event package notification information and per-group dynamic data restrictions of presence event package notification information.

8.3.2.2 Syntax

The application/simple-filter+xml MIME body indicating per client restrictions of presence event package notification information is constructed according to IETF RFC 4661 [19] and:

1) contains a <filter-set> root element according to IETF RFC 4661 [19];

2) contains a <ns-bindings> child element according to IETF RFC 4661 [19], of the <filter-set> element;

3) contains a <ns-binding> child element according to IETF RFC 4661 [19], of the <ns-bindings> element where the <ns-binding> element:

   A) contains a "prefix" attribute according to IETF RFC 4661 [19] set to "pidf"; and

   B) contains a "urn" attribute set to the "urn:ietf:params:xml:ns:pidf" value;

4) contains a <ns-binding> child element according to IETF RFC 4661 [19], of the <ns-bindings> element where the <ns-binding> element:

   A) contains a "prefix" attribute according to IETF RFC 4661 [19], set to "mcvideoPI10"; and

   B) contains an "urn" attribute according to IETF RFC 4661 [19], set to the "urn:3gpp:ns:mcvideoPresInfo:1.0" value;

5) contains a <filter> child element according to IETF RFC 4661 [19], of the <filter-set> element where the <filter> element;

   A) contains an "id" attribute set to a value constructed according to IETF RFC 4661 [19];

   B) does not contain an "uri" attribute of the <filter> child element according to IETF RFC 4661 [19]; and

   C) does not contain an "domain" attribute according to IETF RFC 4661 [19];

6) contains a <what> child element according to IETF RFC 4661 [19], of the <filter> element; and

7) contains an <include> child element according to IETF RFC 4661 [19], of the <what> element where the <include> element;

   A) does not contain a "type" attribute according to IETF RFC 4661 [19]; and

   B) contains the value, according to IETF RFC 4661 [19], set to concatenation of the '//pidf:presence/pidf::tuple[@id="' string, the MCVideo client ID, and the '"]' string.

The application/simple-filter+xml MIME body indicating per user restrictions of presence event package notification information is constructed according to IETF RFC 4661 [19] and:

1) contains a <filter-set> root element according to IETF RFC 4661 [19];

2) contains a <ns-bindings> child element according to IETF RFC 4661 [19], of the <filter-set> element;

3) contains a <ns-binding> child element according to IETF RFC 4661 [19], of the <ns-bindings> element where the <ns-binding> element:

   A) contains a "prefix" attribute according to IETF RFC 4661 [19] set to "pidf"; and

   B) contains a "urn" attribute set to the "urn:ietf:params:xml:ns:pidf" value;

4) contains a <ns-binding> child element according to IETF RFC 4661 [19], of the <ns-bindings> element where the <ns-binding> element:

   A) contains a "prefix" attribute according to IETF RFC 4661 [19], set to "mcvideoPI10"; and

   B) contains an "urn" attribute according to IETF RFC 4661 [19], set to the "urn:3gpp:ns:mcvideoPresInfo:1.0" value;

5) contains a <filter> child element according to IETF RFC 4661 [19], of the <filter-set> element where the <filter> element;

   A) contains an "id" attribute set to a value constructed according to IETF RFC 4661 [19];

   B) does not contain an "uri" attribute of the <filter> child element according to IETF RFC 4661 [19]; and

   C) does not contain an "domain" attribute according to IETF RFC 4661 [19];

6) contains a <what> child element according to IETF RFC 4661 [19], of the <filter> element; and

7) contains an <include> child element according to IETF RFC 4661 [19], of the <what> element where the <include> element;

   A) does not contain a "type" attribute according to IETF RFC 4661 [19]; and

   B) contains the value, according to IETF RFC 4661 [19], set to concatenation of the '//pidf:presence/pidf::tuple[@id="' string, the MCVideo ID, and the '"]' string.

The application/simple-filter+xml MIME body indicating per-group dynamic data restrictions of presence event package notification information is constructed according to IETF RFC 4661 [63] and:

1) contains a <filter-set> root element according to IETF RFC 4661 [63];

2) contains an <ns-bindings> child element according to IETF RFC 4661 [63], of the <filter-set> element;

3) contains an <ns-binding> child element according to IETF RFC 4661 [63], of the <ns-bindings> element where the <ns-binding> element:

   A) contains a "prefix" attribute according to IETF RFC 4661 [63] set to "pidf"; and

   B) contains a "urn" attribute set to the "urn:ietf:params:xml:ns:pidf" value;

4) contains an <ns-binding> child element according to IETF RFC 4661 [63], of the <ns-bindings> element where the <ns-binding> element:

   A) contains a "prefix" attribute according to IETF RFC 4661 [63], set to "mcvideoPI10"; and

   B) contains a "urn" attribute according to IETF RFC 4661 [63], set to the "urn:3gpp:ns:mcvideoPresInfo:1.0" value;

5) contains a <filter> child element according to IETF RFC 4661 [63], of the <filter-set> element where the <filter> element;

   A) contains an "id" attribute set to a value constructed according to IETF RFC 4661 [63];

   B) does not contain a "uri" attribute of the <filter> child element according to IETF RFC 4661 [63]; and

   C) does not contain a "domain" attribute according to IETF RFC 4661 [63];

6) contains a <what> child element according to IETF RFC 4661 [63], of the <filter> element; and

7) contains one or more <include> child elements according to IETF RFC 4661 [63], of the <what> element where the <include> element(s);

   A) does not contain a "type" attribute according to IETF RFC 4661 [63]; and

   B) can contain one of the values, according to IETF RFC 4661 [63], needed to retrieve the dynamic group data the UE is interested in:

      a) "//pidf:presence/pidf:groupStatus/@pidf:ModifiedBy" if the group status is requested;

      b) "//pidf:presence/pidf:additionalData/@pidf:groupBroadcastAlias" if the group broadcast alias is requested;

      c) "//pidf:presence/pidf:additionalData/@pidf:groupRegroupAlias" if the group regroup alias is requested;

      d) "//pidf:presence/pidf:additionalData/@pidf:groupCallOngoing" if the group call ongoing information is requested; or

      e) "//pidf:presence/pidf:tuple/pidf:status/pidf:affiliation/@pidf:client [@pidf:status="affiliated"]" if the Contact address for all affiliated users are requested.

9 Group call

9.1 General

This clause describes the group call procedures for on-network and off-network.

For on-network, prearranged group call including emergency group call for each functional entity are specified in clause 9.2.1 and chat group (restricted) call including emergency group call for each functional entity are specified in clause 9.2.2.

Off-network group call and off-network broadcast group call are specified in clause 9.3 and clause 9.4.

9.2 On-network group call

9.2.1 Prearranged group call

9.2.1.1 General

9.2.1.2 MCVideo client procedures

9.2.1.2.1 On-demand prearranged group call

9.2.1.2.1.1 Client originating procedures

Upon receiving a request from an MCVideo user to establish an MCVideo prearranged group session the MCVideo client shall determine whether the group document contains a <list-service> element that contains a <preconfigured-group-use-only> element. If a <preconfigured-group-use-only> element exists and is set to the value "true", then the MCVideo client:

1) should indicate to the MCVideo user that calls are not allowed on the indicated group; and

2) shall skip the remainder of this procedure.

The MCVideo client shall generate an initial SIP INVITE request by following the UE originating session procedures specified in 3GPP TS 24.229 [11], with the clarifications given below.

The MCVideo client:

1) if the MCVideo user has requested the origination of an MCVideo emergency group call or is originating an MCVideo prearranged group call and the MCVideo emergency state is already set, the MCVideo client shall comply with the procedures in clause 6.2.8.1.1;

2) if the MCVideo user has requested the origination of an MCVideo imminent peril group call, the MCVideo client shall comply with the procedures in clause 6.2.8.1.9;

3) if the MCVideo user has requested the origination of a broadcast group call, the MCVideo client shall comply with the procedures in clause 6.2.8.2;

4) shall include the g.3gpp.mcvideo media feature tag and the g.3gpp.icsi-ref media feature tag with the value of "urn:urn-7:3gpp-service.ims.icsi.mcvideo" in the Contact header field of the SIP INVITE request according to IETF RFC 3840 [22];

5) shall include an Accept-Contact header field containing the g.3gpp.mcvideo media feature tag along with the "require" and "explicit" header field parameters according to IETF RFC 3841 [20];

6) shall include the ICSI value "urn:urn-7:3gpp-service.ims.icsi.mcvideo" (coded as specified in 3GPP TS 24.229 [11]), in a P-Preferred-Service header field according to IETF RFC 6050 [14] in the SIP INVITE request;

7) shall include an Accept-Contact header field with the g.3gpp.icsi-ref media feature tag containing the value of "urn:urn-7:3gpp-service.ims.icsi.mcvideo" along with the "require" and "explicit" header field parameters according to IETF RFC 3841 [20];

8) should include the "timer" option tag in the Supported header field;

9) should include the Session-Expires header field according to IETF RFC 4028 [23]. It is recommended that the "refresher" header field parameter is omitted. If included, the "refresher" header field parameter shall be set to "uac";

10) shall set the Request-URI of the SIP INVITE request to the public service identity identifying the participating MCVideo function serving the MCVideo user;

NOTE 1: The MCVideo client is configured with public service identity identifying the participating MCVideo function serving the MCVideo user.

11) may include a P-Preferred-Identity header field in the SIP INVITE request containing a public user identity as specified in 3GPP TS 24.229 [11];

12) if the MCVideo emergency state is already set or the MCVideo client emergency group state for this group is set to "MVEG 2: in-progress", the MCVideo client shall include the Resource-Priority header field and comply with the procedures in clause 6.2.8.1.2;

13) if the MCVideo client imminent peril group state for this group is set to "MVIG 2: in-progress" or "MVIG 4: confirm-pending" shall include the Resource-Priority header field and comply with the procedures in clause 6.2.8.1.12;

14) shall contain in an application/vnd.3gpp.mcvideo-info+xml MIME body with the <mcvideoinfo> element containing the <mcvideo-Params> element with:

   a) the <session-type> element set to a value of "prearranged";

   b) the <mcvideo-request-uri> element set to the group identity;

   c) the <mcvideo-client-id> element set to the MCVideo client ID of the originating MCVideo client; and

NOTE 2: The MCVideo client does not include the MCVideo ID of the originating MCVideo user in the body, as this will be inserted into the body of the SIP INVITE request that is sent from the originating participating MCVideo function.

   d) if the group identity can be determined to be a TGI and if the MCVideo client can associate the TGI with a MCVideo group ID, the <associated-group-id> element set to the MCVideo group ID;

   e) if the MCVideo client is aware of active functional aliases, and an active functional alias is to be included in the initial SIP INVITE request, the <functional-alias-URI> set to the URI of the used functional alias.

NOTE 3: The text "can associate the TGI with a MCVideo group ID" means that the MCVideo client is able to determine that there is a constituent group of the temporary group that it is a member of.

NOTE 4: The MCVideo client is informed about temporary groups and regouping of MCVideo groups that the user is a member of as specified in 3GPP TS 24.481 [24].

NOTE 5: If the MCVideo user selected a TGI where there are several MCVideo groups where the MCVideo user is a member, the MCVideo client selects one of those MCVideo groups.

15) shall include an SDP offer according to 3GPP TS 24.229 [11] with the clarifications given in clause 6.2.1;

16) if an implicit transmission request is required, shall indicate this as specified in clause 6.4; and

17) shall send the SIP INVITE request towards the MCVideo server according to 3GPP TS 24.229 [11].

On receiving a SIP 2xx response to the SIP INVITE request, the MCVideo client:

1) shall interact with the user plane as specified in 3GPP TS 24.581 [5] ;

2) if the MCVideo emergency group call state is set to "MVEGC 2: emergency-call-requested" or "MVEGC 3: emergency-call-granted" or the MCVideo imminent peril group call state is set to "MVIGC 2: imminent-peril-call-requested" or "MVIGC 3: imminent-peril-call-granted", the MCVideo client shall perform the actions specified in clause 6.2.8.1.4; and

3) may subscribe to the conference event package as specified in clause 9.1.3.1.

On receiving a SIP 4xx response, a SIP 5xx response or a SIP 6xx response to the SIP INVITE request:

1) if the MCVideo emergency group call state is set to "MVEGC 2: emergency-call-requested" or "MVEGC 3: emergency-call-granted"; or

2) if the MCVideo imminent peril group call state is set to "MVIGC 2: imminent-peril-call-requested" or "MVIGC 3: imminent-peril-call-granted";

the MCVideo client shall perform the actions specified in clause 6.2.8.1.5.

On receiving a SIP INFO request where the Request-URI contains an MCVideo session ID identifying an ongoing group session, the MCVideo client shall follow the actions specified in clause 6.2.8.1.13.

9.2.1.2.1.2 Client terminating procedures

In the procedures in this clause:

1) emergency indication in an incoming SIP INVITE request refers to the <emergency-ind> element of the application/vnd.3gpp.mcvideo-info+xml MIME body; and

2) imminent peril indication in an incoming SIP INVITE request refers to the <imminentperil-ind> element of the application/vnd.3gpp.mcvideo-info+xml MIME body.

Upon receipt of an initial SIP INVITE request, the MCVideo client shall follow the procedures for termination of multimedia sessions in the IM CN subsystem as specified in 3GPP TS 24.229 [11] with the clarifications below.

The MCVideo client:

1) may reject the SIP INVITE request if any of the following conditions are met:

   a) MCVideo client does not have enough resources to handle the call;

   b) the number of the maximum simultaneous MCVideo emergency group calls supported for the specific calling functional alias as specified in the <MaxSimultaneousEmergencyGroupCalls> element within the <FunctionalAliasList> list element of the MCVideo user profile document (see the MCVideo user profile document in 3GPP TS 24.484 [25]) has been reached; or

   c) any other reason outside the scope of this specification;

2) if the SIP INVITE request is rejected in step 1), shall respond toward participating MCVideo function either with appropriate reject code as specified in 3GPP TS 24.229 [11] and warning texts as specified in clause 4.4.2 or

with SIP 480 (Temporarily unavailable) response not including warning texts if the user is authorised to restrict the reason for failure and skip the rest of the steps of this clause;

NOTE: If the SIP INVITE request contains an emergency indication or imminent peril indication, the MCVideo client can by means beyond the scope of this specification choose to accept the request.

3) shall check if a Resource-Priority header field is included in the incoming SIP INVITE request and may perform further actions outside the scope of this specification to act upon an included Resource-Priority header field as specified in 3GPP TS 24.229 [11];

4) if the SIP INVITE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body with the <mcvideoinfo> element containing the <mcvideo-Params> element with the <emergency-ind> element set to a value of "true":

   a) should display to the MCVideo user an indication that this is a SIP INVITE request for an MCVideo emergency group call and:

      i) should display the MCVideo ID of the originator of the MCVideo emergency group call contained in the <mcvideo-calling-user-id> element of the application/vnd.3gpp.mcvideo-info+xml MIME body;

      ii) should display the MCVideo group identity of the group with the emergency condition contained in the <mcvideo-calling-group-id> element; and

      iii) if the <alert-ind> element is set to "true", should display to the MCVideo user an indication of the MCVideo emergency alert and associated information;

   b) shall set the MCVideo emergency group state to "MVEG 2: in-progress";

   c) shall set the MCVideo imminent peril group state to "MVIG 1: no-imminent-peril"; and

   d) shall set the MCVideo imminent peril group call state to "MVIGC 1: imminent-peril-gc-capable"; otherwise

5) if the SIP INVITE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body with the <mcvideoinfo> element containing the <mcvideo-Params> element with the <imminentperil-ind> element set to a value of "true":

   a) should display to the MCVideo user an indication that this is a SIP INVITE request for an MCVideo imminent peril group call and:

      i) should display the MCVideo ID of the originator of the MCVideo imminent peril group call contained in the <mcvideo-calling-user-id> element of the application/vnd.3gpp.mcvideo-info+xml MIME body; and

      ii) should display the MCVideo group identity of the group with the imminent peril condition contained in the <mcvideo-calling-group-id> element; and

   b) shall set the MCVideo imminent peril group state to "MVIG 2: in-progress";

6) may display to the MCVideo user the MCVideo ID of the inviting MCVideo user;

6A) may display to the MCVideo user the functional alias of the inviting MCVideo user;

7) shall perform the automatic commencement procedures specified in clause 6.2.3.1.2 if one of the following conditions are met:

   a) SIP INVITE request contains an Answer-Mode header field with the value "Auto" and the MCVideo service setting at the invited MCVideo client for answering the call is set to automatic commencement mode; or

   b) SIP INVITE request contains an Answer-Mode header field with the value "Auto" and the MCVideo service setting at the invited MCVideo client for answering the call is set to manual commencement mode, yet the invited MCVideo client allows the call to be answered with automatic commencement mode;

8) shall perform the manual commencement procedures specified in clause 6.2.3.2.2 if one of the following conditions are met:

a) SIP INVITE request contains an Answer-Mode header field with the value "Manual" and the MCVideo service setting at the invited MCVideo client for answering the call is to use manual commencement mode; or

b) SIP INVITE request contains an Answer-Mode header field with the value "Manual" and the MCVideo service setting at the invited MCVideo client for answering the call is set to automatic commencement mode, yet the invited MCVideo client allows the call to be answered with manual commencement mode; and

9) when the SIP 200 (OK) response to the SIP INVITE request is sent, may subscribe to the conference event package as specified in clause 9.1.3.1.

9.2.1.2.1.3 MCVideo upgrade to in-progress emergency or imminent peril

This clause covers both on-demand session and pre-established sessions.

Upon receiving a request from an MCVideo user to upgrade the MCVideo group session to an emergency condition or an imminent peril condition on an MCVideo prearranged group, the MCVideo client shall generate a SIP re-INVITE request as specified in 3GPP TS 24.229 [11], with the clarifications given below.

1) if the MCVideo user is requesting to upgrade the MCVideo group session to an in-progress emergency group state and this is an unauthorised request for an MCVideo emergency call as determined by the procedures of clause 6.2.8.1.8, the MCVideo client:

   a) should indicate to the MCVideo user that they are not authorised to upgrade the MCVideo group session to an in-progress emergency group state; and

   b) shall skip the remaining steps of the current clause;

2) if the MCVideo user is requesting to upgrade the MCVideo group session to an in-progress imminent peril state and this is an unauthorised request for an MCVideo imminent peril group call as determined by the procedures of clause 6.2.8.1.8, the MCVideo client:

   a) should indicate to the MCVideo user that they are not authorised to upgrade the MCVideo group session to an in-progress imminent peril group state; and

   b) shall skip the remaining steps of the current clause;

3) if the MCVideo user has requested to upgrade the MCVideo group session to an MCVideo emergency call, the MCVideo client:

   a) shall include an application/vnd.3gpp.mcvideo-info+xml MIME body by following the procedures in clause 6.2.8.1.1;

   b) if an indication of an MCVideo emergency alert is to be included, shall perform the procedures specified in clause 6.2.9.1 for the MCVideo emergency alert trigger; and

   c) shall include a Resource-Priority header field and comply with the procedures in clause 6.2.8.1.2.

4) if the MCVideo user has requested to upgrade the MCVideo group session to an MCVideo imminent peril call, the MCVideo client:

   a) shall include an application/vnd.3gpp.mcvideo-info+xml MIME body by following the procedures in clause 6.2.8.1.9; and

   b) shall include a Resource-Priority header field and comply with the procedures in clause 6.2.8.1.12;

5) if the SIP re-INVITE request is to be sent within an on-demand session, shall include in the SIP re-INVITE request an SDP offer according to 3GPP TS 24.229 [11] with the clarifications specified in clause 6.2.1;

6) if an implicit transmission request is required, shall indicate this as specified in clause 6.4; and

7) shall send the SIP re-INVITE request according to 3GPP TS 24.229 [11].

On receiving a SIP 2xx response to the SIP re-INVITE request the MCVideo client:

1) shall interact with the user plane as specified in 3GPP TS 24.581 [5]; and

2) shall perform the actions specified in clause 6.2.8.1.4.

On receiving a SIP INFO request where the Request-URI contains an MCVideo session ID identifying an ongoing group session, the MCVideo client shall follow the actions specified in clause 6.2.8.1.13.

On receiving a SIP 4xx response, SIP 5xx response or a SIP 6xx response to the SIP re-INVITE request the MCVideo client shall perform the actions specified in clause 6.2.8.1.5.

9.2.1.2.1.4 MCVideo in-progress emergency cancel

This clause covers both on-demand session and pre-established sessions.

Upon receiving a request from an MCVideo user to cancel the in-progress emergency condition on a prearranged MCVideo group, the MCVideo client shall generate a SIP re-INVITE request by following the UE originating session procedures specified in 3GPP TS 24.229 [11], with the clarifications given below.

The MCVideo client:

1) if the MCVideo user is not authorised to cancel the in-progress emergency group state of the MCVideo group as determined by the procedures of clause 6.2.8.1.7, the MCVideo client:

   a) should indicate to the MCVideo user that they are not authorised to cancel the in-progress emergency group state of the MCVideo group; and

   b) shall skip the remaining steps of the current clause;

2) shall, if the MCVideo user is cancelling an in-progress emergency condition and optionally an MCVideo emergency alert originated by the MCVideo user, include an application/vnd.3gpp.mcvideo-info+xml MIME body populated as specified in clause 6.2.8.1.3;

3) shall, if the MCVideo user is cancelling an in-progress emergency condition and an MCVideo emergency alert originated by another MCVideo user, include an application/vnd.3gpp.mcvideo-info+xml MIME body populated as specified in clause 6.2.8.1.14;

4) shall include in the application/vnd.3gpp.mcvideo-info+xml MIME body with the <mcvideoinfo> element containing the <mcvideo-Params> element with:

   a) the <session-type> element set to a value of "prearranged"; and

   b) the <mcvideo-request-uri> element set to the group identity;

NOTE 1: The MCVideo ID of the originating MCVideo user is not included in the body, as this will be inserted into the body of the SIP INVITE request that is sent by the originating participating MCVideo function.

5) shall include the g.3gpp.mcvideo media feature tag in the Contact header field of the SIP re-INVITE request according to IETF RFC 3840 [22];

6) if the SIP re-INVITE request is to be sent within an on-demand session, shall include in the SIP re-INVITE request an SDP offer according to 3GPP TS 24.229 [11] with the clarifications specified in clause 6.2.1;

7) shall include a Resource-Priority header field and comply with the procedures in clause 6.2.8.1.2; and

8) shall send the SIP re-INVITE request according to 3GPP TS 24.229 [11].

On receiving a SIP 2xx response to the SIP re-INVITE request, the MCVideo client:

1) shall interact with the user plane as specified in 3GPP TS 24.581 [5];

2) shall set the MCVideo emergency group state of the group to "MVEG 1: no-emergency";

3) shall set the MCVideo emergency group call state of the group to "MVEGC 1: emergency-gc-capable"; and

4) if the MCVideo emergency alert state is set to "MVEA 4: Emergency-alert-cancel-pending", the sent SIP re-INVITE request did not contain an <originated-by> element in the application/vnd.3gpp.mcvideo-info+xml MIME body and the SIP 2xx response to the SIP request for a priority group call does not contain a Warning

header field as specified in clause 4.4 with the warning text containing the mcvideo-warn-code set to "149", shall set the MCVideo emergency alert state to "MVEA 1: no-alert".

On receiving a SIP INFO request where the Request-URI contains an MCVideo session ID identifying an ongoing group session, the MCVideo client shall follow the actions specified in clause 6.2.8.1.13.

On receiving a SIP 4xx response, SIP 5xx response or SIP 6xx response to the SIP re-INVITE request:

1) shall set the MCVideo emergency group state as "MVEG 2: in-progress";

2) if the SIP 4xx response, SIP 5xx response or SIP 6xx response contains an application/vnd.3gpp.mcvideo-info+xml MIME body with an <alert-ind> element set to a value of "true" and the sent SIP re-INVITE request did not contain an <originated-by> element in the application/vnd.3gpp.mcvideo-info+xml MIME body, the MCVideo client shall set the MCVideo emergency alert state to "MVEA 3: emergency-alert-initiated"; and

3) if the SIP 4xx response, SIP 5xx response or SIP 6xx response did not contain an application/vnd.3gpp.mcvideo-info+xml MIME body with an <alert-ind> element and did not contain an <originated-by> element, the MCVideo emergency alert (MVEA) state shall revert to its value prior to entering the current procedure.

NOTE 3: If the in-progress emergency group state cancel request is rejected, the state of the session does not change, i.e. continues with MCVideo emergency group call level priority.

9.2.1.2.1.5 MCVideo in-progress imminent peril cancel

This clause covers on-demand session.

Upon receiving a request from an MCVideo user to cancel the in-progress imminent peril condition on a prearranged MCVideo group, the MCVideo client shall generate a SIP re-INVITE request by following the procedures specified in 3GPP TS 24.229 [11], with the clarifications given below.

The MCVideo client:

1) if the MCVideo user is not authorised to cancel the in-progress imminent peril group state of the MCVideo group as determined by the procedures of clause 6.2.8.1.10, the MCVideo client:

   a) should indicate to the MCVideo user that they are not authorised to cancel the in-progress imminent peril group state of the MCVideo group; and

   b) shall skip the remaining steps of the current clause;

2) shall include an application/vnd.3gpp.mcvideo-info+xml MIME body populated as specified in clause 6.2.8.1.11; and

3) shall include a Resource-Priority header field and comply with the procedures in clause 6.2.8.1.12;

4) shall include in the application/vnd.3gpp.mcvideo-info+xml MIME body with the <mcvideoinfo> element containing the <mcvideo-Params> element with:

   a) the <session-type> element set to a value of "prearranged"; and

   b) the <mcvideo-request-uri> element set to the group identity;

NOTE 1: The MCVideo ID of the originating MCVideo user is not included in the body, as this will be inserted into the body of the SIP re-INVITE request that is sent by the originating participating MCVideo function.

5) shall include the g.3gpp.mcvideo media feature tag in the Contact header field of the SIP re-INVITE request according to IETF RFC 3840 [22];

6) if the SIP re-INVITE request is to be sent within an on-demand session, shall include in the SIP re-INVITE request an SDP offer according to 3GPP TS 24.229 [11] with the clarifications specified in clause 6.2.1; and

7) shall send the SIP re-INVITE request according to 3GPP TS 24.229 [11].

On receiving a SIP 2xx response to the SIP re-INVITE request, the MCVideo client:

1) shall interact with the user plane as specified in 3GPP TS 24.581 [5];

2) shall set the MCVideo imminent peril group state of the group to "MVIG 1: no-imminent-peril"; and

3) shall set the MCVideo imminent peril group call state of the group to "MVIGC 1: imminent-peril-gc-capable".

On receiving a SIP 4xx, SIP 5xx response or SIP 6xx response to the SIP re-INVITE request:

1) if the SIP 4xx response, SIP 5xx response or SIP 6xx response:

   a) contains an application/vnd.3gpp.mcvideo-info+xml MIME body with an <imminentperil-ind> element set to a value of "true"; or

   b) does not contain an application/vnd.3gpp.mcvideo-info+xml MIME body with an <imminentperil-ind> element;

   then the MCVideo client shall set the MCVideo imminent peril group state as "MVIG 2: in-progress".

   NOTE 3: This is the case where the MCVideo client requested the cancellation of the MCVideo imminent peril in-progress state and was rejected.

9.2.1.2.1.6 MCVideo client receives SIP re-INVITE request

This clause covers both on-demand session.

Upon receipt of a SIP re-INVITE request the MCVideo client:

1) if the SIP re-INVITE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body with the <mcvideoinfo> element containing the <mcvideo-Params> element with the <emergency-ind> element set to a value of "true":

   a) should display to the MCVideo user the MCVideo ID of the originator of the MCVideo emergency group call and an indication that this is an MCVideo emergency group call;

   b) if the <mcvideoinfo> element containing the <mcvideo-Params> element contains an <alert-ind> element set to "true", should display to the MCVideo user an indication of the MCVideo emergency alert and associated information;

   c) shall set the MCVideo emergency group state to "MVEG 2: in-progress";

   d) shall set the MCVideo imminent peril group state to "MVIG 1: no-imminent-peril"; and

   e) shall set the MCVideo imminent peril group call state to "MVIGC 1: imminent-peril-gc-capable";

2) if the SIP re-INVITE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body with the <mcvideoinfo> element containing the <mcvideo-Params> element with the <imminentperil-ind> element set to a value of "true":

   a) should display to the MCVideo user the MCVideo ID of the originator of the MCVideo imminent peril group call and an indication that this is an MCVideo imminent peril group call; and

   b) shall set the MCVideo imminent peril group state to "MIG 2: in-progress";

3) if the SIP re-INVITE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body with the <mcvideoinfo> element containing the <mcvideo-Params> element with the <emergency-ind> element set to a value of "false":

   a) should display to the MCVideo user the MCVideo ID of the MCVideo user cancelling the MCVideo emergency group call;

   b) if the <mcvideoinfo> element containing the <mcvideo-Params> element contains an <alert-ind> element set to "false":

      i) should display to the MCVideo user an indication of the MCVideo emergency alert cancellation and the MCVideo ID of the MCVideo user cancelling the MCVideo emergency alert; and

ii) if the SIP re-INVITE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body including an <originated-by> element:

A) should display to the MCVideo user the MCVideo ID contained in the <originated-by> element of the MCVideo user that originated the MCVideo emergency alert; and

B) if the MCVideo ID contained in the <originated-by> element is the MCVideo ID of the receiving MCVideo user shall set the MCVideo emergency alert state to "MVEA 1: no-alert";

c) shall set the MCVideo emergency group state to "MVEG 1: no-emergency"; and

d) if the MCVideo emergency group call state of the group is set to "MVEGC 3: emergency-call-granted", shall set the MCVideo emergency group call state of the group to "MVEGC 1: emergency-gc-capable";

4) if the SIP re-INVITE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body with the <mcvideoinfo> element containing the <mcvideo-Params> element with the <imminentperil-ind> element set to a value of "false":

a) should display to the MCVideo user the MCVideo ID of the MCVideo user cancelling the MCVideo imminent peril group call and an indication that this is an MCVideo imminent peril group call;

b) shall set the MCVideo imminent peril group state to "MVIG 1: no-imminent-peril"; and

c) shall set the MCVideo imminent peril group call state to "MVIGC 1: imminent-peril-gc-capable";

5) shall check if a Resource-Priority header field is included in the incoming SIP re-INVITE request and may perform further actions outside the scope of this specification to act upon an included Resource-Priority header field as specified in 3GPP TS 24.229 [11];

6) shall accept the SIP re-INVITE request and generate a SIP 200 (OK) response according to rules and procedures of 3GPP TS 24.229 [11];

7) shall include the g.3gpp.mcvideo media feature tag in the Contact header field of the SIP 200 (OK) response;

8) shall include the g.3gpp.icsi-ref media feature tag containing the value of "urn:urn-7:3gpp-service.ims.icsi.mcvideo" in the Contact header field of the SIP 200 (OK) response;

9) if the SIP re-INVITE request was received within an on-demand session, shall include an SDP answer in the SIP 200 (OK) response to the SDP offer in the incoming SIP re-INVITE request according to 3GPP TS 24.229 [11] with the clarifications given in clause 6.2.2;

10) shall send the SIP 200 (OK) response towards the MCVideo server according to rules and procedures of 3GPP TS 24.229 [11]; and

11) shall interact with the media plane as specified in 3GPP TS 24.581 [5].

9.2.1.2.3 End group call

9.2.1.2.3.1 Client originating procedures on-demand

When an MCVideo client wants to leave the MCVideo session that has been established using on-demand session, the MCVideo client shall follow the procedures as specified in clause 6.2.4.1.

9.2.1.2.3.3 Client terminating procedures

Upon receiving a SIP BYE request for releasing the prearranged MCVideo group call, the MCVideo client shall follow the procedures as specified in clause 6.2.6.

9.2.1.2.4 Re-join procedure

9.2.1.2.4.1 On demand session establishment

Upon receiving a request from an MCVideo user to re-join an ongoing MCVideo session or triggered by coming back from out of coverage, the MCVideo client shall generate an initial SIP INVITE request by following the UE originating session procedures specified in 3GPP TS 24.229 [11], with the clarifications given below.

NOTE: How an MCVideo client is informed whether it comes back from out of coverage is out of scope of present document.

The MCVideo client shall follow the procedures specified in clause 9.2.1.2.1.1 with the clarification in step 9) of clause 9.2.1.2.1.1 that the Request-URI of the SIP INVITE request shall contain a URI of the MCVideo session identity to re-join.

9.2.1.3 Participating MCVideo function procedures

9.2.1.3.1 Originating procedures

9.2.1.3.1.1 On demand prearranged group call

In the procedures in this clause:

1) group identity in an incoming SIP INVITE request refers to the group identity from the <mcvideo-request-uri> element of the application/vnd.3gpp.mcvideo-info+xml MIME body of the incoming SIP INVITE request;

2) emergency indication in an incoming SIP INVITE request refers to the <emergency-ind> element of the application/vnd.3gpp.mcvideo-info+xml MIME body; and

3) imminent peril indication in an incoming SIP INVITE request refers to the <imminentperil-ind> element of the application/vnd.3gpp.mcvideo-info+xml MIME body.

Upon receipt of a "SIP INVITE request for originating participating MCVideo function" containing an application/vnd.3gpp.mcvideo-info+xml MIME body with the <session-type> element set to a value of "prearranged", the participating MCVideo function:

1) if unable to process the request due to a lack of resources or a risk of congestion exists, may reject the SIP INVITE request with a SIP 500 (Server Internal Error) response. The participating MCVideo function may include a Retry-After header field to the SIP 500 (Server Internal Error) response as specified in IETF RFC 3261 [15]. Otherwise, continue with the rest of the steps;

NOTE 1: if the SIP INVITE request contains an emergency indication or an imminent peril indication set to a value of "true" and this is an authorised request for originating a priority call as determined by clause 6.3.2.1.8.1, the participating MCVideo function can according to local policy choose to accept the request.

2) shall determine the MCVideo ID of the calling user from public user identity in the P-Asserted-Identity header field of the SIP INVITE request, and shall authorise the calling user;

NOTE 2: The MCVideo ID of the calling user is bound to the public user identity at the time of service authorisation, as documented in clause 7.3.

3) if through local policy in the participating MCVideo function, the user identified by the MCVideo ID is not authorised to initiate prearranged group calls, shall reject the "SIP INVITE request for originating participating MCVideo function" with a SIP 403 (Forbidden) response to the SIP INVITE request, with warning text set to "109 user not authorised to make prearranged group calls" in a Warning header field as specified in clause 4.4;

4) shall validate the media parameters and if the MCVideo codecs are not offered in the SIP INVITE request shall reject the request with a SIP 488 (Not Acceptable Here) response. Otherwise, continue with the rest of the steps;

5) shall check if the number of maximum simultaneous MCVideo group calls supported for the MCVideo user as specified in the <MaxSimultaneousCallsN6> element of the <MCVideo-group-call> element of the MCVideo user profile document (see the MCVideo user profile document in 3GPP TS 24.484 [25]) has been exceeded. If

exceeded, the participating MCVideo function shall respond with a SIP 486 (Busy Here) response with the warning text set to "103 maximum simultaneous MCVideo group calls reached" in a Warning header field as specified in clause 4.4. Otherwise, continue with the rest of the steps;

NOTE 3: If the SIP INVITE request contains an emergency indication or an imminent peril indication, the participating MCVideo function can by means beyond the scope of this specification choose to allow for an exception to the limit for the maximum simultaneous MCVideo sessions supported for the MCVideo user. Alternatively, a lower priority session of the MCVideo user could be terminated to allow for the new session.

6) if the user identified by the MCVideo ID is not affiliated to the group identified in the "SIP INVITE request for originating participating MCVideo function" as determined by clause 8.2.2.2.11 and this is an authorised request for originating a priority call as determined by clause 6.3.2.1.8.1, shall perform the actions specified in clause 8.2.2.2.12 for implicit affiliation;

7) if the actions for implicit affiliation specified in step 6) above were performed but not successful in affiliating the MCVideo user due to the MCVideo user already having N2 simultaneous affiliations (specified in the <MaxAffiliationsN2> element of the <Common> element of the corresponding MCVideo user profile), shall reject the "SIP INVITE request for originating participating MCVideo function" with a SIP 486 (Busy Here) response with the warning text set to "102 too many simultaneous affiliations" in a Warning header field as specified in clause 4.4. and skip the rest of the steps.

NOTE 4: N2 is the total number of MCVideo groups that an MCVideo user can be affiliated to simultaneously as specified in 3GPP TS 23.281 [26].

NOTE 5: if the SIP INVITE request contains an emergency indication set to a value of "true" or an imminent peril indication set to a value of "true" and this is an authorised request for originating a priority call as determined by clause 6.3.2.1.8.1, the participating MCVideo function can according to local policy choose to allow an exception to the N2 limit specified in the <MaxAffiliationsN2> element of the <Common> element of the MCVideo user profile of the served MCVideo ID. Alternatively, a lower priority affiliation of the MCVideo user could be cancelled to allow for the new affiliation.

8) shall determine the public service identity of the controlling MCVideo function associated with the group identity in the SIP INVITE request;

NOTE 6: The public service identity can identify the controlling MCVideo function in the local MCVideo system or in an interconnected MCVideo system.

NOTE 7: If the controlling MCVideo function is in an interconnected MCVideo system in a different trust domain, then the public service identity can identify the MCVideo gateway server that acts as an entry point in the interconnected MCVideo system from the local MCVideo system.

NOTE 8: If the controlling MCVideo function is in an interconnected MCVideo system in a different trust domain, then the local MCVideo system can route the SIP request through an MCVideo gateway server that acts as an exit point from the local MCVideo system to the interconnected MCVideo system.

NOTE 9: How the participating MCVideo function determines the public service identity of the controlling MCVideo function associated with the group identity or of the MCVideo gateway server in the interconnected MCVideo system is out of the scope of the present document.

NOTE 10: How the local MCVideo system routes the SIP request through an exit MCVideo gateway server is out of the scope of the present document.

9) shall generate a SIP INVITE request as specified in clause 6.3.2.1.3;

10) shall set the Request-URI to the public service identity of the controlling MCVideo function determined in step 8);

11) shall not copy the following header fields from the incoming SIP INVITE request to the outgoing SIP INVITE request, if they were present in the incoming SIP INVITE request:

   a) Answer-Mode header field as specified in IETF RFC 5373 [27]; and

   b) Priv-Answer-Mode header field as specified in IETF RFC 5373 [27];

12) shall set the <mcvideo-calling-user-id> element of the application/vnd.3gpp.mcvideo-info+xml MIME body of the SIP INVITE request to the MCVideo ID of the calling user;

13) shall include in the SIP INVITE request an SDP offer based on the SDP offer in the received SIP INVITE request from the MCVideo client as specified in clause 6.3.2.1.1.1;

13a) if the received SIP request contains a <functional-alias-URI> element of the application/vnd.3gpp.mcvideo-info+xml MIME body, then check if the status of the functional alias is activated for the MCVideo ID. If the functional alias status is activated, then set the <functional-alias-URI> element of the application/vnd.3gpp.mcvideo-info+xml MIME body in the outgoing SIP INVITE request to the received value, if the status is unequal activated then do not include a <functional-alias-URI> element;

14) if the received SIP INVITE request contains an application/vnd.3gpp.location-info+xml MIME body and if not already copied, shall copy the contents of the application/vnd.3gpp.location-info+xml MIME body received in the SIP INVITE request into an application/vnd.3gpp.location-info+xml MIME body included in the outgoing SIP request;

15) if a Resource-Priority header field was included in the received SIP INVITE request, shall include a Resource-Priority header field according to rules and procedures of 3GPP TS 24.229 [11] set to the value indicated in the Resource-Priority header field of the SIP INVITE request from the MCVideo client; and

NOTE 11: The participating MCVideo function will leave verification of the Resource-Priority header field to the controlling MCVideo function.

16) shall forward the SIP INVITE request, according to 3GPP TS 24.229 [11].

Upon receipt of a SIP 302 (Moved Temporarily) response to the above SIP INVITE request in step 15), the participating MCVideo function:

1) shall generate a SIP INVITE request as specified in clause 6.3.2.1.10;

2) shall include an SDP offer based upon the SDP offer in the received SIP INVITE request from the MCVideo client as specified in clause 6.3.2.1.1.1; and

3) shall forward the SIP INVITE request according to 3GPP TS 24.229 [11].

Upon receipt of a SIP 2xx response in response to the above SIP INVITE request in step 15), the participating MCVideo function:

1) if the received SIP 2xx response contains an application/vnd.3gpp.mcvideo-info+xml MIME body with an <MKFC-GKTPs> element, shall perform the procedures in clause 6.3.2.3.2;

2) shall generate a SIP 200 (OK) response as in clause 6.3.2.1.5.2;

3) shall include in the SIP 200 (OK) response an SDP answer as specified in the clause 6.3.2.1.2.1;

4) shall include Warning header field(s) that were received in the incoming SIP 200 (OK) response;

5) shall include the public service identity received in the P-Asserted-Identity header field of the incoming SIP 200 (OK) response into the P-Asserted-Identity header field of the outgoing SIP 200 (OK) response;

6) shall include an MCVideo session identity mapped to the MCVideo session identity provided in the Contact header field of the received SIP 200 (OK) response;

7) if the procedures of clause 8.2.2.2.12 for implicit affiliation were performed in the present clause, shall complete the implicit affiliation by performing the procedures of clause 8.2.2.2.13;

8) shall send the SIP 200 (OK) response to the MCVideo client according to 3GPP TS 24.229 [11];

9) shall interact with Media Plane as specified in 3GPP TS 24.581 [5]; and

10) shall start the SIP Session timer according to rules and procedures of IETF RFC 4028 [23].

Upon receipt of a SIP 4xx, 5xx or 6xx response to the above SIP INVITE request in step 14) the participating MCVideo function:

1) shall generate a SIP response according to 3GPP TS 24.229 [11];

2) shall include Warning header field(s) that were received in the incoming SIP response;

3) shall forward the SIP response to the MCVideo client according to 3GPP TS 24.229 [11]; and

4) if the implicit affiliation procedures of clause 8.2.2.2.12 were invoked in this procedure, shall perform the procedures of clause 8.2.2.2.14;

9.2.1.3.1.3 Reception of a SIP re-INVITE request from served MCVideo client

This clause covers on-demand session.

Upon receipt of a SIP re-INVITE request for an MCVideo session identifying an on-demand prearranged MCVideo group session, the participating MCVideo function:

1) if unable to process the request due to a lack of resources or a risk of congestion exists, may reject the SIP re-INVITE request with a SIP 500 (Server Internal Error) response. The participating MCVideo function may include a Retry-After header field to the SIP 500 (Server Internal Error) response as specified in IETF RFC 3261 [15] and skip the rest of the steps;

NOTE 1: If the SIP re-INVITE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body with the <emergency-ind> element set to a value of "true", the participating MCVideo function can choose to accept the request.

2) shall determine if the media parameters are acceptable and the MCVideo codecs are offered in the SDP offer and if not, reject the request with a SIP 488 (Not Acceptable Here) response. Otherwise, continue with the rest of the steps;

3) shall generate an outgoing SIP re-INVITE request as specified in clause 6.3.2.1.9;

4) shall, if the SIP re-INVITE request was received within an on-demand session, include in the SIP re-INVITE request an SDP offer based on the SDP offer in the received SIP re-INVITE request as specified in clause 6.3.2.1.1;

5) if the received SIP re-INVITE request contains a Resource-Priority header field, shall include a Resource-Priority header field with the contents set as in the received Resource-Priority header field; and

NOTE 3: The controlling MCVideo function will determine the validity of the Resource-Priority header field.

6) shall forward the SIP re-INVITE request according to 3GPP TS 24.229 [11].

Upon receipt of a SIP 2xx response to the above SIP re-INVITE request in step 7) the participating MCVideo function:

1) shall generate a SIP 200 (OK) response as specified in the clause 6.3.2.1.5.2;

2) shall include in the SIP 200 (OK) response an SDP answer as specified in the clause 6.3.2.1.2.1;

3) shall include Warning header field(s) that were received in the incoming SIP 200 (OK) response;

4) shall copy the contents received in the P-Asserted-Identity header field of the incoming SIP 200 (OK) response into the P-Asserted-Identity header field of the outgoing SIP 200 (OK) response;

5) shall send the SIP 200 (OK) response towards the MCVideo client according to 3GPP TS 24.229 [11]; and

6) shall interact with the media plane as specified in 3GPP TS 24.581 [5].

Upon receipt of a SIP 403 (Forbidden) response to the above SIP INVITE request in step 7) the participating MCVideo function:

1) shall generate a SIP 403 (Forbidden) response according to 3GPP TS 24.229 [11];

2) shall copy, if included in the received SIP 403 (Forbidden) response, the application/vnd.3gpp.mcvideo-info+xml MIME body MIME body to the outgoing SIP (Forbidden) response;

3) shall include Warning header field(s) that were received in the incoming SIP 403 (Forbidden) response;

4) shall forward the SIP 403 (Forbidden) response to the MCVideo client according to 3GPP TS 24.229 [11]; and

5) shall interact with the media plane as specified in 3GPP TS 24.581 [5].

9.2.1.3.2 Terminating Procedures

In the procedures in this clause:

1) emergency indication in an incoming SIP INVITE request refers to the <emergency-ind> element of the application/vnd.3gpp.mcvideo-info+xml MIME body; and

2) imminent peril indication in an incoming SIP INVITE request refers to the <imminentperil-ind> element of the application/vnd.3gpp.mcvideo-info+xml MIME body.

NOTE 1: This clause covers on-demand session.

Upon receipt of a "SIP INVITE request for terminating participating MCVideo function", the participating MCVideo function:

1) if unable to process the request due to a lack of resources or a risk of congestion exists, may reject the SIP INVITE request with a SIP 500 (Server Internal Error) response. The participating MCVideo function may include a Retry-After header field to the SIP 500 (Server Internal Error) response as specified in IETF RFC 3261 [15], and shall not continue with the rest of the steps;

NOTE 2: if the SIP INVITE request contains an emergency indication or an imminent peril indication set to a value of "true" and this is an authorised request for originating a priority call as determined by clause 6.3.2.1.8.1, the participating MCVideo function can according to local policy choose to accept the request.

2) shall check the presence of the isfocus media feature tag in the URI of the Contact header field and if it is not present then the participating MCVideo function shall reject the request with a SIP 403 (Forbidden) response with the warning text set to "104 isfocus not assigned" in a Warning header field as specified in clause 4.4, and shall not continue with the rest of the steps;

3) if the Answer-Mode Indication in the application/poc-settings+xml MIME body has not yet been received from the invited MCVideo client as defined in clause 7.3.3 or clause 7.3.4, shall reject the request with a SIP 480 (Temporarily Unavailable) response with the warning text set to "146 T-PF unable to determine the service settings for the called user" in a Warning header field as specified in clause 4.4, and shall not continue with the rest of the steps;

4) shall use the MCVideo ID present in the <mcvideo-request-uri> element of the application/vnd.3gpp.mcvideo-info+xml MIME body of the incoming SIP INVITE request to retrieve the binding between the MCVideo ID and public user identity;

5) if the binding between the MCVideo ID and public user identity does not exist, then the participating MCVideo function shall reject the SIP INVITE request with a SIP 404 (Not Found) response. Otherwise, continue with the rest of the steps;

6) if the SIP INVITE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body with an <MKFC-GKTPs> element, shall perform the procedures in clause 6.3.2.3.2;

7) shall perform the automatic commencement procedures specified in clause 6.3.2.2.5.1 and according to IETF RFC 5373 [27] if the "SIP INVITE request for terminating participating MCVideo function" does not contain an Answer-Mode header field and the Answer-Mode Indication received in the application/poc-settings+xml MIME body received from the invited MCVideo client as per clause 7.3.3 or clause 7.3.4 is set to "auto-answer"; and

8) shall perform the manual commencement procedures specified in clause 6.3.2.2.6.1 and according to IETF RFC 5373 [27] if the "SIP INVITE request for terminating participating MCVideo function" does not contain an Answer-Mode header field and the Answer-Mode Indication received in the application/poc-settings+xml MIME body received from the invited MCVideo client as per clause 7.3.3 or clause 7.3.4 is set to "manual-answer".

9.2.1.3.3 End group call at the originating participating MCVideo function

9.2.1.3.3.1 Receipt of SIP BYE request for ending group call on-demand

Upon receiving from the MCVideo client a SIP BYE request the participating MCVideo function shall follow the procedures as specified in clause 6.3.2.1.6.

9.2.1.3.4 End group call at the terminating participating MCVideo function

9.2.1.3.4.1 Receipt of SIP BYE request for private call on-demand

Upon receiving a SIP BYE request from the controlling MCVideo function, the participating MCVideo function shall follow the procedures as specified in clause 6.3.2.2.8.1.

9.2.1.3.5 Re-join procedures

9.2.1.3.5.1 Originating procedures - on demand prearranged group call

Upon receipt of a "SIP INVITE request for originating participating MCVideo function" containing an application/vnd.3gpp.mcvideo-info+xml MIME body with the <session-type> element set to a value of "prearranged", the participating MCVideo function shall follow the procedures specified in clause 9.2.1.3.1.1 with the clarification in step 10) of clause 9.2.1.3.1.1 that the Request-URI of the SIP INVITE request shall contain a URI of the MCVideo session identity which mapped to the MCVideo session identity provided in Request-URI of the "SIP INVITE request for originating participating MCVideo function".

9.2.1.3.6 Reception of a SIP re-INVITE request for terminating MCVideo client for priority call

In the procedures in this clause:

1) emergency indication in an incoming SIP INVITE request refers to the <emergency-ind> element of the application/vnd.3gpp.mcvideo-info+xml MIME body; and

2) imminent peril indication in an incoming SIP INVITE request refers to the <imminentperil-ind> element of the application/vnd.3gpp.mcvideo-info+xml MIME body.

Upon receipt of a SIP re-INVITE request for a terminating MCVideo client of a MCVideo group containing an emergency indication or imminent peril indication, the participating MCVideo function:

1) shall check if a Resource-Priority header field is included in the incoming SIP INVITE request and may perform further actions outside the scope of this specification to act upon an included Resource-Priority header field as specified in 3GPP TS 24.229 [11];

2) shall generate an outgoing SIP re-INVITE request as specified in clause 6.3.2.2.10;

3) shall include in the SIP re-INVITE request an SDP offer based on the SDP offer in the received SIP re-INVITE request as specified in clause 6.3.2.2.1; and

4) shall send the SIP re-INVITE request towards the MCVideo client according to 3GPP TS 24.229 [11].

Upon receiving a SIP 200 (OK) response to the above SIP re-INVITE request sent to the MCVideo client, the participating MCVideo function:

1) shall generate a SIP 200 (OK) response as described in the clause 6.3.2.2.4.2;

2) shall include in the SIP 200 (OK) response an SDP answer based on the SDP answer in the received SIP 200 (OK) response as specified in clause 6.3.2.2.2.1;

3) shall interact with the media plane as specified in 3GPP TS 24.581 [5]; and

4) shall forward the SIP 200 (OK) response according to 3GPP TS 24.229 [11].

9.2.1.4 Controlling MCVideo function procedures

9.2.1.4.1 Originating Procedures

9.2.1.4.1.1 INVITE targeted to an MCVideo client

This clause describes the procedures for inviting an MCVideo user to an MCVideo session. The procedure is initiated by the controlling MCVideo function as the result of an action in clause 9.2.1.4.2 or as the result of receiving a SIP 403 (Forbidden) response as described in this clause.

The controlling MCVideo function:

1) shall generate a SIP INVITE request as specified in clause 6.3.3.1.2;

2) shall set the Request-URI to the public service identity of the terminating participating MCVideo function associated to the MCVideo user to be invited.;

NOTE 1: If the terminating participating MCVideo function is in an interconnected MCVideo system in a different trust domain, then the public service identity can identify the MCVideo gateway server that acts as an entry point in the interconnected MCVideo system from the local MCVideo system.

NOTE 2: If the terminating participating MCVideo function is in an interconnected MCVideo system in a different trust domain, then the local MCVideo system can route the SIP request through an MCVideo gateway server that acts as an exit point from the local MCVideo system to the interconnected MCVideo system.

NOTE 3: How the controlling MCVideo function determines the public service identity of the terminating participating MCVideo function associated with the MCVideo user to be invited or of the MCVideo gateway server in the interconnected MCVideo system is out of the scope of the present document.

NOTE 4: How the local MCVideo system routes the SIP request through an exit MCVideo gateway server is out of the scope of the present document.

NOTE 5: If the terminating MCVideo user is part of a partner MCVideo system, then the public service identity can identify an entry point in the partner network that is able to identify the terminating participating MCVideo function.

3) shall set the P-Asserted-Identity header field to the public service identity of the controlling MCVideo function;

4) shall include in the application/vnd.3gpp.mcvideo-info+xml MIME body in the outgoing SIP INVITE request:

   a) the <mcvideo-request-uri> element set to the MCVideo ID of the terminating user; and

   b) the <mcvideo-calling-group-id> element set to the group identity;

NOTE 6: The <mcvideo-calling-user-id> is already included in the MIME body as a result of calling clause 6.3.3.1.2 in step 1).

5) shall include in the SIP INVITE request an SDP offer based on the SDP offer in the received SIP INVITE request from the originating network according to the procedures specified in clause 6.3.3.1.1;

6) if the in-progress emergency state of the group is set to a value of "true" the controlling MCVideo function:

   a) shall include a Resource-Priority header field populated with the values for an MCVideo emergency group call as specified in clause 6.3.3.1.19;

   b) if the received SIP INVITE request contained an application/vnd.3gpp.mcvideo-info+xml MIME body with the <emergency-ind> element set to a value of "true":

      i) shall include in the outgoing SIP INVITE request in the application/vnd.3gpp.mcvideo-info+xml MIME body an <emergency-ind> element set to a value of "true"; and

      ii) if the <alert-ind> element is set to "true" in the received SIP INVITE request and the requesting MCVideo user and MCVideo group are authorised for the initiation of MCVideo emergency alerts as determined by the procedures of clause 6.3.3.1.13.1, shall populate the application/vnd.3gpp.mcvideo-

info+xml MIME body and the application/vnd.3gpp.location-info+xml MIME body as specified in clause 6.3.3.1.12. Otherwise, shall set the <alert-ind> element to a value of "false"; and

c) if the in-progress imminent peril state of the group is set to a value of "true" shall include in the application/vnd.3gpp.mcvideo-info+xml MIME body an <imminentperil-ind> element set to a value of "false";

7) if the in-progress emergency state of the group is set to a value of "false" and the in-progress imminent peril state of the group is set to a value of "true", the controlling MCVideo function:

a) shall include a Resource-Priority header field populated with the values for an MCVideo imminent peril group call as specified in clause 6.3.3.1.19; and

b) shall include in the application/vnd.3gpp.mcvideo-info+xml MIME body with the <imminentperil-ind> element set to a value of "true";

8) if:

a) an MCVideo GKTP document exists for the group identity contained in the <mcvideo-request-uri> element in the application/vnd.3gpp.mcvideo-info+xml MIME body of the incoming SIP INVITE request; and

b) the MCVideo GKTP document contains a <MKFC-GKTPs> element;

then:

a) for each instance of <GKTP> element of the <MKFC-GKTPs> element of the MCVideo GKTP document:

i) shall perform the procedure in clause 6.3.3.6.2 to re-generate an I_MESSAGE; and

ii) if the procedure in clause 6.3.3.6.2 was successful, shall include the I_MESSAGE in a <GKTP> element of the <MKFC-GKTPs> element of an application/vnd.3gpp.mcvideo-info+xml MIME body included in the outgoing SIP INVITE request; and

9) shall send the SIP INVITE request towards the terminating network in accordance with 3GPP TS 24.229 [11].

Upon receiving a SIP 183 (Session Progress) response containing a Require header field with the option tag "100rel" and containing a P-Answer-State header field with the value "Unconfirmed" in response to the SIP INVITE request the controlling MCVideo function:

1) shall send a SIP PRACK request towards the MCVideo client according to 3GPP TS 24.229 [11].

Upon receiving a SIP 200 (OK) response for the SIP INVITE request the controlling MCVideo function:

1) shall interact with the media plane as specified in 3GPP TS 24.581 [5] clause 6.3;

2) shall send a SIP NOTIFY request to all participants with a subscription to the conference event package as specified in clause 9.2.3.4; and

3) shall increment the local counter of the number of SIP 200 (OK) responses received from invited members, by 1.

NOTE 7: The notifications above could be sent prior to the SIP 200 (OK) response being sent to the inviting MCVideo client. These notifications received by MCVideo clients that are group members do not mean that the group session will be successfully established.

NOTE 8: The procedures executed by the controlling MCVideo function prior to sending a response to the inviting MCVideo client are specified in clause 9.2.1.4.2.

9.2.1.4.1.2 INVITE targeted to the non-controlling MCVideo function of an MCVideo group

The controlling MCVideo function:

1) shall generate a SIP INVITE request as specified in clause 6.3.3.1.2;

2) shall set the Request-URI to the public service identity of the non-controlling MCVideo function serving the group identity of the MCVideo group owned by the interconnected MCVideo system;

NOTE 1: The public service identity can identify the non-controlling function in the local MCVideo system or in an interconnected MCVideo system.

NOTE 2: If the non-controlling MCVideo function is in an interconnected MCVideo system in a different trust domain, then the public service identity can identify the MCVideo gateway server that acts as an entry point in the interconnected MCVideo system from the local MCVideo system.

NOTE 3: If the non-controlling MCVideo function is in an interconnected MCVideo system in a different trust domain, then the local MCVideo system can route the SIP request through an MCVideo gateway server that acts as an exit point from the local MCVideo system to the interconnected MCVideo system.

NOTE 4: How the controlling MCVideo function determines the public service identity of the non-controlling MCVideo function associated with the group identity or of the MCVideo gateway server in the interconnected MCVideo system is out of the scope of the present document.

NOTE 5: How the local MCVideo system routes the SIP request through an exit MCVideo gateway server is out of the scope of the present document.

3) shall set the P-Asserted-Identity to the public service identity of the controlling MCVideo function;

4) shall include in the application/vnd.3gpp.mcvideo-info+xml MIME body in the outgoing SIP INVITE request:

   a) the <mcvideo-request-uri> element set to the group identity of the MCVideo group hosted by the non-controlling MCVideo function in the interconnected MCVideo system; and

   b) the <mcvideo-calling-group-id> element set to the group identity of the group served by the controlling MCVideo function;

5) shall include the Recv-Info header field set to g.3gpp.mcvideo-transmission-request;

6) if:

   a) an MCVideo GKTP document exists for the group identity contained in the <mcvideo-request-uri> element in the application/vnd.3gpp.mcvideo-info+xml MIME body of the incoming SIP INVITE request; and

   b) the MCVideo GKTP document contains a <MKFC-GKTPs> element;

   then:

   a) for each instance of <GKTP> element of the <MKFC-GKTPs> element of the MCVideo GKTP document:

      i) shall perform the procedure in clause 6.3.3.6.2 to re-generate an I_MESSAGE; and

      ii) if the procedure in clause 6.3.3.6.2 was successful, shall include the I_MESSAGE in a <GKTP> element of the <MKFC-GKTPs> element of an application/vnd.3gpp.mcvideo-info+xml MIME body included in the outgoing SIP INVITE request;

7) shall include in the SIP INVITE request an SDP offer based on the SDP offer in the received SIP INVITE request from the originating network according to the procedures specified in clause 6.3.3.1.1; and

8) shall send the SIP INVITE request towards the interconnected MCVideo system in accordance with 3GPP TS 24.229 [11].

Upon receiving SIP 403 (Forbidden) response for the SIP INVITE request, if according to local policy and if:

1) the response contains a Warning header field with the MCVideo warning code "128"; and

2) the response contains a P-Refused-URI-List header field and an application/resource-lists+xml MIME body as specified in IETF RFC 5318 [28];

NOTE 9: The application/resource-lists+xml MIME body contains MCVideo IDs identifying MCVideo users in a interconnected MCVideo system that needs to be invited to the prearranged group call in case of group regrouping using interrogating method.

Editor's Note: The above note currently isn't defined in the 23.280 and 23.281.

then the controlling MCVideo function:

1) shall check if the number of members of the MCVideo group exceeds the value contained in the <on-network-max-participant-count> element of the group document as specified in 3GPP TS 24.481 [24]. If exceeded, the controlling MCVideo function shall invite only <on-network-max-participant-count> members from the application/resource-lists+xml MIME body; and

NOTE 10: The <on-network-max-participant-count> element indicates the maximum number of participants allowed in the prearranged group session It is operator policy that determines which participants in the application/resource-lists+xml MIME body are invited to the group call.

2) shall invite MCVideo users as specified in this clause using the list of MCVideo IDs in URI-List.

Upon receiving a SIP 200 (OK) response for the SIP INVITE request the controlling MCVideo function:

1) shall interact with the media plane as specified in 3GPP TS 24.581 [5] clause 6.3; and

NOTE 11: The procedures executed by the controlling MCVideo function prior to sending a response to the inviting MCVideo client are specified in clause 9.2.1.4.2.

2) if at least one of the invited MCVideo clients has subscribed to the conference package, shall subscribe to the conference event package in the non-controlling MCVideo function as specified in clause 9.2.3.4.3.

9.2.1.4.2 Terminating Procedures

In the procedures in this clause:

1) MCVideo ID in an incoming SIP INVITE request refers to the MCVideo ID of the originating user from the <mcvideo-calling-user-id> element of the application/vnd.3gpp.mcvideo-info+xml MIME body of the incoming SIP INVITE request;

2) group identity in an incoming SIP INVITE request refers to the group identity from the <mcvideo-request-uri> element of the application/vnd.3gpp.mcvideo-info+xml MIME body of the incoming SIP INVITE request;

3) MCVideo ID in an outgoing SIP INVITE request refers to the MCVideo ID of the called user in the <mcvideo-request-uri> element of the application/vnd.3gpp.mcvideo-info+xml MIME body of the outgoing SIP INVITE request;

4) indication of required group members in a SIP 183 (Session Progress) response refers to the <required> element of the application/vnd.3gpp.mcvideo-info+xml MIME body set to "true" in a SIP 183 (Session Progress) sent by the non-controlling MCVideo function of an MCVideo group;

5) emergency indication in an incoming SIP INVITE request refers to the <emergency-ind> element of the application/vnd.3gpp.mcvideo-info+xml MIME body; and

6) imminent peril indication in an incoming SIP INVITE request refers to the <imminentperil-ind> element of the application/vnd.3gpp.mcvideo-info+xml MIME body.

Upon receipt of a "SIP INVITE request for controlling MCVideo function of an MCVideo group", the controlling MCVideo function:

1) if unable to process the request due to a lack of resources or a risk of congestion exists, may reject the SIP INVITE request with a SIP 500 (Server Internal Error) response. The controlling MCVideo function may include a Retry-After header field to the SIP 500 (Server Internal Error) response as specified in IETF RFC 3261 [15] and skip the rest of the steps;

NOTE 1: if the SIP INVITE request contains an emergency indication or an imminent peril indication set to a value of "true" and this is an authorised request for originating an MCVideo emergency group call as determined by clause 6.3.3.1.13.2, or for originating an MCVideo imminent peril group call as determined by clause 6.3.3.1.13.5, the controlling MCVideo function can according to local policy choose to accept the request.

2) shall determine if the media parameters are acceptable and the MCVideo codecs are offered in the SDP offer and if not reject the request with a SIP 488 (Not Acceptable Here) response and skip the rest of the steps;

3) shall reject the SIP request with a SIP 403 (Forbidden) response and not process the remaining steps if:

a) an Accept-Contact header field does not include the g.3gpp.mcvideo media feature tag; or

b) an Accept-Contact header field does not include the g.3gpp.icsi-ref media feature tag containing the value of "urn:urn-7:3gpp-service.ims.icsi.mcvideo";

4) if received SIP INVITE request includes an application/vnd.3gpp.mcvideo-info+xml MIME body with an <emergency-ind> element included or an <imminentperil-ind> element included, shall validate the request as described in clause 6.3.3.1.17;

5) if the group identity is associated with a group document maintained by the GMS:

NOTE 1A: How the MCVideo server determines that a group identity represents a group for which a group document is stored in the GMS is an implementation detail.

a) shall retrieve the necessary group document(s) from the group management server for the group identity contained in the SIP INVITE request and carry out initial processing as specified in clause 6.3.5.2;

b) if the group document contains a <list-service> element that contains a <preconfigured-group-use-only> element that is set to the value "true", shall reject the SIP INVITE request with a SIP 403 (Forbidden) response with the warning text set to "167 call is not allowed on the preconfigured group" as specified in clause 4.4 "Warning header field" and skip the rest of the steps;

c) if the group referred to by the group identity has been regrouped, shall:

i) stop processing the SIP INVITE request;

ii) shall reject the SIP INVITE request with a SIP 403 (Forbidden) response with the warning text set to "148 group is regrouped" as specified in clause 4.4 "Warning header field"; and

iii) if the group referred to by the group identity has been regrouped based on a preconfigured group, shall send a copy of the notifying SIP MESSAGE that was generated and sent per clause 21.2.4.1 to the participating function for the MCVideo ID of the incoming SIP INVITE request and skip the rest of the steps; and

d) if the result of the initial processing in clause 6.3.5.2 was:

i) that authorization of the MCVideo ID is required at a non-controlling MCVideo function of an MCVideo group is required, perform the actions in clause 6.3.3.1.13.7 and do not continue with the rest of the steps in this clause; and

ii) that a SIP 3xx, 4xx, 5xx or 6xx response to the "SIP INVITE request for controlling MCVideo function of an MCVideo group" has been sent, do not continue with the rest of the steps in this clause;

6) if the group identity is associated with a user or group regroup based on a preconfigured group:

a) shall retrieve the stored information for the group identity; and

b) if there is no stored information for the group identity, the controlling MCPTT function shall return a SIP 404 (Not Found) response with the warning text set to "163 the group identity indicated in the request does not exist" as specified in clause 4.4 "Warning header field" and shall not continue with the rest of the steps;

NOTE 1B: The user or group regroup can have been removed very recently and the client has sent the group call request prior to receiving the removal notification.

7) shall perform the actions as described in clause 6.3.3.2.2;

8) shall maintain a local counter of the number of SIP 200 (OK) responses received from invited members and shall initialise this local counter to zero;

9) shall determine if an MCVideo group call for the group identity is already ongoing by determining if an MCVideo session identity has already been allocated for the group call and the MCVideo session is active;

10) if the SIP INVITE request contains an unauthorised request for an MCVideo emergency group call as determined by clause 6.3.3.1.13.2:

a) shall reject the SIP INVITE request with a SIP 403 (Forbidden) response as specified in clause 6.3.3.1.14; and

b) shall send the SIP 403 (Forbidden) response as specified in 3GPP TS 24.229 [11] and skip the rest of the steps;

11) if the SIP INVITE request contains an unauthorised request for an MCVideo imminent peril group call as determined by clause 6.3.3.1.13.5, shall reject the SIP INVITE request with a SIP 403 (Forbidden) response with the following clarifications:

a) shall include in the SIP 403 (Forbidden) response an application/vnd.3gpp.mcvideo-info+xml MIME body as specified in clause F.1 with the <mcvideoinfo> element containing the <mcvideo-Params> element with the <imminentperil-ind> element set to a value of "false"; and

b) shall send the SIP 403 (Forbidden) response as specified in 3GPP TS 24.229 [11] and skip the rest of the steps;

12) if a Resource-Priority header field is included in the SIP INVITE request:

a) if the Resource-Priority header field is set to the value indicated for emergency calls and the SIP INVITE request does not contain an emergency indication and the in-progress emergency state of the group is set to a value of "false", shall reject the SIP INVITE request with a SIP 403 (Forbidden) response and skip the rest of the steps; or

b) if the Resource-Priority header field is set to the value indicated for imminent peril calls and the SIP INVITE request does not contain an imminent peril indication and the in-progress imminent peril state of the group is set to a value of "false", shall reject the SIP INVITE request with a SIP 403 (Forbidden) response and skip the rest of the steps;

13) if the MCVideo group call is not ongoing then:

a) if:

i) the user identified by the MCVideo ID is not affiliated to the group identity contained in the SIP INVITE request as specified in clause 6.3.6;

ii) the group identity contained in the SIP INVITE request is not a constituent MCVideo group ID;

iii) the received SIP INVITE request does not contain an emergency indication or imminent peril indication; or

iv) the received SIP INVITE request is an authorised request for an MCVideo emergency group call as determined by clause 6.3.3.1.13.2 or MCVideo imminent peril group call as determined by steps clause 6.3.3.1.13.5 and is determined to not be eligible for implicit affiliation as specified in clause 8.2.2.3.6;

then shall return a SIP 403 (Forbidden) response with the warning text set to "120 user is not affiliated to this group" in a Warning header field as specified in clause 4.4, and skip the rest of the steps below;

b) if the user identified by the MCVideo ID is not authorised to initiate the prearranged group session as specified in clause 6.3.5.4, shall send a SIP 403 (Forbidden) response with the warning text set to: "119 user is not authorised to initiate the group call" in a Warning header field as specified in clause 4.4 and skip the rest of the steps below;

c) if the received SIP INVITE request contains an an authorised request for an MCVideo emergency group call as determined by clause 6.3.3.1.13.2 or MCVideo imminent peril group call as determined by clause 6.3.3.1.13.5 and the MCVideo user is eligible to be implicitly affiliated with the MCVideo group as determined as determined in step 13) a) iv) above, shall perform the implicit affiliation as specified in clause 8.2.2.3.7;

d) shall check if a Resource-Priority header field is included in the incoming SIP INVITE request and may apply any preferential treatment to the SIP request as specified in 3GPP TS 24.229 [11];

e) shall create a prearranged group session and allocate an MCVideo session identity for the prearranged group call, and shall handle timer TNG3 (group call timer) as specified in clause 6.3.3.5;

f) if the group identity in the "SIP INVITE request for controlling MCVideo function of an MCVideo group" is a TGI:

i) shall for each of the constituent MCVideo groups homed on the primary MCVideo system:

A) if the controlling MCVideo function does not own the MCVideo group identified by the MCVideo group ID, then generate a SIP INVITE request towards the MCVideo server that owns the MCVideo group identity by following the procedures in clause 9.2.1.4.1.2; and

NOTE 2: The MCVideo server that the SIP INVITE request is sent to acts as a non-controlling MCVideo function;

B) if the controlling MCVideo function owns the MCVideo group identified by the MCVideo group ID then:

I) determine the members to invite to the prearranged MCVideo group call as specified in clause 6.3.5.5;

II) invite each group member determined in step A) above, to the group session, as specified in clause 9.2.1.4.1.1; and

III) interact with the media plane as specified in 3GPP TS 24.581 [5] clause 6.3; and

ii) shall for each of the constituent MCVideo groups homed on the partner MCVideo system generate a SIP INVITE request for the MCVideo group identity homed on the partner MCVideo system as specified in clause 9.2.1.4.1.2; and

g) if the group identity in the SIP INVITE request for controlling MCVideo function of an MCVideo group is an MCVideo group ID:

i) shall determine the members to invite to the prearranged MCVideo group call as specified in clause 6.3.5.5;

ii) if necessary, shall start timer TNG1 (acknowledged call setup timer) according to the conditions stated in clause 6.3.3.3;

iii) if the received SIP INVITE request includes an application/vnd.3gpp.mcvideo-info+xml MIME body with an <emergency-ind> element set to a value of "true":

A) shall cache the information that this MCVideo user has initiated an MCVideo emergency call;

B) if the received SIP INVITE contains an alert indication set to a value of "true" and this is an authorised request for an MCVideo emergency alert meeting the conditions specified in clause 6.3.3.1.13.1, shall cache the information that this MCVideo user has initiated an MCVideo emergency alert; and

C) if the in-progress emergency state of the group is set to a value of "false":

I) shall set the value of the in-progress emergency state of the group to "true"; and

II) shall start timer TNG2 (in-progress emergency group call timer) and handle its expiry as specified in clause 6.3.3.1.16;

iv) if the in-progress emergency state of the group is set to a value of "false" and if the received SIP INVITE request contains an imminent peril indication set to a value of "true", the controlling MCVideo function shall:

A) shall cache the information that this MCVideo user has initiated an MCVideo imminent peril call; and

B) if the in-progress imminent peril state of the group is set to a value of "false", shall set the in-progress imminent peril state of the group to a value of "true";

v) shall invite each group member determined in step 13)g)i) above, to the group session, as specified in clause 9.2.1.4.1.1; and

vi) shall interact with the media plane as specified in 3GPP TS 24.581 [5] clause 6.3; and

14) if the MCVideo group call is ongoing then:

a) if:

i) the user identified by the MCVideo ID in the SIP INVITE request is not affiliated to the group identity contained in the SIP INVITE request as specified in clause 6.3.6;

ii) the group identity contained in the SIP INVITE request is not a constituent MCVideo group ID;

iii) the received SIP INVITE request does not contain an emergency indication or imminent peril indication; or

iv) the received SIP INVITE request is an authorised request for an MCVideo emergency group call as determined by clause 6.3.3.1.13.2 or MCVideo imminent peril group call as determined clause 6.3.3.1.13.5 and is determined to not be eligible for implicit affiliation as specified in clause 8.2.2.3.6;

then shall return a SIP 403 (Forbidden) response with the warning text set to "120 user is not affiliated to this group" in a Warning header field as specified in clause 4.4, and skip the rest of the steps below;

b) if the user identified by the MCVideo ID in the SIP INVITE request is not authorised to join the prearranged group session as specified in clause 6.3.5.3, shall send a SIP 403 (Forbidden) response with the warning text set to "121 user is not allowed to join the group call" in a Warning header field as specified in clause 4.4 and skip the rest of the steps below;

c) shall check if a Resource-Priority header field is included in the incoming SIP INVITE request and may apply any preferential treatment to the SIP request as specified in 3GPP TS 24.229 [11];

d) if <on-network-max-participant-count> as specified in 3GPP TS 24.481 [24] is already reached:

i) if, according to local policy, the user identified by the MCVideo ID in the SIP INVITE request is deemed to have a higher priority than an existing user in the group session, may remove a participant from the session by following clause 9.2.1.4.4.3, and skip the next step; and

NOTE 3: The local policy for deciding whether to admit a user to a call that has reached its maximum amount of participants can include the <user-priority> and the <participant-type> of the user as well as other information of the user from the group document as specified in 3GPP TS 24.481 [24]. The local policy decisions can also include taking into account whether the imminent-peril indicator or emergency indicator was received in the SIP INVITE request.

ii) shall return a SIP 486 (Busy Here) response with the warning text set to "122 too many participants" to the originating network as specified in clause 4.4 and skip the rest of the steps;

e) if the received SIP INVITE request contains an an authorised request for an MCVideo emergency group call as determined by clause 6.3.3.1.13.2 or MCVideo imminent peril group call as determined by clause 6.3.3.1.13.5 and the MCVideo user is eligible to be implicitly affiliated with the MCVideo group as determined in step 14) a) iv) above, shall perform the implicit affiliation as specified in clause 8.2.2.3.7;

f) if the received SIP INVITE request includes an application/vnd.3gpp.mcvideo-info+xml MIME body with an <emergency-ind> element set to a value of "true":

i) shall cache the information that this MCVideo user has initiated an MCVideo emergency call;

ii) if the received SIP INVITE contains an alert indication set to a value of "true" and this is an authorised request for an MCVideo emergency alert meeting the conditions specified in clause 6.3.3.1.13.1, shall cache the information that this MCVideo user has initiated an MCVideo emergency alert;

iii) if the in-progress emergency state of the group is set to a value of "false":

A) shall set the value of the in-progress emergency state of the group to "true";

B) shall start timer TNG2 (in-progress emergency group call timer) and handle its expiry as specified in clause 6.3.3.1.16; and

C) shall generate SIP re-INVITE requests for the MCVideo emergency group call to the other call participants of the MCVideo group as specified in clause 6.3.3.1.6;

iv) if the in-progress imminent peril state of the group is set to a value of "true":

A) for each of the other affiliated member of the group generate a SIP MESSAGE request notification of the MCVideo user's imminent peril indication as specified in clause 6.3.3.1.11, setting the <imminentperil-ind> element of the application/vnd.3gpp.mcvideo-info+xml MIME body to a value of "true"; and

B) send the SIP MESSAGE request as specified in 3GPP TS 24.229 [11]; and

v) upon receiving a SIP 200 (OK) response to the SIP re-INVITE request the controlling MCVideo function shall interact with the media plane as specified in 3GPP TS 24.581 [5];

g) if the in-progress emergency state of the group is set to a value of "false" and if the SIP INVITE request contains an imminent peril indication set to a value of "true", the controlling MCVideo function:

i) shall cache the information that this MCVideo user has initiated an MCVideo imminent peril call; and

ii) if the in-progress imminent peril state of the group is set to a value of "false":

A) shall set the in-progress imminent peril state of the group to a value of "true";

B) shall generate SIP re-INVITE requests for the MCVideo imminent peril group call to the other call participants of the MCVideo group as specified in clause 6.3.3.1.15; and

C) upon receiving a SIP 200 (OK) response to the SIP re-INVITE request the controlling MCVideo function shall interact with the media plane as specified in 3GPP TS 24.581 [5]; and

iii) if the in-progress imminent peril state of the group is set to a value of "true":

A) for each of the other affiliated member of the group generate a SIP MESSAGE request notification of the MCVideo user's imminent peril indication as specified in clause 6.3.3.1.11, setting the <imminentperil-ind> element of the application/vnd.3gpp.mcvideo-info+xml MIME body to a value of "true"; and

B) send the SIP MESSAGE request as specified in 3GPP TS 24.229 [11];

h) shall generate a SIP 200 (OK) response as specified in the clause 6.3.3.2.4.2;

i) shall include in the SIP 200 (OK) response an SDP answer to the SDP offer in the incoming SIP INVITE request as specified in the clause 6.3.3.2.1;

j) shall include in the SIP 200 (OK) response with the warning text set to "123 MCVideo session already exists" as specified in clause 4.4;

k) if the received SIP re-INVITE request contains an alert indication set to a value of "true" and this is an unauthorised request for an MCVideo emergency alert as specified in clause 6.3.3.1.13.1, shall include in the SIP 200 (OK) response the warning text set to "149 SIP INFO request pending" in a Warning header field as specified in clause 4.4;

l) if the received SIP re-INVITE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body with the <imminentperil-ind> element set to a value of "true" and if the in-progress emergency state of the group is set to a value of "true", shall include in the SIP 200 (OK) response the warning text set to "149 SIP INFO request pending" in a Warning header field as specified in clause 4.4;

NOTE 4: In this case, the request was for an imminent peril call but a higher priority MCVideo emergency call was already in progress on the group. Hence, the imminent peril call request aspect of the request is denied but the request is granted with emergency level priority.

m) shall interact with media plane as specified in 3GPP TS 24.581 [5] clause 6.3;

NOTE 5: Resulting media plane processing is completed before the next step is performed.

n) shall send the SIP 200 (OK) response towards the inviting MCVideo client or inviting non-controlling MCVideo function according to 3GPP TS 24.229 [11];

o) shall generate a notification to the MCVideo clients, which have subscribed to the conference state event package that the inviting MCVideo User has joined in the MCVideo group session, as specified in clause 6.3.3.4;

NOTE 6: As a group document can potentially have a large content, the controlling MCVideo function can notify using content-indirection as defined in IETF RFC 4483 [29].

p) shall send a SIP NOTIFY request to each MCVideo client according to 3GPP TS 24.229 [11];

q) Upon receiving a SIP ACK to the above SIP 200 (OK) response and the SIP 200 (OK) response contained a Warning header field as specified in clause 4.4 with the warning text containing the mcvideo-warn-code set to "149", shall follow the procedures in clause 6.3.3.1.18; and

r) shall not continue with the rest of the clause.

Upon receiving a SIP 183 (Session Progress) response to the SIP INVITE request specified in clause 9.2.1.4.1 containing a P-Answer-State header field with the value "Unconfirmed" as specified in IETF RFC 4964 [30], the timer TNG1 (acknowledged call setup timer) is not running, the controlling MCVideo function supports media buffering and the SIP final response is not yet sent to the inviting MCVideo client:

1) shall generate a SIP 200 (OK) response to SIP INVITE request as specified in the clause 6.3.3.2.3.2;

2) shall include the warning text set to "122 too many participants" as specified in clause 4.4 in the SIP 200 (OK) response, if the prearranged MCVideo group has more than <on-network-max-participant-count> members as specified in 3GPP TS 24.481 [24];

3) shall include in the SIP 200 (OK) response an SDP answer to the SDP offer in the incoming SIP INVITE request as specified in the clause 6.3.3.2.1;

4) shall include a P-Answer-State header field with the value "Unconfirmed";

5) if the SIP INVITE request contains an alert indication set to a value of "true" and this is an unauthorised request for an MCVideo emergency alert as specified in clause 6.3.3.1.13.1, shall include in the SIP 200 (OK) response the warning text set to "149 SIP INFO request pending" in a Warning header field as specified in clause 4.4;

6) if the received SIP INVITE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body with the <imminentperil-ind> element set to a value of "true" and if the in-progress emergency state of the group is set to a value of "true", shall include in the SIP 200 (OK) response the warning text set to "149 SIP INFO request pending" in a Warning header field as specified in clause 4.4;

7) shall interact with the media plane as specified in 3GPP TS 24.581 [5] clause 6.3;

NOTE 7: Resulting user plane processing is completed before the next step is performed.

8) shall send the SIP 200 (OK) response towards the inviting MCVideo client according to 3GPP TS 24.229 [11];

9) shall generate a notification to the MCVideo clients, which have subscribed to the conference state event package that the inviting MCVideo User has joined in the MCVideo group session, as specified in clause 6.3.3.4; and

NOTE 8: As a group document can potentially have a large content, the controlling MCVideo function can notify using content-indirection as defined in IETF RFC 4483 [29].

10) shall send a SIP NOTIFY request to each MCVideo client according to 3GPP TS 24.229 [11].

Upon receiving a SIP 183 (Session Progress) response for a SIP INVITE request as specified in clause 9.2.1.4.1.2 containing an indication of required group members, the timer TNG1 (acknowledged call setup timer) is running and all SIP 200 (OK) responses have been received to all SIP INVITE requests sent to MCVideo clients specified in clause 9.2.1.4.1.1, then the controlling MCVideo function shall wait until the SIP 200 (OK) response has been received to the SIP INVITE request specified in clause 9.2.1.4.1.2 before generating a SIP 200 (OK) response to the "SIP INVITE request for controlling MCVideo function of an MCVideo group".

Upon receiving a SIP 200 (OK) response for a SIP INVITE request as specified in clause 9.2.1.4.1 that was sent to an affiliated and <on-network-required> group member as specified in 3GPP TS 24.481 [24]; and

1) if the MCVideo ID in the SIP 200 (OK) response matches to the MCVideo ID in the corresponding SIP INVITE request;

2) there are no outstanding SIP 200 (OK) responses to SIP INVITE requests which were sent to affiliated and <on-network-required> group members as specified in 3GPP TS 24.481 [24]; and

3) there is no outstanding SIP 200 (OK) response to a SIP INVITE request sent in clause 9.2.1.4.1.2 where the SIP 183 (Session Progress) response contained an indication of required group members;

the controlling MCVideo function:

1) shall stop timer TNG1 (acknowledged call setup timer) as described in clause 6.3.3.3;

2) shall generate SIP 200 (OK) response to the SIP INVITE request as specified in the clause 6.3.3.2.3.2 before continuing with the rest of the steps;

3) shall include the warning text set to "122 too many participants" as specified in clause 4.4 in the SIP 200 (OK) response, if all members were not invited because the prearranged MCVideo group has been exceeded the <on-network-max-participant-count> members as specified in 3GPP TS 24.481 [24];

4) shall include in the SIP 200 (OK) response an SDP answer to the SDP offer in the incoming SIP INVITE request as specified in the clause 6.3.3.2.1;

5) shall interact with the media plane as specified in 3GPP TS 24.581 [5] clause 6.3;

NOTE 9: Resulting media plane processing is completed before the next step is performed.

6) shall send a SIP 200 (OK) response to the inviting MCVideo client according to 3GPP TS 24.229 [11];

7) shall generate a notification to the MCVideo clients, which have subscribed to the conference state event package that the inviting MCVideo user has joined in the MCVideo group session, as specified in clause 6.3.3.4; and

NOTE 10: As a group document can potentially have a large content, the controlling MCVideo function can notify using content-indirection as defined in IETF RFC 4483 [29].

8) shall send the SIP NOTIFY request to the MCVideo clients according to 3GPP TS 24.229 [11].

Upon:

1) receiving a SIP 200 (OK) response for a SIP INVITE request as specified in clause 9.2.1.4.1;

2) the timer TNG1 (acknowledged call setup timer) is not running;

3) the local counter of the number of SIP 200 (OK) responses received from invited members is equal to the value of the <on-network-minimum-number-to-start> element of the group document;

4) the controlling MCVideo function supports media buffering; and

5) the SIP final response has not yet been sent to the inviting MCVideo client;

the controlling MCVideo function according to local policy:

1) shall generate SIP 200 (OK) response to the SIP INVITE request as specified in the clause 6.3.3.2.2;

2) shall include the warning text set to "122 too many participants" as specified in clause 4.4 in the SIP 200 (OK) response, if all members were not invited because the prearranged MCVideo group has exceeded the <max-participant-count> members as specified in 3GPP TS 24.481 [24];

3) shall include in the SIP 200 (OK) response an SDP answer to the SDP offer in the incoming SIP INVITE request as specified in the clause 6.3.3.2.1;

4) if the SIP INVITE request contains an alert indication set to a value of "true" and this is an unauthorised request for an MCVideo emergency alert as specified in clause 6.3.3.1.13.1, shall include in the SIP 200 (OK) response the warning text set to "149 SIP INFO request pending" in a Warning header field as specified in clause 4.4;

5) if the received SIP INVITE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body with the <imminentperil-ind> element set to a value of "true" and if the in-progress emergency state of the group is set to a value of "true", shall include in the SIP 200 (OK) response the warning text set to "149 SIP INFO request pending" in a Warning header field as specified in clause 4.4;

6) shall interact with the media plane as specified in 3GPP TS 24.581 [5] clause 6.3;

NOTE 11: Resulting media plane processing is completed before the next step is performed.

7) shall send a SIP 200 (OK) response to the inviting MCVideo client according to 3GPP TS 24.229 [11];

8) shall generate a notification to the MCVideo clients, which have subscribed to the conference state event package that the inviting MCVideo user has joined in the MCVideo group session, as specified in clause 6.3.3.4; and

NOTE 12: As a group document can potentially have a large content, the controlling MCVideo function can notify using content-indirection as defined in IETF RFC 4483 [29].

9) shall send the SIP NOTIFY request to the MCVideo clients according to 3GPP TS 24.229 [11].

Upon expiry of timer TNG1 (acknowledged call setup timer), if there are outstanding SIP 200 (OK) responses to SIP INVITE requests sent to affiliated and <on-network-required> group members as specified in 3GPP TS 24.481 [24], the controlling MCVideo function shall follow the procedures specified in clause 6.3.3.3.

If timer TNG1 (acknowledged call setup timer) is running and a final SIP 4xx, 5xx or 6xx response is received from an affiliated and <on-network-required> group member as specified in 3GPP TS 24.481 [24], the controlling MCVideo function shall follow the relevant procedures specified in clause 6.3.3.3.

If:

1) timer TNG1 (acknowledged call setup timer) is not running;

2) the local counter of the number of SIP 200 (OK) responses received from invited members is equal to the value of the <on-network-minimum-number-to-start> element of the group document; and

3) a final SIP 4xx, 5xx or 6xx response is received from an invited MCVideo client;

then the controlling MCVideo function shall perform one of the following based on policy:

1) send the SIP final response towards the inviting MCVideo client, according to 3GPP TS 24.229 [11], if a SIP final response was received from all the other invited MCVideo clients and the SIP 200 (OK) response is not yet sent; or

2) remove the invited MCVideo client from the MCVideo Session as specified in clause 6.3.3.1.5, if a SIP final response other than 2xx or 3xx was received from all the invited MCVideo clients and the SIP 200 (OK) response is already sent. The controlling MCVideo function may invite an additional member of the prearranged MCVideo group as specified in clause 9.2.1.4.1 that has not already been invited, if the prearranged MCVideo group has more than <on-network-max-participant-count> members as specified in 3GPP TS 24.481 [24], and all members have not yet been invited.

Upon receiving a SIP ACK to the SIP 200 (OK) response sent towards the inviting MCVideo client, and the SIP 200 (OK) response was sent with the warning text set to "149 SIP INFO request pending" in a Warning header field as specified in clause 4.4, the controlling MCVideo function shall follow the procedures in clause 6.3.3.1.18.

9.2.1.4.3 End group call at the terminating controlling MCVideo function

Upon receiving a SIP BYE request the controlling MCVideo function shall follow the procedures as specified in clause 6.3.3.2.4.

9.2.1.4.4 End group call initiated by the controlling MCVideo function

9.2.1.4.4.1 General

This clause describes the procedures of each functional entity for ending the group call initiated by the controlling MCVideo function.

9.2.1.4.4.2 SIP BYE request for releasing MCVideo session for a group call

When the MCVideo session for group call needs to be released as specified in clause 6.3.8.1, the controlling MCVideo function shall follow the procedures in clause 6.3.3.1.5.

9.2.1.4.4.3 SIP BYE request toward a MCVideo client

When an MCVideo client needs to be removed from the MCVideo session (e.g. due to de-affiliation or admitting a higher priority user), the controlling MCVideo function shall follow the procedures in clause 6.3.3.1.5.

After successful removing the MCVideo client from the MCVideo session, the controlling MCVideo function may generate a notification to the MCVideo clients, which have subscribed to the conference state event package that an MCVideo user has been removed from the MCVideo session, as specified in clause 6.3.3.4 and send the SIP NOTIFY request to the MCVideo client according to 3GPP TS 24.229 [11].

9.2.1.4.5 Re-join procedures

9.2.1.4.5.1 Terminating procedures

Upon receipt of a SIP INVITE request that includes an MCVideo session identity of an ongoing MCVideo session in the Request-URI the controlling MCVideo function:

1) if unable to process the request due to a lack of resources or a risk of congestion exists, may reject the SIP INVITE request with a SIP 500 (Server Internal Error) response. The controlling MCVideo function may include a Retry-After header field to the SIP 500 (Server Internal Error) response as specified in IETF RFC 3261 [15]. Otherwise, continue with the rest of the steps;

NOTE 1: If the SIP INVITE request contains an emergency indication or an imminent peril indication set to a value of "true" and this is an authorised request for originating an MCVideo emergency group call as determined by clause 6.3.3.1.13.2, or for originating an MCVideo imminent peril group call as determined by clause 6.3.3.1.13.5, the controlling MCVideo function can according to local policy choose to accept the request.

2) shall reject the SIP request with a SIP 404 (Not Found) response if the MCVideo group call represented by the MCVideo session identity in Request-URI is not present;

3) shall determine if the media parameters are acceptable and the MCVideo codecs are offered in the SDP offer and if not, reject the request with a SIP 488 (Not Acceptable Here) response. Otherwise, continue with the rest of the steps;

4) shall reject the SIP request with a SIP 403 (Forbidden) response and not process the remaining steps if:

   a) an Accept-Contact header field does not include the g.3gpp.mcvideo media feature tag; or

   b) an Accept-Contact header field does not include the g.3gpp.icsi-ref media feature tag containing the value of "urn:urn-7:3gpp-service.ims.icsi.mcvideo";

5) shall determine the MCVideo ID of the calling user;

6) if the user identified by the MCVideo ID is not authorised to join the prearranged group session as specified in clause 6.3.5.3, shall send a SIP 403 (Forbidden) response with the warning text set to "121 user is not authorised to join the group call" in a Warning header field as specified in clause 4.4. Otherwise continue with the rest of the steps below;

7) shall perform the actions on receipt of an initial SIP INVITE request as described in clause 6.3.3.2.2;

8) if the user identified by the MCVideo ID is not affiliated to the MCVideo group ID associated with the MCVideo session identity as specified in clause 6.3.3.5, shall return a SIP 403 (Forbidden) response with the warning text set to "120 user is not affiliated to this group" in a Warning header field as specified in clause 4.4;

9) shall check if a Resource-Priority header field is included in the incoming SIP INVITE request and may apply any preferential treatment to the SIP request as specified in 3GPP TS 24.229 [11];

10) if <on-network-max-participant-count> as specified in 3GPP TS 24.481 [24] is already reached:

   a) if, according to local policy, the user identified by the MCVideo ID in the SIP INVITE request is deemed to have a higher priority than an existing user in the group session, may remove a participant from the session by following clause 9.2.1.4.4.3, and skip the next step; and

NOTE 2: The local policy for deciding whether to admit a user to a call that has reached its maximum amount of participants can include the <user-priority> and the <participant-type> of the user as well as other information of the user from the group document as specified in 3GPP TS 24.481 [24]. The local policy decisions can also include taking into account whether the imminent-peril indicator or emergency indicator was received in the SIP INVITE request.

b) shall return a SIP 486 (Busy Here) response with the warning text set to "122 too many participants" to the originating network as specified in clause 4.4. Otherwise, continue with the rest of the steps;

11) shall generate a SIP 200 (OK) response as specified in the clause 6.3.3.2.3.2;

12) shall include in the SIP 200 (OK) response an SDP answer to the SDP offer in the incoming SIP INVITE request as specified in the clause 6.3.3.2.1;

13) shall interact with media plane as specified in 3GPP TS 24.581 [5] clause 6.3;

NOTE 3: Resulting media plane processing is completed before the next step is performed.

14) shall send the SIP 200 (OK) response towards the inviting MCVideo client according to 3GPP TS 24.229 [11];

15) shall generate a notification to the MCVideo clients, which have subscribed to the conference state event package that the inviting MCVideo User has joined in the MCVideo group session, as specified in clause 6.3.3.4; and

NOTE 4: As a group document can potentially have a large content, the controlling MCVideo function can notify using content-indirection as defined in IETF RFC 4483 [29].

16) shall send a SIP NOTIFY request to each MCVideo client according to 3GPP TS 24.229 [11].

9.2.1.4.6 Late call entry initiated by controlling MCVideo function

When controlling MCVideo function is notified that an MCVideo client is newly affiliated or comes back from out of coverage, the controlling MCVideo function shall invite the MCVideo client to join an ongoing MCVideo group call by following the procedures specified in clause 9.2.1.4.1.

NOTE: How the MCVideo function is informed when an MCVideo client is coming back from out of coverage is out of scope of present document.

9.2.1.4.7 Receipt of a SIP re-INVITE request

In the procedures in this clause:

1) emergency indication in an incoming SIP INVITE request refers to the <emergency-ind> element of the application/vnd.3gpp.mcvideo-info+xml MIME body; and

2) imminent peril indication in an incoming SIP INVITE request refers to the <imminentperil-ind> element of the application/vnd.3gpp.mcvideo-info+xml MIME body.

Upon receipt of a SIP re-INVITE request for an MCVideo session identity identifying an on-demand prearranged MCVideo group session, the controlling MCVideo function:

1) if unable to process the request due to a lack of resources or a risk of congestion exists, may reject the SIP re-INVITE request with a SIP 500 (Server Internal Error) response. The controlling MCVideo function may include a Retry-After header field to the SIP 500 (Server Internal Error) response as specified in IETF RFC 3261 [15] and skip the rest of the steps;

NOTE 1: If the SIP re-INVITE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body with the <emergency-ind> element set to a value of "true", the controlling MCVideo function can choose to accept the request.

2) if received SIP re-INVITE request includes an application/vnd.3gpp.mcvideo-info+xml MIME body with an <emergency-ind> element included or an <imminentperil-ind> element included, shall validate the request as described in clause 6.3.3.1.17;

3) if the received SIP re-INVITE request contains an unauthorised request for an MCVideo emergency call as determined by clause 6.3.3.1.13.2:

   a) shall reject the SIP re-INVITE request with a SIP 403 (Forbidden) response as specified in clause 6.3.3.1.14; and

   b) shall send the SIP 403 (Forbidden) response as specified in 3GPP TS 24.229 [11] and skip the rest of the steps;

4) if the received SIP re-INVITE request contains an imminent peril indication set to "true" for an MCVideo imminent peril group call and this is an unauthorised request for an MCVideo imminent peril group call as determined by clause 6.3.3.1.13.6, shall reject the SIP re-INVITE request with a SIP 403 (Forbidden) response with the following clarifications:

   a) shall include in the SIP 403 (Forbidden) response an application/vnd.3gpp.mcvideo-info+xml MIME body as specified in clause F.1 with the <mcvideoinfo> element containing the <mcvideo-Params> element with the <imminentperil-ind> element set to a value of "false"; and

   b) shall send the SIP 403 (Forbidden) response as specified in 3GPP TS 24.229 [11] and skip the rest of the steps;

5) if a Resource-Priority header field is included in the received SIP re-INVITE request:

   a) if the Resource-Priority header field is set to the value indicated for emergency calls and the SIP re-INVITE request does not contain an emergency indication and the in-progress emergency state of the group is set to a value of "false", shall reject the SIP re-INVITE request with a SIP 403 (Forbidden) response and skip the rest of the steps; and

   b) if the Resource-Priority header field is set to the value indicated for imminent peril calls and the SIP re-INVITE request does not contain an imminent peril indication and the in-progress imminent peril state of the group is set to a value of "false", shall reject the SIP INVITE request with a SIP 403 (Forbidden) response and skip the rest of the steps;

6) if the received SIP re-INVITE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body with the <emergency-ind> element set to a value of "true" and is an authorised request to initiate an MCVideo emergency group call as determined by clause 6.3.3.1.13.2, the controlling MCVideo function shall:

      i) shall cache the MCVideo ID of the MCVideo user that has initiated an MCVideo emergency call;

      ii) if the received SIP INVITE contains an alert indication set to a value of "true" and this is an authorised request for an MCVideo emergency alert meeting the conditions specified in clause 6.3.3.1.13.1, shall cache the MCVideo ID of the MCVideo user that has initiated an MCVideo emergency alert;

      iii) if the in-progress emergency state of the group is set to a value of "true":

         A) for each of the other affiliated member of the group generate a SIP MESSAGE request notification of the MCVideo user's emergency indication as specified in clause 6.3.3.1.11, setting the <emergency-ind> element of the application/vnd.3gpp.mcvideo-info+xml MIME body to a value of "true";

         B) send the SIP MESSAGE request as specified in 3GPP TS 24.229 [11]; and

         C) if the in-progress imminent peril state of the group is set to a value of "true", shall set it to a value of "false"; and

      iv) if the in-progress emergency state of the group is set to a value of "false":

         A) shall set the value of the in-progress emergency state of the group to "true";

         B) shall start timer TNG2 (in-progress emergency group call timer) and handle its expiry as specified in clause 6.3.3.1.16;

NOTE 2: The interactions of TNG2 with the TNG3 (group call timer) are explained in clause 6.3.3.5.2.

Editor's Note: timers need to be defined..

C) shall generate SIP re-INVITE requests for the MCVideo emergency group call to the other participants of the MCVideo group call as specified in clause 6.3.3.1.6;

D) shall send the SIP re-INVITEs towards the other participants of the MCVideo group call; and

E) upon receiving a SIP 200 (OK) response to the SIP re-INVITE request the controlling MCVideo function shall interact with the media plane as specified in 3GPP TS 24.581 [5];

7) if the received SIP re-INVITE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body with the <emergency-ind> element set to a value of "false" and is an unauthorised request for an MCVideo emergency group call cancellation as determined by clause 6.3.3.1.13.4:

a) shall reject the SIP re-INVITE request with a SIP 403 (Forbidden) response;

b) shall include in the SIP 403 (Forbidden) response an application/vnd.3gpp.mcvideo-info+xml MIME body as specified in annex F.1 with an <emergency-ind> element set to a value of "true";

c) if an <alert-ind> element of the mcvideoinfo MIME body is included in the SIP re-INVITE request set to "false", and there is an outstanding MCVideo emergency alert for this MCVideo user, shall include in the application/vnd.3gpp.mcvideo-info+xml MIME body an <alert-ind> element set to a value of "true"; and

d) shall send the SIP 403 (Forbidden) response as specified in 3GPP TS 24.229 [11] and skip the rest of the steps;

8) if the received SIP re-INVITE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body with the <emergency-ind> element set to a value of "false" and is determined to be an authorised request for an MCVideo emergency call cancellation as specified in clause 6.3.3.1.16 and the in-progress emergency state of the group to is set to a value of "true" the controlling MCVideo function:

a) shall set the in-progress emergency group state of the group to a value of "false";

b) shall clear the cache of the MCVideo ID of the MCVideo user as having an outstanding MCVideo emergency group call;

c) if an <alert-ind> element of the application/vnd.3gpp.mcvideo-info+xml MIME body is included and set to "false" and is determined to be an authorised request for an MCVideo emergency alert cancellation as specified in clause 6.3.3.1.13.3 and there is an outstanding MCVideo emergency alert for this MCVideo user shall:

i) if the received SIP re-INVITE request contains an <originated-by> element in the application/vnd.3gpp.mcvideo-info+xml MIME body, clear the cache of the MCVideo ID of the MCVideo user identified by the <originated-by> element as having an outstanding MCVideo emergency alert; or

ii) if the received SIP re-INVITE request does not contain an <originated-by> element in the application/vnd.3gpp.mcvideo-info+xml MIME body, clear the cache of the MCVideo ID of the sender of the SIP re-INVITE request as having an outstanding MCVideo emergency alert;

d) shall generate SIP re-INVITE requests to the participants in the group call as specified in clause 6.3.3.1.6. The MCVideo controlling function:

i) for each of the other participants in the group call shall send the SIP re-INVITE request towards the MCVideo client as specified in 3GPP TS 24.229 [11]; and

ii) Upon receiving a SIP 200 (OK) response to the SIP re-INVITE request the controlling MCVideo function shall interact with the media plane as specified in 3GPP TS 24.581 [5];

NOTE 3: Clause 6.3.3.1.5 will inform the group call participants of the cancellation of the MCVideo group's in-progress emergency state and the cancellation of the MCVideo emergency alert if applicable.

e) shall stop timer TNG2 (in-progress emergency group call timer); and

NOTE 4: The interactions of TNG2 with the TNG3 (group call timer) are explained in clause 6.3.3.5.2;

f) for each of the affiliated members of the group that are not participating in the call:

i) generate a SIP MESSAGE request notification of the cancellation of the MCVideo user's emergency call as specified in clause 6.3.3.1.11;

ii) set the <emergency-ind> element of the application/vnd.3gpp.mcvideo-info+xml MIME body to a value of "false";

iii) if indicated above in step 8) c), set the <alert-ind> element of the application/vnd.3gpp.mcvideo-info+xml MIME body to a value of "false"; and

iv) send the SIP MESSAGE request according to 3GPP TS 24.229 [11];

9) if the received SIP re-INVITE request contains an imminent peril indication and the in-progress emergency group state of the group is set to a value of "false", shall perform the procedures specified in clause 9.2.1.4.8 and skip the rest of the steps.

Upon receiving a SIP 200 (OK) response to a SIP re-INVITE request the controlling MCVideo function shall interact with the media plane as specified in 3GPP TS 24.581 [5];

1) shall generate a SIP 200 (OK) response according to rules and procedures of 3GPP TS 24.229 [11];

2) shall include in the SIP 200 (OK) response an SDP answer according to 3GPP TS 24.229 [11] with the clarifications specified in clause 6.3.3.2.1;

3) shall include the "norefersub" option tag in a Supported header field according to IETF RFC 4488 [31];

4) shall include the "tdialog" option tag in a Supported header field according to IETF RFC 4538 [32];

5) if the received SIP re-INVITE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body with the <alert-ind> element set to a value of "true" and if this is an unauthorised request for an MCVideo emergency alert as determined by clause 6.3.3.1.13.1, shall include in the SIP 200 (OK) response the warning text set to "149 SIP INFO request pending" in a Warning header field as specified in clause 4.4;

6) if the received SIP re-INVITE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body with the <alert-ind> element set to a value of "false" and if this is an unauthorised request for an MCVideo emergency alert cancellation as determined by clause 6.3.3.1.13.3, shall include in the SIP 200 (OK) response the warning text set to "149 SIP INFO request pending" in a Warning header field as specified in clause 4.4;

7) if the received SIP re-INVITE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body with the <imminentperil-ind> element set to a value of "true", this is an authorised request for an MCVideo imminent peril group call and the in-progress emergency state of the group is set to a value of "true", shall include in the SIP 200 (OK) response the warning text set to "149 SIP INFO request pending" in a Warning header field as specified in clause 4.4;

NOTE 5: In this case, the request was for an imminent peril call but a higher priority MCVideo emergency call was already in progress on the group. Hence, the imminent peril call request aspect of the request is denied but the request is granted with emergency level priority.

8) shall interact with media plane as specified in 3GPP TS 24.581 [5]; and

9) shall send the SIP 200 (OK) response towards the MCVideo client according to 3GPP TS 24.229 [11].

Upon receiving a SIP ACK to the SIP 200 (OK) response sent towards the inviting MCVideo client, and the SIP 200 (OK) response was sent with the warning text set to "149 SIP INFO request pending" in a Warning header field as specified in clause 4.4, the controlling MCVideo function shall follow the procedures in clause 6.3.3.1.18.

Upon receipt of a SIP 2xx response for an outgoing SIP MESSAGE request, shall handle according to 3GPP TS 24.229 [11].

9.2.1.4.8 Handling of a SIP re-INVITE request for imminent peril session

This procedure is initiated by the controlling MCVideo function as the result of an action in clause 9.2.1.4.7.

In the procedures in this clause:

1) imminent peril indication in an incoming SIP re-INVITE request refers to the <imminentperil-ind> element of the application/vnd.3gpp.mcvideo-info+xml MIME body.

When the controlling function receives a SIP re-INVITE request with an imminent peril indication set to "true", the controlling function:

1) if the in-progress emergency state of the group is set to a value of "false" and if the SIP re-INVITE request contains an imminent peril indication set to a value of "true" or the in-progress imminent peril state of the group to "true", the controlling MCVideo function shall:

NOTE: 1 The calling procedure has already determined that this is not an unauthorised request for an MCVideo imminent peril call, therefore that check does not need to be repeated in the current procedure.

   a) if the in-progress imminent peril state of the group is set to a value of "true" and this MCVideo user is indicating a new imminent peril indication:

      i) for each of the other affiliated member of the group generate a SIP MESSAGE request notification of the MCVideo user's imminent peril indication as specified in clause 6.3.3.1.11 with the following clarifications;

         A) set the <imminentperil-ind> element of the application/vnd.3gpp.mcvideo-info+xml MIME body to a value of "true"; and

         B) send the SIP MESSAGE request as specified in 3GPP TS 24.229 [11];

   b) if the in-progress imminent peril state of the group is set to a value of "false";

      i) set the value of the in-progress imminent peril state of the group to "true";

      ii) generate SIP re-INVITE requests for the MCVideo imminent peril group call to participants in the MCVideo group call as specified in clause 6.3.3.1.15;

      iii) send the SIP re-INVITES to all of the other participants in the MCVideo group call;

      iv) for each of the affiliated members of the group not participating in the group call, generate a SIP MESSAGE request notification of the MCVideo user's imminent peril indication as specified in clause 6.3.3.1.11 with the following clarifications;

         A) set the <imminentperil-ind> element of the application/vnd.3gpp.mcvideo-info+xml MIME body to a value of "true"; and

         B) send the SIP MESSAGE request as specified in 3GPP TS 24.229 [11]; and

   c) cache the information that this MCVideo user has initiated an MCVideo imminent peril call;

2) if the SIP re-INVITE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body with the <imminentperil-ind> element set to a value of "false" and is an unauthorised request for an MCVideo imminent peril group call cancellation as determined by clause 6.3.3.1.13.6 shall:

   a) reject the SIP re-INVITE request with a SIP 403 (Forbidden) response to the SIP re-INVITE request; and

   b) include in the SIP 403 (Forbidden) response an application/vnd.3gpp.mcvideo-info+xml MIME body as specified in Annex F.1 with the <mcvideoinfo> element containing the <mcvideo-Params> element with the <imminentperil-ind> element set to a value of "false";

   c) send the SIP 403 (Forbidden) response as specified in 3GPP TS 24.229 [11]; and

   d) skip the rest of the steps;

3) if the SIP re-INVITE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body with the <imminentperil-ind> element set to a value of "false" and is determined to be an authorised request for an MCVideo imminent peril call cancellation as specified in clause 6.3.3.1.13.6 and the in-progress imminent peril state of the group to is set to a value of "true" the controlling MCVideo function shall:

   a) set the in-progress imminent peril state of the group to a value of "false";

   b) cache the information that this MCVideo user no longer has an outstanding MCVideo imminent peril group call;

c) generate SIP re-INVITES requests to the other participants in the MCVideo group call as specified in clause 6.3.3.1.15. The MCVideo controlling function:

i) for each participant shall send the SIP re-INVITE request towards the MCVideo client as specified in 3GPP TS 24.229 [11]; and

ii) Upon receiving a SIP 200 (OK) response to the SIP re-INVITE request the controlling MCVideo function interact with the media plane as specified in 3GPP TS 24.581 [5]; and

NOTE 2: Clause 6.3.3.1.14 will inform the affiliated and joined members of the cancellation of the MCVideo group's in-progress emergency state and the cancellation of the MCVideo emergency alert if applicable.

d) for each of the affiliated members of the group not participating in the call shall:

i) generate a SIP MESSAGE request notification of the cancellation of the MCVideo user's imminent peril call as specified in clause 6.3.3.1.11;

ii) set the <imminentperil-ind> element of the application/vnd.3gpp.mcvideo-info+xml MIME body to a value of "false"; and

iii) send the SIP MESSAGE request according to 3GPP TS 24.229 [11];

4) shall include in the SIP 200 (OK) response an SDP answer according to 3GPP TS 24.229 [11] with the clarifications specified in clause 6.3.3.2.1;

5) shall include the "norefersub" option tag in a Supported header field according to IETF RFC 4488 [31];

6) shall include the "tdialog" option tag in a Supported header field according to IETF RFC 4538 [32];

7) shall interact with media plane as specified in 3GPP TS 24.581 [5]; and

8) shall send the SIP 200 (OK) response towards the MCVideo client according to 3GPP TS 24.229 [11].

Upon receipt of a SIP 2xx response for an outgoing SIP MESSAGE request, shall handle according to 3GPP TS 24.229 [11].

9.2.1.5 Non-controlling function of an MCVideo group procedures

9.2.1.5.1 Originating procedures

This clause describes the procedures for inviting an MCVideo user to an MCVideo session. The procedure is initiated by the non-controlling MCVideo function of an MCVideo group as the result of an action in clause 9.2.1.5.2 or clause 9.2.1.5.5.

The non-controlling MCVideo function:

1) shall invite the MCVideo clients as specified in clause 6.3.4.1.2;

2) shall include in each SIP INVITE request an SDP offer based on the SDP offer in the received SIP INVITE request from the controlling MCVideo function according to the procedures specified in clause 6.3.4.1.1; and

3) shall send each SIP INVITE request towards the terminating network in accordance with 3GPP TS 24.229 [11].

For each SIP 183 (Session Progress) response received to each SIP INVITE request sent to an MCVideo client, the non-controlling MCVideo function of an MCVideo group:

1) For each SIP 183 (Session Progress) response containing the option tag "100rel", shall send a SIP PRACK request towards the MCVideo client according to 3GPP TS 24.229 [11]; and

2) shall cache the received response;

For each SIP 200 (OK) response received to each SIP INVITE request sent to an MCVideo client, the non-controlling MCVideo function of an MCVideo group:

1) shall cache the SIP 200 (OK) response;

2) shall start the SIP session timer according to rules and procedures of IETF RFC 4028 [23]; and

3) if at least one of the participants has subscribed to the conference event package, shall send a SIP NOTIFY request to all participants with a subscription to the conference event package as specified in clause 9.2.3.5.2.

On receipt of a SIP 3xx, 4xx, 5xx or 6xx response from an invited MCVideo client, the non-controlling MCVideo function of an MCVideo group:

1) shall send an SIP ACK request towards the MCVideo client as specified in 3GPP TS 24.229 [11];

2) shall remove the cached provisional responses received from the MCVideo client, if any cached provisional responses exists; and

3) if the procedures are inititated by the receipt of the "SIP INVITE request for non-controlling MCVideo function of an MCVideo group" as specified in clause 9.2.1.5.2, shall cache the SIP 3xx, 4xx, 5xx or 6xx response.

9.2.1.5.2 Terminating procedures

9.2.1.5.2.1 General

When receiving the "SIP INVITE request for non-controlling MCVideo function of an MCVideo group" the MCVideo server can be acting as a controller MCVideo function in an ongoing prearranged group call or, if an prearranged group call is not ongoing, be initiated as an non-controlling MCVideo function and invite MCVideo users.

If a prearranged group call is not ongoing the MCVideo server shall perform the actions specified in clause 9.2.1.5.2.2.

If the "SIP INVITE request for non-controlling MCVideo function of an MCVideo group" is received when a prearranged group call is ongoing, the controlling MCVideo function may switch from operating in a controlling MCVideo function mode to operate in a non-controlling MCVideo function mode as specified in clause 9.2.1.5.2.3.

When operating in the non-controlling mode and a SIP BYE request is received from the controlling MCVideo function, the non-controlling MCVideo function shall change from operating in the non-controlling mode to operating in the controlling mode as specified in clause 9.2.1.5.2.4.

9.2.1.5.2.2 Initiating a prearranged group call

Upon receipt of a "SIP INVITE request for non-controlling MCVideo function of an MCVideo group" and if a prearranged group call is not ongoing, the non-controlling MCVideo function of an MCVideo group:

NOTE 1: The Contact header field of the SIP INVITE request contains the "isfocus" feature media tag.

1) if unable to process the request due to a lack of resources or a risk of congestion exists, may reject the SIP INVITE request with a SIP 500 (Server Internal Error) response. The controlling MCVideo function may include a Retry-After header field to the SIP 500 (Server Internal Error) response as specified in IETF RFC 3261 [15]. Otherwise, continue with the rest of the steps;

2) shall determine if the media parameters are acceptable and the MCVideo codecs are offered in the SDP offer and if not reject the request with a SIP 488 (Not Acceptable Here) response. Otherwise, continue with the rest of the steps;

3) shall reject the SIP request with a SIP 403 (Forbidden) response and not process the remaining steps if:

   a) an Accept-Contact header field does not include the g.3gpp.mcvideo media feature tag; or

   b) an Accept-Contact header field does not include the g.3gpp.icsi-ref media feature tag containing the value of "urn:urn-7:3gpp-service.ims.icsi.mcvideo";

4) if the partner MCVideo system does not have a mutual aid relationship with the primary MCVideo system identified by the contents of the P-Asserted-Identity, shall reject the "SIP INVITE request for non-controlling MCVideo function of an MCVideo group" with a SIP 403 (Forbidden) response, with warning text set to "128 isfocus already assigned" in a Warning header field as specified in clause 4.4, and shall not process the remaining steps;

5) void

NOTE : In 3GPP TS 24.379 clause 10.1.1.5.2.2, step 5 deals with "a trusted mutual aid relationship … between the partner MCPTT system and the primary MCPTT system" and references 3GPP TS 23.379 clause 10.6.2.4.2. There is no equivalent clause in 3GPP TS 23.281. If 3GPP TS 23.281 were to include an equivalent clause, this step 5 can be used for a step 5 equivalent to that of 3GPP TS 24.379.

6) shall retrieve the group document from the group management server for the MCVideo group ID contained in the <mcvideo-request-uri> element of the application/vnd.3gpp.mcvideo-info+xml MIME body of the SIP INVITE request and carry out initial processing as specified in clause 6.3.5.2 and continue with the rest of the steps if the checks in clause 6.3.5.2 succeed;

7) shall cache the content of the SIP INVITE request, if received in the Contact header field and if the specific feature tags are supported;

8) shall check if a Resource-Priority header field is included in the incoming SIP INVITE request and may apply any preferential treatment to the SIP request as specified in 3GPP TS 24.229 [11];

9) determine the members to invite to the prearranged MCVideo group call as specified in clause 6.3.5.5;

10) if the group document retrieved from the group management server contains <on-network-required> group members as specified in 3GPP TS 24.481 [24], shall send a SIP 183 (Session Progress) response to the SIP INVITE request for non-controlling MCVideo function of an MCVideo group as specified in clause 6.3.4.2.2.1 and shall populate the response with an application/vnd.3gpp.mcvideo-info+xml MIME body containing the <required> element set to "true".

11) if the group document retrieved from the group management server does not contain any <on-network-required> group members as specified in 3GPP TS 24.481 [24], may, according to local policy, send a SIP 183 (Session Progress) response to the SIP INVITE request for non-controlling MCVideo function of an MCVideo group as specified in clause 6.3.4.2.2.1;

12) shall invite each group member determined in step 9) above, to the group session, as specified in clause 9.2.1.5.1; and

13) shall interact with the media plane as specified in 3GPP TS 24.581 [5] clause 6.3;

Unless a SIP response has been sent to the controlling MCVideo function as specified in step 10 or 11 above, the non-controlling MCVideo function of an MCVideo group shall wait for the first SIP provisional response or first SIP 200 (OK) response from one of the invited MCVideo clients, before sending a response to the SIP INVITE request for non-controlling MCVideo function of an MCVideo group.

Upon receiving the first 18x response to a SIP INVITE request sent to an invited MCVideo client as specified in clause 9.2.1.5.1, not containing a P-Answer-State header field, and if a SIP 183 (Session Progress) response has not already been sent in response to the SIP INVITE request for non-controlling MCVideo function of an MCVideo group, the non-controlling MCVideo function of an MCVideo group:

1) shall generate a SIP 183 (Session Progress) response as described in clause 6.3.4.2.2.1; and

2) shall forward the SIP 183 (Session Progress) response to the controlling MCVideo function according to 3GPP TS 24.229 [11].

Upon receiving the first 18x response to a SIP INVITE request sent to an invited MCVideo client as specified in clause 9.2.1.5.1, containing a P-Answer-State header field with the value "Unconfirmed" as specified in IETF RFC 4964 [30], a SIP 183 (Session Progress) response has not already been sent in response to the SIP INVITE request for non-controlling MCVideo function of an MCVideo group and the non-controlling MCVideo function of an MCVideo group supports media buffering, the non-controlling MCVideo function of an MCVideo group:

1) shall generate SIP 200 (OK) response to the SIP INVITE request as specified in the clause 6.3.4.2.2.2before continuing with the rest of the steps;

2) shall include in the SIP 200 (OK) response an SDP answer to the SDP offer in the incoming SIP INVITE request as specified in the clause 6.3.4.2.1;

3) shall interact with the media plane as specified in 3GPP TS 24.581 [5] clause 6.3.5; and

NOTE 2: Resulting media plane processing is completed before the next step is performed.

4) shall send a SIP 200 (OK) response to the controlling MCVideo function according to 3GPP TS 24.229 [11].

If the group document does not contain any <on-network-required> group members as specified in 3GPP TS 24.481 [24], then upon receiving the first SIP 200 (OK) response to a SIP INVITE request sent to an invited MCVideo client as specified in clause 9.2.1.5.1, the non-controlling MCVideo function of an MCVideo group:

1) shall generate SIP 200 (OK) response to the SIP INVITE request as specified in the clause 6.3.4.2.2.2before continuing with the rest of the steps;

2) shall include in the SIP 200 (OK) response an SDP answer to the SDP offer in the incoming SIP INVITE request as specified in the clause 6.3.4.2.1;

3) shall interact with the media plane as specified in 3GPP TS 24.581 [5] clause 6.3.5; and

NOTE 3: Resulting media plane processing is completed before the next step is performed.

4) shall send a SIP 200 (OK) response to the controlling MCVideo function according to 3GPP TS 24.229 [11];

If the group document contains <on-network-required> group member(s) as specified in 3GPP TS 24.481 [24], then the non-controlling MCVideo function of an MCVideo group shall wait until all SIP 200 (OK) responses to SIP INVITE requests have been received from the <on-network-required> MCVideo clients before sending a SIP 200 (OK) response back to the controlling MCVideo function, as specified above.

If all invited MCVideo clients have rejected SIP INVITE requests with a SIP 3xx, 4xx, 5xx or 6xx response, the non-controlling MCVideo function of an MCVideo group:

1) shall generate a SIP reject response as specified in 3GPP TS 24.229 [11];

2) shall, from the list of reject response codes cached by the non-controlling MCVideo function of an MCVideo group, select the highest prioritized cached reject response code as specified in IETF RFC 3261 [15]; and

3) shall send the reject response towards the controlling MCVideo function as specified in 3GPP TS 24.229 [11].

9.2.1.5.2.3 Joining an ongoing prearranged group call

Upon receipt of a "SIP INVITE request for non-controlling MCVideo function of an MCVideo group" and if a prearranged group call is already ongoing, the non-controlling MCVideo function of an MCVideo group:

NOTE 1: The Contact header field of the SIP INVITE request contains the "isfocus" feature media tag.

1) shall determine if the media parameters are acceptable and the MCVideo codecs are offered in the SDP offer and if not, reject the request with a SIP 488 (Not Acceptable Here) response. Otherwise, continue with the rest of the steps;

2) shall reject the SIP request with a SIP 403 (Forbidden) response and not process the remaining steps if:

   a) an Accept-Contact header field does not include the g.3gpp.mcvideo media feature tag; or

   b) an Accept-Contact header field does not include the g.3gpp.icsi-ref media feature tag containing the value of "urn:urn-7:3gpp-service.ims.icsi.mcvideo";

3) if the partner MCVideo system does not have a mutual aid relationship to merge an ongoing prearranged call with the primary MCVideo system identified by the contents of the P-Asserted-Identity, shall reject the "SIP INVITE request for non-controlling MCVideo function of an MCVideo group" with a SIP 403 (Forbidden) response, with warning text set to "128 isfocus already assigned" in a Warning header field as specified in clause 4.4, and shall not process the remaining steps;

4) shall cache the content of the SIP INVITE request, if received in the Contact header field and if the specific feature tags are supported;

5) shall check if a Resource-Priority header field is included in the incoming SIP INVITE request and may apply any preferential treatment to the SIP request as specified in 3GPP TS 24.229 [11];

6) shall generate SIP 200 (OK) response to the SIP INVITE request as specified in the clause 6.3.4.2.2.2before continuing with the rest of the steps;

7) shall include in the SIP 200 (OK) response an SDP answer to the SDP offer in the incoming SIP INVITE request as specified in the clause 6.3.4.2.1;

NOTE 2: Resulting media plane processing is completed before the next step is performed.

8) shall send a SIP 200 (OK) response to the controlling MCVideo function according to 3GPP TS 24.229 [11]; and

9) if at least one of the MCVideo clients in the pre-arranged group session has a subscription to the conference event package, shall subscribe to the conference event package from the controlling MCVideo function as specified in clause 9.2.3.5.3.

Upon receipt of the SIP ACK request, the non-controlling MCVideo function of an MCVideo group:

1) if information about a currently transmitting MCVideo client is cached:

   a) shall generate a SIP INFO request as specified in clause 6.3.4.1.3; and

   b) shall send the SIP INFO request to the controlling MCVideo function as specified in 3GPP TS 24.229 [11];

2) shall instruct the media plane to finalise the switch to the non-controlling mode as specified in 3GPP TS 24.581 [5] clause 6.3.5.3; and

3) if at least one of the MCVideo clients in the chat group session has a subscription to the conference event package, shall subscribe to the conference event package from the controlling MCVideo function as specified in clause 9.2.3.5.3.

9.2.1.5.2.4 Splitting an ongoing prearranged group call

Upon receipt of a SIP BYE request or a final SIP reject response from the controlling MCVideo function, the non-controlling MCVideo function of an MCVideo group:

1) if keeping the prearranged group call active is according to the release policy in clause 6.3.8.1, shall request media plane to switch to controlling mode as specified in 3GPP TS 24.581 [5] clause 6.3.5;

NOTE 1: Resulting media plane processing is completed before the next step is performed.

2) if a SIP BYE request was received, shall send a SIP 200 (OK) response to the SIP BYE request; and

3) if keeping the prearranged group call active is according to the release policy in clause 6.3.8.1 and if at least one of the remaining MCVideo clients has subscribed to the conference package, shall send a NOTIFY request to all participants with a subscription to the conference event package as specified in clause 9.2.3.5.2.

NOTE 2: The SIP NOTIFY request will indicate that all participants, with the exception of the MCVideo users belonging to the constituent MCVideo group hosted by the non-controlling MCVideo function, have left the group session.

9.2.1.5.3 Rejoin procedures

9.2.1.5.3.1 Terminating procedures

Upon receipt of a SIP INVITE request that includes an MCVideo session identity of an ongoing MCVideo session in the Request-URI the non-controlling MCVideo function act as a controlling MCVideo function towards the MCVideo client and shall perform the actions in the clause 9.2.1.4.5.1 with the following clarifications:

1) the MCVideo session identity in the Contact header field of the SIP 200 (OK) response shall be the MCVideo session identity generated by the non-controlling MCVideo function; and

2) the clause 9.2.3.5.2 shall be used when sending the SIP NOTIFY request for subscriptions to the conference event package.

9.2.1.5.3.2 Late call entry initiated by non-controlling MCVideo function

When non-controlling MCVideo function is notified that an MCVideo client is newly affiliated or comes back from out of coverage, the non-controlling MCVideo function shall invite the MCVideo client to join an ongoing MCVideo group call by following the procedures specified in clause 9.2.1.5.1.

NOTE: How the MCVideo function is informed when an MCVideo client is coming back from out of coverage is out of scope of present document.

9.2.1.5.4 SIP OPTIONS request authorization procedure

Upon receipt of an SIP OPTIONS request containing a P-Asserted-Identity header field containing the public service identity of a MCVideo server not authorized to send the SIP OPTIONS request, the non-controlling MCVideo function of an MCVideo group shall send a SIP 403 (Forbidden) response as specified in 3GPP TS 24.229 [11] and exit this clause.

Upon receipt of an SIP OPTIONS request containing a P-Asserted-Identity header field containing the public service identity of a MCVideo server authorized to send the SIP OPTIONS request, the non-controlling MCVideo function of an MCVideo group shall perform the actions in this clause.

The non-controlling MCVideo function shall retrieve the group document from the group management server for the MCVideo group ID contained in the <mcvideo-request-uri> element of the application/vnd.3gpp.mcvideo-info+xml MIME body of the SIP OPTIONS request with the following clarifications:

NOTE: The action of the non-controlling MCVideo function of an MCVideo group on receipt of the SIP OPTIONS request mimics the actions of the non-controlling MCVideo function of an MCVideo group on receipt of the SIP INVITE request.

The non-controlling MCVideo function shall:

1) if the non-controlling MCVideo function fails to retrieve the group document from the group management server, send a shall send the SIP 404 (Not Found) response to the SIP OPTIONS request with the warning text set to "113 group document does not exist" in a Warning header field as specified in clause 4.4;

2) if the non-controlling MCVideo function successfully retrieves the group document from the group management server or if the group document was already cached and if one of the following conditions are fulfilled:

   a) if the constituent MCVideo group is a chat group and the rules for joining a group conference as specified in clause 6.3.5.3 are fulfilled; or

   b) if the constituent MCVideo group is a prearranged group and the rules for initiating a prearranged group session as specified in clause 6.3.5.4;

   then the non-controlling MCVideo function:

   a) shall send the SIP 200 (OK) response to the SIP OTIONS response as specified in 3GPP TS 24.229 [11] and the IETF RFC 3261 [15] populated as follows:

      i) shall include a warning text set to "147 user is authorized to initiate a temporary group call" in a Warning header field as specified in clause 4.4;

      ii) shall include an application/vnd.3gpp.mcvideo-info MIME body with:

         A) the <session-type> element set to "chat", if the constituent MCVideo group is a chat group; and

         B) the <session-type> element set to "prearranged", if the constituent MCVideo group is a prearranged group; and

      iii) shall include the P-Asserted-Identity of the non-controlling MCVideo function of an MCVideo group; and

3) if none of the conditions in step 2 above) are fulfilled, shall send a SIP 403 (Forbidden) response with the warning text set to "119 user is not authorised to initiate the group call" in a Warning header field as specified in clause 4.4.

9.2.1.5.5 Initiating a temporary group session

Upon receiving a "SIP INVITE request "SIP INVITE request for controlling MCVideo function of an MCVideo group" when a prearranged group session is not ongoing, the non-controlling MCVideo-function shall:

NOTE 1: The difference between a "SIP INVITE request "SIP INVITE request for controlling MCVideo function of an MCVideo group" and a "SIP INVITE request for non-controlling MCVideo function of an MCVideo group" is that the latter SIP INVITE request contains the isfocus media feature tag in the Contact header field.

1) if unable to process the request due to a lack of resources or a risk of congestion exists, may reject the SIP INVITE request with a SIP 500 (Server Internal Error) response. The non-controlling MCVideo function may include a Retry-After header field to the SIP 500 (Server Internal Error) response as specified in IETF RFC 3261 [15]. Otherwise, continue with the rest of the steps;

2) shall determine if the media parameters are acceptable and the MCVideo codecs are offered in the SDP offer and if not reject the request with a SIP 488 (Not Acceptable Here) response. Otherwise, continue with the rest of the steps;

3) shall reject the SIP request with a SIP 403 (Forbidden) response and not process the remaining steps if:

   a) an Accept-Contact header field does not include the g.3gpp.mcvideo media feature tag; or

   b) an Accept-Contact header field does not include the g.3gpp.icsi-ref media feature tag containing the value of "urn:urn-7:3gpp-service.ims.icsi.mcvideo";

4) shall retrieve the group document from the group management server for the MCVideo group ID contained in the <mcvideo-request-uri> element of the application/vnd.3gpp.mcvideo-info+xml MIME body of the SIP INVITE request and carry out initial processing as specified in clause 6.3.5.2 and continue with the rest of the steps if the checks in clause 6.3.5.2 succeed;

NOTE 2: If the checks are not succesful, the SIP response to the "SIP INVITE request "SIP INVITE request for controlling MCVideo function of an MCVideo group" is already sent in the clause 6.3.5.2.

5) shall cache the content of the SIP INVITE request;

6) shall check if a Resource-Priority header field is included in the incoming SIP INVITE request and may apply any preferential treatment to the SIP request as specified in 3GPP TS 24.229 [11];

7) shall authorize the MCVideo user in the <mcvideo-calling-user-identity> element in the application/vnd.3gpp.mcvideo-info+xml MIME body of the "SIP INVITE request for controlling MCVideo function of an MCVideo group" as specified in clause 6.3.5.4, if the MCVideo user is unauthorized to initiated a pre-arranged group session the non-controlling MCVideo function shall send a SIP 403 (Forbidden) response with the warning text set to "119 user is not authorised to initiate the group call" in a Warning header field as specified in clause 4.4.

8) shall generate a SIP INVITE request to the controlling MCVideo function as specified in clause 6.3.4.1.4; and

9) shall send the SIP INVITE request to the controlling MCVideo function as specified in 3GPP TS 24.229 [11].

Upon receipt of a SIP 2xx response to the SIP INVITE request sent to the controlling MCVideo function as specified above, the non-controlling MCVideo function:

1) shall send the SIP ACK request to the controlling MCVideo function as specified in 3GPP TS 24.229 [11];

2) shall generate a SIP 200 (OK) to the "SIP INVITE request for controlling MCVideo function of an MCVideo group" as specified in 3GPP TS 24.229 [11] populated as follows:

   a) shall include an SDP answer as specified in clause 6.3.4.2.1 based on the SDP answer in the SIP 200 (OK) response;

   b) shall include the public service identifier of the non-controlling MCVideo function in the P-Asserted-Identity header field; and

   c) shall include the warning text set to "148 MCVideo group is regrouped" in a Warning header field as specified in clause 4.4;

3) shall start acting as a non-controlling MCVideo function and interact with the media plane as specified in 3GPP TS 24.581 [5] clause 6.5;

4) shall determine the members to invite to the prearranged MCVideo group call as specified in clause 6.3.5.2; and

5) shall invite each group member determined in step 2) above, to the group session, as specified in clause 9.2.1.5.1.

Upon receipt of other final SIP responses with the exception of the SIP 2xx response to the INVITE request sent to the controlling MCVideo function as specified above, the non-controlling MCVideo function:

1) shall send the SIP ACK response to the controlling MCVideo function as specified in 3GPP TS 24.229 [11]; and

2) shall start acting as a controlling MCVideo function as specified in clause 9.2.1.4 and invite members as specified in clause 6.3.4.1.2.

NOTE 4: Regardless if the controlling MCVideo function accepts or rejects the SIP INVITE request sent above the prearranged group session continues to be initiated with only the members of the group homed on the non-controlling MCVideo function of the group being invited to the group call.

The non-controlling MCVideo function shall handle SIP responses (other than the SIP 2xx response) to the SIP INVITE requests sent to invited members as specified in 3GPP TS 24.229 [11].

Upon receipt of a SIP 2xx response to SIP INVITE requests sent to invited members, the non-controlling MCVideo function:

1) shall send the SIP ACK request as specified in 3GPP TS 24.229 [11]; and

2) shall interact with the media plane as specified in 3GPP TS 24.581 [5].

9.2.2 Chat group (restricted) call

9.2.2.1 General

9.2.2.2 MCVideo client procedures

9.2.2.2.1 On-demand chat group call

9.2.2.2.1.1 MCVideo client joins a chat MCVideo group session

Upon receiving a request from an MCVideo user to establish an MCVideo group session using an MCVideo group identity, identifying a chat MCVideo group, the MCVideo client shall determine whether the group document contains a <list-service> element that contains a <preconfigured-group-use-only> element. If a <preconfigured-group-use-only> element exists and is set to the value "true", then the MCVideo client:

1) should indicate to the MCVideo user that calls are not allowed on the indicated group; and

2) shall skip the remainder of this procedure.

Upon receiving a request from an MCVideo user to establish an MCVideo group session using an MCVideo group identity, identifying a chat MCVideo group, the MCVideo client shall generate an initial SIP INVITE request by following the UE originating session procedures specified in 3GPP TS 24.229 [11], with the clarifications given below.

The MCVideo client:

1) if the MCVideo user has requested the origination of an MCVideo emergency group call or is originating an MCVideo chat group call and the MCVideo emergency state is already set, the MCVideo client shall comply with the procedures in clause 6.2.8.1.1;

2) if the MCVideo user has requested the origination of an MCVideo imminent peril group call, the MCVideo client shall comply with the procedures in clause 6.2.8.1.9;

3) shall include the g.3gpp.mcvideo media feature tag and the g.3gpp.icsi-ref media feature tag with the value of "urn:urn-7:3gpp-service.ims.icsi.mcvideo" in the Contact header field of the SIP INVITE request according to IETF RFC 3840 [22];

4) shall include an Accept-Contact header field containing the g.3gpp.mcvideo media feature tag along with the "require" and "explicit" header field parameters according to IETF RFC 3841 [20];

5) shall include the ICSI value "urn:urn-7:3gpp-service.ims.icsi.mcvideo" (coded as specified in 3GPP TS 24.229 [11]), in a P-Preferred-Service header field according to IETF RFC 6050 [14] in the SIP INVITE request;

6) shall include an Accept-Contact header field with the g.3gpp.icsi-ref media feature tag containing the value of "urn:urn-7:3gpp-service.ims.icsi.mcvideo" along with the "require" and "explicit" header field parameters according to IETF RFC 3841 [20];

7) should include the "timer" option tag in the Supported header field;

8) should include the Session-Expires header field according to IETF RFC 4028 [23]. It is recommended that the refresher parameter is omitted. If included, the refresher parameter shall be set to "uac";

9) shall set the Request-URI of the SIP INVITE request to the public service identity identifying the participating MCVideo function serving the MCVideo user;

NOTE 1: The MCVideo client is configured with public service identity identifying the participating MCVideo function serving the MCVideo user.

10) may include a P-Preferred-Identity header field in the SIP INVITE request containing a public user identity as specified in 3GPP TS 24.229 [11];

11) if the MCVideo emergency state is already set or the MCVideo client emergency group state for this group is set to "MVEG 2: in-progress", the MCVideo client shall comply with the procedures in clause 6.2.8.1.2;

12) if the MCVideo client imminent peril group state for this group is set to "MIG 2: in-progress" or "MVIG 3: confirm-pending" shall include the Resource-Priority header field and comply with the procedures in clause 6.2.8.1.12;

13) shall contain an application/vnd.3gpp.mcvideo-info+xml MIME body with the <mcvideoinfo> element containing the <mcvideo-Params> element with:

   a) the <session-type> element set to a value of "chat";

   b) the <mcvideo-request-uri> element set to the group identity;

   c) the <mcvideo-client-id> element set to the MCVideo client ID of the originating MCVideo client; and

   d) if the MCVideo client is aware of active functional aliases, and an active functional alias is to be included in the initial SIP INVITE request, the <functional-alias-URI> set to the URI of the used functional alias;

NOTE 2: The MCVideo ID of the originating MCVideo user is not included in the body, as this will be inserted into the body of the SIP INVITE request that is sent by the originating participating MCVideo function.

14) shall include in the SIP INVITE request an SDP offer according to 3GPP TS 24.229 [11] with the clarifications specified in clause 6.2.1;

15) if an implicit transmission request is required, shall indicate this as specified in clause 6.4; and

16) shall send the SIP INVITE request according to 3GPP TS 24.229 [11].

On receiving a SIP 2xx response to the SIP INVITE request, the MCVideo client:

1) shall interact with the user plane as specified in 3GPP TS 24.581 [5]; and

2) if the MCVideo emergency group call state is set to "MEGC 2: emergency-call-requested" or "MVEGC 3: emergency-call-granted" or the MCVideo imminent peril group call state is set to "MVIGC 2: imminent-peril-call-requested" or "MVIGC 3: imminent-peril-call-granted", the MCVideo client shall perform the actions specified in clause 6.2.8.1.4.

On receiving a SIP 4xx response, a SIP 5xx response or a SIP 6xx response to the SIP INVITE request:

1) if the MCVideo emergency group call state is set to "MVEGC 2: emergency-call-requested" or "MVEGC 3: emergency-call-granted"; or

2) if the MCVideo imminent peril group call state is set to "MVIGC 2: imminent-peril-call-requested" or "MVIGC 3: imminent-peril-call-granted";

the MCVideo client shall perform the actions specified in clause 6.2.8.1.5.

On receiving a SIP INFO request where the Request-URI contains an MCVideo session ID identifying an ongoing group session, the MCVideo client shall follow the actions specified in clause 6.2.8.1.13.

9.2.2.2.1.2 MCVideo client receives SIP re-INVITE request

This clause covers both on-demand session and pre-established sessions.

Upon receipt of a SIP re-INVITE request the MCVideo client:

1) if the SIP re-INVITE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body with the <mcvideoinfo> element containing the <mcvideo-Params> element with the <emergency-ind> element set to a value of "true":

   a) should display to the MCVideo user the MCVideo ID of the originator of the MCVideo emergency group call and an indication that this is an MCVideo emergency group call;

   b) if the <mcvideoinfo> element containing the <mcvideo-Params> element contains an <alert-ind> element set to "true", should display to the MCVideo user an indication of the MCVideo emergency alert and associated information;

   c) shall set the MCVideo emergency group state to "MVEG 2: in-progress";

   d) shall set the MCVideo imminent peril group state to "MVIG 1: no-imminent-peril"; and

   e) shall set the MCVideo imminent peril group call state to "MIGC 1: imminent-peril-gc-capable";

2) if the SIP re-INVITE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body with the <mcvideoinfo> element containing the <mcvideo-Params> element with the <imminentperil-ind> element set to a value of "true":

   a) should display to the MCVideo user the MCVideo ID of the originator of the MCVideo imminent peril group call and an indication that this is an MCVideo imminent peril group call; and

   b) shall set the MCVideo imminent peril group state to "MVIG 2: in-progress";

3) if the SIP re-INVITE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body with the <mcvideoinfo> element containing the <mcvideo-Params> element with the <emergency-ind> element set to a value of "false":

   a) should display to the MCVideo user the MCVideo ID of the MCVideo user cancelling the MCVideo emergency group call;

   b) if the <mcvideoinfo> element containing the <mcvideo-Params> element contains an <alert-ind> element set to "false":

      i) should display to the MCVideo user an indication of the MCVideo emergency alert cancellation and the MCVideo ID of the MCVideo user cancelling the MCVideo emergency alert; and

      ii) if the SIP re-INVITE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body including an <originated-by> element:

         A) should display to the MCVideo user the MCVideo ID contained in the <originated-by> element of the MCVideo user that originated the MCVideo emergency alert; and

         B) if the MCVideo ID contained in the <originated-by> element is the MCVideo ID of the receiving MCVideo user, shall set the MCVideo emergency alert state to "MVEA 1: no-alert";

   c) shall set the MCVideo emergency group state to "MVEG 1: no-emergency"; and

   d) if the MCVideo emergency group call state of the group is set to "MVEGC 3: emergency-call-granted", shall set the MCVideo emergency group call state of the group to "MVEGC 1: emergency-gc-capable";

4) if the SIP re-INVITE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body with the <mcvideoinfo> element containing the <mcvideo-Params> element with the <imminentperil-ind> element set to a value of "false":

   a) should display to the MCVideo user the MCVideo ID of the MCVideo user cancelling the MCVideo imminent peril group call and an indication that this is an MCVideo imminent peril group call;

   b) shall set the MCVideo imminent peril group state to "MVIG 1: no-imminent-peril"; and

   c) shall set the MCVideo imminent peril group call state to "MIGC 1: imminent-peril-gc-capable";

5) may check if a Resource-Priority header field is included in the incoming SIP re-INVITE request and may perform further actions outside the scope of this specification to act upon an included Resource-Priority header field as specified in 3GPP TS 24.229 [11];

6) shall accept the SIP re-INVITE request and generate a SIP 200 (OK) response according to rules and procedures of 3GPP TS 24.229 [11];

7) shall include the g.3gpp.mcvideo media feature tag in the Contact header field of the SIP 200 (OK) response;

8) shall include the g.3gpp.icsi-ref media feature tag containing the value of "urn:urn-7:3gpp-service.ims.icsi.mcvideo" in the Contact header field of the SIP 200 (OK) response;

9) if the SIP re-INVITE request was received within an on-demand session, shall include an SDP answer in the SIP 200 (OK) response to the SDP offer in the incoming SIP re-INVITE request according to 3GPP TS 24.229 [11] with the clarifications given in clause 6.2.2; and

10) shall send the SIP 200 (OK) response towards the MCVideo server according to rules and procedures of 3GPP TS 24.229 [11].

9.2.2.2.1.3 MCVideo in-progress emergency cancel

This clause covers both on-demand session.

Upon receiving a request from an MCVideo user to cancel the in-progress emergency condition on a chat MCVideo group, the MCVideo client shall generate a SIP re-INVITE request as specified in 3GPP TS 24.229 [11], with the clarifications given below.

The MCVideo client:

1) if the MCVideo user is not authorised to cancel the in-progress emergency group state of the MCVideo group as determined by the procedures of clause 6.2.8.1.7, the MCVideo client:

   a) should indicate to the MCVideo user that they are not authorised to cancel the in-progress emergency group state of the MCVideo group; and

   b) shall skip the remaining steps of the current clause;

2) shall, if the MCVideo user is cancelling an in-progress emergency condition and optionally an MCVideo emergency alert originated by the MCVideo user, include an application/vnd.3gpp.mcvideo-info+xml MIME body populated as specified in clause 6.2.8.1.3;

3) shall, if the MCVideo user is cancelling an in-progress emergency condition and optionally an MCVideo emergency alert originated by another MCVideo user, include an application/vnd.3gpp.mcvideo-info+xml MIME body populated as specified in clause 6.2.8.1.14;

4) shall, if the SIP re-INVITE request is to be sent within an on-demand session, include in the SIP re-INVITE request an SDP offer according to 3GPP TS 24.229 [51] with the clarifications specified in clause 6.2.1;

5) shall include a Resource-Priority header field and comply with the procedures in clause 6.2.8.1.2; and

6) shall send the SIP re-INVITE request according to 3GPP TS 24.229 [11].

On receiving a SIP 2xx response to the SIP re-INVITE request, the MCVideo client:

1) shall set the MCVideo emergency group state of the group to "MVEG 1: no-emergency";

2) shall set the MCVideo emergency group call state of the group to "MVEGC 1: emergency-gc-capable"; and

3) if the MCVideo emergency alert state is set to "MVEA 4: Emergency-alert-cancel-pending", the sent SIP re-INVITE request did not contain an <originated-by> element in the application/vnd.3gpp.mcvideo-info+xml MIME body and the SIP 2xx response to the SIP request for a priority group call does not contain a Warning header field as specified in clause 4.4 with the warning text containing the mcvideo-warn-code set to "149", shall set the MCVideo emergency alert state to "MVEA 1: no-alert".

On receiving a SIP 4xx response, SIP 5xx response or SIP 6xx response to the SIP re-INVITE request:

1) shall set the MCVideo emergency group state as "MVEG 2: in-progress";

2) if the SIP 4xx response, SIP 5xx response or SIP 6xx response contains an application/vnd.3gpp.mcvideo-info+xml MIME body with an <alert-ind> element set to a value of "true" and the sent SIP re-INVITE request did not contain an <originated-by> element in the application/vnd.3gpp.mcvideo-info+xml MIME body, the MCVideo client shall set the MCVideo emergency alert state to "MVEA 3: emergency-alert-initiated"; and

3) if the SIP 4xx response, SIP 5xx response or SIP 6xx response did not contain an application/vnd.3gpp.mcvideo-info+xml MIME body with an <alert-ind> element and did not contain an <originated-by> element, the MCVideo emergency alert (MVEA) state shall revert to its value prior to entering the current procedure.

NOTE 3: If the in-progress emergency group state cancel request is rejected, the state of the session does not change, i.e. continues with MCVideo emergency group call level priority.

On receiving a SIP INFO request where the Request-URI contains an MCVideo session ID identifying an ongoing group session, the MCVideo client shall follow the actions specified in clause 6.2.8.1.13.

9.2.2.2.1.4 MCVideo upgrade to in-progress emergency or imminent peril

This clause covers both on-demand session and pre-established sessions.

Upon receiving a request from an MCVideo user to upgrade the MCVideo group session to an emergency condition or an imminent peril condition on a chat MCVideo group, the MCVideo client shall generate a SIP re-INVITE request as specified in 3GPP TS 24.229 [11], with the clarifications given below.

1) if the MCVideo user is requesting to upgrade the MCVideo group session to an in-progress emergency group state and is not authorised to do so as determined by the procedures of clause 6.2.8.1.8, the MCVideo client:

   a) should indicate to the MCVideo user that they are not authorised to upgrade the MCVideo group session to an in-progress emergency group state; and

   b) shall skip the remaining steps of the current clause;

2) if the MCVideo user is requesting to upgrade the MCVideo group session to an in-progress imminent peril state and is not authorised to do so as determined by the procedures of clause 6.2.8.1.8, the MCVideo client:

   a) should indicate to the MCVideo user that they are not authorised to upgrade the MCVideo group session to an in-progress imminent peril group state; and

   b) shall skip the remaining steps of the current clause;

3) if the MCVideo user has requested to upgrade the MCVideo group session to an MCVideo emergency call, the MCVideo client:

   a) shall include an application/vnd.3gpp.mcvideo-info+xml MIME body by following the procedures in clause 6.2.8.1.1;

   b) if an indication of an MCVideo emergency alert is to be included, shall perform the procedures specified in clause 6.2.9.1 for the MCVideo emergency alert trigger; and

   c) shall include a Resource-Priority header field and comply with the procedures in clause 6.2.8.1.2.

4) if the MCVideo user has requested to upgrade the MCVideo group session to an MCVideo imminent peril call, the MCVideo client:

a) shall include an application/vnd.3gpp.mcvideo-info+xml MIME body by following the procedures in clause 6.2.8.1.9; and

b) shall include a Resource-Priority header field and comply with the procedures in clause 6.2.8.1.12;

5) if the SIP re-INVITE request is to be sent within an on-demand session, shall include in the SIP re-INVITE request an SDP offer according to 3GPP TS 24.229 [11] with the clarifications specified in clause 6.2.1;

6) if an implicit transmission request is required, shall indicate this as specified in clause 6.4;

7) shall include a Resource-Priority header field and comply with the procedures in clause 6.2.8.1.2; and

8) shall send the SIP re-INVITE request according to 3GPP TS 24.229 [11].

On receiving a SIP 2xx response to the SIP re-INVITE request the MCVideo client:

1) shall interact with the user plane as specified in 3GPP TS 24.581 [5]; and

2) shall perform the actions specified in clause 6.2.8.1.4.

On receiving a SIP 4xx response, SIP 5xx response or SIP 6xx response to the SIP re-INVITE request the MCVideo client shall perform the actions specified in clause 6.2.8.1.5.

On receiving a SIP INFO request where the Request-URI contains an MCVideo session ID identifying an ongoing group session, the MCVideo client shall follow the actions specified in clause 6.2.8.1.13.

9.2.2.2.1.5 MCVideo in-progress imminent peril cancel

This clause covers on-demand session.

Upon receiving a request from an MCVideo user to cancel the in-progress imminent peril condition on a chat MCVideo group, the MCVideo client shall generate a SIP re-INVITE request by following the procedures specified in 3GPP TS 24.229 [11], with the clarifications given below.

The MCVideo client:

1) if the MCVideo user is not authorised to cancel the in-progress imminent peril group state of the MCVideo group as determined by the procedures of clause 6.2.8.1.10, the MCVideo client:

a) should indicate to the MCVideo user that they are not authorised to cancel the in-progress imminent peril group state of the MCVideo group; and

b) shall skip the remaining steps of the current clause;

2) shall include an application/vnd.3gpp.mcvideo-info+xml MIME body populated as specified in clause 6.2.8.1.11;

3) shall include a Resource-Priority header field and comply with the procedures in clause 6.2.8.1.12;

4) shall include in the application/vnd.3gpp.mcvideo-info+xml MIME body with the <mcvideoinfo> element containing the <mcvideo-Params> element with:

a) the <session-type> element set to a value of "chat"; and

b) the <mcvideo-request-uri> element set to the group identity;

NOTE 1: The MCVideo ID of the originating MCVideo user is not included in the body, as this will be inserted into the body of the SIP re-INVITE request that is sent by the originating participating MCVideo function.

5) shall include the g.3gpp.mcvideo media feature tag in the Contact header field of the SIP re-INVITE request according to IETF RFC 3840 [22];

6) if the SIP re-INVITE request is to be sent within an on-demand session, shall include in the SIP re-INVITE request an SDP offer according to 3GPP TS 24.229 [11] with the clarifications specified in clause 6.2.1;

7) shall send the SIP re-INVITE request according to 3GPP TS 24.229 [11].

On receiving a SIP 2xx response to the SIP re-INVITE request, the MCVideo client:

1) shall interact with the user plane as specified in 3GPP TS 24.581 [5];

2) shall set the MCVideo imminent peril group state of the group to "MVIG 1: no-imminent-peril"; and

3) shall set the MCVideo imminent peril group call state of the group to "MVIGC 1: imminent-peril-gc-capable".

On receiving a SIP 4xx response, SIP 5xx response or SIP 6xx response to the SIP re-INVITE request:

1) if the SIP 4xx response, SIP 5xx response or SIP 6xx response:

   a) contains an application/vnd.3gpp.mcvideo-info+xml MIME body with an <imminentperil-ind> element set to a value of "true"; or

   b) does not contain an application/vnd.3gpp.mcvideo-info+xml MIME body with an <imminentperil-ind> element;

   then the MCVideo client shall set the MCVideo imminent peril group state as "MIG 2: in-progress".

   NOTE 2: This is the case where the MCVideo client requested the cancellation of the MCVideo imminent peril in-progress state and was rejected.

9.2.2.2.1.6 MCVideo client receives a SIP INVITE request for an MCVideo group call

This procedure is used for MCVideo emergency and MCVideo imminent peril calls when the MCVideo client is affiliated but not joined to the chat group.

In the procedures in this clause:

1) emergency indication in an incoming SIP INVITE request refers to the <emergency-ind> element of the application/vnd.3gpp.mcvideo-info+xml MIME body; and

2) imminent peril indication in an incoming SIP INVITE request refers to the <imminentperil-ind> element of the application/vnd.3gpp.mcvideo-info+xml MIME body.

Upon receipt of an initial SIP INVITE request, the MCVideo client:

1) may reject the SIP INVITE request if either of the following conditions is met:

   a) MCVideo client does not have enough resources to handle the call; or

   b) the number of the maximum simultaneous MCVideo emergency group calls supported for the specific calling functional alias as specified in the <MaxSimultaneousEmergencyGroupCalls> element within the <FunctionalAliasList> list element of the MCVideo user profile document (see the MCVideo user profile document in 3GPP TS 24.484 [25]) has been reached; or

   c) any other reason outside the scope of this specification;

2) if the SIP INVITE request is rejected in step 1), shall respond toward participating MCVideo function either with appropriate reject code as specified in 3GPP TS 24.229 [11] and warning texts as specified in clause 4.4.2 or with SIP 480 (Temporarily unavailable) response not including warning texts if the user is authorised to restrict the reason for failure and skip the rest of the steps of this clause;

   NOTE 1: if the SIP INVITE request contains an emergency indication or imminent peril indication, the MCVideo client can by means beyond the scope of this specification choose to accept the request.

3) if the SIP INVITE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body with the <mcvideoinfo> element containing the <mcvideo-Params> element with the <emergency-ind> element set to a value of "true":

   a) should display to the MCVideo user an indication that this is a SIP INVITE request for an MCVideo emergency group call and:

      i) should display the MCVideo ID of the originator of the MCVideo emergency group call contained in the <mcvideo-calling-user-id> element of the application/vnd.3gpp.mcvideo-info+xml MIME body;

ii) should display the MCVideo group identity of the group with the emergency condition contained in the <mcvideo-calling-group-id> element;

iii) if the <alert-ind> element is set to "true", should display to the MCVideo user an indication of the MCVideo emergency alert and associated information; and

iv) if the received SIP INVITE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body with the <mcvideoinfo> element containing an <mcvideo-Params> element which includes a <functional-alias-URI> element, may display to the MCVideo user the functional alias of the inviting MCVideo user; and

b) shall set the MCVideo emergency group state to "MVEG 2: in-progress";

c) shall set the MCVideo imminent peril group state to "MVIG 1: no-imminent-peril"; and

d) shall set the MCVideo imminent peril group call state to "MVIGC 1: imminent-peril-gc-capable"; otherwise

4) if the SIP INVITE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body with the <mcvideoinfo> element containing the <mcvideo-Params> element with the <imminentperil-ind> element set to a value of "true":

a) should display to the MCVideo user an indication that this is a SIP INVITE request for an MCVideo imminent peril group call and:

i) should display the MCVideo ID of the originator of the MCVideo imminent peril group call contained in the <mcvideo-calling-user-id> element of the application/vnd.3gpp.mcvideo-info+xml MIME body; and

ii) should display the MCVideo group identity of the group with the imminent peril condition contained in the <mcvideo-calling-group-id> element; and

b) shall set the MCVideo imminent peril group state to "MVIG 3: in-progress";

5) shall check if a Resource-Priority header field is included in the incoming SIP INVITE request and may perform further actions outside the scope of this specification to act upon an included Resource-Priority header field as specified in 3GPP TS 24.229 [11];

6) shall accept the SIP INVITE request and generate a SIP 200 (OK) response according to rules and procedures of 3GPP TS 24.229 [11];

7) shall include the option tag "timer" in a Require header field of the SIP 200 (OK) response;

8) shall include the g.3gpp.mcvideo media feature tag in the Contact header field of the SIP 200 (OK) response;

9) shall include the g.3gpp.icsi-ref media feature tag containing the value of "urn:urn-7:3gpp-service.ims.icsi.mcvideo" in the Contact header field of the SIP 200 (OK) response;

10) shall include the Session-Expires header field in the SIP 200 (OK) response and start the SIP session timer according to IETF RFC 4028 [23]. If no "refresher" parameter was included in the received SIP INVITE request the "refresher" parameter in the Session-Expires header field shall be set to "uas", otherwise shall include a "refresher" parameter set to the value received in the Session-Expires header field the received SIP INVITE request;

11) shall include an SDP answer in the SIP 200 (OK) response to the SDP offer in the incoming SIP INVITE request according to 3GPP TS 24.229 [11] with the clarifications given in clause 6.2.2;

12) shall send the SIP 200 (OK) response towards the MCVideo server according to rules and procedures of 3GPP TS 24.229 [11]; and

13) shall interact with the media plane as specified in 3GPP TS 24.581 [5].

9.2.2.2.2 End group call

9.2.2.2.2.1 Client originating procedures on-demand

When an MCVideo client wants to leave the MCVideo session that has been established using on-demand session, the MCVideo client shall follow the procedures as specified in clause 6.2.4.1.

9.2.2.2.2.2 Client terminating procedures

Upon receiving a SIP BYE request for releasing the MCVideo chat session, the MCVideo client shall follow the procedures as specified in clause 6.2.6.

9.2.2.3 Participating MCVideo function procedures

9.2.2.3.1 On-demand chat group call

9.2.2.3.1.1 MCVideo chat session establishment

In the procedures in this clause:

1) group identity in an incoming SIP INVITE request refers to the group identity from the <mcvideo-request-uri> element of the application/vnd.3gpp.mcvideo-info+xml MIME body of the incoming SIP INVITE request;

2) emergency indication in an incoming SIP INVITE request refers to the <emergency-ind> element of the application/vnd.3gpp.mcvideo-info+xml MIME body;

3) imminent peril indication in an incoming SIP INVITE request refers to the <imminentperil-ind> element of the application/vnd.3gpp.mcvideo-info+xml MIME body.

Upon receipt of a "SIP INVITE request for originating participating MCVideo function" for a group identity identifying a chat MCVideo group containing an application/vnd.3gpp.mcvideo-info+xml MIME body with the <session-type> element set to a value of "chat", the participating MCVideo function:

1) if unable to process the request due to a lack of resources or a risk of congestion exists, may reject the SIP INVITE request with a SIP 500 (Server Internal Error) response. The participating MCVideo function may include a Retry-After header field to the SIP 500 (Server Internal Error) response as specified in IETF RFC 3261 [15]. Otherwise, continue with the rest of the steps;

NOTE 1: if the SIP INVITE request contains an emergency indication set to a value of "true" or an imminent peril indication set to a value of "true" and this is an authorised request for originating a priority call as determined by clause 6.3.2.1.8.1, the participating MCVideo function can according to local policy choose to accept the request.

2) shall determine the MCVideo ID of the calling user from public user identity in the P-Asserted-Identity header field of the SIP INVITE request, and authorise the calling user;

NOTE 2: The MCVideo ID of the calling user is bound to the public user identity at the time of service authorisation, as documented in clause 7.3.

3) if through local policy in the originating participating MCVideo function, the user identified by the MCVideo ID is not authorised to make chat group calls, shall reject the "SIP INVITE request for originating participating MCVideo function" with a SIP 403 (Forbidden) response to the SIP INVITE request, with warning text set to "108 user not authorised to make chat group calls" in a Warning header field as specified in clause 4.4;

4) shall determine if the media parameters are acceptable and the MCVideo codecs are offered in the SDP offer and if not, reject the request with a SIP 488 (Not Acceptable Here) response. Otherwise, continue with the rest of the steps;

5) shall check if the number of maximum simultaneous MCVideo group calls supported for the MCVideo user as specified in the <MaxSimultaneousCallsN6> element of the <MCVideo-group-call> element of the MCVideo user profile document (see the MCVideo user profile document in 3GPP TS 24.484 [25]) has been exceeded. If exceeded, the MCVideo function shall respond with a SIP 486 (Busy Here) response with the warning text set to

"103 maximum simultaneous MCVideo group calls reached" in a Warning header field as specified in clause 4.4. Otherwise, continue with the rest of the steps;

NOTE 3: If the SIP INVITE request contains an emergency indication set to a value of "true" or an imminent peril indication set to a value of "true" and this is an authorised request for originating a priority call as determined by clause 6.3.2.1.8.1, the participating MCVideo function can according to local policy choose to allow for an exception to the limit for the maximum simultaneous MCVideo sessions supported for the MCVideo user.

6) if the user identified by the MCVideo ID is not affiliated to the group identified in the "SIP INVITE request for originating participating MCVideo function" as determined by clause 8.2.2.2.11, shall perform the actions specified in clause 8.2.2.2.12 for implicit affiliation;

7) if the actions for implicit affiliation specified in step 6) above were performed but not successful in affiliating the MCVideo user due to the MCVideo user already having N2 simultaneous affiliations (specified in the <MaxAffiliationsN2> element of the <Common> element of the corresponding MCVideo user profile), shall reject the "SIP INVITE request for originating participating MCVideo function" with a SIP 486 (Busy Here) response with the warning text set to "102 too many simultaneous affiliations" in a Warning header field as specified in clause 4.4. and skip the rest of the steps.

NOTE 4: N2 is the total number of MCVideo groups that an MCVideo user can be affiliated to simultaneously as specified in 3GPP TS 23.281 [26].

NOTE 5: if the SIP INVITE request contains an emergency indication set to a value of "true" or an imminent peril indication set to a value of "true" and this is an authorised request for originating a priority call as determined by clause 6.3.2.1.8.1, the participating MCVideo function can according to local policy choose to allow an exception to the N2 limit specified in the <MaxAffiliationsN2> element of the <Common> element of the MCVideo user profile of the served MCVideo ID. Alternatively, a lower priority affiliation of the MCVideo user could be cancelled to allow for the new affiliation.

8) shall determine the public service identity of the controlling MCVideo function associated with the group identity in the SIP INVITE request;

NOTE 6: The public service identity can identify the controlling MCVideo function in the local MCVideo system or an interconnected MCVideo system.

NOTE 7: How the participating MCVideo server discovers the public service identity of the controlling MCVideo function associated with the group identity is out of scope of the current document.

9) shall generate a SIP INVITE request as specified in clause 6.3.2.1.3;

10) shall set the Request-URI to the public service identity of the controlling MCVideo function associated with the group identity present in the incoming SIP INVITE request;

NOTE 8: The public service identity can identify the controlling function in the local MCVideo system or in an interconnected MCVideo system.

NOTE 9: If the controlling MCVideo function is in an interconnected MCVideo system in a different trust domain, then the public service identity can identify the MCVideo gateway server that acts as an entry point in the interconnected MCVideo system from the local MCVideo system.

NOTE 10: If the controlling MCVideo function is in an interconnected MCVideo system in a different trust domain, then the local MCVideo system can route the SIP request through an MCVideo gateway server that acts as an exit point from the local MCVideo system to the interconnected MCVideo system.

NOTE 11: How the participating MCVideo function determines the public service identity of the controlling MCVideo function associated with the group identity or of the MCVideo gateway server in the interconnected MCVideo system is out of the scope of the present document.

NOTE 12: How the local MCVideo system routes the SIP request through an exit MCVideo gateway server is out of the scope of the present document.

11) shall include the MCVideo ID of the calling user in <mcvideo-calling-user-id> element of the application/vnd.3gpp.mcvideo-info+xml MIME body of the SIP INVITE request;

11a) if the received SIP request contains a <functional-alias-URI> element of the application/vnd.3gpp.mcvideo-info+xml MIME body, then check if the status of the functional alias is activated for the MCVideo ID. If the functional alias status is activated, then set the <functional-alias-URI> element of the application/vnd.3gpp.mcvideo-info+xml MIME body in the outgoing SIP INVITE request to the received value, if the status is unequal activated then do not include a <functional-alias-URI> element;

12) shall include in the SIP INVITE request an SDP offer based on the SDP offer in the received SIP INVITE request as specified in clause 6.3.2.1.1.1;

13) if the received SIP INVITE request contains an application/vnd.3gpp.location-info+xml MIME body as specified in Annex F.3; and

a) if not already included, shall include a Content-Type header field set to "application/vnd.3gpp.location-info+xml"; and

b) if not already copied, shall copy the contents of the application/vnd.3gpp.location-info+xml MIME body received in the SIP INVITE request into an application/vnd.3gpp.location-info+xml MIME body included in the outgoing SIP request;

NOTE 13: Note that the application/vnd.3gpp.mcvideo-info+xml MIME body will already have been copied into the outgoing SIP INVITE request by clause 6.3.2.1.3.

14) if a Resource-Priority header field was included in the received SIP INVITE request, shall include a Resource-Priority header field according to rules and procedures of IETF RFC 4412 [33] set to the value indicated in the Resource-Priority header field of the SIP INVITE request from the MCVideo client; and

NOTE 14: The participating MCVideo function will leave verification of the Resource-Priority header field to the controlling MCVideo function.

15) shall forward the SIP INVITE request according to 3GPP TS 24.229 [11].

Upon receipt of a SIP 302 (Moved Temporarily) response to the above SIP INVITE request in step 14), the participating MCVideo function:

1) shall generate a SIP INVITE request as specified in clause 6.3.2.1.10;

2) shall include an SDP offer based upon the SDP offer in the received SIP INVITE request from the MCVideo client as specified in clause 6.3.2.1.1.1; and

3) shall forward the SIP INVITE request according to 3GPP TS 24.229 [11];

Upon receipt of a SIP 2xx response to the above SIP INVITE request in step 14) the participating MCVideo function:

1) if the SIP 2xx response contains an application/vnd.3gpp.mcvideo-info+xml MIME body with an <MKFC-GKTPs> element, shall perform the procedures in clause 6.3.2.3.2;

2) shall generate a SIP 200 (OK) response as specified in the clause 6.3.2.1.5.2;

3) shall include in the SIP 200 (OK) response an SDP answer as specified in the clause 6.3.2.1.2.1;

4) shall include Warning header field(s) that were received in the incoming SIP 200 (OK) response;

5) shall include the public service identity received in the P-Asserted-Identity header field of the incoming SIP 200 (OK) response into the P-Asserted-Identity header field of the outgoing SIP 200 (OK) response;

6) if the procedures of clause 8.2.2.2.12 for implicit affiliation were performed in the present clause, shall complete the implicit affiliation by performing the procedures of clause 8.2.2.2.13;

7) shall send the SIP 200 (OK) response to the MCVideo client according to 3GPP TS 24.229 [11]; and

8) shall interact with the media plane as specified in 3GPP TS 24.581 [5].

Upon receipt of a SIP 4xx, 5xx or 6xx response to the above SIP INVITE request in step 14) the participating MCVideo function:

1) shall generate a SIP response according to 3GPP TS 24.229 [11];

2) shall include Warning header field(s) that were received in the incoming SIP response;

3) shall forward the SIP response to the MCVideo client according to 3GPP TS 24.229 [11]; and

4) if the implicit affiliation procedures of clause 8.2.2.2.12 were invoked in the current procedure, shall perform the procedures of clause 8.2.2.2.14.

9.2.2.3.1.2 Reception of a SIP re-INVITE request from served MCVideo client

This clause covers on-demand session.

Upon receipt of a SIP re-INVITE request for a served MCVideo client of a chat MCVideo group, the participating MCVideo function:

1) if unable to process the request due to a lack of resources or a risk of congestion exists, may reject the "SIP INVITE request for terminating participating MCVideo function" with a SIP 500 (Server Internal Error) response. The participating MCVideo function may include a Retry-After header field to the SIP 500 (Server Internal Error) response as specified in IETF RFC 3261 [15]. Otherwise, continue with the rest of the steps;

NOTE 1: If the SIP re-INVITE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body with the <emergency-ind> element set to a value of "true", the participating MCVideo function may by means beyond the scope of this specification choose to accept the request.

2) shall determine if the media parameters are acceptable and the MCVideo codec are offered in the SDP offer and if not, reject the request with a SIP 488 (Not Acceptable Here) response. Otherwise, continue with the rest of the steps;

3) shall generate an outgoing SIP re-INVITE request as specified in clause 6.3.2.1.9;

4) shall, if the SIP re-INVITE request was received within an on-demand session, include in the SIP re-INVITE request an SDP offer based on the SDP offer in the received SIP re-INVITE request as specified in clause 6.3.2.1.1.1;

5) if the received SIP re-INVITE request contains a Resource-Priority header field, shall include a Resource-Priority header field with the contents set as in the received Resource-Priority header field;

6) if the received SIP re-INVITE request contains a Resource-Priority header field, shall include a Resource-Priority header field with the contents set as in the received Resource-Priority header field; and

NOTE 3: The controlling MCVideo function will determine the validity of the Resource-Priority header field.

7) shall forward the SIP re-INVITE request according to 3GPP TS 24.229 [11].

Upon receipt of a SIP 2xx response to the above SIP re-INVITE request in step 7) the participating MCVideo function:

1) shall generate a SIP 200 (OK) response as specified in the clause 6.3.2.1.5.2;

2) if the SIP 200 (OK) response is to be sent within an on-demand session, shall include in the SIP 200 (OK) response an SDP answer as specified in the clause 6.3.2.1.2.1;

3) shall include Warning header field(s) that were received in the incoming SIP 200 (OK) response; and

4) shall send the SIP 200 (OK) response to the MCVideo client according to 3GPP TS 24.229 [11];

Upon receipt of a SIP 403 (Forbidden) response to the sent SIP re-INVITE request the participating MCVideo function:

1) shall generate a SIP 403 (Forbidden) response according to 3GPP TS 24.229 [11];

2) shall copy, if included in the received SIP 403 (Forbidden) response, the application/vnd.3gpp.mcvideo-info+xml MIME body MIME body to the outgoing SIP (Forbidden) response;

3) shall include Warning header field(s) that were received in the incoming SIP 403 (Forbidden) response; and

4) shall forward the SIP 403 (Forbidden) response to the MCVideo client according to 3GPP TS 24.229 [11];

9.2.2.3.1.3 Reception of a SIP INVITE request for terminating MCVideo client

This clause covers on-demand session.

Upon receipt of a "SIP INVITE request for terminating participating MCVideo function", for a terminating MCVideo client of a chat MCVideo group, the participating MCVideo function:

1) if unable to process the request due to a lack of resources or a risk of congestion exists, may reject the "SIP INVITE request for terminating participating MCVideo function" with a SIP 500 (Server Internal Error) response. The participating MCVideo function may include a Retry-After header field to the SIP 500 (Server Internal Error) response as specified in IETF RFC 3261 [15]. Otherwise, continue with the rest of the steps;

NOTE: If the SIP INVITE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body with the <emergency-ind> element set to a value of "true", the participating MCVideo function can by means beyond the scope of this specification choose to accept the request.

2) shall check the presence of the isfocus media feature tag in the URI of the Contact header field and if it is not present then the participating MCVideo function shall reject the request with a SIP 403 (Forbidden) response with the warning text set to "104 isfocus not assigned" in a Warning header field as specified in clause 4.4. Otherwise, continue with the rest of the steps;

3) shall generate a SIP INVITE request as specified in clause 6.3.2.2.3;

4) shall set the Request-URI to the public user identity associated with the MCVideo ID of the MCVideo user to be invited based on the contents of the Request-URI of the received "SIP INVITE request for terminating participating MCVideo function";

5) shall copy the contents of the P-Asserted-Identity header field of the incoming "SIP INVITE request for terminating participating MCVideo function" to the P-Asserted-Identity header field of the outgoing SIP INVITE request;

6) shall include in the SIP INVITE request an SDP offer based on the SDP offer in the received "SIP INVITE request for terminating participating MCVideo function" as specified in clause 6.3.2.2.1;

7) if the received SIP INVITE request contains a Resource-Priority header field, shall include a Resource-Priority header field with the contents set as in the received Resource-Priority header field;

8) shall perform the procedures specified in clause 6.3.2.2.9 to include any MIME bodies in the received SIP INVITE request; and

9) shall send the SIP INVITE request towards the MCVideo client according to 3GPP TS 24.229 [11].

Upon receiving a SIP 200 (OK) response to the above SIP INVITE request sent to the MCVideo client, the participating MCVideo function:

1) shall generate a SIP 200 (OK) response as described in the clause 6.3.2.2.4.2;

2) shall include in the SIP 200 (OK) response an SDP answer based on the SDP answer in the received SIP 200 (OK) response as specified in clause 6.3.2.2.2.1;

3) shall interact with the media plane as specified in 3GPP TS 24.581 [5]; and

4) shall forward the SIP 200 (OK) response according to 3GPP TS 24.229 [11].

9.2.2.3.1.4 Reception of a SIP re-INVITE request for terminating MCVideo client

This clause covers both on-demand session.

Upon receipt of a SIP re-INVITE request for a terminating MCVideo client of a chat MCVideo group, the participating MCVideo function:

1) shall check if a Resource-Priority header field is included in the incoming SIP re-INVITE request and may perform further actions outside the scope of this specification to act upon an included Resource-Priority header field as specified in 3GPP TS 24.229 [11];

2) shall generate an outgoing SIP re-INVITE request as specified in clause 6.3.2.2.10;

3) shall include in the SIP re-INVITE request an SDP offer based on the SDP offer in the received SIP re-INVITE request as specified in clause 6.3.2.2.1; and

4) shall send the SIP re-INVITE request towards the MCVideo client according to 3GPP TS 24.229 [11].

Upon receiving a SIP 200 (OK) response to the above SIP re-INVITE request sent to the MCVideo client, the participating MCVideo function:

1) shall generate a SIP 200 (OK) response as described in the clause 6.3.2.2.4.2;

2) shall include in the SIP 200 (OK) response an SDP answer based on the SDP answer in the received SIP 200 (OK) response as specified in clause 6.3.2.2.2.1; and

3) shall forward the SIP 200 (OK) response according to 3GPP TS 24.229 [11].

9.2.2.4 Controlling MCVideo function procedures

9.2.2.4.1 On-demand chat group call

9.2.2.4.1.1 MCVideo chat session establishment

In the procedures in this clause:

1) MCVideo ID in an incoming SIP INVITE request refers to the MCVideo ID of the originating user from the <mcvideo-calling-user-id> element of the application/vnd.3gpp.mcvideo-info+xml MIME body of the incoming SIP INVITE request;

2) group identity in an incoming SIP INVITE request refers to the group identity from the <mcvideo-request-uri> element of the application/vnd.3gpp.mcvideo-info+xml MIME body of the incoming SIP INVITE request;

3) MCVideo ID in an outgoing SIP INVITE request refers to the MCVideo ID of the called user in the <mcvideo-request-uri> element of the application/vnd.3gpp.mcvideo-info+xml MIME body of the outgoing SIP INVITE request;

4) emergency indication in an incoming SIP INVITE request refers to the <emergency-ind> element of the application/vnd.3gpp.mcvideo-info+xml MIME body; and

5) alert indication in an incoming SIP INVITE request refers to the <alert-ind> element of the application/vnd.3gpp.mcvideo-info+xml MIME body.

Upon receipt of a "SIP INVITE request for controlling MCVideo function of an MCVideo group" containing a group identity identifying a chat MCVideo group, the controlling MCVideo function:

1) if unable to process the request due to a lack of resources or a risk of congestion exists, may reject the SIP INVITE request with a SIP 500 (Server Internal Error) response. The controlling MCVideo function may include a Retry-After header field to the SIP 500 (Server Internal Error) response as specified in IETF RFC 3261 [15] and skip the rest of the steps;

NOTE 1: If the SIP INVITE request contains an emergency indication set to a value of "true", the controlling MCVideo function can by means beyond the scope of this specification choose to accept the request.

2) shall reject the SIP request with a SIP 403 (Forbidden) response and not process the remaining steps if:

   a) an Accept-Contact header field does not include the g.3gpp.mcvideo media feature tag;

   b) an Accept-Contact header field does not include the g.3gpp.icsi-ref media feature tag containing the value of "urn:urn-7:3gpp-service.ims.icsi.mcvideo"; or

   c) the isfocus media feature tag is present in the Contact header field;

2A) if the group document contains a <list-service> element that contains a <preconfigured-group-use-only> element that is set to the value "true", shall reject the SIP INVITE request with a SIP 403 (Forbidden) response with the warning text set to "167 call is not allowed on the preconfigured group" as specified in clause 4.4 "Warning header field" and skip the rest of the steps;

3) if the received SIP INVITE request includes an application/vnd.3gpp.mcvideoinfo+xml MIME body with an <emergency-ind> element included or an <imminentperil-ind> element included, shall validate the request as described in clause 6.3.3.1.17;

4) shall retrieve the necessary group document(s) from the group management server for the group identity contained in the SIP INVITE request and carry out initial processing as specified in clause 6.3.5.2 and continue with the rest of the steps if the checks in clause 6.3.5.2 succeed;

5) if the MCVideo user identified by the MCVideo ID in the SIP INVITE request is not affiliated with the MCVideo group identified by the group identity in the SIP INVITE request as determined by the procedures of clause 6.3.6:

   a) shall check if the MCVideo user is eligible to be implicitly affiliated with the MCVideo chat group as determined by clause 8.2.2.3.6; and

   b) if the MCVideo user is not eligible for implicit affiliation, shall reject the SIP INVITE request with a SIP 403 (Forbidden) response with the warning text set to "120 user is not affiliated to this group" in a Warning header field as specified in clause 4.4 and skip the rest of the steps below;

6) if the SIP INVITE request contains unauthorised request for an MCVideo emergency group call as determined by clause 6.3.3.1.13.2:

   a) shall reject the SIP INVITE request with a SIP 403 (Forbidden) response as specified in clause 6.3.3.1.14; and

   b) shall send the SIP 403 (Forbidden) response as specified in 3GPP TS 24.229 [11] and skip the rest of the steps;

7) if the SIP INVITE request contains an unauthorised request for an MCVideo imminent peril group call as determined by clause 6.3.3.1.13.6, shall reject the SIP INVITE request with a SIP 403 (Forbidden) response with the following clarifications:

   a) shall include in the SIP 403 (Forbidden) response an application/vnd.3gpp.mcvideo-info+xml MIME body as specified in clause F.1 with the <mcvideoinfo> element containing the <mcvideo-Params> element with the <imminentperil-ind> element set to a value of "false"; and

   b) shall send the SIP 403 (Forbidden) response as specified in 3GPP TS 24.229 [11] and skip the rest of the steps;

8) if a Resource-Priority header field is included in the SIP INVITE request:

   a) if the Resource-Priority header field is set to the value indicated for emergency calls and the SIP INVITE request does not contain an emergency indication and the in-progress emergency state of the group is set to a value of "false", shall reject the SIP INVITE request with a SIP 403 (Forbidden) response and skip the remaining steps; and

   b) if the Resource-Priority header field is set to the value indicated for imminent peril calls and the SIP INVITE request does not contain an imminent peril indication and the in-progress imminent peril state of the group is set to a value of "false", shall reject the SIP INVITE request with a SIP 403 (Forbidden) response; and skip the remaining steps;

9) shall determine if the media parameters are acceptable and the MCVideo codecs are offered in the SDP offer and if not reject the request with a SIP 488 (Not Acceptable Here) response and skip the rest of the steps;

10) shall create a chat group session and allocate an MCVideo session identity for the chat group session if the MCVideo chat group session identity does not already exist, and may handle timer TNG3 (group call timer) as specified in clause 6.3.3.5;

11) if the chat group session is ongoing and the <on-network-max-participant-count> as specified in 3GPP TS 24.481 [24] is already reached:

   a) if, according to local policy, the user identified by the MCVideo ID in the SIP INVITE request is deemed to have a higher priority than an existing user in the chat group session, may remove a participant from the session by following clause 9.2.1.4.4.3, and skip the next step; and

NOTE 2: The local policy for deciding whether to admit a user to a call that has reached its maximum amount of participants can include the <user-priority> and the <participant-type> of the user as well as other information of the user from the group document as specified in 3GPP TS 24.481 [24]. The local policy decisions can also include taking into account whether the imminent-peril indicator or emergency indicator was received in the SIP INVITE request.

b) shall return a SIP 486 (Busy Here) response with the warning text set to "122 too many participants" to the originating network as specified in clause 4.4. Otherwise, continue with the rest of the steps;

12) if the received SIP INVITE request was determined to be eligible for implicit affiliation in step 5) and if clause 8.2.2.3.7 was not previously invoked in the present clause, shall perform the implicit affiliation as specified in clause 8.2.2.3.7;

13) if the SIP INVITE request contains an emergency indication set to a value of "true" or the in-progress emergency state of the group to "true" the controlling MCVideo function shall:

a) validate that the SIP INVITE request includes a Resource-Priority header field populated with the values for an MCVideo emergency group call as specified in clause 6.3.3.1.19, and if not:

i) perform the actions specified in clause 6.3.3.1.8;

ii) send the SIP UPDATE request generated in clause 6.3.3.1.8 towards the initiator of the SIP INVITE request according to 3GPP TS 24.229 [11]; and

iii) upon receiving a SIP 200 (OK) response to the SIP UPDATE request sent in clause 6.3.3.1.8, proceed with the rest of the steps.

NOTE 3: Verify that the Resource-Priority header is included and properly populated for both ongoing and newly-entered in-progress emergency states of the specified group.

b) if the in-progress emergency state of the group is set to a value of "true" and this MCVideo user is indicating a new emergency indication:

i) for each of the other affiliated members of the group generate a SIP MESSAGE request notification of the MCVideo user's emergency indication as specified in clause 6.3.3.1.11 with the following clarifications:

A) set the <emergency-ind> element of the application/vnd.3gpp.mcvideo-info+xml MIME body to a value of "true";

B) if the received SIP INVITE contains an alert indication set to a value of "true" and this is an authorised request for an MCVideo emergency alert meeting the conditions specified in clause 6.3.3.1.13.1, perform the procedures specified in clause 6.3.3.1.12; and

C) send the SIP MESSAGE request as specified in 3GPP TS 24.229 [11];

ii) cache the information that this MCVideo user has initiated an MCVideo emergency call; and

iii) if the SIP INVITE request contains an authorised request for an MCVideo emergency alert as determined in step i) B) above, cache the information that this MCVideo user has initiated an MCVideo emergency alert; and

c) if the in-progress emergency state of the group is set to a value of "false":

i) shall set the value of the in-progress emergency state of the group to "true";

ii) shall start timer TNG2 (in-progress emergency group call timer) and handle its expiry as specified in clause 6.3.3.1.16;

iii) shall generate SIP re-INVITE requests for the MCVideo emergency group call to the other affiliated and joined participants of the chat MCVideo group as specified in clause 6.3.3.1.6;

iv) shall generate SIP INVITE requests for the MCVideo emergency group call to the affiliated but not joined members of the chat MCVideo group as specified in clause 6.3.3.1.7;

A) for each affiliated but not joined member shall send the SIP INVITE request towards the MCVideo client as specified in 3GPP TS 24.229 [11]; and

B) upon receiving a SIP 200 (OK) response to the SIP INVITE request the controlling MCVideo function shall interact with the media plane as specified in 3GPP TS 24.581 [5];

v) shall cache the information that this MCVideo user has initiated an MCVideo emergency call; and

vi) if the <alert-ind> element of the application/vnd.3gpp.mcvideo-info+xml MIME body is set to "true" and is an authorised request for an MCVideo emergency alert as specified in clause 6.3.3.1.13.1, shall cache the information that this MCVideo user has initiated an MCVideo emergency alert; and

vii) if the in-progress imminent peril state of the group is set to a value of "true", shall set it to a value of "false";

14) if the in-progress emergency state of the group is set to a value of "false" and if the SIP INVITE request contains an imminent peril indication set to a value of "true" or the in-progress imminent peril state of the group is set to "true", the controlling MCVideo function shall:

a) validate that the SIP INVITE request includes a Resource-Priority header field populated with the values for an MCVideo imminent peril group call as specified in clause 6.3.3.1.19, and if not:

i) perform the actions specified in clause 6.3.3.1.8;

ii) send the SIP UPDATE request generated in clause 6.3.3.1.8 towards the initiator of the SIP INVITE request according to 3GPP TS 24.229 [11]; and

iii) upon receiving a SIP 200 (OK) response to the SIP UPDATE request sent in clause 6.3.3.1.8 proceed with the rest of the steps.

NOTE 4: Verify that the Resource-Priority header is included and properly populated for both ongoing and newly-entered in-progress imminent peril states of the specified group.

b) if the in-progress imminent peril state of the group is set to a value of "true" and this MCVideo user is indicating a new imminent peril indication:

i) for each of the other affiliated member of the group generate a SIP MESSAGE request notification of the MCVideo user's imminent peril indication as specified in clause 6.3.3.1.11 with the following clarifications;

A) set the <imminentperil-ind> element of the application/vnd.3gpp.mcvideo-info+xml MIME body to a value of "true"; and

B) send the SIP MESSAGE request as specified in 3GPP TS 24.229 [11]; and

ii) cache the information that this MCVideo user has initiated an MCVideo imminent peril call; and

c) if the in-progress imminent peril state of the group is set to a value of "false":

i) shall set the value of the in-progress imminent peril state of the group to "true";

ii) shall generate SIP re-INVITE requests for the MCVideo imminent peril group call to the other affiliated and joined participants of the chat MCVideo group as specified in clause 6.3.3.1.15;

iii) shall generate SIP INVITE requests for the MCVideo imminent peril call to the affiliated but not joined members of the chat MCVideo group as specified in clause 6.3.3.1.7;

A) for each affiliated but not joined member shall send the SIP INVITE request towards the MCVideo client as specified in 3GPP TS 24.229 [11]; and

B) Upon receiving a SIP 200 (OK) response to the SIP INVITE request the controlling MCVideo function shall interact with the media plane as specified in 3GPP TS 24.581 [5]; and

iv) shall cache the information that this MCVideo user has initiated an MCVideo imminent peril call;

15) shall accept the SIP request and generate a SIP 200 (OK) response to the SIP INVITE request according to 3GPP TS 24.229 [11];

16) shall include in the SIP 200 (OK) response an SDP answer according to 3GPP TS 24.229 [11] with the clarifications specified in clause 6.3.3.2.1 unless the procedures of clause 6.3.3.1.8 were performed in step 13)a) or step 14)a) above;

17) should include the Session-Expires header field and start supervising the SIP session according to IETF RFC 4028 [23]. It is recommended that the "refresher" header field parameter is omitted. If included, the "refresher" header field parameter shall be set to "uac";

18) shall include the "timer" option tag in a Require header field;

19) shall include the following in a Contact header field:

a) the g.3gpp.mcvideo media feature tag;

b) the g.3gpp.icsi-ref media feature tag containing the value of "urn:urn-7:3gpp-service.ims.icsi.mcvideo";

c) the MCVideo session identity; and

d) the media feature tag isfocus;

20) shall include the "tdialog" option tag in a Supported header field according to IETF RFC 4538 [32];

21) if the SIP INVITE request contains an alert indication set to a value of "true" and this is an unauthorised request for an MCVideo emergency alert as specified in clause 6.3.3.1.13.1, shall include in the SIP 200 (OK) response the warning text set to "149 SIP INFO request pending" in a Warning header field as specified in clause 4.4;

22) if the received SIP INVITE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body with the <imminentperil-ind> element set to a value of "true" and if the in-progress emergency state of the group is set to a value of "true", shall include in the SIP 200 (OK) response the warning text set to "149 SIP INFO request pending" in a Warning header field as specified in clause 4.4;

NOTE 5: In this case, the request was for an imminent peril call but a higher priority MCVideo emergency call was already in progress on the group. Hence, the imminent peril call request aspect of the request is denied but the request is granted with emergency level priority.

23) shall interact with media plane as specified in 3GPP TS 24.581 [5];

24) shall send the SIP 200 (OK) response to the MCVideo client according to 3GPP TS 24.229 [11]; and

25) if the chat group session was already ongoing and if at least one of the participants has subscribed to the conference event package, shall send a SIP NOTIFY request to all participants with a subscription to the conference event package as specified in clause 9.2.3.4.2.

Upon receiving a SIP ACK to the SIP 200 (OK) response sent towards the inviting MCVideo client, and the SIP 200 (OK) response was sent with the warning text set to "149 SIP INFO request pending" in a Warning header field as specified in clause 4.4, the controlling MCVideo function shall follow the procedures in clause 6.3.3.1.18.

9.2.2.4.1.2 Receipt of a SIP re-INVITE request

In the procedures in this clause:

1) emergency indication in an incoming SIP re-INVITE request refers to the <emergency-ind> element of the application/vnd.3gpp.mcvideo-info+xml MIME body; and

2) imminent peril indication in an incoming SIP re-INVITE request refers to the <imminentperil-ind> element of the application/vnd.3gpp.mcvideo-info+xml MIME body.

Upon receipt of a SIP re-INVITE request for an MCVideo session identity identifying a chat MCVideo group session, the controlling MCVideo function:

1) if unable to process the request due to a lack of resources or a risk of congestion exists, may reject the SIP re-INVITE request with a SIP 500 (Server Internal Error) response. The controlling MCVideo function may include a Retry-After header field to the SIP 500 (Server Internal Error) response as specified in IETF RFC 3261 [15] and skip the rest of the steps;

NOTE 1: if the SIP re-INVITE request contains an emergency indication or an imminent peril indication set to a value of "true" and this is an authorised request for originating an MCVideo emergency group call as determined by clause 6.3.3.1.13.2, or for originating an MCVideo imminent peril group call as determined by clause 6.3.3.1.13.5, the controlling MCVideo function can according to local policy choose to accept the request.

2) if the received SIP re-INVITE request includes an application/vnd.3gpp.mcvideo-info+xml MIME body with an <emergency-ind> element included or an <imminentperil-ind> element included, shall validate the request as described in clause 6.3.3.1.17;

3) if the SIP re-INVITE request contains an unauthorised request for an MCVideo emergency call as determined by clause 6.3.3.1.13.2:

   a) shall reject the SIP re-INVITE request with a SIP 403 (Forbidden) response as specified in clause 6.3.3.1.14; and

   b) shall send the SIP 403 (Forbidden) response as specified in 3GPP TS 24.229 [11] and skip the rest of the steps;

4) if the SIP re-INVITE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body with the <emergency-ind> element set to a value of "true" and is an authorised request to initiate an MCVideo emergency group call as determined by clause 6.3.3.1.13.2, the controlling MCVideo function shall:

   a) validate that the SIP re-INVITE request includes a Resource-Priority header field is populated correctly for an MCVideo emergency group call as specified in clause 6.3.3.1.19, and if not:

      i) shall perform the actions specified in clause 6.3.3.1.8; and

      ii) upon receiving a SIP 200 (OK) response to the SIP UPDATE request sent in clause 6.3.3.18 shall proceed with the rest of the steps.

NOTE 2: Verify that the Resource-Priority header is included and properly populated for both ongoing and newly-entered in-progress emergency states of the specified group.

   b) if the in-progress emergency state of the group is set to a value of "true" and this MCVideo user is indicating a new emergency indication:

      i) shall cache the MCVideo ID of the MCVideo user that has initiated an MCVideo emergency call;

      ii) if the SIP re-INVITE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body with the <alert-ind> element set to a value of "true" and is an authorised request for an MCVideo emergency alert as determined by clause 6.3.3.1.13.1, shall cache the MCVideo ID of the MCVideo user that has initiated an MCVideo emergency alert; and

      iii) for each of the other affiliated members of the group, generate a SIP MESSAGE request notification of the MCVideo user's emergency indication as specified in clause 6.3.3.1.11 with the following clarifications:

         A) set the <emergency-ind> element of the application/vnd.3gpp.mcvideo-info+xml MIME body to a value of "true";

         B) if the received SIP re-INVITE contains an alert indication set to a value of "true" and this is an authorised request for an MCVideo emergency alert meeting the conditions specified in clause 6.3.3.1.13.1, perform the procedures specified in clause 6.3.3.1.12; and

         C) send the SIP MESSAGE request as specified in 3GPP TS 24.229 [11]; and

   c) if the in-progress emergency state of the group is set to a value of "false":

      i) shall set the value of the in-progress emergency state of the group to "true";

      ii) shall cache the MCVideo ID of the MCVideo user that has initiated an MCVideo emergency call;

      iii) if the SIP re-INVITE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body with the <alert-ind> element set to a value of "true" and this is an authorised request for an MCVideo emergency

alert as specified in clause 6.3.3.1.13.1, shall cache the MCVideo ID of the MCVideo user that has initiated an MCVideo emergency alert;

iv) shall start timer TNG2 (in-progress emergency group call timer) and handle its expiry as specified in clause 6.3.3.1.16;

v) shall generate SIP re-INVITE requests for the MCVideo emergency group call to the other affiliated and joined participants of the chat MCVideo group as specified in clause 6.3.3.1.6. The MCVideo controlling function:

A) for each affiliated and joined member shall send the SIP re-INVITE request towards the MCVideo client as specified in 3GPP TS 24.229 [11]; and

B) Upon receiving a SIP 200 (OK) response to the SIP re-INVITE request the controlling MCVideo function shall interact with the media plane as specified in 3GPP TS 24.581 [5]; and

vi) shall generate SIP INVITE requests for the MCVideo emergency group call to the affiliated but not joined members of the chat MCVideo group as specified in clause 6.3.3.1.7. The controlling MCVideo function:

A) for each affiliated but not joined member shall send the SIP INVITE request towards the MCVideo client as specified in 3GPP TS 24.229 [11]; and

B) Upon receiving a SIP 200 (OK) response to the SIP INVITE request the controlling MCVideo function shall interact with the media plane as specified in 3GPP TS 24.581 [5]; and

vii) if the in-progress imminent peril state of the group is set to a value of "true", shall set it to a value of "false";

5) if the SIP re-INVITE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body with the <emergency-ind> element set to a value of "false" and is an unauthorised request for an MCVideo emergency group call cancellation as determined by clause 6.3.3.1.13.4:

a) shall reject the SIP re-INVITE request with a SIP 403 (Forbidden) response;

b) shall include in the SIP 403 (Forbidden) response an application/vnd.3gpp.mcvideo-info+xml MIME body as specified in annex F.1 with an <emergency-ind> element set to a value of "true";

c) if an <alert-ind> element of the mcvideoinfo MIME body is included set to "false" and there is an outstanding MCVideo emergency alert for this MCVideo user, shall include in the application/vnd.3gpp.mcvideo-info+xml MIME body and <alert-ind> element set to a value of "true"; and

d) shall send the SIP 403 (Forbidden) response as specified in 3GPP TS 24.229 [11] and skip the rest of the steps;

6) if the SIP re-INVITE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body with the <emergency-ind> element set to a value of "false" and is determined to be an authorised request for an MCVideo emergency call cancellation as specified in clause 6.3.3.1.13.4 and the in-progress emergency state of the group to is set to a value of "true" the controlling MCVideo function shall:

a) validate that the SIP re-INVITE request includes a Resource-Priority header field is populated correctly for a normal priority MCVideo group call as specified in clause 6.3.3.1.19, and if not:

i) shall perform the actions specified in clause 6.3.3.1.8; and

ii) upon receiving a SIP 200 (OK) response to the SIP UPDATE request sent in clause 6.3.3.1.8 shall proceed with the rest of the steps;

NOTE 3: Verify that the Resource-Priority header is included and properly populated for an in-progress emergency state cancellation of the specified group.

b) shall set the in-progress emergency group state of the group to a value of "false";

c) shall clear the cache of the MCVideo ID of the MCVideo user identified by the <originated-by> element as having an outstanding MCVideo emergency group call;

d) if an <alert-ind> element of the application/vnd.3gpp.mcvideo-info+xml MIME body is included and set to "false" and is determined to be an authorised request for an MCVideo emergency alert cancellation as specified in clause 6.3.3.1.13.3 and there is an outstanding MCVideo emergency alert for this MCVideo user shall:

i) if the received SIP re-INVITE request contains an <originated-by> element in the application/vnd.3gpp.mcvideo-info+xml MIME body, clear the cache of the MCVideo ID of the MCVideo user identified by the <originated-by> element as having an outstanding MCVideo emergency alert; and

ii) if the received SIP re-INVITE request does not contain an <originated-by> element in the application/vnd.3gpp.mcvideo-info+xml MIME body, clear the cache of the MCVideo ID of the sender of the SIP re-INVITE request as having an outstanding MCVideo emergency alert;

e) shall generate SIP re-INVITE requests to the other affiliated and joined members of the MCVideo group as specified in clause 6.3.3.1.6. The MCVideo controlling function:

i) for each affiliated and joined member shall send the SIP re-INVITE request towards the MCVideo client as specified in 3GPP TS 24.229 [11]; and

ii) Upon receiving a SIP 200 (OK) response to the SIP re-INVITE request the controlling MCVideo function shall interact with the media plane as specified in 3GPP TS 24.581 [5]; and

NOTE 4: Clause 6.3.3.1.5 will inform the affiliated and joined members of the cancellation of the MCVideo group's in-progress emergency state and the cancellation of the MCVideo emergency alert if applicable.

f) for each of the affiliated but not joined members of the group shall:

i) generate a SIP MESSAGE request notification of the cancellation of the MCVideo user's emergency call as specified in clause 6.3.3.1.11;

ii) set the <emergency-ind> element of the application/vnd.3gpp.mcvideo-info+xml MIME body to a value of "false";

iii) if indicated above in step d), set the <alert-ind> element of the application/vnd.3gpp.mcvideo-info+xml MIME body to a value of "false"; and

iv) send the SIP MESSAGE request according to 3GPP TS 24.229 [11];

7) if a Resource-Priority header field is included in the SIP re-INVITE request:

a) if the Resource-Priority header field is set to the value indicated for emergency calls and the received SIP re-INVITE request does not contain an authorised request for an MCVideo emergency call as determined in step 4) above and the in-progress emergency state of the group is set to a value of "false", shall reject the SIP re-INVITE request with a SIP 403 (Forbidden) response and skip the remaining steps; or

b) if the Resource-Priority header field is set to the value indicated for imminent peril calls and the received SIP re-INVITE request does not contain an authorised request for an MCVideo imminent peril call as determined by the procedures of clause 6.3.3.1.13.5 and the in-progress imminent peril state of the group is set to a value of "false", shall reject the SIP re-INVITE request with a SIP 403 (Forbidden) response and skip the remaining steps;

8) if the received SIP re-INVITE request contains an imminent peril indication, shall perform the procedures specified in clause 9.2.2.4.1.3 and skip the rest of the steps;

9) shall include in the SIP 200 (OK) response an SDP answer according to 3GPP TS 24.229 [11] with the clarifications specified in clause 6.3.3.2.1 unless the procedures of clause 6.3.3.1.8 were performed in step 6) a) i) above;

10) shall include the "tdialog" option tag in a Supported header field according to IETF RFC 4538 [32];

11) if the received SIP re-INVITE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body with the <alert-ind> element set to a value of "true" and if this is an unauthorised request for an MCVideo emergency alert as determined by clause 6.3.3.1.13.1, shall include in the SIP 200 (OK) response the warning text set to "149 SIP INFO request pending" in a Warning header field as specified in clause 4.4;

12) if the received SIP re-INVITE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body with the <alert-ind> element set to a value of "false" and if this is an unauthorised request for an MCVideo emergency alert cancellation as determined by clause 6.3.3.1.13.3, shall include in the SIP 200 (OK) response the warning text set to "149 SIP INFO request pending" in a Warning header field as specified in clause 4.4;

13) if the received SIP re-INVITE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body with the <imminentperil-ind> element set to a value of "true", this is an authorised request for an MCVideo imminent peril group call and if the in-progress emergency state of the group is set to a value of "true", shall include in the SIP 200 (OK) response the warning text set to "149 SIP INFO request pending" in a Warning header field as specified in clause 4.4;

NOTE 5: In this case, the request was for an imminent peril call but a higher priority MCVideo emergency call was already in progress on the group. Hence, the imminent peril call request aspect of the request is denied but the request is granted with emergency level priority.

14) shall interact with media plane as specified in 3GPP TS 24.581 [5]; and

15) shall send the SIP 200 (OK) response towards the MCVideo client according to 3GPP TS 24.229 [11].

Upon receiving a SIP ACK to the SIP 200 (OK) response sent towards the inviting MCVideo client, and the SIP 200 (OK) response was sent with the warning text set to "149 SIP INFO request pending" in a Warning header field as specified in clause 4.4, the controlling MCVideo function shall follow the procedures in clause 6.3.3.1.18.

9.2.2.4.1.3 Handling of a SIP re-INVITE request for imminent peril session

In the procedures in this clause:

1) imminent peril indication in an incoming SIP INVITE request refers to the <imminentperil-ind> element of the application/vnd.3gpp.mcvideo-info+xml MIME body.

When the controlling function receives a SIP re-INVITE request with and imminent peril indication, the controlling function:

1) if the SIP re-INVITE request contains an unauthorised request for an MCVideo imminent peril group call as determined by clause 6.3.3.1.13.5, shall reject the SIP re-INVITE request with a SIP 403 (Forbidden) response with the following clarifications:

   a) shall include in the SIP 403 (Forbidden) response an application/vnd.3gpp.mcvideo-info+xml MIME body as specified in Annex F.1 with the <mcvideoinfo> element containing the <mcvideo-Params> element with the <imminentperil-ind> element set to a value of "false"; and

   b) shall send the SIP 403 (Forbidden) response as specified in 3GPP TS 24.229 [11] and skip the rest of the steps;

2) if the in-progress emergency group state of the group is set to a value of "false" and if the SIP re-INVITE request contains an imminent peril indication set to a value of "true" or the in-progress imminent peril state of the group to "true", the controlling MCVideo function shall:

   a) validate that the SIP re-INVITE request includes a Resource-Priority header field with the namespace set to the MCVideo-specific namespace and the priority set to the priority designated for imminent peril calls and if not:

      i) perform the actions specified in clause 6.3.3.1.8;

      ii) send the SIP UPDATE request generated in clause 6.3.3.1.8 towards the initiator of the SIP re-INVITE request according to 3GPP TS 24.229 [11]; and

      iii) upon receiving a SIP 200 (OK) response to the SIP UPDATE request sent in clause 6.3.3.1.8 proceed with the rest of the steps.

NOTE 3: Verify that the Resource-Priority header is included and properly populated for both ongoing and newly-entered in-progress imminent peril states of the specified group.

   b) if the in-progress imminent peril state of the group is set to a value of "true" and this MCVideo user is indicating a new imminent peril indication:

i) for each of the other affiliated member of the group generate a SIP MESSAGE request notification of the MCVideo user's imminent peril indication as specified in clause 6.3.3.1.11 with the following clarifications;

A) set the <imminentperil-ind> element of the application/vnd.3gpp.mcvideo-info+xml MIME body to a value of "true"; and

B) send the SIP MESSAGE request as specified in 3GPP TS 24.229 [11]; and

ii) cache the information that this MCVideo user has initiated an MCVideo imminent peril call; and

c) if the in-progress imminent peril state of the group is set to a value of "false":

i) shall set the value of the in-progress imminent peril state of the group to "true";

ii) shall generate SIP re-INVITE requests for the MCVideo imminent peril group call to the other affiliated and joined participants of the chat MCVideo group as specified in clause 6.3.3.1.15;

iii) shall generate SIP INVITE requests for the MCVideo imminent peril group call to the affiliated but not joined members of the chat MCVideo group as specified in clause 6.3.3.1.7;

A) for each affiliated but not joined member shall send the SIP INVITE request towards the MCVideo client as specified in 3GPP TS 24.229 [11]; and

B) Upon receiving a SIP 200 (OK) response to the SIP INVITE request the controlling MCVideo function shall interact with the media plane as specified in 3GPP TS 24.581 [5]; and

iv) shall cache the information that this MCVideo user has initiated an MCVideo imminent peril call;

3) if the SIP re-INVITE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body with the <imminentperil-ind> element set to a value of "false" and is an unauthorised request for an MCVideo imminent peril group call cancellation as determined by clause 6.3.3.1.13.6 shall:

a) reject the SIP re-INVITE request with a SIP 403 (Forbidden) response to the SIP re-INVITE request; and

b) include in the SIP 403 (Forbidden) response:

i) include in the SIP 403 (Forbidden) response an application/vnd.3gpp.mcvideo-info+xml MIME body as specified in Annex F.1 with the <mcvideoinfo> element containing the <mcvideo-Params> element with the <imminentperil-ind> element set to a value of "false";

ii) send the SIP 403 (Forbidden) response as specified in 3GPP TS 24.229 [11]; and

iii) skip the rest of the steps;

4) if the SIP re-INVITE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body with the <imminentperil-ind> element set to a value of "false" and is determined to be an authorised request for an MCVideo imminent peril call cancellation as specified in clause 6.3.3.1.13.6 and the in-progress imminent peril state of the group to is set to a value of "true" the controlling MCVideo function shall:

a) validate that the SIP re-INVITE request includes a Resource-Priority header field with the namespace set to the MCVideo-specific namespace, and the priority set to the priority level designated for a normal priority MCVideo group call, and if not:

i) shall perform the actions specified in clause 6.3.3.1.8; and

ii) upon receiving a SIP 200 (OK) response to the SIP UPDATE request sent in clause 6.3.3.1.8 shall proceed with the rest of the steps;

NOTE 3: verify that the Resource-Priority header is included and properly populated for an in-progress emergency group state cancellation of the specified group.

b) shall set the in-progress imminent peril state of the group to a value of "false";

c) shall cache the information that this MCVideo user no longer has an outstanding MCVideo imminent peril group call;

d) shall generate SIP re-INVITES requests to the other affiliated and joined members of the MCVideo group as specified in clause 6.3.3.1.15. The MCVideo controlling function:

i) for each affiliated and joined member shall send the SIP re-INVITE request towards the MCVideo client as specified in 3GPP TS 24.229 [11]; and

ii) Upon receiving a SIP 200 (OK) response to the SIP re-INVITE request the controlling MCVideo function shall interact with the media plane as specified in 3GPP TS 24.581 [5]; and

NOTE 4: clause 6.3.3.1.15 will inform the affiliated and joined members of the cancellation of the MCVideo group's in-progress emergency group state and the cancellation of the MCVideo emergency alert if applicable.

e) for each of the affiliated but not joined members of the group shall:

i) generate a SIP MESSAGE request notification of the cancellation of the MCVideo user's imminent peril call as specified in clause 6.3.3.1.11;

ii) set the <imminentperil-ind> element of the application/vnd.3gpp.mcvideo-info+xml MIME body to a value of "false"; and

iii) send the SIP MESSAGE request according to 3GPP TS 24.229 [11];

5) shall include in the SIP 200 (OK) response an SDP answer according to 3GPP TS 24.229 [11] with the clarifications specified in clause 6.3.3.2.1 unless the procedures of clause 6.3.3.1.8 were performed in step 2) or 4) above;

6) shall include the "norefersub" option tag in a Supported header field according to IETF RFC 4488 [31];

7) shall include the "tdialog" option tag in a Supported header field according to IETF RFC 4538 [32];

8) shall interact with media plane as specified in 3GPP TS 24.581 [5]; and

9) shall send the SIP 200 (OK) response towards the MCVideo client according to 3GPP TS 24.229 [11].

9.2.2.4.2 End group call at the terminating controlling MCVideo function

Upon receiving a SIP BYE request the controlling MCVideo function shall follow the procedures as specified in clause 6.3.3.2.4.

9.2.2.4.3 End group call initiated by the controlling MCVideo function

9.2.2.4.3.1 General

This clause describes the procedures of each functional entity for ending the group call initiated by the controlling MCVideo function.

9.2.2.4.3.2 SIP BYE request for releasing MCVideo session for a group call

When the MCVideo session for group call needs to be released as specified in clause 6.3.8.1, the controlling MCVideo function shall follow the procedures in clause 6.3.3.1.4.

9.2.2.4.3.3 SIP BYE request toward a MCVideo client

When an MCVideo client needs to be removed from the MCVideo session (e.g. due to de-affiliation or admitting a higher priority user), the controlling MCVideo function shall follow the procedures in clause 6.3.3.1.4.

After successful removing the MCVideo client from the MCVideo session, the controlling MCVideo function may generate a notification to the MCVideo clients, which have subscribed to the conference state event package that an MCVideo user has been removed from the MCVideo session, as specified in clause 6.3.3.4 and send the SIP NOTIFY request to the MCVideo client according to 3GPP TS 24.229 [11].

9.2.2.5 Non-controlling function of an MCVideo group procedures

9.2.2.5.1 Terminating procedures

9.2.2.5.1.1 General

When receiving the "SIP INVITE request for non-controlling MCVideo function of an MCVideo group" the MCVideo server can be acting as a controller MCVideo function in an ongoing chat group call or, if a chat group call is not ongoing, be initiated as an non-controlling MCVideo function and invite MCVideo users.

If a chat group call is not ongoing the MCVideo server shall perform the actions specified in clause 9.2.2.5.1.2.

If the "SIP INVITE request for non-controlling MCVideo function of an MCVideo group" is received when a chat group call is ongoing, the controlling MCVideo function may switch from operating in a controlling MCVideo function mode to operate in a non-controlling MCVideo function mode as specified in clause 9.2.2.5.1.3.

When operating in the non-controlling mode and a SIP BYE request is received from the controlling MCVideo function, the non-controlling MCVideo function shall change from operating in the non-controlling mode to operating in the controlling mode as specified in clause 9.2.2.5.1.4.

9.2.2.5.1.2 Initiating a chat group session

Upon receipt of a "SIP INVITE request for non-controlling MCVideo function of an MCVideo group" and if a chat group call is not ongoing, the non-controlling MCVideo function of an MCVideo group:

NOTE 1: The Contact header field of the SIP INVITE request contains the "isfocus" feature media tag.

1) if unable to process the request due to a lack of resources or a risk of congestion exists, may reject the SIP INVITE request with a SIP 500 (Server Internal Error) response. The controlling MCVideo function may include a Retry-After header field to the SIP 500 (Server Internal Error) response as specified in IETF RFC 3261 [15]. Otherwise, continue with the rest of the steps;

2) shall determine if the media parameters are acceptable and the MCVideo codecs are offered in the SDP offer and if not, reject the request with a SIP 488 (Not Acceptable Here) response. Otherwise, continue with the rest of the steps;

3) shall reject the SIP request with a SIP 403 (Forbidden) response and not process the remaining steps if:

   a) an Accept-Contact header field does not include the g.3gpp.mcvideo media feature tag; or

   b) an Accept-Contact header field does not include the g.3gpp.icsi-ref media feature tag containing the value of "urn:urn-7:3gpp-service.ims.icsi.mcvideo";

4) if the partner MCVideo system does not have a mutual aid relationship with the primary MCVideo system identified by the contents of the P-Asserted-Identity, shall reject the "SIP INVITE request for non-controlling MCVideo function of an MCVideo group" with a SIP 403 (Forbidden) response, with warning text set to "128 isfocus already assigned" in a Warning header field as specified in clause 4.4, and shall not process the remaining steps;

5) shall check if a Resource-Priority header field is included in the incoming SIP INVITE request and may apply any preferential treatment to the SIP request as specified in 3GPP TS 24.229 [11];

6) shall generate SIP 200 (OK) response to the SIP INVITE request as specified in the clause 6.3.4.2.2.2 before continuing with the rest of the steps;

7) shall include in the SIP 200 (OK) response an SDP answer to the SDP offer in the incoming SIP INVITE request as specified in the clause 6.3.4.2.1;

8) shall interact with the media plane as specified in 3GPP TS 24.581 [5] clause 6.3.5; and

NOTE 2: Resulting media plane processing is completed before the next step is performed.

9) shall send a SIP 200 (OK) response to the controlling MCVideo function according to 3GPP TS 24.229 [11].

9.2.2.5.1.3 Joining an ongoing chat group call

Upon receipt of a "SIP INVITE request for non-controlling MCVideo function of an MCVideo group" and if a chat group call is already ongoing, the non-controlling MCVideo function of an MCVideo group:

NOTE 1: The Contact header field of the SIP INVITE request contains the "isfocus" feature media tag.

1) shall determine if the media parameters are acceptable and the MCVideo codecs are offered in the SDP offer and if not reject the request with a SIP 488 (Not Acceptable Here) response. Otherwise, continue with the rest of the steps;

2) shall reject the SIP request with a SIP 403 (Forbidden) response and not process the remaining steps if:

   a) an Accept-Contact header field does not include the g.3gpp.mcvideo media feature tag; or

   b) an Accept-Contact header field does not include the g.3gpp.icsi-ref media feature tag containing the value of "urn:urn-7:3gpp-service.ims.icsi.mcvideo";

3) if the partner MCVideo system does not have a mutual aid relationship with the primary MCVideo system identified by the contents of the P-Asserted-Identity, shall reject the "SIP INVITE request for non-controlling MCVideo function of an MCVideo group" with a SIP 403 (Forbidden) response, with warning text set to "128 isfocus already assigned" in a Warning header field as specified in clause 4.4, and shall not process the remaining steps;

4) shall cache the content of the SIP INVITE request, if received in the Contact header field and if the specific feature tags are supported;

5) shall check if a Resource-Priority header field is included in the incoming SIP INVITE request and may apply any preferential treatment to the SIP request as specified in 3GPP TS 24.229 [11];

6) shall generate SIP 200 (OK) response to the SIP INVITE request as specified in the clause 6.3.4.2.2.2 before continuing with the rest of the steps;

7) shall include in the SIP 200 (OK) response an SDP answer to the SDP offer in the incoming SIP INVITE request as specified in the clause 6.3.4.2.1;

8) shall instruct the media plane to initialise the switch to the non-controlling mode as specified in 3GPP TS 24.581 [5] clause 6.5.2.3;

NOTE 2: Resulting media plane processing is completed before the next step is performed.

9) if the media plane provided information about the current speaker(s), cache the information about the current speaker(s); and

10) shall send a SIP 200 (OK) response to the controlling MCVideo function according to 3GPP TS 24.229 [11].

Upon receipt of the SIP ACK request, the non-controlling MCVideo function of an MCVideo group:

1) if information about a current speaker(s) is cached:

   a) shall generate a SIP INFO request as specified in clause 6.3.4.1.3; and

   b) shall send the SIP INFO request to the controlling MCVideo function as specified in 3GPP TS 24.229 [11];

2) shall instruct the media plane to finalise the switch to the non-controlling mode as specified in 3GPP TS 24.581 [5] clause 6.3.5.3; and

3) if at least one of the MCVideo clients in the chat group session has a subscription to the conference event package, shall subscribe to the conference event package from the controlling MCVideo function as specified in clause 9.2.3.5.3.

9.2.2.5.1.4 Splitting an ongoing chat group call

Upon receipt of a SIP BYE request, the non-controlling MCVideo function of an MCVideo group:

1) if keeping the chat group call active is according to the release policy in clause 6.3.8.1, shall request media plane to switch to controlling mode as specified in 3GPP TS 24.581 [5] clause 6.3.5;

NOTE 1: Resulting media plane processing is completed before the next step is performed.

2) shall send a SIP 200 (OK) response to the SIP BYE request; and

3) if at least one MCVideo client has subscribed to the conference package, shall send a NOTIFY request to all participants with a subscription to the conference event package as specified in clause 9.2.3.5.2.

NOTE 2: The SIP NOTIFY request will indicate that all participants, with the exception of the MCVideo users belonging to the constituent MCVideo group hosted by the non-controlling MCVideo function, have left the group session.

9.2.2.5.1.5 MCVideo client joining the temporary group chat session

When acting in the non-controlling connection mode when receiving of a "SIP INVITE request for controlling MCVideo function of an MCVideo group" containing a group identity identifying a constituent chat MCVideo group being part of the temporary group call, the non-controlling MCVideo function shall act as a controlling MCVideo function towards the MCVideo client and shall perform the actions in the clause 9.2.2.4.1.1 with the following clarifications:

1) the MCVideo session identity in the Contact header field of the SIP 200 (OK) response shall be the MCVideo session identity generated by the non-controlling MCVideo function; and

2) the clause 9.2.3.5.2 shall be used when sending the SIP NOTIFY request for subscriptions to the conference event package.

9.2.2.5.1.6 Receipt of a SIP re-INVITE request from an MCVideo client

Upon receipt of a SIP re-INVITE request from an MCVideo client the non-controlling MCVideo function shall act as the controlling MCVideo function and shall perform the actions in clause 9.2.2.4.1.2.

9.2.2.5.1.7 SIP OPTIONS request authorization procedure

Upon receipt of an SIP OPTIONS request containing a P-Asserted-Identity header field containing the public service identity of a MCVideo server authorized to send the OPTIONS request, the non-controlling MCVideo function shall perform the actions in clause 9.2.1.5.4 otherwise the non-controlling MCVideo function shall send a SIP 403 (Forbidden) response as specified in 3GPP TS 24.229.

9.2.2.5.1.8 Initiating a temporary group session

Upon receiving a "SIP INVITE request "SIP INVITE request for controlling MCVideo function of an MCVideo group" when a chat group session is not ongoing, the non-controlling MCVideo-function shall:

NOTE 1: The difference between a "SIP INVITE request "SIP INVITE request for controlling MCVideo function of an MCVideo group" and a "SIP INVITE request for non-controlling MCVideo function of an MCVideo group" is that the latter SIP INVITE request contains the isfocus media feature tag in the Contact header field.

1) if unable to process the request due to a lack of resources or a risk of congestion exists, may reject the SIP INVITE request with a SIP 500 (Server Internal Error) response. The non-controlling MCVideo function may include a Retry-After header field to the SIP 500 (Server Internal Error) response as specified in IETF RFC 3261 [15]. Otherwise, continue with the rest of the steps;

2) shall determine if the media parameters are acceptable and the MCVideo codecs are offered in the SDP offer and if not reject the request with a SIP 488 (Not Acceptable Here) response. Otherwise, continue with the rest of the steps;

3) shall reject the SIP request with a SIP 403 (Forbidden) response and not process the remaining steps if:

   a) an Accept-Contact header field does not include the g.3gpp.mcvideo media feature tag; or

b) an Accept-Contact header field does not include the g.3gpp.icsi-ref media feature tag containing the value of "urn:urn-7:3gpp-service.ims.icsi.mcvideo";

4) shall retrieve the group document from the group management server for the MCVideo group ID contained in the <mcvideo-request-uri> element of the application/vnd.3gpp.mcvideo-info+xml MIME body of the SIP INVITE request and carry out initial processing as specified in clause 6.3.5.2 and continue with the rest of the steps if the checks in clause 6.3.5.2 succeed;

NOTE 2: If the checks are not succesful, the SIP response to the "SIP INVITE request "SIP INVITE request for controlling MCVideo function of an MCVideo group" is already sent in the clause 6.3.5.2.

5) shall cache the content of the SIP INVITE request;

6) shall check if a Resource-Priority header field is included in the incoming SIP INVITE request and may apply any preferential treatment to the SIP request as specified in 3GPP TS 24.229 [11];

7) shall authorize the MCVideo user in the <mcvideo-calling-user-id> element in the application/vnd.3gpp.mcvideo-info+xml MIME body of the "SIP INVITE request for controlling MCVideo function of an MCVideo group" as specified in clause 6.3.5.2, if the MCVideo user is unauthorized to join a chat group session, the non-controlling MCVideo function shall send a SIP 403 (Forbidden) response with the warning text set to "106 user not authorised to join chat group" in a Warning header field as specified in clause 4.4.

8) shall generate a SIP INVITE request to the controlling MCVideo function as specified in clause 6.3.4.1.4; and

9) shall send the SIP INVITE request to the controlling MCVideo function as specified in 3GPP TS 24.229 [11].

Upon receipt of a SIP 2xx response to the SIP INVITE request sent to the controlling MCVideo function as specified above, the non-controlling MCVideo function:

1) shall send the SIP ACK request to the controlling MCVideo function as specified in 3GPP TS 24.229 [11];

2) shall generate a SIP 200 (OK) to the "SIP INVITE request for controlling MCVideo function of an MCVideo group" as specified in 3GPP TS 24.229 populated as follows:

   a) shall include an SDP answer as specified in clause 6.3.4.2.1 based on the SDP answer in the SIP 200 (OK) response;

   b) shall include the public service identifier of the non-controlling MCVideo function in the P-Asserted-Identity header field; and

   c) shall include the warning text set to "148 MCVideo group is regrouped" in a Warning header field as specified in clause 4.4; and

3) shall start acting as a non-controlling MCVideo function and interact with the media plane as specified in 3GPP TS 24.581 [5] clause 6.5.

Upon receipt of other final SIP responses with the exception of the SIP 2xx response to the INVITE request sent to the controlling MCVideo function as specified above, the non-controlling MCVideo function:

1) shall send the SIP ACK response to the controlling MCVideo function as specified in 3GPP TS 24.229 [11]; and

2) perform the actions in the clause 9.2.1.5.2.4.

NOTE 4: Regardless if the controlling MCVideo function accepts or rejects the SIP INVITE request sent above the prearranged group session continues to be initiated with only the members of the group homed on the non-controlling MCVideo function of the group being invited to the group call.

9.2.3 Subscription to the conference event package

9.2.3.1 General

The IETF RFC 4575 [57] defines a conference state event package that shall be used to obtain the status of participants in group sessions.

The MCVideo client may subscribe to the conference state event package at any time in a group session that the MCVideo client participates in. The clause 9.2.3.2 specifies the procedures in the MCVideo client when subscribing to the conference events.

The participating MCVideo function shall forward conference state subscriptions and notifications as specified in clause 9.2.3.3.

The controlling MCVideo function shall handle subscriptions and notification of conference state events as specified in clause 9.2.3.4.

The non-controlling MCVideo function shall handle subscriptions and notification of conference state events as specified in clause 9.2.3.4.

When the non-controlling MCVideo function connection model is used, the controlling MCVideo function subscribes to the conference state event package from the non-controlling MCVideo function as specified in clause 9.2.3.4.3 and the non-controlling MCVideo function subscribes to the conference state event package from the controlling MCVideo function as specified in clause 9.2.3.5.3.

9.2.3.2 MCVideo client

A MCVideo client may subscribe to the conference state event package when a group call is ongoing and the ongoing group call is not initiated as a broadcast group call by sending a SIP SUBSCRIBE request to obtain information of the status of a group session.

When subscribing to the conference state event package, the MCVideo client:

1) shall generate a SIP SUBSCRIBE request and use a new SIP-dialog according to IETF RFC 6665 [16], IETF RFC 4575 [57] and 3GPP TS 24.229 [11];

2) shall set the Request-URI of the SIP SUBSCRIBE request to the MCVideo session identity of the group session;

3) shall include the ICSI value "urn:urn-7:3gpp-service.ims.icsi.mcvideo" (coded as specified in 3GPP TS 24.229 [11]), in a P-Preferred-Service header field according to IETF RFC 6050 [14];

4) shall include an Accept-Contact header with the media feature tag g.3gpp.icsi-ref with the value "urn:urn-7:3gpp-service.ims.icsi.mcvideo" along with "require" and "explicit" header field parameters according to IETF RFC 3841 [20];

5) if the MCVideo client wants to receive the current status and later notification, shall set the Expires header field according to IETF RFC 6665 [16], to 4294967295;

NOTE 1: 4294967295, which is equal to 2^{32}-1, is the highest value defined for Expires header field in IETF RFC 3261 [15].

6) if the MCVideo client wants to fetch the current state only, shall set the Expires header field according to IETF RFC 6665 [16], to zero;

7) shall include an Accept header field containing the application/conference-info+xml"MIME type;

8) shall include an application/vnd.3gpp.mcvideo-info+xml MIME body with the <mcvideo-request-uri> element set to the MCVideo group ID of the group session; and

9) shall send the SIP SUBSCRIBE request using a new SIP dialog according to 3GPP TS 24.229 [11].

The responses to the SIP SUBSCRIBE request shall be handled according to IETF RFC 6665 [16], IETF RFC 4575 [57] and TS 24.229 [11].

Upon receiving a SIP NOTIFY requests to the previously sent SIP SUBSCRIBE request the MCVideo client:

1) shall handle the request according to IETF RFC 6665 [16] and IETF RFC 4575 [57]; and

2) may process the current state information to the MCVideo client based on the information in the SIP NOTIFY request body and may display to the MCVideo user the MCVideo IDs of the participating MCVideo users and the functional alias the participating MCVideo user has bound to that MCVideo group if available.

When needed the MCVideo client shall terminate the subscription and indicate it terminated according to IETF RFC 6665 [16].

NOTE 2: The contents of the received SIP NOTIFY request body is specified in clause 6.3.3.4.

9.2.3.3 Participating MCVideo function

Upon receipt of a "SIP SUBSCRIBE request for conference event status subscription in the participating MCVideo function" and if the SIP SUBSCRIBE request contains:

1) the ICSI value "urn:urn-7:3gpp-service.ims.icsi.mcvideo" (coded as specified in 3GPP TS 24.229 [11]), in a P-Asserted-Service header field according to IETF RFC 6050 [14];

2) an Accept header field containing the application/conference-info+xml"MIME type; and

3) an application/vnd.3gpp.mcvideo-info+xml MIME body containing the <mcvideo-request-uri> set to a MCVideo group ID;

then the participating MCVideo function:

1) shall attempt to resolve the received Request-URI to an existing MCVideo session identity;

2) if the participating MCVideo function could not resolve the received Request-URI to an existing MCVideo session identity, shall reject the SIP SUBSCRIBE response with a SIP 404 (Not Found) response with a warning text set to "137 the indicated group call does not exists" as specified in clause 4.4 and shall skip the rest of the steps

3) shall generate a SUBSCRIBE request as specified in TS 24.229 [11]

4) shall set the SIP URI in the Request-URI with the MCVideo session identity that is mapped to the MCVideo session identity in the received Request-URI;

5) shall include in the application/vnd.3gpp.mcvideo-info+xml MIME body the <mcvideo-calling-user-id> element set to the MCVideo ID of the served user: and

6) shall insert a Record-Route header containing a URI identifying its own address; and

7) shall send the SIP SUBSCRIBE request according to 3GPP TS 24.229 [11].

Upon receiving a SIP response to the SIP SUBSCRIBE request the participating MCVideo function:

1) shall copy the content of the incoming SIP response to an outgoing SIP response;

2) if a SIP 200 (OK) response, shall include in the Contact header field of the outgoing SIP response an MCVideo session identity mapped to the MCVideo session identity provided in the Contact header field of the received SIP 200 (OK) response in the outgoing SIP response; and

3) shall forward the SIP response according to 3GPP TS 24.229 [11].

Upon receiving a SIP NOTIFY request within the dialog created by the SIP SUBSCRIBE request destined to a served MCVideo client, the participating MCVideo function:

1) shall include the public service identity of the MCVideo user in the Request-URI;

2) shall copy the content of the incoming SIP NOTIFY request to the outgoing SIP NOTIFY request; and

3) shall send the SIP NOTIFY request according to 3GPP TS 24.229 [11].

Upon receiving a SIP response to the SIP NOTIFY request the participating MCVideo function:

1) shall copy the content of the incoming SIP response to an outgoing SIP response;

2) if a SIP 200 (OK) response, shall include an MCVideo session identity constructed from the MCVideo session identity provided in the Contact header field of the received SIP 200 (OK) response in the outgoing SIP response; and

3) shall forward the SIP response according to 3GPP TS 24.229 [11].

9.2.3.4 Controlling MCVideo function

9.2.3.4.1 Receiving a subscription to the conference event package

Upon receipt of a "SIP SUBSCRIBE request for conference event status subscription in the controlling MCVideo function" and the SIP SUBSCRIBE request:

1) contains an application/vnd.3gpp.mcvideo-info+xml MIME body with

   a) the <mcvideo-request-uri> element set to the group identity of the group session and the <mcvideo-calling-user-id> element set to either:

      i) the MCVideo ID of a participant in the group session; or

      ii) a constituent MCVideo group ID of a non-controlling MCVideo function in a temporary group session;

2) contains the ICSI value "urn:urn-7:3gpp-service.ims.icsi.mcvideo" (coded as specified in 3GPP TS 24.229 [11]), in a P-Asserted-Service header field according to IETF RFC 6050 [14];

3) contains an Accept header field containing the application/conference-info+xml MIME type; and

4) is not received in a group call initiated as a broadcast group call;

then the controlling MCVideo function:

1) shall check if the <on-network-allow-conference-state> element in the group document in 3GPP TS 24.481 [24] allows the MCVideo ID or the constituent MCVideo group ID in the <mcvideo-calling-user-id> element to subscribe to the conference event package and if not allowed:

   a) shall reject the "SIP SUBSCRIBE request for conference event status subscription in the controlling MCVideo function" with a SIP 403 (Forbidden) response to the SIP SUBSCRIBE request, with warning text set to "138 subscription of conference events not allowed" as specified in clause 4.4; and

   b) shall not continue with the remaining steps;

2) shall handle the request according to IETF RFC 6665 [16] and IETF RFC 4575 [57];

3) shall cache information about the subscription;

4) shall send a conference state notification as specified in clause 9.2.3.4.2; and

5) if the SIP SUBSCRIBE request is the first SUBSCRIBE request from a participant in a temporary group session, shall subscribe to the conference event package from all non-controlling MCVideo functions in the group session as specified in clause 9.2.3.4.3.

Upon receipt of a "SIP SUBSCRIBE request for conference event status subscription in the controlling MCVideo function" in a group call initiated as a broadcast group call, the controlling MCVideo function:

1) shall generate a SIP 480 (Temporarily Unavailable) response to the SIP SUBSCRIBE request as specified in 3GPP TS 24.229 [11];

2) shall include a Warning header field with the warning text set to "105 subscription not allowed in a broadcast group call" as specified in clause 4.4; and

3) send the SIP 480 (Temporarily Unavailable) response according to 3GPP TS 24.229 [11].

9.2.3.4.2 Sending notifications to the conference event package

The procedures in this clause is triggered by:

1) the receipt of a SIP SUBSCRIBE request as specified in clause 9.2.3.4.1;

2) the receipt of a SIP BYE request from one of the participants in a pre-arranged or a chat group session; or

3) when a new participant is added in a pre-arranged or chat group session.

When sending a conference state event notification, the controlling MCVideo function:

1) shall generate a notification package as specified in clause 6.3.3.4 to all MCVideo clients which have subscribed to the conference state event package; and

NOTE: As a group document can potentially have a large content, the controlling MCVideo function can notify using content-indirection as defined in IETF RFC 4483 [29].

2) shall send a SIP NOTIFY request to all participants which have subscribed to the conference state event package as specified in 3GPP TS 24.229 [11].

9.2.3.4.3 Sending subscriptions to the conference event package

The procedure in this clause is triggered by:

1) the receipt of a SIP 200 (OK) response to a SIP INVITE request for non-controlling MCVideo function of an MCVideo group and if at least one participant already has subscribed to the conference event package in the controlling MCVideo function as specified in clause 9.2.3.4.1; or

2) the receipt of the first SIP SUBSCRIBE request as specified in clause 9.2.3.4.1 and one or more participant in the group session is a non-controlling MCVideo function;

then, for each non-controlling MCVideo function from where a SIP 200 (OK) response to a SIP INVITE request for non-controlling MCVideo function of an MCVideo group has been received and where a SIP SUBSCRIBE request is not already sent, the controlling MCVideo function:

1) shall generate a SIP SUBSCRIBE request and use a new SIP-dialog according to IETF RFC 6665 [16], IETF RFC 4575 [57] and 3GPP TS 24.229 [11];

2) shall set the Request-URI of the SIP SUBSCRIBE request to the public service identity of the non-controlling MCVideo function serving the group identity of the MCVideo group owned by the interconnected MCVideo system;

NOTE 1: The public service identity can identify the non-controlling function in the local MCVideo system or in an interconnected MCVideo system.

NOTE 2: If the non-controlling MCVideo function is in an interconnected MCVideo system in a different trust domain, then the public service identity can identify the MCVideo gateway server that acts as an entry point in the interconnected MCVideo system from the local MCVideo system.

NOTE 3: If the non-controlling MCVideo function is in an interconnected MCVideo system in a different trust domain, then the local MCVideo system can route the SIP request through an MCVideo gateway server that acts as an exit point from the local MCVideo system to the interconnected MCVideo system.

NOTE 4: How the controlling MCVideo function determines the public service identity of the non-controlling MCVideo function associated with the group identity or of the MCVideo gateway server in the interconnected MCVideo system is out of the scope of the present document.

NOTE 5: How the local MCVideo system routes the SIP request through an exit MCVideo gateway server is out of the scope of the present document.

3) shall include the same P-Asserted-Identity header field as included in the SIP INVITE request for non-controlling MCVideo function of an MCVideo group;

4) shall include the ICSI value "urn:urn-7:3gpp-service.ims.icsi.mcvideo" (coded as specified in 3GPP TS 24.229 [11]), in a P-Preferred-Service header field according to IETF RFC 6050 [14];

5) shall include an Accept-Contact header with the g.3gpp.mcvideo along with "require" and "explicit" header field parameters according to IETF RFC 3841 [20];

6) shall set the Expires header field according to IETF RFC 6665 [16], to 4294967295;

NOTE6: 4294967295, which is equal to 2^{32}-1, is the highest value defined for Expires header field in IETF RFC 3261 [15].

7) shall include an Accept header field containing the application/conference-info+xml MIME type;

8) shall include an application/vnd.3gpp.mcvideo-info+xml MIME body with:

   a) the <mcvideo-request-uri> element set to the constituent MCVideo group ID; and

   b) the <mcvideo-calling-group-id> set to the temporary MCVideo group ID; and

9) shall send the SIP SUBSCRIBE request using a new SIP dialog according to 3GPP TS 24.229 [11].

The responses to the SIP SUBSCRIBE request shall be handled according to IETF RFC 6665 [16], IETF RFC 4575 [57] and TS 24.229 [11].

Upon receiving an incoming SIP NOTIFY request to the previously sent SIP SUBSCRIBE request, the controlling MCVideo function:

1) shall handle the request according to IETF RFC 6665 [16] and IETF RFC 4575 [57];

2) shall modify the SIP NOTIFY request as specified in clause 6.3.3.4; and

3) shall forward the modified SIP NOTIFY request according to 3GPP TS 24.229 [11] to all other participants with a subscription to the conference event package.

NOTE: A non-controlling MCVideo function of an MCVideo group is regarded as a participant in a temporary group session.

9.2.3.4.4 Terminating a subscription

Upon receipt of a "SIP SUBSCRIBE request for conference event status subscription in the controlling MCVideo function" that terminates the subscription of the conference event package as specified in IETF RFC 6665 [16], the controlling MCVideo function:

1) shall send a SIP 200 (OK) response as specified in IETF RFC 6665 [16]; and

2) if there are no remaining subscriptions to the event package in the ongoing MCVideo call in a temporary group session, shall terminate the subscriptions to the conference event package as specified in IETF RFC 6665 [16] in all non-controlling MCVideo functions in the temporary group session.

Upon expiry of the subscription timer and if there are no remaining subscriptions to the event package in the ongoing MCVideo call in a temporary group session, the controlling MCVideo function shall terminate the subscriptions to the conference event package as specified in IETF RFC 6665 [16] in all non-controlling MCVideo functions in the temporary group session.

9.2.3.5 Non-controlling MCVideo function

9.2.3.5.1 Receiving subscriptions to the conference event package

Upon receipt of "SIP SUBSCRIBE request for conference event status subscription in the non-controlling MCVideo function" and the SIP SUBSCRIBE request:

1) contains an application/vnd.3gpp.mcvideo-info+xml MIME body with

   a) the <mcvideo-request-uri> element set to the constituent MCVideo group ID; and

   b) the <mcvideo-calling-user-id> element is set to:

      i) a participant in the group session; or

      ii) the temporary MCVideo group ID;

2) contains the ICSI value "urn:urn-7:3gpp-service.ims.icsi.mcvideo" (coded as specified in 3GPP TS 24.229 [11]), in a P-Asserted-Service header field according to IETF RFC 6050 [14];

3) contains an Accept header field containing the application/conference-info+xml MIME type; and

4) is not received in a group call initiated as a broadcast group call;

then the non-controlling MCVideo function:

1) shall check if the <on-network-allow-conference-state> element in the group document in 3GPP TS 24.481 [24] of the constituent group allows the MCVideo ID in the <mcvideo-calling-user-id> element to subscribe to the conference event package and if not allowed:

   a) shall reject the "SIP SUBSCRIBE request for conference event status subscription in the non-controlling MCVideo function" with a SIP 403 (Forbidden) response to the SIP SUBSCRIBE request, with warning text set to "138 subscription of conference events not allowed" as specified in clause 4.4; and

   b) shall not continue with the remaining steps;

2) shall handle the request according to IETF RFC 6665 [16] and IETF RFC 4575 [57];

3) shall cache information about the subscription;

4) shall generate a notification package as specified in clause 6.3.3.4 and send a SIP NOTIFY request according to 3GPP TS 24.229 [11] to the MCVideo client which have subscribed to the conference event package; and

5) if the SIP SUBSCRIBE request is the first SIP SUBSCRIBE request from an MCVideo client, shall subscribe to the conference event package from the controlling MCVideo functions in the group session as specified in clause 9.2.3.5.3.

Upon receipt of a "SIP SUBSCRIBE request for conference event status subscription in the controlling MCVideo function" in a group call initiated as a broadcast group call, the controlling MCVideo function:

1) shall generate a SIP 480 (Temporarily Unavailable) response to the SIP SUBSCRIBE request as specified in 3GPP TS 24.229 [11];

2) shall include a Warning header field with the warning text set to "105 subscription not allowed in a broadcast group call" as specified in clause 4.4; and

3) send the SIP 480 (Temporarily Unavailable) response according to 3GPP TS 24.229 [11].

9.2.3.5.2 Sending notifications to the conference event package

The procedures in this clause are triggered by:

1) the receipt of a receipt of a SIP BYE request from one of the participants in a pre-arranged or a chat group session; or

2) when a new participant is added in a pre-arranged or chat group session.

When sending a conference event notification, the non-controlling MCVideo function:

1) shall generate a notification package as specified in clause 6.3.3.4 to all participants which have subscribed to the conference event package; and

NOTE: As a group document can potentially have a large content, the controlling MCVideo function can notify using content-indirection as defined in IETF RFC 4483 [29].

2) shall send a SIP NOTIFY request to all participants which have subscribed to the conference event package as specified in 3GPP TS 24.229 [11].

9.2.3.5.3 Sending a subscription to the conference event package

Upon receipt of the first subscription to the conference event package from an MCVideo client, the non-controlling MCVideo function:

1) shall generate a SIP SUBSCRIBE request and use a new SIP-dialog according to IETF RFC 6665 [16], IETF RFC 4575 [57] and 3GPP TS 24.229 [11];

2) shall set the Request-URI of the SIP SUBSCRIBE request to the temporary MCVideo session identity;

NOTE 1: The SIP URI received in the Contact header field of the SIP INVITE request for non-controlling MCVideo function of an MCVideo group is the temporary MCVideo session identity. Towards MCVideo clients the non-controlling MCVideo function uses an internal generated MCVideo session identity.

3) shall include the ICSI value "urn:urn-7:3gpp-service.ims.icsi.mcvideo" (coded as specified in 3GPP TS 24.229 [11]), in a P-Asserted-Service header field according to IETF RFC 6050 [14];

4) shall include an Accept-Contact header with the media feature tag g.3gpp.icsi-ref with the value "urn:urn-7:3gpp-service.ims.icsi.mcvideo" along with "require" and "explicit" header field parameters according to IETF RFC 3841 [20];

5) shall set the Expires header field according to IETF RFC 6665 [16], to 4294967295;

NOTE 2: 4294967295, which is equal to 2^{32}-1, is the highest value defined for Expires header field in IETF RFC 3261 [15].

6) shall include an Accept header field containing the application/conference-info+xml MIME type;

7) shall include an application/vnd.3gpp.mcvideo-info+xml MIME body with:

   a) the <mcvideo-request-uri> element set to the temporary MCVideo group ID: and

   b) the <mcvideo-calling-group-id> set to the constituent MCVideo group ID; and

8) shall send the SIP SUBSCRIBE request using a new SIP dialog according to 3GPP TS 24.229 [11].

The 2xx response to the SIP SUBSCRIBE request shall be handled according to IETF RFC 6665 [16], IETF RFC 4575 [57] and 3GPP TS 24.229 [11].

Upon receiving an incoming SIP NOTIFY requests to the previously sent SIP SUBSCRIBE request the non-controlling MCVideo function:

1) shall handle the request according to IETF RFC 6665 [16] and IETF RFC 4575 [57];

2) shall store conference information based on the SIP NOTIFY request content;

3) shall modify the SIP NOTIFY request as specified in clause 6.3.3.4; and

4) forward the modified SIP NOTIFY request according to 3GPP TS 24.229 [11] to all MCVideo clients with a subscription to the conference event package.

9.2.3.6 Coding

9.2.3.6.1 Extension of application/conference-info+xml MIME type

9.2.3.6.1.1 Introduction

The present clause describes an extensions of the application/conference-info+xml MIME body specified in IETF RFC 4575 [57].

The functional alias extension is used to indicate per-user functional alias association with MCVideo group.

9.2.3.6.1.2 Schema

```
<?xml version="1.0" encoding="UTF-8"?>
<xs:schema
  targetNamespace="urn:3gpp:ns:mcvideoConfInfo:1.0"
  xmlns:xs="http://www.w3.org/2001/XMLSchema"
  xmlns:mcvideoConfInfo="urn:3gpp:ns:mcvideoConfInfo:1.0"
  elementFormDefault="qualified" attributeFormDefault="unqualified">

  <!-- MCVideo specific child element of endpoint element -->
  <xs:element name="functional-alias" type="xs:anyURI" use="optional"/>

  </xs:schema>
```

The application/conference-info MIME body refers to namespaces using prefixes specified in table 9.2.3.6.1.2-1.

Table 9.2.3.6.1.2-1: Assignment of prefixes to namespace names in the application/pidf+xml MIME body

Prefix	Namespace
mcvideoConfInfo	urn:3gpp:ns:mcvideoConfInfo:1.0
NOTE: The "urn:ietf:params:xml:ns:conference-info" namespace is the default namespace so no prefix is used for it in the application/conference-info MIME body.	

9.2.4 Remote change of an MCVideo user's selected group

9.2.4.1 General

Clause 9.2.4 specifies the MCVideo client procedures, participating MCVideo function procedures and controlling MCVideo function procedures for the on-network remote change of an MCVideo user's selected group.

9.2.4.2 Client procedures

9.2.4.2.1 Remote selected group change initiation

Upon receiving a request from the MCVideo user to send a group selection change request to change the selected group of a targeted MCVideo user to a specific MCVideo group, the MCVideo client:

1) if:

   a) the <RemoteGroupSelectionURIList> element does not exist in the MCVideo user profile document with one or more <entry> elements (see the MCVideo user profile document in 3GPP TS 24.484 [25]); or

   b) the <RemoteGroupSelectionURIList> element exists in the MCVideo user profile document and the MCVideo ID of the targeted MCVideo user does not match with one of the <entry> elements of the <RemoteGroupSelectionURIList> element of the MCVideo user profile document (see the MCVideo user profile document in 3GPP TS 24.484 [25]);

   then:

   a) should indicate to the requesting MCVideo user that they are not authorised to change the selected MCVideo group of the targeted MCVideo user; and

   b) shall skip the rest of the steps of the present clause;

1A) shall determine whether the group document associated with the specific MCVideo group contains a <list-service> element that contains a <preconfigured-group-use-only> element. If a <preconfigured-group-use-only> element exists and is set to the value "true", then the MCVideo client:

   a) should indicate to the MCVideo user that calls are not allowed on the specific MCVideo group; and

   b) shall skip the remainder of this procedure;

2) shall generate a SIP MESSAGE request in accordance with 3GPP TS 24.229 [11] and IETF RFC 3428 [17] with the following clarifications:

   a) shall include the ICSI value "urn:urn-7:3gpp-service.ims.icsi.mcvideo" (coded as specified in 3GPP TS 24.229 [11]), in a P-Preferred-Service header field according to IETF RFC 6050 [14] in the SIP MESSAGE request;

   b) shall include an Accept-Contact header field with the g.3gpp.icsi-ref media feature tag containing the value of "urn:urn-7:3gpp-service.ims.icsi.mcvideo" along with the "require" and "explicit" header field parameters according to IETF RFC 3841 [20];

   c) may include a P-Preferred-Identity header field in the SIP MESSAGE request containing a public user identity as specified in 3GPP TS 24.229 [11]; and

d) shall include an application/vnd.3gpp.mcvideo-info+xml MIME body as specified in clause F.1 with the <mcvideoinfo> element containing the <mcvideo-Params> element with the <anyExt> element containing:

i) the <mcvideo-request-uri> set to the MCVideo group identity to be selected by the targeted MCVideo user; and

ii) the <request-type> element set to a value of "group-selection-change-request"; and

e) shall insert in the SIP MESSAGE request a MIME resource-lists body with the MCVideo ID of the targeted MCVideo user, according to rules and procedures of IETF RFC 5366 [37];

3) shall set the Request-URI to the public service identity identifying the participating MCVideo function serving the MCVideo user; and

4) shall send the SIP MESSAGE request according to rules and procedures of 3GPP TS 24.229 [11].

Upon receipt of a SIP 4xx, 5xx or 6xx response to the SIP MESSAGE request, should indicate to the MCVideo user the failure of the sent group selection change request and not continue with the rest of the steps.

Upon receiving a "SIP MESSAGE request for group selection change response for terminating client", the MCVideo client:

1) shall determine the success or failure of the sent group selection change request from the value of the <selected-group-change-outcome> element contained in the <anyExt> element of the <mcvideo-Params> element of the <mcvideoinfo> element of the application/vnd.3gpp.mcvideo-info+xml MIME body included in the received SIP MESSAGE request; and

2) should indicate to the MCVideo user the success or failure of the sent group selection change request.

9.2.4.2.2 Target client procedures for handling remote selected group change request

Upon receiving a "SIP MESSAGE request for group selection change request for terminating client", the MCVideo client:

1) if the received SIP MESSAGE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body containing an <affiliation-required> element set to a value of "true":

a) shall invoke the procedures of clause 8.2.1.2 to affiliate to the MCVideo group identified by the contents of the <mcvideo-calling-group-id> included in the application/vnd.3gpp.mcvideo-info+xml MIME body;

b) if the MCVideo client has not already invoked the procedures of clause 8.2.1.3, shall invoke the procedures of clause 8.2.1.3; and

c) upon receiving a SIP NOTIFY request including a <p-id> element set to a value matching the <p-id> value included in the SIP PUBLISH request sent in step 1) a) above as specified in clause 8.2.1.3, shall determine if the affiliation procedure to the MCVideo group identified by the contents of the <mcvideo-calling-group-id> in the received SIP MESSAGE request was successful;

2) if the received SIP MESSAGE request contained an application/vnd.3gpp.mcvideo-info+xml MIME body containing an <affiliation-required> element set to a value of "true" and the affiliation was successful as determined in step 1) c) above, or if the <affiliation-required> element was not present in the received SIP MESSAGE request:

a) shall change the MCVideo client's selected group to the MCVideo group identified by the contents of the <mcvideo-request-uri> element contained in the application/vnd.3gpp.mcvideo-info+xml MIME body included in the received SIP MESSAGE request; and

b) shall determine the success or failure of the change of selected group action;

3) shall generate a SIP MESSAGE request in accordance with 3GPP TS 24.229 [11] and IETF RFC 3428 [17] with the following clarifications:

a) shall include the ICSI value "urn:urn-7:3gpp-service.ims.icsi.mcvideo" (coded as specified in 3GPP TS 24.229 [11]), in a P-Preferred-Service header field according to IETF RFC 6050 [14] in the SIP MESSAGE request;

b) shall include an Accept-Contact header field with the g.3gpp.icsi-ref media feature tag containing the value of "urn:urn-7:3gpp-service.ims.icsi.mcvideo" along with the "require" and "explicit" header field parameters according to IETF RFC 3841 [20];

c) may include a P-Preferred-Identity header field in the SIP MESSAGE request containing a public user identity as specified in 3GPP TS 24.229 [11]; and

d) shall include in an application/resource-lists+xml MIME body, the MCVideo ID contained in the <mcvideo-calling-user-id> element in the application/ vnd.3gpp.mcvideo-info+xml MIME body of the received SIP MESSAGE request;

e) shall include an application/vnd.3gpp.mcvideo-info+xml MIME body as specified in clause F.1 with the <mcvideoinfo> element containing the <mcvideo-Params> element with the <anyExt> element containing:

i) the <response-type> element set to a value of "group-selection-change-response";

ii) the <mcvideo-request-uri> set to the MCVideo group identity to be selected by the MCVideo user;

iii) if the MCVideo client was able to successfully change the selected group as determined in step 2) b) above, include a <selected-group-change-outcome> element set to a value of "success"; or

iv) if the MCVideo client:

A) was required to affiliate to the MCVideo group identified by the contents of the <mcvideo-calling-group-id> in the received SIP MESSAGE request and the affiliation failed as determined in step 1) c); or

B) failed to change the selected group as determined in step 2) b)

then include a <selected-group-change-outcome> element set to a value of "fail";

4) should indicate to the MCVideo user the success or failure of the requested change of selected group action;

5) shall set the Request-URI to the public service identity identifying the participating MCVideo function serving the MCVideo user; and

6) shall send the SIP MESSAGE request according to rules and procedures of 3GPP TS 24.229 [11].

9.2.4.3 Participating MCVideo function procedures

9.2.4.3.1 Originating procedures

Upon receiving a "SIP MESSAGE request for group-selection-change for originating participating MCVideo function" the participating MCVideo function:

1) if unable to process the request due to a lack of resources or a risk of congestion exists, may reject the SIP MESSAGE request with a SIP 500 (Server Internal Error) response. The participating MCVideo function may include a Retry-After header field to the SIP 500 (Server Internal Error) response as specified in IETF RFC 3261 [15] and skip the rest of the steps;

2) shall determine the MCVideo ID of the calling user from the public user identity in the P-Asserted-Identity header field of the SIP MESSAGE request, and shall authorise the calling user;

NOTE 1: The MCVideo ID of the calling user is bound to the public user identity at the time of service authorisation, as documented in clause 7.3.

3) if the "SIP MESSAGE request for group selection change for originating participating MCVideo function" contains the <request-type> element set to a value of "group-selection-change-request":

a) if:

i) the <RemoteGroupSelectionURIList> element does not exist in the MCVideo user profile document with one or more <entry> elements (see the MCVideo user profile document in 3GPP TS 24.484 [50]); or

ii) if the MCVideo ID contained in the <mcvideo-request-uri> element contained in the application/vnd.3gpp.mcvideo-info+xml MIME body included in the received "SIP MESSAGE request for group selection change for originating participating MCVideo function" does not match with one of the <entry> elements of the <RemoteGroupSelectionURIList> element of the MCVideo user profile document (see the MCVideo user profile document in 3GPP TS 24.484 [50]);

then:

i) shall reject the SIP MESSAGE request with a SIP 403 (Forbidden) response including warning text set to "155 user not authorised to change user's selected group" in a Warning header field as specified in clause 4.4, and not continue with the rest of the steps in this clause;

4) shall determine the public service identity of the controlling MCVideo function associated with the group identity contained in the <mcvideo-request-uri> element contained in the application/vnd.3gpp.mcvideo-info+xml MIME body;

NOTE 2: The public service identity can identify the controlling MCVideo function in the local MCVideo system or in an interconnected MCVideo system.

NOTE 3: If the controlling MCVideo function is in an interconnected MCVideo system in a different trust domain, then the public service identity can identify the MCVideo gateway server that acts as an entry point in the interconnected MCVideo system from the local MCVideo system.

NOTE 4: If the controlling MCVideo function is in an interconnected MCVideo system in a different trust domain, then the local MCVideo system can route the SIP request through an MCVideo gateway server that acts as an exit point from the local MCVideo system to the interconnected MCVideo system

NOTE 5: How the participating MCVideo function determines the public service identity of the controlling MCVideo function associated with the group identity or of the MCVideo gateway server in the interconnected MCVideo system is out of the scope of the present document.

NOTE 6: How the local MCVideo system routes the SIP request through an exit MCVideo gateway server is out of the scope of the present document.

5) shall generate a SIP MESSAGE request in accordance with 3GPP TS 24.229 [11] and IETF RFC 3428 [33];

6) shall set the Request-URI of the outgoing SIP MESSAGE request to the public service identity of the controlling MCVideo function determined in step 4) ;

NOTE 7: The public service identity can identify the controlling function in the local MCVideo system or in an interconnected MCVideo system.

NOTE 8: If the controlling MCVideo function is in an interconnected MCVideo system in a different trust domain, then the public service identity can identify the MCVideo gateway server that acts as an entry point in the interconnected MCVideo system from the local MCVideo system.

NOTE 9: If the controlling MCVideo function is in an interconnected MCVideo system in a different trust domain, then the local MCVideo system can route the SIP request through an MCVideo gateway server that acts as an exit point from the local MCVideo system to the interconnected MCVideo system.

NOTE 10: How the participating MCVideo function determines the public service identity of the controlling MCVideo function associated with the group identity or of the MCVideo gateway server in the interconnected MCVideo system is out of the scope of the present document.

NOTE 11: How the local MCVideo system routes the SIP request through an exit MCVideo gateway server is out of the scope of the present document.

7) shall copy the contents of the application/vnd.3gpp.mcvideo-info+xml MIME body in the received SIP MESSAGE request into an application/vnd.3gpp.mcvideo-info+xml MIME body as specified in clause F.1 included in the outgoing SIP MESSAGE request;

8) shall copy the contents of the application/resource-lists MIME body into the outgoing SIP MESSAGE request;

9) shall set the <mcvideo-calling-user-id> element of the <mcvideoinfo> element containing the <mcvideo-Params> element to the MCVideo ID determined in step 2) above;

10) shall set the P-Asserted-Identity in the outgoing SIP MESSAGE request to the public user identity in the P-Asserted-Identity header field contained in the received SIP MESSAGE request;

11) shall include an Accept-Contact header field containing the g.3gpp.mcvideo media feature tag along with the "require" and "explicit" header field parameters according to IETF RFC 3841 [20];

12) shall include an Accept-Contact header field with the media feature tag g.3gpp.icsi-ref with the value of "urn:urn-7:3gpp-service.ims.icsi.mcvideo" along with parameters "require" and "explicit" according to IETF RFC 3841 [20];

13) shall include the ICSI value "urn:urn-7:3gpp-service.ims.icsi.mcvideo" (coded as specified in 3GPP TS 24.229 [11]), into the P-Asserted-Service header field of the outgoing SIP MESSAGE request; and

14) shall send the SIP MESSAGE request as specified to 3GPP TS 24.229 [11].

Upon receipt of a SIP 2xx response in response to the sent SIP MESSAGE request, the participating MCVideo function shall generate a SIP 200 (OK) response and forward the SIP 200 (OK) response to the MCVideo client.

Upon receipt of a SIP 4xx, 5xx or 6xx response to the SIP MESSAGE request, shall forward the error response to the MCVideo client.

9.2.4.3.2 Terminating procedures

Upon receiving a "SIP MESSAGE request for group-selection-change for terminating participating MCVideo function" the participating MCVideo function:

1) if unable to process the request due to a lack of resources or a risk of congestion exists, may reject the SIP MESSAGE request with a SIP 500 (Server Internal Error) response. The participating MCVideo function may include a Retry-After header field to the SIP 500 (Server Internal Error) response as specified in IETF RFC 3261 [15] and skip the rest of the steps;

2) shall use the MCVideo ID present in the <mcvideo-request-uri> element of the application/vnd.3gpp.mcvideo-info+xml MIME body of the incoming SIP MESSAGE request to retrieve the binding between the MCVideo ID and public user identity;

3) if the binding between the MCVideo ID and public user identity does not exist, then the participating MCVideo function shall reject the SIP MESSAGE request with a SIP 404 (Not Found) response. Otherwise, continue with the rest of the steps;

4) shall generate an outgoing SIP MESSAGE request as specified in clause 6.3.2.2.11;

5) shall include the ICSI value "urn:urn-7:3gpp-service.ims.icsi.mcvideo" (coded as specified in 3GPP TS 24.229 [11]), into the P-Asserted-Service header field of the outgoing SIP MESSAGE request; and

6) shall send the SIP MESSAGE request as specified in 3GPP TS 24.229 [11].

Upon receipt of SIP 2xx responses to the outgoing SIP MESSAGE requests, the participating MCVideo function shall forward the SIP 2xx response to the controlling MCVideo function.

Upon receipt of a SIP 4xx, 5xx or 6xx response to the SIP MESSAGE request, shall forward the response to the controlling MCVideo function.

9.2.4.4 Controlling MCVideo function procedures

Upon receiving:

- a "SIP MESSAGE request for group selection change request for controlling MCVideo function"; or

- a "SIP MESSAGE request for group selection change response for controlling MCVideo function";

the controlling MCVideo function:

1) if unable to process the request due to a lack of resources or a risk of congestion exists, may reject the SIP MESSAGE request with a SIP 500 (Server Internal Error) response. The controlling MCVideo function may

include a Retry-After header field to the SIP 500 (Server Internal Error) response as specified in IETF RFC 3261 [15]. Otherwise, continue with the rest of the steps;

2) shall reject the SIP request with a SIP 403 (Forbidden) response and not process the remaining steps if an Accept-Contact header field does not include the g.3gpp.icsi-ref media feature tag containing the value of "urn:urn-7:3gpp-service.ims.icsi.mcvideo";

2A) if the group document contains a <list-service> element that contains a <preconfigured-group-use-only> element that is set to the value "true", shall reject the SIP request with a SIP 403 (Forbidden) response with the warning text set to "167 call is not allowed on the preconfigured group" as specified in clause 4.4 "Warning header field" and skip the rest of the steps;

3) if there is a <request-type> element set to a value of "group-selection-change-request" contained in the <anyExt> element in the <mcvideo-Params> element contained in the <mcvideoinfo> root element contained in the application/vnd.3gpp.mcvideo-info+xml MIME body in the received SIP MESSAGE request:

   a) if the MCVideo user identified by the MCVideo ID in the application/resource-lists MIME body contained in the SIP MESSAGE request is not affiliated with the MCVideo group identified by the <mcvideo-request-uri> in the application/vnd.3gpp.mcvideo-info+xml MIME body as determined by the procedures of clause 6.3.6:

      i) shall determine if the MCVideo user is eligible to be affiliated with the MCVideo group as determined by clause 8.2.2.3.8; and

      ii) if the MCVideo user is not eligible for affiliation, shall reject the SIP MESSAGE request with a SIP 403 (Forbidden) response with the warning text set to "120 user is not affiliated to this group" in a Warning header field as specified in clause 4.4 and skip the rest of the steps below;

4) shall generate a SIP MESSAGE request in accordance with 3GPP TS 24.229 [11] and IETF RFC 3428 [33];

5) shall include an Accept-Contact header field containing the g.3gpp.mcvideo media feature tag along with the "require" and "explicit" header field parameters according to IETF RFC 3841 [20];

6) shall include an Accept-Contact header field with the media feature tag g.3gpp.icsi-ref with the value of "urn:urn-7:3gpp-service.ims.icsi.mcvideo" along with parameters "require" and "explicit" according to IETF RFC 3841 [20];

7) shall copy the contents of the application/vnd.3gpp.mcvideo-info+xml MIME body in the received SIP MESSAGE request into an application/vnd.3gpp.mcvideo-info+xml MIME body included in the outgoing SIP MESSAGE request with the following clarifications:

   a) shall set the <mcvideo-calling-group-id> to the MCVideo group identity contained in the <mcvideo-request-uri> element contained in the application/vnd.3gpp.mcvideo-info+xml MIME body included in the received SIP MESSAGE request; and

   b) shall set the <mcvideo-request-uri> element of the application/vnd.3gpp.mcvideo-info+xml MIME body in the outgoing SIP MESSAGE request to the MCVideo ID of the targeted MCVideo user contained in the application/resource-lists MIME body contained in the received SIP MESSAGE request;

8) if the received SIP MESSAGE request is a "SIP MESSAGE request for group selection change request for controlling MCVideo function":

   a) if the targeted MCVideo user is not affiliated to the identified MCVideo group and was determined to be eligible to be affiliated with the MCVideo group in step 3) a) i) above, shall include in the application/vnd.3gpp.mcvideo-info+xml MIME body with the <mcvideoinfo> element containing the <mcvideo-Params> element with the <anyExt> element an <affiliation-required> element set to a value of "true";

9) shall set the Request-URI to the public service identity of the terminating participating MCVideo function associated with the targeted MCVideo user;

NOTE 1: The public service identity can identify the terminating participating function in the local MCVideo system or in an interconnected MCVideo system.

NOTE 2: If the terminating participating MCVideo function is in an interconnected MCVideo system in a different trust domain, then the public service identity can identify the MCVideo gateway server that acts as an entry point in the interconnected MCVideo system from the local MCVideo system.

NOTE 3: If the terminating participating MCVideo function is in an interconnected MCVideo system in a different trust domain, then the local MCVideo system can route the SIP request through an MCVideo gateway server that acts as an exit point from the local MCVideo system to the interconnected MCVideo system.

NOTE 4: How the controlling MCVideo function determines the public service identity of the terminating participating MCVideo function associated with the targeted MCVideo user or of the MCVideo gateway server in the interconnected MCVideo system is out of the scope of the present document.

NOTE 5: How the local MCVideo system routes the SIP request through an exit MCVideo gateway server is out of the scope of the present document.

10) shall include a P-Asserted-Service header field with the value "urn:urn-7:3gpp-service.ims.icsi.mcvideo";

11) shall copy the public user identity of the calling MCVideo user from the P-Asserted-Identity header field of the incoming SIP MESSAGE request into the P-Asserted-Identity header field of the outgoing SIP MESSAGE request; and

12) shall send the SIP MESSAGE request according to according to rules and procedures of 3GPP TS 24.229 [11].

Upon receipt of SIP 2xx responses to the outgoing SIP MESSAGE requests, the controlling MCVideo function shall generate a SIP 200 (OK) response and forward the SIP 200 (OK) response to the originating participating MCVideo function.

Upon receipt of a SIP 4xx, 5xx or 6xx response to the SIP MESSAGE request, controlling MCVideo function shall forward the error response to the originating participating MCVideo function.

9.3 Off-network group call

9.3.1 General

9.3.1.1 Common Procedures

9.3.1.1.1 MONP MCVideo message transport

In order to participate in a call of an MCVideo group, the MCVideo client:

1) shall send the MONP MCVideo message transported in a MONP MCVIDEO MESSAGE CARRIER message, specified in 3GPP TS 24.379 [40], as a UDP message to the multicast IP address of the MCVideo group, on UDP port 8809 (as specified in 3GPP TS 24,379 [40]), with an IP time-to-live set to 255; and

2) shall treat UDP messages received on the multicast IP address of the MCVideo group and on port 8809 as received MONP MCVIDEO MESSAGE CARRIER messages.

The MONP MCVIDEO MESSAGE CARRIER message is the entire payload of the UDP message.

9.3.1.1.2 Session description

One off-network MCVideo session includes one media-transmission control entity.

The MCVideo client shall generate an SDP body for a group call in accordance with rules and procedures of IETF RFC 4566 [2].

The MCVideo client:

1) shall include in the session-level section:

   a) the "o=" field with the <username> portion set to a dash;

b) the "s=" field with the <session name> portion set to a dash; and

c) the "c=" field with the <nettype> portion set to "IN", the <addrtype> portion set to the IP version of a multicast IP address of the MCVideo group and the <connection-address> portions set to the multicast IP address of the MCVideo group;

2) shall include the media-level section for audio component of MCVideo consisting of:

a) the "m=" field with the <media> portion set to "audio", the <port> portion set to a port number for MCVideo group, the <proto> field set to "RTP/AVP" and <fmt> portion set indicating RTP payload type numbers;

b) the "i=" field with the <session description> portion set to "audio component of MCVideo";

c) the "a=fmtp:" attribute(s), the "a=rtpmap:" attribute(s) or both, indicating the codec(s) and media parameters of the audio component of MCVideo;

d) the "a=rtcp:" attribute indicating port number to be used for RTCP at the MCVideo client selected according to the rules and procedures of IETF RFC 3605 [3], if the media steam uses other than the default IP address;

3) shall include the media-level section for video component of MCVideo consisting of:

a) the "m=" field with the <media> portion set to "video", the <port> portion set to a port number for MCVideo video of the MCVideo group, the <proto> field set to "RTP/AVP" and <fmt> portion set indicating RTP payload type numbers;

b) the "i=" field with the <session description> portion set to "video component of MCVideo";

c) the "a=fmtp:" attribute(s), the "a=rtpmap:" attribute(s) or both, indicating the codec(s) and media parameters of the MCVideo video;

d) the "a=rtcp:" attribute indicating port number to be used for RTCP at the MCVideo client selected according to the rules and procedures of IETF RFC 3605 [3], if the media stream uses other than the default IP address; and

4) shall include the media-level section for media-transmission control entity consisting of:

a) an "m=" line, with the <media> portion set to "application", the <port> portion set to a port number for media-transmission control entity of the MCVideo group, the <proto> field set to "udp" and <fmt> portion set to "MCVideo"; and

b) the "a=fmtp:MCVideo" attribute indicating the parameters of the media-transmission control entity as specified in 3GPP TS 24.581 [5].

9.3.2 Basic call control

9.3.2.1 General

In this release of specification, media streams of off-network group call cannot be modified and the SDP is the same for the entire duration of the call.

The maximum number of simultaneous off-network group calls is limited by the value of "/<x>/Common/MCVideoGroupCall/MaxCallNc4" leaf node present in the MCVideo UE configuration as specified in 3GPP TS 24.483 [4].

9.3.2.2 Basic call control state machine

The Figure 9.3.2.2-1 gives an overview of the main states and transitions on the UE for call control.

Each call control state machine is per MCVideo group ID.

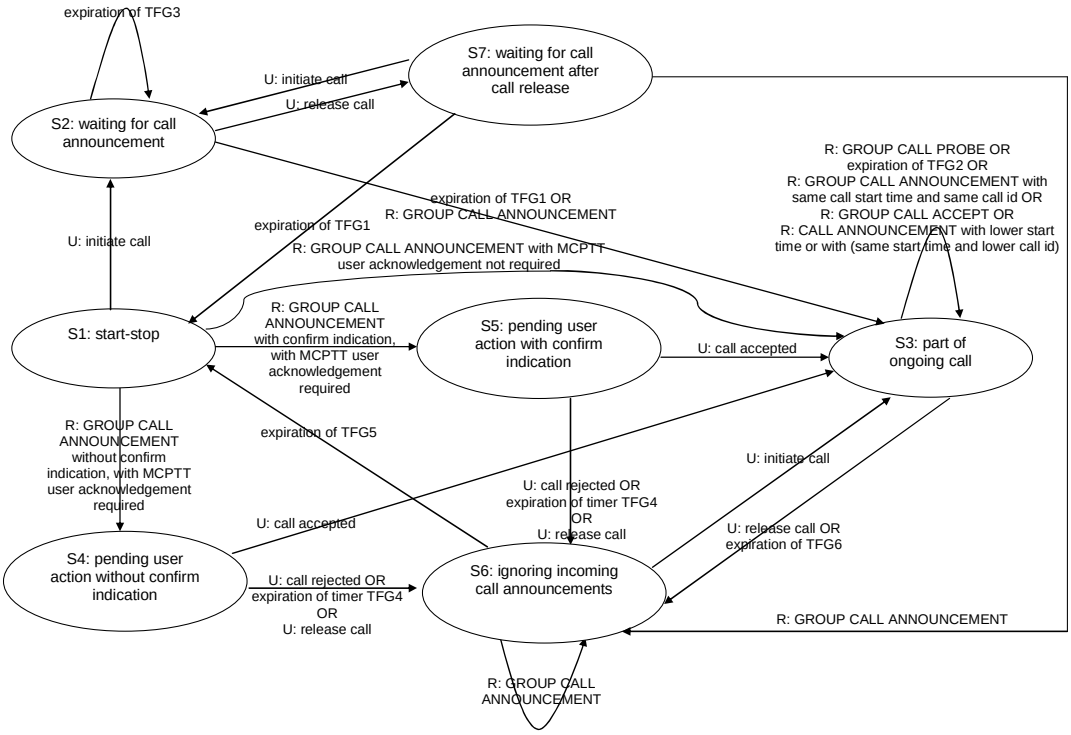

Figure 9.3.2.2-1: Basic call control state machine

The following pieces of information are associated with the basic call control state machine:

a) the stored call identifier of the call;

b) the probe response value of the call;

c) the stored refresh interval of the call;

d) the stored SDP body of the call;

e) the stored originating MCVideo user ID of the call;

f) the stored MCVideo group ID of the call; and

h) the stored call start time of the call.

The basic call control state machine has a related call type control state machine described in clause 9.3.3.2.

When sending the message, MCVideo client indicates the stored current ProSe per-packet priority associated with the call type control state machine to the lower layers.

9.3.2.3 Call Control states

9.3.2.3.1 S1: start-stop

This state exists for UE, when the UE is not part of an ongoing call.

This state is the start state of this state machine.

This state is the stop state of this state machine.

9.3.2.3.2 S2: waiting for call announcement

This state exists for UE, when the UE has sent a GROUP CALL PROBE message and is waiting for a GROUP CALL ANNOUNCEMENT message.

9.3.2.3.3 S3: part of ongoing call

This state exists for UE, when the UE is part of an ongoing group call.

9.3.2.3.4 S4: pending user action without confirm indication

This state exists for UE, when the UE has presented a notification to the MCVideo user for the received GROUP CALL ANNOUNCEMENT message, is waiting for a response and is not expected to send confirm indication.

9.3.2.3.5 S5: pending user action with confirm indication

This state exists for UE, when the UE has presented a notification to the MCVideo user for the received GROUP CALL ANNOUNCEMENT message, is waiting for a response and is expected to send confirm indication.

9.3.2.3.6 S6: ignoring incoming call announcements

This state exists for UE, when the group call was rejected or released, GROUP CALL ANNOUNCEMENT message was sent or received and GROUP CALL ANNOUNCEMENT messages continue being received.

9.3.2.3.7 S7: waiting for call announcement after call release

This state exists for UE, when the group call was released, GROUP CALL ANNOUNCEMENT message was neither sent nor received and GROUP CALL PROBE was sent.

9.3.2.4 Procedures

9.3.2.4.1 General

9.3.2.4.1.1 Call announcement timer calculation

9.3.2.4.1.1.1 Periodic call announcement timer calculation

The MCVideo client:

1) shall generate a random number, X, with uniform distribution between 0 and 1; and
2) shall set the TFG2 (periodic announcement) timer as follows:
   - TFG2 (periodic announcement) = the refresh interval of the call * (2/3 + 2/3*X) seconds.

9.3.2.4.1.1.2 Call announcement timer calculation after CALL PROBE

The MCVideo client:

1) shall generate a random number, X, with uniform distribution between 0 and 1; and
2) shall set the TFG2 (periodic announcement) timer as follows:
   - TFG2 (periodic announcement) = 1/12*X seconds.

9.3.2.4.1.2 Max duration timer calculation

The MCVideo client shall set the TFG6 (max duration) timer as follows:

- TFG6 (max duration) = X – (Y – Z) seconds, where:

- X = value of "/<x>/<x>/OffNetwork/MCVideo/MaxDuration" leaf node present in group configuration as specified in 3GPP TS 24.483 [4];
- Y = current UTC time, in seconds since midnight UTC of January 1, 1970 (not counting leap seconds);
- Z = Call start time IE of the GROUP CALL ANNOUNCEMENT message.

9.3.2.4.2 Call Probe

9.3.2.4.2.1 Call probe initiation

When in the "S1: start-stop" state, upon an indication from an MCVideo user to initiate a group call for an MCVideo group ID, the MCVideo client:

1) shall store the MCVideo group ID as the MCVideo group ID of the call;
2) shall create a call type control state machine as described in clause 9.3.3.2;
3) shall generate a GROUP CALL PROBE message as specified in clause 17.1.2. In the GROUP CALL PROBE message, the MCVideo client:
   a) shall set the MCVideo group ID IE to the stored MCVideo group ID of the call;
4) shall send the GROUP CALL PROBE message as specified in clause 9.3.1.1.1;
5) shall start timer TFG3 (call probe retransmission);
6) shall start timer TFG1 (wait for call announcement); and
7) shall enter the "S2: waiting for call announcement" state.

9.3.2.4.2.2 Call probe retransmission

When in the "S2: waiting for call announcement" state, upon expiration of TFG3 (call probe retransmission), the MCVideo client:

1) shall generate a GROUP CALL PROBE message as specified in clause 17.1.2. In the GROUP CALL PROBE message, the MCVideo client:
   a) shall set the MCVideo group ID IE to the stored MCVideo group ID of the call;
2) shall send the GROUP CALL PROBE message as specified in clause 9.3.1.1.1;
3) shall start timer TFG3 (call probe retransmission); and
4) shall remain in the "S2: waiting for call announcement" state.

9.3.2.4.2.3 Receiving GROUP CALL PROBE message when participating in the ongoing call

When in the "S3: part of ongoing call" state, upon receiving a GROUP CALL PROBE message with the MCVideo group ID IE matching the stored MCVideo group ID of the call, the MCVideo client:

1) if the stored probe response value of the call is set to "false":
   a) shall stop timer TFG2 (call announcement);
   b) shall start timer TFG2 (call announcement) with value as specified in clause 9.3.2.4.1.1.2; and
   c) shall set the stored probe response of the call to "true"; and
2) shall remain in the "S3: part of ongoing call" state.

9.3.2.4.3 Call setup

9.3.2.4.3.1 Not receiving any response to GROUP CALL PROBE message

When in the "S2: waiting for call announcement" state, upon expiry of timer TFG1 (wait for call announcement), the MCVideo client:

1) shall stop timer TFG3 (call probe retransmission), if running;
2) shall generate an SDP body as specified in clause 9.3.1.1.2 and store it as the SDP body of the call;
3) shall generate a random number with uniform distribution between 0 and 65535 and store it as the call identifier of the call;
4) shall select refresh interval value and store it as the refresh interval of the call;
5) shall store own MCVideo user ID as the originating MCVideo user ID of the call;
6) shall store the current UTC time as the call start time of the call;
7) shall generate a GROUP CALL ANNOUNCEMENT message as specified in clause 17.1.3. In the GROUP CALL ANNOUNCEMENT message, the MCVideo client:
   a) shall set the Call identifier IE to the stored call identifier of the call;
   b) shall set the Call type IE to the stored current call type associated with the call type control state machine;
   c) shall set the Refresh interval IE to the stored refresh interval of the call;
   d) shall set the SDP IE to the stored SDP body of the call;
   e) shall set the Originating MCVideo user ID IE to the stored originating MCVideo user ID of the call;
   f) shall set the MCVideo group ID IE to the stored MCVideo group ID of the call;
   g) shall set the Call start time IE to the stored call start time of the call;
   h) shall set the Last call type change time IE to the stored last call type change time of the call associated with call type control state machine;
   i) shall set the Last user to change call type IE to last user to change call type associated with call type control state machine; and
   j) may include the Confirm mode indication IE;
8) shall send the GROUP CALL ANNOUNCEMENT message as specified in clause 9.3.1.1.1;
9) shall establish a media session based on the stored SDP body of the call;
10) shall start transmission control as originating transmission participant as specified in clause a.b in 3GPP TS 24.581 [5];
11) shall start timer TFG6 (max duration) with value as specified in clause 9.3.2.4.1.2;
12) shall start timer TFG2 (call announcement) with value as specified in clause 9.3.2.4.1.1.1; and
13) shall enter the "S3: part of ongoing call" state.

Note: In this release of the specification, the refresh interval of the call is fixed to 10 seconds.

9.3.2.4.3.2 Receiving a GROUP CALL ANNOUNCEMENT message

When in the "S2: waiting for call announcement" state, upon receiving a GROUP CALL ANNOUNCEMENT message with the MCVideo group ID IE matching the stored MCVideo group ID of the call, the MCVideo client:

1) shall stop timer TFG3 (call probe retransmission);

2) shall stop timer TFG1 (wait for call announcement);

3) shall store the value of the SDP IE of the GROUP CALL ANNOUNCEMENT message as the SDP body of the call;

4) shall store the value of the Call identifier IE of the GROUP CALL ANNOUNCEMENT message as the call identifier of the call;

5) shall store the value of the originating MCVideo user ID IE of the GROUP CALL ANNOUNCEMENT message as the Originating MCVideo user ID of the call;

6) shall store the value of the Refresh interval IE of the GROUP CALL ANNOUNCEMENT message as the refresh interval of the call;

7) shall store the value of the Call start time IE of the GROUP CALL ANNOUNCEMENT message as the call start time of the call;

8) shall establish a media session based on the stored SDP body of the call;

9) shall start transmission control as terminating transmission participant as specified in clause a.b in 3GPP TS 24.581 [5];

10) shall start timer TFG6 (max duration) with value as specified in clause 9.3.2.4.1.2;

11) shall start timer TFG2 (call announcement) with value as specified in clause 9.3.2.4.1.1.1; and

12) shall enter the "S3: part of ongoing call" state.

9.3.2.4.3.3 Receiving a GROUP CALL ANNOUNCEMENT message when not participating in the ongoing call

When in the "S1: start-stop" state, upon receiving a GROUP CALL ANNOUNCEMENT message with the MCVideo group ID IE not matching MCVideo group ID of the call stored for other state machines, the MCVideo client:

1) shall store the value of the SDP IE of the GROUP CALL ANNOUNCEMENT message as the SDP body of the call;

2) shall store the value of the Call identifier IE of the GROUP CALL ANNOUNCEMENT message as the call identifier of the call;

3) shall store the value of the Originating MCVideo user ID IE of the GROUP CALL ANNOUNCEMENT message as the originating MCVideo user ID of the call;

4) shall store the value of the Refresh interval IE of the GROUP CALL ANNOUNCEMENT message as the refresh interval of the call;

5) shall store the value of the MCVideo group ID IE of the GROUP CALL ANNOUNCEMENT message as the MCVideo group ID of the call;

6) shall store the value of the Call start time IE of the GROUP CALL ANNOUNCEMENT message as the call start time of the call;

7) shall create a call type control state machine as described in clause 9.3.3.2;

8) if the terminating UE is configured that the terminating MCVideo user acknowledgement is required upon a terminating call request reception:

   a) shall start timer TFG4 (waiting for the user);

   b) if the GROUP CALL ANNOUNCEMENT message contains the Confirm mode indication IE, shall enter the "S5: pending user action with confirm indication" state; and

   c) if the GROUP CALL ANNOUNCEMENT message does not contains the Confirm mode indication IE, shall enter the "S4: pending user action without confirm indication" state; and

9) if the terminating UE is configured that the terminating MCVideo user acknowledgement is not required upon a terminating call request reception:

   a) shall establish a media session based on the stored SDP body of the call;

   b) shall start transmission control as terminating transmission participant as specified in clause a.b in 3GPP TS 24.581 [5];

   c) if the GROUP CALL ANNOUNCEMENT message contains the Confirm mode indication IE:

      i) shall generate a GROUP CALL ACCEPT message as specified in clause 17.1.4. In the GROUP CALL ACCEPT message, the MCVideo client:

         A) shall set the Call identifier IE to the stored call identifier of the call;

         B) shall set the Sending MCVideo user ID IE to own MCVideo user id;

         C) shall set the Call type IE to the stored current call type associated with the call type control state machine; and

         D) shall set the MCVideo group ID IE to the stored MCVideo group ID of the call; and

      ii) shall send the GROUP CALL ACCEPT message as specified in clause 9.3.1.1.1;

   d) shall start timer TFG6 (max duration) with value as specified in clause 9.3.2.4.1.2;

   e) shall start timer TFG2 (call announcement) with value as specified in clause 9.3.2.4.1.1.1; and

   f) shall enter the "S3: part of ongoing call" state.

9.3.2.4.3.4 MCVideo user accepts the terminating call with confirm indication

When in the "S5: pending user action with confirm indication" state, upon indication from the MCVideo user to accept the incoming group call, the MCVideo client:

1) shall establish a media session based on the stored SDP body of the call;

2) shall start transmission control as terminating transmission participant as specified in clause a.b in 3GPP TS 24.581 [5];

3) shall generate a GROUP CALL ACCEPT message as specified in clause 17.1.4. In the GROUP CALL ACCEPT message, the MCVideo client:

   a) shall set the Call identifier IE to the stored call identifier of the call;

   b) shall set the Sending MCVideo user ID IE to own MCVideo user id;

   c) shall set the Call type IE to the stored current call type associated with the call type control state machine; and

   d) shall set the MCVideo group ID IE to the stored MCVideo group ID of the call; and

4) shall send the GROUP CALL ACCEPT message as specified in clause 9.3.1.1.1;

5) shall start timer TFG6 (max duration) with value as specified in clause 9.3.2.4.1.2;

6) shall start timer TFG2 (call announcement) with value as specified in clause 9.3.2.4.1.1.1; and

7) shall enter the "S3: part of ongoing call" state.

9.3.2.4.3.5 MCVideo user accepts the terminating call without confirm indication

When in the "S4: pending user action without confirm indication" state, upon an indication from the MCVideo user to accept the incoming group call, the MCVideo client:

1) shall establish a media session based on the stored SDP body of the call;

2) shall start transmission control as terminating transmission participant as specified in clause a.b in 3GPP TS 24.581 [5];

3) shall start timer TFG6 (max duration) with value as specified in clause 9.3.2.4.1.2;

4) shall start timer TFG2 (call announcement) with value as specified in clause 9.3.2.4.1.1.1; and

5) shall enter the "S3: part of ongoing call" state.

9.3.2.4.3.6 Receiving GROUP CALL ACCEPT message

When in the "S3: part of ongoing call" state, upon receiving a GROUP CALL ACCEPT message with the MCVideo group ID IE matching the stored MCVideo group ID of the call, the MCVideo client:

1) can inform the MCVideo user about the call acceptance; and

2) shall remain in the "S3: part of ongoing call" state.

9.3.2.4.3.7 MCVideo user rejects the terminating call

When in the "S5: pending user action with confirm indication" state or the "S4: pending user action without confirm indication" state, upon an indication from the MCVideo user to reject the incoming group call, the MCVideo client:

1) shall stop timer TFG4 (waiting for the user);

2) shall start timer TFG5 (not present incoming call announcements); and

3) shall enter the "S6: ignoring incoming call announcements" state.

9.3.2.4.3.8 MCVideo user does not act on terminating call

When in the "S5: pending user action with confirm indication" state or the "S4: pending user action without confirm indication" state, upon expiration of timer TFG4 (waiting for the user), the MCVideo client:

1) shall start timer TFG5 (not present incoming call announcements); and

2) shall enter the "S6: ignoring incoming call announcements" state.

9.3.2.4.4 Periodic group call announcement

9.3.2.4.4.1 Sending periodic call announcement

When in the "S3: part of ongoing call" state, upon expiry of timer TFG2 (call announcement), the MCVideo client:

1) shall generate a GROUP CALL ANNOUNCEMENT message as specified in clause 17.1.3. In the GROUP CALL ANNOUNCEMENT message, the MCVideo client:

   a) shall set the Call identifier IE to the stored call identifier of the call;

   b) shall set the Call type IE to the stored current call type associated with the call type control state machine;

   c) shall set the Refresh interval IE to the stored refresh interval of the call;

   d) shall set the SDP IE to the stored SDP body of the call;

   e) shall set the Originating MCVideo user ID IE to the stored originating MCVideo user ID of the call;

   f) shall set the MCVideo group ID IE to the stored MCVideo group ID of the call;

   g) shall set the Last call type change time IE to the stored last call type change time of the call associated with call type control state machine;

   h) shall set the Last user to change call type IE to last user to change call type associated with call type control state machine;

i) shall set the Call start time IE to the stored call start time of the call;

j) if the stored probe response value of the call is set to "true", shall include Probe response IE;

2) shall send the GROUP CALL ANNOUNCEMENT message as specified in clause 9.3.2.1.1.1;

3) if the stored probe response value of the call is set to "true", shall set the stored probe response value of the call to "false";

4) shall start timer TFG2 (call announcement) with value as specified in clause 9.3.2.4.1.1.1; and

5) shall remain in the "S3: part of ongoing call" state.

9.3.2.4.4.2 Receiving periodic call announcement

When in the "S3: part of ongoing call" state, upon receiving a GROUP CALL ANNOUNCEMENT message with the MCVideo group ID IE matching the stored MCVideo group ID of the call, the Call start time IE being the same as the stored call start time of the call, the Last call type change time IE being the same as the stored last call type change time of the call associated with the call type control state machine, the Last user to change call type IE being the same as the stored last user to change call type of the call associated with the call type control state machine and the Call identifier IE being the same as the stored call identifier of the call and Call type IE same as the stored current call type associated with the call type control state machine and:

1) if the stored probe response value of the call is set to "true" and GROUP CALL ANNOUNCEMENT message contains Probe response IE; or

2) if the stored probe response value of the call is set to "false":

the MCVideo client,

1) shall stop timer TFG2 (call announcement);

2) shall start timer TFG2 (call announcement) with value as specified in clause 9.3.2.4.1.1.1;

3) shall set the stored probe response of the call to "false", if set to "true"; and

4) shall remain in the "S3: part of ongoing call" state.

9.3.2.4.5 Call release

9.3.2.4.5.1 MCVideo user leaves the call when GROUP CALL ANNOUNCEMENT was sent or received

When in the "S3: part of ongoing call" state, the "S5: pending user action with confirm indication" state, or the "S4: pending user action without confirm indication" state, upon an indication from the MCVideo user to release the group call, the MCVideo client:

1) shall release the media session, if established;

2) shall stop timer TFG4 (waiting for the user), if running;

3) shall stop timer TFG2 (call announcement), if running;

4) shall start timer TFG5 (not present incoming call announcements); and

5) shall enter the "S6: ignoring incoming call announcements" state.

9.3.2.4.5.2 Receiving GROUP CALL ANNOUNCEMENT message for rejected or released call

When in the "S6: ignoring incoming call announcements" state, upon receiving a GROUP CALL ANNOUNCEMENT message with the MCVideo group ID IE matching the stored MCVideo group ID of the call, the MCVideo client:

1) shall store the value of the SDP IE of the GROUP CALL ANNOUNCEMENT message as the SDP body of the call;

2) shall store the value of the Call identifier IE of the GROUP CALL ANNOUNCEMENT message as the call identifier of the call;

3) shall store the value of the Originating MCVideo user ID IE of the GROUP CALL ANNOUNCEMENT message as the originating MCVideo user ID of the call;

4) shall store the value of the Refresh interval IE of the GROUP CALL ANNOUNCEMENT message as the refresh interval of the call;

5) shall store the value of the Call start time IE of the GROUP CALL ANNOUNCEMENT message as the call start time of the call;

6) shall stop timer TFG5 (not present incoming call announcements);

7) shall start timer TFG5 (not present incoming call announcements); and

8) shall remain in the "S6: ignoring incoming call announcements" state.

9.3.2.4.5.3 MCVideo user initiates originating call for rejected or released call

When in the "S6: ignoring incoming call announcements" state, upon an indication from the MCVideo user to initiate a group call for an MCVideo group ID matching the stored MCVideo group ID of the call, the MCVideo client:

1) stop timer TFG5 (not present incoming call announcements);

2) shall establish a media session based on the stored SDP body of the call;

3) shall start transmission control as terminating transmission participant as specified in clause a.b in 3GPP TS 24.581 [5];

4) shall start timer TFG6 (max duration) with value as specified in clause 9.3.2.4.1.2;

5) shall start timer TFG2 (call announcement) with value as specified in clause 9.3.2.4.1.1.1; and

6) shall enter the "S3: part of ongoing call" state.

9.3.2.4.5.4 No GROUP CALL ANNOUNCEMENT messages for rejected or released call

When in the "S6: ignoring incoming call announcements" state, upon expiration of timer TFG5 (not present incoming call announcements), the MCVideo client:

1) shall release the stored SDP body of the call;

2) shall release the stored call identifier of the call;

3) shall release the stored originating MCVideo user ID of the call;

4) shall release the stored refresh interval of the call;

5) shall release the stored MCVideo group ID of the call;

6) shall release the call start time of the call;

7) shall destroy the call type control state machine; and

8) shall enter the "S1: start-stop" state.

9.3.2.4.5.5 MCVideo user leaves the call when GROUP CALL PROBE was sent

When in the "S2: waiting for call announcement" state, upon an indication from the MCVideo user to release the group call, the MCVideo client:

1) shall stop timer TFG3 (call probe retransmission); and

2) shall enter the "S7: Waiting for call announcement after call release" state.

9.3.2.4.5.6 MCVideo user initiates originating call for released call

When in the "S7: Waiting for call announcement after call release" state, upon an indication from the MCVideo user to initiate a group call for an MCVideo group ID matching the stored MCVideo group ID of the call, the MCVideo client:

1) shall stop timer TFG1 (wait for call announcement);
2) shall generate a GROUP CALL PROBE message as specified in clause 17.1.2. In the GROUP CALL PROBE message, the MCVideo client:
   a) shall set the MCVideo group ID IE to the stored MCVideo group ID of the call; and
3) shall send the GROUP CALL PROBE message as specified in clause 9.3.1.1.1;
4) shall start timer TFG3 (call probe retransmission);
5) shall start timer TFG1 (wait for call announcement); and
6) shall enter the "S2: waiting for call announcement" state.

9.3.2.4.5.7 Receiving GROUP CALL ANNOUNCEMENT message for released call

When in the "S7: Waiting for call announcement after call release" state, upon receiving a GROUP CALL ANNOUNCEMENT message with the MCVideo group ID IE matching the stored MCVideo group ID of the call, the MCVideo client:

1) shall store the value of the SDP IE of the GROUP CALL ANNOUNCEMENT message as the SDP body of the call;
2) shall store the value of the Call identifier IE of the GROUP CALL ANNOUNCEMENT message as the call identifier of the call;
3) shall store the value of the Originating MCVideo user ID IE of the GROUP CALL ANNOUNCEMENT message as the originating MCVideo user ID of the call;
4) shall store the value of the Refresh interval IE of the GROUP CALL ANNOUNCEMENT message as the refresh interval of the call;
5) shall store the value of the Call start time IE of the GROUP CALL ANNOUNCEMENT message as the call start time of the call;
6) shall stop timer TFG1 (wait for call announcement);
7) shall start timer TFG5 (not present incoming call announcements); and
8) shall enter the "S6: ignoring incoming call announcements" state.

9.3.2.4.5.8 No GROUP CALL ANNOUNCEMENT messages for released call

When in the "S7: Waiting for call announcement after call release" state, upon expiration of timer TFG1 (wait for call announcement), the MCVideo client:

1) shall release the stored MCVideo group ID of the call;
2) shall destroy the call type control state machine; and
3) shall enter the "S1: start-stop" state.

9.3.2.4.5.9 Max duration reached

When in the "S3: part of ongoing call" state, upon expiration of timer TFG6 (max duration), the MCVideo client:

1) shall release the media session;
2) shall stop timer TFG2 (call announcement), if running;

3) shall start timer TFG5 (not present incoming call announcements); and

4) shall enter the "S6: ignoring incoming call announcements" state.

9.3.2.4.6 Merge of calls

9.3.2.4.6.1 Merge of two calls

When in the "S3: part of ongoing call" state, upon receiving a GROUP CALL ANNOUNCEMENT message with the MCVideo group ID IE matching the stored MCVideo group ID of the call and:

1) the Originating MCVideo user ID IE is different from the stored originating MCVideo user ID of the call; or

2) the Call identifier IE is different from the stored call identifier of the call;

then:

1) if the stored current call type associated with the call type control state machine is "BASIC GROUP CALL" and the value of the Call type IE of GROUP CALL ANNOUNCEMENT message is either "IMMINENT PERIL GROUP CALL" or "EMERGENCY GROUP CALL";

2) if the stored current call type associated with the call type control state machine is "IMMINENT PERIL GROUP CALL" and the value of the Call type IE of GROUP CALL ANNOUNCEMENT message is "EMERGENCY GROUP CALL";

3) if the stored current call type associated with the call type control state machine being equal to the Call type IE of the GROUP CALL ANNOUNCEMENT message and the Call start time IE of the GROUP CALL ANNOUNCEMENT message being lower than the stored call start time of the call; or

4) if the stored current call type associated with the call type control state machine being equal to the Call type IE of the GROUP CALL ANNOUNCEMENT message and the Call start time IE of the GROUP CALL ANNOUNCEMENT message being equal to the stored call start time of the call and the Call identifier IE of the GROUP CALL ANNOUNCEMENT message being lower than the stored call identifier of the call;

the MCVideo client:

1) shall store the value of the SDP IE of the GROUP CALL ANNOUNCEMENT message as the SDP body of the call;

2) shall store the value of the Call identifier IE of the GROUP CALL ANNOUNCEMENT message as the call identifier of the call;

3) shall store the value of the Originating MCVideo user ID IE of the GROUP CALL ANNOUNCEMENT message as the originating MCVideo user ID of the call;

4) shall store the value of the Refresh interval IE of the GROUP CALL ANNOUNCEMENT message as the refresh interval of the call;

5) shall store the value of the Call start time IE of the GROUP CALL ANNOUNCEMENT message as the call start time of the call;

6) shall adjust the media session based on the stored SDP body of the call and restart transmission control as terminating transmission participant as specified in clause a.b in 3GPP TS 24.581 [5];

7) shall stop timer TFG6 (max duration);

8) shall start timer TFG6 (max duration) with value as specified in clause 9.3.2.4.1.2;

9) shall stop timer TFG2 (call announcement); and

10) shall start timer TFG2 (call announcement) with value according to rules and procedures as specified in clause 9.3.2.4.1.1.1; and

11) shall remain in the "S3: part of ongoing call" state.

9.3.2.4.7 Error handling

9.3.2.4.7.1 Unexpected MONP message received

Upon receiving an unexpected MONP message or MONP MCVideo message in a state where there is no handling specified for the MONP message or the MONP MCVideo message, the MCVideo client shall discard this message.

9.3.2.4.7.2 Unexpected indication from MCVideo user

Upon receiving an indication from the MCVideo user in a state where there is no handling specified for the indication, the MCVideo client shall ignore the indication.

9.3.2.4.7.3 Unexpected expiration of a timer

Upon expiration of a timer in a state where there is no handling specified for expiration of the timer, the MCVideo client shall ignore the expiration of the timer.

9.3.3. Call type control

9.3.3.1 General

This state machine exists in parallel with the basic call control state machine for off-network group call as specified in clause 9.3.2.2.

9.3.3.2 Call type control state machine

The Figure 9.3.3.2-1 gives an overview of the states and transitions of the state machine.

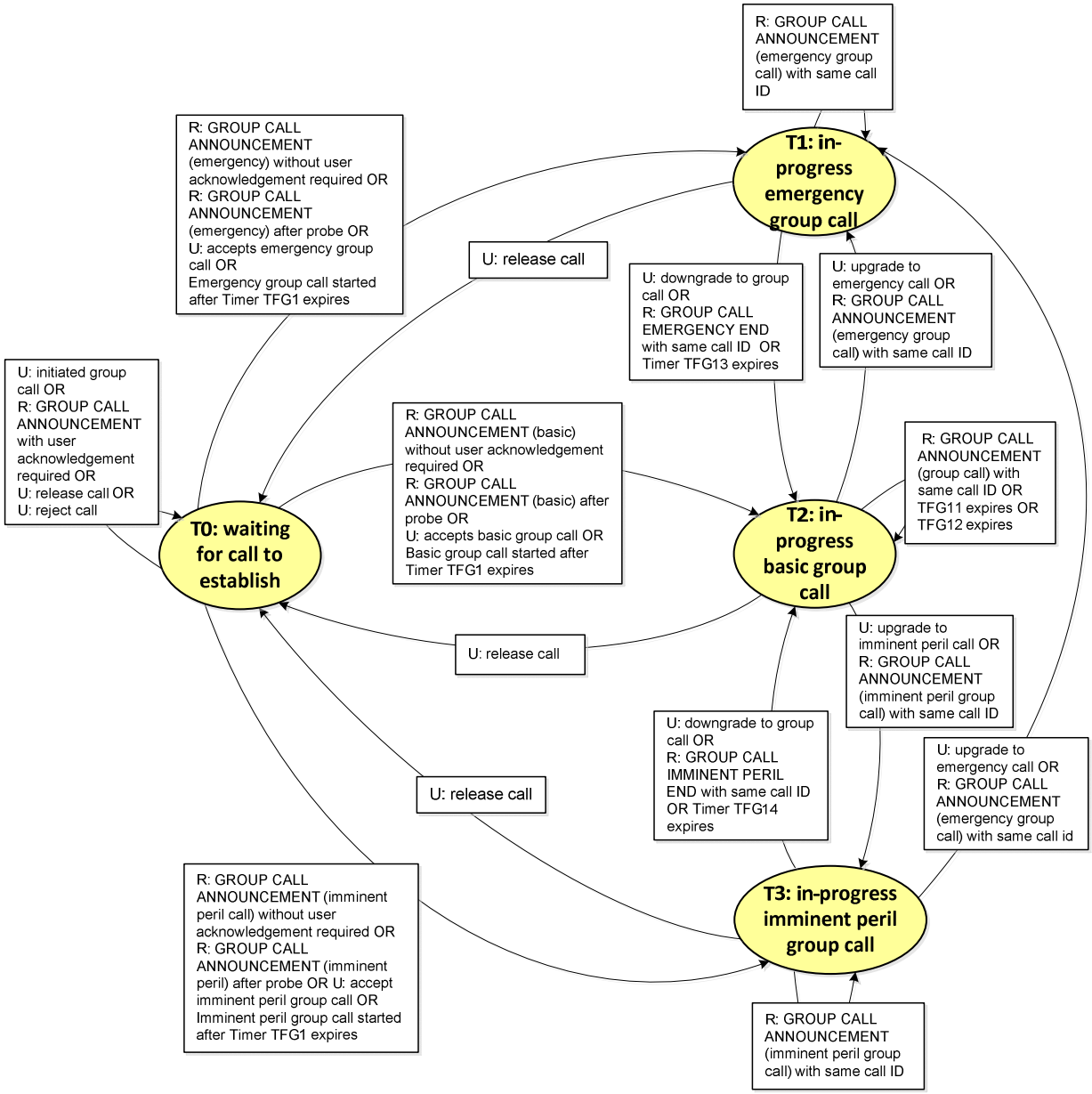

Figure 9.3.3.2-1: Call type control state machine

The following pieces of information are associated with the call type control state machine:

a) the stored current call type;

b) the stored current ProSe per-packet priority;

c) the stored last call type change time of the call; and

d) the stored last user to change call type of the call.

When sending the message, MCVideo client indicates the stored current ProSe per-packet priority (as described in 3GPP TS 24.483 [4]) associated with the call type control state machine to the lower layers.

9.3.3.3 Call type control states

9.3.3.3.1 T0: waiting for call to establish

This state is the start state of this state machine.

9.3.3.3.2 T1: in-progress emergency group call

This state exists for UE, when the UE is part of an in-progress emergency group call.

9.3.3.3.3 T2: in-progress basic group call

This state exists for UE, when the UE is part of an in-progress basic group call.

9.3.3.3.4 T3: in-progress imminent peril group call

This state exists for UE, when the UE is part of an in-progress imminent peril group call.

9.3.3.4 Procedures

9.3.3.4.1 General

9.3.3.4.1.1 Implicit downgrade (emergency) timer calculation

The MCVideo client shall set the TFG13 (implicit downgrade emergency) timer as follows:

1) TFG13 (implicit downgrade emergency) = X – (Y – Z) seconds, where:

   a) X = value of "/<*x*>/<x>/OffNetwork/MCVideo/EmergencyCallCancel" leaf node present in group configuration as specified in 3GPP TS 24.483 [4];

   b) Y = current UTC time, in seconds since midnight UTC of January 1, 1970 (not counting leap seconds); and

   c) Z = Last call type change time IE of the GROUP CALL ANNOUNCEMENT message or the Last call type change time IE of the GROUP CALL PRIORITY ENDED message.

9.3.3.4.1.2 Implicit downgrade (imminent peril) timer calculation

The MCVideo client shall set the TFG14 (implicit downgrade imminent peril) timer as follows:

1) TFG14 (implicit downgrade imminent peril) = X – (Y – Z) seconds, where:

   a) X = value of "/<*x*>/<x>/OffNetwork/MCVideo/ImminentPerilCallCancel" leaf node present in group configuration as specified in 3GPP TS 24.483 [4];

   b) Y = current UTC time, in seconds since midnight UTC of January 1, 1970 (not counting leap seconds); and

   c) Z = Last call type change time IE of the GROUP CALL ANNOUNCEMENT message or the Last call type change time IE of the GROUP CALL PRIORITY ENDED message.

9.3.3.4.2 User initiated the call probe

When in the "T0: waiting for the call to establish " state, upon an indication from an MCVideo user to initiate a group call probe for an MCVideo group, the MCVideo client:

1) if the stored emergency state associated with emergency alert state machine described in 11.3.2.2 is set to "true" and the value of "/<*x*>/<x>/Common/AllowedEmergencyCall" leaf node present in group configuration as specified in 3GPP TS 24.483 [4] is set to "true":

   a) shall set the stored current call type to "EMERGENCY GROUP CALL"; and

   b) shall set the stored current ProSe per-packet priority to value corresponding to MCVideo off-network emergency group call as described in 3GPP TS 24.483 [4];

2) if the stored emergency state associated with emergency alert state machine described in 11.3.2.2 is set to "false", and:

   a) if the user initiates an MCVideo emergency call and the values of "/<*x*>/<*x*>/Common/MCVideoGroupCall/EmergencyCall/Enabled" leaf node present in the user profile and

"/<*x*>/<x>/Common/AllowedEmergencyCall" leaf node present in group configuration as specified in 3GPP TS 24.483 [4] are set to "true":

i) shall set the stored current call type to "EMERGENCY GROUP CALL"; and

ii) shall set the stored current ProSe per-packet priority to value corresponding to MCVideo off-network emergency group call as described in 3GPP TS 24.483 [4];

b) if the user initiates an MCVideo imminent peril group call and the value of "/<*x*>/<*x*>/Common/MCVideoGroupCall/ImminentPerilCall/Authorised" leaf node present in the user profile "/<*x*>/<x>/Common/AllowedImminentPerilCall " leaf node present in group configuration as specified in 3GPP TS 24.483 [4] are set to "true":

i) shall set the stored current call type to "IMMINENT PERIL GROUP CALL"; and

ii) shall set the stored current ProSe per-packet priority to value corresponding to MCVideo off-network imminent peril group call as described in 3GPP TS 24.483 [4]; and

c) if the user initiates an MCVideo group call which is not an MCVideo emergency call and which is not an MCVideo imminent peril group call:

i) shall set the stored current call type to "BASIC GROUP CALL"; and

ii) shall set the stored current ProSe per-packet priority to value corresponding to MCVideo off-network basic group call as described in 3GPP TS 24.483 [4];

3) shall set the stored last call type change time to current UTC time;

4) shall set the last user to change call type to own MCVideo user ID; and

5) shall remain in "T0: waiting for the call to establish" state.

9.3.3.4.3 Received GROUP CALL ANNOUNCEMENT message as a response to GROUP CALL PROBE message

When in the "T0: waiting for the call to establish " state, upon receipt of a GROUP CALL ANNOUNCEMENT message as a response to GROUP CALL PROBE message, the MCVideo client:

1) if the Call type IE of the received GROUP CALL ANNOUNCEMENT message is set to "EMERGENCY GROUP CALL":

a) shall set the stored current call type to "EMERGENCY GROUP CALL";

b) shall set the stored current ProSe per-packet priority to value corresponding to MCVideo off-network emergency group call as described in 3GPP TS 24.483 [4];

c) shall set the stored last call type change time to the Last call type change time IE of the GROUP CALL ANNOUNCEMENT message;

d) shall set the stored last user to change call type to the Last user to change call type IE of the GROUP CALL ANNOUNCEMENT message;

e) shall start timer TFG13 (implicit downgrade emergency) with value as specified in clause 9.3.3.4.1.1; and

f) shall enter "T1: in-progress emergency group call" state;

2) if the Call type IE of the received GROUP CALL ANNOUNCEMENT message is set to "IMMINENT PERIL GROUP CALL", and if the stored current call type is other than "EMERGENCY GROUP CALL":

a) shall set the stored current call type to "IMMINENT PERIL GROUP CALL";

b) shall set the stored current ProSe per-packet priority to value corresponding to MCVideo off-network imminent peril group call as described in 3GPP TS 24.483 [4];

c) shall set the stored last call type change time to the Last call type change time IE of the GROUP CALL ANNOUNCEMENT message;

d) shall set the stored last user to change call type to the Last user to change call type IE of the GROUP CALL ANNOUNCEMENT message;

e) shall start timer TFG14 (implicit downgrade imminent peril) with value as specified in clause 9.3.3.4.1.2; and

f) shall enter "T3: in-progress imminent peril group call" state; and

3) if the Call type IE of the received GROUP CALL ANNOUNCEMENT message is set to "BASIC GROUP CALL", and if the stored current call type is "BASIC GROUP CALL":

a) shall set the stored last call type change time to the Last call type change time IE of the GROUP CALL ANNOUNCEMENT message;

b) shall set the stored last user to change call type to the Last user to change call type IE of the GROUP CALL ANNOUNCEMENT message; and

c) shall enter "T2: in-progress basic group call" state.

9.3.3.4.4 Received GROUP CALL ANNOUNCEMENT with MCVideo user acknowledgement required

When in the "T0: waiting for the call to establish" state, upon receipt of a GROUP CALL ANNOUNCEMENT message by an idle MCVideo client when MCVideo user acknowledgement is required, the MCVideo client:

1) if the Call type IE of the received GROUP CALL ANNOUNCEMENT message is set to "EMERGENCY GROUP CALL":

a) shall set the stored current call type to "EMERGENCY GROUP CALL"; and

b) shall set the stored current ProSe per-packet priority to value corresponding to MCVideo off-network emergency group call as described in 3GPP TS 24.483 [4];

2) if the Call type IE of the received GROUP CALL ANNOUNCEMENT message is set to "IMMINENT PERIL GROUP CALL":

a) shall set the stored current call type to "IMMINENT PERIL GROUP CALL"; and

b) shall set the stored current ProSe per-packet priority to value corresponding to MCVideo off-network imminent peril group call as described in 3GPP TS 24.483 [4];

3) if the Call type IE of the received GROUP CALL ANNOUNCEMENT message is set to "BASIC GROUP CALL":

a) shall set the stored current call type to "BASIC GROUP CALL";

b) shall set the stored current ProSe per-packet priority to value corresponding to MCVideo off-network basic group call as described in 3GPP TS 24.483 [4];

4) shall set the stored last call type change time to the Last call type change time IE of the GROUP CALL ANNOUNCEMENT message;

5) shall set the last user to change call type to the Last user to change call type IE of the GROUP CALL ANNOUNCEMENT message; and

6) shall remain in "T0: waiting for the call to establish" state.

9.3.3.4.5 Received GROUP CALL ANNOUNCEMENT without MCVideo user acknowledgement required

When in the "T0: waiting for the call to establish" state, upon receipt of a GROUP CALL ANNOUNCEMENT message by an idle MCVideo client when MCVideo user acknowledgement is not required, the MCVideo client:

1) shall set the stored last call type change time to the Last call type change time IE of the GROUP CALL ANNOUNCEMENT message;

2) shall set the last user to change call type to the Last user to change call type IE of the GROUP CALL ANNOUNCEMENT message;

3) if the Call type IE of the received GROUP CALL ANNOUNCEMENT message is set to "EMERGENCY GROUP CALL":

   a) shall set the stored current call type to "EMERGENCY GROUP CALL";

   b) shall set the stored current ProSe per-packet priority to value corresponding to MCVideo off-network emergency group call as described in 3GPP TS 24.483 [4];

   c) shall start timer TFG13 (implicit downgrade emergency) with value as specified in clause 9.3.3.4.1.1; and

   d) shall enter "T1: in-progress emergency group call" state;

4) if the Call type IE of the received GROUP CALL ANNOUNCEMENT message is set to "IMMINENT PERIL GROUP CALL":

   a) shall set the stored current call type to "IMMINENT PERIL GROUP CALL";

   b) shall set the stored current ProSe per-packet priority to value corresponding to MCVideo off-network imminent peril group call as described in3GPP TS 24.483 [4];

   c) shall start timer TFG14 (implicit downgrade imminent peril) with value as specified in clause 9.3.3.4.1.2; and

   d) shall enter "T3: in-progress imminent peril group call" state; and

5) if the Call type IE of the received GROUP CALL ANNOUNCEMENT message is set to "BASIC GROUP CALL":

   a) shall set the stored current call type to "BASIC GROUP CALL";

   b) shall set the stored current ProSe per-packet priority to value corresponding to MCVideo off-network basic group call as described in 3GPP TS 24.483 [4]; and

   c) shall enter "T2: in-progress basic group call" state.

9.3.3.4.6 Call started

When in state "T0: waiting for the call to establish", if:

   a) the MCVideo user accepts the call when MCVideo user acknowledgement is required; or

   b) the MCVideo client sends a GROUP CALL ANNOUNCEMENT message on expiry of timer TFG1 (wait for call announcement) associated with the basic call control state machine;

the MCVideo client:

1) if the stored current call type is set to "EMERGENCY GROUP CALL"

   a) shall start timer TFG13 (implicit downgrade emergency) with value as specified in clause 9.3.3.4.1.1; and

   b) shall enter "T1: in-progress emergency group call" state;

2) if the stored current call type is set to "IMMINENT PERIL GROUP CALL"

   a) shall start timer TFG14 (implicit downgrade imminent peril) with value as specified in clause 9.3.3.4.1.2; and

   b) shall enter "T3: in-progress imminent peril group call" state; or

3) if the stored current call type is set to "BASIC GROUP CALL"

   a) shall enter "T2: in-progress basic group call" state.

9.3.3.4.7 Upgrade call

9.3.3.4.7.1 Originating user upgrading the call

When in the "T2: in-progress basic group call" state, upon receiving an indication from the user to upgrade the call to "IMMINENT PERIL GROUP CALL" or "EMERGENCY GROUP CALL" or when in the "T3: in-progress imminent peril group call" state, upon receiving an indication from the user to upgrade the call to "EMERGENCY GROUP CALL", the MCVideo client:

1) if the user request is to upgrade the call to "EMERGENCY GROUP CALL" and the value of "/<*x*>/<*x*>/OffNetwork/EmergencyCallChange" leaf node present in the user profile as specified in 3GPP TS 24.483 [4] is set to "true":

   a) shall set the stored current call type to "EMERGENCY GROUP CALL";

   b) shall set the stored current ProSe per-packet priority to value corresponding to MCVideo off-network emergency group call as described in 3GPP TS 24.483 [4];

   c) shall start timer TFG13 (implicit downgrade emergency) with value as specified in clause 9.3.3.4.1.1;

   d) shall stop timer TFG14 (implicit downgrade imminent peril), if running; and

   e) shall enter "T1: in-progress emergency group call" state;

2) if the user request is to upgrade the call to "IMMINENT PERIL GROUP CALL" and the value of "/<*x*>/<*x*>/OffNetwork/ ImminentPerilCallChange" leaf node present in the user profile as specified in 3GPP TS 24.483 [4] set to "true":

   a) shall set the stored current call type to "IMMINENT PERIL GROUP CALL";

   b) shall set the stored current ProSe per-packet priority to value corresponding to MCVideo off-network imminent peril group call as described in 3GPP TS 24.483 [4];

   c) shall start timer TFG14 (implicit downgrade imminent peril) with value as specified in clause 9.3.3.4.1.2 and

   d) shall enter "T3: in-progress imminent peril group call" state;

3) shall store the current UTC time as last call type change time of the call;

4) shall store own MCVideo user ID as last user to change call type of the call;

5) shall generate a GROUP CALL ANNOUNCEMENT message as specified in clause 17.1.3. In the GROUP CALL ANNOUNCEMENT message, the MCVideo client:

   a) shall set the Call identifier IE to the stored call identifier of the call associated with the basic call control state machine;

   b) shall set the Call type IE to the stored current call type;

   c) shall set the Refresh interval IE to the stored refresh interval of the call associated with the basic call control state machine;

   d) shall set the SDP IE to the stored SDP body of the call associated with the basic call control state machine;

   e) shall set the Originating MCVideo user ID IE to the stored originating MCVideo user ID of the call associated with the basic call control state machine;

   f) shall set the MCVideo group ID IE to the stored MCVideo group ID of the call associated with the basic call control state machine;

   g) shall set the call start time IE to the stored call start time of the call;

   h) shall set the Last call type change time IE to the stored last call type change time of the call; and

   i) shall set the Last user to change call type IE to the stored last user to change call type of the call; and

6) shall send the GROUP CALL ANNOUNCEMENT message as specified in clause 9.3.1.1.1;

9.3.3.4.7.2 Terminating UE receiving a GROUP CALL ANNOUNCEMENT message when participating in the ongoing call

When in the "T1: in-progress emergency group call" state or "T2: in-progress basic group call" state or "T3: in-progress imminent peril group call" state, upon receiving a GROUP CALL ANNOUNCEMENT message with the MCVideo group ID IE matching with MCVideo group ID of the ongoing call and the Call Identifier IE being the same as the stored call identifier of the call, the MCVideo client:

1) if the stored last user to change call type of the call is same as the Last user to change call type IE of the GROUP CALL ANNOUNCEMENT message and the stored last call type change time is smaller than Last call type change time IE of the GROUP CALL ANNOUNCEMENT message:

   a) shall set the stored last call type change time of the call to Last call type change time IE of the GROUP CALL ANNOUNCEMENT message;

   b) if the Call type IE of the received GROUP CALL ANNOUNCEMENT message is set to "EMERGENCY GROUP CALL" and the stored call type is other than "EMERGENCY GROUP CALL":

      i) shall set the stored current call type to "EMERGENCY GROUP CALL";

      ii) shall set the stored current ProSe per-packet priority to value corresponding to MCVideo off-network emergency group call as described in 3GPP TS 24.483 [4];

      iii) shall stop timer TFG14 (implicit downgrade imminent peril), if running;

      iv) shall start timer TFG13 (implicit downgrade emergency) with value as specified in clause 9.3.3.4.1.1; and

      v) shall enter "T1: in-progress emergency group call" state;

   c) if the Call type IE of the received GROUP CALL ANNOUNCEMENT message is set to "IMMINENT PERIL GROUP CALL" and the stored call type is other than "IMMINENT PERIL GROUP CALL":

      i) shall set the stored current call type to "IMMINENT PERIL GROUP CALL";

      ii) shall set the stored current ProSe per-packet priority to value corresponding to MCVideo off-network imminent peril group call as described in 3GPP TS 24.483 [4];

      iii) shall start timer TFG14 (implicit downgrade imminent peril) with value as specified in clause 9.3.3.4.1.2; and

      iv) shall enter "T3: in-progress imminent peril group call" state; and

   d) if the Call type IE of the received GROUP CALL ANNOUNCEMENT message is set to "BASIC GROUP CALL" and the stored call type is other than "BASIC GROUP CALL":

      i) shall set the stored current call type to "BASIC GROUP CALL";

      ii) shall set the stored current ProSe per-packet priority to value corresponding to MCVideo off-network basic group call as described in 3GPP TS 24.483 [4];

      iii) shall stop timer TFG13 (implicit downgrade), if running; and

      iv) shall enter "T2: in-progress basic group call" state; and

2) if the stored last user to change call type of the call is different from the Last user to change call type IE of the GROUP CALL ANNOUNCEMENT message and:

   a) if the stored call type is same as Call type IE in the received GROUP CALL ANNOUNCEMENT message and the stored last call type change time is smaller than Last call type change time IE of the GROUP CALL ANNOUNCEMENT message:

      i) shall set the stored last call type change time of the call to Last call type change time IE of the GROUP CALL ANNOUNCEMENT message; and

      ii) shall set the stored last user to change call type of the call to Last user to change call type IE of the GROUP CALL ANNOUNCEMENT message;

b) if the Call type IE of the received GROUP CALL ANNOUNCEMENT message is set to "EMERGENCY GROUP CALL" and the stored call type is other than "EMERGENCY GROUP CALL":

   i) shall set the stored last call type change time of the call to Last call type change time IE of the GROUP CALL ANNOUNCEMENT message;

   ii) shall set the stored last user to change call type of the call to Last user to change call type IE of the GROUP CALL ANNOUNCEMENT message;

   iii) shall set the stored current call type to "EMERGENCY GROUP CALL";

   iv) shall set the stored current ProSe per-packet priority to value corresponding to MCVideo off-network emergency group call as described in 3GPP TS 24.483 [4];

   v) shall stop timer TFG14 (implicit downgrade imminent peril), if running;

   vi) shall start timer TFG13 (implicit downgrade emergency) with value as specified in clause 9.3.3.4.1.1; and

   vii) shall enter "T1: in-progress emergency group call" state; and

c) if the Call type IE of the received GROUP CALL ANNOUNCEMENT message is set to "IMMINENT PERIL GROUP CALL" and the stored call type is "BASIC GROUP CALL":

   i) shall set the stored last call type change time of the call to Last call type change time IE of the GROUP CALL ANNOUNCEMENT message;

   ii) shall set the stored last user to change call type of the call to Last user to change call type IE of the GROUP CALL ANNOUNCEMENT message;

   iii) shall set the stored current call type to "IMMINENT PERIL GROUP CALL ";

   iv) shall set the stored current ProSe per-packet priority to value corresponding to MCVideo off-network imminent peril group call as described in 3GPP TS 24.483 [4];

   v) shall start timer TFG14 (implicit downgrade imminent peril) with value as specified in clause 9.3.3.4.1.2; and

   vi) shall enter "T3: in-progress imminent peril group call" state.

9.3.3.4.8 Downgrade call

9.3.3.4.8.1 Originating user downgrading emergency group call

When in the "T1: in-progress emergency group call" state, upon receiving an indication from:

1) the MCVideo user who upgraded the MCVideo group call; or

2) an authorized MCVideo user with the value of "/<*x*>/<*x*>/Common/MCVideoGroupCall/EmergencyCall/CancelMCVideoGroup" leaf node present in the user profile as specified in 3GPP TS 24.483 [4] is set to "true",

to downgrade "EMERGENCY GROUP CALL", the MCVideo client:

1) shall set the stored current call type to "BASIC GROUP CALL";

2) shall set the stored current ProSe per-packet priority to value corresponding to MCVideo off-network basic group call as described in 3GPP TS 24.483 [4];

3) shall set current UTC time as last call type change time of the call;

4) shall store own MCVideo user ID as last user to change call type of the call;

5) shall generate a GROUP CALL EMERGENCY END message as specified in clause 17.1.13. In the GROUP CALL EMERGENCY END message, the MCVideo client:

a) shall set the Call identifier IE to the stored call identifier of the call associated with the basic call control state machine;

b) shall set the Originating MCVideo user ID IE to the stored originating MCVideo user ID of the call associated with the basic call control state machine;

c) shall set the MCVideo group ID IE to the stored MCVideo group ID of the call associated with the basic call control state machine;

d) shall set the Last call type change time IE to the stored last call type change time of the call; and

e) shall set the Last user to change call type IE to the stored last user to change call type of the call;

6) shall send the GROUP CALL EMERGENCY END message as specified in clause 9.3.1.1.1;

7) shall stop timer TFG13 (implicit downgrade emergency);

8) shall initialize the counter CFG11 (emergency end retransmission) with value set to 1;

9) shall start timer TFG11 (emergency end retransmission); and

10) shall enter the "T2: in-progress basic group call" state.

9.3.3.4.8.2 Retransmitting GROUP CALL EMERGENCY END

When in the "T2: in-progress basic group call" state, upon expiry of timer TFG11 (emergency end retransmission), the MCVideo client:

1) shall generate a GROUP CALL EMERGENCY END message as specified in clause 17.1.13. In the GROUP CALL EMERGENCY END message, the MCVideo client:

a) shall set the Call identifier IE to the stored call identifier of the call associated with the basic call control state machine;

b) shall set the Originating MCVideo user ID IE to the stored originating MCVideo user ID of the call associated with the basic call control state machine;

c) shall set the MCVideo group ID IE to the stored MCVideo group ID of the call associated with the basic call control state machine;

d) shall set the Last call type change time IE to the stored last call type change time of the call; and

e) shall set the Last user to change call type IE to the stored last user to change call type of the call;

2) shall send the GROUP CALL EMERGENCY END message as specified in clause 9.3.1.1.1;

3) shall increment the value of the counter CFG11 (emergency end retransmission) by 1;

4) shall start timer TFG11 (emergency end retransmission) if the value of the associated counter CFG11 (emergency end retransmission) is less than the upper limit; and

5) shall remain in "T2: in-progress basic group call" state.

9.3.3.4.8.3 Terminating user downgrading emergency group call

When in the "T1: in-progress emergency group call" state, upon receiving GROUP CALL EMERGENCY END message, the MCVideo client:

1) shall set the stored last call type change time to the Last call type change time IE of the received GROUP CALL EMERGENCY END message;

2) shall set the stored last user to change call type to the Last user to change call type IE of the received GROUP CALL EMERGENCY END message;

3) shall set the stored current call type to "BASIC GROUP CALL";

4) shall set the stored current ProSe per-packet priority to value corresponding to MCVideo off-network basic group call as described in 3GPP TS 24.483 [4];

5) shall stop timer TFG13 (implicit downgrade emergency); and

6) shall enter the "T2: in-progress basic group call" state.

9.3.3.4.8.4 Originating user downgrading imminent peril group call

When in the "T3: in-progress imminent peril group call" state, upon receiving an indication from:

1) the MCVideo user who upgraded the call; or

2) an authorized user with the value of "/<*x*>/<*x*>/Common/MCVideoGroupCall/ImminentPerilCall/Cancel" leaf node present in the user profile as specified in 3GPP TS 24.483 [4] is set to "true",

to downgrade "IMMINENT PERIL GROUP CALL", the MCVideo client:

1) shall set the stored current call type to "BASIC GROUP CALL";

2) shall set the stored current ProSe per-packet priority to value corresponding to MCVideo off-network basic group call as described in 3GPP TS 24.483 [4];

3) shall set current UTC time as last call type change time of the call;

4) shall store own MCVideo user ID as last user to change call type of the call;

5) shall generate a GROUP CALL IMMINENT PERIL END message as specified in clause 17.1.12. In the GROUP CALL IMMINENT PERIL END message, the MCVideo client:

   a) shall set the Call identifier IE to the stored call identifier of the call associated with the basic call control state machine;

   b) shall set the Originating MCVideo user ID IE to the stored originating MCVideo user ID of the call associated with the basic call control state machine;

   c) shall set the MCVideo group ID IE to the stored MCVideo group ID of the call associated with the basic call control state machine;

   d) shall set the Last call type change time IE to the stored last call type change time of the call; and

   e) shall set the Last user to change call type IE to the stored last user to change call type of the call;

6) shall send the GROUP CALL IMMINENT PERIL END message as specified in clause 9.3.1.1.1;

7) shall stop timer TFG14 (implicit downgrade imminent peril);

8) shall initialize the counter CFG12 (imminent peril end retransmission) with value set to 1;

9) shall start timer TFG12 (imminent peril end retransmission); and

10) shall enter the "T2: in-progress basic group call" state.

9.3.3.4.8.5 Retransmitting GROUP CALL IMMINENT PERIL END

When in the "T2: in-progress basic group call" state, upon expiry of timer TFG12 (imminent peril end retransmission), the MCVideo client:

1) shall generate a GROUP CALL IMMINENT PERIL END message as specified in clause 17.1.12. In the GROUP CALL IMMINENT PERIL END message, the MCVideo client:

   a) shall set the Call identifier IE to the stored call identifier of the call associated with the basic call control state machine;

   b) shall set the Originating MCVideo user ID IE to the stored originating MCVideo user ID of the call associated with the basic call control state machine;

c) shall set the MCVideo group ID IE to the stored MCVideo group ID of the call associated with the basic call control state machine;

d) shall set the Last call type change time IE to the stored last call type change time of the call; and

e) shall set the Last user to change call type IE to the stored last user to change call type of the call;

2) shall send the GROUP CALL IMMINENT PERIL END message as specified in clause 9.3.1.1.1;

3) shall increment the value of the counter CFG12 (imminent peril end retransmission) by 1;

4) shall start the timer TFG12 (imminent peril end retransmission) if the value of the associated counter CFG12 (imminent peril end retransmission) is less than the upper limit; and

5) shall remain in "T2: in-progress basic group call" state.

9.3.3.4.8.6 Terminating user downgrading imminent peril group call

When in the "T3: in-progress imminent peril group call" state, upon receiving GROUP CALL IMMINENT PERIL END message, the MCVideo client:

1) shall set the stored last call type change time to the Last call type change time IE of the received GROUP CALL IMMINENT PERIL END message;

2) shall set the stored last user to change call type to the Last user to change call type IE of the received GROUP CALL IMMINENT PERIL END message;

3) shall set the stored current call type to "BASIC GROUP CALL";

4) shall set the stored current ProSe per-packet priority to value corresponding to MCVideo off-network basic group call as described in 3GPP TS 24.483 [4];

5) shall stop timer TFG14 (implicit downgrade imminent peril); and

6) shall enter the "T2: in-progress basic group call" state.

9.3.3.4.8.7 Implicit emergency priority end

When in the "T1: in-progress emergency group call" state, upon expiry of timer TFG13 (implicit downgrade emergency), the MCVideo client:

1) shall store the current UTC time as the stored last call type change time of the call;

2) shall store the originating MCVideo user ID as the stored last user to change call type of the call;

3) shall set the stored current call type to "BASIC GROUP CALL";

4) shall set the stored current ProSe per-packet priority to value corresponding to MCVideo off-network basic group call as described in 3GPP TS 24.483 [4]; and

5) shall enter the "T2: in-progress basic group call" state.

9.3.3.4.8.8 Implicit imminent peril priority end

When in the "T3: in-progress imminent peril call" state, upon expiry of timer TFG14 (implicit downgrade imminent peril), the MCVideo client:

1) shall store the current UTC time as the stored last call type change time of the call;

2) shall store the originating MCVideo user ID as the stored last user to change call type of the call;

3) shall set the stored current call type to "BASIC GROUP CALL";

4) shall set the stored current ProSe per-packet priority to value corresponding to MCVideo off-network basic group call as described in 3GPP TS 24.483 [4]; and

5) shall enter the "T2: in-progress basic group call" state.

9.3.3.4.9 Merge of two calls

When in the "T1: in-progress emergency group call" state or "T2: in-progress basic group call" state or "T3: in-progress imminent peril group call" state, upon receiving a GROUP CALL ANNOUNCEMENT message with the MCVideo group ID IE matching the stored MCVideo group ID of the call and:

1) the Originating MCVideo user ID IE is different from the stored originating MCVideo user ID of the call; or

2) the Call identifier IE is different from the stored call identifier of the call;

then:

1) if the stored current call type is "BASIC GROUP CALL" and the value of the Call type IE of GROUP CALL ANNOUNCEMENT message is either "IMMINENT PERIL GROUP CALL" or "EMERGENCY GROUP CALL"; or

2) if the stored current call type is "IMMINENT PERIL GROUP CALL" and the value of the Call type IE of GROUP CALL ANNOUNCEMENT message is "EMERGENCY GROUP CALL"; or

3) if the stored current call type being equal to the Call type IE of the GROUP CALL ANNOUNCEMENT message and the Call start time IE of the GROUP CALL ANNOUNCEMENT message being lower than the stored call start time of the call; or

4) if the stored current call type being equal to the Call type IE of the GROUP CALL ANNOUNCEMENT message and the Call start time IE of the GROUP CALL ANNOUNCEMENT message being equal to the stored call start time of the call and the Call identifier IE of the GROUP CALL ANNOUNCEMENT message being lower than the stored call identifier of the call;

the MCVideo client:

1) shall store the value of the Last call type change time IE of the received GROUP CALL ANNOUNCEMENT message as the last call type change time of the call;

2) shall store the value of the Last user to change call type IE of the GROUP CALL ANNOUNCEMENT message as the last user to change call type of the call;

3) shall store the value of the Call type IE of the GROUP CALL ANNOUNCEMENT message as the current call type of the call;

4) if the Call type IE of GROUP CALL ANNOUNCEMENT message is set to "EMERGENCY GROUP CALL":

   a) shall set the stored current ProSe per-packet priority to value corresponding to MCVideo off-network emergency group call as described in 3GPP TS 24.483 [4]; and

   b) shall enter "T1: in-progress emergency group call" state; and

5) if the Call type IE of GROUP CALL ANNOUNCEMENT message is set to "IMMINENT PERIL GROUP CALL":

   a) shall set the stored current ProSe per-packet priority to value corresponding to MCVideo off-network imminent peril group call as described in 3GPP TS 24.483 [4]; and

   b) shall enter "T3: in-progress imminent peril group call" state.

9.3.3.4.10 Call release after call establishment

When in state T1: in-progress emergency group call" or "T2: in-progress basic group call" or "T3: in-progress imminent peril group call" or upon receiving an indication from MCVideo user to release the call, the MCVideo client:

1) shall release stored current call type;

2) shall release stored ProSe per-packet priority;

3) shall release Last call type change time;

4) shall release Last user to change call type; and

5) shall enter "T0: waiting for the call to establish" state.

9.3.3.4.11 Call release or reject before call establishment

When in state "T0: waiting for the call to establish", upon receiving an indication from MCVideo user to release or reject the call, the MCVideo client:

1) shall release stored current call type;

2) shall release stored ProSe per-packet priority;

3) shall release Last call type change time;

4) shall release Last user to change call type;

5) shall remain in "T0: waiting for the call to establish" state.

9.3.3.4.12 Error handling

9.3.3.4.12.1 Unexpected MONP message received

Upon receiving an unexpected MONP message or MONP MCVideo message in a state where there is no handling specified for the MONP message or the MONP MCVideo message, the MCVideo client shall discard this message.

9.3.3.4.12.2 Unexpected indication from MCVideo user

Upon receiving an indication from the MCVideo user in a state where there is no handling specified for the indication, the MCVideo client shall ignore the indication.

9.3.3.4.12.3 Unexpected expiration of a timer

Upon expiration of a timer in a state where there is no handling specified for expiration of the timer, the MCVideo client shall ignore the expiration of the timer.

9.4 Off-network Broadcast group call

9.4.1 General

9.4.2 Basic call control

9.4.2.1 General

9.4.2.2 Broadcast group call control state machine

The figure 9.4.2.2-1 gives an overview of the main states and transitions on the UE for broadcast group call call control.

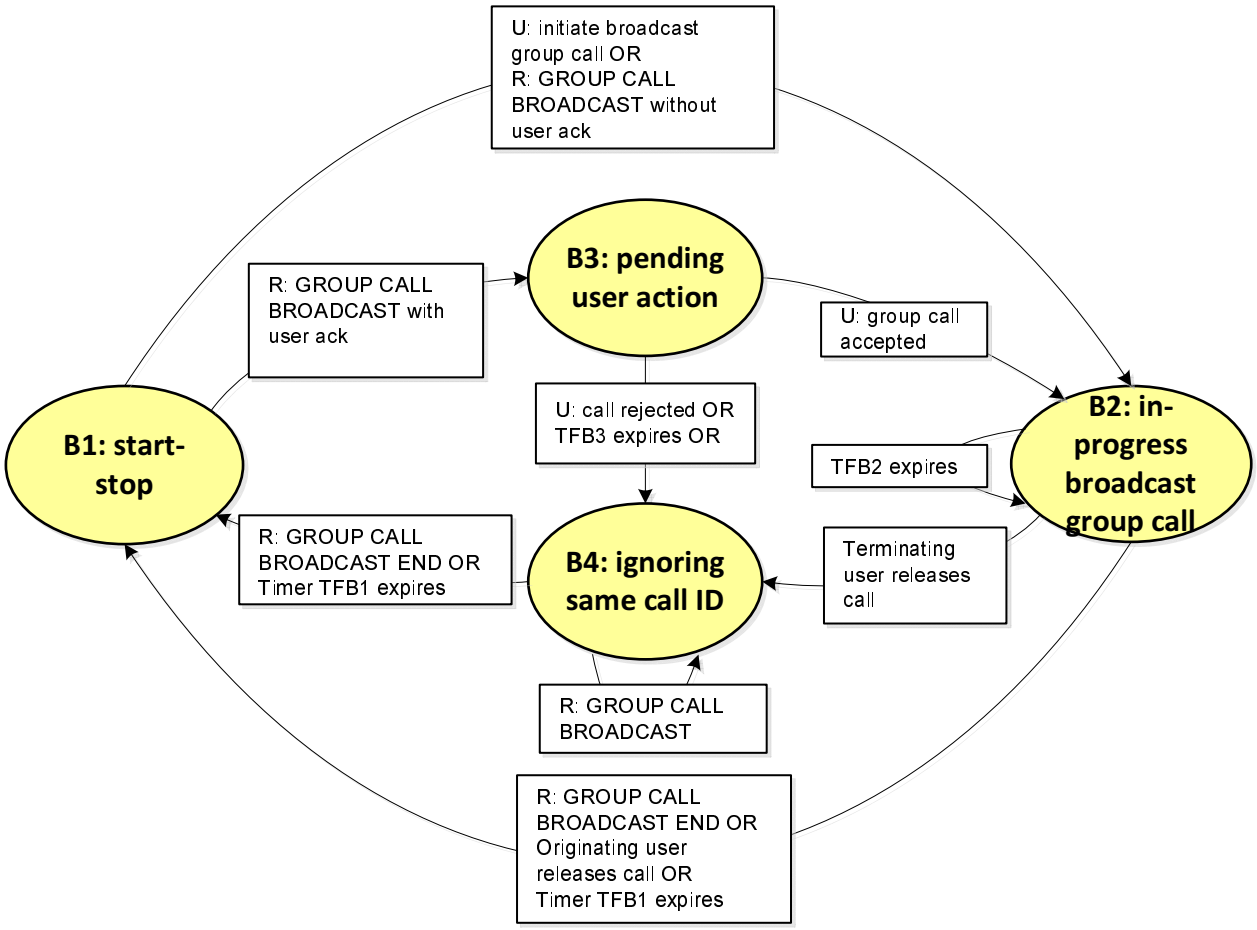

Figure 9.4.2.2-1: Broadcast group call control state machine

9.4.2.3 Broadcast group call Control states

9.4.2.3.1 B1: start-stop

This state exists for UE, when the UE is not part of an ongoing broadcast group call.

9.4.2.3.2 B2: in-progress broadcast group call

This state exists for UE, when the UE is part of an ongoing broadcast group call.

9.4.2.3.3 B3: pending user action

This state exists for the UE, when the UE has presented a notification to the MCVideo user for the received GROUP CALL BROADCAST message, is waiting for a response and is not expected to send confirm indication.

9.4.2.3.4 B4: ignoring same call ID

This state exists for UE, when the group call was rejected or released and GROUP CALL BROADCAST messages continue being received.

9.4.2.4 Procedures

9.4.2.4.1 User initiating a broadcast group call

When in the "B1: start-stop" state, upon the indication from MCVideo user to initiate the broadcast group call, the MCVideo client:

1) shall generate an SDP body as specified in clause 9.3.1.1.2 and store it as the SDP body of the call;
2) shall generate a random number with uniform distribution between 0 and 65535 and store it as the call identifier of the call;
3) shall store own MCVideo user ID as the originating MCVideo user ID of the call;
4) shall store "BROADCAST GROUP CALL" as the current call type;
5) shall generate a GROUP CALL BROADCAST message as specified in clause 17.1.18. In the GROUP CALL BROADCAST message, the MCVideo client:
   a) shall set the Call identifier IE to the stored call identifier of the call;
   b) shall set the Call type IE to the stored current call type;
   c) shall set the Originating MCVideo user ID IE to the stored originating MCVideo user ID of the call;
   d) shall set the MCVideo group ID IE to the stored MCVideo group ID of the call; and
   e) shall set the SDP IE to the stored SDP body of the call;
6) shall set the ProSe per-packet priority to the value corresponding to MCVideo off-network broadcast callas described in 3GPP TS 24.483 [4];
7) shall start transmission control as originating transmission participant as described specified in clause a.b in 3GPP TS 24.581 [5];
8) shall send the GROUP CALL BROADCAST message as specified in clause 9.3.1.1.1;
9) shall establish a media session based on the stored SDP body of the call;
10) shall start timer TFB2 (broadcast retransmission); and
11) shall enter the "B2: in-progress broadcast group call" state.

9.4.2.4.2 Terminating UE receiving a GROUP CALL BROADCAST message when not participating in the in-progress broadcast group call

When in the "B1: start-stop" state, upon receiving a GROUP CALL BROADCAST message with the Call identifier IE not matching any in-progress broadcast group call, the MCVideo client:

1) shall store the value of the Call identifier IE of the GROUP CALL BROADCAST message as the call identifier of the call;
2) shall store the value of the Call type IE of the GROUP CALL BROADCAST message as the received current call type;
3) shall store the value of the SDP IE of the GROUP CALL BROADCAST message as the SDP body of the call;
4) shall store the value of the Originating MCVideo user ID IE of the GROUP CALL BROADCAST message as the originating MCVideo user ID of the call;
5) shall store the value of the MCVideo group ID IE of the GROUP CALL BROADCAST message as the MCVideo group ID of the call;
6) if the terminating UE is configured that the terminating MCVideo user acknowledgement is required upon a terminating call request reception:

i) shall start timer TFB3 (waiting for the user); and

ii) shall enter the "B3: pending user action" state; and

7) if the terminating UE is configured that the terminating MCVideo user acknowledgement is not required upon a terminating call request reception:

i) shall establish a media session based on the stored SDP body of the call;

ii) shall start transmission control as terminating transmission participant as specified in clause a.b in 3GPP TS 24.581 [5];

iii) shall start timer TFB1 (max duration); and

iv) shall enter the "B2: in-progress broadcast group call" state.

9.4.2.4.3 MCVideo user accepts the terminating call

When in the "B3: pending user action" state, upon indication from the MCVideo user to accept the incoming broadcast group call, the MCVideo client:

1) shall establish a media session based on the stored SDP body of the call;

2) shall start transmission control as terminating transmission participant as described specified in clause a.b in 3GPP TS 24.581 [5];

3) shall stop timer TFB3 (waiting for the user);

4) shall start timer TFB1 (max duration); and

5) shall enter the "B2: in-progress broadcast group call" state.

9.4.2.4.4 MCVideo user rejects the terminating call

When in the "B3: pending user action" state, upon an indication from the MCVideo user to reject the incoming broadcast group call, the MCVideo client:

1) shall stop timer TFB3 (waiting for the user); and

2) shall enter the "B4: ignoring same call ID" state.

9.4.2.4.5 MCVideo user does not act on terminating call

When in the "B3: pending user action" state, upon expiration of timer TFB3 (waiting for the user), the MCVideo client:

1) shall enter the "B4: ignoring same call ID" state.

9.4.2.4.6 Terminating user releasing the call

When in the "B2: in-progress broadcast group call" state, upon an indication from the terminating MCVideo user to release the in-progress broadcast group call, the MCVideo client:

1) shall release the media session;

2) shall stop transmission control; and

3) shall enter the "B4: ignoring same call ID" state.

9.4.2.4.7 Originating user releasing the call

When in the "B2: in-progress broadcast group call" state, upon an indication from the originating MCVideo user to release the in-progress broadcast group call, the MCVideo client:

1) shall release the media session;

2) shall generate a GROUP CALL BROADCAST END message as specified in clause 17.1.19. In the GROUP CALL BROADCAST END message, the MCVideo client:

   a) shall set the Call identifier IE to the stored call identifier of the call;

   b) shall set the Originating MCVideo user ID IE to the stored originating MCVideo user ID of the call; and

   c) shall set the MCVideo group ID IE to the stored MCVideo group ID of the call;

3) shall send the GROUP CALL BROADCAST END message as specified in clause 9.3.1.1.1;

4) shall stop timer TFB2 (broadcast retransmission);

5) shall stop transmission control; and

6) shall enter the "B1: start-stop" state.

9.4.2.4.8 Receiving GROUP CALL BROADCAST END message

When in the "B2: in-progress broadcast group call" state or "B4: ignoring same call ID" state, upon receiving GROUP CALL BROADCAST END message with the same Call identifier IE as the stored call identifier, the MCVideo client:

1) shall release media session;

2) shall stop transmission control, if running; and

3) shall enter the "B1: start-stop" state.

9.4.2.4.9 Originating UE retransmitting GROUP CALL BROADCAST message

When in the "B2: in-progress broadcast group call" state, upon expiry of timer TFB2 (broadcast retransmission), the MCVideo client:

1) shall generate a GROUP CALL BROADCAST message as specified in clause 17.1.18. In the GROUP CALL BROADCAST message, the MCVideo client:

   a) shall set the Call identifier IE to the stored call identifier of the call;

   b) shall set the Call type IE to the stored current call type;

   c) shall set the Originating MCVideo user ID IE to the stored originating MCVideo user ID of the call;

   d) shall set the MCVideo group ID IE to the stored MCVideo group ID of the call; and

   e) shall set the SDP IE to the stored SDP body of the call;

2) shall send the GROUP CALL BROADCAST message as specified in clause 9.3.1.1.1;

3) shall restart timer TFB2 (broadcast retransmission); and

4) shall remain in the "B2: in-progress broadcast group call" state.

9.4.2.4.10 Ignoring same call ID

When in the "B4: ignoring same call ID" state, upon receiving GROUP CALL BROADCAST message and if the call identifier in GROUP CALL BROADCAST message matches with the stored call identifier the MCVideo client:

1) shall restart timer TFB1 (max duration); and

2) shall remain in "B4: ignoring same call ID" state.

9.4.2.4.11 Releasing the call

When in the "B2: in-progress broadcast group call" state or "B4: ignoring same call ID" state, upon expiry of timer TFB1 (max duration) the MCVideo client:

1) shall release the media session;
2) shall clear the stored call identifier;
3) shall stop transmission control, if running; and
4) shall enter the "B1: start-stop" state.

10 Private call

10.1 General

This clause describes the private call procedures between two MCVideo clients for on-network and off-network.

For on-network, private call procedures with transmission control are specified in clause 10.2.2and without transmission control are specified in clause 10.2.3.

For on-network, private call procedures are specified for the MCVideo client, the participating MCVideo function and the controlling MCVideo function on the originating side and terminating side..

For off-network, only private call procedures are specified in clause 10.3.

For off-network, private call procedures are specified for the MCVideo client on the originating side and terminating side.

For both on-network and off-network private calls, the use of automatic commencement mode and manual commencement mode are specified.

10.2 Private call in on-network

10.2.1 General

For on-network, the procedures for private call with transmission control are specified in clause 10.2.2.

For on-network, the procedures for private call without transmission control are specified in clause 10.2.3.

For on-network, the procedures for ending the private call initiated by MCVideo client are specified in clause 10.2.4.

For on-network, the procedures for ending the private call initiated by MCVideo server are specified in clause 10.2.5.

10.2.2 Private call with transmission control

10.2.2.1 General

Clause 10.2.2 specifies the MCVideo client procedures, participating MCVideo function procedures and controlling MCVideo function procedures for on-network private calls with transmission control. The procedures cover on-demand session establishment.

For a private call, the MCVideo client shall initiate the call to one MCVideo user

10.2.2.2 MCVideo client procedures

10.2.2.2.1 Client originating procedures

Upon receiving a request from an MCVideo user to establish an MCVideo private call the MCVideo client shall generate an initial SIP INVITE request by following the UE originating session procedures specified in 3GPP TS 24.229 [11], with the clarifications given below.

The MCVideo client:

1) shall set the Request-URI of the SIP INVITE request to a public service identity of the participating MCVideo function serving the MCVideo user;

2) may include a P-Preferred-Identity header field in the SIP INVITE request containing a public user identity as specified in 3GPP TS 24.229 [11];

3) shall include the g.3gpp.mcvideo media feature tag and the g.3gpp.icsi-ref media feature tag with the value of "urn:urn-7:3gpp-service.ims.icsi.mcvideo" in the Contact header field of the SIP INVITE request according to IETF RFC 3840 [22];

4) shall include an Accept-Contact header field containing the g.3gpp.mcvideo media feature tag along with the "require" and "explicit" header field parameters according to IETF RFC 3841 [20];

5) shall include the ICSI value "urn:urn-7:3gpp-service.ims.icsi.mcvideo" (coded as specified in 3GPP TS 24.229 [11]), in a P-Preferred-Service header field according to IETF RFC 6050 [14] in the SIP INVITE request;

6) shall include an Accept-Contact header field with the media feature tag g.3gpp.icsi-ref contain with the value of "urn:urn-7:3gpp-service.ims.icsi.mcvideo" along with parameters "require" and "explicit" according to IETF RFC 3841 [20];

7) for the establishment of a private call shall insert in the SIP INVITE request a MIME resource-lists body with the MCVideo ID of the invited MCVideo user, according to rules and procedures of IETF RFC 5366 [37];

8) if an end-to-end security context needs to be established and if the MCVideo user is initiating a private call then:

   a) if necessary, shall instruct the key management client to request keying material from the key management server as described in 3GPP TS 33.180 [8];

   b) shall use the keying material to generate a PCK as described in 3GPP TS 33.180 [8];

   c) shall use the PCK to generate a PCK-ID with the four most significant bits set to "0001" to indicate that the purpose of the PCK is to protect private call communications and with the remaining twenty eight bits being randomly generated as described in 3GPP TS 33.180 [8];

   d) shall encrypt the PCK to a UID associated to the MCVideo client using the MCVideo ID and KMS URI of the invited user as determined by the procedures of clause 6.2.8.3.9 and a time related parameter as described in 3GPP TS 33.180 [8];

   e) shall generate a MIKEY-SAKKE I_MESSAGE using the encapsulated PCK and PCK-ID as specified in 3GPP TS 33.180 [8]; and

   g) shall add the MCVideo ID of the originating MCVideo to the initiator field (IDRi) of the I_MESSAGE as described in 3GPP TS 33.180 [8]; and

   f) shall sign the MIKEY-SAKKE I_MESSAGE using the originating MCVideo user's signing key provided in the keying material together with a time related parameter, and add this to the MIKEY-SAKKE payload, as described in 3GPP TS 33.180 [8].

9) shall include an SDP offer according to 3GPP TS 24.229 [11] with the clarification given in clause 6.2.1 and with a media stream of the offered media-transmission control entity;

10) if implicit transmission control is required, shall comply with the conditions specified in clause 6.4;

11) if the MCVideo user is initiating a private call then:

a) if force of automatic commencement mode at the invited MCVideo client is requested by the MCVideo user, shall include in the SIP INVITE request a Priv-Answer-Mode header field with the value "Auto" according to the rules and procedures of IETF RFC 5373 [27];

b) if force of automatic commencement mode at the invited MCVideo client is not requested by the MCVideo user and:

i) if automatic commencement mode at the invited MCVideo client is requested by the MCVideo user, shall include in the SIP INVITE request an Answer-Mode header field with the value "Auto" according to the rules and procedures of IETF RFC 5373 [27]; and

ii) if manual commencement mode at the invited MCVideo client is requested by the MCVideo user, shall include in the SIP INVITE request an Answer-Mode header field with the value "Manual" according to the rules and procedures of IETF RFC 5373 [27]; and

c) shall contain an application/vnd.3gpp.mcvideo-info+xml MIME body with the <mcvideoinfo> element containing the <mcvideo-Params> element with the <session-type> element set to a value of "private", and if the MCVideo client needs to include an active functional alias in the initial SIP INVITE request, with the <functional-alias-URI> set to the URI of the used functional alias;

NOTE: The MCVideo client learns the functional aliases that are activated for an MCVideo ID from procedures specified in clause 20.2.1.3.

12) if the MCVideo emergency private call state is set to either "MVEPC 2: emergency-pc-requested" or "MVEPC 3: emergency-pc-granted" or the MCVideo emergency private priority state for this private call is set to "MVEPP 2: in-progress", the MCVideo client shall comply with the procedures in clause 6.2.8.3.3; and

13) shall send SIP INVITE request towards the MCVideo server according to 3GPP TS 24.229 [11].

Upon receiving a SIP 183(Session Progress) response to the SIP INVITE request the MCVideo client:

1) may indicate the progress of the session establishment to the inviting MCVideo user.

Upon receiving a SIP 200 (OK) response to the SIP INVITE request the MCVideo client:

1) shall interact with the media plane as specified in 3GPP TS 24.581 [5];

2) if the MCVideo emergency private call state is set to "MVEPC 2: emergency-pc-requested" or "MVEPC 3: emergency-pc-granted", shall perform the actions specified in clause 6.2.8.3.4; and

3) shall notify the user that the call has been successfully established.

On receiving a SIP 4xx response, a SIP 5xx response or a SIP 6xx response to the SIP INVITE request:

1) if the MCVideo emergency private call state is set to "MVEPC 2: emergency-pc-requested"; or

2) if the MCVideo emergency private call state is set to "MVEPC 3: emergency-pc-granted";

the MCVideo client shall perform the actions specified in clause 6.2.8.3.5.

On receiving a SIP INFO request where the Request-URI contains an MCVideo session ID identifying an ongoing session, the MCVideo client shall follow the actions specified in clause 6.2.8.3.7.

10.2.2.2.2 Client terminating procedures

Upon receipt of an initial SIP INVITE request, the MCVideo client shall follow the procedures for termination of multimedia sessions in the IM CN subsystem as specified in 3GPP TS 24.229 [11] with the clarifications below.

The MCVideo client:

1) may reject the SIP INVITE request if any of the following conditions are met:

a) MCVideo client is already occupied in another session and the number of simultaneous sessions exceeds the value of the <Max-Simul-Call-Nc10> element of the <MCVideo-Private-Call> element of the <Common> element of the MCVideo UE profile document, the maximum simultaneous MCVideo session for private call, as specified in TS 24.484 [25];

b) MCVideo client does not have enough resources to handle the call; or

c) any other reason outside the scope of this specification;

otherwise, continue with the rest of the steps.

NOTE 1: If the SIP INVITE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body with the <emergency-ind> element set to a value of "true", the participating MCVideo function can choose to accept the request.

2) if the SIP INVITE request is rejected in step 1), shall respond toward participating MCVideo function either with appropriate reject code as specified in 3GPP TS 24.229 [11] and warning texts as specified in clause 4.4.2 or with SIP 480 (Temporarily unavailable) response not including warning texts if the user is authorised to restrict the reason for failure according to <allow-failure-restriction> as specified in 3GPP TS 24.484 [25] and skip the rest of the steps of this clause;

3) if the SIP INVITE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body with the <mcvideoinfo> element containing the <mcvideo-Params> element with the <emergency-ind> element set to a value of "true":

a) should display to the MCVideo user an indication that this is a SIP INVITE request for an MCVideo emergency private call and:

i) should display the MCVideo ID of the originator of the MCVideo emergency private call contained in the <mcvideo-calling-user-id> element of the application/vnd.3gpp.mcvideo-info+xml MIME body; and

ii) if the <alert-ind> element is set to "true", should display to the MCVideo user an indication of the MCVideo emergency alert and associated information; and

b) shall set the MCVideo emergency private priority state to "MVEPP 2: in-progress" for this private call;

4) if the SDP offer of the SIP INVITE request contains an "a=key-mgmt" attribute field with a "mikey" attribute value containing a MIKEY-SAKKE I_MESSAGE:

a) shall extract the MCVideo ID of the originating MCVideo client from the initiator field (IDRi) of the I_MESSAGE as described in 3GPP TS 33.180 [8];

b) shall convert the MCVideo ID to a UID as described in 3GPP TS 33.180 [8];

c) shall use the UID to validate the signature of the MIKEY-SAKKE I_MESSAGE as described in 3GPP TS 33.180 [8];

d) if authentication verification of the MIKEY-SAKKE I_MESSAGE fails, shall reject the SIP INVITE request with a SIP 488 (Not Acceptable Here) response as specified in IETF RFC 4567 [34], and include warning text set to "136 authentication of the MIKEY-SAKE I_MESSAGE failed" in a Warning header field as specified in clause 4.4; and

e) if the signature of the MIKEY-SAKKE I_MESSAGE was successfully validated:

i) shall extract and decrypt the encapsulated PCK using the terminating user's (KMS provisioned) UID key as described in 3GPP TS 33.180 [8]; and

ii) shall extract the PCK-ID, from the payload as specified in 3GPP TS 33.180 [8];

NOTE 2: With the PCK successfully shared between the originating MCVideo client and the terminating MCVideo client, both clients are able to use SRTP/SRTCP to create an end-to-end secure session.

5) may check if a Resource-Priority header field is included in the incoming SIP INVITE request and may perform further actions outside the scope of this specification to act upon an included Resource-Priority header field as specified in 3GPP TS 24.229 [11];

6) may display to the MCVideo user the MCVideo ID of the inviting MCVideo user;

6A) may display to the MCVideo user the functional alias of the inviting MCVideo user, if provided;

7) shall perform the automatic commencement procedures specified in clause 6.2.3.1.1 if one of the following conditions are met:

   a) SIP INVITE request contains an Answer-Mode header field with the value "Auto" and the MCVideo service setting at the invited MCVideo client for answering the call is set to automatic commencement mode;

   b) SIP INVITE request contains an Answer-Mode header field with the value "Auto" and the MCVideo service setting at the invited MCVideo client for answering the call is set to manual commencement mode, yet the invited MCVideo client is willing to answer the call with automatic commencement mode; or

   c) SIP INVITE request contains a Priv-Answer-Mode header field with the value of "Auto"; and

8) shall perform the manual commencement procedures specified in clause 6.2.3.2.1 if either of the following conditions are met:

   a) SIP INVITE request contains an Answer-Mode header field with the value "Manual" and the MCVideo service setting at the invited MCVideo client for answering the call is set to manual commencement mode;

   b) SIP INVITE request contains an Answer-Mode header field with the value "Manual" and the MCVideo service setting at the invited MCVideo client for answering the call is set to automatic commencement mode, yet the invited MCVideo client allows the call to be answered with manual commencement mode; or

   c) SIP INVITE request contains a Priv-Answer-Mode header field with the value of "Manual".

Upon receiving the SIP CANCEL request cancelling a SIP INVITE request for which a dialog exists at the MCVideo client and a SIP 200 (OK) response has not yet been sent to the SIP INVITE request then the MCVideo client:

1) shall send a SIP 200 (OK) response to the SIP CANCEL request according to 3GPP TS 24.229 [11]; and

2) shall send a SIP 487 (Request Terminated) response to the SIP INVITE request according to 3GPP TS 24.229 [11].

Upon receiving a SIP BYE request for an established dialog, the MCVideo client:

1) shall follow the procedures in clause 10.2.5.2.

10.2.2.2.3 Client terminating procedures for reception of SIP re-INVITE request

This clause covers on-demand session.

Upon receipt of a SIP re-INVITE request for an existing private call session, the MCVideo client shall:

1) if the SIP re-INVITE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body with the <mcvideoinfo> element containing the <mcvideo-Params> element with the <emergency-ind> element set to a value of "true":

   a) should display to the MCVideo user an indication that this is a SIP re-INVITE request to upgrade this call to an MCVideo emergency private call and:

      i) should display the MCVideo ID of the originator of the MCVideo emergency private call contained in the <mcvideo-calling-user-id> element of the application/vnd.3gpp.mcvideo-info+xml MIME body; and

      ii) if the <alert-ind> element is set to "true", should display to the MCVideo user an indication of the MCVideo emergency alert and associated information; and

   b) shall set the MCVideo emergency private priority state to "MVEPP 2: in-progress" for this private call;

2) if the SIP re-INVITE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body with the <mcvideoinfo> element containing the <mcvideo-Params> element with the <emergency-ind> element set to a value of "false":

   a) should display to the MCVideo user an indication that this is a SIP re-INVITE request to downgrade this emergency private call to a normal priority private call and:

      i) should display the MCVideo ID of the sender of the SIP re-INVITE request contained in the <mcvideo-calling-user-id> element of the application/vnd.3gpp.mcvideo-info+xml MIME body; and

ii) if the <alert-ind> element is set to "false" should display to the MCVideo user an indication that the MCVideo emergency alert is cancelled;

iii) if the SIP re-INVITE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body including an <originated-by> element:

A) should display to the MCVideo user the MCVideo ID contained in the <originated-by> element of the MCVideo user that originated the MCVideo emergency alert; and

B) if the MCVideo ID contained in the <originated-by> element is the MCVideo ID of the receiving MCVideo user, shall set the MCVideo emergency alert state to "MVPEA 1: no-alert";

b) shall set the MCVideo emergency private priority state to "MVEPP 1: no-emergency" for this private call; and

c) if the MCVideo emergency private call state of the call is set to "MVEPC 3: emergency-call-granted", shall set the MCVideo emergency private call state of the call to "MVEPC 1: emergency-pc-capable";

3) may check if a Resource-Priority header field is included in the incoming SIP INVITE request and may perform further actions outside the scope of this specification to act upon an included Resource-Priority header field as specified in 3GPP TS 24.229 [11];

4) may display to the MCVideo user the MCVideo ID of the inviting MCVideo user;

NOTE 1: As this is a re-INVITE for an existing MCVideo private call session, there is no attempt made to change the answer-mode from its current state.

4A) may display to the MCVideo user the functional alias of the inviting MCVideo user, if provided;

5) shall accept the SIP re-INVITE request and generate a SIP 200 (OK) response according to rules and procedures of 3GPP TS 24.229 [11];

6) if the SIP re-INVITE request was received within an on-demand session, shall include an SDP answer in the SIP 200 (OK) response to the SDP offer in the incoming SIP INVITE request according to 3GPP TS 24.229 [11] with the clarifications given in clause 6.2.2;

7) shall send the SIP 200 (OK) response towards the MCVideo server according to rules and procedures of 3GPP TS 24.229 [11]; and

8) shall interact with the media plane as specified in 3GPP TS 24.581 [5].

10.2.2.2.4 MCVideo in-progress emergency cancel

This clause covers on-demand session.

Upon receiving a request from an MCVideo user to cancel the in-progress emergency condition on an MCVideo emergency private call, the MCVideo client shall generate a SIP re-INVITE request by following the UE session procedures specified in 3GPP TS 24.229 [4], with the clarifications given below.

The MCVideo client:

1) if the MCVideo user is not authorised to cancel the in-progress emergency condition on an MCVideo emergency private call as determined by the procedures of clause 6.2.8.3.1.2, the MCVideo client:

a) should indicate to the MCVideo user that they are not authorised to cancel the in-progress emergency condition on an MCVideo emergency private call; and

b) shall skip the remaining steps of the current clause;

2) shall, if the MCVideo user is cancelling an in-progress emergency condition and optionally an MCVideo emergency alert originated by the MCVideo user, include an application/vnd.3gpp.mcvideo-info+xml MIME body populated as specified in clause 6.2.8.3.6;

3) shall, if the MCVideo user is cancelling an in-progress emergency condition and optionally an MCVideo emergency alert originated by another MCVideo user, include an application/vnd.3gpp.mcvideo-info+xml MIME body populated as specified in clause 6.2.8.3.8;

4) shall include a Resource-Priority header field and comply with the procedures in clause 6.2.8.3.3;

5) shall include in the SIP re-INVITE request an SDP offer the media parameters as currently established;

NOTE 1: The SIP re-INVITE request can be sent within an on-demand session or a pre-established session associated with an MCVideo group session. If the SIP re-INVITE request is sent within a pre-established session, the media-level section for the offered MCVideo video media stream and the media-level section of the offered media-transmission control entity are expected to be the same as was negotiated in the existing pre-established session.

6) if an implicit transmission request is required, shall indicate this as specified in clause 6.4; and

7) shall send the SIP re-INVITE request according to 3GPP TS 24.229 [4].

On receiving a SIP 2xx response to the SIP re-INVITE request, the MCVideo client:

1) shall interact with the user plane as specified in 3GPP TS 24.380 [5];

2) shall set the MCVideo emergency private priority state of the MCVideo private call to "MVEPP 1: no-emergency";

3) shall set the MCVideo emergency private call state of the call to "MVEPC 1: emergency-pc-capable"; and

4) if the MCVideo emergency alert state is set to "MVPEA 4: Emergency-alert-cancel-pending", the sent SIP re-INVITE request did not contain an <originated-by> element in the application/vnd.3gpp.mcvideo-info+xml MIME body and the SIP 2xx response to the SIP request for a priority group call does not contain a Warning header field as specified in clause 4.4 with the warning text containing the mcvideo-warn-code set to "149", shall set the MCVideo emergency alert state to "MVPEA 1: no-alert".

On receiving a SIP 4xx response, SIP 5xx response or SIP 6xx response to the SIP re-INVITE request:

1) if the SIP 4xx response, SIP 5xx response or SIP 6xx response contains an application/vnd.3gpp.mcvideo-info+xml MIME body with an <emergency-ind> element set to a value of "true", the MCVideo client shall set the MCVideo emergency private priority state as "MVEPP 2: in-progress";

2) if the SIP 4xx response, SIP 5xx response or SIP 6xx response contains an application/vnd.3gpp.mcvideo-info+xml MIME body with an <alert-ind> element set to a value of "true" and the sent SIP re-INVITE request did not contain an <originated-by> element in the application/vnd.3gpp.mcvideo-info+xml MIME body, the MCVideo client shall set the MCVideo emergency alert state to "MVPEA 3: emergency-alert-initiated"; and

3) if the SIP 4xx response, SIP 5xx response or SIP 6xx response did not contain an application/vnd.3gpp.mcvideo-info+xml MIME body, shall set the MCVideo emergency private priority state as "MVEPP 2: in-progress" and the MCVideo emergency alert (MPEA) state shall revert to its value prior to entering the current procedure.

NOTE 2: If the in-progress emergency private priority state cancel request is rejected, the state of the session does not change, i.e. continues with MCVideo emergency private call level priority.

On receiving a SIP INFO request where the Request-URI contains an MCVideo session ID identifying an ongoing group session, the MCVideo client shall follow the actions specified in clause 6.2.8.3.7.

10.2.2.2.5 Upgrade to MCVideo emergency private call

This clause covers both on-demand session and pre-established sessions.

Upon receiving a request from an MCVideo user to upgrade the ongoing MCVideo private call to an MCVideo emergency private call, the MCVideo client shall generate a SIP re-INVITE request as specified in 3GPP TS 24.229 [4], with the clarifications given below.

1) shall include an application/vnd.3gpp.mcvideo-info+xml MIME body populated as specified in clause 6.2.8.3.2;

2) shall include a Resource-Priority header field and comply with the procedures in clause 6.2.8.3.3.

3) shall include an SDP offer with the media parameters as currently established according to 3GPP TS 24.229 [4];

NOTE: The SIP re-INVITE request can be sent within an on-demand session or a pre-established session associated with an MCVideo private call. If the SIP re-INVITE request is sent within a pre-established session, the media-level section for the offered MCVideo video media stream and the media-level section of the offered media-transmission control entity are expected to be the same as was negotiated in the existing pre-established session.

4) if an implicit transmission request is required, shall indicate this as specified in clause 6.4; and

5) shall send the SIP re-INVITE request according to 3GPP TS 24.229 [4].

On receiving a SIP 2xx response to the SIP re-INVITE request the MCVideo client:

1) shall interact with the user plane as specified in 3GPP TS 24.380 [5]; and

2) shall perform the actions specified in clause 6.2.8.3.4.

On receiving a SIP 4xx response, SIP 5xx response or SIP 6xx response to the SIP re-INVITE request, the MCVideo client shall perform the actions specified in clause 6.2.8.3.5.

On receiving a SIP INFO request where the Request-URI contains an MCVideo session ID identifying an ongoing group session, the MCVideo client shall follow the actions specified in clause 6.2.8.3.7

10.2.2.3 Participating MCVideo function procedures

10.2.2.3.1 Originating procedures

10.2.2.3.1.1 On-demand private call

Upon receipt of a "SIP INVITE request for originating participating MCVideo function" containing an application/vnd.3gpp.mcvideo-info+xml MIME body with the <session-type> element set to a value of "private", the participating MCVideo function:

1) may reject the SIP INVITE request depending on the value of the Resource-Priority header field if the Resource-Priority header field is included in the received SIP INVITE request according to rules and procedures specified in IETF RFC 4412 [33] and shall not continue with the rest of the steps;

2) if unable to process the request due to a lack of resources or a risk of congestion exists, may reject the "SIP INVITE request for originating participating MCVideo function" with a SIP 500 (Server Internal Error) response. The participating MCVideo function may include a Retry-After header field to the SIP 500 (Server Internal Error) response as specified in IETF RFC 3261 [15] and shall not continue with the rest of the steps;

NOTE 1: If the received SIP INVITE request contains an emergency indication set to a value of "true", the participating MCVideo function can choose to accept the request.

NOTE 2: If the received SIP INVITE request contains an emergency indication set to a value of "true", the participating MCVideo function can choose to allow an exception to the limit on the number of private calls and accept the request.

3) shall determine the MCVideo ID of the calling user from public user identity in the P-Asserted-Identity header field of the SIP INVITE request and shall authorise the user;

NOTE 3: The MCVideo ID of the calling user is bound to the public user identity at the time of service authorisation, as documented in clause 7.3.

4) if the participating MCVideo function cannot find a binding between the public user identity and an MCVideo ID or if the validity period of an existing binding has expired, then the participating MCVideo function shall reject the SIP INVITE request with a SIP 404 (Not Found) response with the warning text set to "141 user unknown to the participating function" in a Warning header field as specified in clause 4.4, and shall not continue with any of the remaining steps;

5) shall:

   a) if the <session-type> is set to "private", determine that the call is a private call;

6) if the call is a:

   a) private call, determine the public service identity of the controlling MCVideo function for the private call service associated with the originating user's MCVideo ID identity;

NOTE 4: The public service identity can identify the controlling MCVideo function in the local MCVideo system or in an interconnected MCVideo system.

NOTE 5: If the controlling MCVideo function is in an interconnected MCVideo system in a different trust domain, then the public service identity can identify the MCVideo gateway server that acts as an entry point in the interconnected MCVideo system from the local MCVideo system.

NOTE 6: If the controlling MCVideo function is in an interconnected MCVideo system in a different trust domain, then the local MCVideo system can route the SIP request through an MCVideo gateway server that acts as an exit point from the local MCVideo system to the interconnected MCVideo system.

NOTE 7: How the participating MCVideo function determines the public service identity of the controlling MCVideo function for the private call service or first-to-answer call service associated with the originating user or of the MCVideo gateway server in the interconnected MCVideo system is out of the scope of the present document.

NOTE 8: How the local MCVideo system routes the SIP request through an exit MCVideo gateway server is out of the scope of the present document.

7) if the participating MCVideo function is unable to identify the controlling MCVideo function for the private call service, it shall reject the SIP INVITE request with a SIP 404 (Not Found) response with the warning text "142 unable to determine the controlling function" in a Warning header field as specified in clause 4.4, and shall not continue with any of the remaining steps;

8) if the incoming SIP INVITE request does not contain an application/resource-lists MIME body, shall reject the "SIP INVITE request for originating participating MCVideo function" with a SIP 403 (Forbidden) response including warning text set to "145 unable to determine called party" in a Warning header field as specified in clause 4.4, and shall not continue with the rest of the steps;

9) if the call is a private call and the incoming SIP INVITE request contains an application/resource-lists MIME body with more than one <entry> element, shall reject the "SIP INVITE request for originating participating MCVideo function" with a SIP 403 (Forbidden) response including warning text set to "145 unable to determine called party" in a Warning header field as specified in clause 4.4, and shall not continue with the rest of the steps;

10) if the <allow-private-call> element of the <ruleset> element is not present in the MCVideo user profile document on the participating MCVideo function or is present with the value "false" (see the MCVideo user profile document in 3GPP TS 24.484 [25]), indicating that the user identified by the MCVideo ID is not authorised to initiate private calls, shall reject the "SIP INVITE request for originating participating MCVideo function" with a SIP 403 (Forbidden) response, with warning text set to "107 user not authorised to make private calls" in a Warning header field as specified in clause 4.4, and shall not continue with the rest of the steps;

11) if the call is a private call and:

   a) if the received SIP INVITE request includes an Answer-Mode header field as specified in IETF RFC 5373 [27] with the value "Auto" and the <allow-automatic-commencement> element of the <ruleset> element is not present in the MCVideo user profile document on the participating MCVideo function or is present with the value "false" (see the MCVideo user profile document in 3GPP TS 24.484 [25]) indicating that the user identified by the MCVideo ID is not authorised to initiate private call with automatic commencement, shall reject the "SIP INVITE request for originating participating MCVideo function" with a SIP 403 (Forbidden) response including warning text set to "125 user not authorised to make private call with automatic commencement" in a Warning header field as specified in clause 4.4, and shall not continue with the rest of the steps;

   b) if the received SIP INVITE request includes an Answer-Mode header field as specified in IETF RFC 5373 [27] with the value "Manual" and the <allow-manual-commencement> element of the <ruleset> element is not present in the MCVideo user profile document on the participating MCVideo function or is present with the value "false" (see the MCVideo user profile document in 3GPP TS 24.484 [25]), indicating that the user identified by the MCVideo ID is not authorised to initiate

private call with manual commencement, shall reject the "SIP INVITE request for originating participating MCVideo function" with a SIP 403 (Forbidden) response including warning text set to "126 user not authorised to make private call with manual commencement" in a Warning header field as specified in clause 4.4, and shall not continue with the rest of the steps;

c) if the <PrivateCall> element exists in the MCVideo user profile document with one more <entry> elements (see the MCVideo user profile document in 3GPP TS 24.484 [25]) and:

   i) if the "uri" attribute of the <entry> element of the application/resource-lists MIME body does not match with one of the <entry> elements of the <PrivateCall> element of the MCVideo user profile document (see the MCVideo user profile document in 3GPP TS 24.484 [25]); and

   ii) if configuration is not set in the MCVideo user profile document (see the MCVideo user profile document in 3GPP TS 24.484 [25]) that allows the MCVideo user to make a private call to users not contained within the <entry> elements of the <PrivateCall> element;

then:

   i) shall reject the "SIP INVITE request for originating participating MCVideo function" with a SIP 403 (Forbidden) response including warning text set to "144 user not authorised to call this particular user" in a Warning header field as specified in clause 4.4 and shall not continue with the rest of the steps;

12) shall validate the media parameters and if the MCVideo video media codec is not offered in the "SIP INVITE request for originating participating MCVideo function" shall reject the request with a SIP 488 (Not Acceptable Here) response. Otherwise, continue with the rest of the steps;

13) shall generate a SIP INVITE request as specified in clause 6.3.2.1.3 with the following clarifications:

a) if the conditions in step 12) above were executed and the participating MCVideo function determined that the "uri" attribute of only one of the <entry> elements of the application/resource-lists MIME body matched with an <entry> element of the <PrivateCall> element of the MCVideo user profile document (see the MCVideo user profile document in 3GPP TS 24.484 [25]) then the <session-type> in the application/vnd.3gpp.mcvideo-info+xml MIME body of the SIP INVITE request generated in clause 6.3.2.1.3 is set to "private"; and

b) if the conditions in step 12) above were executed, then only the <entry> element(s) of the application/resource-lists MIME body that have a "uri" attribute that matched with an <entry> elements of the <PrivateCall> element of the MCVideo user profile document (see the MCVideo user profile document in 3GPP TS 24.484 [25]) are included in the application/resource-lists MIME body in the SIP INVITE request generated in clause 6.3.2.1.3;

14) shall set the Request-URI to the public service identity of the controlling MCVideo function hosting the private call service as determined by step 6);

15) shall set the <mcvideo-calling-user-id> element in an application/vnd.3gpp.mcvideo-info+xml MIME body of the SIP INVITE request to the MCVideo ID of the calling user;

16) if the call is a private call and:

a) if a Priv-Answer-Mode header field specified in IETF RFC 5373 [27] was received in the incoming SIP INVITE request with a value of "Manual", shall not include a Priv-Answer-Mode header field in the outgoing SIP INVITE request;

b) if the <allow-force-auto-answer> element of the <ruleset> element is not present in the MCVideo user profile document on the participating MCVideo function or is present with the value "false" (see the MCVideo user profile document in 3GPP TS 24.484 [25]), and the Priv-Answer-Mode header field specified in IETF RFC 5373 [27] was received in the incoming SIP INVITE request with a value of "Auto", shall reject the "SIP INVITE request for originating participating MCVideo function" with a SIP 403 (Forbidden) response including warning text set to "143 not authorised to force auto answer" in a Warning header field as specified in clause 4.4, and shall not continue with the rest of the steps;

c) if the <allow-force-auto-answer> element of the <ruleset> element is present in the MCVideo user profile document with the value "true" (see the MCVideo user profile document in 3GPP TS 24.484 [25]) on the participating MCVideo function, and the Priv-Answer-Mode header field specified in IETF RFC 5373 [27]

was received in the incoming SIP INVITE request with a value of "Auto", shall include the Priv-Answer-Mode header field set to a value of "Auto" in the outgoing SIP INVITE request;

d) if a Priv-Answer-Mode header field containing the value of "Auto" has not been included in the outgoing SIP INVITE request as specified in step 17) above and the incoming "SIP INVITE request for originating participating MCVideo function" contained an Answer-Mode header field as specified in IETF RFC 5373 [27], then shall populate the Answer-Mode header field of the outgoing SIP INVITE request with the contents of the Answer-Mode header field from the incoming "SIP INVITE request for originating participating MCVideo function";

17) shall include in the SIP INVITE request an SDP offer based on the SDP offer in the received "SIP INVITE request for originating participating MCVideo function", as specified in clause 6.3.2.1.1.1;

18) shall include a Resource-Priority header field according to rules and procedures of 3GPP TS 24.229 [11] set to the value indicated in the Resource-Priority header field if included in the SIP INVITE request from the MCVideo client; and

19) shall forward the SIP INVITE request, according to 3GPP TS 24.229 [11].

Upon receiving a SIP 180 (Ringing) response, the participating MCVideo function:

1) shall generate a SIP 180 (Ringing) response to the SIP INVITE request as specified in the clause 6.3.2.1.5.1;

2) shall include the P-Asserted-Identity header field as received in the incoming SIP 180 (Ringing) response;

3) shall include Warning header field(s) received in the incoming SIP 180 (Ringing) response; and

4) shall forward the SIP 180 (Ringing) response to the MCVideo client according to 3GPP TS 24.229 [11].

Upon receiving a SIP 200 (OK) response, the participating MCVideo function:

1) shall generate a SIP 200 (OK) response as specified in the clause 6.3.2.1.5.2;

2) shall include in the SIP 200 (OK) response an SDP answer as specified in the clause 6.3.2.1.2.1;

3) shall include Warning header field(s) received in the incoming SIP 200 (OK) response;

4) shall include the P-Asserted-Identity header field received in the incoming SIP 200 (OK) response into the outgoing SIP 200 (OK) response;

5) shall include an MCVideo session identity mapped to the MCVideo session identity provided in the Contact header field of the received SIP 200 (OK) response;

6) shall send the SIP 200 (OK) response to the MCVideo client according to 3GPP TS 24.229 [11];

7) shall interact with the media plane as specified in 3GPP TS 24.581 [5]; and

8) shall start the SIP session timer according to rules and procedures of IETF RFC 4028 [23].

The participating MCVideo function shall forward any other SIP response that does not contain SDP, including any MIME bodies contained therein, along the signalling path to the originating network according to 3GPP TS 24.229 [11].

10.2.2.3.1.2 Private call initiation using pre-established session

Upon receipt of a "SIP REFER request for a pre-established session", with:

1) the Refer-To header field containing a Content-ID ("cid") Uniform Resource Locator (URL) as specified in IETF RFC 2392 [49] that points to an application/resource-lists MIME body as specified in IETF RFC 5366 [37] containing one or more <entry> element(s) with a "uri" attribute containing a SIP URI set to the MCVideo ID of the called user(s);

2) an hname "body" parameter in the headers portion of the SIP URI specified above containing an application/vnd.3gpp.mcvideo-info MIME body with the <session-type> element set to "private" ; and

3) a Content-ID header field set to the "cid" URL;

the participating function:

1) if unable to process the request due to a lack of resources or a risk of congestion exists, may reject the SIP INVITE request with a SIP 500 (Server Internal Error) response. The participating MCVideo function may include a Retry-After header field to the SIP 500 (Server Internal Error) response as specified in IETF RFC 3261 [15] and shall not continue with the rest of the steps;

2) shall determine the MCVideo ID of the calling user from public user identity in the P-Asserted-Identity header field of the SIP REFER request;

3) if the participating MCVideo function cannot find a binding between the public user identity and an MCVideo ID or if the validity period of an existing binding has expired, then the participating MCVideo function shall reject the SIP REFER request with a SIP 404 (Not Found) response with the warning text set to "141 user unknown to the participating function" in a Warning header field as specified in clause 4.4, and shall not continue with any of the remaining steps;

4) if the received SIP REFER request does not contain an application/resource-lists MIME body referenced by a "cid" URL in the Refer-To header field, shall reject the "SIP REFER request for pre-established session" with a SIP 403 (Forbidden) response including warning text set to "145 unable to determine called party" in a Warning header field as specified in clause 4.4, and shall not continue with the rest of the steps;

5) if the received SIP REFER request contains an application/resource-lists MIME body referenced by a "cid" URL in the Refer-To header field with more than one <entry> element each with an application/vnd.3gpp.mcvideo-info MIME body with the <session-type> element:

   a) set to "private", shall reject the "SIP REFER request for pre-established session" with a SIP 403 (Forbidden) response including warning text set to "145 unable to determine called party" in a Warning header field as specified in clause 4.4, and shall not continue with any of the remaining steps;

6) if the received SIP REFER request contains an application/resource-lists MIME body referenced by a "cid" URL in the Refer-To header field with only one <entry> element with an application/vnd.3gpp.mcvideo-info MIME body with the <session-type> element:

   a) not set to "private", shall reject the "SIP REFER request for pre-established session" with a SIP 403 (Forbidden) response including warning text set to "145 unable to determine called party" in a Warning header field as specified in clause 4.4, and shall not continue with any of the remaining steps; or

   b) set to "private", determine that the call is a private call;

7) if the call is a:

   a) private call, shall determine the public service identity of the controlling MCVideo function for the private call service associated with the originating user's MCVideo ID; or

NOTE 1: The public service identity can identify the controlling MCVideo function in the local MCVideo system or in an interconnected MCVideo system.

NOTE 2: If the controlling MCVideo function is in an interconnected MCVideo system in a different trust domain, then the public service identity can identify the MCVideo gateway server that acts as an entry point in the interconnected MCVideo system from the local MCVideo system.

NOTE 3: If the controlling MCVideo function is in an interconnected MCVideo system in a different trust domain, then the local MCVideo system can route the SIP request through an MCVideo gateway server that acts as an exit point from the local MCVideo system to the interconnected MCVideo system.

NOTE 4: How the participating MCVideo function determines the public service identity of the controlling MCVideo function for the private call service or first-to-answer call service associated with the originating user or of the MCVideo gateway server in the interconnected MCVideo system is out of the scope of the present document.

NOTE 5: How the local MCVideo system routes the SIP request through an exit MCVideo gateway server is out of the scope of the present document.

8) if the participating MCVideo function is unable to identify the controlling MCVideo function for the private call service associated with the originating user's MCVideo ID, it shall reject the REFER request with a SIP 404 (Not Found) response with the warning text "142 unable to determine the controlling function" in a Warning header field as specified in clause 4.4, and shall not continue with any of the remaining steps;

9) if the <allow-private-call> element of the <ruleset> element is not present in the MCVideo user profile document (see the MCVideo user profile document in 3GPP TS 24.484 [25]) on the participating MCVideo function or is present with the value "false", indicating that the user identified by the MCVideo ID is not authorised to initiate private calls, shall reject the "SIP REFER request for pre-established session" with a SIP 403 (Forbidden) response to the SIP INVITE request, with warning text set to "107 user not authorised to make private calls" in a Warning header field as specified in clause 4.4;

10) if the call is a private call:

   a) if the received SIP REFER request includes an Answer-Mode header field as specified in IETF RFC 5373 [27] set to "Auto" contained in the header portion of the SIP URI present in the application/resource-lists MIME body referenced by a "cid" URL in the Refer-To header field, and the <allow-automatic-commencement> element of the <ruleset> element is not present in the MCVideo user profile document (see the MCVideo user profile document in 3GPP TS 24.484 [25]) on the participating MCVideo function or is present with the value "false" (indicating that the user identified by the MCVideo ID is not authorised to initiate private call with automatic commencement), shall reject the "SIP REFER request for pre-established session" with a SIP 403 (Forbidden) response including warning text set to "125 user not authorised to make private call with automatic commencement" in a Warning header field as specified in clause 4.4, and shall not continue with the rest of the steps;

   b) if the received SIP REFER request includes an Answer-Mode header field as specified in IETF RFC 5373 [27] set to "Manual" contained in the header portion of the SIP URI present in the application/resource-lists MIME body referenced by a "cid" URL in the Refer-To header field, and the <allow-manual-commencement> element of the <ruleset> element is not present in the MCVideo user profile document (see the MCVideo user profile document in 3GPP TS 24.484 [25]) on the participating MCVideo function or is present with the value "false" (indicating that the user identified by the MCVideo ID is not authorised to initiate private call with manual commencement), shall reject the "SIP REFER request for pre-established session" with a SIP 403 (Forbidden) response including warning text set to "126 user not authorised to make private call with manual commencement" in a Warning header field as specified in clause 4.4 and shall not continue with the rest of the steps;

   c) if the <allow-force-auto-answer> element of the <ruleset> element is not present in the MCVideo user profile document (see the MCVideo user profile document in 3GPP TS 24.484 [25]) on the participating MCVideo function or is present with the value "false", and the SIP REFER request contained a Priv-Answer-Mode header field as specified in IETF RFC 5373 [27] set to "Auto" in the header portion of the SIP URI in the application/resource-lists MIME body referenced by a "cid" URL in the Refer-To header field, shall reject the "SIP INVITE request for originating participating MCVideo function" with a SIP 403 (Forbidden) response including warning text set to "143 not authorised to force auto answer" in a Warning header field as specified in clause 4.4, and shall not continue with the rest of the steps;

   d) if the <PrivateCall> element exists in the MCVideo user profile document with one more <entry> elements (see the MCVideo user profile document in 3GPP TS 24.484 [25]) and:

      i) if the SIP URI in the application/resource-lists MIME body referenced by a "cid" URL in the Refer-To header field not match with one of the <entry> elements of the <PrivateCall> element of the MCVideo user profile document (see the MCVideo user profile document in 3GPP TS 24.484 [25]); and

      ii) if configuration is not set in the MCVideo user profile document (see the MCVideo user profile document in 3GPP TS 24.484 [25]) that allows the MCVideo user to make a private call to users not contained within the <entry> elements of the <PrivateCall> element;

      then:

      i) shall reject the "SIP INVITE request for originating participating MCVideo function" with a SIP 403 (Forbidden) response including warning text set to "144 user not authorised to call this particular user" in a Warning header field as specified in clause 4.4 and shall not continue with the rest of the steps;

11) if the "SIP REFER request for a pre-established session" contained a Refer-Sub header field containing "false" value and a Supported header field containing "norefersub" value, shall handle the SIP REFER request as specified in 3GPP TS 24.229 [11], IETF RFC 3515 [64] as updated by IETF RFC 6665 [16], and IETF RFC 4488 [31] without establishing an implicit subscription;

12) shall generate a final SIP 200 (OK) response to the "SIP REFER request for a pre-established session" according to 3GPP TS 24.229 [11];

NOTE 6: In accordance with IETF RFC 4488 [31], the participating MCVideo function inserts the Refer-Sub header field containing the value "false" in the SIP 200 (OK) response to the SIP REFER request to indicate that it has not created an implicit subscription.

13) shall send the response to the "SIP REFER request for a pre-established session" towards the MCVideo client according to 3GPP TS 24.229 [11];

14) shall generate a SIP INVITE request as specified in clause 6.3.2.1.4 with the following clarifications:

a) if the conditions in step 11) above were executed and the participating MCVideo function determined that the "uri" attribute of only one of the <entry> elements of the application/resource-lists MIME body matched with an <entry> element of the <PrivateCall> element of the MCVideo user profile document (see the MCVideo user profile document in 3GPP TS 24.484 [25]) then the <session-type> in the application/vnd.3gpp.mcvideo-info+xml MIME body of the SIP INVITE request generated in clause 6.3.2.1.4 is set to "private"; and

b) if the conditions in step 11) above were executed, then only the <entry> element(s) of the application/resource-lists MIME body that have a "uri" attribute that matched with an <entry> elements of the <PrivateCall> element of the MCVideo user profile document (see the MCVideo user profile document in 3GPP TS 24.484 [25]) are included in the application/resource-lists MIME body in the SIP INVITE request generated in clause 6.3.2.1.3;

15) shall set the Request-URI of the SIP INVITE request to the public service identity of the controlling MCVideo function hosting the private call service for the calling MCVideo user as determined above in step 7);

16) if the call is a private call:

a) if the SIP REFER request contained a Priv-Answer-Mode header field as specified in IETF RFC 5373 [27] set to "Manual" in the header portion of the SIP URI in the application/resource-lists MIME body referenced by a "cid" URL in the Refer-To header field, shall copy the Priv-Answer-Mode header field from the incoming SIP REFER request to the outgoing SIP INVITE request;

b) if the <allow-force-auto-answer> element of the <ruleset> element is present in the MCVideo user profile document with the value "true" (see the MCVideo user profile document in 3GPP TS 24.484 [25]) on the participating MCVideo function, and the Priv-Answer-Mode header field specified in IETF RFC 5373 [27] was received in the header portion of the SIP URI in the application/resource-lists MIME body referenced by a "cid" URL in the Refer-To header field, with a value set to "Auto", shall copy the Priv-Answer-Mode header field to the outgoing SIP INVITE request; and

c) if a Priv-Answer-Mode header field containing the value of "Auto" has not been copied to the outgoing SIP INVITE request as specified in step 16) above, and the incoming SIP REFER request contained an Answer-Mode header field in the headers portion of the SIP URI in the application/resource-lists referenced by a "cid" URL in the Refer-To header field, then copy the Answer-Mode header field to the outgoing SIP INVITE request;

17) if the received SIP REFER request contained a Resource-Priority header field, shall include in the outgoing SIP INVITE request a Resource-Priority header field according to rules and procedures of 3GPP TS 24.229 [11] set to the value indicated in the Resource-Priority header field of the received SIP REFER request; and

17a) if the call is a private call and if the received SIP REFER request contains a <functional-alias-URI> element of the application/vnd.3gpp.mcvideo-info+xml MIME body, then shall check if the status of the functional alias is activated for the MCVideo ID. If the functional alias status is activated, then the participating MCVideo function shall set the <functional-alias-URI> element of the application/vnd.3gpp.mcvideo-info+xml MIME body in the outgoing SIP INVITE request to the received value, otherwise shall not include a <functional-alias-URI> element;

NOTE 7: The participating MCVideo function will leave verification of the Resource-Priority header field to the controlling MCVideo function.

18) shall forward the SIP INVITE request according to 3GPP TS 24.229 [11].

Upon receiving SIP provisional responses for the SIP INVITE request the participating MCVideo function:

1) shall discard the received SIP responses without forwarding them.

Upon receiving a SIP 200 (OK) response for the SIP INVITE request the participating MCVideo function:

1) shall interact with the media plane as specified in 3GPP TS 24.581 [5].

Upon receipt of a SIP 4xx, 5xx or 6xx response to the above SIP INVITE request the participating MCVideo function:

1) shall interact with the media plane as specified in 3GPP TS 24.581 [5].

10.2.2.3.1.3 Receipt of SIP re-INVITE for MCVideo private call from the served user

This clause covers both on-demand session and pre-established sessions.

Upon receipt of a SIP re-INVITE request for an existing MCVideo private call session the participating MCVideo function:

1) may reject the SIP re-INVITE request depending on the value of the Resource-Priority header field if the Resource-Priority header field is included in the received SIP re-INVITE request according to rules and procedures specified in IETF RFC 4412 [33] and skip the rest of the steps;

2) if unable to process the request due to a lack of resources or a risk of congestion exists, may reject the "SIP INVITE request for originating participating MCVideo function" with a SIP 500 (Server Internal Error) response. The participating MCVideo function may include a Retry-After header field to the SIP 500 (Server Internal Error) response as specified in IETF RFC 3261 [15];

NOTE 1: If the SIP re-INVITE request contains an emergency indication, the participating MCVideo function can choose to accept the request.

3) shall determine the MCVideo ID of the calling user from public user identity in the P-Asserted-Identity header field of the SIP INVITE request and shall authorise the user;

NOTE 2: The MCVideo ID of the calling user is bound to the public user identity at the time of service authorisation, as documented in clause 7.3.

4) shall validate the media parameters and if the MCVideo video media codec is not offered in the SIP re-INVITE request shall reject the request with a SIP 488 (Not Acceptable Here) response and skip the rest of the steps;

NOTE 3: If the received SIP re-INVITE request is received within a pre-established session, associated with an MCVideo private call, the media-level section for the offered MCVideo video media stream and the media-level section of the offered media-transmission control entity are expected to be the same as was negotiated in the existing pre-established session.

5) shall generate a SIP re-INVITE request as specified in clause 6.3.2.1.9;

6) shall set the <mcvideo-calling-user-id> element in an application/vnd.3gpp.mcvideo-info+xml MIME body of the SIP re-INVITE request to the MCVideo ID of the calling user;

7) shall, if the SIP re-INVITE request was received within an on-demand session include in the SIP re-INVITE request an SDP containing the current media parameters used by the existing session;

8) shall, if the SIP re-INVITE request was received within a pre-established session, include in the SIP re-INVITE request an SDP offer based upon the previously negotiated SDP for the pre-established session as specified in clause 6.3.2.1.1.2;

9) shall include a Resource-Priority header field according to rules and procedures of 3GPP TS 24.229 [11] set to the value indicated in the Resource-Priority header field if included in the SIP re-INVITE request from the MCVideo client; and

10) shall forward the SIP re-INVITE request, according to 3GPP TS 24.229 [11].

Upon receiving a SIP 200 (OK) response, the participating MCVideo function:

1) shall generate a SIP 200 (OK) response as specified in the clause 6.3.2.1.5.2;

2) if the SIP 200 (OK) response is to be sent within an on-demand session shall include in the SIP 200 (OK) response an SDP answer as specified in the clause 6.3.2.1.2.1;

3) if the SIP 200 (OK) response is to be sent within a pre-established session shall include in the SIP 200 (OK) response an SDP answer based upon the previously negotiated SDP for the pre-established session;

4) shall include Warning header field(s) received in the incoming SIP 200 (OK) response;

5) shall include the P-Asserted-Identity header field received in the incoming SIP 200 (OK) response into the outgoing SIP 200 (OK) response;

6) shall send the SIP 200 (OK) response to the MCVideo client according to 3GPP TS 24.229 [11]; and

7) shall interact with the media plane as specified in 3GPP TS 24.581 [5].

The participating MCVideo function shall forward any other SIP response that does not contain SDP, including any MIME bodies contained therein, along the signalling path to the originating network according to 3GPP TS 24.229 [11].

10.2.2.3.2 Terminating procedures

This clause covers both on demand session and pre-established session.

Upon receipt of a "SIP INVITE request for terminating participating MCVideo function", the participating MCVideo function:

1) if unable to process the request due to a lack of resources or a risk of congestion exists, may reject the "SIP INVITE request for terminating participating MCVideo function" with a SIP 500 (Server Internal Error) response. The participating MCVideo function may include a Retry-After header field to the SIP 500 (Server Internal Error) response as specified in IETF RFC 3261 [15], and shall not continue with the rest of the steps;

2) shall check the presence of the isfocus media feature tag in the URI of the Contact header field and if it is not present then the participating MCVideo function shall reject the request with a SIP 403 (Forbidden) response with the warning text set to "104 isfocus not assigned" in a Warning header field as specified in clause 4.4, and shall not continue with the rest of the steps;

3) if the <session-type> element of the application/vnd.3gpp.mcvideo-info+xml MIME body is set to "private" and the Answer-Mode Indication in the application/poc-settings+xml MIME body has not yet been received from the invited MCVideo client as defined in clause 7.3.3 or clause 7.3.4, shall reject the request with a SIP 480 (Temporarily Unavailable) response with the warning text set to "146 T-PF unable to determine the service settings for the called user" in a Warning header field as specified in clause 4.4 and shall not continue with the rest of the steps;

4) shall use the MCVideo ID present in the <mcvideo-request-uri> element of the application/vnd.3gpp.mcvideo-info+xml MIME body of the incoming SIP INVITE request to retrieve the binding between the MCVideo ID and public user identity;

5) if the binding between the MCVideo ID and public user identity does not exist, then the participating MCVideo function shall reject the SIP INVITE request with a SIP 404 (Not Found) response. Otherwise, continue with the rest of the steps;

6) when the called user identified by the MCVideo ID is unable to participate in private calls as identified in the called user's MCVideo user profile document (see the MCVideo user profile document in 3GPP TS 24.484 [25]) on the terminating participating MCVideo function, shall reject the "SIP INVITE request for terminating participating MCVideo function" with a SIP 403 (Forbidden) response including warning text set to "127 user not authorised to be called in private call" in a Warning header field as specified in clause 4.4;

6A) if the <session-type> element of the application/vnd.3gpp.mcvideo-info+xml MIME body is set to "private" and if the <IncomingPrivateCallList> element exists in the MCVideo user profile document with one or more <entry> elements (see the MCVideo user profile document in 3GPP TS 24.484 [25]) and:

   i) if the <mcvideo-calling-user-id> element of the application/vnd.3gpp.mcvideo-info+xml MIME body of the incoming SIP INVITE request does not match with one of the <entry> elements of the <IncomingPrivateCallList> element of the MCVideo user profile document; and

   ii) if configuration is not set in the MCVideo user profile document that allows the MCVideo user to receive a private call by users not contained within the <entry> elements of the <IncomingPrivateCallList> element (see <allow-to-receive-private-call-from-any-user> element in MCVideo user profile document in 3GPP TS 24.484 [25]);

then:

i) shall reject the "SIP INVITE request for terminating participating MCVideo function" with a SIP 403 (Forbidden) response including warning text set to "159 user not authorised to be called by this originating user" in a Warning header field as specified in clause 4.4 and shall not continue with the rest of the steps;

7) shall perform the automatic commencement procedures specified in clause 6.3.2.2.5.1 and according to IETF RFC 5373 [27] if one of the following conditions are met:

a) "SIP INVITE request for terminating participating MCVideo function" contains an Answer-Mode header field with the value "Auto";

b) "SIP INVITE request for terminating participating MCVideo function" does not contain an Answer-Mode header field and the Answer-Mode Indication received in the application/poc-settings+xml MIME body received from the invited MCVideo client as per clause 7.3.3 or clause 7.3.4 is set to "auto-answer"; or

c) "SIP INVITE request for terminating participating MCVideo function" contains a Priv-Answer-Mode header field with the value "Auto"; and

8) shall perform the manual commencement procedures specified in clause 6.3.2.2.6.1 and according to IETF RFC 5373 [27] if either of the following conditions are met:

a) "SIP INVITE request for terminating participating MCVideo function" contains an Answer-Mode header field with the value "Manual";

b) "SIP INVITE request for terminating participating MCVideo function" does not contain an Answer-Mode header field and Answer-Mode Indication received in the application/poc-settings+xml MIME body received from the invited MCVideo client as per clause 7.3.3 or clause 7.3.4 is set to "manual-answer"; or

c) "SIP INVITE request for terminating participating MCVideo function" contains a Priv-Answer-Mode header field with the value "Manual".

10.2.2.3.3 Receipt of SIP re-INVITE request by terminating participating function

This clause covers the on-demand session case only.

Upon receipt of a SIP re-INVITE request for an existing MCVideo private call session the participating MCVideo function:

1) if unable to process the request due to a lack of resources or a risk of congestion exists, may reject the SIP re-INVITE with a SIP 500 (Server Internal Error) response. The participating MCVideo function may include a Retry-After header field to the SIP 500 (Server Internal Error) response as specified in IETF RFC 3261 [15] and skip the rest of the steps;

NOTE 1: If the SIP re-INVITE request contains an emergency indication, the participating MCVideo function can choose to accept the request.

2) shall use the MCVideo ID present in the <mcvideo-request-uri> element of the application/vnd.3gpp.mcvideo-info+xml MIME body of the incoming SIP re-INVITE request to retrieve the binding between the MCVideo ID and public user identity;

3) if the binding between the MCVideo ID and public user identity does not exist, then the participating MCVideo function shall reject the SIP re-INVITE request with a SIP 404 (Not Found) response and skip the rest of the steps;

4) shall generate a SIP re-INVITE as specified in clause 6.3.2.2.10;

NOTE 2: As this is the modification of an in-progress MCVideo private call, this procedure does not attempt modification of the existing answer-mode of the call.

5) shall include in the SIP re-INVITE request an SDP offer containing the current media parameters used by the existing session; and

6) shall send the SIP re-INVITE request towards the MCVideo client according to 3GPP TS 24.229 [11].

Upon receiving the SIP 200 (OK) response to the SIP re-INVITE request, the participating MCVideo function:

1) shall generate a SIP 200 (OK) response as described in the clause 6.3.2.2.4.2;

2) shall include in the SIP 200 (OK) response an SDP answer based on the SDP answer in the received SIP 200 (OK) response as specified in clause 6.3.2.2.2.1;

3) shall copy the P-Asserted-Identity header field from the incoming SIP 200 (OK) response to the outgoing SIP 200 (OK) response;

4) shall interact with the media plane as specified in 3GPP TS 24.581 [5]; and

5) shall forward the SIP 200 (OK) response according to 3GPP TS 24.229 [11].

The participating MCVideo function shall forward any other SIP response that does not contain SDP along the signalling path to the originating network according to 3GPP TS 24.229 [11].

10.2.2.4 Controlling MCVideo function procedures

10.2.2.4.1 Originating procedures

This clause describes the procedures for inviting an MCVideo user to an MCVideo session. The procedure is initiated by the controlling MCVideo function as the result of an action in clause 10.2.2.4.2

The controlling MCVideo function:

1) shall generate a SIP INVITE request as specified in clause 6.3.3.1.2;

NOTE 1: As a result of calling clause 6.3.3.1.2, the <mcvideo-calling-user-id> containing the calling user's MCVideo ID is copied into the outgoing SIP INVITE.

2) if the received SIP INVITE request contains an authorised request for an MCVideo emergency private call as determined by clause 6.3.3.1.13.2:

   a) shall set the <emergency-ind> element of the application/vnd.3gpp.mcvideo-info+xml MIME body to a value of "true";

   b) if the received SIP INVITE request contains an alert indication set to a value of "true" and this is an authorised request for an MCVideo emergency alert meeting the conditions specified in clause 6.3.3.1.13.1, perform the procedures specified in clause 6.3.3.1.12; and

   c) if the received SIP INVITE request did not contain an alert indication or contains an alert indication set to a value of "true" and is not an authorised request for an MCVideo emergency alert meeting the conditions specified in clause 6.3.3.1.13.1, shall set the <alert-ind> element of the application/vnd.3gpp.mcvideo-info+xml MIME body to a value of "false";

3) shall copy the MCVideo ID of the MCVideo user listed in the MIME resources body of the incoming SIP INVITE request, into the <mcvideo-request-uri> element in the application/vnd.3gpp.mcvideo-info+xml MIME body of the outgoing SIP INVITE request;

4) shall set the Request-URI to the public service identity of the terminating participating MCVideo function associated to the MCVideo user to be invited;

NOTE 2: The public service identity can identify the terminating participating MCVideo function in the local MCVideo system or in an interconnected MCVideo system.

NOTE 3: If the terminating participating MCVideo function is in an interconnected MCVideo system in a different trust domain, then the public service identity can identify the MCVideo gateway server that acts as an entry point in the interconnected MCVideo system from the local MCVideo system.

NOTE 4: If the terminating participating MCVideo function is in an interconnected MCVideo system in a different trust domain, then the local MCVideo system can route the SIP request through an MCVideo gateway server that acts as an exit point from the local MCVideo system to the interconnected MCVideo system.

NOTE 5: How the controlling MCVideo function determines the public service identity of the terminating participating MCVideo function for the private call service or first-to-answer call service associated with the originating user or of the MCVideo gateway server in the interconnected MCVideo system is out of the scope of the present document.

NOTE 6: How the local MCVideo system routes the SIP request through an exit MCVideo gateway server is out of the scope of the present document.

5) shall copy the public user identity of the calling MCVideo user from the P-Asserted-Identity header field of the incoming SIP INVITE request into the P-Asserted-Identity header field of the SIP INVITE request;

6) shall include a Resource-Priority header field populated with the values for an MCVideo emergency private call as specified in clause 6.3.3.1.19, if either of the following conditions is met:

   a) if the received SIP INVITE request contains an authorised request for an MCVideo emergency private call as determined in step 2 above; or

   b) the originating MCVideo user is in an in-progress emergency private call state with the targeted MCVideo user;

7) shall include in the SIP INVITE request an SDP offer based on the SDP offer in the received SIP INVITE request from the originating network according to the procedures specified in clause 6.3.3.1.1;

8) shall send the SIP INVITE request towards the core network according to 3GPP TS 24.229 [11]; and

9) shall start a private call timer with a value set to the configured max private call duration for the user.

Upon receiving SIP 200 (OK) response for the SIP INVITE request the controlling MCVideo function:

1) shall cache the contact received in the Contact header field; and

2) shall interact with the media plane as specified in 3GPP TS 24.581 [5].

Upon expiry of the private call timer, the controlling MCVideo function shall follow the procedure for releasing private call session as specified in clause 10.2.5.4.

10.2.2.4.2 Terminating procedures

In the procedures in this clause:

1) <emergency–ind> refers to the <emergency-ind> element of the application/vnd.3gpp.mcvideo-info+xml MIME body;

2) <alert–ind> refers to the <alert-ind> element of the application/vnd.3gpp.mcvideo-info+xml MIME body; and

3) <session-type> refers to the <session-type> element of an application/vnd.3gpp.mcvideo-info+xml MIME body.

Upon receipt of:

- a "SIP INVITE request for controlling MCVideo function of a private call"; or

the controlling MCVideo function:

1) if the <session-type> in the SIP INVITE request is set to "private":

   a) shall check whether the public service identity contained in the Request-URI is allocated for private call and perform the actions specified in clause 6.3.7.1 if it is not allocated and skip the rest of the steps; and

   b) shall perform actions to verify the MCVideo ID of the inviting MCVideo user in the <mcvideo-calling-user-id> element of the application/vnd.3gpp.mcvideo-info+xml MIME body of the SIP INVITE request, and authorise the request according to local policy, and if it is not authorised the controlling MCVideo function shall return a SIP 403 (Forbidden) response with the warning text as specified in "Warning header field" and skip the rest of the steps;

2) if the incoming SIP INVITE request does not contain an application/resource-lists MIME body shall reject the SIP INVITE request with a SIP 403 (Forbidden) response including warning text set to "145 unable to determine

called party" in a Warning header field as specified in clause 4.4, and shall not continue with the rest of the steps;

3) if the <session-type> is set to "private" and the application/resource-lists MIME body contains more than one <entry> element, shall reject the "SIP INVITE request for originating participating MCVideo function" with a SIP 403 (Forbidden) response including warning text set to "145 unable to determine called party" in a Warning header field as specified in clause 4.4, and shall not continue with the rest of the steps;

4) shall validate that the received SDP offer includes at least one media stream for which the media parameters and at least one codec or media format is acceptable by the controlling MCVideo function and if not, reject the request with a SIP 488 (Not Acceptable Here) response and skip the rest of the steps;

5) if received SIP INVITE request includes an <emergency-ind>, shall validate the request as described in clause 6.3.3.1.17;

6) if the received SIP INVITE request contains an unauthorised request for an MCVideo emergency private call as determined by clause 6.3.3.1.13.2:

   a) shall reject the SIP INVITE request with a SIP 403 (Forbidden) response as specified in clause 6.3.3.1.14; and

   b) shall send the SIP 403 (Forbidden) response as specified in 3GPP TS 24.229 [4] and skip the rest of the steps;

7) if a Resource-Priority header field is included in the received SIP INVITE request and if the Resource-Priority header field is set to the value indicated for emergency calls, shall reject the SIP INVITE request with a SIP 403 (Forbidden) response and skip the remaining steps if neither one of the following conditions are true:

   a) the SIP INVITE request does not contain an authorised request for an MCVideo emergency call as determined in step 4 above; or

   b) the originating MCVideo user is not in an in-progress emergency private call state with the targeted MCVideo user;

8) if:

   a) the received SIP INVITE request contains an emergency indication set to a value of "true";

   b) the originating MCVideo user is not in an in-progress emergency private call state with the targeted MCVideo user; and

   c) if the <session-type> in the SIP INVITE request is set to "private";

   then:

   a) shall cache the information that the MCVideo user has initiated an MCVideo emergency private call to the targeted user; and

   b) shall cache the information that the MCVideo user is in an in-progress emergency private call state with the targeted MCVideo user;

9) shall perform actions as described in clause 6.3.3.2.2;

10) shall allocate an MCVideo session identity for the MCVideo session; and

11) shall invite the MCVideo user(s) listed in the MIME resource-lists body of received SIP INVITE request as specified in clause 10.2.2.4.1.

Upon receiving a SIP 180 (Ringing) response and if the SIP 180 (Ringing) response or the SIP final response has not yet been sent to the inviting MCVideo client, the controlling MCVideo function:

1) if the SIP 180 (Ringing) response is associated with a SIP INVITE that contained a <session-type> set to "private", shall generate a SIP 180 (Ringing) response to the SIP INVITE request and send the SIP 180 (Ringing) response towards the inviting MCVideo client according to 3GPP TS 24.229 [11]; and

Upon receiving a SIP 200 (OK) response for the SIP INVITE request, the SIP dialog was established as a result of receiving a SIP INVITE request with a <session-type> element set to the value of "private" and the SIP final response has not yet been sent to the inviting MCVideo client, the controlling MCVideo function:

1) shall generate a SIP 200 (OK) response to the SIP INVITE request as specified in the clause 6.3.3.2.3.2 before continuing with the rest of the steps;

2) shall include in the SIP 200 (OK) response an SDP answer to the SDP offer in the incoming SIP INVITE request as specified in the clause 6.3.3.2.2;

3) if the received SIP INVITE request contains an alert indication set to a value of "true" and this is an unauthorised request for an MCVideo emergency alert as specified in clause 6.3.3.1.13.1, shall include in the SIP 200 (OK) response the warning text set to "149 SIP INFO request pending" in a Warning header field as specified in clause 4.4;

NOTE 1: This is the case when the MCVideo user's request for an MCVideo emergency private call was granted but the request for the MCVideo emergency alert was denied.

4) shall interact with the media plane as specified in 3GPP TS 24.581 [5]; and

NOTE 2: Resulting media plane processing is completed before the next step is performed.

5) shall send a SIP 200 (OK) response towards the inviting MCVideo client according to 3GPP TS 24.229 [11].

Upon receiving a SIP 200 (OK) response for the SIP INVITE request, the SIP dialog was established as a result of receiving a SIP INVITE request with a <session-type> element set to the value of "first-to-answer" and the SIP final response has not yet been sent to the inviting MCVideo client the controlling MCVideo function:

1) shall generate a SIP 200 (OK) response to the SIP INVITE request as specified in the clause 6.3.3.2.3.2 before continuing with the rest of the steps;

2) shall include in the SIP 200 (OK) response an SDP answer to the SDP offer in the incoming SIP INVITE request as specified in the clause 6.3.3.2.1;

3) the received SIP INVITE request contains an emergency indication set to a value of "true":

   a) shall cache the information that the MCVideo user has initiated an MCVideo emergency private call to the targeted user; and

   b) shall cache the information that the MCVideo user is in an in-progress emergency private call state with the targeted MCVideo user;

4) if the received SIP INVITE request contains an alert indication set to a value of "true" and this is an unauthorised request for an MCVideo emergency alert as specified in clause 6.3.3.1.13.1, shall include in the SIP 200 (OK) response the warning text set to "149 SIP INFO request pending" in a Warning header field as specified in clause 4.4;

NOTE 3: This is the case when the MCVideo user's request for an MCVideo emergency private call was granted but the request for the MCVideo emergency alert was denied.

5) shall interact with the media plane as specified in 3GPP TS 24.380 [5];

NOTE 4: Resulting media plane processing is completed before the next step is performed.

6) shall send a SIP 200 (OK) response towards the inviting MCVideo client according to 3GPP TS 24.229 [4]; and

7) if not successful in cancelling or terminating SIP dialogs in step 6) above, may repeat the SIP CANCEL and SIP BYE requests.

Upon receiving a SIP ACK to the SIP 200 (OK) response sent towards the inviting MCVideo client, where the SIP 200 (OK) response was sent with a Warning header field as specified in clause 4.4 with the warning text containing the mcvideo-warn-code set to "149", the controlling MCVideo function shall follow the procedures in clause 6.3.3.1.18.

The controlling MCVideo function shall forward any other SIP response that does not contain SDP, including any MIME bodies contained therein, along the signalling path to the originating network according to 3GPP TS 24.229 [11].

10.2.2.4.3 Receiving a SIP re-INVITE for upgrade to emergency private call

In the procedures in this clause:

1) emergency indication in an incoming SIP re-INVITE request refers to the <emergency-ind> element of the application/vnd.3gpp.mcvideo-info+xml MIME body; and

2) alert indication in an incoming SIP re-INVITE request refers to the <alert-ind> element of the application/vnd.3gpp.mcvideo-info+xml MIME body.

Upon receiving a SIP re-INVITE request with an emergency indication set to a value of "true", the controlling MCVideo function:

1) shall validate that the received SDP offer includes at least one media stream for which the media parameters and at least one codec or media format is acceptable by the controlling MCVideo function and if not, reject the request with a SIP 488 (Not Acceptable Here) response and skip the rest of the steps;

2) shall validate the request as described in clause 6.3.3.1.17;

3) if the SIP re-INVITE request contains an unauthorised request for an MCVideo emergency private call as determined by clause 6.3.3.1.13.2:

   a) shall reject the SIP INVITE request with a SIP 403 (Forbidden) response as specified in clause 6.3.3.1.14; and

   b) shall send the SIP 403 (Forbidden) response as specified in 3GPP TS 24.229 [4] and skip the rest of the steps;

4) if a Resource-Priority header field is included in the received SIP re-INVITE request and if the Resource-Priority header field is set to the value indicated for emergency calls, shall reject the SIP re-INVITE request with a SIP 403 (Forbidden) response and skip the remaining steps if neither of the following conditions are true:

   a) the SIP re-INVITE request does contains an authorised request for an MCVideo emergency call as determined in step 2 above; or

   b) the originating MCVideo user is in an in-progress emergency private call state with the targeted MCVideo user;

5) if the SIP re-INVITE request contains an emergency indication set to a value of "true" and the originating MCVideo user is not in an in-progress emergency private call state with the targeted MCVideo user:

   a) shall cache the information that the MCVideo user is in an in-progress emergency private call state with the targeted MCVideo user; and

   b) if the SIP re-INVITE request contains an alert indication set to "true" and this is an authorised request for an MCVideo emergency alert as specified in clause 6.3.3.1.13.1, shall cache the information that the MCVideo user has sent an MCVideo emergency alert to the targeted user; and

6) shall send a SIP re-INVITE invite towards the MCVideo user listed in the MIME resource-lists body of received SIP re-INVITE request as specified in clause 11.1.1.4.5.

Upon receiving a SIP 200 (OK) response for the SIP re-INVITE request and if the SIP response has not yet been sent to the inviting MCVideo client, the controlling MCVideo function:

1) shall generate a SIP 200 (OK) response to the SIP re-INVITE request as specified in the clause 6.3.3.2.3 before continuing with the rest of the steps;

2) shall include in the SIP 200 (OK) response an SDP answer to the SDP offer in the incoming SIP re-INVITE request containing the current media parameters used by the existing session;

3) if the received SIP re-INVITE request contains an alert indication set to a value of "true" and this is an unauthorised request for an MCVideo emergency alert as specified in clause 6.3.3.1.13.1, shall include in the SIP 200 (OK) response the warning text set to "149 SIP INFO request pending" in a Warning header field as specified in clause 4.4.

NOTE: When a SIP 200 (OK) response sent to the originator as a response to a SIP INVITE request that contained authorised request(s) for an MCVideo emergency private call and optionally an MCVideo emergency alert, the originator will consider a SIP 200 (OK) response populated in this manner as confirmation that its request(s) for an upgrade to an MCVideo emergency private call and optionally an MCVideo emergency alert were accepted by the controlling function.

4) shall interact with the media plane as specified in 3GPP TS 24.380 [5]; and

5) shall send the SIP 200 (OK) response towards the inviting MCVideo client according to 3GPP TS 24.229 [4].

Upon receiving a SIP ACK to the SIP 200 (OK) response sent towards the inviting MCVideo client, and the SIP 200 (OK) response was sent with the warning text set to "149 SIP INFO request pending" in a Warning header field as specified in clause 4.4, the controlling MCVideo function shall follow the procedures in clause 6.3.3.1.18:

The controlling MCVideo function shall forward any other SIP response that does not contain SDP, including any MIME bodies contained therein, along the signalling path to the originating network according to 3GPP TS 24.229 [4].

10.2.2.4.4 Receiving a SIP re-INVITE for cancellation of emergency private call

In the procedures in this clause:

1) emergency indication in an incoming SIP INVITE request refers to the <emergency-ind> element of the application/vnd.3gpp.mcvideo-info+xml MIME body; and

2) alert indication in an incoming SIP INVITE request refers to the <alert-ind> element of the application/vnd.3gpp.mcvideo-info+xml MIME body.

Upon receiving a SIP re-INVITE request with an emergency indication set to a value of "false", the controlling MCVideo function:

1) shall validate that the received SDP offer includes at least one media stream for which the media parameters and at least one codec or media format is acceptable by the controlling MCVideo function and if not, reject the request with a SIP 488 (Not Acceptable Here) response and skip the rest of the steps;

2) shall validate the request as described in clause 6.3.3.1.17;

3) if the SIP re-INVITE request contains an unauthorised request for an MCVideo emergency private call cancellation as determined by clause 6.3.3.1.13.4:

   a) shall reject the SIP re-INVITE request with a SIP 403 (Forbidden) response;

   b) shall include in the SIP 403 (Forbidden) response an application/vnd.3gpp.mcvideo-info+xml MIME body as specified in annex F.1 with an <emergency-ind> element set to a value of "true";

   c) if the SIP re-INVITE request contains an alert indication set to "false" and this is an unauthorised request for an MCVideo emergency alert cancellation as specified in clause 6.3.3.1.13.3, shall include in the SIP 403 (Forbidden) response an application/vnd.3gpp.mcvideo-info+xml MIME body with an <alert-ind> element set to "true; and

   d) shall send the SIP 403 (Forbidden) response as specified in 3GPP TS 24.229 [4] and skip the rest of the steps;

4) shall reject the SIP re-INVITE request with a SIP 403 (Forbidden) response if a Resource-Priority header field is included in the received SIP re-INVITE request set to the value configured for emergency calls, and skip the remaining steps; and

5 if the SIP re-INVITE request contains an authorised request for an MCVideo emergency private call cancellation as determined by clause 6.3.3.1.13.4:

   a) shall clear the cache of the MCVideo ID of the originator of the MCVideo emergency private call that is no longer in an in-progress emergency private call state with the targeted MCVideo user; and

   b) if the SIP re-INVITE request contains an alert indication set to "false" and this is an authorised request for an MCVideo emergency alert cancellation meeting the conditions specified in clause 6.3.3.1.13.3:

      i) if the received SIP re-INVITE request contains an <originated-by> element in the application/vnd.3gpp.mcvideo-info+xml MIME body, shall clear the cache of the MCVideo ID of

MCVideo user identified by the <originated-by> element as having an outstandingMCVideo emergency alert; and

ii) if the received SIP re-INVITE request does not contain an <originated-by> element in the application/vnd.3gpp.mcvideo-info+xml MIME body, clear the cache of the MCVideo ID of the sender of the SIP re-INVITE request as having an outstanding MCVideo emergency alert;

6) shall send a SIP re-INVITE request towards the MCVideo user listed in the MIME resource-lists body of received SIP re-INVITE request as specified in clause 11.1.1.4.6.

Upon receiving a SIP 200 (OK) response for the SIP re-INVITE request and if the SIP response has not yet been sent to the inviting MCVideo client, the controlling MCVideo function:

1) shall generate a SIP 200 (OK) response to the SIP re-INVITE request as specified in the clause 6.3.3.2.3 before continuing with the rest of the steps;

2) shall include in the SIP 200 (OK) response an SDP answer to the SDP offer in the incoming SIP re-INVITE request as specified in the clause 6.3.3.2.2;

3) if the received SIP re-INVITE request contains an alert indication set to a value of "false" and this is an unauthorised request for an MCVideo emergency alert cancellation as specified in clause 6.3.3.1.13.3, shall include in the SIP 200 (OK) response the warning text set to "149 SIP INFO request pending" in a Warning header field as specified in clause 4.4.

NOTE: When a SIP 200 (OK) response sent to the originator as a response to a SIP INVITE request that contained authorised request(s) for an MCVideo emergency private call cancellation and optionally an MCVideo emergency alert cancellation, the originator will consider a SIP 200 (OK) response populated in this manner as confirmation that its request(s) for cancellation of an MCVideo emergency private call and optionally an MCVideo emergency alert were accepted by the controlling function.

4) shall interact with the media plane as specified in 3GPP TS 24.380 [5]; and

5) shall send the SIP 200 (OK) response towards the inviting MCVideo client according to 3GPP TS 24.229 [4].

Upon receiving a SIP ACK to the SIP 200 (OK) response sent towards the inviting MCVideo client, and the SIP 200 (OK) response was sent with the warning text set to "149 SIP INFO request pending" in a Warning header field as specified in clause 4.4, the controlling MCVideo function shall follow the procedures in clause 6.3.3.1.18.

The controlling MCVideo function shall forward any other SIP response that does not contain SDP, including any MIME bodies contained therein, along the signalling path to the originating network according to 3GPP TS 24.229 [4].

10.2.2.4.5 Sending a SIP re-INVITE for upgrade to emergency private call

This clause describes the procedures for sending a re-INVITE request to an MCVideo user in an MCVideo private call for the purpose of upgrading the session to an emergency private call session. The procedure is initiated by the controlling MCVideo function as the result of an action in clause 11.1.1.4.3.

The controlling MCVideo function:

1) shall generate a SIP re-INVITE request as specified in clause 6.3.3.1.9;

2) if the received SIP re-INVITE request contained an application/vnd.3gpp.mcvideo-info+xml MIME body, shall copy the application/vnd.3gpp.mcvideo-info+xml MIME body to the outgoing re-INVITE request;

3) if the received SIP re-INVITE request contains an authorised request for an MCVideo emergency private call as determined by clause 6.3.3.1.13.2:

a) shall set the <emergency-ind> element of the application/vnd.3gpp.mcvideo-info+xml MIME body to a value of "true";

b) if the received SIP INVITE request contains an alert indication set to a value of "true" and this is an authorised request for an MCVideo emergency alert meeting the conditions specified in clause 6.3.3.1.13.1, perform the procedures specified in clause 6.3.3.1.12; and

c) if the received SIP INVITE request did not contain an alert indication or contains an alert indication set to a value of "true" and is not an authorised request for an MCVideo emergency alert meeting the conditions specified in clause 6.3.3.1.13.1, shall set the <alert-ind> element of the application/vnd.3gpp.mcvideo-info+xml MIME body to a value of "false";

4) shall include a Resource-Priority header field populated with the values for an MCVideo emergency private call as specified in clause 6.3.3.1.19, if the received SIP re-INVITE request contains an authorised request for an MCVideo emergency private call as determined in step 2 above; and

5) shall send the SIP re-INVITE request towards the core network according to 3GPP TS 24.229 [4].

Upon receiving SIP 200 (OK) response for the SIP re-INVITE request the controlling MCVideo function:

1) shall cache the contact received in the Contact header field.

10.2.2.4.6 Sending a SIP re-INVITE for cancellation of emergency private call

This clause describes the procedures for sending a re-INVITE request to an MCVideo user in an MCVideo emergency private call for the purpose of downgrading the session to a normal priority private call session. The procedure is initiated by the controlling MCVideo function as the result of an action in clause 11.1.1.4.4.

The controlling MCVideo function:

1) shall generate a SIP re-INVITE request as specified in clause 6.3.3.1.9;

2) if the received SIP re-INVITE request contained an application/vnd.3gpp.mcvideo-info+xml MIME body, shall copy the application/vnd.3gpp.mcvideo-info+xml MIME body to the outgoing re-INVITE request.

3) if the received SIP re-INVITE request contains an authorised request for an MCVideo emergency private call cancellation as determined by clause 6.3.3.1.13.4:

   a) shall set the <emergency-ind> element of the application/vnd.3gpp.mcvideo-info+xml MIME body to a value of "false";

   b) if the received SIP INVITE request contains an alert indication set to a value of "false" and this is an authorised request for an MCVideo emergency alert cancellation meeting the conditions specified in clause 6.3.3.1.13.3:

      i) shall set the <alert-ind> element of the application/vnd.3gpp.mcvideo-info+xml MIME body to a value of "false"; and

      ii) if the received SIP request contains an <originated-by> element in the application/vnd.3gpp.mcvideo-info+xml MIME body, copy the contents of the received <originated-by> element to an <originated-by> element in the application/vnd.3gpp.mcvideo-info+xml MIME body in the outgoing SIP re-INVITE request;

   c) if the received SIP INVITE request contains an alert indication set to a value of "false" and is not an authorised request for an MCVideo emergency alert cancellation meeting the conditions specified in clause 6.3.3.1.13.3, shall set the <alert-ind> element of the application/vnd.3gpp.mcvideo-info+xml MIME body to a value of "true";

4) shall include a Resource-Priority header field populated with the values for a normal MCVideo private call as specified in clause 6.3.3.1.19, if the received SIP re-INVITE request contains an authorised request for an MCVideo emergency private call cancellation as determined in step 3 above; and

5) shall send the SIP re-INVITE request towards the core network according to 3GPP TS 24.229 [4].

Upon receiving SIP 200 (OK) response for the SIP re-INVITE request the controlling MCVideo function:

1) shall cache the contact received in the Contact header field.

10.2.3 Private call without transmission control

10.2.3.1 MCVideo client procedures

When the MCVideo user wants to make an on-demand private call without transmission control or first-to-answer call without transmission control, the MCVideo client shall follow the procedures in clause 10.2.2.1.1 with the following exceptions:

1) in step 8) of clause 10.2.2.1.1, the MCVideo client shall not offer a media-level section for a media-transmission control entity; and

2) step 9) of clause 10.2.2.1.1 shall be ignored.

Upon receipt of an initial SIP INVITE request for the private call an SDP offer not including a media-level section for a media-transmission control entity, the MCVideo client shall consider it as the request for private call without transmission control and shall follow the procedures as specified in clause 10.2.2.1.2 for on-demand session.

10.2.3.2 Participating MCVideo function procedures

10.2.3.2.1 Originating procedures

Upon receipt of a "SIP INVITE request for originating participating MCVideo function" or "SIP REFER request for a pre-established session" for the private call or first-to-answer call with SDP offer not including media-level section for media-transmission control entity, the participating MCVideo function shall consider it as the request for the private call without transmission control or first-to-answer call without transmission control and shall follow the procedures as specified in clause 10.2.2.4.1.1 for an on-demand session and shall follow the procedures as specified in clause 10.2.2.4.1.2 for initiation using a pre-established session.

10.2.3.2.2 Terminating procedures

Upon receipt of a "SIP INVITE request for terminating participating MCVideo function" for the private call or first-to-answer call with SDP offer not including media-level section for media-transmission control entity, the participating MCVideo shall consider it as the request for the private call without transmission control or first-to-answer call without transmission control and shall follow the procedures as specified in clause 10.2.2.4.2.

10.2.3.3 Controlling MCVideo function procedures

10.2.3.3.1 Originating procedures

The controlling MCVideo function shall follow the procedures as specified in clause 10.2.2.4.

10.2.3.3.2 Terminating procedures

Upon receiving of a "SIP INVITE request for controlling MCVideo function of a private call" or a "SIP INVITE request for controlling MCVideo function of a first-to-answer call", with SDP offer not including media-level section for media-transmission control entity, the controlling MCVideo function shall consider it as the request for the private call without transmission control or first-to-answer call without transmission control, and shall follow the procedures as specified in clause 10.2.2.4.2.

10.2.4 Ending the private call initiated by MCVideo client

10.2.4.1 MCVideo client procedures

10.2.4.1.1 On-demand private call

10.2.4.1.1.1 Client originating procedures

Upon receiving a request from an MCVideo user to release an MCVideo private call session established using on-demand session signalling, the MCVideo client shall follow the procedures as specified in clause 6.2.5.1.

10.2.4.1.1.2 Client terminating procedures

Upon receiving a SIP BYE request for private call session, the MCVideo client shall follow the procedures as specified in clause 6.2.6.

10.2.4.2 Participating MCVideo function procedures

10.2.4.2.1 Originating procedures

10.2.4.2.1.1 Receipt of SIP BYE request for on-demand private call

Upon receiving from the MCVideo client a SIP BYE request the participating MCVideo function shall follow the procedures as specified in clause 6.3.2.1.6.

10.2.4.2.2 Terminating procedures

10.2.4.2.2.1 Receipt of SIP BYE request for private call on-demand

Upon receiving a SIP BYE request from the controlling MCVideo function, the participating MCVideo function shall follow the procedures as specified in clause 6.3.2.2.8.1.

10.2.4.3 Controlling MCVideo function procedures

10.2.4.3.1 Terminating procedures

Upon receiving a SIP BYE request the controlling MCVideo function shall follow the procedures as specified in clause 6.3.3.2.4.

10.2.5 Ending the private call initiated by the MCVideo server

10.2.5.1 General

This clause describes the procedures of each functional entity for ending the private call initiated by the MCVideo server.

NOTE: For private call without transmission control, ending the private call is initiated only by the MCVideo client.

10.2.5.2 MCVideo client procedures

Upon receiving a SIP BYE request for private call session, the MCVideo client shall follow the procedures as specified in clause 6.2.6.

10.2.5.3 Participating MCVideo function procedures

10.2.5.3.1 Originating procedures

When the MCVideo session for private call needs to be released as specified in clause 6.3.8.2, the participating MCVideo function shall follow the procedures in clause 6.3.3.1.5.

10.2.5.3.2 Terminating procedures

10.2.5.3.2.1 Receipt of SIP BYE request for private call on-demand

Upon receiving a SIP BYE request from the controlling MCVideo function, the participating MCVideo function shall follow the procedures as specified in clause 6.3.2.2.8.1.

10.2.5.4 Controlling MCVideo function procedures

When the MCVideo session for private call needs to be released as specified in clause 6.3.8.2, the controlling MCVideo function shall follow the procedures in clause 6.3.3.1.5.

10.3 Off-network private call

10.3.1 General

10.3.1.1 Common procedures

10.3.1.1.1 Sending/Receiving a message

In order to participate in a private call, the MCVideo client:

1) shall send the MONP MCVideo message transported in a MONP MCVIDEO MESSAGE CARRIER message, specified in 3GPP TS 24.379 [40], as a UDP message to the local IP address of the MCVideo user, on UDP port 8809 (as specified in 3GPP TS 24,379 [40]), with an IP time-to-live set to 255; and

2) shall treat UDP messages received on the port 8809 as received MONP messages.

NOTE: An MCVideo client that supports IPv6 shall listen to the IPv6 addresses.

10.3.1.1.2 Session description

One off-network MCVideo session includes one media-transmission control entity.

The MCVideo client shall generate an SDP body for a private call in accordance with rules and procedures of IETF RFC 4566 [2] and IETF RFC 3264 [7].

The MCVideo client:

1) shall include in the session-level section:

   a) the "o=" field with the <username> portion set to a dash;

   b) the "s=" field with the <session name> portion set to a dash; and

   c) the "c=" field with the <nettype> portion set to "IN", the <addrtype> portion set to the IP version of the unicast IP address of the MCVideo client and the <connection-address> portion set to the unicast IP address of the MCVideo client;

2) shall include the media-level section for audio component of MCVideo consisting of:

   a) the "m=" field with the <media> portion set to "audio", the <port> portion set to a port number for MCVideo group, the <proto> field set to "RTP/AVP" and <fmt> portion set indicating RTP payload type numbers;

b) the "i=" field with the <session description> portion set to "audio component of MCVideo";

c) the "a=fmtp:" attribute(s), the "a=rtpmap:" attribute(s) or both, indicating the codec(s) and media parameters of the audio component of MCVideo;

d) the "a=rtcp:" attribute indicating port number to be used for RTCP at the MCVideo client selected according to the rules and procedures of IETF RFC 3605 [3], if the media stream uses other than the default IP address;

e) if the SDP offer is for video pull call:

i) shall include an "a=recvonly" attribute;

3) shall include the media-level section for video component of MCVideo consisting of:

a) the "m=" field with the <media> portion set to "video", the <port> portion set to a port number for MCVideo video of the MCVideo group, the <proto> field set to "RTP/AVP" and <fmt> portion set indicating RTP payload type numbers;

b) the "i=" field with the <session description> portion set to "video";

c) the "a=fmtp:" attribute(s), the "a=rtpmap:" attribute(s) or both, indicating the codec(s) and media parameters of the video component of MCVideo;

d) the "a=rtcp:" attribute indicating port number to be used for RTCP at the MCVideo client selected according to the rules and procedures of IETF RFC 3605 [3], if the media stream uses other than the default IP address; and

e) if the SDP offer is for video pull call:

i) shall include an "a=recvonly" attribute; and

ii) shall skip step 4).

4) shall include the media-level section for media-transmission control entity consisting of:

a) an "m=" line, with the <media> portion set to "application", the <port> portion set to a port number for media-transmission control entity of the MCVideo group, the <proto> field set to "udp" and <fmt> portion set to "MCVideo"; and

b) the "a=fmtp:MCVideo" attribute indicating the parameters of the media-transmission control entity as specified 3GPP TS 24.581 [5]; and

5) shall include the MIKEY-SAKKE I_MESSAGE, if generated by the MCVideo client, in an "a=key-mgmt" attribute as a "mikey" attribute value in the SDP offer as specified in IETF RFC 4567 [6].

10.3.2 Basic call control

10.3.2.1 General

The maximum number of simultaneous off-network private calls is limited by the value of "/<*x*>/Common/PrivateCall/MaxCallNc10" leaf node present in the UE configuration as specified in 3GPP TS 24.483 [4].

10.3.2.2 Private call control state machine

The figure 10.3.2.2-1 gives an overview of the main states and transitions on the UE for private call control.

Each private call control state machine is per MCVideo user ID.

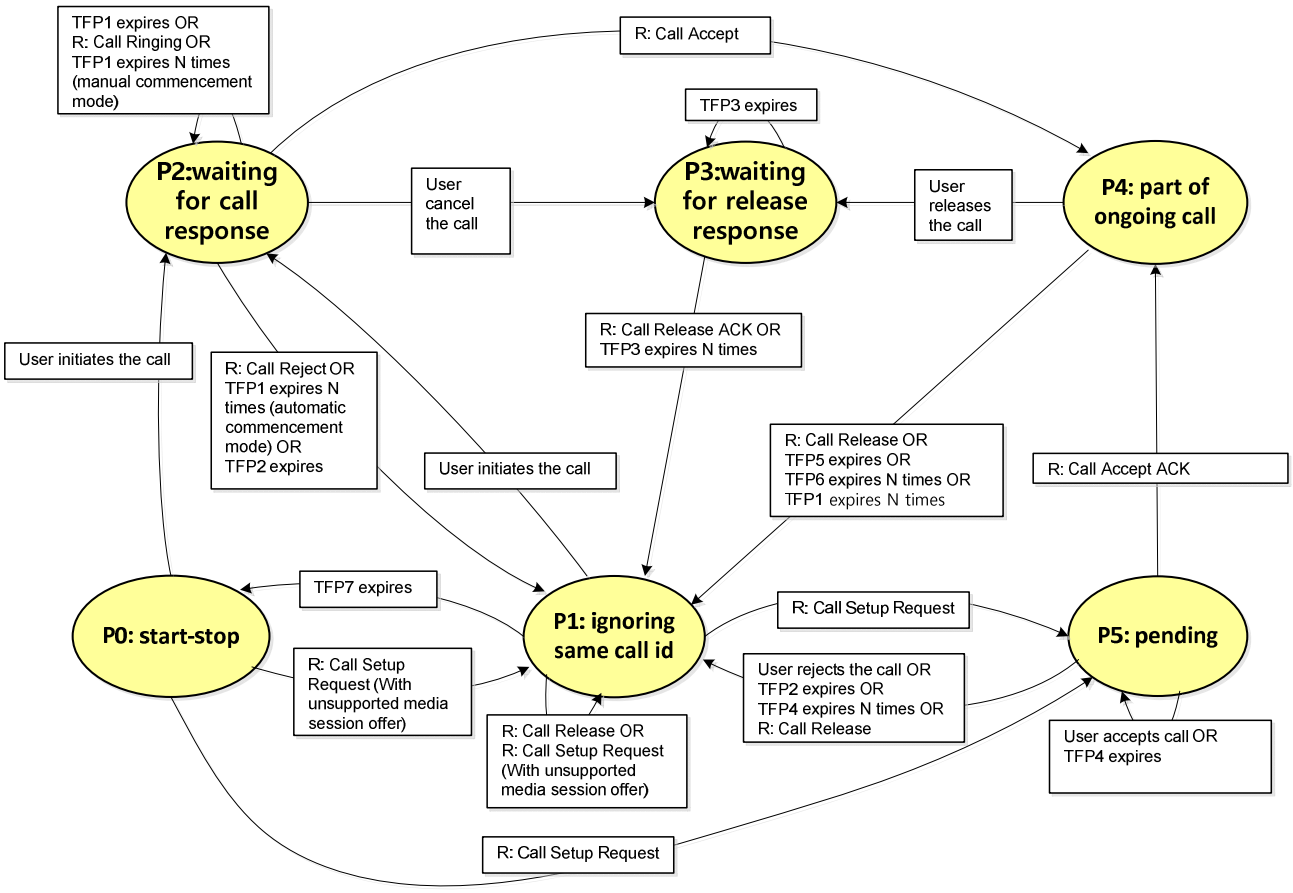

Figure 10.3.2.2-1: Private call control state machine

10.3.2.3 Private call control states

10.3.2.3.1 P0: start-stop

In this state, no private call control entity exists.

10.3.2.3.2 P1: ignoring same call id

This state exists for UE, when the UE is not part of an ongoing private call.

10.3.2.3.3 P2: waiting for call response

This state exists for UE, when the UE has sent a PRIVATE CALL SETUP REQUEST message and is waiting for a response, PRIVATE CALL ACCEPT or PRIVATE CALL REJECT message.

10.3.2.3.4 P3: waiting for release response

This state exists for UE, when the UE has sent a PRIVATE CALL RELEASE message and is waiting for a PRIVATE CALL RELEASE ACK message.

10.3.2.3.5 P4: part of ongoing call

This state exists for UE, when the UE is part of an ongoing private call.

10.3.2.3.6 P5: pending

This state exists for UE, when the UE has presented a notification to the user for the received PRIVATE CALL SETUP REQUEST message and is waiting for a user indication.

10.3.2.4 Procedures

10.3.2.4.1 General

10.3.2.4.2 Private call setup

10.3.2.4.2.1 Initiating a private call

When in the "P0: start-stop" state or "P1: ignoring same call id", upon an indication from MCVideo User to initiate a private call and the value of "/<x>/<x>/Common/PrivateCall/Authorised" leaf node present in the user profile as specified in 3GPP TS 24.483 [4] is set to "true", the MCVideo client:

1) shall generate and store the call identifier as a random number uniformly distributed between (0, 65536);

2) shall store own MCVideo user ID as caller ID;

3) shall store MCVideo user ID of the callee as callee ID;

4) shall store "AUTOMATIC COMMENCEMENT MODE" as commencement mode, if requested and the value of "/<x>/<x>/Common/PrivateCall/AutoCommence" leaf node present in the user profile as specified in 3GPP TS 24.483 [4] is set to "true". Otherwise if the value of "/<x>/<x>/Common/PrivateCall/ManualCommence" leaf node present in the user profile as specified in 3GPP TS 24.483 [4] is set to "true", store "MANUAL COMMENCEMENT MODE" as commencement mode;

5) shall store "PRIVATE CALL" as the current call type;;

6) if an end-to-end security context needs to be established then:

   a) shall use keying material provided by the key management server to generate a PCK as described in 3GPP TS 33.180 [8];

   b) shall use the PCK to generate a PCK-ID with the four most significant bits set to "0001" to indicate that the purpose of the PCK is to protect private call communications and with the remaining twenty eight bits being randomly generated as described in 3GPP TS 33.180 [8];

   c) shall encrypt the PCK to a UID associated to the MCVideo client using the MCVideo ID of the invited user and a time related parameter as described in 3GPP TS 33.180 [8];

   d) shall generate a MIKEY-SAKKE I_MESSAGE using the encapsulated PCK and PCK-ID as specified in 3GPP TS 33.180 [8];

   e) shall add the MCVideo ID of the originating MCVideo to the initiator field (IDRi) of the I_MESSAGE as described in 3GPP TS 33.180 [8];

   f) shall sign the MIKEY-SAKKE I_MESSAGE using the originating MCVideo user's signing key provided in the keying material together with a time related parameter, and add this to the MIKEY-SAKKE payload, as described in 3GPP TS 33.180 [8] and;

   g) shall store the MIKEY-SAKKE I_MESSAGE for later inclusion in an SDP body;

7) may store current user location as user location;

8) shall set the stored current ProSe per-packet priority to value corresponding to MCPTT off-network private call as described in 3GPP TS 24.483 [4].

9) shall generate and store offer SDP, as defined in clause 10.3.1.1.2;

10) shall generate a PRIVATE CALL SETUP REQUEST message as specified in clause 17.1.5. In the PRIVATE CALL SETUP REQUEST message, the MCVideo client:

a) shall set the Call identifier IE with the stored call identifier;

b) shall set the MCVideo user ID of the caller IE with the stored caller ID;

c) shall set the MCVideo user ID of the callee IE with the stored callee ID;

d) shall set the Commencement mode IE with the stored commencement mode;

e) shall set the Call type IE with the stored current call type;

f) shall set the SDP offer IE with the stored offer SDP; and

g) may set the User location IE with the stored user location.

11) shall send the PRIVATE CALL SETUP REQUEST message towards other MCVideo client according to rules and procedures as specified in clause 10.3.1.1.1;

12) shall initialize the counter CFP1 (private call request retransmission) with the value set to 1;

13) shall start timer TFP1 (private call request retransmission); and

14) shall enter the "P2: waiting for call response" state.

10.3.2.4.2.2 Private call setup request retransmission

When in the "P2: waiting for call response" state, upon expiry of timer TFP1 (private call request retransmission), the MCVideo client:

1) may update the stored user location with current user location;

2) shall increment the value of counter CFP1 (private call request retransmission) by 1;

3) shall generate a PRIVATE CALL SETUP REQUEST message as specified in clause 17.1.5. In the PRIVATE CALL SETUP REQUEST message, the MCVideo client:

   a) shall set the Call identifier IE with the stored call identifier;

   b) shall set the MCVideo user ID of the caller IE with the stored caller ID;

   c) shall set the MCVideo user ID of the callee IE with the stored callee ID;

   d) shall set the Commencement mode IE with the stored commencement mode;

   e) shall set the Call type IE with the stored current call type;

   f) shall set the SDP offer IE with the stored offer SDP; and

   g) may set the User location IE with stored user location.

4) shall send the PRIVATE CALL SETUP REQUEST message towards other MCVideo client according to rules and procedures as specified in clause 10.3.1.1.1;

5) shall start timer TFP1 (private call request retransmission); and

6) shall remain in the "P2: waiting for call response" state.

10.3.2.4.2.3 Ringing notification to the user

When in the "P2: waiting for call response" state, upon receiving a PRIVATE CALL RINGING message, the MCVideo client:

1) shall remain in the "P2: waiting for call response" state.

10.3.2.4.2.4 No response to private call setup request with automatic commencement mode

In the "P2: waiting for call response" state, when timer TFP1 (private call request retransmission) expires and the value of the counter CFP1 (private call request retransmission) is equal to the upper limit and the stored commencement mode is "AUTOMATIC COMMENCEMENT MODE", the MCVideo client:

1) shall start timer TFP7 (waiting for any message with same call identifier); and

2) shall enter the "P1: ignoring same call id" state.

10.3.2.4.2.5 No response to private call setup request with manual commencement mode

When in the "P2: waiting for call response" state when timer TFP1 (private call request retransmission) expires and the value of the counter CFP1 (private call request retransmission) is equal to the upper limit and the stored commencement mode is "MANUAL COMMENCEMENT MODE", the MCVideo client:

1) shall start timer TFP2 (waiting for call response message); and

2) shall remain in the "P2: waiting for call response" state.

10.3.2.4.2.6 No response to private call setup request after waiting for user acknowledgement

When in the "P2: waiting for call response" state, upon expiry of timer TFP2 (waiting for call response message), the MCVideo client:

1) shall start timer TFP7 (waiting for any message with same call identifier);

2) shall release the call control state machine; and

3) shall enter the "P1: ignoring same call id" state.

10.3.2.4.2.7 Private call setup request rejected

When in the "P2: waiting for call response" state, upon receiving a PRIVATE CALL REJECT message in response to PRIVATE CALL SETUP REQUEST message with Call identifier IE same as the stored call identifier, the MCVideo client:

1) shall stop timer TFP1 (call setup retransmission), if running;

2) shall stop timer TFP2 (waiting for call response message), if running;

3) shall start timer TFP7 (waiting for any message with same call identifier);

4) shall release the call control state machine; and

5) shall enter the "P1: ignoring same call id" state.

10.3.2.4.2.8 Private call setup request accepted

When in the "P2: waiting for call response" state, upon receiving a PRIVATE CALL ACCEPT message response to PRIVATE CALL SETUP REQUEST message with the same call identifier, the MCVideo client:

1) shall store the SDP answer IE received in the PRIVATE CALL ACCEPT message as answer SDP;

2) shall generate a PRIVATE CALL ACCEPT ACK message as specified in clause 17.1.11:

   a) shall set the Call identifier IE to the stored call identifier;

   b) shall set the MCVideo user ID of the caller IE with the stored caller ID; and

   c) shall set the MCVideo user ID of the callee IE with the stored callee ID.

3) shall send the PRIVATE CALL ACCEPT ACK message in response to the request message according to rules and procedures as specified in clause 10.3.1.1.1;

4) shall stop timer TFP1 (call setup retransmission), if running;

5) shall stop timer TFP2 (waiting for call response message), if running;

6) shall establish a media session based on the SDP body of the stored answer SDP;

7) shall start transmission control as terminating transmission participant as specified in clause a.b in 3GPP TS 24.581 [5];

8) shall start timer TFP5 (max duration); and

9) shall enter the "P4: part of ongoing call" state.

10.3.2.4.2.9 User cancels the private call setup request

When in the "P2: waiting for call response" state, upon an indication from MCVideo User to cancel the private call request, the MCVideo client:

1) shall generate a PRIVATE CALL RELEASE message as specified in clause 17.1.9;

   a) shall set the Call identifier IE to the stored call identifier;

   b) shall set the MCVideo user ID of the caller IE with the stored caller ID; and

   c) shall set the MCVideo user ID of the callee IE with the stored callee ID;

2) shall send the PRIVATE CALL RELEASE message in response to the request message according to rules and procedures as specified in clause 10.3.1.1.1;

3) shall start timer TFP3 (private call release retransmission); and

4) shall enter the "P3: waiting for release response" state.

10.3.2.4.3 Private call setup in automatic commencement mode

10.3.2.4.3.1 Unable to establish media

When in the "P0: start-stop" or "P1: ignoring same call id" state, upon receiving a PRIVATE CALL SETUP REQUEST message with Call identifier IE different than stored call identifier and media session declared in SDP body of PRIVATE CALL SETUP REQUEST message cannot be established, the MCVideo client:

1) shall store the Call identifier IE in the received message as call identifier;

2) shall store the MCVideo user ID of the caller IE in the received PRIVATE CALL SETUP message as caller ID;

3) shall store own MCVideo user ID as callee ID;

4) shall generate a PRIVATE CALL REJECT message as specified in clause 17.1.8. In the PRIVATE CALL REJECT message, the MCVideo client:

   a) shall set the Call identifier IE to the cached call identifier;

   b) shall set the MCVideo user ID of the caller IE with the stored caller ID;

   c) shall set the MCVideo user ID of the callee IE with stored callee ID; and

   d) shall set the Reason IE as "FAILED", if requested to restrict notification of call failure and the value of "/<*x*>/<*x*>/Common/PrivateCall/FailRestrict" leaf node present in the user profile as specified in 3GPP TS 24.483 [4] is set to "true". Otherwise, shall set the Reason IE as "MEDIA FAILURE".

5) shall send the PRIVATE CALL REJECT message in response to the request message according to rules and procedures as specified in clause 10.3.1.1.1;

6) shall start timer TFP7 (waiting for any message with same call identifier); and

7) shall enter the "P1: ignoring same call id" state if current state is the "P0: start-stop" state.

10.3.2.4.3.2 Responding to private call setup request when not participating in the ongoing call

When in the "P0: start-stop" or "P1: ignoring same call id" state, upon receiving a PRIVATE CALL SETUP REQUEST message with Commencement mode IE set to "AUTOMATIC COMMENCEMENT MODE" and Call identifier IE different than stored call identifier and media session declared in SDP body of PRIVATE CALL SETUP REQUEST message can be established, the MCVideo client:

1) shall store the Call identifier IE in the received message as call identifier;

2) shall set the stored current call type to "PRIVATE CALL";

3) shall set the stored current ProSe per-packet priority to value corresponding to MCPTT off-network private call as described in 3GPP TS 24.483 [4].

4) shall store the MCVideo user ID of the caller IE in the received PRIVATE CALL SETUP REQUEST message as caller ID;

5) shall store own MCVideo user ID as callee ID;

6) if the SDP offer contains an "a=key-mgmt" attribute field with a "mikey" attribute value containing a MIKEY-SAKKE I_MESSAGE:

   a) shall extract the MCVideo ID of the originating MCVideo user from the initiator field (IDRi) of the I_MESSAGE as described in 3GPP TS 33.180 [8];

   b) shall convert the MCVideo ID to a UID as described in 3GPP TS 33.180 [8];

   c) shall use the UID to validate the signature of the MIKEY-SAKKE I_MESSAGE as described in 3GPP TS 33.180 [8];

   d) if the validation of the signature failed, shall generate a PRIVATE CALL REJECT message as specified in clause 17.1.8. In the PRIVATE CALL REJECT message, the MCVideo client:

      i) shall set the call identifier IE to the stored call identifier;

      ii) shall set the MCVideo user ID of the caller IE with the stored caller ID;

      iii) shall set the MCVideo user ID of the callee IE with the stored callee ID;

      iv) shall set the Reason IE as "FAILED", if requested to restrict notification of call failure and the value of "/<*x*>/<*x*>/Common/PrivateCall/FailRestrict" leaf node present in the user profile as specified in 3GPP TS 24.483 [4] is set to "true". Otherwise, shall set the reason IE as "E2E SECURITY CONTEXT FAILURE";

      v) shall send the PRIVATE CALL REJECT message in response to the request message according to rules and procedures as specified in clause 10.3.1.1.1; and

      vi) shall remain in the current state;

   e) if the validation of the signature was successful:

      i) shall extract and decrypt the encapsulated PCK using the terminating user's (KMS provisioned) UID key as described in 3GPP TS 33.180 [8];

      ii) shall extract the PCK-ID, from the payload as specified in 3GPP TS 33.180 [8];

      iii) shall generate and store answer SDP based on received SDP offer IE in PRIVATE CALL SETUP REQUEST message, as defined in clause 10.3.1.1.2;

      iv) shall generate a PRIVATE CALL ACCEPT message as specified in clause 17.1.7. In the PRIVATE CALL ACCEPT message, the MCVideo client:

         A) shall set the Call identifier IE to the stored call identifier; and

         B) shall set the MCVideo user ID of the caller IE with stored caller ID.

         C) shall set the MCVideo user ID of the callee IE with stored callee ID; and

D) shall set the SDP answer IE with the stored answer SDP;

v) shall send PRIVATE CALL ACCEPT message in response to the request message according to rules and procedures as specified in clause 10.3.1.1.1;

vi) shall establish a media session based on the SDP body of the stored answer SDP;

vii) shall initialize the counter CFP4 with value set to 1;

viii) shall start timer TFP4 (private call accept retransmission); and

ix) shall enter the "P5: pending" state; and

NOTE: With the PCK successfully shared between the originating MCVideo client and the terminating MCVideo client, both clients are able to use SRTP/SRTCP to create an end-to-end secure session.

7) if the SDP offer does not contain an "a=key-mgmt" attribute, the MCVideo client:

a) shall generate and store answer SDP based on received SDP offer IE in PRIVATE CALL SETUP REQUEST message, as defined in clause 10.3.1.1.2;

b) shall generate a PRIVATE CALL ACCEPT message as specified in clause 17.1.7:

i) shall set the Call identifier IE to the stored call identifier;

ii) shall set the MCVideo user ID of the caller IE with stored caller ID.

iii) shall set the MCVideo user ID of the callee IE with stored callee ID; and

iv) shall set the SDP answer IE with the stored answer SDP;

c) shall send PRIVATE CALL ACCEPT message in response to the request message according to rules and procedures as specified in clause 10.3.1.1.1;

d) shall establish a media session based on the SDP body of the stored answer SDP;

e) shall initialize the counter CFP4 with value set to 1;

f) shall start timer TFP4 (private call accept retransmission); and

g) shall enter the "P5: pending" state.

10.3.2.4.3.3 Private call accept retransmission

When in the "P5: pending" state, upon expiry of timer TFP4 (private call accept retransmission), the MCVideo client:

1) shall generate a PRIVATE CALL ACCEPT message as specified in clause 17.1.7. In the PRIVATE CALL ACCEPT message, the MCVideo client:

a) shall set the Call identifier IE to the stored call identifier;

b) shall set the MCVideo user ID of the caller IE with the stored caller ID;

c) shall set the MCVideo user ID of the callee IE with the stored callee ID; and

d) shall set the SDP answer IE with the stored answer SDP;

2) shall send PRIVATE CALL ACCEPT message in response to the request message according to rules and procedures as specified in clause 10.3.1.1.1;

3) shall increment the value of the counter CFP4 (private call accept retransmission) by 1;

4) shall start timer TFP4 (private call accept retransmission); and

5) shall remain in the "P5: pending" state.

10.3.2.4.3.4 Establishing the call

When in the "P5: pending" state, upon receiving a PRIVATE CALL ACCEPT ACK message or RTP media from originating user, the MCVideo client:

1) shall stop timer TFP4 (private call accept retransmission);
2) shall start transmission control as terminating MCVideo client as specified in clause a.b in 3GPP TS 24.581 [5];
3) shall start timer TFP5 (max duration); and
4) shall enter the "P4: part of ongoing call" state.

10.3.2.4.3.5 Call failure

In the "P5: pending" state, when timer TFP4 (private call accept retransmission) expires and the value of the counter CFP4 (private call accept retransmission) is equal to the upper limit, the MCVideo client:

1) shall start timer TFP7 (waiting for any message with same call identifier); and
2) shall enter the "P1: ignoring same call id" state.

10.3.2.4.4 Private call setup in manual commencement mode

10.3.2.4.4.1 Incoming private call

When in the "P0: start-stop" or "P1: ignoring same call id" state, upon receiving a PRIVATE CALL SETUP REQUEST message with Commencement mode IE set to "MANUAL COMMENCEMENT MODE" and Call identifier IE different from stored call identifier, the MCVideo client:

1) shall store the Call identifier IE in the received message as call identifier;
2) shall set the stored current call type to "PRIVATE CALL";
3) shall set the stored current ProSe per-packet priority to value corresponding to MCPTT off-network private call as described in 3GPP TS 24.483 [4].
4) shall store the MCVideo user ID of the caller IE as received in the PRIVATE CALL SETUP REQUEST as caller ID;
5) shall store own MCVideo user ID as callee ID;
6) shall generate a PRIVATE CALL RINGING message as specified in clause 17.1.6;
   a) shall set the Call identifier IE to the stored call identifier;
   b) shall set the MCVideo user ID of the caller IE with the stored caller ID; and
   c) shall set the MCVideo user ID of the callee IE with the stored callee ID;
7) shall send PRIVATE CALL RINGING message in response to the request message according to rules and procedures as specified in clause 10.3.1.1.1;
8) shall start timer TFP2 (waiting for call response message); and
9) shall enter the "P5: pending" state.

10.3.2.4.4.2 No response from the user

When in the "P5: pending" state, upon expiry of timer TFP2 (waiting for call response message), the MCVideo client:

1) shall generate a PRIVATE CALL REJECT message as specified in clause 17.1.8:
   a) shall set the Call identifier IE to the stored call identifier;

b) shall set the MCVideo user ID of the caller IE with the stored caller ID;

c) shall set the MCVideo user ID of the callee IE with the stored callee ID; and

d) shall set the Reason IE as "FAILED".

2) shall send the PRIVATE CALL REJECT message in response to the request message according to rules and procedures as specified in clause 10.3.1.1.1;

3) shall start timer TFP7 (waiting for any message with same call identifier); and

4) shall enter the "P1: ignoring same call id" state.

10.3.2.4.4.3 User accepts the private call setup request

When in the "P5: pending" state, upon an indication from MCVideo User to accept the incoming private call, the MCVideo client:

1) if the SDP offer contains an "a=key-mgmt" attribute field with a "mikey" attribute value containing a MIKEY-SAKKE I_MESSAGE:

a) shall extract the MCVideo ID of the originating MCVideo user from the initiator field (IDRi) of the I_MESSAGE as described in 3GPP TS 33.180 [8];

b) shall convert the MCVideo ID to a UID as described in 3GPP TS 33.180 [8];

c) shall use the UID to validate the signature of the MIKEY-SAKKE I_MESSAGE as described in 3GPP TS 33.180 [8];

d) if the validation of the signature failed, shall generate a PRIVATE CALL REJECT message as specified in clause 17.1.8. In the PRIVATE CALL REJECT message, the MCVideo client:

i) shall set the call identifier IE to the stored call identifier;

ii) shall set the MCVideo user ID of the caller IE with the stored caller ID;

iii) shall set the MCVideo user ID of the callee IE with the stored callee ID;

iv) shall set the Reason IE as "FAILED", if requested to restrict notification of call failure and the value of "/<*x*>/<*x*>/Common/PrivateCall/FailRestrict" leaf node present in the user profile as specified in 3GPP TS 24.483 [4] is set to "true". Otherwise, shall set the reason IE as "E2E SECURITY CONTEXT FAILURE";

v) shall send the PRIVATE CALL REJECT message in response to the request message according to rules and procedures as specified in clause 10.3.1.1.1; and

vi) shall enter the "P1: ignoring same call id" state;

e) if the validation of the signature was successful:

i) shall extract and decrypt the encapsulated PCK using the terminating user's (KMS provisioned) UID key as described in 3GPP TS 33.180 [8];

ii) shall extract the PCK-ID, from the payload as specified in 3GPP TS 33.180 [8];

iii) shall generate and store answer SDP based on received SDP offer IE in PRIVATE CALL SETUP REQUEST message, as defined in clause 10.3.1.1.2;

iv) shall generate a PRIVATE CALL ACCEPT message as specified in clause 17.1.7. In the PRIVATE CALL ACCEPT message, the MCVideo client:

A) shall set the Call identifier IE to the stored call identifier;

B) shall set the MCVideo user ID of the caller IE with the stored caller ID;

C) shall set the MCVideo user ID of the callee IE with the stored callee ID; and

D) shall set the SDP answer IE with the stored answer SDP;

v) shall send the PRIVATE CALL ACCEPT message in response to the request message according to rules and procedures as specified in clause 10.3.1.1.1;

vi) shall establish a media session based on the SDP body of the private call;

vii) shall stop timer TFP2 (waiting for call response message);

viii) shall initialize the counter CFP4 with value set to 1;

ix) shall start timer TFP4 (private call accept retransmission); and

x) shall remain in the "P5: pending" state; and

NOTE: With the PCK successfully shared between the originating MCVideo client and the terminating MCVideo client, both clients are able to use SRTP/SRTCP to create an end-to-end secure session.

2) if the SDP offer does not contain an "a=key-mgmt" attribute, the MCVideo client:

a) shall generate and store answer SDP based on received SDP offer IE in PRIVATE CALL SETUP REQUEST message, as defined in clause 10.3.1.1.2;

b) shall generate a PRIVATE CALL ACCEPT message as specified in clause 17.1.7. In the PRIVATE CALL ACCEPT message, the MCVideo client:

i) shall set the Call identifier IE to the stored call identifier;

ii) shall set the MCVideo user ID of the caller IE with the stored caller ID;

iii) shall set the MCVideo user ID of the callee IE with the stored callee ID; and

iv) shall set the SDP answer IE with the stored answer SDP;

c) shall send the PRIVATE CALL ACCEPT message in response to the request message according to rules and procedures as specified in clause 10.3.1.1.1;

d) shall establish a media session based on the SDP body of the private call;

e) shall stop timer TFP2 (waiting for call response message);

f) shall initialize the counter CFP4 with value set to 1;

g) shall start timer TFP4 (private call accept retransmission); and

h) shall remain in the "P5: pending" state.

10.3.2.4.4.4 Private call accept retransmission

When in the "P5: pending" state, upon expiry of timer TFP4 (private call accept retransmission), the MCVideo client:

1) shall generate a PRIVATE CALL ACCEPT message as specified in clause 17.1.7. In the PRIVATE CALL ACCEPT message, the MCVideo client:

a) shall set the Call identifier IE to the stored call identifier;

b) shall set the MCVideo user ID of the caller IE the stored caller ID;

c) shall set the MCVideo user ID of the callee IE with the stored callee ID; and

d) shall set the SDP answer IE with the stored answer SDP;

2) shall send PRIVATE CALL ACCEPT message in response to the request message according to rules and procedures as specified in clause 10.3.1.1.1;

3) shall increment the value of the (counter CFP4 private call accept retransmission) by 1;

4) shall start timer TFP4 (private call accept retransmission); and

5) shall remain in the "P5: pending" state.

10.3.2.4.4.5 Establishing the call

When in the "P5: pending" state, upon receiving a PRIVATE CALL ACCEPT ACK message or RTP media from originating user, the MCVideo client:

1) shall stop timer TFP4 (private call accept retransmission);

2) shall start transmission control as terminating MCVideo client as specified in clause a.b in 3GPP TS 24.581 [5];

3) shall start timer TFP5 (max duration); and

4) shall enter the "P4: part of ongoing call" state.

10.3.2.4.4.6 Call failure

In the "P5: pending" state, when timer TFP4 (private call accept retransmission) expires and the value of the counter CFP4 (private call accept retransmission) is equal to the upper limit, the MCVideo client:

1) shall start timer TFP7 (waiting for any message with same call identifier); and

2) shall enter the "P1: ignoring same call id" state.

10.3.2.4.4.7 User rejects the private call setup request

When in the "P5: pending" state, upon an indication from MCVideo User to reject the incoming private call, the MCVideo client:

1) shall generate a PRIVATE CALL REJECT message as specified in clause 17.1.8:

   a) shall set the Call identifier IE to the stored call identifier;

   b) shall set the MCVideo user ID of the caller IE with the stored caller ID;

   c) shall set the MCVideo user ID of the callee IE with stored callee ID; and

   d) shall set the Reason IE as "FAILED", if requested to restrict notification of call failure and the value of "/<*x*>/<*x*>/Common/PrivateCall/FailRestrict" leaf node present in the user profile as specified in 3GPP TS 24.483 [4] is set to "true". Otherwise, shall set the Reason IE as "REJECT";

2) shall send the PRIVATE CALL REJECT message in response to the request message according to rules and procedures as specified in clause 10.3.1.1.1;

3) shall start timer TFP7 (waiting for any message with same call identifier); and

4) shall enter the "P1: ignoring same call id" state.

10.3.2.4.4.8 Caller cancels the private call setup request before call establishment

When in the "P5: pending" state or "P1: ignoring same call id" state, upon receiving a PRIVATE CALL RELEASE message, the MCVideo client:

1) shall generate a PRIVATE CALL RELEASE ACK message as specified in clause 17.1.10. In the PRIVATE CALL RELEASE ACK message, the MCVideo client:

   a) shall set the Call identifier IE to the stored call identifier;

   b) shall set the MCVideo user ID of the caller IE with the stored caller ID; and.

   c) shall set the MCVideo user ID of the callee IE with the stored callee ID.

2) shall send the PRIVATE CALL RELEASE ACK message in response to the request message according to rules and procedures as specified in clause 10.3.1.1.1;

3) shall start timer TFP7 (waiting for any message with same call identifier);

4) shall stop timer TFP4 (private call accept retransmission) if running; and

5) shall enter the "P1: ignoring same call id" state, if the current state is "P5: pending" state.

10.3.2.4.5 Private call release

10.3.2.4.5.1 Releasing a private call

When in the "P4: part of ongoing call" state, upon an indication from MCVideo User to release a private call, the MCVideo client:

1) shall generate a PRIVATE CALL RELEASE message as specified in clause 17.1.9. In the PRIVATE CALL RELEASE message, the MCVideo client:

   a) shall set the Call identifier IE to the stored call identifier;

   b) shall set the MCVideo user ID of the caller IE with stored caller ID; and

   c) shall set the MCVideo user ID of the callee IE with stored callee ID.

2) shall send the PRIVATE CALL RELEASE message in response to the request message according to rules and procedures as specified in clause 10.3.1.1.1;

3) shall initialize the counter CFP3 (private call release retransmission) with the value set to 1;

4) shall start timer TFP3 (private call release retransmission); and

5) shall enter the "P3: waiting for release response" state.

10.3.2.4.5.2 Private call release retransmission

When in the "P3: waiting for release response" state, upon expiry of timer TFP3 (private call release retransmission), the MCVideo client:

1) shall generate a PRIVATE CALL RELEASE message as specified in clause 17.1.9. In the PRIVATE CALL RELEASE message, the MCVideo client:

   a) shall set the Call identifier IE to the stored call identifier;

   b) shall set the MCVideo user ID of the caller IE with stored caller ID; and

   c) shall set the MCVideo user ID of the callee IE with the stored callee ID.

2) shall send the PRIVATE CALL RELEASE message in response to the request message according to rules and procedures as specified in clause 10.3.1.1.1;

3) shall increment the value of timer CFP3 by 1;

4) shall start timer TFP3 (private call release retransmission); and

5) shall remain in the "P3: waiting for release response" state.

10.3.2.4.5.3 No response to private call release

In the "P3: waiting for release response" state, when timer TFP3 (private call request retransmission) expires and the value of the counter CFP3 (private call release retransmission) is equal to the upper limit, the MCVideo client:

1) shall terminate the media session;

2) shall start timer TFP7 (waiting for any message with same call identifier); and

3) shall enter the "P1: ignoring same call id" state.

10.3.2.4.5.4 Acknowledging private call release after call establishment

When in the "P4: part of ongoing call" state, upon receiving a PRIVATE CALL RELEASE message, the MCVideo client:

1) shall generate a PRIVATE CALL RELEASE ACK message as specified in clause 17.1.10;
   a) shall set the Call identifier IE to the stored call identifier;
   b) shall set the MCVideo user ID of the caller IE the stored caller ID; and
   c) shall set the MCVideo user ID of the callee IE with the stored callee ID.
2) shall send the PRIVATE CALL RELEASE ACK message in response to the request message according to rules and procedures as specified in clause 10.3.1.1.1;
3) shall terminate the media session for private call;
4) shall start timer TFP7 (waiting for any message with same call identifier); and
5) shall enter the "P1: ignoring same call id" state.

10.3.2.4.5.5 Private call release acknowledged

When in the "P3: waiting for release response" state, upon receiving a PRIVATE CALL RELEASE ACK to PRIVATE CALL RELEASE message, the MCVideo client:

1) shall stop timer TFP3 (private call release retransmission), if running;
2) shall terminate the media session;
3) shall start timer TFP7 (waiting for any message with same call identifier); and
4) shall enter the "P1: ignoring same call id" state.

10.3.2.4.5.6 Max duration reached

When in the "P4: part of ongoing call" state, upon expiry of timer TFP5 (max duration), the MCVideo client:

1) shall terminate the media session;
2) shall start timer TFP7 (waiting for any message with same call identifier); and
3) shall enter the "P1: ignoring same call id" state.

10.3.2.4.5.7 Stop ignoring same call id

When in the "P1: ignoring same call id" state, upon expiry of timer TFP7 (waiting for any message with same call identifier) the MCVideo client:

1) shall clear the stored call identifier; and
2) shall enter the "P0: start-stop" state.

10.3.2.4.5.8 No response to emergency private call setup request

In the "P4: part of ongoing call" state, when timer TFP1 (private call request retransmission) expires and the value of the counter CFP1 (private call request retransmission) is equal to the upper limit, the MCVideo client:

1) shall start timer TFP7 (waiting for any message with same call identifier); and
2) shall enter the "P1: ignoring same call id" state.

10.3.2.4.5.9 No response to emergency private call cancel

In the "P4: part of ongoing call" state, when timer TFP6 (emergency private call cancel retransmission) expires and the value of the counter CFP6 (emergency private call cancel retransmission) is equal to the upper limit, the MCVideo client:

1) shall start timer TFP7 (waiting for any message with same call identifier); and

2) shall enter the "P1: ignoring same call id" state.

10.3.2.4.6 Error handling

10.3.2.4.6.1 Unexpected MONP message received

Upon receiving an unexpected MONP message or MONP MCVideo message in a state where there is no handling specified for the MONP message or the MONP MCVideo message, the MCVideo client shall discard this message.

10.3.2.4.6.2 Unexpected indication from MCVideo user

Upon receiving an indication from the MCVideo user in a state where there is no handling specified for the indication, the MCVideo client shall ignore the indication.

10.3.2.4.6.3 Unexpected expiration of a timer

Upon expiration of a timer in a state where there is no handling specified for expiration of the timer, the MCVideo client shall ignore the expiration of the timer.

11 Emergency Alert

11.1 General

This clause describes the emergency alert procedures for on-network and off-network.

For on-network emergency alert, the procedures for originating and terminating MCVideo clients, participating MCVideo functions and controlling MCVideo function are specified in clause 11.2. MCVideo emergency call procedures that have emergency alerts as an optional capability shall be performed as defined in clause 9.2 for on-network group call and defined in clause 10.2 for on-network private call.

For off-network emergency alert, the procedures for each functional entity is specified in clause 11.3.

11.2 On-network emergency alert

11.2.1 Client procedures

11.2.1.1 Emergency alert origination

Upon receiving a request from the MCVideo user to send an MCVideo emergency alert to the indicated MCVideo group shall determine whether the group document contains a <list-service> element that contains a <preconfigured-group-use-only> element. If a <preconfigured-group-use-only> element exists and is set to the value "true", then the MCVideo client:

1) should indicate to the MCVideo user that alerts are not allowed on the indicated group; and

2) shall skip the remainder of this procedure.

If this is an authorised request for an MCVideo emergency alert as determined by clause 6.2.8.1.6, the MCVideo client shall generate a SIP MESSAGE request in accordance with 3GPP TS 24.229 [11] and IETF RFC 3428 [33] with the clarifications given below.

NOTE 1: this SIP MESSAGE request is assumed to be sent out-of-dialog.

The MCVideo client:

1) shall include the ICSI value "urn:urn-7:3gpp-service.ims.icsi.mcvideo" (coded as specified in 3GPP TS 24.229 [11]), in a P-Preferred-Service header field according to IETF RFC 6050 [9] in the SIP MESSAGE request;

2) shall include an Accept-Contact header field with the g.3gpp.icsi-ref media feature tag containing the value of "urn:urn-7:3gpp-service.ims.icsi.mcvideo" along with the "require" and "explicit" header field parameters according to IETF RFC 3841 [6];

3) may include a P-Preferred-Identity header field in the SIP MESSAGE request containing a public user identity as specified in 3GPP TS 24.229 [11];

4) shall include an application/vnd.3gpp.mcvideo-info+xml MIME body as specified in clause F.1 with the <mcvideoinfo> element containing the <mcvideo-Params> element with:

   a) the <mcvideo-request-uri> element set to the group identity;

   b) the <alert-ind> element set to a value of "true";

   c) the <mcvideo-client-id> element set to the MCVideo client ID of the originating MCVideo client; and

   d) if the MCVideo client needs to include an active functional alias in the SIP MESSAGE request, the <functional-alias-URI> set to the URI of the used functional alias;

NOTE 1A: The MCVideo client learns the functional aliases that are activated for an MCVideo ID from procedures specified in clause 20.2.1.3.

5) shall include an application/vnd.3gpp.mcvideo-location-info+xml MIME body as specified in Annex F.3 with a <Report> element included in the <location-info> root element;

6) shall include in the <Report> element the specific location information configured for the MCVideo emergency alert location trigger;

7) shall set the MCVideo emergency state if not already set;

8) shall set the MCVideo emergency alert state to "MVEA 2: emergency-alert-confirm-pending";

9) shall set the Request-URI to the public service identity identifying the participating MCVideo function serving the group identity; and

10) shall send the SIP MESSAGE request according to rules and procedures of 3GPP TS 24.229 [11].

On receiving a SIP 2xx response to the SIP MESSAGE request, the MCVideo client shall set the MCVideo emergency alert state to "MVEA 3: emergency-alert-initiated".

On receiving a SIP 4xx response a SIP 5xx response or a SIP 6xx response to the SIP MESSAGE request, the MCVideo client shall set the MCVideo emergency alert state to "MVEA 1: no-alert".

NOTE 2: the MCVideo emergency state is left set in this case as the MCVideo user presumably is in the best position to determine whether or not they are in a life-threatening condition. The assumption is that the MCVideo user can clear the MCVideo emergency state manually if need be.

11.2.1.2 Emergency alert cancellation

Upon receiving a request from the MCVideo user to send an MCVideo emergency alert cancellation to the indicated MCVideo group and this is an authorised request for an MCVideo emergency alert cancellation as determined by

clause 6.2.8.1.6, the MCVideo client shall generate a SIP MESSAGE request in accordance with 3GPP TS 24.229 [11] and IETF RFC 3428 [33] with the clarifications given below.

NOTE 1: This SIP MESSAGE request is assumed to be sent out-of-dialog.

The MCVideo client:

1) shall include the ICSI value "urn:urn-7:3gpp-service.ims.icsi.mcvideo" (coded as specified in 3GPP TS 24.229 [11]), in a P-Preferred-Service header field according to IETF RFC 6050 [9] in the SIP MESSAGE request;

2) shall include an Accept-Contact header field with the g.3gpp.icsi-ref media feature tag containing the value of "urn:urn-7:3gpp-service.ims.icsi.mcvideo" along with the "require" and "explicit" header field parameters according to IETF RFC 3841 [6];

3) may include a P-Preferred-Identity header field in the SIP MESSAGE request containing the public user identity of the originator as specified in 3GPP TS 24.229 [11];

4) shall include an application/vnd.3gpp.mcvideo-info+xml MIME body as specified in clause F.1 with the <mcvideoinfo> element containing the <mcvideo-Params> element with:

   a) the <mcvideo-request-uri> element set to the MCVideo group identity;

   b) the <alert-ind> element set to a value of "false"; and

   c) if the MCVideo user is cancelling an MCVideo emergency alert originated by another MCVideo user, include the <originated-by> element set to the MCVideo ID of the MCVideo user who originated the MCVideo emergency alert;

5) if the MCVideo user has additionally requested the cancellation of the in-progress emergency state of the MCVideo group and this is an authorised request for an in-progress emergency group state cancellation as determined by clause 6.2.8.1.7, shall include an <emergency-ind> element set to a value of "false" in the <mcvideoinfo> element containing the <mcvideo-Params> element;

6) shall set the Request-URI to the public service identity identifying the participating MCVideo function serving the group identity;

7) if the generated SIP MESSAGE request does not contain an <originated-by> element in the application/vnd.3gpp.mcvideo-info+xml MIME body, shall set the MCVideo emergency alert state to "MVEA 4: Emergency-alert-cancel-pending"; and

8) shall send the SIP MESSAGE request according to rules and procedures of 3GPP TS 24.229 [11].

On receipt of a SIP MESSAGE request containing an application/vnd.3gpp.mcvideo-info+xml MIME body with an <alert-ind-rcvd> element set to true and an <mcvideo-client-id> matching the MCVideo client ID included in the sent SIP MESSAGE request:

1) if the <alert-ind> element is set to a value of "false" in the application/vnd.3gpp.mcvideo-info+xml MIME body of the received SIP MESSAGE request and the sent SIP MESSAGE request did not contain an <originated-by> element in the application/vnd.3gpp.mcvideo-info+xml MIME body, shall:

   a) set the MCVideo emergency alert state to "MVEA 1: no-alert"; and

   b) clear the MCVideo emergency state if not already cleared;

2) if the <alert-ind> element in the application/vnd.3gpp.mcvideo-info+xml MIME body of the received SIP MESSAGE request is set to a value of "true" and if the MCVideo emergency alert state is set to "MVEA 4: Emergency-alert-cancel-pending" and the sent SIP MESSAGE request did not contain an <originated-by> element in the application/vnd.3gpp.mcvideo-info+xml MIME body, shall set the MCVideo emergency alert state to "MVEA 3: emergency-alert-initiated"; and

NOTE 2: It would appear to be an unusual situation for the initiator of an MCVideo emergency alert to not be able to clear their own alert. Nevertheless, an MCVideo user can be configured to be authorised to initiate MCVideo emergency alerts but not have the authority to clear them. Hence, the case is covered here.

3) if an <emergency-ind> element is present in the application/vnd.3gpp.mcvideo-info+xml MIME body of received SIP MESSAGE request and is set to a value of "false":

   a) shall set the MCVideo emergency group call state of the group to "MVEGC 1: emergency-gc-capable"; and

   b) shall set the MCVideo emergency group state of the group to "MVEG 1: no-emergency".

NOTE 3: The case where an <emergency-ind> element is set to true is possible but not handled specifically above as it results in no state changes.

On receiving a SIP 4xx response, SIP 5xx response or SIP 6xx response to the sent SIP MESSAGE request:

1) if the received SIP 4xx response, SIP 5xx response or SIP 6xx response contains an application/vnd.3gpp.mcvideo-info+xml MIME body as specified in clause F.1 with the <mcvideoinfo> element containing the <mcvideo-Params> element with the <alert-ind> element set to a value of "true", the sent SIP MESSAGE request did not contain an <originated-by> element in the application/vnd.3gpp.mcvideo-info+xml MIME body and the MCVideo emergency alert state is set to "MVEA 4: Emergency-alert-cancel-pending", shall set the MCVideo emergency alert state to "MVEA 3: emergency-alert-initiated"; and

NOTE 4: In this case, an <emergency-ind> element would either not be present or would be set to true. In either case, no change in state would result. Hence, this case is not specified above.

2) if the received SIP 4xx response, SIP 5xx response or a SIP 6xx response to the SIP MESSAGE request does not contain an application/vnd.3gpp.mcvideo-info+xml MIME body with an <alert-ind> element, the sent SIP MESSAGE request does not contain an <originated-by> element in the application/vnd.3gpp.mcvideo-info+xml MIME body and the MCVideo emergency alert state is set to "MVEA 4: Emergency-alert-cancel-pending", shall set the MCVideo emergency alert state to "MVEA 3: emergency-alert-initiated".

11.2.1.3 MCVideo client receives an MCVideo emergency alert or call notification

Upon receipt of a "SIP MESSAGE request for emergency notification", the MCVideo client:

1) if the received SIP MESSAGE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body with the <alert-ind> element set to a value of "true", should display to the MCVideo user an indication of the MCVideo emergency alert and associated information, including:

   a) the MCVideo group identity contained in <mcvideo-calling-group-id> element application/vnd.3gpp.mcvideo-info+xml MIME body;

   b) the originator of the MCVideo emergency alert contained in the <mcvideo-calling-user-id> element of the application/vnd.3gpp.mcvideo-info+xml MIME body; and

   c) the mission critical organization of the MCVideo emergency alert originator contained in the <mc-org> element of the application/vnd.3gpp.mcvideo-info+xml MIME body;

NOTE 1: This is the case of the MCVideo client receiving the notification of another MCVideo user's emergency alert.

2) if the received SIP MESSAGE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body with the <alert-ind> element set to a value of "false":

   a) should display to the MCVideo user an indication of the MCVideo emergency alert cancellation and associated information, including:

      i) the MCVideo group identity contained in the <mcvideo-calling-group-id> element application/vnd.3gpp.mcvideo-info+xml MIME body;

      ii) the originator of the MCVideo emergency alert contained in:

         A) if present, the <originated-by> element of the application/vnd.3gpp.mcvideo-info+xml MIME body; or

         B) the <mcvideo-calling-user-id> element of the application/vnd.3gpp.mcvideo-info+xml MIME body; and

b) if the MCVideo ID contained in the <originated-by> element is the MCVideo ID of the receiving MCVideo user, shall set the MCVideo emergency alert state to "MVEA 1: no-alert"; and

c) if the received SIP MESSAGE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body with the <emergency-ind> element is set to a value of "false":

i) shall set the MCVideo emergency group state to "MVEG 1: no-emergency"; and

ii) shall set the MCVideo emergency group call state to "MVEGC 1: emergency-gc-capable";

NOTE 2: This is the case of the MCVideo client receiving the notification of the cancellation by a third party of an MCVideo emergency alert. This can be the MCVideo emergency alert of another MCVideo user or the MCVideo emergency alert of the recipient, as determined by the contents of the <originated-by> element. Optionally, notification of the cancellation of the in-progress emergency state of the MCVideo group can be included.

3) if the received SIP MESSAGE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body with the <emergency-ind> element set to a value of "true":

a) should display to the MCVideo user an indication of the additional emergency MCVideo user participating in the MCVideo emergency group call including the following if not already displayed as part of step 1):

i) the MCVideo group identity contained in the <mcvideo-calling-group-id> element application/vnd.3gpp.mcvideo-info+xml MIME body; and

ii) the <mcvideo-calling-user-id> element of the application/vnd.3gpp.mcvideo-info+xml MIME body;

b) shall set the MCVideo emergency group state to "MVEG 2: in-progress" if not already set to that value;

NOTE 3: This is the case of the MCVideo client receiving notification of an additional MCVideo user in an MCVideo emergency state (i.e., not the MCVideo user that originally triggered the in-progress emergency state of the group) joining the in-progress emergency group call. An emergency alert indication, if included, is handled in step 1).

4) if the received SIP MESSAGE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body with the <emergency-ind> element set to a value of "false":

a) should display to the MCVideo user an indication of the cancellation of the in-progress emergency state of the MCVideo group call including the following if not already displayed as part of step 2):

i) the MCVideo group identity contained in the <mcvideo-calling-group-id> element application/vnd.3gpp.mcvideo-info+xml MIME body; and

ii) the <mcvideo-calling-user-id> element of the application/vnd.3gpp.mcvideo-info+xml MIME body;

b) shall set the MCVideo emergency group state to "MVEG 1: no-emergency"; and

c) shall set the MCVideo emergency group call state to "MVEGC 1: emergency-gc-capable";

NOTE 4: This is the case of the MCVideo client receiving the notification of the cancellation of the in-progress emergency state of the MCVideo group. In this case, the receiving MCVideo client is affiliated with the MCVideo group but not participating in the session. An emergency alert cancellation, if included, is handled in step 2).

5) if the received SIP MESSAGE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body with the <imminentperil-ind> element set to a value of "true":

a) should display to the MCVideo user an indication of the MCVideo user participating in the MCVideo imminent peril group call including the following if not already displayed as part of step 1):

i) the MCVideo group identity contained in the <mcvideo-calling-group-id> element application/vnd.3gpp.mcvideo-info+xml MIME body; and

ii) the <mcvideo-calling-user-id> element of the application/vnd.3gpp.mcvideo-info+xml MIME body; and

b) shall set the MCVideo imminent peril group state to "MVIG 2: in-progress" if not already set to that value;

NOTE 5: This is the case of the MCVideo client receiving notification of an additional MCVideo user initiating an imminent peril group call when there is already an in-progress imminent peril state in effect on the group.

6) if the received SIP MESSAGE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body with the <imminentperil-ind> element set to a value of "false":

   a) should display to the MCVideo user an indication of the cancellation of the in-progress imminent peril state of the MCVideo group including the following if not already displayed as part of step 2):

      i) the MCVideo group identity contained in the <mcvideo-calling-group-id> element application/vnd.3gpp.mcvideo-info+xml MIME body; and

      ii) the <mcvideo-calling-user-id> element of the application/vnd.3gpp.mcvideo-info+xml MIME body;

   b) shall set the MCVideo imminent peril group state to "MVIG 1: no-imminent-peril"; and

   c) shall set the MCVideo imminent peril group call state to "MVIGC 1: imminent-peril-gc-capable";

NOTE 6: This is the case of the MCVideo client receiving notification of the cancellation of the in-progress imminent peril state of the group.

7) shall generate a SIP 200 (OK) response according to rules and procedures of 3GPP TS 24.229 [11]; and

8) shall send the SIP 200 (OK) response towards the MCVideo server according to rules and procedures of 3GPP TS 24.229 [11].

11.2.1.4 MCVideo client receives notification of entry into or exit from a group geographic area

Upon receipt of a "SIP MESSAGE request for notification of entry into or exit from a group geographic area", the MCVideo client;

1) shall send a SIP 200 (OK) to the participating MCVideo function that sent the SIP MESSAGE request; and

2) if the <group-geo-area-ind> element of the application/vnd.3gpp.mcvideo-info+xml MIME body is:

   a) set to "true":

      i) may display to the MCVideo user an indication that a group geographic area has been entered; and

      ii) shall execute the procedure in clause 8.2.1.2 to affiliate to the group indicated by the participating MCVideo function; and

   b) set to "false":

      i) may display to the MCVideo user an indication that a group geographic area has been exited; and

      ii) shall execute the procedure in clause 8.2.1.2 to de-affiliate from the group indicated by the participating MCVideo function.

11.2.1.5 MCVideo client receives notification of entry into or exit from an emergency alert area

Upon receipt of a "SIP MESSAGE request for notification of entry into or exit from an emergency alert area", the MCVideo client:

1) if the received SIP MESSAGE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body with the <emergency-alert-area-ind> element of the value:

   a) set to "true":

      i) may display to the MCVideo user an indication that MCVideo client has entered a pre-defined emergency alert area; and

ii) if the MCVideo user is not in emergency state, shall initiate the emergency alert origination procedure as specified in clause 12.1.1.1; or

b) set to "false":

i) may display to the MCVideo user an indication that MCVideo client has exited a pre-defined emergency alert area.

NOTE: In this case, the MCVideo emergency state remains set, as the MCVideo user is in the best position to determine whether or not they are in a life-threatening condition. The MCVideo user can clear the MCVideo emergency state manually, if needed.

2) shall generate a SIP 200 (OK) response according to rules and procedures of 3GPP TS 24.229 [11]; and

3) shall send the SIP 200 (OK) response towards the MCVideo server according to rules and procedures of 3GPP TS 24.229 [11].

11.2.2 Participating MCVideo function procedures

11.2.2.1 Receipt of a SIP MESSAGE request for emergency notification from the served MCVideo client

Upon receipt of a "SIP MESSAGE request for emergency notification for originating participating MCVideo function", the participating MCVideo function:

1) if unable to process the request due to a lack of resources or a risk of congestion exists, may reject the SIP MESSAGE request with a SIP 500 (Server Internal Error) response. The participating MCVideo function may include a Retry-After header field to the SIP 500 (Server Internal Error) response as specified in IETF RFC 3261 [24] and skip the rest of the steps;

NOTE 1: if the SIP MESSAGE request contains an emergency indication set to a value of "true" or an alert indication set to a value of "true", the participating MCVideo function can, according to local policy, choose to accept the request.

2) shall determine the MCVideo ID of the calling user from the public user identity in the P-Asserted-Identity header field of the SIP MESSAGE request, and shall authorise the calling user;

NOTE 2: The MCVideo ID of the calling user is bound to the public user identity at the time of service authorisation, as documented in clause 7.3.

3) if the MCVideo user is not affiliated with the MCVideo group as determined by clause 9.2.2.2.11, shall perform the actions specified in clause 9.2.2.2.12 for implicit affiliation;

4) if the actions for implicit affiliation specified in step 3) above were performed but not successful in affiliating the MCVideo user due to the MCVideo user already having N2 simultaneous affiliations (specified in the <MaxAffiliationsN2> element of the <Common> element of the corresponding MCVideo user profile of the served MCVideo ID), shall reject the "SIP MESSAGE request for emergency notification for originating participating MCVideo function" with a SIP 486 (Busy Here) response with the warning text set to "102 too many simultaneous affiliations" in a Warning header field as specified in clause 4.4. and skip the rest of the steps.

NOTE 3: N2 is the total number of MCVideo groups that an MCVideo user can be affiliated to simultaneously as specified in 3GPP TS 23.379 [3].

NOTE 4: As this is a request for MCVideo emergency services, the participating MCVideo function can choose to accept the request.

5) shall determine the public service identity of the controlling MCVideo function associated with the group identity in the received SIP MESSAGE request;

NOTE 5: The public service identity can identify the controlling MCVideo function in the local MCVideo system or in an interconnected MCVideo system.

NOTE 6: If the controlling MCVideo function is in an interconnected MCVideo system in a different trust domain, then the public service identity can identify the MCVideo gateway server that acts as an entry point in the interconnected MCVideo system from the local MCVideo system.

NOTE 7: If the controlling MCVideo function is in an interconnected MCVideo system in a different trust domain, then the local MCVideo system can route the SIP request through an MCVideo gateway server that acts as an exit point from the local MCVideo system to the interconnected MCVideo system.

NOTE 8: How the participating MCVideo function determines the public service identity of the controlling MCVideo function associated with the group identity or of the MCVideo gateway server in the interconnected MCVideo system is out of the scope of the present document.

NOTE 9: How the local MCVideo system routes the SIP request through an exit MCVideo gateway server is out of the scope of the present document.

6) shall generate a SIP MESSAGE request in accordance with 3GPP TS 24.229 [11] and IETF RFC 3428 [33];

7) shall set the Request-URI of the outgoing SIP MESSAGE request to the public service identity of the controlling MCVideo function determined in step 5) above;

8) shall copy the contents of the application/vnd.3gpp.mcvideo-info+xml MIME body in the received SIP MESSAGE request into an application/vnd.3gpp.mcvideo-info+xml MIME body as specified in clause F.1 included in the outgoing SIP MESSAGE request;

8a) if the received SIP MESSAGE request contains a <functional-alias-URI> element of the application/vnd.3gpp.mcvideo-info+xml MIME body, shall check the status of the functional alias for the MCVideo ID. If the functional alias status is activated, then the participating MCVideo function shall set the <functional-alias-URI> element of the application/vnd.3gpp.mcvideo-info+xml MIME body in the outgoing SIP MESSAGE request to the received value, otherwise it shall not include a <functional-alias-URI> element;9) shall set the <mcvideo-calling-user-id> element of the <mcvideoinfo> element containing the <mcvideo-Params> element to the MCVideo ID determined in step 2) above;

10) if the received SIP MESSAGE request contains an application/vnd.3gpp.mcvideo-location-info+xml MIME body as specified in clause F.3 shall copy the contents of the application/vnd.3gpp.mcvideo-location-info+xml MIME body in the received SIP MESSAGE request into an application/vnd.3gpp.mcvideo-location-info+xml MIME body included in the outgoing SIP MESSAGE request;

11) shall set the P-Asserted-Identity in the outgoing SIP MESSAGE request to the public user identity in the P-Asserted-Identity header field contained in the received SIP MESSAGE request; and

12) shall send the SIP MESSAGE request as specified to 3GPP TS 24.229 [11].

Upon receipt of a SIP 2xx response in response to the SIP MESSAGE request sent in step 10):

1) shall generate a SIP 200 (OK) response as specified in 3GPP TS 24.229 [11] with the follow clarifications:

   a) shall include the public user identity received in the P-Asserted-Identity header field of the incoming SIP 200 (OK) response into the P-Asserted-Identity header field of the outgoing SIP 200 (OK) response;

2) if the procedures of clause 9.2.2.2.12 for implicit affiliation were performed in the present clause, shall complete the implicit affiliation by performing the procedures of clause 9.2.2.2.13; and

3) shall send the SIP 200 (OK) response to the MCVideo client according to 3GPP TS 24.229 [11].

Upon receipt of a SIP 4xx, 5xx or 6xx response to the sent SIP MESSAGE request and if the implicit affiliation procedures of clause 9.2.2.2.12 were invoked in the present clause, the participating MCVideo function shall perform the procedures of clause 9.2.2.2.14.

11.2.2.2 Receipt of a SIP MESSAGE request for emergency notification for terminating MCVideo client

In the procedures in this clause:

1) emergency indication in an incoming SIP MESSAGE request refers to the <emergency-ind> element of the application/vnd.3gpp.mcvideo-info+xml MIME body; and

2) alert indication in an incoming SIP MESSAGE request refers to the <alert-ind> element of the application/vnd.3gpp.mcvideo-info+xml MIME body.

Upon receipt of a "SIP MESSAGE requests for emergency notification for terminating participating MCVideo function", the participating MCVideo function:

1) if unable to process the request due to a lack of resources or a risk of congestion exists, may reject the SIP MESSAGE request with a SIP 500 (Server Internal Error) response. The participating MCVideo function may include a Retry-After header field to the SIP 500 (Server Internal Error) response as specified in IETF RFC 3261 [24] and skip the rest of the steps;

NOTE 1: if the SIP MESSAGE request contains an emergency indication set to a value of "true" or an alert indication set to a value of "true", the participating MCVideo function can by means beyond the scope of this specification choose to accept the request.

2) shall use the MCVideo ID present in the <mcvideo-request-uri> element of the application/vnd.3gpp.mcvideo-info+xml MIME body of the incoming SIP MESSAGE request to retrieve the binding between the MCVideo ID and public user identity;

3) if the binding between the MCVideo ID and public user identity does not exist, then the participating MCVideo function shall reject the SIP MESSAGE request with a SIP 404 (Not Found) response. Otherwise, continue with the rest of the steps;

4) shall generate an outgoing SIP MESSAGE request as specified in clause 6.3.2.2.11; and

5) shall send the SIP MESSAGE request as specified in 3GPP TS 24.229 [11].

Upon receipt of SIP 2xx responses to the outgoing SIP MESSAGE requests, the participating MCVideo function shall follow the procedures specified in 3GPP TS 24.229 [11].

11.2.2.3 Receipt of a SIP MESSAGE request indicating successful delivery of emergency notification

Upon receipt of a SIP MESSAGE request routed to the terminating participating MCVideo function with the Request-URI set to the public service identity of the terminating participating MCVideo function and the SIP MESSAGE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body with an <alert-ind-rcvd> element present, the participating MCVideo function:

1) if unable to process the request due to a lack of resources or a risk of congestion exists, may reject the SIP MESSAGE request with a SIP 500 (Server Internal Error) response. The participating MCVideo function may include a Retry-After header field to the SIP 500 (Server Internal Error) response as specified in IETF RFC 3261 [24] and skip the rest of the steps;

2) shall use the MCVideo ID present in the <mcvideo-request-uri> element of the application/vnd.3gpp.mcvideo-info+xml MIME body of the incoming SIP MESSAGE request to retrieve the binding between the MCVideo ID and public user identity;

3) if the binding between the MCVideo ID and public user identity does not exist, then the participating MCVideo function shall reject the SIP MESSAGE request with a SIP 404 (Not Found) response. Otherwise, continue with the rest of the steps;

4) shall generate an outgoing SIP MESSAGE request in accordance with 3GPP TS 24.229 [11] and IETF RFC 3428 [33] and:

   a) shall include in the SIP MESSAGE request all Accept-Contact header fields and all Reject-Contact header fields, with their feature tags and their corresponding values along with parameters according to rules and procedures of IETF RFC 3841 [6] that were received (if any) in the incoming SIP MESSAGE request;

   b) shall set the Request-URI of the outgoing SIP MESSAGE request to the public user identity associated to the MCVideo ID of the MCVideo user that was in the Request-URI of the incoming SIP MESSAGE request;

   c) shall copy the contents of the application/vnd.3gpp.mcvideo-info+xml MIME body received in the incoming SIP MESSAGE request into an application/vnd.3gpp.mcvideo-info+xml MIME body included in the outgoing SIP MESSAGE request; and

d) shall copy the contents of the P-Asserted-Identity header field of the incoming SIP MESSAGE request to the P-Asserted-Identity header field of the outgoing SIP MESSAGE request; and

5) shall send the SIP MESSAGE request as specified in 3GPP TS 24.229 [11].

Upon receipt of SIP 2xx responses to the outgoing SIP MESSAGE requests, the participating MCVideo function shall follow the procedures specified in 3GPP TS 24.229 [11].

11.2.3 Controlling MCVideo function procedures

11.2.3.1 Handling of a SIP MESSAGE request for emergency notification

Upon receipt of a "SIP MESSAGE request for emergency notification for controlling MCVideo function", the controlling MCVideo function:

1) if unable to process the request due to a lack of resources or a risk of congestion exists, may reject the SIP MESSAGE request with a SIP 500 (Server Internal Error) response. The controlling MCVideo function may include a Retry-After header field to the SIP 500 (Server Internal Error) response as specified in IETF RFC 3261 [24]. Otherwise, continue with the rest of the steps;

NOTE: If the SIP MESSAGE request contains an alert indication set to a value of "true", the controlling MCVideo function can, according to local policy, choose to accept the request.

2) shall reject the SIP request with a SIP 403 (Forbidden) response and not process the remaining steps if an Accept-Contact header field does not include the g.3gpp.icsi-ref media feature tag containing the value of "urn:urn-7:3gpp-service.ims.icsi.mcvideo";

2A) if the group document contains a <list-service> element that contains a <preconfigured-group-use-only> element that is set to the value "true", shall reject the SIP request with a SIP 403 (Forbidden) response with the warning text set to "168 alert is not allowed on the preconfigured group" as specified in clause 4.4 "Warning header field" and skip the rest of the steps;

3) if the received SIP MESSAGE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body with the <alert-ind> element set to a value of "false", shall perform the procedures specified in clause 11.2.3.2 and skip the rest of the steps;

4) if the received SIP MESSAGE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body with the <alert-ind> element set to a value of "true":

a) if the received SIP MESSAGE request is an unauthorised request for an MCVideo emergency alert as specified in clause 6.3.3.1.13.1 shall reject the SIP MESSAGE request with a SIP 403 (Forbidden) response to the SIP MESSAGE request as specified in 3GPP TS 24.229 [11] with the following clarifications:

i) shall include in the SIP 403 (Forbidden) response an application/vnd.3gpp.mcvideo-info+xml MIME body as specified in clause F.1 with the <mcvideoinfo> element containing the <mcvideo-Params> element with the <alert-ind> element set to a value of "false"; and

ii) shall send the SIP 403 (Forbidden) response as specified in 3GPP TS 24.229 [11] and skip the rest of the steps; and

b) if the received SIP MESSAGE request is an authorised request for an MCVideo emergency alert as specified in clause 6.3.3.1.13.1:

i) if the sending MCVideo user identified by the <mcvideo-calling-user-id> element included in the application/vnd.3gpp.mcvideo-info+xml MIME body is not affiliated with the MCVideo group identified by the <mcvideo-request-uri> element of the MIME body as determined by the procedures of clause 6.3.6:

I) shall check if the MCVideo user is eligible to be implicitly affiliated with the MCVideo group as determined by clause 9.2.2.3.6;

II) if the MCVideo user is determined not to be eligible to be implicitly affiliated to the MCVideo group shall reject the SIP MESSAGE request with a SIP 403 (Forbidden) response with the warning text set

to "120 user is not affiliated to this group" in a Warning header field as specified in clause 4.4 and skip the rest of the steps below; or

III) if the procedures of clause 9.2.2.3.6 determined the MCVideo user to be eligible to be implicitly affiliated to the MCVideo group shall, perform the implicit affiliation as specified in clause 9.2.2.3.7;

ii) for each of the other affiliated members of the group:

A) generate an outgoing SIP MESSAGE request notification of the MCVideo user's emergency alert indication as specified in clause 6.3.3.1.11 with the clarifications of clause 6.3.3.1.12;

B) shall include in the application/vnd.3gpp.mcvideo-info+xml MIME body with the <mcvideoinfo> element containing the <mcvideo-Params> element with the <mcvideo-calling-user-id> element set to the value of the <mcvideo-calling-user-id> element in the received SIP MESSAGE request; and

C) send the SIP MESSAGE request according to according to rules and procedures of 3GPP TS 24.229 [11];

iii) shall generate a SIP 200 (OK) response to the received SIP MESSAGE request as specified in 3GPP TS 24.229 [11] with the following clarifications:

A) shall cache the information that the MCVideo user has initiated an MCVideo emergency alert;

iv) shall send the SIP 200 (OK) response to the received SIP MESSAGE according to rules and procedures of 3GPP TS 24.229 [11].

v) shall generate a SIP MESSAGE request as described in clause 6.3.3.1.20 to indicate successful receipt of an emergency alert, and shall include in the application/vnd.3gpp.mcvideo-info+xml MIME body:

A) the <alert-ind> element set to a value of "true";

B) the <alert-ind-rcvd> element set to a value of true; and

C) the <mcvideo-client-id> element with the MCVideo client ID that was included in the incoming SIP MESSAGE request; and

vi) shall send the SIP MESSAGE request according to according to rules and procedures of 3GPP TS 24.229 [11].

Upon receipt of SIP 2xx responses to the outgoing SIP MESSAGE requests, the controlling MCVideo function shall follow the procedures specified in 3GPP TS 24.229 [11].

11.2.3.2 Handling of a SIP MESSAGE request for emergency alert cancellation

Upon receipt of a "SIP MESSAGE request for emergency notification for controlling MCVideo function" containing an application/vnd.3gpp.mcvideo-info+xml MIME body with the <alert-ind> element set to a value of "false", the controlling MCVideo function:

1) if the received SIP MESSAGE request is an unauthorised request for an MCVideo emergency alert cancellation as specified in clause 6.3.3.1.13.1:

a) and if the received SIP MESSAGE request does not contain an <emergency-ind> element or is an unauthorised request for an MCVideo emergency call cancellation as specified in clause 6.3.3.1.13.4, shall reject the SIP MESSAGE request with a SIP 403 (Forbidden) response to the SIP MESSAGE request as specified in 3GPP TS 24.229 [11] with the following clarifications:

i) shall include in the SIP 403 (Forbidden) response an application/vnd.3gpp.mcvideo-info+xml MIME body as specified in clause F.1 with the <mcvideoinfo> element containing the <mcvideo-Params> element with the <alert-ind> element set to a value of "true";

ii) if the received SIP MESSAGE request contains an <emergency-ind> element of the <mcvideoinfo> element set to a value of "false" and if the in-progress emergency state of the group is set to a value of "true" and this is an unauthorised request for an MCVideo emergency call cancellation as determined in step i) above, shall include an <emergency-ind> element set to a value of "true" in the application/vnd.3gpp.mcvideo-info+xml MIME body in the SIP 403 (Forbidden) response; and

iii) shall send the SIP 403 (Forbidden) response according to rules and procedures of 3GPP TS 24.229 [11] and skip the rest of the steps; and

b) and if the received SIP MESSAGE request contains an <emergency-ind> element and is an authorised request for an MCVideo emergency call cancellation as specified in clause 6.3.3.1.13.4 and the in-progress emergency state of the MCVideo group is set to a value of "true":

i) shall set the in-progress emergency state of the group to a value of "false";

ii) shall clear the cache of the MCVideo ID of the MCVideo user that triggered the setting of the in-progress emergency state of the MCVideo group to "true";

iii) shall generate SIP re-INVITE requests to the other affiliated and joined members of the MCVideo group as specified in clause 6.3.3.1.6. The MCVideo controlling function:

A) for each affiliated and joined member shall send the SIP re-INVITE request towards the MCVideo client as specified in 3GPP TS 24.229 [11]; and

B) Upon receiving a SIP 200 (OK) response to the SIP re-INVITE request the controlling MCVideo function shall interact with the media plane as specified in 3GPP TS 24.380 [5];

iv) for each of the affiliated but not joined members of the group shall:

A) generate a SIP MESSAGE request notification of the cancellation of the MCVideo user's emergency call as specified in clause 6.3.3.1.11;

B) shall include in the application/vnd.3gpp.mcvideo-info+xml MIME body with the <mcvideoinfo> element containing the <mcvideo-Params> element with the <mcvideo-calling-user-id> element set to the value of the <mcvideo-calling-user-id> element in the received SIP MESSAGE request; and

C) shall include an <emergency-ind> element set to a value of "false" in the application/vnd.3gpp.mcvideo-info+xml MIME body in the outgoing SIP MESSAGE request;

v) shall generate a SIP 200 (OK) response to the received SIP MESSAGE request as specified in 3GPP TS 24.229 [11];

vi) shall send the SIP 200 (OK) response to the received SIP MESSAGE as specified in 3GPP TS 24.229 [11] and skip the rest of the steps;

vii) shall generate a SIP MESSAGE request as described in clause 6.3.3.1.20 to indicate successful receipt of the request for emergency alert cancellation

viii) shall include in the application/vnd.3gpp.mcvideo-info+xml MIME body of the SIP MESSAGE request:

A) the <alert-ind> element set to a value of "true";

B) the <alert-ind-rcvd> element set to a value of true;

C) the <emergency-ind> element set to a value of "false"; and

D) the <mcvideo-client-id> element with the MCVideo client ID that was included in the incoming SIP MESSAGE request; and

ix) shall send the SIP MESSAGE request according to according to rules and procedures of 3GPP TS 24.229 [11]; and

2) if the received SIP MESSAGE request is an authorised request for an MCVideo emergency alert cancellation as specified in clause 6.3.3.1.13.1:

a) if the received SIP MESSAGE request contains an <originated-by> element in the application/vnd.3gpp.mcvideo-info+xml MIME body, shall clear the cache of the MCVideo ID of the MCVideo user identified by the <originated-by> element as having an outstanding MCVideo emergency alert;

b) if the received SIP MESSAGE request does not contain an <originated-by> element in the application/vnd.3gpp.mcvideo-info+xml MIME body, clear the cache of the MCVideo ID of the sender of the SIP MESSAGE request as having an outstanding MCVideo emergency alert;

c) if the received SIP MESSAGE request does not contain an <emergency-ind> element or is an unauthorised request for an MCVideo emergency call cancellation as specified in clause 6.3.3.1.13.4, for each of the affiliated but not joined members of the group shall:

   i) generate a SIP MESSAGE request notification of the cancellation of the MCVideo user's emergency alert as specified in clause 6.3.3.1.11;

   ii) shall include in the application/vnd.3gpp.mcvideo-info+xml MIME body with the <mcvideoinfo> element containing the <mcvideo-Params> element with the <mcvideo-calling-user-id> element set to the value of the <mcvideo-calling-user-id> element in the received SIP MESSAGE request;

   iii) if the received SIP MESSAGE request contains an <originated-by> element in the application/vnd.3gpp.mcvideo-info+xml MIME body, copy the contents of the received <originated-by> element to an <originated-by> element in the application/vnd.3gpp.mcvideo-info+xml MIME body in the outgoing SIP MESSAGE request;

   iv) shall include an <alert-ind> element set to a value of "false" in the application/vnd.3gpp.mcvideo-info+xml MIME body in the outgoing SIP MESSAGE request; and

   v) send the SIP MESSAGE request as specified in 3GPP TS 24.229 [11];

d) if the received SIP MESSAGE request contains an <emergency-ind> element and is an authorised request for an MCVideo emergency call cancellation as specified in clause 6.3.3.1.13.4 and the in-progress emergency state of the MCVideo group is set to a value of "true":

   i) shall set the in-progress emergency state of the group to a value of "false";

   ii) cache the information that the MCVideo user has cancelled the outstanding in-progress emergency state of the group;

   iii) shall generate SIP re-INVITES requests to the other affiliated and joined members of the MCVideo group as specified in clause 6.3.3.1.6. The MCVideo controlling function:

      A) for each affiliated and joined member shall send the SIP re-INVITE request towards the MCVideo client as specified in 3GPP TS 24.229 [11]; and

      B) Upon receiving a SIP 200 (OK) response to the SIP re-INVITE request the controlling MCVideo function shall interact with the media plane as specified in 3GPP TS 24.380 [5]; and

   iv) for each of the affiliated but not joined members of the group shall:

      A) generate a SIP MESSAGE request notification of the cancellation of the MCVideo user's emergency call as specified in clause 6.3.3.1.11;

      B) include in the application/vnd.3gpp.mcvideo-info+xml MIME body with the <mcvideoinfo> element containing the <mcvideo-Params> element with the <mcvideo-calling-user-id> element set to the value of the <mcvideo-calling-user-id> element in the received SIP MESSAGE request;

      C) if the received SIP MESSAGE request contains an <originated-by> element in the application/vnd.3gpp.mcvideo-info+xml MIME body, copy the contents of the received <originated-by> element to an <originated-by> element in the application/vnd.3gpp.mcvideo-info+xml MIME body in the outgoing SIP MESSAGE request;

      D) include in the application/vnd.3gpp.mcvideo-info+xml MIME body an <alert-ind> element set to a value of "false"; and

      E) shall include an <emergency-ind> element set to a value of "false" in the application/vnd.3gpp.mcvideo-info+xml MIME body in the outgoing SIP MESSAGE request;

e) shall generate a SIP 200 (OK) response to the received SIP MESSAGE request as specified in 3GPP TS 24.229 [11];

f) shall send the SIP 200 (OK) response to the received SIP MESSAGE as specified in 3GPP TS 24.229 [11].

g) shall generate a SIP MESSAGE request as described in clause 6.3.3.1.20 to indicate successful receipt of the request for emergency alert cancellation;

h) shall include in the application/vnd.3gpp.mcvideo-info+xml MIME body, the <alert-ind> element set to a value of "false" and the <alert-ind-rcvd> set to "true";

i) shall populate the <mcvideo-client-id> element with the MCVideo client ID that was included in the incoming SIP MESSAGE request;

j) if the received SIP MESSAGE request contains an <emergency-ind> element of the <mcvideoinfo> element set to a value of "false":

   i) if this is an authorised request for an MCVideo emergency call cancellation as specified in clause 6.3.3.1.13.4, shall include an <emergency-ind> element set to a value of "false" in the application/vnd.3gpp.mcvideo-info+xml MIME body in the outgoing SIP MESSAGE request; and

   B) otherwise, if this is an unauthorised request for an MCVideo emergency call cancellation as specified in clause 6.3.3.1.13.4, and the in-progress emergency state of the group is set to a value of "true", shall include an <emergency-ind> element set to a value of "true" in the application/vnd.3gpp.mcvideo-info+xml MIME body in the outgoing SIP MESSAGE request; and

k) shall send the SIP MESSAGE request according to according to the rules and procedures of 3GPP TS 24.229 [11].

Upon receipt of SIP 2xx responses to the outgoing SIP MESSAGE requests, the controlling MCVideo function shall follow the procedures specified in 3GPP TS 24.229 [11].

11.3 Off-network emergency alert

11.3.1 General

11.3.2 Basic state machine

11.3.2.1 General

11.3.2.2 Emergency alert state machine

The figure 11.3.2.2-1 gives an overview of the main states and transitions on the UE for emergency alert.

Each emergency alert state machine is per MCVideo group.

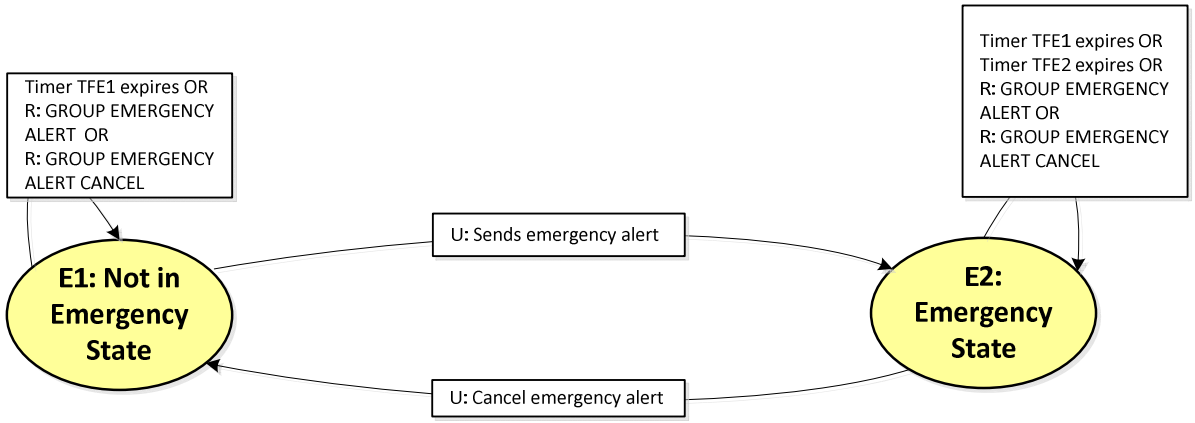

Figure 11.3.2.2-1: Emergency alert state machine

The following piece of information is associated with the emergency alert state machine:

a) the stored emergency state of the MCVideo group.

NOTE: The emergency alert state machine is referred by the MCVideo off-network group call and MCVideo off-network private call procedures.

11.3.2.3 Emergency alert states

11.3.2.3.1 E1: Not in emergency state

This state is the start state of this state machine.

The UE stays in this state while not in emergency state.

11.3.2.3.2 E2: Emergency state

This state exists for UE, when the UE has sent a GROUP EMERGENCY ALERT message.

11.3.3 Procedures

11.3.3.1 Originating user sending emergency alert

When in state "E1: Not in emergency state", upon receiving an indication from the MCVideo user to transmit an emergency alert for an MCVideo group ID and the value of "/<*x*>/<*x*>/Common/AllowedActivateAlert" leaf node present in the user profile as specified in 3GPP TS 24.483 [4] is set to "true", the MCVideo client:

1) shall set the stored emergency state as "true";

2) shall set the stored MCVideo group ID to the indicated MCVideo group ID;

3) shall generate a GROUP EMERGENCY ALERT message as specified in clause 17.1.14. In the GROUP EMERGENCY ALERT message, the MCVideo client:

   a) shall set the MCVideo group ID IE to the stored MCVideo group ID;

   b) shall set the Originating MCVideo user ID IE to own MCVideo user ID;

   c) shall set the Organization name IE to own organization name; and

   d) may set the User location IE with client's current location, if requested;

4) shall send the GROUP EMERGENCY ALERT message as specified in clause 9.3.1.1.1;

5) shall start timer TFE2 (emergency alert retransmission); and

6) shall enter "E2: Emergency state" state.

11.3.3.2 Emergency alert retransmission

When in state "E2: Emergency state", upon expiry of timer TFE2 (emergency alert retransmission), the MCVideo client:

1) shall generate a GROUP EMERGENCY ALERT message as specified in clause 17.1.14. In the GROUP EMERGENCY ALERT message, the MCVideo client:

   a) shall set the MCVideo group ID IE to the stored MCVideo group ID;

   b) shall set the originating MCVideo user ID IE to own MCVideo user ID;

   c) shall set the Organization name IE to own organization name; and

   d) may set the Location IE with client's current location, if requested; and

2) shall send the GROUP EMERGENCY ALERT message as specified in clause 9.3.1.1.1;

3) shall start the timer TFE2 (emergency alert retransmission); and

4) shall remain in the current state.

11.3.3.3 Terminating user receiving emergency alert

When in state "E1: Not in emergency state" or in "E2: Emergency state", upon receiving a GROUP EMERGENCY ALERT message with the Originating MCVideo user ID IE not stored in the list of users in emergency, the MCVideo client:

1) shall store the Originating MCVideo user ID IE and location IE in the list of users in emergency;

2) shall generate a GROUP EMERGENCY ALERT ACK message as specified in clause 17.1.15. In the GROUP EMERGENCY ALERT ACK message, the MCVideo client:

   a) shall set the MCVideo group ID IE to the MCVideo group ID IE of the received GROUP EMERGENCY ALERT message;

   b) shall set the Sending MCVideo user ID IE to own MCVideo user ID; and

   c) shall set the Originating MCVideo user ID IE to the Originating MCVideo user ID IE of the received GROUP EMERGENCY ALERT message; and

3) shall send the GROUP EMERGENCY ALERT ACK message as specified in clause 9.3.1.1.1;

4) shall start timer TFE1 (Emergency Alert); and

5) shall remain in the current state.

NOTE: Each instance of timer TFE1 is per MCVideo user ID.

11.3.3.4 Terminating user receiving retransmitted emergency alert

When in state "E1: Not in emergency state" or in "E2: Emergency state", upon receiving a GROUP EMERGENCY ALERT message with the Originating MCVideo user ID IE stored in the list of users in emergency and Location IE different than the stored location of the user, the MCVideo client:

1) may update the stored location of the user with the received Location IE;

2) shall restart the associated timer TFE1 (Emergency Alert); and

3) shall remain in the current state.

11.3.3.5 Originating user cancels emergency alert

When in "E2: Emergency state", upon receiving an indication from the MCVideo user to cancel an emergency alert and the value of "/<*x*>/<*x*>/Common/AllowedCancelAlert" leaf node present in the user profile as specified in 3GPP TS 24.483 [4] is set to "true", the MCVideo client:

1) shall set the stored emergency state as "false";
2) shall generate a GROUP EMERGENCY ALERT CANCEL message as specified in clause 17.1.16. In the GROUP EMERGENCY ALERT CANCEL message, the MCVideo client:
   a) shall set the MCVideo group ID IE to the stored MCVideo group ID; and
   b) shall set the Originating MCVideo user ID IE to own MCVideo user ID; and
3) shall send the GROUP EMERGENCY ALERT CANCEL message as specified in clause 9.3.1.1.1;
4) shall stop timer TFE2 (emergency alert retransmission); and
5) shall enter "E1: Not in emergency state" state.

11.3.3.6 Terminating user receives GROUP EMERGENCY ALERT CANCEL message

When in state "E1: Not in emergency state" or in "E2: Emergency state", upon receiving a GROUP EMERGENCY ALERT CANCEL message with the Originating MCVideo user ID IE stored in the list of users in emergency, the MCVideo client:

1) shall remove the MCVideo user ID and associated location information from the stored list of users in emergency;
2) shall generate a GROUP EMERGENCY ALERT CANCEL ACK message as specified in clause 17.1.17. In the GROUP EMERGENCY ALERT CANCEL ACK message, the MCVideo client:
   a) shall set the MCVideo group ID IE to the MCVideo group ID IE of the received GROUP EMERGENCY ALERT CANCEL message; and
   b) shall set the Sending MCVideo user ID IE to own MCVideo user ID; and
   c) shall set the Originating MCVideo user ID IE to the Originating MCVideo user ID IE of the received GROUP EMERGENCY ALERT message;
3) shall send the GROUP EMERGENCY ALERT CANCEL ACK message as specified in clause 9.3.1.1.1;
4) shall stop the associated timer TFE1 (Emergency Alert); and
5) shall remain in the current state.

11.3.3.7 Implicit emergency alert cancel

When in state "E1: Not in emergency state" or in "E2: Emergency state", upon expiry of timer TFE1 (Emergency Alert) associated with a stored MCVideo user ID, the MCVideo client:

1) shall remove the MCVideo user ID and associated location information from the stored list of users in emergency; and
2) shall remain in the current state.

12 Video Pull

12.1 General

12.2 On-network video pull

12.2.1 General

A MCVideo user triggers its MCVideo client to pull a video either from another MCVideo client or from a MCVideo server.

12.2.2 MCVideo client procedures

12.2.2.1 One-to-one video pull originating procedures

In order to pull a video from another MCVideo client, the MCVideo client shall perform the procedures of the clause 10.2.2.2.1, with the following clarifications:

1) shall contain an application/vnd.3gpp.mcvideo-info+xml MIME body with the <mcvideoinfo> element containing the <mcvideo-Params> element with the <session-type> element set to a value of "one-to-one video pull".

12.2.2.2 One-to-one video pull terminating procedures

Upon receipt of an initial SIP INVITE request for the one-to-one video pull call, the MCVideo client shall perform the procedures of the clause 10.2.2.2.2, with the following clarifications:

1) shall initiate the implicit transmit media request as specified in 3GPP TS 24.581 [5].

12.2.2.3 One-to-one video pull release procedures

When the MCVideo client is in an ongoing one-to-one video pull call, upon an indication from MCVideo user to release the call, the MCVideo client shall perform the procedures of the clause 10.2.4.1.

12.2.2.4 One-from-server video pull originating procedures

In order to pull a video from a MCVideo server, MCVideo client shall perform the procedures of the clause 10.2.2.2.1, with the following clarifications:

1) shall contain an application/vnd.3gpp.mcvideo-info+xml MIME body with the <mcvideoinfo> element containing the <mcvideo-Params> element with the <session-type> element set to a value of "one-from-server video pull";

2) shall contain an application/vnd.3gpp.mcvideo-info+xml MIME body with the <mcvideoinfo> element containing the <mcvideo-Params> element with the <video-pull-url> element set to the URL of the video file to be streamed;

NOTE: How an MCVideo client is informed the URL of the video file is out of scope of the current document.

3) shall not insert in the SIP INVITE request a MIME resource-lists body with the MCVideo ID of the invited MCVideo user; and

4) shall use the automatic commencement mode.

12.2.2.5 One-from-server video pull terminating procedures

No procedures specified.

12.2.2.6 One-from-server video pull release procedures

When the MCVideo client is in an ongoing one-from-server video pull call, upon an indication from MCVideo user to release the call, the MCVideo client shall perform the procedures of the clause 10.2.4.1.

12.2.3 MCVideo server procedures

12.2.3.1 Participating MCVideo function procedures

12.2.3.1.1 One-to-one video pull originating procedures

Upon receipt of a "SIP INVITE request for originating participating MCVideo function" containing an application/vnd.3gpp.mcvideo-info+xml MIME body with the <session-type> element set to a value of "one-to-one video pull", the participating MCVideo function determine that the call is a private call and shall perform the procedures of the clause 10.2.2.3.1.1.

12.2.3.1.2 One-to-one video pull terminating procedures

Upon receipt of a "SIP INVITE request for terminating participating MCVideo function" containing an application/vnd.3gpp.mcvideo-info+xml MIME body with the <session-type> element set to a value of "one-to-one video pull", the participating MCVideo function determine that the call is a private call and shall perform the procedures of the clause 10.2.2.3.2.

12.2.3.1.3 One-to-one video pull release procedures

Upon receiving from the MCVideo client a SIP BYE request the participating MCVideo function shall follow the procedures as specified in clause 10.2.4.

Upon receiving a SIP BYE request from the controlling MCVideo function, the participating MCVideo function shall follow the procedures as specified in clause 10.2.5.

12.2.3.1.4 One-from-server video pull originating procedures

Upon receipt of a "SIP INVITE request for originating participating MCVideo function" containing an application/vnd.3gpp.mcvideo-info+xml MIME body with the <session-type> element set to a value of "one-from-server video pull", the participating MCVideo function determine that the call is a private call and shall perform the procedures of the clause 10.2.2.3.1.1, with the following clarifications:

1) shall not check the <allow-private-call> element of the <ruleset> element; and
2) shall use the automatic commencement mode.

12.2.3.1.5 One-from-server video pull terminating procedures

No procedures specified.

12.2.3.1.6 One-from-server video pull release procedures

Upon receiving from the MCVideo client a SIP BYE request the participating MCVideo function shall follow the procedures as specified in clause 10.2.4.

Upon receiving a SIP BYE request from the controlling MCVideo function, the participating MCVideo function shall follow the procedures as specified in clause 10.2.5.

12.2.3.2 Controlling MCVideo function procedures

12.2.3.2.1 One-to-one video pull originating procedures

No procedures specified.

12.2.3.2.2 One-to-one video pull terminating procedures

Upon receipt of a "SIP INVITE request for controlling MCVideo function" containing an application/vnd.3gpp.mcvideo-info+xml MIME body with the <session-type> element set to a value of "one-to-one video pull", the controlling MCVideo function determine that the call is a private call and shall perform the procedures of the clause 10.2.2.4.2, with following clarifications:

1) shall check whether the MCVideo ID of the MCVideo calling user in the <mcvideo-calling-user-id> is authorised to initiate the one-to-one video pull call, and if it is not authorised the controlling MCVideo function shall return a SIP 403 (Forbidden) response with the warning text as specified in "Warning header field" and skip the rest of the steps; and

2) shall check whether the MCVideo ID of the MCVideo called party user in the <mcvideo-called-party-id> is authorised to receive the one-to-one video pull call, and if it is not authorised the controlling MCVideo function shall return a SIP 403 (Forbidden) response with the warning text as specified in "Warning header field" and skip the rest of the steps.

12.2.3.2.3 One-to-one video pull release procedures

When the MCVideo session for one-to-one video pull call needs to be released, the controlling MCVideo function shall perform the procedures of the clause 10.2.5.4.

12.2.3.2.4 One-from-server video pull originating procedures

No procedures specified.

12.2.3.2.5 One-from-server video pull terminating procedures

Upon receipt of a "SIP INVITE request for controlling MCVideo function" containing an application/vnd.3gpp.mcvideo-info+xml MIME body with the <session-type> element set to a value of "one-from-server video pull", the controlling MCVideo function determine that the call is a private call and shall perform the procedures of the clause 10.2.2.4.2, with following clarifications:

1) shall check whether the MCVideo ID of the MCVideo calling user in the <mcvideo-calling-user-id> is authorised to initiate the one-from-server video pull call, and if it is not authorised the controlling MCVideo function shall return a SIP 403 (Forbidden) response with the warning text as specified in "Warning header field" and skip the rest of the steps; and

2) shall based on the received URL of the video file contained in <video-pull-url> element of the application/vnd.3gpp.mcvideo-info+xml MIME body to transmit media to the MCVideo client as specified in 3GPP TS 24.380 [5].

12.2.3.2.6 One-from-server video pull release procedures

When the MCVideo session for one-from-server video pull call needs to be released, the controlling MCVideo function shall perform the procedures of the clause 10.2.5.4.

12.3 Off-network video pull

12.3.1 General

The MCVideo client uses off network private call setup procedures as defined in subclasue 10.3 with clarifications given in clause 12.3.2.

12.3.2 MCVideo client procedures

12.3.2.1 Off network video pull setup

12.3.2.1.1 Initiating video pull

When in the "P0: start-stop" state or "P1: ignoring same call id", upon an indication from MCVideo User to initiate a private call and the value of "/<x>/<x>/Common/PrivateCall/Authorised" leaf node present in the user profile as specified in 3GPP TS 24.483 [4] is set to "true", the MCVideo client shall follow the procedure as defined in clause 10.3.2.4.2.1 with following clarification:

1) in step 5) of clause 10.3.2.4.2.1, shall store "PRIVATE VIDEO PULL CALL" as the current call type.

12.3.2.1.2 Video pull setup request accepted

When in the "P2: waiting for call response" state, upon receiving a PRIVATE CALL ACCEPT message response to PRIVATE CALL SETUP REQUEST message with the same call identifier, the MCVideo client shall follow the procedure as defined in clause 10.3.2.4.2.8 with following clarification:

1) in step 7) of clause 10.3.2.4.2.8, shall not start transmission control as terminating transmission participant

12.3.2.2 Off network video pull setup in automatic commencement mode

12.3.2.2.1 Responding to video pull setup request when not participating in the ongoing call

When in the "P0: start-stop" or "P1: ignoring same call id" state, upon receiving a PRIVATE CALL SETUP REQUEST message with Commencement mode IE set to "AUTOMATIC COMMENCEMENT MODE" and Call identifier IE different than stored call identifier and Call type IE set to "PRIVATE VIDEO PULL CALL" and media session declared in SDP body of PRIVATE CALL SETUP REQUEST message can be established, the MCVideo client shall follow the procedure as defined in clause 10.3.2.4.3.2 with following clarification:

1) in step 2) of clause 10.3.2.4.3.2, shall set the stored current call type to "PRIVATE VIDEO PULL CALL".

12.3.2.2.2 Establishing the video pull call

When in the "P5: pending" state, upon receiving a PRIVATE CALL ACCEPT ACK message or RTP media from originating user, the MCVideo client shall follow the procedure as defined in clause 10.3.2.4.3.4 with following clarification:

1) in step 2) of clause 10.3.2.4.3.4, shall not start transmission control as terminating MCVideo client.

13 Video Push

13.1 General

13.2 On-network video push

13.2.1 General

A MCVideo user triggers its MCVideo client to push a video to another MCVideo client or a MCVideo server.

13.2.2 MCVideo client procedures

13.2.2.1 One-to-one video push originating procedures

In order to push a video to another MCVideo client, the MCVideo client shall perform the procedures of clause 10.2.2.2.1, with the following clarifications:

1) shall contain an application/vnd.3gpp.mcvideo-info+xml MIME body with the <mcvideoinfo> element containing the <mcvideo-Params> element with the <session-type> element set to a value of "one-to-one video push"; and

2) shall interact with the media plane as specified in 3GPP TS 24.581 [5] clause 6.2.

13.2.2.2 One-to-one video push terminating procedures

Upon receipt of an initial SIP INVITE request for the one-to-one video push call, the MCVideo client shall perform the procedures of clause 10.2.2.2.2, with the following clarifications:

1) shall display to the MCVideo user an indication that this is a one-to-one video push call; and

2) may save the MCVideo media stream to a file.

13.2.2.3 One-to-one video push release procedures

When the MCVideo client is in an ongoing one-to-one video push call, upon an indication from MCVideo user to release the call, the MCVideo client shall perform the procedures of clause 10.2.4.1.

13.2.2.4 One-to-server video push originating procedures

In order to push a video to a MCVideo server, the MCVideo client shall perform the procedures of clause 10.2.2.2.1, with the following clarifications:

1) shall contain an application/vnd.3gpp.mcvideo-info+xml MIME body with the <mcvideoinfo> element containing the <mcvideo-Params> element with the <session-type> element set to a value of "one-to-server video push";

2) shall not insert in the SIP INVITE request a MIME resource-lists body with the MCVideo ID of the invited MCVideo user; and

3) shall use the automatic commencement mode.

Upon receiving a SIP INFO request within the dialog of the SIP request for a one-to-server video push call:

1) with the Info-Package header field containing the g.3gpp.mcvido-info package name;

2) with the application/vnd.3gpp.mcvideo-info+xml MIME body associated with the info package according to IETF RFC 6086 [54]; and

3) with one <video-push-url> element set in the application/vnd.3gpp.mcvideo-info+xml MIME body.

The MCVideo client shall store the received <video-push-url> element.

13.2.2.5 One-to-server video push release procedures

When the MCVideo client is in an ongoing one-to-server video push call, upon an indication from MCVideo user to release the call, the MCVideo client shall perform the procedures of clause 10.2.4.1.

13.2.3 MCVideo server procedures

13.2.3.1 Participating MCVideo function procedures

13.2.3.1.1 One-to-one video push originating procedures

Upon receipt of a "SIP INVITE request for originating participating MCVideo function" containing an application/vnd.3gpp.mcvideo-info+xml MIME body with the <session-type> element set to a value of "one-to-one video push", the participating MCVideo function shall perform the procedures of clause 10.2.2.3.1.1.

13.2.3.1.2 One-to-one video push terminating procedures

Upon receipt of a "SIP INVITE request for terminating participating MCVideo function" containing an application/vnd.3gpp.mcvideo-info+xml MIME body with the <session-type> element set to a value of "one-to-one video push", the participating MCVideo function shall perform the procedures of clause 10.2.2.3.2.

13.2.3.1.3 One-to-one video push release procedures

Upon receiving from the MCVideo client a SIP BYE request the participating MCVideo function shall follow the procedures as specified in clause 10.2.4.

Upon receiving a SIP BYE request from the controlling MCVideo function, the participating MCVideo function shall follow the procedures as specified in clause 10.2.5.

13.2.3.1.4 One-to-server video push originating procedures

Upon receipt of a "SIP INVITE request for originating participating MCVideo function" containing an application/vnd.3gpp.mcvideo-info+xml MIME body with the <session-type> element set to a value of "one-to-server video push", the participating MCVideo function shall perform the procedures of clause 10.2.2.3.1.1, with the following clarifications:

1) shall not check the <allow-private-call> element of the <ruleset> element; and

2) shall use the automatic commencement mode.

13.2.3.1.5 One-to-server video push release procedures

Upon receiving from the MCVideo client a SIP BYE request the participating MCVideo function shall follow the procedures as specified in clause 10.2.4.

Upon receiving a SIP BYE request from the controlling MCVideo function, the participating MCVideo function shall follow the procedures as specified in clause 10.2.5.

13.2.3.2 Controlling MCVideo function procedures

13.2.3.2.1 One-to-one video push terminating procedures

Upon receipt of a "SIP INVITE request for controlling MCVideo function" containing an application/vnd.3gpp.mcvideo-info+xml MIME body with the <session-type> element set to a value of "one-to-one video push", the controlling MCVideo function:

1) shall check whether the public service identity contained in the Request-URI is allocated for one-to-one video push call and perform the actions specified in clause 6.3.7.1 if it is not allocated and skip the rest of the steps;

2) shall check whether the MCVideo ID of the MCVideo calling user in the <mcvideo-calling-user-id> is authorised to initiate the one-to-one video push call, and if it is not authorised the controlling MCVideo function shall return a SIP 403 (Forbidden) response with the warning text as specified in "Warning header field" and skip the rest of the steps;

3) shall check whether the MCVideo ID of the MCVideo called party user in the <mcvideo-called-party-id> is authorised to receive the one-to-one video push call, and if it is not authorised the controlling MCVideo function

shall return a SIP 403 (Forbidden) response with the warning text as specified in "Warning header field" and skip the rest of the steps;

4) shall allocate an MCVideo session identity for the MCVideo session; and

5) shall invite the MCVideo user listed in the MIME resource-lists body of received SIP INVITE request as specified in clause 10.2.2.4.1.

13.2.3.2.2 One-to-one video push release procedures

When the MCVideo session for one-to-one video push call needs to be released, the controlling MCVideo function shall perform the procedures of clause 10.2.5.4.

13.2.3.2.3 One-to-server video push terminating procedures

Upon receipt of a "SIP INVITE request for controlling MCVideo function" containing an application/vnd.3gpp.mcvideo-info+xml MIME body with the <session-type> element set to a value of "one-to-server video push", the controlling MCVideo function:

1) shall check whether the public service identity contained in the Request-URI is allocated for one-to-server video push call and perform the actions specified in clause 6.3.7.1 if it is not allocated and skip the rest of the steps;

2) shall check whether the MCVideo ID of the MCVideo calling user in the <mcvideo-calling-user-id> is authorised to initiate the one-to-server video push call, and if it is not authorised the controlling MCVideo function shall return a SIP 403 (Forbidden) response with the warning text as specified in "Warning header field" and skip the rest of the steps;

3) shall allocate an MCVideo session identity for the MCVideo session;

4) shall generate and send a SIP 200 (OK) response towards the inviting MCVideo client according to 3GPP TS 24.229 [11]; and

5) shall save the MCVideo media stream to a file.

To send the URL of the file where the MCVideo media stream will be recorded, the controlling MCVideo function:

1) shall generate a SIP INFO request according to rules and procedures of 3GPP TS 24.229 [11] and IETF RFC 6086 [21];

2) shall include the Info-Package header field set to g.3gpp.mcvideo-info in the SIP INFO request;

3) shall include an application/vnd.3gpp.mcvideo-info+xml MIME body as specified in annex F.1 with an <video-push-url> element set to the URL of the file where the MCVideo media stream will be recorded; and

4) shall send the SIP INFO request towards the inviting MCVideo client in the dialog of a SIP request for one-to-server video push call, as specified in 3GPP TS 24.229 [11].

13.2.3.2.4 One-to-server video push release procedures

When the MCVideo session for one-to-server video push call needs to be released, the controlling MCVideo function shall perform the procedures of clause 10.2.5.4.

13.3 Off-network video push

13.3.1 General

13.3.1.1 Common Procedures

13.3.1.1.1 Sending/Receiving a message

In order to participate in Video Push, the MCVideo client:

1) shall send the MONP MCVideo message transported in a MONP MCVIDEO MESSAGE CARRIER message, specified in 3GPP TS 24.379 [40], as a UDP message to the local IP address of the MCVideo user, on UDP port 8809 (as specified in 3GPP TS 24,379 [40]), with an IP time-to-live set to 255; and

2) shall treat UDP messages received on the port 8809 as received MONP messages.

NOTE: An MCVideo client that supports IPv6 shall listen to the IPv6 addresses.

13.3.2 MCVideo client procedures

13.3.2.1 Video push to another MCVideo user

13.3.2.1.1 Private video push call setup

In order to push a video from authorized MCVideo user to another user, MCVideo client shall perform the procedures of the clause 10.3.2.4.2.1, with the following clarifications:

1) shall store "PRIVATE VIDEO PUSH CALL" as the current call type as specified in clause 17.2.11.

13.3.2.1.2 Private video push call setup in manual commencement mode

When the MCVideo client receives a PRIVATE CALL SETUP REQUEST message with Commencement mode IE set to "MANUAL COMMENCEMENT MODE" and the call type IE set to "PRIVATE VIDEO PUSH CALL", it SHALL perform the procedures of clause 10.3.2.4.4 with the following clarifications to the clause 10.3.2.4.4.1;

1) shall set the stored current call type to "PRIVATE VIDEO PUSH CALL" as specified in clause 17.2.11.

13.3.2.1.3 Private video push call release

When the MCVideo client is in an ongoing private video push call, upon an indication from MCVideo User to relese the call, the MCVideo client SHALL perform the procedures of clause 10.3.2.4.5.

13.3.2.1.4 Sending video push notification

When the Private call initiator receives the PRIVATE CALL ACCEPT message, the initiator may send a NOTIFY VIDEO PUSH message as per below:

1) shall store NOTIFY VIDEO PUSH as the current message type;

2) shall generate and store the call identifier as a random number uniformly distributed between (0, 65536);

3) shall store own MCVideo user ID as notifier ID;

4) shall store MCVideo user ID of notification recipient user as notification recipient ID;

5) shall store the MCVideo user ID of Video Push recipient user as callee ID, if the video push is intended for an MCVideo user;

6) shall store the MCVideo group ID of Video Push recipient user as group call recipient ID, if the video push is intended for a MCVideo group;

7) shall store the result as "SUCCESS" or "FAILURE", based on whether the remote push call setup between caller and callee was successful;

8) shall store the failure reason as specified in clause 17.2.8, if the result is set as "FAILURE";

9) shall generate a NOTIFY VIDEO PUSH message as specified in clause 17.1.23. In the NOTIFY VIDEO PUSH message, the MCVideo client:

   a) shall set the Remote video push notification message identity IE with stored current message type;

   b) shall set the call identifier IE with the stored call identifier;

c) shall set the MCVideo remote push request notifier IE with stored notifier ID;

d) shall set the MCVideo remote push request notification recipient IE with stored video push requester ID;

e) shall set the MCVideo remote push call recipient user IE with stored callee ID, if the video push is intended for an MCVideo user;

f) shall set the MCVideo remote push call recipient group IE with stored group call recipient ID, if the video push is intended for a MCVideo group;

g) shall set the Result IE with stored result; and

h) if a failure reason was stored in step 8) above, shall set the Reason IE with the stored failure reason; and

10) shall send the NOTIFY VIDEO PUSH message towards other MCVideo client according to rules and procedures as specified in clause 13.3.1.1.1.

13.3.2.1.5 Receiving video push notification

Upon receiving the NOTIFY VIDEO PUSH message MCVideo client may notify the MCVideo user about the video being pushed to another user.

13.3.2.2 Remotely initiated video push

13.3.2.2.1 Initiating a remote video push request

When an authorized MCVideo user requires to push a remote video from one user to another user, the authorized MCVideo client:

1) shall store PRIVATE REMOTE VIDEO PUSH REQUEST as the current message type;

2) shall generate and store the call identifier as a random number uniformly distributed between (0, 65536);

3) shall store own MCVideo user ID as remote video push requester ID;

4) shall store MCVideo user ID of remote video push request recipient as caller ID;

5) shall store the MCVideo user ID of Video Push call recipient as callee ID;

6) shall generate and store the video information as specified in clause 17.2.17;

7) shall generate a PRIVATE REMOTE VIDEO PUSH REQUEST message as specified in clause 17.1.20. In the PRIVATE REMOTE VIDEO PUSH REQUEST message, the MCVideo client:

   a) shall set the remote video push setup request message identity IE with stored current message type;

   b) shall set the call identifier IE with stored call identifier;

   c) shall set the MCVideo remote push requester IE with stored remote video push requester ID;

   d) shall set the MCVideo remote push call originator IE with stored caller ID;

   e) shall set the MCVideo remote push call recipient IE with stored callee ID; and

   f) may set the Video Information IE with stored video information; and

8) shall send the PRIVATE REMOTE VIDEO PUSH REQUEST message towards other MCVideo client according to rules and procedures as specified in clause 13.3.1.1.1.

13.3.2.2.2 Sending video push trying response

Upon receiving the PRIVATE REMOTE VIDEO PUSH REQUEST message, the MCVideo client:

1) shall store VIDEO PUSH TRYING RESPONSE as the current message type;

2) shall generate and store the call identifier as a random number uniformly distributed between (0, 65536);

3) shall generate and store video information as specified in clause 17.2.17;

4) shall generate a VIDEO PUSH TRYING RESPONSE message as specified in clause 17.1.22. In the VIDEO PUSH TRYING RESPONSE message, the MCVideo client:

   a) shall set the Remote video push trying response message identity IE with stored current message type;

   b) shall set the Call identifier IE with the stored call identifier;

   c) may set the Video Information with stored video information; and

5) shall send the VIDEO PUSH TRYING RESPONSE message towards other MCVideo client according to rules and procedures as specified in clause 13.3.1.1.1;

13.3.2.2.3 Private video push call setup

Upon receiving the PRIVATE REMOTE VIDEO PUSH REQUEST message, MCVideo client shall perform the procedure as specified in clause 10.3.2.4.2.1, with the following clarifications:

1) shall store "PRIVATE VIDEO PUSH CALL" as the current call type as specified in clause 17.2.11;

If Video Information IE is not present in the received PRIVATE REMOTE VIDEO PUSH REQUEST message, the MCVideo client shall use the camera as source of video.

13.3.2.2.4 Private video push call setup in manual commencement mode

When the MCVideo client receives a PRIVATE CALL SETUP REQUEST message with Commencement mode IE set to "MANUAL COMMENCEMENT MODE" and the call type IE set to "PRIVATE VIDEO PUSH CALL", it SHALL perform the procedures of clause 10.3.2.4.4.1 with the following clarifications:

1) shall set the stored current call type to "PRIVATE VIDEO PUSH CALL" as specified in clause 17.2.11;

13.3.2.2.5 Private video push call release

When the MCVideo client is in an ongoing private video push call, upon an indication from MCVideo User to relese the call, the MCVideo client SHALL perform the procedures of clause 10.3.2.4.5;

13.3.2.2.6 Sending video push notification

When the MCVideo client which initiated the private video push receives the PRIVATE CALL ACCEPT message from the recipient of the private call, the MCVideo client:

1) shall store NOTIFY VIDEO PUSH as the current message type;

2) shall generate and store the call identifier as a random number uniformly distributed between (0, 65536);

3) shall store own MCVideo user ID as notifier ID;

4) shall store MCVideo user ID of notification recipient user as notification recipient ID;

5) shall store the MCVideo user ID of Video Push recipient user as callee ID, if the video push is intended for an MCVideo user;

6) shall store the MCVideo group ID of Video Push recipient user as group call recipient ID, if the video push is intended for a MCVideo group;

7) shall store the result as SUCCESS or FAILURE, based on whether the remote push call setup between caller and callee was successful or not;

8) shall store the failure reason as specified in clause 17.2.8, if the result is set as FAILURE;

9) shall generate a NOTIFY VIDEO PUSH message as specified in clause 17.1.23. In the NOTIFY VIDEO PUSH message, the MCVideo client:

a) shall set the Remote video push notification message identity IE with stored current message type;

b) shall set the call identifier IE with the stored call identifier;

c) shall set the MCVideo remote push request notifier IE with stored notifier ID;

d) shall set the MCVideo remote push request notification recipient IE with stored video push requester ID;

e) shall set the MCVideo remote push call recipient user IE with stored callee ID, if the video push is intended for an MCVideo user;

f) shall set the MCVideo remote push call recipient group IE with stored group call recipient ID, if the video push is intended for a MCVideo group;

g) shall set the Result IE with stored result; and

h) if a failure reason was stored in step 8) above, shall set the Reason IE with the stored failure reason; and

10) shall send the NOTIFY VIDEO PUSH message towards MCVideo client who initiated the PRIVATE REMOTE VIDEO PUSH REQUEST, according to rules and procedures as specified in clause 13.3.1.1.1.

13.3.2.2.7 Receiving video push notification

Upon receiving the NOTIFY VIDEO PUSH message MCVideo client may notify the MCVideo user about the video being pushed to another user.

13.3.2.3 Remotely initiated video push to a group

13.3.2.3.1 Initiating a remote video push request to a group

When an authorized MCVideo user wishes to push a remote video from one user to a group, authorized MCVideo client:

1) shall store GROUP REMOTE VIDEO PUSH REQUEST as the current message type;

2) shall generate and store the call identifier as a random number uniformly distributed between (0, 65536);

3) shall store own MCVideo user ID as remote video push requester ID;

4) shall store MCVideo user ID of remote video push request recipient as caller ID;

5) shall store the MCVideo group ID of Video Push call recipient as group call recipient ID;

6) shall generate and store the video information as specified in clause 17.2.17;

7) shall generate a GROUP REMOTE VIDEO PUSH REQUEST message as specified in clause 17.1.21. In the GROUP REMOTE VIDEO PUSH REQUEST message, the MCVideo client:

   a) shall set the remote video push setup request message identity IE with stored current message type;

   b) shall set the call identifier IE with the stored call identifier;

   c) shall set the MCVideo remote push requester IE with stored remote video push requester ID;

   d) shall set the MCVideo remote push call originator IE with stored caller ID;

   e) shall set the MCVideo remote push call recipient IE with stored group call recipient ID; and

   f) may set the Video Information IE with stored video information; and

8) shall send the GROUP REMOTE VIDEO PUSH REQUEST message towards the intended MCVideo Group according to rules and procedures as specified in clause 13.3.1.1.1.

13.3.2.3.2 Group video push call setup

Upon accepting the remote video push request, MCVideo client shall make an Off-network broadcast group call as specified in clause 9.3.

If Video Information IE is not present in the received GROUP REMOTE VIDEO PUSH REQUEST message, the MCVideo client shall use the camera as source of video.

13.3.3 Void

14 Capability information sharing

14.1 General

14.2 On-network capability information sharing

14.2.1 General

14.2.2 MCVideo client procedures

14.2.3 MCVideo server procedures

14.3 Off-network capability information sharing

14.3.1 General

14.3.2 MCVideo client procedures

14.3.3 MCVideo server procedures

15 Ambient viewing call

15.1 General

This clause specifies the MCVideo client procedures, participating MCVideo function procedures and controlling MCVideo function procedures for on-network ambient viewing calls. The procedures as specified are applicable to both locally initiated and remotely initiated ambient viewing call.

The procedures for originating an ambient viewing call are initiated by the MCVideo user at the MCVideo client in the following circumstances:

- an authorised MCVideo user initiates an ambient viewing call in order to view to the terminating user; or
- an authorised MCVideo user initiates an ambient viewing call in order to be viewed to by the terminating user.

The procedures for releasing an ambient viewing call are initiated by the MCVideo user at the MCVideo client in the following circumstances:

- a viewing MCVideo user initiates the ambient viewing call release; or

- a viewed-to MCVideo user who was the originator of the ambient viewing call initiates the ambient viewing call release.

The procedures for releasing an ambient viewing call by the controlling MCVideo function are initiated in the following circumstances:

- can be triggered by the MCVideo administrator by a mechanism outside of the scope of the standard; or
- can be triggered by a call terminating event occurring at the controlling MCVideo function such as a timer expiration.

15.2 MCVideo client procedures

15.2.1 On-demand ambient viewing call

15.2.1.1 Client originating procedures for remote-initiated call

Upon receiving a request from the MCVideo user to originate a remote initiated ambient viewing call, if the <allow-request-remote-initiated-ambient-viewing> element of the <ruleset> element is not present in the MCVideo user profile document (see the MCVideo user profile document in 3GPP TS 24.484 [25]) or is set to a value of "false", the MCVideo client shall inform the MCVideo user and shall exit this procedure.

Upon receiving a request from the MCVideo user to originate a locally initiated ambient viewing call, if the <allow-request-locally-initiated-ambient-viewing> element of the <ruleset> element is not present in the MCVideo user profile document (see the MCVideo user profile document in 3GPP TS 24.484 [25]) or is set to a value of "false", the MCVideo client shall inform the MCVideo user and shall exit this procedure.

Upon receiving a request from an MCVideo user to establish an MCVideo ambient viewing call that has been authorised successfully by the requesting MCVideo client, the MCVideo client shall generate an initial SIP INVITE request by following the UE originating session procedures specified in 3GPP TS 24.229 [11], with the clarifications given below.

The MCVideo client:

1) shall set the Request-URI of the SIP INVITE request to a public service identity of identifying the participating MCVideo function serving the MCVideo user;

2) may include a P-Preferred-Identity header field in the SIP INVITE request containing a public user identity as specified in 3GPP TS 24.229 [11];

3) shall include the g.3gpp.mcvideo media feature tag and the g.3gpp.icsi-ref media feature tag with the value of "urn:urn-7:3gpp-service.ims.icsi.mcvideo" in the Contact header field of the SIP INVITE request according to IETF RFC 3840 [22];

4) shall include an Accept-Contact header field containing the g.3gpp.mcvideo media feature tag along with the "require" and "explicit" header field parameters according to IETF RFC 3841 [20];

5) shall include the ICSI value "urn:urn-7:3gpp-service.ims.icsi.mcvideo" (coded as specified in 3GPP TS 24.229 [11]), in a P-Preferred-Service header field according to IETF RFC 6050 [14] in the SIP INVITE request;

6) shall include an Accept-Contact header field with the media feature tag g.3gpp.icsi-ref contain with the value of "urn:urn-7:3gpp-service.ims.icsi.mcvideo" along with parameters "require" and "explicit" according to IETF RFC 3841 [20];

7) shall include an application/vnd.3gpp.mcvideo-info+xml MIME body with the <session-type> element set to a value of "ambient-viewing";

8) shall include in the application/vnd.3gpp.mcvideo-info+xml MIME body an <ambient-viewing-type> element set to a value of:

   a) "local-init", if the MCVideo user has requested a locally initiated ambient viewing call; or

b) "remote-init", if the MCVideo user has requested a remotely initiated ambient viewing call;

9) shall insert in the SIP INVITE request a MIME resource-lists body with the MCVideo ID of the targeted MCVideo user, according to rules and procedures of IETF RFC 5366 [37];

NOTE 1: the targeted MCVideo user is the viewed-to MCVideo user in the case of a remotely initiated ambient viewing call or the viewing MCVideo user in the case of a locally initiated viewing call.

10) if an end-to-end security context needs to be established then:

a) if necessary, shall instruct the key management client to request keying material from the key management server as described in 3GPP TS 33.180 [8];

b) shall use the keying material to generate a PCK as described in 3GPP TS 33.180 [8];

c) shall use the PCK to generate a PCK-ID with the four most significant bits set to "0001" to indicate that the purpose of the PCK is to protect private call communications and with the remaining twenty eight bits being randomly generated as described in 3GPP TS 33.180 [8];

d) shall encrypt the PCK to a UID associated to the MCVideo client using the MCVideo ID and KMS URI of the invited user and a time related parameter as described in 3GPP TS 33.180 [8];

e) shall generate a MIKEY-SAKKE I_MESSAGE using the encapsulated PCK and PCK-ID as specified in 3GPP TS 33.180 [8];

f) shall add the MCVideo ID of the originating MCVideo to the initiator field (IDRi) of the I_MESSAGE as described in 3GPP TS 33.180 [8]; and

g) shall sign the MIKEY-SAKKE I_MESSAGE using the originating MCVideo user's signing key provided in the keying material together with a time related parameter, and add this to the MIKEY-SAKKE payload, as described in 3GPP TS 33.180 [8];

11) shall include an SDP offer according to 3GPP TS 24.229 [11] with the clarification given in clause 6.2.1;

12) if this is a locally initiated ambient viewing call, shall comply with the conditions for implicit transmit media request control as specified in clause 6.4;

13) if this is a remotely initiated ambient viewing call, shall comply with the conditions for an implicit transmit media request control to the terminating MCVideo client as specified in clause 6.4;

14) shall include in the SIP INVITE request a Priv-Answer-Mode header field with the value "Auto" according to the rules and procedures of IETF RFC 5373 [27]; and

15) shall send the SIP INVITE request towards the participating MCVideo function according to 3GPP TS 24.229 [11].

Upon receiving a SIP 183(Session Progress) response to the SIP INVITE request the MCVideo client:

1) if the SIP 183(Session Progress) response includes an alert-info header field as specified in IETF RFC 3261 [15] and as updated by IETF RFC 7462 [66] set to a value of "<C:\dev\nullfile:///dev/null>" shall not give any indication of the progress of the call setup to the MCVideo user; and

NOTE 2: The alert-info header field having the value of "<C:\dev\nullfile:///dev/null>" is intended to result in having a "null" alert, i.e. an alert with no content or physical manifestation of any kind.

2) if this is a remotely initiated ambient viewing call, may indicate the progress of the session establishment to the inviting MCVideo user.

Upon receiving a SIP 200 (OK) response to the SIP INVITE request the MCVideo client:

1) shall interact with the media plane as specified in 3GPP TS 24.581 [5];

2) if this is a remotely initiated ambient viewing call, shall notify the user that the call has been successfully established;

3) if this is a locally initiated ambient viewing call, shall not provide any indication to the user that the call has been successfully established;

4) if the <ambient-viewing-type> element contained in the application/vnd.3gpp.mcvideo-info+xml MIME body in the sent SIP INVITE request was set to a value of "local-init":

   a) shall cache the value of "viewed-to MCVideo user" as the ambient viewing client role for this call; or

   b) if the <ambient-viewing-type> element contained in the application/vnd.3gpp.mcvideo-info+xml MIME body was set to a value of "remote-init" shall cache the value of "viewing MCVideo user" as the ambient viewing client role for this call; and

5) shall cache the value contained in the <ambient-viewing-type> element of the application/vnd.3gpp.mcvideo-info+xml MIME body set in step 8) as the ambient viewing type of this call.

15.2.1.2 Client terminating procedures

Upon receipt of an initial SIP INVITE request, the MCVideo client shall follow the procedures for termination of multimedia sessions in the IM CN subsystem as specified in 3GPP TS 24.229 [11] with the clarifications below.

The MCVideo client:

1) may reject the SIP INVITE request if either of the conditions in step a) or b) are met:

   a) MCVideo client is already occupied in another session and the number of simultaneous sessions exceeds <MaxCall>, the maximum simultaneous MCVideo session for private call, as specified in TS 24.484 [25]; or

   b) MCVideo client does not have enough resources to handle the call;

   c) if neither condition a) nor b) are met, continue with the rest of the steps;

2) if the SIP INVITE request is rejected in step 1):

   a) shall respond towards the participating MCVideo function either with:

      i) an appropriate reject code as specified in 3GPP TS 24.229 [11] and warning texts as specified in clause 4.4.2; or

      ii) with a SIP 480 (Temporarily unavailable) response not including warning texts if the user is authorised to restrict the reason for failure according to <allow-failure-restriction> as specified in 3GPP TS 24.484 [25]; and

   b) skip the rest of the steps of this clause;

3) if the SDP offer of the SIP INVITE request contains an "a=key-mgmt" attribute field with a "mikey" attribute value containing a MIKEY-SAKKE I_MESSAGE:

   a) shall extract the MCVideo ID of the originating MCVideo from the initiator field (IDRi) of the I_MESSAGE as described in 3GPP TS 33.180 [8];

   b) shall convert the MCVideo ID to a UID as described in 3GPP TS 33.180 [8];

   c) shall use the UID to validate the signature of the MIKEY-SAKKE I_MESSAGE as described in 3GPP TS 33.180 [8];

   d) if authentication verification of the MIKEY-SAKKE I_MESSAGE fails, shall reject the SIP INVITE request with a SIP 488 (Not Acceptable Here) response as specified in IETF RFC 4567 [6], and include warning text set to "136 authentication of the MIKEY-SAKKE I_MESSAGE failed" in a Warning header field as specified in clause 4.4; and

   e) if the signature of the MIKEY-SAKKE I_MESSAGE was successfully validated:

      i) shall extract and decrypt the encapsulated PCK using the terminating user's (KMS provisioned) UID key as described in 3GPP TS 33.180 [8]; and

      ii) shall extract the PCK-ID, from the payload as specified in 3GPP TS 33.180 [8];

NOTE 1: With the PCK successfully shared between the originating MCVideo client and the terminating MCVideo client, both clients are able to use SRTP/SRTCP to create an end-to-end secure session.

4) may check if a Resource-Priority header field is included in the incoming SIP INVITE request and may perform further actions outside the scope of this specification to act upon an included Resource-Priority header field as specified in 3GPP TS 24.229 [11];

5) if the received SIP INVITE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body with the <mcvideoinfo> element containing the <mcvideo-Params> element with the <ambient-viewing-type> element set to a value of "local-init", may display to the MCVideo user the MCVideo ID of the inviting MCVideo user;

6) shall perform the automatic commencement procedures specified in clause 6.2.3.1.1;

NOTE 2: Auto-answer is the commencement mode for both participants in locally initiated and remotely initiated ambient viewing calls.

7) if the <ambient-viewing-type> element contained in the application/vnd.3gpp.mcvideo-info+xml MIME body in the received SIP INVITE request was set to a value of "remote-init":

   a) shall cache the value of "viewed-to MCVideo user" as the ambient viewing client role for this call; or;

   b) if the <ambient-viewing-type> element contained in the application/vnd.3gpp.mcvideo-info+xml MIME body was set to a value of "local-init" " shall cache the value of "viewing MCVideo user" as the ambient viewing client role for this call;

8) if the received SIP INVITE request includes an alert-info header field as specified in IETF RFC 3261 [15] and as updated by IETF RFC 7462 [66] set to a value of "<file:///dev/null>" shall not give any indication of the progress of the call to the MCVideo user;

NOTE 3: The alert-info header field having the value of "<file:///dev/null>" is intended to result in having a "null" alert, i.e. an alert with no content or physical manifestation of any kind.

9) if the <ambient-viewing-type> element contained in the application/vnd.3gpp.mcvideo-info+xml MIME body is set to a value of "local-init", should provide an indication to the MCVideo user that the ambient viewing call is in progress; and

NOTE 4: The terminating user in a remotely initiated ambient viewing is the viewed-to MCVideo user and is intended to be totally unaware that their camera is activated and a call is in progress.

10) shall cache as the ambient viewing type for the call the value contained in the <ambient-viewing-type> element of the application/vnd.3gpp.mcvideo-info+xml MIME body contained in the received SIP INVITE request.

15.2.1.3 Client release origination procedure

Upon receiving a request from an MCVideo user to release an MCVideo ambient viewing call:

The MCVideo client:

1) if the MCVideo client has not received a g.3gpp.mcvideo.ambient-viewing-call-release feature-capability indicator as described in clause D.3 in the Feature-Caps header field according to IETF RFC 6809 [63] in;

   a) a received SIP INVITE request for the ambient viewing call; or

   b) a received SIP 200 (OK) response to a sent SIP INVITE request for the ambient viewing call;

   then shall skip the rest of the steps;

2) shall interact with the media plane as specified in 3GPP TS 24.581 [5];

3) shall generate a SIP BYE request according to rules and procedures of 3GPP TS 24.229 [11] and IETF RFC 6086 [21]; and

4) shall send the SIP BYE request within the dialog of the MCVideo ambient call session as specified in 3GPP TS 24.229 [11].

Upon receipt of the SIP 200 (OK) response to the SIP BYE request the MCVideo client:

1) shall interact with the media plane as specified in 3GPP TS 24.581 [5];

2) if the cached ambient viewing client role is equal to "viewed-to MCVideo user", shall provide no indication that an ambient viewing call has been terminated;

3) if the cached ambient viewing client role is equal to "viewing MCVideo user", may provide an indication to the MCVideo user that the ambient viewing call has been terminated; and

4) shall clear the cache of the data stored as:

   a) ambient viewing client role; and

   b) ambient viewing type.

15.2.1.4 Client session release termination procedure

This clause is referenced from other procedures.

Upon receipt of a SIP BYE request in the dialog of an ambient viewing session, the MCVideo client:

1) shall comply with the procedures of clause 6.2.6;

2) if the cached ambient viewing client role is equal to "viewed-to MCVideo user", shall provide no indication that an ambient viewing call has been terminated;

3) if the cached ambient viewing client role is equal to "viewing MCVideo user", may provide an indication to the MCVideo user that the ambient viewing call has been terminated; and

4) shall clear the cache of the data stored as:

   a) ambient viewing client role; and

   b) ambient viewing type.

15.2.2 Ambient viewing call using pre-established session

15.2.2.1 Client originating procedures

Upon receiving a request from the MCVideo user to originate a remote initiated ambient viewing call, if the <allow-request-remote-initiated-ambient-viewing> element of the <ruleset> element is not present in the MCVideo user profile document (see the MCVideo user profile document in 3GPP TS 24.484 [25]) or is set to a value of "false", the MCVideo client shall inform the MCVideo user and shall exit this procedure.

Upon receiving a request from the MCVideo user to originate a locally initiated ambient viewing call, if the <allow-request-locally-initiated-ambient-viewing> element of the <ruleset> element is not present in the MCVideo user profile document (see the MCVideo user profile document in 3GPP TS 24.484 [25]) or is set to a value of "false", the MCVideo client shall inform the MCVideo user and shall exit this procedure.

Upon receiving a request from an MCVideo user to establish an MCVideo ambient viewing call that has been authorised successfully by the requesting MCVideo client within a pre-established session, the MCVideo client shall generate a SIP REFER request outside a dialog in accordance with the procedures specified in 3GPP TS 24.229 [11], IETF RFC 4488 [31] and IETF RFC 3515 [64] as updated by IETF RFC 6665 [16] and IETF RFC 7647 [65], with the clarifications given below.

If an end-to-end security context needs to be established the MCVideo client:

1) if necessary, shall instruct the key management client to request keying material from the key management server as described in 3GPP TS 33.180 [8];

2) shall use the keying material to generate a PCK as described in 3GPP TS 33.180 [8];

3) shall use the PCK to generate a PCK-ID with the four most significant bits set to "0001" to indicate that the purpose of the PCK is to protect private call communications and with the remaining twenty eight bits being randomly generated as described in 3GPP TS 33.180 [8];

4) shall encrypt the PCK to a UID associated to the MCVideo client using the MCVideo ID of the invited user and a time related parameter as described in 3GPP TS 33.180 [8];

5) shall generate a MIKEY-SAKKE I_MESSAGE using the encapsulated PCK and PCK-ID as specified in 3GPP TS 33.180 [8];

6) shall add the MCVideo ID of the originating MCVideo to the initiator field (IDRi) of the I_MESSAGE as described in 3GPP TS 33.180 [8]; and

7) shall sign the MIKEY-SAKKE I_MESSAGE using the originating MCVideo user's signing key provided in the keying material together with a time related parameter, and add this to the MIKEY-SAKKE payload, as described in 3GPP TS 33.180 [8].

The MCVideo client populates the SIP REFER request as follows:

1) shall include the Request-URI set to the public service identity identifying the pre-established session on the MCVideo server serving the MCVideo user;

2) shall include the Refer-Sub header field with value "false" according to rules and procedures of IETF RFC 4488 [31];

3) shall include the Supported header field with value "norefersub" according to rules and procedures of IETF RFC 4488 [31];

4) shall include the option tag "multiple-refer" in the Require header field;

5) may include a P-Preferred-Identity header field in the SIP REFER request containing a public user identity as specified in 3GPP TS 24.229 [11];

6) shall include a P-Preferred-Service header field set to the ICSI value "urn:urn-7:3gpp-service.ims.icsi.mcvideo" (coded as specified in 3GPP TS 24.229 [11]), according to IETF RFC 6050 [14];

7) shall set the Refer-To header field of the SIP REFER request as specified in IETF RFC 3515 [64] with a Content-ID ("cid") Uniform Resource Locator (URL) as specified in IETF RFC 2392 [49] that points to an application/resource-lists MIME body as specified in IETF RFC 5366 [37], and with the Content-ID header field set to this "cid" URL.

8) shall include in the application/resource-lists MIME body a single <entry> element containing a "uri" attribute set to the MCVideo ID of the targeted user, extended with hname "body" parameter containing:

   a) an application/vnd.3gpp.mcvideo-info MIME body containing:

      i) a <session-type> element set to "ambient-viewing";

      ii) if the MCVideo user has requested a locally initiated ambient viewing call, an <ambient-viewing-type> element set to a value of "local-init"; or

      iii) if the MCVideo user has requested a remotely initiated ambient viewing call, an <ambient-viewing-type> element set to a value of "remote-init";

   b) a Priv-Answer-Mode header field with the value "Auto" according to the rules and procedures of IETF RFC 5373 [27];

   c) if end-to-end security is required for the ambient viewing call, an application/sdp MIME body containing the SDP parameters of the pre-established session according to 3GPP TS 24.229 [11] with the clarification given in clause 6.2.1;

   d) if this is a locally initiated ambient viewing call, shall comply with the implicit transmit media request as specified in clause 6.4; and

   e) if this is a remotely initiated ambient viewing call, shall comply with the implicit transmit media reqeust to the terminating MCVideo client as specified in clause 6.4; and

9) shall include a Target-Dialog header field as specified in IETF RFC 4538 [32] identifying the pre-established session.

Upon receiving a final SIP 2xx response to the SIP REFER request the MCVideo client:

1) shall interact with media plane as specified in 3GPP TS 24.581 [5]; and

2) if this is a locally initiated ambient viewing call, shall not provide any indication to the user that the call setup is in progress.

On video establishment by interaction with the media plane as specified in 3GPP TS 24.581 [5] if the sent SIP REFER request the MCVideo client:

Editor's Note [CT1#108, CR0033, C1-180501]: The call setup and release over the pre-established session need defined in the 3GPP TS 24.581 [5].1) if the MCVideo user has requested a locally initiated ambient viewing call shall provide no indication to the MCVideo user that the ambient viewing call has been successfully established; and

2) if the MCVideo user has requested a remotely initiated ambient viewing call shall provide an indication to the MCVideo user that the ambient viewing call has been successfully established.

3) if the <ambient-viewing-type> element contained in the application/vnd.3gpp.mcvideo-info+xml MIME body in the sent SIP REFER request was set to a value of "local-init":

   a) shall cache the value of "viewed-to MCVideo user" as the ambient viewing client role for this call; or

   b) if the <ambient-viewing-type> element contained in the application/vnd.3gpp.mcvideo-info+xml MIME body was set to a value of "remote-init" shall cache the value of "viewing MCVideo user" as the ambient viewing client role for this call; and

4) shall cache the value contained in the <ambient-viewing-type> element of the application/vnd.3gpp.mcvideo-info+xml MIME body set in step 8) as the ambient viewing type of this call.

15.2.2.2 Client terminating procedures

The MCVideo client shall follow the procedures for termination of multimedia sessions for ambient viewing calls as specified in clause 15.2.1.2.

NOTE: The terminating MCVideo client in an ambient viewing call receives a SIP INVITE request with Replaces header field when using a pre-established session.

15.2.2.3 Client release origination procedure

Upon receiving a request from an MCVideo user to release an MCVideo ambient viewing call when using a pre-established MCVideo session:

The MCVideo client:

1) if the MCVideo client has not received a g.3gpp.mcvideo.ambient-viewing-call-release feature-capability indicator as described in clause D.3 in the Feature-Caps header field according to IETF RFC 6809 [63] in;

   a) a received SIP INVITE request for the ambient viewing call; or

   b) a received SIP 200 (OK) response to a sent SIP INVITE request or SIP REFER request for the ambient viewing call;

   then shall skip the rest of the steps; and

2) shall perform the actions specified in clause 6.2.5.2.

If the procedures of clause 6.2.5.2 were successful:

1) if the cached ambient viewing client role is equal to "viewed-to MCVideo user", shall provide no indication that an ambient viewing call has been terminated;

2) if the cached ambient viewing client role is equal to "viewing MCVideo user", may provide an indication to the MCVideo user that the ambient viewing call has been terminated; and

3) shall clear the cache of the data stored as:

   a) ambient viewing client role; and

   b) ambient viewing type.

15.2.2.4 Reception of SIP INFO request with release-reason

Upon receiving a SIP INFO request containing an application/vnd.3gpp.mcvideo-info+xml MIME body containing a <release-reason> element, the MCVideo client:

1) if the cached ambient viewing client role is equal to "viewed-to MCVideo user", shall provide no indication that an ambient viewing call is being terminated;

2) if the cached ambient viewing client role is equal to "viewing MCVideo user", should provide an indication to the MCVideo user that an ambient viewing call is being terminated;

3) shall generate and send a SIP 200 OK response to the SIP INFO request according to 3GPP TS 24.229 [11]; and

4) shall comply with the procedures of clause 15.2.2.5.

15.2.2.5 Client session release termination procedure

This clause is referenced from other procedures.

Upon receiving an interaction with the media plane indicating release of the ambient viewing call but preservation of the pre-established session as specified in 3GPP TS 24.581 [5], the MCVideo client:.

Editor's Note [CT1#108, CR0033, C1-180501]: The call setup and release over the pre-established session need defined in the 3GPP TS 24.581 [5].

1) if the cached ambient viewing client role is equal to "viewed-to MCVideo user", shall provide no indication that an ambient viewing call has been terminated;

2) if the cached ambient viewing client role is equal to "viewing MCVideo user", may provide an indication to the MCVideo user that the ambient viewing call has been terminated; and

3) shall clear the cache of the data stored as:

   a) ambient viewing client role; and

   b) ambient viewing type.

15.3 Participating MCVideo function procedures

15.3.1 Originating procedures

15.3.1.1 On-demand ambient viewing call

Upon receipt of a “SIP INVITE request for originating participating MCVideo function” containing an application/vnd.3gpp.mcvideot-info+xml MIME body with the <session-type> element set to a value of “ambient-viewing”, the participating MCVideo function:

1) if unable to process the request due to a lack of resources or a risk of congestion exists, may reject the “SIP INVITE request for originating participating MCVideo function” with a SIP 500 (Server Internal Error) response. The participating MCVideo function may include a Retry-After header field to the SIP 500 (Server Internal Error) response as specified in IETF RFC 3261 [15] and shall not continue with the rest of the steps;

2) shall determine the MCVideo ID of the calling user from public user identity in the P-Asserted-Identity header field of the SIP INVITE request and shall authorise the user;

NOTE 1: The MCVideo ID of the calling user is bound to the public user identity at the time of service authorisation, as documented in clause 7.3.

3) if the participating MCVideo function cannot find a binding between the public user identity and an MCVideo ID or if the validity period of an existing binding has expired, then the participating MCVideo function shall reject the SIP INVITE request with a SIP 404 (Not Found) response with the warning text set to “141 user unknown to the participating function” in a Warning header field as specified in clause 4.4, and shall not continue with any of the remaining steps;

4) if the <ambient-viewing-type> element of the application/vnd.3gpp.mcvideo-info+xml MIME body in the received SIP INVITE request is set to a value of:

   a) “remote-init” and an <allow-request-remote-initiated-ambient-viewing> element of the <ruleset> element is not present in the MCVideo user profile document (see the MCVideo user profile document in 3GPP TS 24.484 [25]) or is set to a value of “false”; or

   b) "local-init" and an <allow-request-locally-initiated-ambient-viewing> element of the <ruleset> element is not present in the MCVideo user profile document (see the MCVideo user profile document in 3GPP TS 24.484 [25]) or is set to a value of “false";

   then shall reject the “SIP INVITE request for originating participating MCVideo function” with a SIP 403 (Forbidden) response, with warning text set to “154 The MCVideo user is not authorised to make an ambient viewing call” in a Warning header field as specified in clause 4.4, and shall not continue with the rest of the steps;

5) shall determine the public service identity of the controlling MCVideo function for the ambient viewing call service associated with the originating user's MCVideo ID identity. If the participating MCVideo function is unable to identify the controlling MCVideo function for the ambient viewing call service associated with the originating user's MCVideo ID identity, it shall reject the SIP INVITE request with a SIP 404 (Not Found) response with the warning text “142 unable to determine the controlling function” in a Warning header field as specified in clause 4.4, and shall not continue with any of the remaining steps;

6) if the incoming SIP INVITE request does not contain an application/resource-lists MIME body or contains an application/resource-lists MIME body with more than one <entry> element, shall reject the ”SIP INVITE request for originating participating MCVideo function” with a SIP 403 (Forbidden) response including warning text set to “145 unable to determine called party” in a Warning header field as specified in clause 4.4, and shall not continue with the rest of the steps;

7) if the <allow-private-call> element of the <ruleset> element is not present in the MCVideo user profile document on the participating MCVideo function or is present with the value “false” (see the MCVideo user profile document in 3GPP TS 24.484 [25]), indicating that the user identified by the MCVideo ID is not authorised to initiate private calls, shall reject the ”SIP INVITE request for originating participating MCVideo function” with a SIP 403 (Forbidden) response, with warning text set to “107 user not authorised to make private calls" in a Warning header field as specified in clause 4.4, and shall not continue with the rest of the steps;

8) if the <PrivateCall> element exists in the MCVideo user profile document with one or more <entry> elements (see the MCVideo user profile document in 3GPP TS 24.484 [25]) and:

   a) if the “uri” attribute of the <entry> element of the application/resource-lists MIME body does not match with one of the <entry> elements of the <PrivateCall> element of the MCVideo user profile document (see the MCVideo user profile document in 3GPP TS 24.484 [25]); and

   b) if configuration is not set in the MCVideo user profile document (see the MCVideo user profile document in 3GPP TS 24.484 [25]) that allows the MCVideo user to make a private call to users not contained within the <entry> elements of the <PrivateCall> element;

   then:

   a) shall reject the “SIP INVITE request for originating participating MCVideo function” with a SIP 403 (Forbidden) response including warning text set to “144 user not authorised to call this particular user” in a Warning header field as specified in clause 4.4 and shall not continue with the rest of the steps;

9) shall validate the media parameters and if the MCVideo video codec is not offered in the “SIP INVITE request for originating participating MCVideo function” shall reject the request with a SIP 488 (Not Acceptable Here) response. Otherwise, continue with the rest of the steps;

10) shall generate a SIP INVITE request as specified in clause 6.3.2.1.3;

11) shall set the Request-URI to the public service identity of the controlling MCVideo function hosting the private call service;

NOTE 2: The public service identity can identify the controlling MCVideo function in the local MCVideo system or in an interconnected MCVideo system.

NOTE 3: If the controlling MCVideo function is in an interconnected MCVideo system in a different trust domain, then the public service identity can identify the MCVideo gateway server that acts as an entry point in the interconnected MCVideo system from the local MCVideo system.

NOTE 4: If the controlling MCVideo function is in an interconnected MCVideo system in a different trust domain, then the local MCVideo system can route the SIP request through an MCVideo gateway server that acts as an exit point from the local MCVideo system to the interconnected MCVideo system.

NOTE 5: How the participating MCVideo function determines the public service identity of the controlling MCVideo function associated with the handled MCVideo group ID or of the MCVideo gateway server in the interconnected MCVideo system is out of the scope of the present document.

NOTE 6: How the local MCVideo system routes the SIP request through an exit MCVideo gateway server is out of the scope of the present document.

12) shall set the <mcvideo-calling-user-id> element in an application/vnd.3gpp.mcvideo-info+xml MIME body of the SIP INVITE request to the MCVideo ID of the calling user;

13) if the Priv-Answer-Mode header field specified in IETF RFC 5373 [27] was received in the incoming SIP INVITE request with a value of "Auto" or if no Priv-Answer-Mode header field was received in the incoming SIP INVITE request or a Priv-Answer-Mode header field was received containing a value other than "Auto", shall include the Priv-Answer-Mode header field set to a value of "Auto" in the outgoing SIP INVITE request;

14) shall include in the SIP INVITE request an SDP offer based on the SDP offer in the received "SIP INVITE request for originating participating MCVideo function", as specified in clause 6.3.2.1.1.1; and

15) shall forward the SIP INVITE request, according to 3GPP TS 24.229 [11].

15.3.1.2 Receipt of SIP BYE request for on-demand ambient viewing call

Upon receiving from the MCVideo client a SIP BYE request the participating MCVideo function:

1) shall follow the procedures as specified in clause 10.2.4.2.1.1.

15.3.1.3 Receipt of REFER "BYE" request for private call using pre-established session

Upon receiving from the MCVideo client a SIP REFER request when using a pre-established session with the "method" SIP URI parameter set to value "BYE" in the URI in the Refer-To header field the participating MCVideo function shall follow the procedures as specified in clause X1.

Editor's Note [CT1#108, CR0034, C1-180568]: The procedures will defined in the future.

15.3.1.4 Ambient viewing call initiation using pre-established session

Upon receipt of a "SIP REFER request for a pre-established session", with:

1) the Refer-To header field containing a Content-ID ("cid") Uniform Resource Locator (URL) as specified in IETF RFC 2392 [49] that points to an application/resource-lists MIME body as specified in IETF RFC 5366 [37] containing one <entry> element with a "uri" attribute containing a SIP URI set to the MCVideo ID of the called user(s);

2) a "body" parameter of the SIP URI specified above containing an application/vnd.3gpp.mcvideo-info MIME body with the <session-type> element set to "ambient-viewing"; and

3) a Content-ID header field set to the "cid" URL;

the participating MCVideo function:

1) if unable to process the request due to a lack of resources or a risk of congestion exists, may reject the SIP INVITE request with a SIP 500 (Server Internal Error) response. The participating MCVideo function may include a Retry-After header field to the SIP 500 (Server Internal Error) response as specified in IETF RFC 3261 [15] and shall not continue with the rest of the steps;

2) shall determine the MCVideo ID of the calling user from public user identity in the P-Asserted-Identity header field of the SIP REFER request;

3) if the participating MCVideo function cannot find a binding between the public user identity and an MCVideo ID or if the validity period of an existing binding has expired, then the participating MCVideo function shall reject the SIP REFER request with a SIP 404 (Not Found) response with the warning text set to "141 user unknown to the participating function" in a Warning header field as specified in clause 4.4, and shall not continue with any of the remaining steps;

4) if the received SIP REFER request does not contain an application/resource-lists MIME body referenced by a "cid" URL in the Refer-To header field, shall reject the "SIP REFER request for pre-established session" with a SIP 403 (Forbidden) response including warning text set to "145 unable to determine called party" in a Warning header field as specified in clause 4.4, and shall not continue with the rest of the steps;

5) if the received SIP REFER request contains an application/resource-lists MIME body referenced by a "cid" URL in the Refer-To header field with more than one <entry> element each with an application/vnd.3gpp.mcvideo-info MIME body with the <session-type> element, shall reject the "SIP REFER request for pre-established session" with a SIP 403 (Forbidden) response including warning text set to "145 unable to determine called party" in a Warning header field as specified in clause 4.4, and shall not continue with any of the remaining steps;

6) if the received SIP REFER request contains an application/resource-lists MIME body referenced by a "cid" URL in the Refer-To header field with only one <entry> element with an application/vnd.3gpp.mcvideo-info MIME body with the <session-type> element not set to "ambient-viewing", shall reject the "SIP REFER request for pre-established session" with a SIP 403 (Forbidden) response including warning text set to "145 unable to determine called party" in a Warning header field as specified in clause 4.4, and shall not continue with any of the remaining steps;

7) if the <ambient-viewing-type> element of the application/vnd.3gpp.mcvideo-info+xml MIME body in the received SIP REFER request is set to a value of:

   a) "remote-init" and an <allow-request-remote-initiated-ambient-viewing> element of the <ruleset> element is not present in the MCVideo user profile document (see the MCVideo user profile document in 3GPP TS 24.484 [25]) or is set to a value of "false"; or

   b) "local-init" and an <allow-request-locally-initiated-ambient-viewing> element of the <ruleset> element is not present in the MCVideo user profile document (see the MCVideo user profile document in 3GPP TS 24.484 [25]) or is set to a value of "false";

   then shall reject the "SIP REFER request for a pre-established session" with a SIP 403 (Forbidden) response, with warning text set to "154 The MCVideo user is not authorised to make an ambient viewing call" in a Warning header field as specified in clause 4.4, and shall not continue with the rest of the steps;

8) shall determine the public service identity of the controlling MCVideo function for the ambient viewing call service associated with the originating user's MCVideo ID;

NOTE 1: How the participating MCVideo server discovers the public service identity of the controlling MCVideo function associated with the ambient viewing call service of the calling user is out of scope of the current document.

9) if the participating MCVideo function is unable to identify the controlling MCVideo function for the ambient viewing call service associated with the originating user's MCVideo ID, it shall reject the REFER request with a SIP 404 (Not Found) response with the warning text "142 unable to determine the controlling function" in a Warning header field as specified in clause 4.4, and shall not continue with any of the remaining steps;

10) if the <allow-private-call> element of the <ruleset> element is not present in the MCVideo user profile document (see the MCVideo user profile document in 3GPP TS 24.484 [25]) on the participating MCVideo function or is present with the value "false", indicating that the user identified by the MCVideo ID is not authorised to initiate

private calls, shall reject the "SIP REFER request for pre-established session"with a SIP 403 (Forbidden) response to the SIP INVITE request, with warning text set to "107 user not authorised to make private calls" in a Warning header field as specified in clause 4.4;

11) if the <PrivateCall> element exists in the MCVideo user profile document with one or more <entry> elements (see the MCVideo user profile document in 3GPP TS 24.484 [25]) and:

   a) the "uri" attribute of each and every <entry> element of the application/resource-lists MIME body referenced by a "cid" URL in the Refer-To header field does not match with any of the <entry> elements of the <PrivateCall> element of the MCVideo user profile document (see the MCVideo user profile document in 3GPP TS 24.484 [25]); and

   b) if configuration is not set in the MCVideo user profile document (see the MCVideo user profile document in 3GPP TS 24.484 [25]) that allows the MCVideo user to make a private call to users not contained within the <entry> elements of the <PrivateCall> element;

   then:

   a) shall reject the "SIP INVITE request for originating participating MCVideo function" with a SIP 403 (Forbidden) response including warning text set to "144 user not authorised to call this particular user" in a Warning header field as specified in clause 4.4 and shall not continue with the rest of the steps;

12) if the "SIP REFER request for a pre-established session" contained a Refer-Sub header field containing "false" value and a Supported header field containing "norefersub" value, shall handle the SIP REFER request as specified in 3GPP TS 24.229 [11], IETF RFC 3515 [64] as updated by IETF RFC 6665 [16], and IETF RFC 4488 [31] without establishing an implicit subscription;

13) shall generate a final SIP 200 (OK) response to the "SIP REFER request for a pre-established session" according to 3GPP TS 24.229 [11];

NOTE 2: In accordance with IETF RFC 4488 [31], the participating MCVideo function inserts the Refer-Sub header field containing the value "false" in the SIP 200 (OK) response to the SIP REFER request to indicate that it has not created an implicit subscription.

14) shall include in the SIP 200 (OK) response the g.3gpp.mcvideo.ambient-viewing-call-release feature-capability indicator as described in clause D.3 in the Feature-Caps header field according to IETF RFC 6809 [63];

NOTE 3: The originator of the ambient viewing call is either the initiator of a "remote-init" ambient viewing type call or the originator of a "local-init" ambient viewing type call. In either case, the originating user is allowed to release the ambient viewing call.

15) shall send the response to the "SIP REFER request for a pre-established session" towards the MCVideo client according to 3GPP TS 24.229 [11];

16) shall generate a SIP INVITE request as specified in clause X2;

Editor's Note [CT1#108, CR0034, C1-180568]: The procedures will defined in the future.

17) shall include a Priv-Answer-Mode header field set to a value of "Auto" in the outgoing SIP INVITE request;

18) shall set the Request-URI of the SIP INVITE request to the public service identity of the controlling MCVideo function hosting the ambient viewing call service for the calling MCVideo user as determined above in step 7); and

NOTE 4: The public service identity can identify the controlling MCVideo function in the local MCVideo system or in an interconnected MCVideo system.

NOTE 5: If the controlling MCVideo function is in an interconnected MCVideo system in a different trust domain, then the public service identity can identify the MCVideo gateway server that acts as an entry point in the interconnected MCVideo system from the local MCVideo system.

NOTE 6: If the controlling MCVideo function is in an interconnected MCVideo system in a different trust domain, then the local MCVideo system can route the SIP request through an MCVideo gateway server that acts as an exit point from the local MCVideo system to the interconnected MCVideo system.

NOTE 7: How the participating MCVideo function determines the public service identity of the controlling MCVideo function associated with the handled MCVideo group ID or of the MCVideo gateway server in the interconnected MCVideo system is out of the scope of the present document.

NOTE 8: How the local MCVideo system routes the SIP request through an exit MCVideo gateway server is out of the scope of the present document.

NOTE 9: The participating MCVideo function will leave verification of the Resource-Priority header field to the controlling MCVideo function.

19) shall forward the SIP INVITE request according to 3GPP TS 24.229 [11].

Upon receiving SIP provisional responses for the SIP INVITE request the participating MCVideo function:

1) shall discard the received SIP responses without forwarding them.

Upon receiving a SIP 200 (OK) response for the SIP INVITE request the participating MCVideo function:

1) shall interact with the media plane as specified in 3GPP TS 24.581 [5].

15.3.2 Terminating procedures

15.3.2.1 Terminating procedures for ambient viewing call

Upon receipt of a "SIP INVITE request for terminating participating MCVideo function", the participating MCVideo function:

NOTE: The procedures in the present clause are applicable for both on-demand and pre-established sessions.

1) if unable to process the request due to a lack of resources or a risk of congestion exists, may reject the "SIP INVITE request for terminating participating MCVideo function" with a SIP 500 (Server Internal Error) response. The participating MCVideo function may include a Retry-After header field to the SIP 500 (Server Internal Error) response as specified in IETF RFC 3261 [15], and shall not continue with the rest of the steps;

2) shall check the presence of the isfocus media feature tag in the URI of the Contact header field and if it is not present then the participating MCVideo function shall reject the request with a SIP 403 (Forbidden) response with the warning text set to "104 isfocus not assigned" in a Warning header field as specified in clause 4.4, and shall not continue with the rest of the steps;

3) shall use the MCVideo ID present in the <mcvideo-request-uri> element of the application/vnd.3gpp.mcvideo-info+xml MIME body of the incoming SIP INVITE request to retrieve the binding between the MCVideo ID and public user identity;

4) if the binding between the MCVideo ID and public user identity does not exist, then the participating MCVideo function shall reject the SIP INVITE request with a SIP 404 (Not Found) response. Otherwise, continue with the rest of the steps;

5) when the called user identified by the MCVideo ID is unable to participate in private calls as identified in the called user's MCVideo user profile document (see the MCVideo user profile document in 3GPP TS 24.484 [25]) on the terminating participating MCVideo function, shall reject the "SIP INVITE request for terminating participating MCVideo function" with a SIP 403 (Forbidden) response including warning text set to "127 user not authorised to be called in private call" in a Warning header field as specified in clause 4.4; and

6) shall perform the automatic commencement procedures specified in clause 6.3.2.2.5.1 and according to IETF RFC 5373 [27].

15.3.2.2 Receipt of SIP BYE request for on-demand ambient viewing call

Upon receiving a SIP BYE request from the controlling MCVideo function, the participating MCVideo function shall follow the procedures as specified in clause 10.2.4.2.2.1.

15.3.2.3 Receipt of SIP BYE request for an ongoing pre-established session

Upon receiving a SIP BYE request from the controlling MCVideo function for an ambient viewing call and if the MCVideo session id refers to an MCVideo user that has a pre-established session with the participating MCVideo function, the participating MCVideo function:

1) if the SIP BYE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body:

   a) shall generate a SIP INFO request according to rules and procedures of 3GPP TS 24.229 [11] and IETF RFC 6086 [21];

   b) shall include the Info-Package header field set to g.3gpp.mcvideo-info in the SIP INFO request;

   c) shall copy the contents of the application/vnd.3gpp.mcvideo-info+xml MIME body in the received SIP BYE request to the SIP INFO request; and

   d) shall send the SIP INFO request towards the targeted MCVideo client in the dialog of the pre-established session according to 3GPP TS 24.229 [11].

Upon receiving a SIP 2xx response for the sent SIP INFO request, shall perform the procedures specified in clause X3.

Editor's Note [CT1#108, CR0034, C1-180568]: The procedures will defined in the future.

15.4 Controlling MCVideo function procedures

15.4.1 Originating procedures

This clause describes the procedures for inviting an MCVideo user to an MCVideo ambient viewing session. The procedure is initiated by the controlling MCVideo function as the result of an action in clause 15.4.2.

The controlling MCVideo function:

1) shall generate a SIP INVITE request as specified in clause 6.3.3.1.2;

NOTE 1: As a result of calling clause 6.3.3.1.2, the <mcvideo-calling-user-id> containing the calling user's MCVideo ID is copied into the outgoing SIP INVITE.

2) shall copy the MCVideo ID of the MCVideo user listed in the MIME resources body of the incoming SIP INVITE request, into the <mcvideo-request-uri> element in the application/vnd.3gpp.mcvideo-info+xml MIME body of the outgoing SIP INVITE request;

3) shall set the Request-URI to the public service identity of the terminating participating MCVideo function associated to the MCVideo user to be invited;

NOTE 2: The public service identity can identify the terminating participating MCVideo function in the local MCVideo system or in an interconnected MCVideo system.

NOTE 3: If the terminating participating MCVideo function is in an interconnected MCVideo system in a different trust domain, then the public service identity can identify the MCVideo gateway server that acts as an entry point in the interconnected MCVideo system from the local MCVideo system.

NOTE 4: If the terminating participating MCVideo function is in an interconnected MCVideo system in a different trust domain, then the local MCVideo system can route the SIP request through an MCVideo gateway server that acts as an exit point from the local MCVideo system to the interconnected MCVideo system.

NOTE 5: How the controlling MCVideo function determines the public service identity of the terminating participating MCVideo function associated with the handled MCVideo group ID or of the MCVideo gateway server in the interconnected MCVideo system is out of the scope of the present document.

NOTE 6: How the local MCVideo system routes the SIP request through an exit MCVideo gateway server is out of the scope of the present document.

4) shall copy the public user identity of the calling MCVideo user from the P-Asserted-Identity header field of the incoming SIP INVITE request into the P-Asserted-Identity header field of the SIP INVITE request;

5) shall include in the SIP INVITE request an SDP offer based on the SDP offer in the received SIP INVITE request from the originating network according to the procedures specified in clause 6.3.3.1.1;

6) if the <ambient-viewing-type> element contained in the application/vnd.3gpp.mcvideo-info+xml MIME body in the received SIP INVITE request is set to a value of "local-init", shall include the g.3gpp.mcvideo.ambient-viewing-call-release feature-capability indicator as described in clause D.3 in the Feature-Caps header field according to IETF RFC 6809 [63];

NOTE 4: The only case where the terminating user can release the ambient viewing call is when the terminating client is the "viewing MCVideo user";

7) if the <ambient-viewing-type> element contained in the application/vnd.3gpp.mcvideo-info+xml MIME body in the received SIP INVITE request is set to a value of "remote-init", shall include in the outgoing SIP INVITE request an alert-info header field set to a value of "<file:///dev/null>" according to IETF RFC 3261 [15];

8) shall send the SIP INVITE request towards the core network according to 3GPP TS 24.229 [11]; and

9) shall start a private call timer with a value set to the configured max private call duration for the user.

Upon receiving SIP 200 (OK) response for the SIP INVITE request the controlling MCVideo function:

1) shall cache the contact received in the Contact header field; and

2) shall interact with the media plane as specified in 3GPP TS 24.581 [5].

Upon expiry of the private call timer, the controlling MCVideo function shall follow the procedure for releasing the ambient viewing call session as specified in clause 15.4.3 with the clarification that the <release-reason> element included in the SIP BYE request shall be set to "private-call-timer-expiry".

15.4.2 Terminating procedures

Upon receiving of a "SIP INVITE request for controlling MCVideo function of an ambient viewing call" the controlling MCVideo function:

1) shall check whether the public service identity contained in the Request-URI is allocated for ambient viewing call and perform the actions specified in clause 6.3.7.1 if it is not allocated and skip the rest of the steps;

2) shall perform actions to verify the MCVideo ID of the inviting MCVideo user in the <mcvideo-calling-user-id> element of the application/vnd.3gpp.mcvideo-info+xml MIME body of the SIP INVITE request, and authorise the request according to local policy;

3) if the request is not authorised as determined by step 2) above, the controlling MCVideo function shall return a SIP 403 (Forbidden) response with the warning text as specified in "Warning header field" and skip the rest of the steps;

4) shall validate that the received SDP offer includes at least one media stream for which the media parameters and at least one codec or media format is acceptable by the controlling MCVideo function and if not, reject the request with a SIP 488 (Not Acceptable Here) response and skip the rest of the steps;

5) shall perform actions as described in clause 6.3.3.2.2;

6) shall allocate an MCVideo session identity for the MCVideo ambient viewing call session; and

7) shall invite the MCVideo user listed in the MIME resource-lists body of received SIP INVITE request as specified in clause 15.4.1.

If the procedures of clause 15.4.1 were successful in inviting the MCVideo user listed in the MIME resource-lists body of received SIP INVITE request, the controlling MCVideo function:

1) shall generate a SIP 200 (OK) response to the SIP INVITE request as specified in the clause 6.3.3.2.3.2 before continuing with the rest of the steps;

2) shall include in the SIP 200 (OK) response an SDP answer to the SDP offer in the incoming SIP INVITE request as specified in the clause 6.3.3.2.2;

3) shall include in the SIP 200 (OK) response the g.3gpp.mcvideo.ambient-viewing-call-release feature-capability indicator as described in clause D.3 in the Feature-Caps header field according to IETF RFC 6809 [63];

NOTE: The originator of the ambient viewing call is either the initiator of a "remote-init" ambient viewing type call or the originator of a "local-init" ambient viewing type call. In either case, the originating user is allowed to release the ambient viewing call.

4) shall interact with the media plane as specified in 3GPP TS 24.581 [5];

5) shall send a SIP 200 (OK) response towards the inviting MCVideo client according to 3GPP TS 24.229 [11];

6) if the <ambient-viewing-type> element contained in the application/vnd.3gpp.mcvideo-info+xml MIME body in the received SIP INVITE request is set to a value of "remote-init":

   a) shall cache the MCVideo ID contained in the <mcvideo-calling-user-id> element of the received SIP INVITE request as the viewing MCVideo user of the ambient viewing call and cache the MCVideo ID contained in the MIME resource-lists body of the received SIP INVITE request as the viewed-to MCVideo user; and

   b) shall cache the ambient viewing type of the ambient viewing call as "remote-init"; and

7) if the <ambient-viewing-type> element contained in the application/vnd.3gpp.mcvideo-info+xml MIME body in the received SIP INVITE request is set to a value of "local-init":

   a) shall cache the MCVideo ID contained in the <mcvideo-calling-user-id> element of the received SIP INVITE request as the viewed-to MCVideo user of the ambient viewing call and cache the MCVideo ID contained in the MIME resource-lists body of received SIP INVITE request as the viewing MCVideo user; and

   b) shall cache the ambient viewing type of the ambient viewing call as "local-init".

If the procedures of clause 15.4.1 were not successful in inviting the MCVideo user listed in the MIME resource-lists body of received SIP INVITE request, the controlling MCVideo function shall reject the received SIP INVITE request with a SIP 480 (Temporarily Unavailable) response and skip the remaining procedures of the present clause.

The controlling MCVideo function shall forward any other SIP response that does not contain SDP, including any MIME bodies contained therein, along the signalling path to the originating network according to 3GPP TS 24.229 [11].

15.4.3 Server initiated ambient call release

The ambient viewing call release is triggered by an MCVideo administrator by a mechanism outside of the scope of the standard, or directly by the controlling MCVideo function.

This clause is referenced from other procedures.

Upon receipt of a trigger to release an ongoing ambient viewing call identified by the MCVideo ID of the viewing MCVideo user, the MCVideo ID of the viewed-to MCVideo user and the ambient viewing type of the call, the controlling MCVideo function:

1) shall identify the MCVideo sessions of the viewing MCVideo user and the MCVideo ID of the viewed-to MCVideo user for the ambient viewing call to be released;

2) shall interact with the media plane as specified in 3GPP TS 24.581 [5] for the MCVideo session release;

3) shall generate a SIP BYE request according to rules and procedures of 3GPP TS 24.229 [11] to be sent in the dialog for the ambient viewing call with the MCVideo client of the viewed-to MCVideo user; and

4) shall send the SIP BYE request in the dialog for the ambient viewing call with the MCVideo client of the viewed-to MCVideo user.

Upon receipt of a SIP 200 (OK) response to the SIP BYE request the controlling MCVideo function:

1) shall interact with the media plane as specified in 3GPP TS 24.581 [5] for the MCVideo session release;

2) shall generate a SIP BYE requests according to 3GPP TS 24.229 [11];

3) shall include an application/vnd.3gpp.mcvideo-info+xml MIME body in the SIP BYE request including a <release-reason> element set to a value of:

   a) "administrator-action" if triggered by an MCVideo administrator;

   b) "private-call-expiry" if the ambient viewing call is released due to the expiry of the private call timer;

   c) "call-request-for-viewed-to-client" if there is a call request targeted to the viewed-to client; or

   d) "call-request-initiated-by-viewed-to-client" if there is a call request initiated by the viewed-to client; and

4) shall send the SIP BYE requests in the dialog for the ambient viewing call with the MCVideo client of the viewing MCVideo user according to 3GPP TS 24.229 [11].

Upon receipt of a SIP 200 (OK) response to the SIP BYE request sent to the MCVideo client of the viewing MCVideo user the controlling MCVideo function:

1) shall interact with the media plane as specified in clause 6.3 in 3GPP TS 24.581 [5] for releasing media plane resources associated with the SIP sessions with the MCVideo clients; and

2) shall delete the following cached data for the ambient viewing call:

   a) the MCVideo ID of the viewed-to MCVideo user;

   b) the MCVideo ID of the viewing MCVideo user; and

   c) the value of the ambient viewing type.

15.4.4 Reception of a SIP BYE request

Upon receipt of a SIP BYE request for an ambient viewing session the controlling MCVideo function:

1) shall interact with the media plane as specified in clause 6.3 in 3GPP TS 24.581 [5] for releasing the media plane resource associated with the SIP session towards the MCVideo client;

2) shall generate a SIP BYE request according to 3GPP TS 24.229 [11]; and

3) shall send the SIP BYE request in the dialog of the other participant in the ambient viewing call according to 3GPP TS 24.229 [11].

Upon receiving a SIP 200 (OK) response to the sent SIP BYE request the controlling MCVideo function:

1) shall interact with the media plane as specified in clause 6.3 in 3GPP TS 24.581 [5] for releasing media plane resources associated with the SIP session with the MCVideo ambient viewing call participant;

2) shall generate a SIP 200 (OK) response to the received SIP BYE request and send the SIP 200 (OK) response towards the MCVideo client according to 3GPP TS 24.229 [11]; and

3) shall delete the following cached data for the ambient viewing call:

   a) the MCVideo ID of the viewed-to MCVideo user;

   b) the MCVideo ID of the viewing MCVideo user; and

   c) the value of the ambient viewing type.

16 Use of MBMS transmission (on-network)

16.1 General

This clause describes the participating MCVideo function and the MCVideo client procedure for:

1) MBMS bearer announcements;

2) MBMS bearer listening status; and

3) MBMS bearer suspension status.

16.2 MCVideo client procedures

16.2.1 General

This clause describes the procedures in the MCVideo client for:

1) receiving an MBMS bearer announcement from the participating MCVideo function;

2) sending an MBMS bearer listening status report to the participating MCVideo function; and

3) sending an MBMS bearer suspension status report to the participating MCVideo function.

16.2.2 Receiving an MBMS bearer announcement

The MCVideo client associates each received application/sdp MIME body and each received security key with a general purpose MBMS subchannel announced in the same MBMS Bearer Announcement message. When receiving a MapGroupToBearer message, the MCVideo client interprets its content (e.g. the m= line number) in the context of the application/sdp MIME body associated with the general purpose MBMS subchannel on which the MapGroupToBearer was received.

When the MCVideo client receives a SIP MESSAGE request containing:

1) a P-Asserted-Service header field containing the "urn:urn-7:3gpp-service.ims.icsi.mcvideo"; and

2) an application/vnd.3gpp.mcvideo-mbms-usage-info+xml MIME body containing one or more <announcement> element(s);

then the MCVideo client for each <announcement> element in the application/vnd.3gpp.mcvideo-mbms-usage-info+xml MIME body:

1) if the <mbms-service-areas> element is present:

   a) if an <announcement> element with the same value of the <TMGI> element is already stored:

      i) shall replace the old <announcement> element with the <announcement> element received in the application/vnd.3gpp.mcvideo-mbms-usage-info+xml MIME body;

   b) if there is no <announcement> element with the same value of the <TMGI> element stored:

      i) shall store the received <announcement> element;

   c) shall associate the received announcement with the received application/sdp MIME body;

   d) shall associate the received announcement with the received <GPMS> element;

   e) shall store the MBMS public service identity of the participating MCVideo function received in the P-Asserted-Identity header field and associate the MBMS public service identity with the new <announcement> element;

   f) if a "a=key-mgmt" media-level attribute with the "mikey" key management and protocol identifier and a MIKEY-SAKKE I_MESSAGE is included for the general purpose MBMS subchannel defined in the "m=application" media line in the application/sdp MIME body in the received SIP MESSAGE request,

      i) shall extract the initiator URI from the initiator field (IDRi) of the I_MESSAGE as described in 3GPP TS 33.180 [8]. If the initiator URI deviates from the public service identity of the participating MCVideo function serving the MCVideo user, shall reject the SIP MESSAGE request with a SIP 488 (Not Acceptable Here) response as specified in IETF RFC 4567 [6], and include warning text set to "136 authentication of the MIKEY-SAKE I_MESSAGE failed" in a Warning header field as specified in clause 4.4 and shall not continue with the rest of the steps;

ii) shall convert the initiator URI to a UID as described in 3GPP TS 33.180 [8];

iii) shall use the UID to validate the signature of the MIKEY-SAKKE I_MESSAGE as described in 3GPP TS 33.180 [8];

iv) if authentication verification of the MIKEY-SAKKE I_MESSAGE fails, shall reject the SIP MESSAGE request with a SIP 488 (Not Acceptable Here) response as specified in IETF RFC 4567 [6], and include warning text set to "136 authentication of the MIKEY-SAKE I_MESSAGE failed" in a Warning header field as specified in clause 4.4 and shall not continue with the rest of the steps;

v) shall extract and decrypt the encapsulated MSCCK using the participating MCVideo function's (KMS provisioned) UID key as described in 3GPP TS 33.180 [8]; and

vi) shall extract the MSCCK-ID, from the payload as specified in 3GPP TS 33.180 [8];

NOTE: With the MSCCK successfully shared between the participating MCVideo function and the served UEs, the participating MCVideo function is able to securely send MBMS subchannel control messages to the MCVideo clients.

g) shall listen to the general purpose MBMS subchannel defined in the "m=application" media line in the application/sdp MIME body in the received SIP MESSAGE request when entering an MBMS service area where the announced MBMS bearer is available; and

h) shall check the condition for sending a listening status report as specified in the clause 16.2.3; and

2) if no <mbms-service-areas> element is present:

a) shall discard a previously stored <announcement> element identified by the value of the <TMGI>;

b) shall remove the association with the stored application/sdp MIME body and stop listening to the general purpose MBMS subchannel;

c) if no more <announcement> elements associated with the stored application/sdp MIME body are stored in the MCVideo client, shall remove the stored application/sdp MIME body; and

d) check the condition for sending a listening status report as specified in the clause 16.2.3.

16.2.3 The MBMS bearer listening status and suspension report procedures

16.2.3.1 Conditions for sending an MBMS listening status report

If one of the following conditions is fulfilled:

1) if the MCVideo client:

a) receives a Map Group To Bearer message over the general purpose MBMS channel;

b) participates in a group session identified by the Map Group To Bearer message; and

c) the status "listening" is not already reported; or

2) if the MCVideo client:

a) receives an MBMS bearer announcement as described in clause 16.2.2;

b) enters an MBMS service area where a general purpose MBMS is available; and

c) experiences good MBMS bearer radio condition;

then the MCVideo client shall report that the MCVideo client is listening to the MBMS bearer as specified in clause 16.2.3.2.

If one of the following conditions is fulfilled:

1) if the MCVideo client:

   a) receives an MBMS bearer announcement as described in the clause 16.2.2;

   b) the MBMS bearer announcement contains a cancellation of an <announcement> element identified by the same TMGI value as received in a Map Group To Bearer message in an ongoing transmission; and

   c) the status "not-listening" is not already reported;

2) if the MCVideo client:

   a) receives an MBMS bearer announcement as described in the clause 16.2.2;

   b) the MBMS bearer announcement contains a cancellation of an <announcement> element;

   c) does not participate in an ongoing transmission;

   d) the MCVideo client has reported the "listening" status due to the availability of the general purpose MBMS subchannel in the <announcement> element; and

   e) the status "not-listening" is not already reported; or

3. if the MCVideo client:

   a) suffers from bad MBMS bearer radio condition,

then the MCVideo client shall report that the MCVideo client is not listening to the MBMS subchannels as specified in clause 16.2.3.2.

If all the following conditions are fulfilled:

1) the MCVideo client has reported "listening" as the most recent listening status relative to an MBMS bearer;

2) the MCVideo client is notified that the MBMS bearer is about to be suspended by the RAN; and

3) the MCVideo client has not received an MBMS bearer announcement containing a <report-suspension> element set to "false",

then the MCVideo client shall report that the MBMS bearer is about to be suspended, as specified in clause 16.2.3.2.

If all the following conditions are fulfilled:

1) the MCVideo client has reported "listening" as the most recent listening status relative to an MBMS bearer;

2) the MCVideo client has reported that the MBMS bearer is about to be suspended, but the suspension of the bearer has not been detected yet by the MCVideo client;

3) the MCVideo client is notified that the MBMS bearer is no longer to be suspended by the RAN; and

4) the MCVideo client has not received an MBMS bearer announcement containing a <report-suspension> element set to "false",

then the MCVideo client shall report that the MBMS bearer is no longer to be suspended, as specified in clause 16.2.3.2.

16.2.3.2 Sending the MBMS bearer listening or suspension status report

When the MCVideo client wants to report the MBMS bearer listening status, the MCVideo client:

NOTE 1: The application/vnd.3gpp.mcvideo-mbms-usage-info+xml can contain both the listening status "listening" and "not listening" at the same time.

1) shall generate a SIP MESSAGE request in accordance with 3GPP TS 24.229 [11] and IETF RFC 3428 [17]; and

   a) shall include in the Request-URI the MBMS public service identity of the participating MCVideo function received in the P-Asserted-Identity header field of the announcement message;

b) shall include an Accept-Contact header field with the g.3gpp.icsi-ref media-feature tag with the value of "urn:urn-7:3gpp-service.ims.icsi.mcvideo" along with parameters "require" and "explicit" according to IETF RFC 3841 [20];

c) should include a public user identity in the P-Preferred-Identity header field as specified in 3GPP TS 24.229 [11];

d) shall include a P-Preferred-Service header field with the value "urn:urn-7:3gpp-service.ims.icsi.mcvideo";

e) shall include an application/vnd.3gpp.mcvideo-mbms-usage-info+xml MIME body with the <version> element set to "1";

f) if the MCVideo client is listening to the MBMS bearer, the application/vnd.3gpp.mcvideo-mbms-usage-info+xml MIME body:

i) shall include an <mbms-listening-status> element set to "listening";

ii) if the intention is to report that the MCVideo client is listening to the MBMS subchannel for an ongoing transmission in a session (e.g. as the response to the Map Group To Bearer message), shall include the MCVideo session identity of the ongoing transmission in a <session-id> element;

iii) shall include one or more <TMGI> elements for which the listening status applies; and

iv) if the intention is to report that the MCVideo client is listening to the general purpose MBMS subchannel, shall include the <general-purpose> element set to "true";

g) if the MCVideo client is not listening, the application/vnd.3gpp.mcvideo-mbms-usage-info+xml MIME body:

i) shall include an <mbms-listening-status> element set to "not-listening";

iii) shall include one or more <TMGI> elements for which the listening status applies;

iii) if the intention is to report that the MCVideo client is no longer listening to the MBMS subchannel in an ongoing session (e.g. as the response to Unmap Group to Bearer message), shall include the MCVideo session identity in a <session-id> element; and

iv) if the intention is to report that the MCVideo client is no longer listening to general purpose MBMS subchannel, shall include the <general-purpose> element set to "false"; and

NOTE 2: If the MCVideo client reports that the MCVideo client is no longer listening to the general purpose MBMS subchannel, it is implicitly understood that the MCVideo client no longer listens to any MBMS subchannel in ongoing transmissions that the MCVideo client previously reported status "listening".

h) shall include an application/vnd.3gpp.mcvideo-info+xml MIME body with the <mcvideo-request-uri> set to the MCVideo ID of the user; and

2) shall send the SIP MESSAGE request according to 3GPP TS 24.229 [11].

When the MCVideo client meets all the conditions specified in clause 16.2.3.1 for reporting a change in an MBMS bearer suspension status, the MCVideo client:

1) shall generate a SIP MESSAGE request in accordance with 3GPP TS 24.229 [11] and IETF RFC 3428 [17]; and

a) shall include in the Request-URI the MBMS public service identity of the participating MCVideo function received in the P-Asserted-Identity header field of the announcement message;

b) shall include an Accept-Contact header field with the g.3gpp.icsi-ref media-feature tag with the value of "urn:urn-7:3gpp-service.ims.icsi.mcvideo" along with parameters "require" and "explicit" according to IETF RFC 3841 [20];

c) should include a public user identity in the P-Preferred-Identity header field as specified in 3GPP TS 24.229 [11];

d) shall include a P-Preferred-Service header field with the value "urn:urn-7:3gpp-service.ims.icsi.mcvideo";

e) shall include an application/vnd.3gpp.mcvideo-mbms-usage-info+xml MIME body with the <version> element set to "1";

f) if at least one MBMS bearer is about to be suspended, the application/vnd.3gpp.mcvideo-mbms-usage-info+xml MIME body:

i) shall include an <mbms-suspension-status> element set to "suspending";

ii) shall set the <number-of-reported-bearers> element to the total number of the included <suspended-TMGI> elements and <other-TMGI> elements;

iii) shall include <suspended-TMGI> element(s) set to the TMGI value for each of the MTCHs on the same MCH corresponding to the MBMS bearers about to be suspended; and

iv) may include <other-TMGI> elements, if available, corresponding to the TMGI values for other MTCHs on the same MCH as the MBMS bearers to be suspended

NOTE 3: To report the suspension of MTCHs on different MCHs, the MCVideo client sends a separate message for each of the involved MCHs.

g) if the MBMS bearer is no longer about to be suspended, the application/vnd.3gpp.mcvideo-mbms-usage-info+xml MIME body:

i) shall include an <mbms-suspension-status> element set to "not-suspending";

ii) shall set the <number-of-reported-bearers> element to the number of included <suspended-TMGI> elements; and

iii) shall include a <suspended-TMGI> element set to the corresponding TMGI value for each of the MTCHs of the MBMS bearers that are no longer about to be suspended; and

h) shall include an application/vnd.3gpp.mcvideo-info+xml MIME body with the <mcvideo-request-uri> set to the MCVideo ID of the user; and

2) shall send the SIP MESSAGE request according to 3GPP TS 24.229 [11].

NOTE 4: The MCVideo client reports in separate messages the MBMS bearers that are about to be suspended and the MBMS bearers that are no longer about to be suspended.

16.2.4 Receiving a MuSiK download message

When the MCVideo client receives a SIP MESSAGE request containing:

1) a P-Asserted-Service header field containing the "urn:urn-7:3gpp-service.ims.icsi.mcvideo"; and

2) with one of the following:

a) an application/vnd.3gpp.mcvideo-mbms-usage-info+xml MIME body containing an <mbms-explicitMuSiK-download> element with at least one <group> subelement; or

b) an application/vnd.3gpp.mcvideo-mbms-usage-info+xml MIME body containing an <mbms-defaultMuSiK-download> element with zero or more <group> subelements;

the MCVideo client shall:

1) if the received message contains an <mbms-explicitMuSiK-download> element, set the impacted groups to be those groups identified by the <group> subelements;

2) if the received message contains an <mbms-defaultMuSiK-download> element without <group> subelements, set the impacted groups to be all groups not associated with currently valid explicit MuSiK downloads; and

3) if the received message contains an <mbms-defaultMuSiK-download> element with <group> subelements, first dissociate those groups identified by the <group> subelements from currently valid associations with explicit MuSiK downloads and then set the impacted groups to be all groups not associated with currently valid explicit MuSiK downloads.

If the key identifier within the CSB-ID of the MIKEY payload is a MuSiK-ID (4 most-significant bits have the value '6'), the MCVideo client:

1) shall process the MIKEY payload according to 3GPP TS 33.180 [8], as follows:

   a) if the initiator field (IDRi) has type 'URI' (identity hiding is not used), the client:

      i) shall extract the initiator URI from the initiator field (IDRi) of the I_MESSAGE as described in 3GPP TS 33.180 [8]. If the initiator URI deviates from the public service identity of the participating MCVideo function serving the MCVideo client, shall reject the SIP MESSAGE request by sending a SIP 488 (Not Acceptable Here) response as specified in IETF RFC 4567 [47], and including warning text set to "136 authentication of the MIKEY-SAKKE I_MESSAGE failed" in a Warning header field as specified in clause 4.4 and shall not continue with the rest of the steps; and

      ii) shall convert the initiator URI to a UID as described in 3GPP TS 33.180 [8];

   b) otherwise, if the initiator field (IDRi) has type 'UID' (identity hiding in use), the client:

      i) shall convert the public service identity of participating MCVideo function serving the MCVideo user to a UID as described in 3GPP TS 33.180 [8]; and

      ii) shall compare the generated UID with the UID in the initiator field (IDRi) of the I_MESSAGE as described in 3GPP TS 33.180 [8]. If the two initiator UIDs deviate from each other, shall reject the SIP MESSAGE request by sending a SIP 488 (Not Acceptable Here) response as specified in IETF RFC 4567 [47], and including warning text set to "136 authentication of the MIKEY-SAKKE I_MESSAGE failed" in a Warning header field as specified in clause 4.4 and shall not continue with the rest of the steps;

   c) otherwise, shall reject the SIP MESSAGE request by sending a SIP 488 (Not Acceptable Here) response as specified in IETF RFC 4567 [47], and including warning text set to "136 authentication of the MIKEY-SAKKE I_MESSAGE failed" in a Warning header field as specified in clause 4.4 and shall not continue with the rest of the steps;

   d) shall use the UID to validate the signature of the I_MESSAGE as described in 3GPP TS 33.180 [8];

   e) if authentication verification of the I_MESSAGE fails or the I_MESSAGE does not contain a Status attribute, shall reject the SIP MESSAGE request by sending SIP 488 (Not Acceptable Here) response as specified in IETF RFC 4567 [47], and including warning text set to "136 authentication of the MIKEY-SAKKE I_MESSAGE failed" in a Warning header field as specified in clause 4.4 and shall not continue with the rest of the steps; and

   f) shall examine the Status attribute and shall either mark the associated security functions as "not in use" or shall extract and store the encapsulated MuSiK and the corresponding MuSiK-ID from the payload as specified in 3GPP TS 33.180 [8]; and

2) for each of the impacted groups, shall either associate the status 'security not in use' or shall add/replace in the storage associated with the group the MuSiK-ID and the MuSiK, for use (decrypted) as security key for floor control.

NOTE: It is expected that the MCVideo client is capable of storing a different MuSiK for each MCVideo group of interest.

The MCVideo client shall respond with SIP 200 (OK) only if it finds the message syntactically correct and recognizes it as a valid and error-free MuSiK download (default or explicit) message.

16.3 Participating MCVideo server procedures

16.3.1 General

This clause describes the procedures in the participating MCVideo function for:

1) sending an MBMS bearer announcements to the MCVideo client;

2) receiving an MBMS bearer listening status from the MCVideo client; and

3) receiving an MBMS bearer suspension status from the MCVideo client.

16.3.2 Sending MBMS bearer announcement procedures

16.3.2.1 General

The availability of an MBMS bearer is announced to MCVideo clients by means of an MBMS bearer announcement message. One or more MBMS bearer announcement elements are included in an application/vnd.3gpp.mcvideo-mbms-usage-info+xml MIME body.

An MBMS bearer announcement message can contain new MBMS bearer announcements, updated MBMS bearer announcements or cancelled MBMS bearer announcements or a mix of all of them at the same time in an application/vnd.3gpp.mcvideo-mbms-usage-info+xml MIME body. Each initial MBMS bearer announcement message announces one MBMS bearer intended to carry a general purpose MBMS subchannel used for application level multicast signalling in a specified MBMS service area and additionally, the message could also announce zero or more extra MBMS bearers intended to carry media and media control.

NOTE: A new MBMS bearer announcement does not implicitly remove previously sent MBMS bearer announcements if the previously sent MBMS bearer announcement is not included in an MBMS bearer announcement message. However, the application/sdp MIME body, if included in the new MBMS bearer announcement message, fully replaces the existing application/sdp MIME body (which includes the MSCCK security key used to protect the general purpose MBMS subchannel).

When and to whom the participating MCVideo function sends the MBMS bearer announcement is based on local policy in the participating MCVideo function.

The following clauses describe how the participating MCVideo function:

1. sends an initial MBMS bearer announcement message;

2. updates a previously sent announcement of MBMS bearer(s);

3. cancels a previously sent announcement of MBMS bearer(s); and

4. keys, re-keys or un-keys MCVideo groups using Multicast Signalling Key (MuSiK) via a key download procedure.

Prior to the participating MCVideo function transmitting on an MBMS bearer, the participating MCVideo function:

1. if necessary, shall instruct the local key management client to request keying material from the key management server as described in 3GPP TS 33.180 [8];

2. shall generate MSCCK(s) with the corresponding MSCCK-ID(s) and MuSiK(s) with the corresponding MuSiK-ID(s) as necessary; and

3. shall distribute MSCCKs, MSCCK-IDs, MuSiKs and MuSiK-IDs to the MCVideo clients, as needed, using the keying material received from the key management server for security protection, as described in 3GPP TS 33.180 [8].

16.3.2.2 Sending an initial MBMS bearer announcement procedure

For each MCVideo client that the participating MCVideo function is sending an MBMS bearer announcement to, the participating MCVideo function:

1) shall generate an SIP MESSAGE request in accordance with 3GPP TS 24.229 [11] and IETF RFC 3428 [17];

2) shall set the Request-URI to the URI received in the To header field in a third-party SIP REGISTER request;

3) shall include an Accept-Contact header field with the g.3gpp.icsi-ref media-feature tag with the value of "urn:urn-7:3gpp-service.ims.icsi.mcvideo" along with parameters "require" and "explicit" according to IETF RFC 3841 [20];

4) shall include a P-Asserted-Service header field with the value "urn:urn-7:3gpp-service.ims.icsi.mcvideo";

5) shall include one application/sdp MIME body conforming to 3GPP TS 24.229 [11] where the application/sdp MIME body and:

   a) shall include the Content-Disposition header field with the value "render"; and

   b) if FEC is applied to protect one of the following media lines

      i) shall include a "a=FEC-declaration" session attribute set to "0", with the the "encoding-id" parameter set to "1", as specified in [67].

      ii) shall include a "a=FEC-OTI-extension" session attribute, providing the FEC object transmission information, specified in clause 8.2.2.10a in [67].

      iii) should include an "a=mbms-repair" session attribute, as specified in clause 8.2.2.10a in [67].

   c) should include one or more "m=video" media lines and media line attributes as defined in 3GPP TS 24.581 [5] to be used as the MBMS subchannel for video. Additional the participating MCVideo function:

      i) shall set c-line to the unspecified address (0.0.0.0), if IPv4, or to a domain name within the "invalid" DNS top-level domain, if IPv6;

      ii) shall set port number of the media line to 9;

      iii) if transmission control and media control is multiplexed with video, shall include the "a=rtcp-mux" attribute as specified in IETF RFC 5761 [72]; and shall include the "a=rtcp:9" as specified in IETF RFC 5761 [72].

      iv) if the declared media is protected by FEC, shall include a "a=FEC" attribute, set to 0.

   d) should include one or more" m=audio" media lines and media line attributes as defined in 3GPP TS 24.581 [5] to be used as the MBMS subchannel for audio. Additional the participating MCVideo function:

      i) shall set c-line to the unspecified address (0.0.0.0), if IPv4, or to a domain name within the "invalid" DNS top-level domain, if IPv6;

      ii) shall set port number of the media line to 9;

      iii) if media control is multiplexed with audio, shall include the "a=rtcp-mux" attribute as specified in IETF RFC 5761 [72]; and shall include the "a=rtcp:9" as specified in IETF RFC 5761 [72].

      iv) if the declared media is protected by FEC, shall include a "a=FEC" attribute, set to 0.

   e) if "m=video" media lines to be used in an MBMS subchannel for video without multiplexing transmission control are included above, shall include one or more "m=application" media line as defined in 3GPP TS 24.581 [5] to be used as the MBMS subchannel for transmission control messages. The media line:

      i) shall set c-line to the unspecified address (0.0.0.0), if IPv4, or to a domain name within the ".invalid" DNS top-level domain, if IPv6; and

      ii) shall set the port number of the media line to 9;

   f) should include one or more" m=application" media lines and media line attributes as defined in 3GPP TS 24.581 [5] to be used as the MBMS subchannel for FEC repair packets. Additionally the participating MCVideo function:

      i) shall set c-line to the unspecified address (0.0.0.0), if IPv4, or to a domain name within the "invalid" DNS top-level domain, if IPv6;

      ii) shall set port number of the media line to 9;

      iii) shall include a "a=FEC" attribute, set to 0.

g) shall include one "m=application" media line as defined in clause 4.3.3.1 from 3GPP TS 24.581 [5] to be used as the general purpose MBMS subchannel. The media line shall include a valid multicast IP address and a valid port number. If the protection of MBMS subchannel control messages sent over the general purpose MBMS subchannel of the MBMS bearer is required, the participating MCVideo function also includes an "a=key-mgmt" media-level attribute. The participating MCVideo function:

i) shall encrypt the MSCCK to a UID associated to the targeted MCVideo ID and a time related parameter as described in 3GPP TS 33.180 [8];

ii) shall generate a MIKEY-SAKKE I_MESSAGE using the encapsulated MSCCK and MSCCK-ID as specified in 3GPP TS 33.180 [8];

iii) shall add the public service identity of the participating MCVideo function to the initiator field (IDRi) of the I_MESSAGE as described in 3GPP TS 33.180 [8];

iv) shall sign the MIKEY-SAKKE I_MESSAGE using the public service identity of the participating MCVideo function signing key provided in the keying material together with a time related parameter, and add this to the MIKEY-SAKKE payload, as described in 3GPP TS 33.180 [8]; and

v) shall include the "mikey" key management and protocol identifier and the signed MIKEY-SAKKE I_MESSAGE in the value of the a=key-mgmt" media-level attribute according to IETF RFC 4567 [6];

6) shall include an application/vnd.3gpp.mcvideo-mbms-usage-info+xml MIME body defined in clause F.2 with the <version> element set to "1" and one or more <announcement> elements associated with the pre-activated MBMS bearers. Each set of an <announcement> element:

a) shall include a TMGI value in the <TMGI> element;

NOTE 4: The same TMGI value can only appear in one <announcement> element. The TMGI value is also used to identify the <announcement> when updating or cancelling the <announcement> element.

NOTE 5: The security key active for the general purpose MBMS subchannel on which the mapping (i.e. the MapGroupToBearer message) of media or media control to this MBMS bearer was indicated, is used for MBMS subchannels on this MBMS bearer, unless a different key or an indication of not using encryption is in place.

b) shall include the QCI value in the <QCI> element;

c) if multiple carriers are supported, shall include the frequency to be used in the <frequency> element;

NOTE 6: In the current release if the <frequency> element is included, the frequency in the <frequency> element is the same as the frequency used for unicast.

d) shall include one or more MBMS service area IDs in <mbms-service-area-id> elements in the <mbms-service-areas> element;

NOTE 7: Initial mappings of groups to MBMS subchannels on an MBMS bearer for the purpose of carrying media or media control can occur only where the MBMS service area for this bearer and the MBMS service area for the bearer carrying the general purpose MBMS subchannel on which the MapGroupToBearer message is sent intersect. However, once media or media control were successfully mapped to this bearer, the reception by the MCVideo client can continue (until UnmapGroupToBearer is received or until timeout) throughout the entire MBMS service area of this bearer.

e) may include the <report-suspension> element and set it to "true" value or the "false" value; and

NOTE 8: The participating function can choose to direct some clients not to send an MBMS bearer suspension report when notified by RAN, by including the <report-suspension> element set to "false". The purpose is to prevent an avalanche of identical reports sent by clients roughly at the same time, to report the suspension of the same MBMS bearer. The way the participation function determines which clients are to send or not to send the report is outside the scope of the present document.

f) if the MBMS bearer is carrying the general purpose MBMS subchannel, shall include one <GPMS>element, giving the number of the "m=application" media line in the application/sdp MIME body generated in step 5 above to be used for the general purpose MBMS subchannel;

7) shall include the MBMS public service identity of the participating MCVideo function in the P-Asserted-Identity header field;

8) shall include in a MIME body with Content-Type header field set to "application/vnd.3gpp.mcvideo-info+xml", the <mcvideo-request-uri> element set to the MCVideo ID of the user; and

9) shall send the SIP MESSAGE request towards the MCVideo client according to 3GPP TS 24.229 [11].

16.3.2.3 Updating an announcement

When the participating MCVideo function wants to update a previously sent announcement, the participating MCVideo function sends an MBMS bearer announcement in an SIP MESSAGE request as specified in clause 16.3.2.2 where the participating MCVideo function in the <announcement> element to be updated:

1) shall include the same TMGI value as in the MBMS bearer announcement to be updated in the <TMGI> element;

NOTE 1: TMGI value is used to identify the <announcement> when updating or cancelling the <announcement> element and can't be changed.

2) shall include the same or an updated value of the QCI in the <QCI> element;

3) if a frequency was included in the previously sent announcement, shall include the same value in the <frequency> element;

4) shall include the same list of MBMS service area IDs or an updated list of MBMS service area IDs in the <mbms-service-areas> element;

5) may include the same or an updated value in the <report-suspension> element;

6) shall include the <GPMS> element with the same value as in the initial <announcement> element; and

7) shall include the same application/sdp MIME body as included in the initial MBMS announcement.

16.3.2.4 Cancelling an MBMS bearer announcement

When the participating MCVideo function wants to cancel an MBMS bearer announcement associated with an <announcement> element, the participating MCVideo function sends an MBMS bearer announcement as specified in clause 16.3.2.2 where the participating MCVideo function in the <announcement> element to be cancelled:

1) shall include the same TMGI value as in the <announcement> element to be cancelled in the <TMGI> element;

2) shall not include an <mbms-service-areas> element;

3) if the application/vnd.3gpp.mcvideo-mbms-usage-info+xml MIME body only contains <announcement> elements that are to be cancelled, shall not include an <GPMS> element; and

4) if the application/vnd.3gpp.mcvideo-mbms-usage-info+xml MIME body only contains <announcement> elements that are to be cancelled, shall not include an application/sdp MIME body.

16.3.2.5 Sending a MuSiK download message

For each MCVideo client that the participating MCVideo function is intending to use an MBMS bearer to transmit confidentiality protected transmission control signalling (SRTCP) to the client, the participating MCVideo function shall perform a key download procedure for each Multicast Signalling Key (MuSiK). Two kinds of MuSiK download are possible: default MuSiK download and explicit MuSiK download. The default MuSiK download is used to set, reset or unset a MuSiK and its corresponding MuSiK-ID and is applicable to all groups supported by the MCVideo client, except for certain identified groups for which MuSiKs and MUSiK-IDs are assigned, reassigned or unassigned separately via explicit MuSiK download. The default MuSiK and MUSiK-ID can apply to all the MCVideo clients supported by the participating MCVideo function and can be overridden by the explicit MuSiK download which is selectively applied only to the MCVideo clients using the explicitly identified groups. A group subject to explicit MuSiK download, can be switched to the default MuSiK protection via a default MuSiK download identifying that group. The participating MCVideo function:

1) shall generate a SIP MESSAGE request in accordance with 3GPP TS 24.229 [11] and IETF RFC 3428 [17];

2) shall set the Request-URI to the URI received in the To header field in a third-party SIP REGISTER request;

3) shall include an Accept-Contact header field with the g.3gpp.icsi-ref media-feature tag with the value of "urn:urn-7:3gpp-service.ims.icsi.mcvideo" along with parameters "require" and "explicit" according to IETF RFC 3841 [20];

4) shall include a P-Asserted-Service header field with the value "urn:urn-7:3gpp-service.ims.icsi.mcvideo";

5) shall include an application/vnd.3gpp.mcvideo-mbms-usage-info+xml MIME body defined in clause F.2 with the <version> element set to "1", and either

   a) containing an <mbms-explicitMuSiK-download> element with at least one <group> element associated with the MuSiK being downloaded; or

   b) containing an <mbms-defaultMuSiK-download> element with zero or more <group> elements associated with the MuSiK being downloaded;

6) if the transmission control signaling for the group(s) in the specified list is to be protected using the MuSiK, shall include an application/mikey MIME body with the MIKEY message containing the encrypted MuSiK and the corresponding MuSiK-ID, constructed as described in clauses 5.8.1 and 5.2.2 of 3GPP TS 33.180 [8];

NOTE: Clause 9.2.1.3 of 3GPP TS 33.180 [8] shows an example on how to include an application/mikey MIME body in a SIP message.

7) shall send the SIP MESSAGE request towards the MCVideo client according to 3GPP TS 24.229 [11].

The participating MCVideo function shall consider the key download successful on receipt of a 200 (OK) message in response to the SIP MESSAGE request sent in step 7).

A participating MCVideo function that does not receive a 200 (OK) message from a specific MCVideo client shall use unicast signalling for transmission control towards that MCVideo client for the groups for which the MuSiK was intended.

16.3.3 Receiving an MBMS bearer listening status from an MCVideo client

Upon receiving a "SIP MESSAGE request for an MBMS listening status update", the participating MCVideo function shall handle the request in accordance with 3GPP TS 24.229 [11] and IETF RFC 3428 [17].

If the SIP MESSAGE request contains:

1) an application/vnd.3gpp.mcvideo-mbms-usage-info+xml MIME body with an <mbms-listening-status> element; and

2) an application/vnd.3gpp.mcvideo-info+xml MIME body containing an MCVideo ID in the <mcvideo-request-uri> served by the participating MCVideo function;

then the participating MCVideo function:

1) shall verify that the public user identity in the P-Asserted-Identity header field is bound to the MCVideo ID in the <mcvideo-request-uri> element in the application/vnd.3gpp.mcvideo-info+xml MIME body, and if that is the case:

   a) if the <mbms-listening-status> element is set to "listening":

      i) if <session-identifier> elements are included, shall indicate to the media plane that the MCVideo client in the session identified by the <session-identifier> element is now listening to the MBMS subchannel; and

      ii) if <general-purpose> element is included with the value "true", shall indicate to the media plane that the MCVideo client is now listening to the general purpose MBMS subchannel; and

   b) if the <mbms-listening-status> element is set to "not-listening":

      i) if <session-identifier> elements are included, shall indicate to the media plane that the MCVideo client in the sessions identified by the <session-identifier> elements is not listening to the MBMS subchannel;

ii) if <general-purpose> element is included with the value "false", shall indicate to the media plane that the MCVideo client is no longer listening to the general purpose MBMS bearer; and

iii) shall interact with the media plane as specified in 3GPP TS 24.581 [5].

NOTE 1: If the MCVideo client reports that the MCVideo client is no longer listening to the general purpose MBMS subchannel it is implicitly understood that the MCVideo client no longer listens to any MBMS subchannel in ongoing transmissions that the MCVideo client previously reported status "listening".

If the SIP MESSAGE request contains:

1) an application/vnd.3gpp.mcvideo-mbms-usage-info+xml MIME body with an <mbms-suspension-status> element; and

2) an application/vnd.3gpp.mcvideo-info+xml MIME body containing an MCVideo ID in the <mcvideo-request-uri> served by the participating MCVideo function;

then the participating MCVideo function:

1) shall verify that the public user identity in the P-Asserted-Identity header field is bound to the MCVideo ID in the <mcvideo-request-uri> element in the application/vnd.3gpp.mcvideo-info+xml MIME body, and if that is the case:

   a) if the <mbms-suspension-status> element is set to "suspending":

      i) shall consider that the bearer identified by the <suspended-TMGI> element is about to be suspended and that the reduction or elimination of traffic on that bearer and/or on some of the bearers indicated in the <other-TMGI> elements can potentially avoid the suspension; and

NOTE 2: An MBMS bearer is about to be suspended when RAN has notified the clients of the decision to suspend the bearer, but the actual suspension, which would occur at the end of the MCCH modification period, has not taken place yet because the MCCH modification period has not yet expired.

      ii) may take implementation/configuration specific immediate action for the MCVideo client that reports the suspension as well as other MCVideo clients that listen to the same bearer (e.g. moving traffic to unicast bearer(s)), reducing transmission rate, eliminating traffic, modifying pre-emption priority).

   b) if the <mbms-suspension-status> element is set to "not-suspending":

      i) shall consider that the bearer identified by the <suspended-TMGI> element is no longer about to be suspended; and

NOTE 3: An MBMS bearer is no longer about to be suspended when RAN has notified the clients of the decision to no longer suspend the bearer after having previously notified the clients that the bearer would be suspended at the end of the MCCH modification period. The RAN notifications to first suspend and subsequently not to suspend the same MBMS bearer would have to come within the same MCCH modification period.

      ii) may take implementation/configuration specific immediate action for the MCVideo client that reports the suspension as well as other MCVideo clients that listen to the same bearer (e.g. restoring traffic previously reduced or eliminated from MBMS bearers upon reception of suspension information).

NOTE 4: If the MCVideo client reports that the MCVideo client is no longer listening to MBMS subchannels associated with the MBMS bearer indicated in the suspension information, it is implicitly understood that the suspension of that MBMS bearer has actually occurred.

16.3.4 Abnormal cases

Upon receipt of a SIP MESSAGE request with an application/vnd.3gpp.mcvideo-mbms-usage-info+xml MIME body:

1) where the P-Asserted-Identity identifies a public user identity not associated with MCVideo user served by the participating MCVideo function; or

2) with the application/vnd.3gpp.mcvideo-info+xml MIME body and with a <mcvideo-request-uri> element containing an MCVideo ID that identifies an MCVideo user served by the participating MCVideo function and

an application/vnd.3gpp.mcvideo-mbms-usage-info+xml MIME body containing one or more <announcement> elements;

then the participating MCVideo function shall send a SIP 403 (Forbidden) response as specified in 3GPP TS 24.229 [11].

17 Off-network message formats

17.1 MONP MCVIDEO message functional definitions and contents

17.1.1 General

The following clauses describe the MONP MCVideo message functional definitions and contents transported in an MONP MCVIDEO MESSAGE CARRIER message as defined in 3GPP TS 24.379 [40]. Each message consists of a series of information elements. Annex I of 3GPP TS 24.379 [40] describes the standard format of a MONP message and the encoding rules for each type of information element.

17.1.2 GROUP CALL PROBE message

17.1.2.1 Message definition

This message is sent by the UE to other UEs to check for an ongoing group call. For contents of the message see Table 17.1.2.1-1.

Message type: GROUP CALL PROBE

Direction: UE to other UEs

Table 17.1.2.1-1: GROUP CALL PROBE message content

IEI	Information Element	Type/Reference	Presence	Format	Length
	Group call probe message identity	Message type 17.2.2	M	V	1
	MCVideo group ID	MCVideo group ID 17.2.5	M	LV-E	3-x

17.1.3 GROUP CALL ANNOUNCEMENT message

17.1.3.1 Message definition

This message is sent by the UE to other UEs to announce an ongoing group call to other UEs. For contents of the message see Table 17.1.3.1-1.

Message type: GROUP CALL ANNOUNCEMENT

Direction: UE to other UEs

Table 17.1.3.1-1: GROUP CALL ANNOUNCEMENT message content

IEI	Information Element	Type/Reference	Presence	Format	Length
	Group call announcement message identity	Message type 17.2.2	M	V	1
	Call identifier	Call identifier 17.2.3	M	V	2
	Call type	Call type 17.2.11	M	V	1
	Refresh interval	Refresh interval 17.2.4	M	V	2
	Call start time	Call start time 17.2.14	M	V	5
	Last call type change time	Last call type change time 17.2.15	M	V	5
	MCVideo group ID	MCVideo group ID 17.2.5	M	LV-E	3-x
	SDP	SDP 17.2.6	M	LV-E	3-x
	Originating MCVideo user ID	MCVideo user ID 17.2.10	M	LV-E	3-x
	Last user to change call type	MCVideo User ID 17.2.10	M	LV-E	3-x
80	Confirm mode indication	Confirm mode indication 17.2.9	O	T	1
81	Probe response	Probe response 17.2.16	O	T	1

17.1.4 GROUP CALL ACCEPT message

17.1.4.1 Message definition

This message is sent by the UE to other UEs to indicate acceptance of a group call. For contents of the message see Table 17.1.4.1-1.

Message type: GROUP CALL ACCEPT

Direction: UE to other UEs

Table 17.1.4.1-1: GROUP CALL ACCEPT message content

IEI	Information Element	Type/Reference	Presence	Format	Length
	Group call accept message identity	Message type 17.2.2	M	V	1
	Call identifier	Call identifier 17.2.3	M	V	2
	Call type	Call type 17.2.11	M	V	1
	MCVideo group ID	MCVideo group ID 17.2.5	M	LV-E	3-x
	Sending MCVideo user ID	MCVideo user ID 17.2.10	M	LV-E	3-x

17.1.5 PRIVATE CALL SETUP REQUEST message

17.1.5.1 Message definition

This message is sent by a UE to another UE to request setup of a private call. For contents of the message see Table 17.1.5.1-1.

Message type: PRIVATE CALL SETUP REQUEST

Direction: UE to another UE

Table 17.1.5.1-1: PRIVATE CALL SETUP REQUEST message content

IEI	Information Element	Type/Reference	Presence	Format	Length
	Private call setup request message identity	Message type 17.2.2	M	V	1
	Call identifier	Call identifier 17.2.3	M	V	2
	Commencement mode	Commencement mode 17.2.7	M	V	1
	Call type	Call type 17.2.11	M	V	1
	MCVideo user ID of the caller	MCVideo user ID 17.2.10	M	LV-E	3-x
	MCVideo user ID of the callee	MCVideo user ID 17.2.10	M	LV-E	3-x
	SDP offer	SDP 17.2.6	M	LV-E	3-x
78	User location	User location 17.2.12	O	TLV-E	3-x

17.1.6 PRIVATE CALL RINGING message

17.1.6.1 Message definition

This message is automatically sent by a UE to another UE in response to a PRIVATE CALL SETUP REQUEST message. This message indicates that the UE has presented the incoming call notification to the user and is awaiting user response. For contents of the message see Table 17.1.6.1-1.

Message type: PRIVATE CALL RINGING

Direction: UE to another UE

Table 17.1.6.1-1: PRIVATE CALL RINGING message content

IEI	Information Element	Type/Reference	Presence	Format	Length
	Private call ringing message identity	Message type 17.2.2	M	V	1
	Call identifier	Call identifier 17.2.3	M	V	2
	MCVideo user ID of the caller	MCVideo user ID 17.2.10	M	LV-E	3-x
	MCVideo user ID of the callee	MCVideo user ID 17.2.10	M	LV-E	3-x

17.1.7 PRIVATE CALL ACCEPT message

17.1.7.1 Message definition

This message is sent by a UE to another UE in response to a PRIVATE CALL SETUP REQUEST message when user accepts the call. This message indicates that the UE accepts the call setup request. For contents of the message see Table 17.1.7.1-1.

Message type: PRIVATE CALL ACCEPT

Direction: UE to another UE

Table 17.1.7.1-1: PRIVATE CALL ACCEPT message content

IEI	Information Element	Type/Reference	Presence	Format	Length
	Private call accept message identity	Message type 17.2.2	M	V	1
	Call identifier	Call identifier 17.2.3	M	V	2
	MCVideo user ID of the caller	MCVideo user ID 17.2.10	M	LV-E	3-x
	MCVideo user ID of the callee	MCVideo user ID 17.2.10	M	LV-E	3-x
	SDP answer	SDP 17.2.6	M	LV-E	3-x

17.1.8 PRIVATE CALL REJECT message

17.1.8.1 Message definition

This message is sent by a UE to another UE in response to a PRIVATE CALL SETUP REQUEST message when user rejects the call. This message indicates that the UE rejects the call setup request. For contents of the message see Table 17.1.8.1-1.

Message type: PRIVATE CALL REJECT

Direction: UE to another UE

Table 17.1.8.1-1: PRIVATE CALL REJECT message content

IEI	Information Element	Type/Reference	Presence	Format	Length
	Private call reject message identity	Message type 17.2.2	M	V	1
	Call identifier	Call identifier 17.2.3	M	V	2
	Reason	Reason 17.2.8	M	V	1
	MCVideo user ID of the caller	MCVideo user ID 17.2.10	M	LV-E	3-x
	MCVideo user ID of the callee	MCVideo user ID 17.2.10	M	LV-E	3-x

17.1.9 PRIVATE CALL RELEASE message

17.1.9.1 Message definition

This message is sent by a UE to another UE to terminate an ongoing private call. For contents of the message see Table 17.1.9.1-1.

Message type: PRIVATE CALL RELEASE

Direction: UE to another UE

Table 17.1.9.1-1: PRIVATE CALL RELEASE message content

IEI	Information Element	Type/Reference	Presence	Format	Length
	Private call release message identity	Message type 17.2.2	M	V	1
	Call identifier	Call identifier 17.2.3	M	V	2
	MCVideo user ID of the caller	MCVideo user id 17.2.10	M	LV-E	3-x
	MCVideo user ID of the callee	MCVideo user id 17.2.10	M	LV-E	3-x

17.1.10 PRIVATE CALL RELEASE ACK message

17.1.10.1 Message definition

This message is sent by a UE to another UE in response to a PRIVATE CALL RELEASE message. This message indicates that the UE has terminated the call. For contents of the message see Table 17.1.10.1-1.

Message type: PRIVATE CALL RELEASE ACK

Direction: UE to another UE

Table 17.1.10.1-1: PRIVATE CALL RELEASE ACK message content

IEI	Information Element	Type/Reference	Presence	Format	Length
	Private call release ack message identity	Message type 17.2.2	M	V	1
	Call identifier	Call identifier 17.2.3	M	V	2
	MCVideo user ID of the caller	MCVideo user id 17.2.10	M	LV-E	3-x
	MCVideo user ID of the callee	MCVideo user ID 17.2.10	M	LV-E	3-x

17.1.11 PRIVATE CALL ACCEPT ACK message

17.1.11.1 Message definition

This message is sent by a UE to another UE in response to a PRIVATE CALL ACCEPT message. This message acknowledges the receipt of PRIVATE CALL ACCEPT message. For contents of the message see Table 17.1.11.1-1.

Message type: PRIVATE CALL ACCEPT ACK

Direction: UE to another UE

Table 17.1.11.1-1: PRIVATE CALL ACCEPT ACK message content

IEI	Information Element	Type/Reference	Presence	Format	Length
	Private call accept ack message identity	Message type 17.2.2	M	V	1
	Call identifier	Call identifier 17.2.3	M	V	2
	MCVideo user ID of the caller	MCVideo user ID 17.2.10	M	LV-E	3-x
	MCVideo user ID of the callee	MCVideo user ID 17.2.10	M	LV-E	3-x

17.1.12 GROUP CALL IMMINENT PERIL END message

17.1.12.1 Message definition

This message is sent by the UE to other UEs to indicate termination of imminent peril mode in the group call. For contents of the message see Table 17.1.12.1-1.

Message type: GROUP CALL IMMINENT PERIL END

Direction: UE to other UEs

Table 17.1.12.1-1: GROUP CALL IMMINENT PERIL END message content

IEI	Information Element	Type/Reference	Presence	Format	Length
	Group call imminent peril end message identity	Message type 17.2.2	M	V	1
	Call identifier	Call identifier 17.2.3	M	V	2
	Last call type change time	Last call type change time 17.2.16	M	V	5
	Last user to change call type	MCVideo User ID 17.2.10	M	LV-E	3-x
	MCVideo group ID	MCVideo group ID 17.2.5	M	LV-E	3-x
	Originating MCVideo user ID	MCVideo user ID 17.2.10	M	LV-E	3-x

17.1.13 GROUP CALL EMERGENCY END message

17.1.13.1 Message definition

This message is sent by the UE to other UEs to indicate termination of emergency mode in the group call. For contents of the message see Table 17.1.13.1-1.

Message type: GROUP CALL EMERGENCY END

Direction: UE to other UEs

Table 17.1.13.1-1: GROUP CALL EMERGENCY END message content

IEI	Information Element	Type/Reference	Presence	Format	Length
	Group call emergency end message identity	Message type 17.2.2	M	V	1
	Call identifier	Call identifier 17.2.3	M	V	2
	Last call type change time	Last call type change time 17.2.16	M	V	5
	Last user to change call type	MCVideo User ID 17.2.10	M	LV-E	3-x
	MCVideo group ID	MCVideo group ID 17.2.5	M	LV-E	3-x
	Originating MCVideo user ID	MCVideo user ID 17.2.10	M	LV-E	3-x

17.1.14 GROUP EMERGENCY ALERT message

17.1.14.1 Message definition

This message is sent by the UE to other UEs to indicate an emergency situation. For contents of the message see Table 17.1.14.1-1.

Message type: GROUP EMERGENCY ALERT

Direction: UE to other UEs

Table 17.1.14.1-1: GROUP EMERGENCY ALERT message content

IEI	Information Element	Type/Reference	Presence	Format	Length
	Group emergency alert message identity	Message type 17.2.2	M	V	1
	MCVideo group ID	MCVideo group ID 17.2.5	M	LV-E	3-x
	Originating MCVideo user ID	MCVideo user ID 17.2.10	M	LV-E	3-x
	Organization name	Organization name 17.2.13	M	LV-E	3-x
78	User location	User location 17.2.12	O	TLV-E	4-x

17.1.15 GROUP EMERGENCY ALERT ACK message

17.1.15.1 Message definition

This message is sent by the UE to other UEs to indicate receipt of emergency alert. For contents of the message see Table 17.1.15.1-1.

Message type: GROUP EMERGENCY ALERT ACK

Direction: UE to other UEs

Table 17.1.15.1-1: GROUP EMERGENCY ALERT ACK message content

IEI	Information Element	Type/Reference	Presence	Format	Length
	Group emergency alert ack message identity	Message type 17.2.2	M	V	1
	MCVideo group ID	MCVideo group ID 17.2.5	M	LV-E	3-x
	Originating MCVideo user ID	MCVideo user ID 17.2.10	M	LV-E	3-x
	Sending MCVideo user ID	MCVideo user ID 17.2.10	M	LV-E	3-x

17.1.16 GROUP EMERGENCY ALERT CANCEL message

17.1.16.1 Message definition

This message is sent by the UE to other UEs to indicate end of emergency situation. For contents of the message see Table 17.1.16.1-1.

Message type: GROUP EMERGENCY ALERT CANCEL

Direction: UE to other UEs

Table 17.1.16.1-1: GROUP EMERGENCY ALERT CANCEL message content

IEI	Information Element	Type/Reference	Presence	Format	Length
	Group emergency alert cancel 0message identity	Message type 17.2.2	M	V	1
	MCVideo group ID	MCVideo group ID 17.2.5	M	LV-E	3-x
	Originating MCVideo user ID	MCVideo User ID 17.2.10	M	LV-E	3-x
	Sending MCVideo user ID	MCVideo user ID 17.2.10	M	LV-E	3-x

17.1.17 GROUP EMERGENCY ALERT CANCEL ACK message

17.1.17.1 Message definition

This message is sent by the UE to other UEs to indicate receipt of emergency alert cancel. For contents of the message see Table 17.1.17.1-1.

Message type: GROUP EMERGENCY ALERT CANCEL ACK

Direction: UE to other UEs

Table 17.1.17.1-1: GROUP EMERGENCY ALERT CANCEL ACK message content

IEI	Information Element	Type/Reference	Presence	Format	Length
	Group emergency alert cancel ack message identity	Message type 17.2.2	M	V	1
	MCVideo group ID	MCVideo group ID 17.2.5	M	LV-E	3-x
	Originating MCVideo user ID	MCVideo User ID 17.2.10	M	LV-E	3-x
	Sending MCVideo user ID	MCVideo user ID 17.2.10	M	LV-E	3-x

17.1.18 GROUP CALL BROADCAST message

17.1.18.1 Message definition

This message is sent by the UE to other UEs to announce a broadcast group call to other UEs. For contents of the message see Table 17.1.18.1-1.

Message type: GROUP CALL BROADCAST

Direction: UE to other UEs

Table 17.1.18.1-1: GROUP CALL BROADCAST message content

IEI	Information Element	Type/Reference	Presence	Format	Length
	Group call broadcast message identity	Message type 17.2.2	M	V	1
	Call identifier	Call identifier 17.2.3	M	V	2
	Call type	Call type 17.2.11	M	V	1
	Originating MCVideo user ID	MCVideo user ID 17.2.10	M	LV-E	3-x
	MCVideo group ID	Group ID 17.2.5	M	LV-E	3-x
	SDP	SDP 17.2.6	M	LV-E	3-x

17.1.19 GROUP CALL BROADCAST END message

17.1.19.1 Message definition

This message is sent by the UE to other UEs to indicate termination of a broadcast group call. For contents of the message see Table 17.1.19.1-1.

Message type: GROUP CALL BROADCAST END

Direction: UE to other UEs

Table 17.1.19.1-1: GROUP CALL BROADCAST END message content

IEI	Information Element	Type/Reference	Presence	Format	Length
	Group call broadcast end message identity	Message type 17.2.2	M	V	1
	Call identifier	Call identifier 17.2.3	M	V	2
	MCVideo group ID	MCVideo group ID 17.2.5	M	LV-E	3-x
	Originating MCVideo user ID	MCVideo user ID 17.2.10	M	LV-E	3-x

17.1.20 PRIVATE REMOTE VIDEO PUSH REQUEST message

17.1.20.1 Message definition

This message is sent by the UE to another UE to request Private Video Push communication. For contents of message see Table 17.1.20.1-1.

Message type: PRIVATE REMOTE VIDEO PUSH REQUEST

Direction: UE to another UE

Table 17.1.20.1-1: PRIVATE REMOTE VIDEO PUSH REQUEST message content

IEI	Information Element	Type/Reference	Presence	Format	Length
	Remote video push setup request message identity	Message type 17.2.2	M	V	1
	Call identifier	Call identifier 17.2.3	M	V	2
	MCVideo remote push requester	MCVideo user ID 17.2.10	M	LV-E	3-x
	MCVideo remote push call originator	MCVideo user ID 17.2.10	M	LV-E	3-x
	MCVideo remote push call recipient	MCVideo user ID 17.2.10	M	LV-E	3-x
79	Video Information	Video Information 17.2.17	O	TLV-E	3-x

17.1.21 GROUP REMOTE VIDEO PUSH REQUEST message

17.1.21.1 Message definition

This message is sent by the UE to another UE to request Group Video Push communication. For contents of message see Table 17.1.21.1-1.

Message type: GROUP REMOTE VIDEO PUSH REQUEST

Direction: UE to another UE

Table 17.1.21.1-1: GROUP REMOTE VIDEO PUSH REQUEST message content

IEI	Information Element	Type/Reference	Presence	Format	Length
	Remote video push setup request message identity	Message type 17.2.2	M	V	1
	Call identifier	Call identifier 17.2.3	M	V	2
	MCVideo remote push requester	MCVideo user ID 17.2.10	M	LV-E	3-x
	MCVideo remote push call originator	MCVideo user ID 17.2.10	M	LV-E	3-x
	MCVideo remote push call recipient	MCVideo group ID 17.2.5	M	LV-E	3-x
79	Video Information	Video Information 17.2.17	O	TLV-E	3-x

17.1.22 VIDEO PUSH TRYING RESPONSE message

17.1.22.1 Message definition

This message is sent by the UE to another UE in response to a PRIVATE REMOTE VIDEO PUSH REQUEST message. This message indicates that the UE has accepted the Video Push request and is setting up a private/group call for Video Push. For contents of message see Table 17.1.22.1-1.

Message type: VIDEO PUSH TRYING RESPONSE

Direction: UE to another UE

Table 17.1.22.1-1: VIDEO PUSH TRYING RESPONSE message content

IEI	Information Element	Type/Reference	Presence	Format	Length
	Remote video push trying response message identity	Message type 17.2.2	M	V	1
	Call identifier	Call identifier 17.2.3	M	V	2

17.1.23 NOTIFY VIDEO PUSH message

17.1.23.1 Message definition

This message is sent by the UE to another UE in response to a PRIVATE REMOTE VIDEO PUSH REQUEST message. This message indicates whether the UE has successfully setup a private/group call for Video Push. For contents of message see Table 17.1.23.1-1.

Message type: NOTIFY VIDEO PUSH

Direction: UE to another UE

Table 17.1.23.1-1: NOTIFY VIDEO PUSH message content

IEI	Information Element	Type/Reference	Presence	Format	Length
	Remote video push notification message identity	Message type 17.2.2	M	V	1
	Call identifier	Call identifier 17.2.3	M	V	2
	Result	Request result 17.2.18	M	V	1
	MCVideo remote push request notifier	MCVideo user ID 17.2.10	M	LV-E	3-x
	MCVideo remote push request notification recipient	MCVideo user ID 17.2.10	M	LV-E	3-x
#7A	MCVideo remote push call recipient user	MCVideo user ID 17.2.10	O	TLV-E	3-x
#7B	MCVideo remote push call recipient group	MCVideo group ID 17.2.5	O	TLV-E	3-x
#20	Reason	Reason 17.2.8	O	TV	2

17.2 General message format and information elements coding

17.2.1 General

The MONP MCVideo message is transported in a MONP MCVIDEO MESSAGE CARRIER message defined in 3GPP TS 24.379 [40]. Each MONP MCVideo message consists of a series of information elements. A MONP MCVideo message consists of the following parts:

The least significant bit of a field is represented by the lowest numbered bit of the highest numbered octet of the field. When the field extends over more than one octet, the order of bit values progressively decreases as the octet number increases.

Figure 17.2.1-1 shows an example of a field where the most significant bit of the field is marked MSB and the least significant bit of the field is marked LSB.

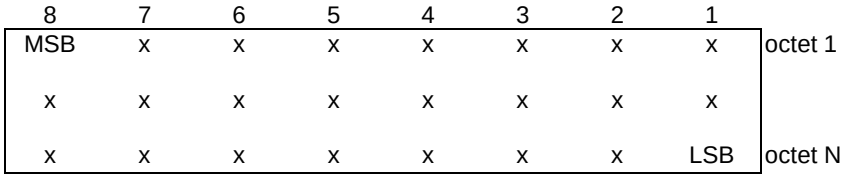

Figure 17.2.1-1: Example of bit ordering of a field

Within the protocols defined in the present document, the message consists of the following parts:

a) message type information element; and

b) other information elements, as required.

The organization of a message is illustrated in the example shown in Figure 17.2.1-2.

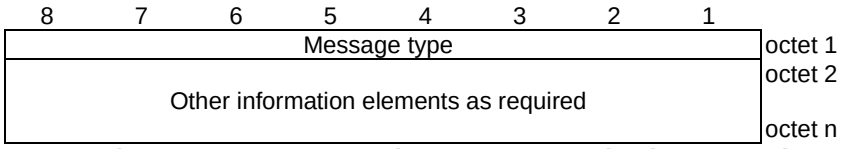

Figure 17.2.1-2: General message organization example

Unless specified otherwise in the message descriptions of clause 17.1, a particular information element shall not be present more than once in a given message.

The sending entity shall set value of a spare bit to zero. The receiving entity shall ignore value of a spare bit

The sending entity shall not set a value of an information element to a reserved value. The receiving entity shall discard message containing an information element set to a reserved value.

17.2.2 Message type

The purpose of the Message type information element is to identify the type of the message.

The value part of the Message type information element is coded as shown in Table 17.2.2-1.

The Message type information element is a type 3 information element with a length of 1 octet.

Table 17.2.2-1: Message types

Bits 8	7	6	5	4	3	2	1	
1	0	0	0	0	0	0	1	GROUP CALL PROBE
1	0	0	0	0	0	1	0	GROUP CALL ANNOUNCEMENT
1	0	0	0	0	0	1	1	GROUP CALL ACCEPT
1	0	0	0	0	1	0	0	GROUP CALL EMERGENCY END
1	0	0	0	0	1	0	1	GROUP CALL IMMINENT PERIL END
1	0	0	0	0	1	1	0	GROUP CALL BROADCAST
1	0	0	0	0	1	1	1	GROUP CALL BROADCAST END
1	0	0	0	1	0	0	0	PRIVATE CALL SETUP REQUEST
1	0	0	0	1	0	0	1	PRIVATE CALL RINGING
1	0	0	0	1	0	1	0	PRIVATE CALL ACCEPT
1	0	0	0	1	0	1	1	PRIVATE CALL REJECT
1	0	0	0	1	1	0	0	PRIVATE CALL RELEASE
1	0	0	0	1	1	0	1	PRIVATE CALL RELEASE ACK
1	0	0	0	1	1	1	0	PRIVATE CALL ACCEPT ACK
1	0	0	0	1	1	1	1	GROUP EMERGENCY ALERT
1	0	0	1	0	0	0	0	GROUP EMERGENCY ALERT ACK
1	0	0	1	0	0	0	1	GROUP EMERGENCY ALERT CANCEL
1	0	0	1	0	0	1	0	GROUP EMERGENCY ALERT CANCEL ACK
1	0	0	1	0	0	1	1	PRIVATE REMOTE VIDEO PUSH REQUEST
1	0	0	1	0	1	0	0	GROUP REMOTE VIDEO PUSH REQUEST
1	0	0	1	0	1	0	1	VIDEO PUSH TRYING RESPONSE
1	0	0	1	0	1	1	0	NOTIFY VIDEO PUSH

All other values are reserved.

17.2.3 Call identifier

The purpose of the Call identifier information element is to uniquely identify the call.

The Call identifier information element is coded as shown in Figure 17.2.3-1 and Table 17.2.3-1.

The Call identifier information element is a type 3 information element with a length of 2 octets.

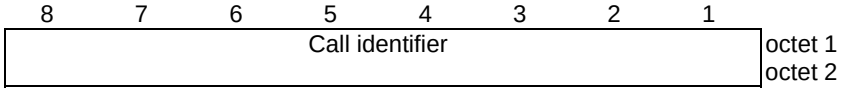

Figure 17.2.3-1: Call identifier information element

Table 17.2.3-1: Call identifier information element

Call identifier value (octet 1 to 2) The Call identifier contains a number uniquely identifying the call.

17.2.4 Refresh interval

The refresh interval information identifier is used to indicate the minimum time period between successive periodic messages;

The Refresh interval information element is coded as shown in Figure 17.2.4-1 and Table 17.2.4-1.

The Refresh interval information element is a type 3 information element with a length of 2 octets.

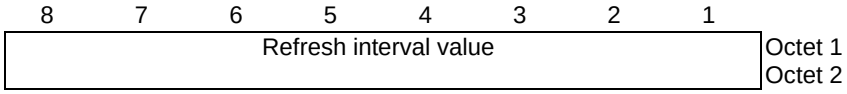

Figure 17.2.4-1: Refresh interval

Table 17.2.4-1: Refresh interval information element

Refresh interval value (octet 1 to 2) The Refresh interval contains a number denoting the minimum time interval (milliseconds) between two successive periodic announcements.

17.2.5 MCVideo group ID

The MCVideo group ID information element is used to indicate the destination MCVideo group identifier;

The MCVideo group ID information element is coded as shown in Figure 17.2.5-1 and Table 17.2.5-1.

The MCVideo group ID information element is a type 6 information element.

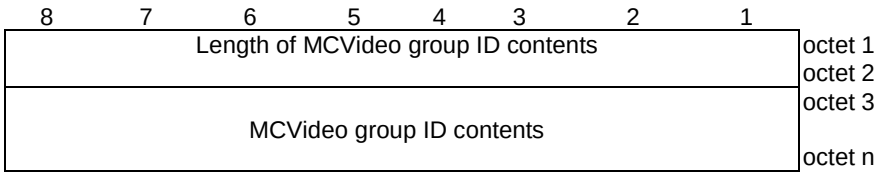

Figure 17.2.5-1: MCVideo group ID information element

Table 17.2.5-1: MCVideo group ID information element

MCVideo group ID is contained in octet 3 to octet n; Max value of 65535 octets.

17.2.6 SDP

The purpose of the SDP information element is to contain SDP message.

The SDP information element is coded as shown in Figure 17.2.6-1 and Table 17.2.6-1.

The SDP information element is a type 6 information element.

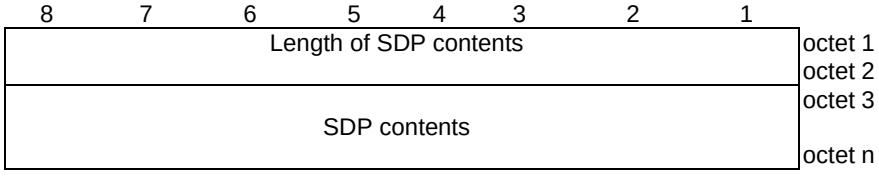

Figure 17.2.6-1: SDP information element

Table 17.2.6-1: SDP information element

SDP message container contents (octet 3 to octet n); Max value of 65535 octets. This information element contains SDP message as defined in Section 10.2.1.1.2 or 11.2.1.1.2.

17.2.7 Commencement mode

The purpose of the Commencement mode information element is to identify the type of the commencement mode of the private call.

The value part of the Commencement mode information element is coded as shown in Table 17.2.7-1.

The Commence mode information element is a type 3 information element with a length of 1 octet.

Table 17.2.7-1: Commencement mode

Bits 8 7 6 5 4 3 2 1	
0 0 0 0 0 0 0 0	AUTOMATIC COMMENCEMENT MODE
0 0 0 0 0 0 0 1	MANUAL COMMENCEMENT MODE
All other values are reserved.	

17.2.8 Reason

The purpose of the Reason information element is to indicate the reason of the reject.

The Reason information element is coded as shown in figure 17.2.8-1.

The Reason information element is a type 3 information element.

8	7	6	5	4	3	2	1	
Reason IEI								octet 1

Figure 17.2.8-1: Reason information element

Table 17.2.8-1: Reason type

Bits 8 7 6 5 4 3 2 1	
0 0 0 0 0 0 0 0	REJECT
0 0 0 0 0 0 0 1	MEDIA FAILURE
0 0 0 0 0 0 1 0	BUSY
0 0 0 0 0 0 1 1	E2E SECURITY CONTEXT FAILURE
0 0 0 0 0 1 0 0	FAILED
All other values are reserved.	

17.2.9 Confirm mode indication

The purpose of the Confirm mode indication information element is to indicate that the terminating MCVideo client is expected to confirm call acceptance.

The Confirm mode indication information element is coded as shown in figure 17.2.9-1.

The Confirm mode indication information element is a type 2 information element.

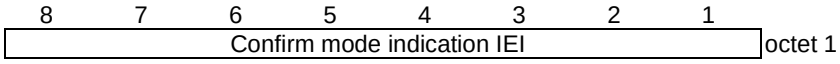

Figure 17.2.9-1: Confirm mode indication information element

17.2.10 MCVideo user ID

The MCVideo user ID information element is used to indicate an MCVideo user ID.

The MCVideo user ID information element is coded as shown in Figure 17.2.10-1 and Table 17.2.10-1.

The MCVideo user ID information element is a type 6 information element.

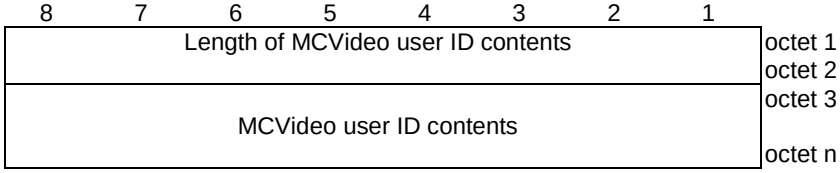

Figure 17.2.10-1: MCVideo user ID information element

Table 17.2.10-1: MCVideo user ID information element

MCVideo user ID is contained in octet 3 to octet n; Max value of 65535 octets.

17.2.11 Call type

The purpose of the Call type information element is to identify the type of the call.

The value part of the Call type information element is coded as shown in Table 17.2.11-1.

The Call type information element is a type 3 information element with a length of 1 octet.

Table 17.2.11-1: Call type

Bits 8 7 6 5 4 3 2 1	
0 0 0 0 0 0 0 1	BASIC GROUP CALL
0 0 0 0 0 0 1 0	BROADCAST GROUP CALL
0 0 0 0 0 0 1 1	EMERGENCY GROUP CALL
0 0 0 0 0 1 0 0	IMMINENT PERIL GROUP CALL
0 0 0 0 0 1 0 1	PRIVATE CALL
0 0 0 0 0 1 1 0	PRIVATE VIDEO PUSH CALL
All other values are reserved.	

17.2.12 User location

The User location information element is used to indicate the current location of the MCVideo client;

The User location information element is coded as shown in Figure 17.2.12-1 and Table 17.2.12-1.

The User location information element is a type 6 information element.

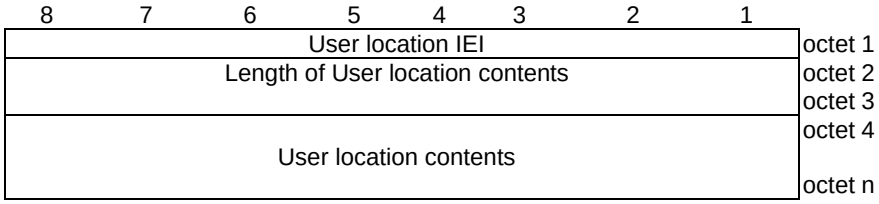

Figure 17.2.12-1: User location information element

Table 17.2.12-1: User location information element

User location is contained in octet 4 to octet n; Max value of 65535 octets.

The User location information element contains the LocationInfo structure defined in clause 7.4 of 3GPP TS 29.199-9 [9].

17.2.13 Organization name

The Organization name information element is used to indicate the name of the organization to which the user belongs.

The Organization name information element is coded as shown in Figure 17.2.13-1 and Table 17.2.13-1.

The Organization name information element is a type 6 information element.

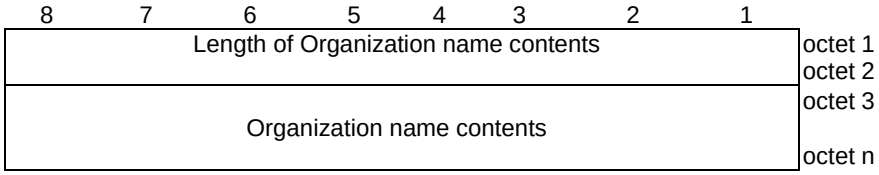

Figure 17.2.13-1: Organization name information element

Table 17.2.13-1: Organization name information element

Organization name is contained in octet 3 to octet n; Max value of 65535 octets.

17.2.14 Call start time

The Call start time information element is used to indicate the UTC time when a call was started.

The Call start time information element is coded as shown in Figure 17.2.14-1 and Table 17.2.14-1.

The Call start time information element is a type 3 information element with a length of 5 octets.

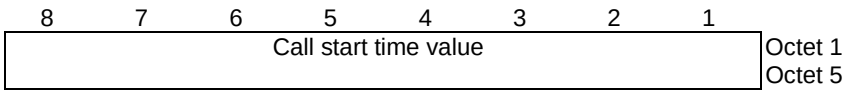

Figure 17.2.14-1: Call start time value

Table 17.2.14-1: Call start time value

Call start time value (octet 1 to 5) The Call start time value is an unsigned integer containing UTC time of the time when a call was started, in seconds since midnight UTC of January 1, 1970 (not counting leap seconds).

17.2.15 Last call type change time

The Last call type change time information identifier is used to indicate the last UTC time when a call priority was changed.

The Last call type change time information element is coded as shown in Figure 17.2.15-1 and Table 17.2.15-1.

The Last call type change time information element is a type 3 information element with a length of 5 octets.

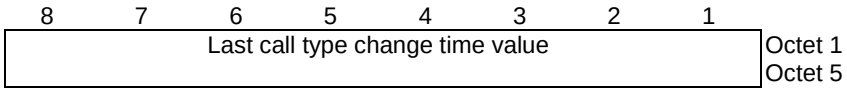

Figure 17.2.15-1: Last call type change time value

Table 17.2.15-1: Last call type change time value

Last call type change time (octet 1 to 5) The Last call type change time value is an unsigned integer containing UTC time of the time when a call priority was changed, in seconds since midnight UTC of January 1, 1970 (not counting leap seconds).

17.2.16 Probe response

The purpose of the probe response information element is to indicate that the GROUP CALL ANNOUNCEMENT message was sent in response of a GROUP CALL PROBE message.

The probe response information element is coded as shown in figure 17.2.16-1.

The probe response is a type 2 information element.

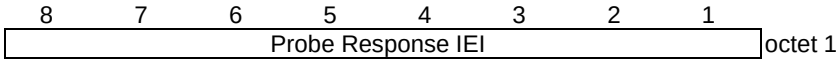

Figure 17.2.16-1: Probe response information element

17.2.17 Video Information

The Video Information IE is used to indicate the source (user/group) of the video being pushed.

The Video Information IE is coded as shown in Figure 17.2.17-1, Table 17.2.17-1 and Table 17.2.17-2.

The Video Information IE is a type 6 information element.

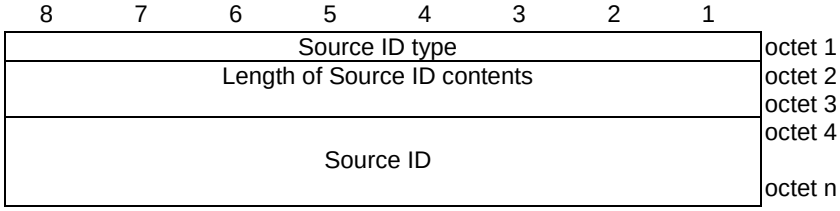

Figure 17.2.17-1: Video Information IE

Table 17.2.17-1: Source ID type

Bits 8 7 6 5 4 3 2 1	
0 0 0 0 0 0 0 0	USER ID
0 0 0 0 0 0 0 1	GROUP ID
All other values are reserved.	

Table 17.2.17-2: Source ID contents

MCVideo user ID/MCVideo group ID is contained in octet 4 to octet n; Max value of 65535 octets.

17.2.18 Result

The purpose of the Result information element is to indicate the result of the remote video push request.

The Result information element is coded as shown in figure 17.2.18-1.

The Result information element is a type 3 information element.

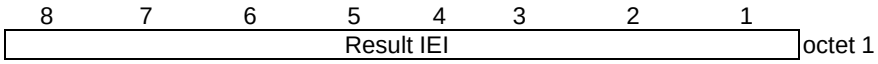

Figure 17.2.18-1: Result information element

Table 17.2.18-1: Result type

Bits 8 7 6 5 4 3 2 1	
0 0 0 0 0 0 0 0	SUCCESS
0 0 0 0 0 0 0 1	FAILURE
All other values are reserved.	

18 Location procedures

18.1 General

If the participating MCVideo function needs to obtain location information, the participating MCVideo function configures the MCVideo client upon successful service authorization. The configuration contains information the MCVideo client uses to set up filter criteria for when the MCVideo client shall send location reports to the participating MCVideo function.

The participating MCVideo function can also explicitly request the MCVideo client to send a location report.

The MCVideo client will, based on the received configuration or when explicitly requested, send location reports.

The location information is used by the participating MCVideo function to determine whether to use MBMS bearers or not as described in clause 16.

18.2 Participating MCVideo function location procedures

18.2.1 General

The participating MCVideo function has procedures to:

- configure the location reporting at the UE;
- request the UE to report the location of the UE; and
- receive a location information report from the UE.

18.2.2 Location reporting configuration

The participating MCVideo function may configure the location reporting in the MCVideo client by generating a SIP MESSAGE request in accordance with 3GPP TS 24.229 [11] and IETF RFC 3428 [17]. The participating MCVideo function:

1) shall include a Request-URI set to the URI corresponding to the identity of the MCVideo client;
2) shall include an Accept-Contact header field with the media feature tag g.3gpp.icsi-ref set to the value "urn:urn-7:3gpp-service.ims.icsi.mcvideo" along with parameters "require" and "explicit" in accordance with IETF RFC 3841 [20];
3) shall include an application/vnd.3gpp.mcvideo-info+xml MIME body with an <mcvideo-request-uri> element containing the MCVideo ID of the MCVideo user to receive the configuration;
4) shall include an application/vnd.3gpp.mcvideo-location-info+xml MIME body with the <Configuration> element contained in the <location-info> root element set to the desired configuration;
5) shall include the TriggerId attribute where defined for the sub-elements defining the trigger criterion;
6) shall include the public service identity of the participating MCVideo function in the P-Asserted-Identity header field;
7) shall include a P-Asserted-Service header field with the value "urn:urn-7:3gpp-service.ims.icsi.mcvideo"; and
8) shall send the SIP MESSAGE request as specified in 3GPP TS 24.229 [11].

18.2.3 Location information request

If the participating MCVideo function needs to request the MCVideo client to report its location, the participating MCVideo functions shall generate a SIP MESSAGE request in accordance with 3GPP TS 24.229 [11] and IETF RFC 3428 [17]. The participating MCVideo function:

1) shall include a Request-URI set to the URI corresponding to the identity of the MCVideo client;
2) shall include an Accept-Contact header field with the media feature tag g.3gpp.icsi-ref set to the value "urn:urn-7:3gpp-service.ims.icsi.mcvideo" along with parameters "require" and "explicit" in accordance with IETF RFC 3841 [20];
3) shall include an application/vnd.3gpp.mcvideo-info+xml MIME body with an <mcvideo-request-uri> element containing the MCVideo ID of the MCVideo user;
4) shall include an application/vnd.3gpp.mcvideo-location-info+xml MIME body with a <Request> element contained in the <location-info> root element;
5) shall include a P-Asserted-Service header field with the value "urn:urn-7:3gpp-service.ims.icsi.mcvideo"; and
6) shall send the SIP MESSAGE request as specified in 3GPP TS 24.229 [11].

18.2.4 Location information report

If the participating MCVideo function receives a SIP request containing:

1) a Content-Type header field set to "application/vnd.3gpp.mcvideo-location-info+xml"; and

2) an application/vnd.3gpp.mcvideo-location-info+xml MIME body with a <Report> element included in the <location-info> root element;

then the participating MCVideo function shall authorise the location report based on the MCVideo ID received. If the MCVideo user is authorised to send a location report the participating MCVideo function:

1) shall use the location information as needed;

2) shall follow the procedure of clause 6.3.3.1.20, if the MCVideo client has entered into or exited from an emergency alert area; and

3) shall follow the procedure of clause 6.3.3.1.21, if the MCVideo client has entered into or exited from a group geographic area.

NOTE: The <Report> element contains the event triggering identity in the location information report from the UE, and can contain location information.

18.2.5 Abnormal cases

Upon receipt of a SIP request:

1) where the P-Asserted-Identity identifies a public user identity not associated with an MCVideo user served by the participating MCVideo function; or

2) with a MIME body with Content-Type header field set to "application/vnd.3gpp.mcvideo-info+xml" and with a <mcvideo-request-URI> element containing an MCVideo ID that identifies an MCVideo user served by the participating MCVideo function;

then, when the SIP request contains:

1) an Accept-Contact header field with the g.3gpp.mcvideo media feature tag;

2) an Accept-Contact header field with the g.3gpp.icsi-ref media-feature tag with the value of "urn:urn-7:3gpp-service.ims.icsi.mcvideo"; and

3) an application/vnd.3gpp.mcvideo-location-info+xml MIME body containing a <Request> element or a <Configuration> element;

the participating MCVideo function shall remove the application/vnd.3gpp.mcvideo-location-info+xml MIME body when sending a SIP request.

18.3 MCVideo client location procedures

18.3.1 General

The MCVideo client sends a location report when one of the trigger criteria is fulfilled or when it receives a request from the participating MCVideo function to send a location report. To send the location report the MCVideo client can use an appropriate SIP message that it needs to send for other reasons, or it can include the location report in a SIP MESSAGE request.

To send a location report, the MCVideo client includes in the SIP MESSAGE request an application/vnd.3gpp.mcvideo-location-info+xml MIME body as specified in clause F.3. The MCVideo client populates the elements in accordance with its reporting configuration. Further location information may also be included in the P-Access-Network-Info header field.

18.3.2 Location reporting configuration

Upon receiving a SIP MESSAGE request containing:

1) an Accept-Contact header field with the media feature tag g.3gpp.icsi-ref set to the value "urn:urn-7:3gpp-service.ims.icsi.mcvideo";

2) a Content-Type header field set to "application/vnd.3gpp.mcvideo-location-info+xml"; and

3) an application/vnd.3gpp.mcvideo-location-info+xml MIME body with a <Configuration> root element included in the <location-info> root element;

then the MCVideo client:

1) shall store the contents of the <Configuration> elements;

2) shall set the location reporting triggers accordingly; and

3) shall start the minimumReportInterval timer.

18.3.3 Location information request

Upon receiving a SIP MESSAGE request containing

1) an Accept-Contact header field with the media feature tag g.3gpp.icsi-ref set to the value "urn:urn-7:3gpp-service.ims.icsi.mcvideo";

2) a Content-Type header field set to "application/vnd.3gpp.mcvideo-location-info+xml"; and

3) an application/vnd.3gpp.mcvideo-location-info+xml MIME body with a <Request> element included in the <location-info> root element;

then the MCVideo client:

1) shall send a location report as specified in clause 18.3.4; and

2) shall reset the minimumReportInterval timer.

18.3.4 Location information report

18.3.4.1 Report triggering

If a location reporting trigger fires the MCVideo client checks if the minimumReportInterval timer is running. If the timer is running the MCVideo client waits until the timer expires. When the minimumReportInterval timer expires, the MCVideo client:

1) shall, if any of the reporting triggers are still true, send a location information report as specified in clause 18.3.4.2.

If the MCVideo client receives a location information request as specified in clause 18.3.3, the MCVideo client shall send a location report as specified in clause 18.3.4.2.

18.3.4.2 Sending location information report

If the MCVideo client needs to send a SIP request for other reasons (e.g. a SIP MESSAGE request containing an MBMS listening report as described in clause 16), the MCVideo client:

1) shall include an application/vnd.3gpp.mcvideo-location-info+xml MIME body and in the <location-info> root element the MCVideo client shall include:

   a) a <Report> element and if the Report was triggered by a location request include the <ReportID> attribute set to the value of the <RequestID> attribute in the received Request;

b) <TriggerId> child elements, where each element is set to the value of the <Trigger-Id> attribute associated with the trigger that have fired; and

c) the location reporting elements corresponding to the triggers that have fired;

2) shall set the minimumReportInterval timer to the minimumReportInterval time and start the timer; and

3) shall reset all triggers.

If the MCVideo client does not need to send a SIP request for other reasons, the MCVideo client shall generate a SIP MESSAGE request in accordance with 3GPP TS 24.229 [11] and IETF RFC 3428 [17]. The MCVideo client;

1) shall include in the Request-URI, the SIP URI received in the P-Asserted-Identity header field in the received SIP MESSAGE request for location report configuration;

2) shall include a Content-Type header field set to "application/vnd.3gpp.mcvideo-location-info+xml";

3) shall include an application/vnd.3gpp.mcvideo-location-info+xml MIME body and in the <location-info> root element include:

a) a <Report> element and if the Report was triggered by a location request include the <ReportID> attribute set to the value of the <RequestID> attribute in the received Request;

b) a <TriggerId> child element set to the value of each <Trigger-Id> value of the triggers that have fired; and

c) the location reporting elements corresponding to the triggers that have fired;

4) shall include an Accept-Contact header field with the media feature tag g.3gpp.mcvideo along with parameters "require" and "explicit" in accordance with IETF RFC 3841 [20];

5) shall set the minimumReportInterval timer to the minimumReportInterval time and start the timer;

6) shall reset all triggers; and

7) shall send the SIP MESSAGE request as specified in 3GPP TS 24.229 [11].

19 MCVideo Service Continuity

19.1 General

This clause describes the procedures for service continuity of an ongoing SIP session supporting an MCVideo private call or MCVideo group call when:

- the MCVideo UE (referred to as the remote UE) is connected to the network via E-UTRAN and decides to connect to a UE-to-network relay, e.g. because it realises that it is losing connection to the network and wants to ensure seamless service; and

- the remote UE is connected to the network via the UE-to-network-relay and decides to disconnect from the UE-to-network relay, e.g. because the remote UE realises that it is losing connection to UE-to-network relay or because the LTE-Uu link quality goes above a certain threshold, and decides to connect to the network via E-UTRAN for seamless service.

MCVideo service continuity follows the principles of 3GPP TS 24.237 [60] for PS-PS service continuity. In particular:

1) the SIP session is anchored at a Service Centralisation and Continuity Application Server (SCC AS) before and after the handover. This requires that initial filter criteria is configured to ensure that the SCC AS is in the registration path, is the first application server in the path of an originating session, and the last AS in the path of a terminating session;

2) the remote UE is an SC UE that supports PS-PS access transfer as per 3GPP TS 24.237 [60]; and

3) the remote UE is either configured with a static PS to PS STI as specified in 3GPP TS 24.216 [73] that it uses when initiating the session transfer request, or it uses a dynamic PS to PS STI which is the URI contained in the

Contact header field returned at the creation of the dialog over the Source Access Leg, as specified in 3GPP TS 24.237 [60].

19.2 Service continuity from on-network MCVideo service to UE-to-network relay MCVideo service

19.2.1 Remote UE

When performing service continuity from on-network MCVideo service to UE-to-network relay MCVideo service, the remote UE:

1) shall perform ProSe UE-to-network relay discovery over PC5 as specified in clause 10A of 3GPP TS 24.334 [59];

NOTE 1: Depending on the model (A or B) used for discovery as specified in 3GPP TS 24.334 [59], the remote UE can perform UE-to-network relay discovery while still in coverage (when model A is used), or while still in coverage if the LTE-Uu link quality drops below a certain threshold (when model B is used).

NOTE 2: As part of the discovery process, service authorisation is performed as specified in 3GPP TS 24.334 [59]. The UE-to-network relay is provisioned with relay service code(s) associated with allowed MCVideo group(s) as specified in 3GPP TS 24.483 [4] and 3GPP TS 24.484 [25]. To find a permitted UE-to-network relay for group communications, a remote UE is provisioned with the relay service code(s) associated with the MCVideo group(s) which the MCVideo user is part of, in the MCVideo group configuration MO as specified in 3GPP TS 24.483 [4].

2) shall select a suitable UE-to-network relay by performing the UE-to-network relay selection procedure specified in clause 10A.2.12 of 3GPP TS 24.334 [59];

3) shall establish a direct link to the relay as specified in clause 10.4.2 of 3GPP TS 24.334 [59];

NOTE 3: As part of this process the remote UE is assigned a /64 IPv6 Prefix by the relay.

4) shall initiate IMS registration over the UE-to-network relay target access leg by following the procedures in clause 10.2.0 of 3GPP TS 24.237 [60];

NOTE 4: As part of this process the remote UE needs to discover the P-CSCF address to connect to via the UE-to-network relay. The remote UE either uses mechanism I or mechanism III of clause 9.2.1 in 3GPP TS 24.229 [11] to discover the P-CSCF address. The details of how mechanism I or mechanism III are used to discover the P-CSCF address are not covered by the present document.

5) shall initiate session transfer by following the procedures specified in clause 10.2.1 of 3GPP TS 24.237 [60];

6) after successful session transfer if MCVideo content is being distributed on the target side using MBMS bearers, shall send a MBMS bearer listening status report procedure to the participating MCVideo function by performing the procedures in clause 16; and

NOTE 5: Upon receiving the MBMS bearer listening status from an MCVideo client indicating that the MCVideo UE is now listening to a MBMS subchannel, the participating MCVideo function performs the procedures in clause 16 to switch to MBMS bearer.

7) after successful session transfer if the remote UE still has an connection in the source access, may perform IMS de-registration of the contact address of the IMS public user identity registered on the source access leg by following the procedures in 3GPP TS 24.229 [11].

19.2.2 SCC AS

The SCC AS follows the procedures in clause 10.3.2 of 3GPP TS 24.237 [60].

19.3 Service continuity from UE-to-network relay MCVideo service to on-network MCVideo service

19.3.1 Remote UE

When performing access transfer between UE-to-network relay MCVideo service and on-network MCVideo service, the remote UE:

1) shall initiate IMS registration over the on-network target access leg by following the procedures in clause 10.2.0 of 3GPP TS 24.237 [60]; and

NOTE: The remote UE uses option II procedures for P-CSCF discovery as defined in clause L.2.2.1 of 3GPP TS 24.229 [11] to discover the P-CSCF address when connecting to EPC.

2) follows the procedures in steps 5), 6) and 7) of clause 14.A.2.1.

19.3.2 SCC AS

The SCC AS follows the procedures in clause 19.2.2.

20 Functional alias

20.1 General

Clause 20.2 contains the procedures for management of functional alias at the MCVideo client, the MCVideo server serving the MCVideo user and the MCVideo server owning the functional alias.

Clause 20.3 describes the coding used for management of functional aliases.

20.2 Procedures

20.2.1 MCVideo client procedures

20.2.1.1 General

The MCVideo client procedures consist of:

- a functional alias status change procedure;
- a functional alias status determination procedure; and
- a location based functional alias status change procedure.

In order to obtain information about success or rejection of changes triggered by the functional alias status change procedure for an MCVideo user, the MCVideo client needs to initiate the functional alias status determination procedure for the MCVideo user before starting the functional alias status change procedure for the MCVideo user.

20.2.1.2 Functional alias status change procedure

In order:

- to indicate that an MCVideo user requests to activate one or more functional aliases;
- to indicate that the MCVideo user requests to deactivate one or more functional aliases;

- to refresh indication of an MCVideo user interest in one or more functional aliases due to near expiration of the expiration time of a functional alias with the status set to the "activated" state received in a SIP NOTIFY request in clause 20.2.1.3;

- to indicate that the MCVideo client entering into or exiting from a location area triggers one or more functional aliases to be activated;

- to indicate that the MCVideo client entering into or exiting from a location area triggers one or more functional aliases to be deactivated; or

- any combination of the above;

the MCVideo client shall generate a SIP PUBLISH request according to TS 24.229 [11], IETF RFC 3903 [12], and IETF RFC 3856 [13].

When the MCVideo user requests to deactivate a functional alias, the MCVideo client shall first check the <manual-deactivation-not-allowed-if-location-criteria-met> element within the <anyExt> element of the <entry> element corresponding to the functional alias within the <FunctionalAliasList> list element of the <anyExt> element of the <OnNetwork> element of the MCVideo user profile document (see the MCVideo user profile document in TS 24.484 [12]). If the functional alias has been activated due to a location area trigger and the <manual-deactivation-not-allowed-if-location-criteria-met> element is set to a value of "true", the MCVideo client shall suppress the MCVideo user's request.

NOTE 1: If the request is suppressed, a notification message can be displayed to the user.

In the SIP PUBLISH request, the MCVideo client:

1) shall set the Request-URI to the public service identity identifying the originating participating MCVideo function serving the MCVideo user;

2) shall include an application/vnd.3gpp.MCVideo-info+xml MIME body. In the application/vnd.3gpp.MCVideo-info+xml MIME body, the MCVideo client shall include the <mcvideo-request-uri> element set to the MCVideo ID of the MCVideo user;

3) shall include the ICSI value "urn:urn-7:3gpp-service.ims.icsi.mcvideo" (coded as specified in TS 24.229 [11]), in a P-Preferred-Service header field according to IETF RFC 6050 [14];

4) if the MCVideo client requests to activate one or more functional aliases, shall set the Expires header field according to IETF RFC 3903 [12], to 4294967295;

NOTE 2: 4294967295, which is equal to 2^{32}-1, is the highest value defined for Expires header field in IETF RFC 3261 [15].

5) if the MCVideo client requests to deactivate one or more functional aliases, shall set the Expires header field according to IETF RFC 3903 [12], to zero; and

NOTE 3: Activation and deactivation of functional alias cannot be performed with the same PUBLISH request.

6) shall include an application/pidf+xml MIME body indicating per-user functional alias information according to clause 20.3.1. In the MIME body, the MCVideo client:

   a) shall include all functional aliases where the MCVideo user requests activation for the MCVideo ID;

   b) shall include the MCVideo client ID of the targeted MCVideo client;

   c) shall not include the "status" attribute and the "expires" attribute in the <functionalalias> element;

   d) if the MCVideo client has received an indication that take over of a functional alias is possible and intends to take over a functional alias, shall include a <take-over> child element set to "true"; and

   e) shall set the <p-id-fa> child element of the <presence> root element to a globally unique value.

The MCVideo client shall send the SIP PUBLISH request according to TS 24.229 [11].

20.2.1.3 Functional alias status determination procedure

NOTE 1: The MCVideo UE also uses this procedure to determine which functional alias have been successfully activated for the MCVideo ID.

In order to discover functional aliases:

1) which are activated for the MCVideo user; or

2) which another MCVideo user has activated;

the MCVideo client shall generate an initial SIP SUBSCRIBE request according to TS 24.229 [11], IETF RFC 3856 [13], and IETF RFC 6665 [16].

In the SIP SUBSCRIBE request, the MCVideo client:

1) shall set the Request-URI to the public service identity identifying the originating participating MCVideo function serving the MCVideo user;

2) shall include an application/vnd.3gpp.mcvideo-info+xml MIME body. In the application/vnd.3gpp.mcvideo-info+xml MIME body, the MCVideo client shall include:

   a) the <mcvideo-request-uri> element set to the MCVideo ID of the targeted MCVideo user; and

   b) the <request-type> element in the <anyExt> element of the <mcvideo-Params> element of the <mcvideoinfo> element set to the value "functional-alias-status-determination";

3) shall include the ICSI value "urn:urn-7:3gpp-service.ims.icsi.mcvideo" (coded as specified in TS 24.229 [11]), in a P-Preferred-Service header field according to IETF RFC 6050 [14];

4) if the MCVideo client wants to receive the current status and later notification, shall set the Expires header field according to IETF RFC 6665 [16], to 4294967295;

NOTE 2: 4294967295, which is equal to 2^{32}-1, is the highest value defined for Expires header field in IETF RFC 3261 [15].

5) if the MCVideo client wants to fetch the current state only, shall set the Expires header field according to IETF RFC 6665 [16], to zero;

6) shall include an Events header field set to "presence"; and

7) shall include an Accept header field containing the application/pidf+xml MIME type.

In order to re-subscribe or de-subscribe, the MCVideo client shall generate an in-dialog SIP SUBSCRIBE request according to TS 24.229 [11], IETF RFC 3856 [13], and IETF RFC 6665 [16]. In the SIP SUBSCRIBE request, the MCVideo client:

1) if the MCVideo client wants to receive the current status and later notification, shall set the Expires header field according to IETF RFC 6665 [16], to 4294967295;

NOTE 3: 4294967295, which is equal to 2^{32}-1, is the highest value defined for Expires header field in IETF RFC 3261 [15].

2) if the MCVideo client wants to de-subscribe, shall set the Expires header field according to IETF RFC 6665 [16], to zero;

3) shall include an Events header field set to "presence"; and

4) shall include an Accept header field containing the application/pidf+xml MIME type.

Upon receiving a SIP NOTIFY request according to TS 24.229 [11], IETF RFC 3856 [13], and IETF RFC 6665 [16], if SIP NOTIFY request contains an application/pidf+xml MIME body indicating per-user functional alias information constructed according to clause 20.3.1, then the MCVideo client shall determine the status of the MCVideo user for each functional alias in the MIME body. If the <p-id-fa> child element of the <presence> root element of the application/pidf+xml MIME body of the SIP NOTIFY request is included, the <p-id-fa> element value indicates the SIP PUBLISH request which triggered sending of the SIP NOTIFY request.

If the MCVideo client detected a functional alias activation or deactivation, it shall perform the procedure specified in clause 8.2.1.7.

20.2.1.4 Location based functional alias status change procedure

If a location criterion for functional alias activation or de-activation is met, the MCVideo client shall initiate the functional alias status change procedure as specified in clause 20.2.1.2.

20.2.2 MCVideo server procedures

20.2.2.1 General

The MCVideo server procedures consist of:

- procedures of MCVideo server serving the MCVideo user; and
- procedures of MCVideo server owning the functional alias.

20.2.2.2 Procedures of MCVideo server serving the MCVideo user

20.2.2.2.1 General

The procedures of MCVideo server serving the MCVideo user consist of:

- a receiving functional alias status change from MCVideo client procedure;
- a receiving subscription to functional alias status procedure;
- a sending notification of change of functional alias status procedure;
- a sending functional alias status change towards MCVideo server owning the functional procedure; and
- a functional alias status determination from MCVideo server owning the functional alias procedure.

20.2.2.2.2 Stored information

The MCVideo server shall maintain a list of MCVideo user information entries. The list of the MCVideo user information entries contains one MCVideo user information entry for each served MCVideo ID.

In each MCVideo user information entry, the MCVideo server shall maintain:

1) an MCVideo ID. This field uniquely identifies the MCVideo user information entry in the list of the MCVideo user information entries; and
2) a list of functional alias information entries.

In each functional alias information, the MCVideo server shall maintain:

1) a functional alias ID. This field uniquely identifies the functional alias information entry in the list of the functional alias information entries;
2) a functional alias status;
3) an expiration time;
4) a functional alias p-id-fa; and
5) a next publishing time.

20.2.2.2.3 Receiving functional alias status change from MCVideo client procedure

Upon receiving a SIP PUBLISH request such that:

1) Request-URI of the SIP PUBLISH request contains either the public service identity identifying the originating participating MCVideo function serving the MCVideo user, or the public service identity identifying the terminating participating MCVideo function serving the MCVideo user;

2) the SIP PUBLISH request contains an application/vnd.3gpp.mcvideo-info+xml MIME body containing the<mcvideo-request-uri> element which identifies an MCVideo ID served by the MCVideo server;

3) the ICSI value "urn:urn-7:3gpp-service.ims.icsi.mcvideo" (coded as specified in 3GPP TS 24.229 [11]), in a P-Asserted-Service header field according to IETF RFC 6050 [14];

4) the Event header field of the SIP PUBLISH request contains the "presence" event type; and

5) SIP PUBLISH request contains an application/pidf+xml MIME body indicating per-user functional alias information according to clause 20.3.1;

then the MCVideo server:

1) shall identify the served MCVideo ID in the <mcvideo-request-uri> element of the application/vnd.3gpp.mcvideo-info+xml MIME body of the SIP PUBLISH request;

2) if the Request-URI of the SIP PUBLISH request contains the public service identity identifying the originating participating MCVideo function serving the MCVideo user, shall identify the originating MCVideo ID from public user identity in the P-Asserted-Identity header field of the SIP PUBLISH request;

3) if the Request-URI of the SIP PUBLISH request contains the public service identity identifying the terminating participating MCVideo function serving the MCVideo user, shall identify the originating MCVideo ID in the <mcvideo-calling-user-id> element of the application/vnd.3gpp.mcvideo-info+xml MIME body of the SIP PUBLISH request;

4) if the originating MCVideo ID is different than the served MCVideo ID or the originating MCVideo ID is not authorized to modify functional alias status of the served MCVideo ID, shall send a SIP 403 (Forbidden) response and shall not continue with the rest of the steps;

5) if the Expires header field of the SIP PUBLISH request is not included or has nonzero value lower than 4294967295, shall send a SIP 423 (Interval Too Brief) response to the SIP PUBLISH request, where the SIP 423 (Interval Too Brief) response contains a Min-Expires header field set to 4294967295, and shall not continue with the rest of the steps;

6) if the Expires header field of the SIP PUBLISH request has nonzero value, shall determine the candidate expiration interval to according to IETF RFC 3903 [12];

7) if the Expires header field of the SIP PUBLISH request has zero value, shall set the candidate expiration interval to zero;

8) shall respond with SIP 200 (OK) response to the SIP PUBLISH request according to TS 24.229 [11], IETF RFC 3903 [12]. In the SIP 200 (OK) response, the MCVideo server:

   a) shall set the Expires header field according to IETF RFC 3903 [12], to the candidate expiration time;

9) if the "entity" attribute of the <presence> element of the application/pidf+xml MIME body of the SIP PUBLISH request is different than the served MCVideo ID, shall not continue with the rest of the steps;

10) shall consider an MCVideo user information entry such that:

   a) the MCVideo user information entry is in the list of MCVideo user information entries described in clause 20.2.2.2.2; and

   b) the MCVideo ID of the MCVideo user information entry is equal to the served MCVideo ID;

   as the served MCVideo user information entry;

11) shall consider a copy of the list of the MCVideo functional alias entries of the served MCVideo user information entry as the served list of the MCVideo functional alias information entries;

12) if the candidate expiration interval is nonzero, shall construct the candidate list of the MCVideo functional alias entries as follows:

a) for each functional alias ID which has a functional alias information entry in the served list of the functional alias information entries, such that the expiration time of the functional alias information entry has not expired yet, and which is indicated in a "functionalAliasID" attribute of a <functionalAlias> element of the <status> element of the <tuple> element of the <presence> root element of the application/pidf+xml MIME body of the SIP PUBLISH request:

   i) shall copy the functional alias information entry into a new functional alias information entry of the candidate list of the functional alias information entries;

   ii) if the functional alias status of the functional alias information entry is "deactivating" or "deactivated", shall set the functional alias status of the new functional alias information entry to the "activated" state and shall set the activating p-id-fa of the new functional alias information entry to the value of the <p-id-fa> element of the <presence> root element of the application/pidf+xml MIME body of the SIP PUBLISH request; and

   iii) shall set the expiration time of the new functional alias information entry to the current time increased with the candidate expiration interval;

b) for each functional alias ID which has a functional alias information entry in the served list of the functional alias information entries, such that the expiration time of the functional alias information entry has not expired yet, and which is not indicated in any "functionalAliasID" attribute of the <functionalAlias> element of the <status> element of the <tuple> element of the <presence> root element of the application/pidf+xml MIME body of the SIP PUBLISH request:

   i) shall copy the functional alias information entry into a new functional alias information entry of the candidate list of the functional alias information entries; and

   ii) if the functional alias status of the functional alias information entry is "activated" or "activating":

      - shall set the functional alias status of the new functional alias entry to the "deactivating" state; and

      - shall set the expiration time of the new functional alias information entry to the current time increased with twice the value of timer F; and

c) for each functional alias ID:

   i) which does not have a functional alias information entry in the served list of the functional alias entries; or

   ii) which has a functional alias information entry in the served list of the functional alias information entries, such that the expiration time of the functional alias information entry has already expired;

   and which is indicated in a "functionalAliasID" element of the <functionalAlias> element of the <status> element of the <tuple> element of the <presence> root element of the application/pidf+xml MIME body of the SIP PUBLISH request:

   i) shall add a new functional alias information entry in the candidate list of the functional alias information list for the functional alias ID;

   ii) shall set the functional alias status of the new functional alias information entry to the "activating" state;

   iii) shall set the expiration time of the new functional alias information entry to the current time increased with the candidate expiration interval; and

   iv) shall set the activating p-id-fa of the new functional alias information entry to the value of the <p-id-fa> element of the <presence> root element of the application/pidf+xml MIME body of the SIP PUBLISH request;

13) if the candidate expiration interval is zero, constructs the candidate list of the functional alias information entries as follows:

a) for each functional alias ID which has an entry in the served list of the functional alias information entries:

   i) shall copy the functional alias entry of the served list of the functional alias information into a new functional alias information entry of the candidate list of the functional alias information entries;

ii) shall set the functional alias status of the new functional alias information entry to the "de-activating" state; and

iii) shall set the expiration time of the new functional alias information entry to the current time increased with twice the value of timer F;

14) shall replace the list of the functional alias information entries stored in the served MCVideo user information entry with the candidate list of the functional alias information entries;

15) shall perform the procedures specified in clause 20.2.2.2.6 for the served MCVideo ID and each functional alias:

a) which does not have a functional alias information entry in the served list of the functional alias information entries and which has a functional alias information entry in the candidate list of the functional alias information entries with the functional alias status set to the "activating" state;

b) which has a functional alias information entry in the served list of the functional alias information entries with the expiration time already expired, and which has a functional alias information entry in the candidate list of the functional alias information entries with the functional alias status set to the "activating" state;

c) which has a functional alias information entry in the served list of the functional alias information entries with the functional alias status set to the "deactivating" state or the "deactivated" state and with the expiration time not expired yet, and which has an functional alias information entry in the candidate list of the functional alias information entries with the functional alias status set to the "activating" state; or

d) which has a functional alias information entry in the served list of the functional alias information entries with the functional alias status set to the "activated" state and with the expiration time not expired yet, and which has an functional alias information entry in the candidate list of the functional alias information entries with the functional alias status set to the "deactivating" state;

16) shall identify the handled p-id-fa in the <p-id-fa> child element of the <presence> root element of the application/pidf+xml MIME body of the SIP PUBLISH request; and

17) shall perform the procedures specified in clause 20.2.2.2.5 for the served MCVideo ID.

20.2.2.2.4 Receiving subscription to functional alias status procedure

Upon receiving a SIP SUBSCRIBE request such that:

1) Request-URI of the SIP SUBSCRIBE request contains either the public service identity identifying the originating participating MCVideo function serving the MCVideo user, or the public service identity identifying the terminating participating MCVideo function serving the MCVideo user;

2) the SIP SUBSCRIBE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body containing:

a) the<mcvideo-request-uri> element which identifies an MCVideo ID served by the MCVideo server; and

b) the <request-type> element in the <anyExt> element of the <mcvideo-Params> element of the <mcvideoinfo> element set to the value "functional-alias-status-determination";

3) the ICSI value "urn:urn-7:3gpp-service.ims.icsi.mcvideo" (coded as specified in TS 24.229 [11]), in a P-Asserted-Service header field according to IETF RFC 6050 [14]; and

4) the Event header field of the SIP SUBSCRIBE request contains the "presence" event type;

the MCVideo server:

1) shall identify the served MCVideo ID in the <mcvideo-request-uri> element of the application/vnd.3gpp.mcvideo-info+xml MIME body of the SIP SUBSCRIBE request;

2) if the Request-URI of the SIP SUBSCRIBE request contains the public service identity identifying the originating participating MCVideo function serving the MCVideo user, shall identify the originating MCVideo ID from public user identity in the P-Asserted-Identity header field of the SIP SUBSCRIBE request;

3) if the Request-URI of the SIP SUBSCRIBE request contains the public service identity identifying the terminating participating MCVideo function serving the MCVideo user, shall identify the originating MCVideo

ID in the <mcvideo-calling-user-id> element of the application/vnd.3gpp.mcvideo-info+xml MIME body of the SIP SUBSCRIBE request;

4) if the originating MCVideo ID is different than the served MCVideo ID and the originating MCVideo ID is not authorized to modify functional alias status of the served MCVideo ID, shall send a SIP 403 (Forbidden) response and shall not continue with the rest of the steps; and

5) shall generate a SIP 200 (OK) response to the SIP SUBSCRIBE request according to TS 24.229 [11], IETF RFC 6665 [16].

For the duration of the subscription, the MCVideo server shall notify the subscriber about changes of the information of the served MCVideo ID, as described in clause 20.2.2.2.5.

20.2.2.2.5 Sending notification of change of functional alias status procedure

In order to notify the subscriber about changes of functional aliases of the served MCVideo ID, the MCVideo server:

1) shall consider an MCVideo user information entry such that:

   a) the MCVideo user information entry is in the list of MCVideo user information entries described in clause 20.2.2.2.2; and

   b) the MCVideo ID of the MCVideo user information entry is equal to the served MCVideo ID;

   as the served MCVideo user information entry;

2) shall generate an application/pidf+xml MIME body indicating per-user functional alias information according to clause 20.3.1 and the served list of the MCVideo user information entries with the following clarifications:

   a) the MCVideo server shall not include information from functional alias information entry with the expiration time already expired;

   b) the MCVideo server shall not include information from a functional alias information entry with the functional alias status set to the "deactivated" state;

   c) if this procedures is invoked by procedure in clause 20.2.2.2.3 where the handled p-id-fa value was identified, the MCVideo server shall set the <p-id-fa> child element of the <presence> root element of the application/pidf+xml MIME body of the SIP NOTIFY request to the handled p-id-fa value; and

3) send a SIP NOTIFY request according to 3GPP TS 24.229 [11], and IETF RFC 6665 [16] for the subscription created in clause 20.2.2.2.4. In the SIP NOTIFY request, the MCVideo server shall include the generated application/pidf+xml MIME body indicating per-user functional alias information.

20.2.2.2.6 Sending functional alias status change towards MCVideo server owning the functional alias procedure

NOTE 1: Usage of one SIP PUBLISH request to carry information about change of functional alias state of several MCVideo users served by the same MCVideo server is not supported in this version of the specification.

In order:

- to send an activation request of a served MCVideo ID for a handled functional alias ID;

- to send a deactivation request of a served MCVideo ID for a handled functional alias ID;

- to send a take over request of a served MCVideo ID for a handled functional alias ID due to take over; or

- to send an activation request of a served MCVideo ID for a handled functional alias ID due to near expiration of the previously published information;

the MCVideo server shall generate a SIP PUBLISH request according to TS 24.229 [11], IETF RFC 3903 [12] and IETF RFC 3856 [13]. In the SIP PUBLISH request, the MCVideo server:

1) shall set the Request-URI to the public service identity of the controlling MCVideo function associated with the handled functional alias ID;

NOTE 2: The public service identity can identify the controlling MCVideo function in the local MCVideo system or in an interconnected MCVideo system.

NOTE 3: If the controlling MCVideo function is in an interconnected MCVideo system in a different trust domain, then the public service identity can identify the MCVideo gateway server that acts as an entry point in the interconnected MCVideo system from the local MCVideo system.

NOTE 4: If the controlling MCVideo function is in an interconnected MCVideo system in a different trust domain, then the local MCVideo system can route the SIP request through an MCVideo gateway server that acts as an exit point from the local MCVideo system to the interconnected MCVideo system.

NOTE 5: How the MCVideo server determines the public service identity of the controlling MCVideo function associated with the handled functional alias ID or of the MCVideo gateway server in the interconnected MCVideo system is out of the scope of the present document.

NOTE 6: How the local MCVideo system routes the SIP request through an exit MCVideo gateway server is out of the scope of the present document.

2) shall include an application/vnd.3gpp.mcvideo-info+xml MIME body. In the application/vnd.3gpp.mcvideo-info+xml MIME body, the MCVideo server:

   a) shall include the <mcvideo-request-uri> element set to the handled functional alias ID; and

   b) shall include the <mcvideo-calling-user-id> element set to the served MCVideo ID;

3) shall include the ICSI value "urn:urn-7:3gpp-service.ims.icsi.mcvideo" (coded as specified in TS 24.229 [11]), in a P-Asserted-Service header field according to IETF RFC 6050 [14];

4) if sending an activation request, shall set the Expires header field according to IETF RFC 3903 [12], to 4294967295;

NOTE 7: 4294967295, which is equal to 2^{32}-1, is the highest value defined for Expires header field in IETF RFC 3261 [15].

5) if sending a deactivation request, shall set the Expires header field according to IETF RFC 3903 [12], to zero;

6) shall include a P-Asserted-Identity header field set to the public service identity of the MCVideo server according to 3GPP TS 24.229 [11];

7) shall set the current p-id-fa to a globally unique value;

8) shall consider an MCVideo user information entry such that:

   a) the MCVideo user information entry is in the list of MCVideo user information entries described in clause 20.2.2.2.2; and

   b) the MCVideo ID of the MCVideo user information entry is equal to the served MCVideo ID;

   as the served MCVideo user information entry;

9) for each functional alias information entry such that:

   a) the functional alias information entry has the "activating" functional alias status, the functional alias ID set to the handled functional alias ID, the expiration time has not expired yet and the activating p-id-fa is not set; and

   b) the functional alias information entry is in the list of the functional alias information entries of the served MCVideo user information entry;

   shall set the activating p-id-fa of the functional alias information entry to the current p-id-fa; and

10) shall include an application/pidf+xml MIME body indicating per-functional alias status information constructed according to clause 20.3.1.2. The MCVideo server shall indicate all served MCVideo user IDs, such that:

   a) the functional alias status is set to "activating" with or without "take-over" element or "activated", and the expiration time has not expired yet in a functional alias information entry with the functional alias ID set to the handled functional alias;

b) the functional alias information entry is in the list of the functional alias information entries of an MCVideo user information entry; and

c) the MCVideo user information entry is a served MCVideo user information entry.

The MCVideo server shall set the <p-id-fa> child element of the <presence> root element to the current p-id-fa.

The MCVideo server shall not include the "expires" attribute in the <functionalAlias> element.

NOTE 8: The MCVideo server sets the "status" attribute in the <functionalAlias> element to indicate whether the request is for functional alias take over.

The MCVideo server shall send the SIP PUBLISH request according to 3GPP TS 24.229 [11].

If timer F expires for the SIP PUBLISH request sent for a (de)activation request of served MCVideo ID for the functional alias ID or upon receiving a SIP 3xx, 4xx, 5xx or 6xx response to the SIP PUBLISH request, the MCVideo server:

1) shall remove each functional alias ID entry such that:

a) the functional alias information entry has the functional alias ID set to the handled functional alias ID; and

b) the functional alias information entry is in the list of the functional alias information entries of the served MCVideo user information entry.

20.2.2.2.7 Functional alias status determination from MCVideo server owning functional alias procedure

NOTE 1: Usage of one SIP SUBSCRIBE request to subscribe for notification about change of functional alias state of several MCVideo users served by the same MCVideo server is not supported in this version of the specification.

In order to discover whether a served MCVideo user successfully activated a handled functional alias in the MCVideo server owning the functional alias, the MCVideo server shall generate an initial SIP SUBSCRIBE request according to TS 24.229 [11], IETF RFC 3856 [13], and IETF RFC 6665 [16].

In the SIP SUBSCRIBE request, the MCVideo server:

1) shall set the Request-URI to the public service identity of the controlling MCVideo function associated with the handled functional alias;

NOTE 2: The public service identity can identify the controlling MCVideo function in the local MCVideo system or in an interconnected MCVideo system.

NOTE 3: If the controlling MCVideo function is in an interconnected MCVideo system in a different trust domain, then the public service identity can identify the MCVideo gateway server that acts as an entry point in the interconnected MCVideo system from the local MCVideo system.

NOTE 4: If the controlling MCVideo function is in an interconnected MCVideo system in a different trust domain, then the local MCVideo system can route the SIP request through an MCVideo gateway server that acts as an exit point from the local MCVideo system to the interconnected MCVideo system.

NOTE 5: How the MCVideo server determines the public service identity of the controlling MCVideo function associated with the handled functional alias ID or of the MCVideo gateway server in the interconnected MCVideo system is out of the scope of the present document.

NOTE 6: How the local MCVideo system routes the SIP request through an exit MCVideo gateway server is out of the scope of the present document.

2) shall include an application/vnd.3gpp.mcvideo-info+xml MIME body. In the application/vnd.3gpp.mcvideo-info+xml MIME body, the MCVideo server:

a) shall include the <mcvideo-request-uri> element set to the handled functional alias ID; and

b) shall include the <mcvideo-calling-user-id> element set to the served MCVideo ID;

3) shall include the ICSI value "urn:urn-7:3gpp-service.ims.icsi.mcvideo" (coded as specified in TS 24.229 [11]), in a P-Asserted-Service header field according to IETF RFC 6050 [14];

4) if the MCVideo server wants to receive the current status and later notification, shall set the Expires header field according to IETF RFC 6665 [16], to 4294967295;

NOTE 7: 4294967295, which is equal to 2^{32}-1, is the highest value defined for Expires header field in IETF RFC 3261 [15].

5) if the MCVideo server wants to fetch the current state only, shall set the Expires header field according to IETF RFC 6665 [16], to zero;

6) shall include an Accept header field containing the application/pidf+xml MIME type;

7) shall include an Events header field set to "presence"; and

8) shall include an application/simple-filter+xml MIME body indicating per-user restrictions of presence event package notification information according to clause 20.3.2, indicating the served MCVideo ID.

In order to re-subscribe or de-subscribe, the MCVideo server shall generate an in-dialog SIP SUBSCRIBE request according to TS 24.229 [11], IETF RFC 3856 [13], and IETF RFC 6665 [16]. In the SIP SUBSCRIBE request, the MCVideo server:

1) if the MCVideo server wants to receive the current status and later notification, shall set the Expires header field according to IETF RFC 6665 [16], to 4294967295;

NOTE 8: 4294967295, which is equal to 2^{32}-1, is the highest value defined for Expires header field in IETF RFC 3261 [15].

2) if the MCVideo server wants to de-subscribe, shall set the Expires header field according to IETF RFC 6665 [16], to zero;

3) shall include an Events header field set to "presence"; and

4) shall include an Accept header field containing the application/pidf+xml MIME type.

Upon receiving a SIP NOTIFY request according to TS 24.229 [11], IETF RFC 3856 [13], and IETF RFC 6665 [16], if SIP NOTIFY request contains an application/pidf+xml MIME body indicating per-functional alias information constructed according to clause 20.3.1, then the MCVideo server:

1) for each served MCVideo ID such that the application/pidf+xml MIME body of SIP NOTIFY request contains:

   a) a <tuple> element of the root <presence> element;

   b) the "id" attribute of the <tuple> element indicating the served MCVideo ID;

   c) an <functionalAlias> child element of the <status> element of the <tuple> element; and

   d) the "expires" attribute of the <functionalAlias> element indicating expiration of activation of functional alias;

   perform the following:

   a) if a functional alias information entry exists such that:

      i) the functional alias information entry has the "activating" functional alias status, the functional alias ID set to the handled functional alias ID, and the expiration time has not expired yet;

      ii) the functional alias information entry is in the list of the functional alias information entries of an MCVideo user information entry with the MCVideo ID set to the served MCVideo ID; and

      iii) the MCVideo user information entry is in the list of MCVideo user information entries described in clause 20.2.2.2.2;

      shall set the functional alias status of the functional alias information entry to "activated"; and

      shall set the next publishing time of the functional alias information entry to the current time and half of the time between the current time and the expiration of the functional alias; and

2) for each functional alias information entry such that:

   a) the functional alias information entry has the "activated" functional alias status or the "deactivating" functional alias status, the functional alias ID set to the handled functional alias ID, and the expiration time has not expired yet;

   b) the functional alias information entry is in the list of the functional alias information entries of an MCVideo user information entry with the MCVideo ID set to a served MCVideo ID; and

   c) the MCVideo user information entry is in the list of MCVideo user information entries described in clause 20.2.2.2.2; and

   for which the application/pidf+xml MIME body of SIP NOTIFY request does not contain:

   a) a <tuple> element of the root <presence> element;

   b) the "id" attribute of the <tuple> element indicating the served MCVideo ID; and

   c) an <functionalAlias> child element of the <status> child element of the <tuple> element.

   perform the following:

   a) shall set the functional alias status of the functional alias information entry to "deactivated"; and

   b) shall set the expiration time of the functional alias information entry to the current time; and

3) if a <p-id-fa> element is included in the <presence> root element of the application/pidf+xml MIME body of the SIP NOTIFY request, then for each functional alias information entry such that:

   a) the functional alias information entry has the "activating" functional alias status, the functional alias ID set to the handled functional alias ID, the expiration time has not expired yet and with the activating p-id-fa set to the value of the <p-id-fa> element;

   b) the functional alias information entry is in the list of the functional alias information entries of an MCVideo user information entry with the MCVideo ID set to a served MCVideo ID; and

   d) the MCVideo user information entry is in the list of MCVideo user information entries described in clause 20.2.2.2.2; and

   for which the application/pidf+xml MIME body of SIP NOTIFY request does not contain:

   a) a <tuple> element of the root <presence> element;

   b) the "id" attribute of the <tuple> element indicating the served MCVideo ID; and

   c) an <functionalAlias> child element of the <status> child element of the <tuple> element;

   perform the following:

   a) shall set the functional alias status of the functional alias information entry to "deactivated"; and

   b) shall set the expiration time of the functional alias information entry to the current time.

20.2.2.3 Procedures of MCVideo server owning the functional alias

20.2.2.3.1 General

The procedures of MCVideo server owning the functional alias consist of:

- receiving functional alias status change procedure;
- receiving subscription to functional alias status procedure;
- sending notification of change of functional alias status procedure; and
- modification of functional alias eligibility check procedure.

20.2.2.3.2 Stored information

The MCVideo server shall maintain a list of functional alias information entries.

In each functional alias information entry, the MCVideo server shall maintain:

1) a functional alias ID. This field uniquely identifies the functional alias information entry in the list of the functional alias information entries; and

2) a list of MCVideo user information entries.

In each MCVideo user information entry, the MCVideo server shall maintain:

1) an MCVideo ID. This field uniquely identifies the MCVideo user information entry in the list of the MCVideo user information entries;

2) a take-over possible indication; and

3) an expiration time.

20.2.2.3.3 Receiving functional alias status change procedure

Upon receiving a SIP PUBLISH request such that:

1) Request-URI of the SIP PUBLISH request contains the public service identity of the controlling MCVideo function associated with the served functional alias;

2) the SIP PUBLISH request contains an application/vnd.3gpp.mcvideo-info+xml MIME body containing the <mcvideo-request-uri> element and the <mcvideo-calling-user-id> element;

3) the ICSI value "urn:urn-7:3gpp-service.ims.icsi.mcvideo" (coded as specified in TS 24.229 [11]), in a P-Asserted-Service header field according to IETF RFC 6050 [14];

4) the Event header field of the SIP PUBLISH request contains the "presence" event type; and

5) SIP PUBLISH request contains an application/pidf+xml MIME body indicating per-functional alias information constructed according to clause 20.3.1.2;

then the MCVideo server:

1) shall identify the served functional alias in the <mcvideo-request-uri> element of the application/vnd.3gpp.mcvideo-info+xml MIME body of the SIP PUBLISH request;

2) shall identify the handled MCVideo ID in the <mcvideo-calling-user-id> element of the application/vnd.3gpp.mcvideo-info+xml MIME body of the SIP PUBLISH request;

3) if the Expires header field of the SIP PUBLISH request is not included or has nonzero value lower than 4294967295, shall send a SIP 423 (Interval Too Brief) response to the SIP PUBLISH request, where the SIP 423 (Interval Too Brief) response contains a Min-Expires header field set to 4294967295, and shall not continue with the rest of the steps;

4) if the functional alias does not exist in the MCVideo server, shall reject the SIP PUBLISH request with SIP 403 (Forbidden) response to the SIP PUBLISH request according to 3GPP TS 24.229 [11], IETF RFC 3903 [12] and IETF RFC 3856 [13] and skip the rest of the steps;

4a) if SIP PUBLISH request is for activation of a functional alias then:

   a) if handled MCVideo ID does not match with any of the entries in the <mcvideo-user-list> which contains the MCVideo IDs of MCVideo users which are allowed to activate the functional alias; or

   b) if no local policy exists that authorizes the request by the handled MCVideo ID;

   shall reject the SIP PUBLISH request with SIP 403 (Forbidden) response according to 3GPP TS 24.229 [11], IETF RFC 3903 [12] and IETF RFC 3856 [13] and skip the rest of the steps;

5) if SIP PUBLISH request is for activation of a functional alias and the number of activations for the handled functional alias is equal <max-simultaneous-activations>, shall reject the SIP PUBLISH request with SIP 403 (Forbidden) response to the SIP PUBLISH request according to 3GPP TS 24.229 [11], IETF RFC 3903 [12] and IETF RFC 3856 [13] and skip the rest of the steps;

6) if SIP PUBLISH request is for take over of a functional alias, the MCVideo server shall use the <allow-takeover> and <allow-takeover-functional-alias-other-user> elements to determine if take over is possible. If take over is not possible, the MCVideo server shall reject the SIP PUBLISH request with SIP 403 (Forbidden) response to the SIP PUBLISH request according to TS 24.229 [11], IETF RFC 3903 [12] and IETF RFC 3856 [13] and skip the rest of the steps;

7) shall respond with SIP 200 (OK) response to the SIP PUBLISH request according to TS 24.229 [11], IETF RFC 3903 [12]. In the SIP 200 (OK) response, the MCVideo server:

   a) shall set the Expires header field according to IETF RFC 3903 [12], to the selected expiration time;

8) if the "entity" attribute of the <presence> element of the application/pidf+xml MIME body of the SIP PUBLISH request is different than the served functional alias ID, shall not continue with the rest of the steps;

9) if the handled MCVideo ID is different from the MCVideo ID in the "id" attribute of the <tuple> element of the <presence> root element of the application/pidf+xml MIME body of the SIP PUBLISH request, shall not continue with the rest of the steps;

10) shall consider a functional alias information entry such that:

   a) the functional alias information entry is in the list of functional alias information entries described in clause 20.2.2.3.2; and

   b) the functional alias ID of the functional alias information entry is equal to the served functional alias ID;

   as the served functional alias information entry;

11) if the selected expiration time is zero:

   a) shall remove the MCVideo user information entry such that:

      i) the MCVideo user information entry is in the list of the MCVideo user information entries of the served functional alias information entry; and

      ii) the MCVideo user information entry has the MCVideo ID set to the served MCVideo ID;

12) if the selected expiration time is not zero:

   a) shall consider an MCVideo user information entry such that:

      i) the MCVideo user information entry is in the list of the MCVideo user information entries of the served functional alias information entry; and

      ii) the MCVideo ID of the MCVideo user information entry is equal to the handled MCVideo ID;

      as the served MCVideo user information entry;

   b) if the MCVideo user information entry does not exist:

      i) shall insert an MCVideo user information entry with the MCVideo ID set to the handled MCVideo ID into the list of the MCVideo user information entries of the served functional alias information entry; and

      ii) shall consider the inserted MCVideo user information entry as the served MCVideo user information entry; and

   c) shall set the expiration time in the served MCVideo user information entry according to the selected expiration time;

13) shall identify the handled p-id-fa in the <p-id-fa> child element of the <presence> root element of the application/pidf+xml MIME body of the SIP PUBLISH request; and

14) shall perform the procedures specified in clause 20.2.2.3.5 for the served functional alias ID.

20.2.2.3.4 Receiving subscription to functional alias status procedure

NOTE: Usage of one SIP SUBSCRIBE request to subscribe for notification about change of functional alias state of several MCVideo users served by the same MCVideo server is not supported in this version of the specification.

Upon receiving a SIP SUBSCRIBE request such that:

1) Request-URI of the SIP SUBSCRIBE request contains the public service identity of the controlling MCVideo function associated with the served functional alias;

2) the SIP SUBSCRIBE request contains an application/vnd.3gpp.mcvideo-info+xml MIME body containing the<mcvideo-request-uri> element and the <mcvideo-calling-user-id> element;

3) the ICSI value "urn:urn-7:3gpp-service.ims.icsi.mcvideo" (coded as specified in TS 24.229 [11]), in a P-Asserted-Service header field according to IETF RFC 6050 [14];

4) the Event header field of the SIP SUBSCRIBE request contains the "presence" event type; and

5) the SIP SUBSCRIBE request contains an application/simple-filter+xml MIME body indicating per-user restrictions of presence event package notification information according to clause 20.3.2 indicating the same MCVideo ID as in the <mcvideo-calling-user-id> element of the application/vnd.3gpp.mcvideo-info+xml MIME body of the SIP SUBSCRIBE request;

then the MCVideo server:

1) shall identify the served functional alias ID in the <mcvideo-request-uri> element of the application/vnd.3gpp.mcvideo-info+xml MIME body of the SIP SUBSCRIBE request;

2) shall identify the handled MCVideo ID in the <mcvideo-calling-user-id> element of the application/vnd.3gpp.mcvideo-info+xml MIME body of the SIP SUBSCRIBE request;

3) if the Expires header field of the SIP SUBSCRIBE request is not included or has nonzero value lower than 4294967295, shall send a SIP 423 (Interval Too Brief) response to the SIP SUBSCRIBE request, where the SIP 423 (Interval Too Brief) response contains a Min-Expires header field set to 4294967295, and shall not continue with the rest of the steps;

4) if a functional alias does not exist in the MCVideo server, shall reject the SIP PUBLISH request with SIP 403 (Forbidden) response to the SIP PUBLISH request according to TS 24.229 [11], IETF RFC 3903 [12] and IETF RFC 3856 [13] and skip the rest of the steps;

5) if the handled MCVideo ID based on local policy is not authorized for notifications of the functional alias identified by the served functional alias ID, shall reject the SIP SUBSCRIBE request with SIP 403 (Forbidden) response to the SIP SUBSCRIBE request according to TS 24.229 [11], IETF RFC 3903 [12] and IETF RFC 3856 [13] and skip the rest of the steps; and

6) shall generate a SIP 200 (OK) response to the SIP SUBSCRIBE request according to TS 24.229 [11], IETF RFC 6665 [16].

For the duration of the subscription, the MCVideo server shall notify subscriber about changes of the information of the served MCVideo ID, as described in clause 20.2.2.3.5.

20.2.2.3.5 Sending notification of change of functional alias status procedure

In order to notify the subscriber identified by the handled MCVideo ID about changes of the functional alias status of the served functional alias ID, the MCVideo server:

1) shall consider a functional alias information entry such that:

   a) the functional alias information entry is in the list of functional alias information entries described in clause 20.2.2.3.2; and

   b) the functional alias ID of the functional alias information entry is equal to the served functional alias ID;

2) shall consider an MCVideo user information entry such:

a) the MCVideo user information entry is in the list of the MCVideo user information entries of the served functional alias information entry; and

b) the MCVideo ID of the MCVideo user information entry is equal to the handled MCVideo ID;

as the served MCVideo user information entry;

3) shall generate an application/pidf+xml MIME body indicating per-functional alias information according to clause 20.3.1 and the served list of the served MCVideo user information entry of the functional alias information entry with following clarifications:

a) the MCVideo server shall include the "expires" attribute in the <functionalAlias> element; and

b) if this procedures is invoked by procedure in clause 20.2.2.3.3 where the handled p-id-fa was identified, the MCVideo server shall set the <p-id-fa> child element of the <presence> root element of the application/pidf+xml MIME body of the SIP NOTIFY request to the handled p-id-fa value; and

4) send a SIP NOTIFY request according to 3GPP TS 24.229 [11], and IETF RFC 6665 [16] for the subscription created in clause 20.2.2.3.4. In the SIP NOTIFY request, the MCVideo server shall include the generated application/pidf+xml MIME body indicating per-functional alias information.

20.2.2.3.6 Functional alias status automatic deactivation procedure

In order to deactivate a functional alias associated with a target MCVideo ID:

1) externally triggered by an MCVideo administrator by a mechanism outside of the scope of the standard; or

2) directly by the MCVideo function owning the functional alias as a result of an internal trigger like the expiration of the functional alias association;

the MCVideo server

1) shall consider a functional alias information entry such that:

a) the functional alias information entry is in the list of functional alias information entries described in clause 20.2.2.3.2; and

b) the functional alias ID of the functional alias information entry is equal to the served functional alias ID;

as the served functional alias information entry;

2) shall remove the MCVideo user information entry such that:

a) the MCVideo user information entry is in the list of the MCVideo user information entries of the served functional alias information entry; and

b) the MCVideo user information entry has the MCVideo ID set to the target MCVideo ID; and

3) shall perform the procedures specified in clause 20.2.2.3.5 for the served functional alias ID.

20.3 Coding

20.3.1 Extension of application/pidf+xml MIME type

20.3.1.1 Introduction

The clauses of the parent clause describe an extension of the application/pidf+xml MIME body specified in IETF RFC 3863 [18]. The extension is used to indicate:

- per-user functional alias information; and
- per-functional alias status information.

20.3.1.2 Syntax

The application/pidf+xml MIME body indicating per-user functional alias information is constructed according to IETF RFC 3863 [18] and:

1) contains a <presence> root element according to IETF RFC 3863 [18];
2) contains an "entity" attribute of the <presence> element set to the MCVideo ID of the MCVideo user;
3) contains one <tuple> child element according to IETF RFC 3863 [18] per <presence> element;
4) can contain a <p-id-fa> child element defined in the XML schema defined in table 20.3.1.2-1, of the <presence> element set to an identifier of a SIP PUBLISH request;
5) contains an "id" attribute of the <tuple> element set to the MCVideo client ID;
6) contains one <status> child element of each <tuple> element;
7) contains one <functionalAlias> child element defined in the XML schema defined in table 20.3.1.2-1, of the <status> element, for each functional alias in which the MCVideo user is interested;
8) contains a "functionalAliasID" attribute of each <fucntionalAlias> element set to the functional alias ID of the functional alias in which the MCVideo user is interested;;
9) can contain a "status" attribute of each <functionalAliasID> element indicating the activation status of functional alias for the MCVideo user; and
10) can contain an "expires" attribute of each <functionalAlias> element indicating expiration of activation of the functional alias for the MCVideo user.

The application/pidf+xml MIME body indicating per-functional alias status information is constructed according to IETF RFC 3856 [13] and:

1) contains the <presence> root element according to IETF RFC 3863 [18];
2) contains an "entity" attribute of the <presence> element set to the functional alias ID of the functional alias;
3) contains one <tuple> child element according to IETF RFC 3863 [18] of the <presence> element;
4) can contain a <p-id-fa> child element defined in the XML schema defined in table 20.3.1.2-1, of the <presence> element set to an identifier of a SIP PUBLISH request;
5) contains an "id" attribute of the <tuple> element set to the MCVideo ID;
6) contains one <status> child element of each <tuple> element;
7) contains one <functionalAlias> child element defined in the XML schema defined in table 20.3.1.2-1, of the <status> element, for each MCVideo ID for which functional alias information is provided;
8) contains one "user" attribute defined in the XML schema defined in table 20.3.1.2-2, of the <functionalAlias> element set to the MCVideo client ID; and
9) can contain an "expires" attribute defined in the XML schema defined in table 20.3.1.2-2, of the <functionalAlias> element indicating expiration of activation of the functional alias for the MCVideo user.

Table 20.3.1.2-1: XML schema with elements and attributes extending the application/pidf+xml MIME body

```
<?xml version="1.0" encoding="UTF-8"?>
<xs:schema
  targetNamespace="urn:3gpp:ns:mcvideoPresInfoFA:1.0"
  xmlns:xs="http://www.w3.org/2001/XMLSchema"
  xmlns:mcvideoPIFA10="urn:3gpp:ns:mcvideoPresInfoFA:1.0"
  elementFormDefault="qualified" attributeFormDefault="unqualified">

  <!-- MCVideo functional alias specific child elements of tuple element -->
  <xs:element name="functionalAlias" type="mcvideoPIFA10:functionalAliasType"/>
  <xs:complexType name="functionalAliasType">
```

```
    <xs:sequence>
      <xs:any namespace="##any" processContents="lax" minOccurs="0" maxOccurs="unbounded"/>
    </xs:sequence>
    <xs:attribute name="functionalAliasID" type="xs:anyURI" use="optional"/>
    <xs:attribute name="user" type="xs:anyURI" use="optional"/>
    <xs:attribute name="status" type="mcvideoPIFA10:statusType" use="optional"/>
    <xs:attribute name="expires" type="xs:dateTime" use="optional"/>
    <xs:anyAttribute namespace="##any" processContents="lax"/>
  </xs:complexType>

  <xs:simpleType name="statusType">
    <xs:restriction base="xs:string">
      <xs:enumeration value="activating"/>
      <xs:enumeration value="activated"/>
      <xs:enumeration value="deactivating"/>
      <xs:enumeration value="take-over-possible"/>
    </xs:restriction>
  </xs:simpleType>

  <xs:element name="p-id-fa" type="xs:string"/>

  <xs:element name="take-over" type="xs:boolean"/>

  </xs:schema>
```

The application/pidf+xml MIME body refers to namespaces using prefixes specified in table 20.3.1.2-2.

Table 20.3.1.2-2: Assignment of prefixes to namespace names in the application/pidf+xml MIME body

Prefix	Namespace
mcvideoPIFA10	urn:3gpp:ns:mcvideoPresInfoFA:1.0
NOTE: The "urn:ietf:params:xml:ns:pidf" namespace is the default namespace so no prefix is used for it in the application/pidf+xml MIME body.	

20.3.2 Extension of application/simple-filter+xml MIME type

20.3.2.1 Introduction

The clauses of the parent clause describe an extension of the application/simple-filter+xml MIME body specified in IETF RFC 4661 [19].

The extension is used to indicate per-user restrictions of presence event package notification information for functional alias information.

20.3.2.2 Syntax

The application/simple-filter+xml MIME body indicating per-user restrictions of presence event package notification information is constructed according to IETF RFC 4661 [19] and:

1) contains a <filter-set> root element according to IETF RFC 4661 [19];

2) contains an <ns-bindings> child element according to IETF RFC 4661 [19], of the <filter-set> element;

3) contains an <ns-binding> child element according to IETF RFC 4661 [19], of the <ns-bindings> element where the <ns-binding> element:

   A) contains a "prefix" attribute according to IETF RFC 4661 [19] set to "pidf"; and

   B) contains a "urn" attribute set to the "urn:ietf:params:xml:ns:pidf" value;

4) contains a <ns-binding> child element according to IETF RFC 4661 [19], of the <ns-bindings> element where the <ns-binding> element:

   A) contains a "prefix" attribute according to IETF RFC 4661 [19], set to "mcvideoPIFA10"; and

   B) contains an "urn" attribute according to IETF RFC 4661 [19], set to the "urn:3gpp:ns:mcvideoPresInfoFA:1.0" value;

5) contains a <filter> child element according to IETF RFC 4661 [19], of the <filter-set> element where the <filter> element;

   A) contains an "id" attribute set to a value constructed according to IETF RFC 4661 [19];

   B) does not contain a "uri" attribute of the <filter> child element according to IETF RFC 4661 [19]; and

   C) does not contain a "domain" attribute according to IETF RFC 4661 [19];

6) contains a <what> child element according to IETF RFC 4661 [19], of the <filter> element; and

7) contains an <include> child element according to IETF RFC 4661 [19], of the <what> element where the <include> element;

   A) does not contain a "type" attribute according to IETF RFC 4661 [19]; and

   B) contains the value, according to IETF RFC 4661 [19], set to concatenation of the '//pidf:presence/pidf:tuple[@id="' string, the MCVideo ID, and the '"]' string.

20.4 Functional alias to group binding for the MCVideo user procedures

20.4.1 General

This clause describes the functional alias to group binding for the MCVideo user procedures for on-network.

For on-network functional alias to group binding for the MCVideo user, the procedures for originating MCVideo clients, participating MCVideo functions and controlling MCVideo function are specified in clause 20.4.2.

An MCVideo user can bind the same functional alias with multiple MCVideo groups but an MCVideo user cannot bind multiple functional aliases to the same MCVideo group.

20.4.2 On-network functional alias to group binding

20.4.2.1 Client procedures

20.4.2.1.1 General

On request from an MCVideo user at MCVideo client, a request to create binding of a functional alias with group for the MCVideo user is initiated by the MCVideo client towards the participating MCVideo function.

20.4.2.1.2 Functional alias to group binding

Upon receiving a request from an MCVideo user to bind a functional alias with an MCVideo group or a list of MCVideo groups for the MCVideo user, if the <allow-functional-alias-binding-with-group> element of the <ruleset> element is not present in the MCVideo user profile document (see the MCVideo user profile document in 3GPP TS 24.484 [25]) or is set to a value of "false", the MCVideo client shall inform the MCVideo user and shall exit this procedure.

Upon receiving a request from an MCVideo user to bind a functional alias with an MCVideo group or a list of MCVideo groups for the MCVideo user, if the requested functional alias is not activated by MCVideo user at MCVideo client, the MCVideo client shall inform the MCVideo user and shall exit this procedure.

Upon receiving a request from an MCVideo user to bind a functional alias with an MCVideo group or a list of MCVideo groups for the MCVideo user, the MCVideo client shall generate a SIP MESSAGE request in accordance with 3GPP TS 24.229 [11] and IETF RFC 3428 [17] with the clarifications given below.

The MCVideo client:

1) shall set the Request-URI to the public service identity identifying the participating MCVideo function serving the MCVideo user;

2) shall include the ICSI value "urn:urn-7:3gpp-service.ims.icsi.mcvideo" (coded as specified in 3GPP TS 24.229 [11]), in a P-Preferred-Service header field according to IETF RFC 6050 [14];

3) shall include an Accept-Contact header field containing the g.3gpp.mcvideo media feature tag along with the "require" and "explicit" header field parameters according to IETF RFC 3841 [20];

4) shall include an Accept-Contact header field with the media feature tag g.3gpp.icsi-ref with the value of "urn:urn-7:3gpp-service.ims.icsi.mcvideo" along with parameters "require" and "explicit" according IETF RFC 3841 [20];

5) may include a P-Preferred-Identity header field in the SIP MESSAGE request containing a public user identity as specified in 3GPP TS 24.229 [11];

6) shall include an application/vnd.3gpp.mcvideo-info+xml MIME body as specified in clause F.1 with the <mcvideoinfo> element containing the <mcvideo-Params> element with:

   a) the <request-type> element set to a value of "fa-group-binding-req";

   b) the <binding-ind> element set to a value of "true";

   c) the <binding-fa-uri> element set to the URI of an activated functional alias that shall be bound with the specified list of MCVideo groups in an application/resource-lists+xml MIME body;

   d) the <mcvideo-client-id> element set to the MCVideo client ID of the originating MCVideo client; and

   e) if the MCVideo client needs to include an active functional alias in the SIP MESSAGE request, the <functional-alias-URI> set to the URI of the used functional alias;

7) shall include an application/resource-lists+xml MIME body with one or more <entry> elements containing a "uri" attribute set to an MCVideo group ID; and

8) shall send the SIP MESSAGE request according to rules and procedures of 3GPP TS 24.229 [11].

On receiving a SIP 2xx response to the SIP MESSAGE request, the MCVideo client shall inform the MCVideo user of success in binding of a functional alias with the MCVideo group or list of MCVideo groups for the MCVideo user.

On receiving a SIP 4xx response a SIP 5xx response or a SIP 6xx response to the SIP MESSAGE request, the MCVideo client shall inform the MCVideo user of unsuccess in binding of a functional alias with the MCVideo group or list of MCVideo groups for the MCVideo user, possibly taking into account Warning header information for the failure reason.

20.4.2.1.3 Functional alias to group unbinding

Upon receiving a request from an MCVideo user to unbind a functional alias with an MCVideo group or a list of MCVideo groups for the MCVideo user, if the <allow-functional-alias-binding-with-group> element of the <ruleset> element is not present in the MCVideo user profile document (see the MCVideo user profile document in 3GPP TS 24.484 [25]) or is set to a value of "false", the MCVideo client shall inform the MCVideo user and shall exit this procedure.

Upon receiving a request from an MCVideo user to unbind a functional alias with an MCVideo group or a list of MCVideo groups for the MCVideo user, the MCVideo client shall generate a SIP MESSAGE request in accordance with 3GPP TS 24.229 [11] and IETF RFC 3428 [17] with the clarifications given below.

The MCVideo client:

1) shall set the Request-URI to the public service identity identifying the participating MCVideo function serving the MCVideo user;

2) shall include the ICSI value "urn:urn-7:3gpp-service.ims.icsi.mcvideo" (coded as specified in 3GPP TS 24.229 [11]), in a P-Preferred-Service header field according to IETF RFC 6050 [14];

3) shall include an Accept-Contact header field containing the g.3gpp.mcvideo media feature tag along with the "require" and "explicit" header field parameters according to IETF RFC 3841 [20];

4) shall include an Accept-Contact header field with the media feature tag g.3gpp.icsi-ref with the value of "urn:urn-7:3gpp-service.ims.icsi.mcvideo" along with parameters "require" and "explicit" according IETF RFC 3841 [20];

5) may include a P-Preferred-Identity header field in the SIP MESSAGE request containing a public user identity as specified in 3GPP TS 24.229 [11];

6) shall include an application/vnd.3gpp.mcvideo-info+xml MIME body as specified in clause F.1 with the <mcvideoinfo> element containing the <mcvideo-Params> element with:

   a) the <request-type> element set to a value of "fa-group-binding-req";

   b) the <binding-ind> element set to a value of "false";

   c) the <unbinding-fa-uri> element set to the URI of a functional alias that shall be unbound from the specified list of MCVideo groups in an application/resource-lists+xml MIME body;

   d) the <mcvideo-client-id> element set to the MCVideo client ID of the originating MCVideo client; and

   e) if the MCVideo client needs to include an active functional alias in the SIP MESSAGE request, the <functional-alias-URI> set to the URI of the used functional alias;

7) shall include an application/resource-lists+xml MIME body with one or more <entry> elements containing a "uri" attribute set to an MCVideo group ID; and

8) shall send the SIP MESSAGE request according to rules and procedures of 3GPP TS 24.229 [11].

On receiving a SIP 2xx response to the SIP MESSAGE request, the MCVideo client shall inform the MCVideo user of success in unbinding the functional alias with the MCVideo group or list of MCVideo groups for the MCVideo user.

On receiving a SIP 4xx response a SIP 5xx response or a SIP 6xx response to the SIP MESSAGE request, the MCVideo client shall inform the MCVideo user of unsuccess in unbinding of a functional alias with the MCVideo group or list of MCVideo groups for the MCVideo user, possibly taking into account Warning header information for the failure reason.

20.4.2.2 Participating MCVideo function procedures

20.4.2.2.1 General

The participating MCVideo function has procedures to:

- receive a request for binding/unbinding of a functional alias with the MCVideo group(s) for the MCVideo user from the MCVideo Client.

20.4.2.2.2 Receipt of a SIP MESSAGE request for binding/unbinding of a functional alias with the MCVideo group(s) for the MCVideo user

Upon receipt of a "SIP MESSAGE request for binding of a functional alias with the MCVideo group(s) for the MCVideo user for originating participating MCVideo function", the participating MCVideo function:

1) if unable to process the request due to a lack of resources or a risk of congestion exists, may reject the SIP MESSAGE request with a SIP 500 (Server Internal Error) response. The participating MCVideo function may include a Retry-After header field to the SIP 500 (Server Internal Error) response as specified in IETF RFC 3261 [15] and skip the rest of the steps;

2) shall determine the MCVideo ID of the calling user from the public user identity in the P-Asserted-Identity header field of the SIP MESSAGE request;

NOTE 1: The MCVideo ID of the calling user is bound to the public user identity at the time of service authorisation, as documented in clause 7.3.

3) if the participating MCVideo function cannot find a binding between the public user identity and an MCVideo ID or if the validity period of an existing binding has expired, then the participating MCVideo function shall reject the SIP MESSAGE request with a SIP 404 (Not Found) response with the warning text set to "141 user

unknown to the participating function" in a Warning header field as specified in clause 4.4, and shall not continue with any of the remaining steps;

4) if the <request-type> element in the application/vnd.3gpp.mcvideo-info+xml MIME body of the SIP MESSAGE request is set to a value of "fa-group-binding-req" and:

   a) the <allow-functional-alias-binding-with-group> element of the <ruleset> element is not present in the MCVideo user profile document (see the MCVideo user profile document in 3GPP TS 24.484 [25]) or is set to a value of "false", shall reject the SIP MESSAGE request with a SIP 403 (Forbidden) response including warning text set to "176 user not authorized to request for binding/unbinding of a functional alias with the MCVideo group(s) for the MCVideo user" in a Warning header field, and shall not continue with the rest of the steps in this clause;

   b) the SIP MESSAGE request do not contain an application/resource-lists MIME body or the < binding-ind> element and the <binding-fa-uri> element in the application/vnd.3gpp.mcvideo-info+xml MIME body, shall reject the SIP MESSAGE request with a SIP 403 (Forbidden) response including warning text set to "177 unable to determine target functional alias or group for creating/removing a binding information for the MCVideo user" in a Warning header field, and shall not continue with the rest of the steps in this clause; and

   c) the SIP MESSAGE request do not contain an application/resource-lists MIME body or the < binding-ind> element and the <unbinding-fa-uri> element in the application/vnd.3gpp.mcvideo-info+xml MIME body, shall reject the SIP MESSAGE request with a SIP 403 (Forbidden) response including warning text set to "177 unable to determine target functional alias or group for creating/removing a binding information for the MCVideo user" in a Warning header field, and shall not continue with the rest of the steps in this clause;

5) shall generate a SIP MESSAGE request in accordance with 3GPP TS 24.229 [11] and IETF RFC 3428 [17];

6) shall set the Request-URI of the outgoing SIP MESSAGE request to the public service identity of the controlling MCVideo function for the binding of a functional alias with the MCVideo group(s) for the MCVideo user service associated with the originating user's MCVideo ID identity;

NOTE 2: The public service identity can identify the controlling MCVideo function in the local MCVideo system or in an interconnected MCVideo system.

NOTE 3: If the controlling MCVideo function is in an interconnected MCVideo system in a different trust domain, then the public service identity can identify the MCVideo gateway server that acts as an entry point in the interconnected MCVideo system from the local MCVideo system.

NOTE 4: If the controlling MCVideo function is in an interconnected MCVideo system in a different trust domain, then the local MCVideo system can route the SIP request through an MCVideo gateway server that acts as an exit point from the local MCVideo system to the interconnected MCVideo system.

NOTE 5: How the participating MCVideo function determines the public service identity of the controlling MCVideo function associated with the handled functional alias ID or of the MCVideo gateway server in the interconnected MCVideo system is out of the scope of the present document.

NOTE 6: How the local MCVideo system routes the SIP request through an exit MCVideo gateway server is out of the scope of the present document.

7) shall copy the contents of the application/vnd.3gpp.mcvideo-info+xml MIME body in the received SIP MESSAGE request into an application/vnd.3gpp.mcvideo-info+xml MIME body as specified in clause F.1 included in the outgoing SIP MESSAGE request;

8) if the received SIP MESSAGE request contains a <functional-alias-URI> element of the application/vnd.3gpp.mcvideo-info+xml MIME body, shall check the status of the functional alias for the MCVideo ID. If the functional alias status is activated, then the participating MCVideo function shall set the <functional-alias-URI> element of the application/vnd.3gpp.mcvideo-info+xml MIME body in the outgoing SIP MESSAGE request to the received value, otherwise it shall not include a <functional-alias-URI> element;

9) shall set the <mcvideo-calling-user-id> element of the <mcvideoinfo> element containing the <mcvideo-Params> element to the MCVideo ID determined in step 2) above;

10) shall copy the contents of the application/resource-lists MIME body in the received SIP MESSAGE request into an application/resource-lists MIME body in the outgoing SIP MESSAGE request;

11) shall set the P-Asserted-Identity in the outgoing SIP MESSAGE request to the public user identity in the P-Asserted-Identity header field contained in the received SIP MESSAGE request;

12) shall include an Accept-Contact header field containing the g.3gpp.mcvideo media feature tag along with the "require" and "explicit" header field parameters according to IETF RFC 3841 [20];

13) shall include an Accept-Contact header field with the media feature tag g.3gpp.icsi-ref with the value of "urn:urn-7:3gpp-service.ims.icsi.mcvideo" along with parameters "require" and "explicit" according to IETF RFC 3841 [20];

14) shall include the ICSI value "urn:urn-7:3gpp-service.ims.icsi.mcvideo" (coded as specified in 3GPP TS 24.229 [11]), into the P-Asserted-Service header field of the outgoing SIP MESSAGE request; and

15) shall send the SIP MESSAGE request as specified to 3GPP TS 24.229 [11].

Upon receipt of a SIP 2xx response in response to the SIP MESSAGE request sent in step 15):

1) shall generate a SIP 200 (OK) response as specified in 3GPP TS 24.229 [11] with the following clarifications:

   a) shall include the public user identity received in the P-Asserted-Identity header field of the incoming SIP 200 (OK) response into the P-Asserted-Identity header field of the outgoing SIP 200 (OK) response; and

2) shall send the SIP 200 (OK) response to the MCVideo client according to 3GPP TS 24.229 [11].

Upon receipt of a SIP 4xx, 5xx or 6xx response to the SIP MESSAGE request, shall forward the error response to the MCVideo client.

20.4.2.3 Controlling MCVideo function procedures

20.4.2.3.1 General

The participating MCVideo function has procedures to:

- receive a request for binding/unbinding of a functional alias with the MCVideo group(s) for the MCVideo user from the MCVideo Client.

20.4.2.3.2 Receipt of a SIP MESSAGE request for binding/unbinding of a functional alias with the MCVideo group(s) for the MCVideo user

Upon receiving a:

- "SIP MESSAGE request for binding of a functional alias with the MCVideo group(s) for the MCVideo user for controlling MCVideo function";

the controlling MCVideo function:

1) if unable to process the request due to a lack of resources or a risk of congestion exists, may reject the SIP MESSAGE request with a SIP 500 (Server Internal Error) response. The controlling MCVideo function may include a Retry-After header field to the SIP 500 (Server Internal Error) response as specified in IETF RFC 3261 [15] and skip the rest of the steps;

2) shall reject the SIP request with a SIP 403 (Forbidden) response and not process the remaining steps if an Accept-Contact header field does not include the g.3gpp.icsi-ref media feature tag containing the value of "urn:urn-7:3gpp-service.ims.icsi.mcvideo";

3) the SIP MESSAGE request do not contain an application/resource-lists MIME body or the <binding-ind> element and the <binding-fa-uri> element in the application/vnd.3gpp.mcvideo-info+xml MIME body, shall reject the SIP MESSAGE request with a SIP 403 (Forbidden) response including warning text set to "177 unable to determine target functional alias or group for creating/removing a binding information for the MCVideo user " in a Warning header field, and shall not continue with the rest of the steps in this clause;

4) the SIP MESSAGE request do not contain an application/resource-lists MIME body or the <binding-ind> element and the <unbinding-fa-uri> element in the application/vnd.3gpp.mcvideo-info+xml MIME body, shall reject the SIP MESSAGE request with a SIP 403 (Forbidden) response including warning text set to "177 unable

to determine target functional alias or group for creating/removing a binding information for the MCVideo user " in a Warning header field, and shall not continue with the rest of the steps in this clause;

5) if any of the <entry> element containing a "uri" attribute set to an MCVideo group ID of the incoming SIP MESSAGE request contains an application/resource-lists MIME body having an existing binding with any other functional alias from same MCVideo user, shall reject the SIP MESSAGE request with a SIP 403 (Forbidden) response including warning text set to "178 MCVideo group binding already exists with other functional alias" in a Warning header field as specified in clause 4.4, and shall skip the rest of the steps;

6) if the application/vnd.3gpp.mcvideo-info+xml MIME body of the SIP MESSAGE request contains the <request-type> element set to a value of "fa-group-binding-req" and:

   a) if the <binding-ind> element set to a value of "true", shall update or store the record for the MCVideo client, and create a binding information for the functional alias specified in the <binding-fa-uri> element with the list of the MCVideo group(s) included in an application/resource-lists MIME body; or

   b) if the <binding-ind> element set to a value of "false", shall update or store the record for the MCVideo client, and remove a binding information of the functional alias specified in the <unbinding-fa-uri> element from the list of the MCVideo group(s) included in an application/resource-lists MIME body;

7) shall generate a SIP 200 (OK) response as specified in 3GPP TS 24.229 [11]with the following clarifications:

   a) shall include the public user identity in the P-Asserted-Identity header field of the outgoing SIP 200 (OK) response; and

8) shall send the SIP 200 (OK) response to the MCVideo client according to 3GPP TS 24.229 [11].

21 Regroup using a preconfigured group

21.1 General

In the procedures in this clause:

1) temporary group identity in an incoming SIP MESSAGE request refers to the temporary group identity from the <mcvideo-regroup-uri> element of the application/vnd.3gpp.mcvideo-regroup+xml MIME body of the incoming SIP MESSAGE request; and

2) preconfigured group identity in an incoming SIP MESSAGE request refers to the the group identity from the <preconfigured-group> element of the application/vnd.3gpp.mcvideo-regroup+xml MIME body of the incoming SIP MESSAGE request.

Regroup using a preconfigured group refers to the creation of a user/group regroup based on the configuration information associated with an existing group that is referred to as the preconfigured group. A regroup takes its entire configuration from the preconfigured group, including security keys. If the preconfigured group document contains a <listserv> element that contains a <preconfigured-group-use-only> element, that <preconfigured-group-use-only> element is not included in the configuration of the regroup.

All MCVideo servers and all MCVideo clients are configured with the preconfigured group to allow immediate use of the regroup for a call upon creation of the regroup.

A regroup using a preconfigured group is initiated by the MCVideo client referencing a preconfigured group document in the GMS. The advantage of regroup using a preconfigured group is speed of setup of the group, especially when large numbers of users (e.g., thousands) are involved. Control of the regroup using a preconfigured group is focused in the controlling MCVideo function. Creation and removal of a regoup is normally initiated by an MCVideo client. Removal can also be initiated by the controlling MCVideo function.

21.2 Group regroup using a preconfigured group

21.2.1 Client procedures

21.2.1.1 Requesting a group regroup using a preconfigured group

Upon receiving a request from an MCVideo user to establish an MCVideo group regroup using a preconfigured group, the MCVideo client shall generate a SIP MESSAGE request in accordance with 3GPP TS 24.229 [11] and IETF RFC 3428 [17] and:

1) shall include an Accept-Contact header field containing the g.3gpp.mcvideo media feature tag along with the "require" and "explicit" header field parameters according to IETF RFC 3841 [20];

2) shall include an Accept-Contact header field with the media feature tag g.3gpp.icsi-ref with the value of "urn:urn-7:3gpp-service.ims.icsi.mcvideo" along with parameters "require" and "explicit" according to IETF RFC 3841 [20];

3) shall set the Request-URI to the public service identity identifying the originating participating MCVideo function serving the MCVideo user;

4) may include a P-Preferred-Identity header field in the SIP MESSAGE request containing a public user identity as specified in 3GPP TS 24.229 [11];

5) shall include the ICSI value "urn:urn-7:3gpp-service.ims.icsi.mcvideo" (coded as specified in 3GPP TS 24.229 [11]), in a P-Asserted-Service-Id header field according to IETF RFC 6050 [14];

6) shall contain an application/vnd.3gpp.mcvideo-info+xml MIME body with the <mcvideoinfo> element containing the <mcvideo-Params> element with:

   a) the <mcvideo-client-id> element set to the MCVideo client ID of the originating MCVideo client; and

   b) if the MCVideo client is aware of active functional aliases, and an active functional alias is to be included in the SIP MESSAGE request, the <functional-alias-URI> set to the URI of the used functional alias; and

7) shall contain an application/vnd.3gpp.mcvideo-regroup+xml MIME body with:

   a) the <regroup-action> element set to the value "create";

   b) the <mcvideo-regroup-uri> element set to a unique temporary group identity URI;

NOTE: How the unique temporary group identity URI is formed is an implementation decision.

   c) the <preconfigured-group> element set to the group identity of the preconfigured group; and

   d) the <groups-for-regroup> element set to the list of MCVideo group identities of groups that are to be included in the regroup; and

8) shall send the SIP MESSAGE request according to 3GPP TS 24.229 [11].

On receiving a SIP 2xx response to the SIP MESSAGE request, the MCVideo client:

1) should notify the MCVideo user of the successful creation of the group regroup using preconfigured group.

On receiving a SIP 4xx response, a SIP 5xx response or a SIP 6xx response to the SIP INVITE request:

1) should notify the MCVideo user of the failure to create the group regroup using preconfigured group.

21.2.1.2 Removing a regroup using preconfigured group

Upon receiving a request from an MCVideo user to remove a user or group regroup using a preconfigured group, the MCVideo client:

1) shall generate a SIP MESSAGE request in accordance with 3GPP TS 24.229 [11] and IETF RFC 3428 [17]:

2) shall include an Accept-Contact header field containing the g.3gpp.mcvideo media feature tag along with the "require" and "explicit" header field parameters according to IETF RFC 3841 [20];

3) shall include an Accept-Contact header field with the media feature tag g.3gpp.icsi-ref with the value of "urn:urn-7:3gpp-service.ims.icsi.mcvideo" along with parameters "require" and "explicit" according to IETF RFC 3841 [20];

4) shall set the Request-URI to the public service identity identifying the originating participating MCVideo function serving the MCVideo user;

5) may include a P-Preferred-Identity header field in the SIP INVITE request containing a public user identity as specified in 3GPP TS 24.229 [11];

6) shall include the ICSI value "urn:urn-7:3gpp-service.ims.icsi.mcvideo" (coded as specified in 3GPP TS 24.229 [11]), in a P-Asserted-Service-Id header field according to IETF RFC 6050 [14];

7) shall contain an application/vnd.3gpp.mcvideo-info+xml MIME body with the <mcvideoinfo> element containing the <mcvideo-Params> element with:

   a) the <mcvideo-client-id> element set to the MCVideo client ID of the originating MCVideo client; and

   b) if the MCVideo client is aware of active functional aliases, and an active functional alias is to be included in the SIP MESSAGE request, the <functional-alias-URI> set to the URI of the used functional alias; and

8) shall contain an application/vnd.3gpp.mcvideo-regroup+xml MIME body with:

   a) the <mcvideo-regroup-uri> element set to the unique temporary group identity URI representing the regroup to be removed; and

   b) the <regroup-action> element set to "remove"; and

9) shall send the SIP MESSAGE request according to 3GPP TS 24.229 [11].

On receiving a SIP 2xx response to the SIP MESSAGE request, the MCVideo client:

1) should notify the MCVideo user of the successful removal of the regroup using preconfigured group.

On receiving a SIP 4xx response, a SIP 5xx response or a SIP 6xx response to the SIP INVITE request:

1) should notify the MCVideo user of the failure to remove the regroup using preconfigured group.

21.2.1.3 Receiving a notification of creation of a regroup using preconfigured group

Upon receiving a "SIP MESSAGE request to the MCVideo client to request creation of a regroup using preconfigured group", the MCVideo client:

1) should notify the MCVideo user of the creation of the regroup using preconfigured group;

2) shall send a 200 (OK) response to the MCVideo server according to 3GPP TS 24.229 [11];

3) in the application/vnd.3gpp.mcvideo-regroup+xml MIME body contained in the incoming SIP MESSAGE request:

   a) if a <users-for-regroup> element is included in that MIME body, shall store the value of the <mcvideo-regroup-uri> element as the temporary group identity and associate that with the group identity received in the <mcvideo-regroup-uri> element, along with the information that the created regroup is a user regroup and should store the contents of the <users-for-regroup> element as the list of the users that are part of that user regroup: or

   b) if a <groups-for-regroup> element is included in that MIME body, shall store the value of the <mcvideo-regroup-uri> element as the temporary group identity and associate that with the group identity received in the <mcvideo-regroup-uri> element, along with the information that the created regroup is a group regroup and should store the contents of the <groups-for-regroup> element as the list of groups that are part of that group regroup:

4) shall consider that the MCVideo Client is affiliated with the regroup;

5) should not initiate calls targeting any of the constituent groups but instead target the regroup for the duration of a group regroup; and

6) if the regroup is a chat group, the MCVideo client should join the regroup when this notification of creation is received.

21.2.1.4 Receiving notification of removal of a regroup using preconfigured group

Upon receiving a "SIP MESSAGE request to the MCVideo client to request removal of a regroup using preconfigured group", the MCVideo client:

1) should notify the MCVideo user of the removal of the regroup using preconfigured group;

2) shall send a 200 (OK) response to the MCVideo server according to 3GPP TS 24.229 [11]; and

3) shall consider that the MCVideo client is de-affiliated from the regroup.

21.2.2 Participating MCVideo function procedures

21.2.2.1 General

In the procedures in this clause:

1) temporary group identity in an incoming SIP MESSAGE request refers to the temporary group identity from the <mcvideo-regroup-uri> element of the application/vnd.3gpp.mcvideo-regroup+xml MIME body of the incoming SIP MESSAGE request; and

2) preconfigured group identity in an incoming SIP MESSAGE request refers to the the group identity from the <preconfigured-group> element of the application/vnd.3gpp.mcvideo-regroup+xml MIME body of the incoming SIP MESSAGE request.

21.2.2.2 Requesting a group regroup using a preconfigured group

Upon receipt of a “SIP MESSAGE request to the originating participating MCVideo function to request creation of a group regroup using preconfigured group”, the originating participating MCVideo function:

1) if unable to process the request due to a lack of resources or a risk of congestion exists, may reject the SIP MESSAGE request with a SIP 500 (Server Internal Error) response. The originating participating MCVideo function may include a Retry-After header field to the SIP 500 (Server Internal Error) response as specified in IETF RFC 3261 [15]. The originating participating MCVideo function shall skip the rest of the steps;

2) shall determine the MCVideo ID of the user from the public user identity in the P-Asserted-Identity header field of the SIP MESSAGE request;

3) shall authorise the user. If the user profile identified by the MCVideo ID does not contain an <allow-regroup> element set to “true”, the originating participating MCVideo function shall reject the “SIP MESSAGE request to the originating participating MCVideo function to request creation of a group regroup using preconfigured group” with a SIP 403 (Forbidden) response to the SIP MESSAGE request, with warning text set to “160 user not authorised to request creation of a group regroup” in a Warning header field as specified in clause 4.9, and shall not continue with the rest of these steps;

4) shall select a controlling MCVideo function to manage the regroup and determine the public service identity of that controlling MCVideo function;

NOTE 1: How the originating participating MCVideo function selects a controlling MCVideo function to manage the regroup is a deployment decision.

NOTE 2: The public service identity can identify the controlling MCVideo function in the local MCVideo system or in an interconnected MCVideo system.

NOTE 3: If the controlling MCVideo function is in an interconnected MCVideo system in a different trust domain, then the public service identity can identify the MCVideo gateway server that acts as an entry point in the interconnected MCVideo system from the local MCVideo system.

NOTE 4: If the controlling MCVideo function is in an interconnected MCVideo system in a different trust domain, then the local MCVideo system can route the SIP request through an MCVideo gateway server that acts as an exit point from the local MCVideo system to the interconnected MCVideo system.

NOTE 5: How the originating participating MCVideo function determines the public service identity of the controlling MCVideo function associated with the group identity or of the MCVideo gateway server in the interconnected MCVideo system is out of the scope of the present document.

NOTE 6: How the local MCVideo system routes the SIP request through an exit MCVideo gateway server is out of the scope of the present document.

5) shall generate an outgoing SIP MESSAGE request in accordance with 3GPP TS 24.229 [11] and IETF RFC 3428 [17] and:

   a) shall include in the SIP MESSAGE request all Accept-Contact header fields and all Reject-Contact header fields, with their feature tags and their corresponding values along with parameters according to rules and procedures of IETF RFC 3841 [20] that were received (if any) in the incoming SIP MESSAGE request;

   b) shall set the Request-URI of the outgoing SIP MESSAGE request to the public service identity of the controlling MCVideo function selected in step 4);

   c) shall copy the contents of the application/vnd.3gpp.mcvideo-info+xml MIME body received in the incoming SIP MESSAGE request into an application/vnd.3gpp.mcvideo-info+xml MIME body included in the outgoing SIP MESSAGE request;

   d) shall copy the contents of the application/vnd.3gpp.mcvideo-regroup+xml MIME body received in the incoming SIP MESSAGE request into an application/vnd.3gpp.mcvideo-regroup+xml MIME body included in the outgoing SIP MESSAGE request; and

   e) shall copy the contents of the P-Asserted-Identity header field of the incoming SIP MESSAGE request to the P-Asserted-Identity header field of the outgoing SIP MESSAGE request; and

6) shall send the SIP MESSAGE request as specified in 3GPP TS 24.229 [11].

Upon receipt of a SIP 480 (Temporarily Unavailable) response to the above SIP MESSAGE request, the originating participating MCVideo function:

1) shall select a different controlling MCVideo function to manage the regroup and determine the public service identity of that controlling MCVideo function;

NOTE 7: How the originating participating MCVideo function whether it decides to retry is a deployment decision.

2) shall generate a SIP MESSAGE request as specified in this clause with the Request-URI of the outgoing SIP MESSAGE request set to the public service identity of the controlling MCVideo function selected in step 1); and

3) shall forward the SIP MESSAGE request according to 3GPP TS 24.229 [11].

Upon receipt of a SIP 2xx response to the above SIP MESSAGE request, the originating participating MCVideo function shall send a SIP 200 (OK) response to the MCVideo client according to 3GPP TS 24.229 [11].

Upon receipt of any SIP 4xx response other than a 480 response, or a SIP 5xx or 6xx response to the above SIP MESSAGE request, the originating participating MCVideo function:

1) shall generate a SIP response according to 3GPP TS 24.229 [11];

2) shall include Warning header field(s) that were received in the incoming SIP response; and

3) shall forward the SIP response to the MCVideo client according to 3GPP TS 24.229 [11].

21.2.2.3 Removing a regroup using preconfigured group

Upon receipt of a "SIP MESSAGE request to the originating participating MCVideo function to remove a regroup using preconfigured group" for a temporary group identity, the originating participating MCVideo function:

1) if unable to process the request due to a lack of resources or a risk of congestion exists, may reject the SIP MESSAGE request with a SIP 500 (Server Internal Error) response. The originating participating MCVideo

function may include a Retry-After header field to the SIP 500 (Server Internal Error) response as specified in IETF RFC 3261 [15]. The originating participating MCVideo function shall skip the rest of the steps;

2) shall determine the MCVideo ID of the user from the public user identity in the P-Asserted-Identity header field of the SIP MESSAGE request;

3) shall authorise the user. If the user profile identified by the MCVideo ID does not contain an <allow-regroup> element set to "true", the originating participating MCVideo function shall reject the "SIP MESSAGE request to remove a regroup using preconfigured group" with a SIP 403 (Forbidden) response to the SIP MESSAGE request, with warning text set to "161 user not authorised to request removal of a regroup " in a Warning header field as specified in clause 4.9, and shall skip the rest of these steps;

4) shall determine the public service identity of the controlling MCVideo function associated with the regroup identity in the SIP MESSAGE request;

NOTE 1: The public service identity can identify the controlling MCVideo function in the local MCVideo system or in an interconnected MCVideo system.

NOTE 2: If the controlling MCVideo function is in an interconnected MCVideo system in a different trust domain, then the public service identity can identify the MCVideo gateway server that acts as an entry point in the interconnected MCVideo system from the local MCVideo system.

NOTE 3: If the controlling MCVideo function is in an interconnected MCVideo system in a different trust domain, then the local MCVideo system can route the SIP request through an MCVideo gateway server that acts as an exit point from the local MCVideo system to the interconnected MCVideo system.

NOTE 4: How the originating participating MCVideo function determines the public service identity of the controlling MCVideo function associated with the group identity or of the MCVideo gateway server in the interconnected MCVideo system is out of the scope of the present document.

NOTE 5: How the local MCVideo system routes the SIP request through an exit MCVideo gateway server is out of the scope of the present document.

5) shall generate an outgoing SIP MESSAGE request in accordance with 3GPP TS 24.229 [11] and IETF RFC 3428 [17] and:

   a) shall include in the SIP MESSAGE request all Accept-Contact header fields and all Reject-Contact header fields, with their feature tags and their corresponding values along with parameters according to rules and procedures of IETF RFC 3841 [20] that were received (if any) in the incoming SIP MESSAGE request;

   b) shall set the Request-URI of the outgoing SIP MESSAGE request to the public service identity of the controlling MCVideo function determined in step 4;

   c) shall copy the contents of the application/vnd.3gpp.mcvideo-info+xml MIME body received in the incoming SIP MESSAGE request into an application/vnd.3gpp.mcvideo-info+xml MIME body included in the outgoing SIP MESSAGE request;

   d) shall copy the contents of the application/vnd.3gpp.mcvideo-regroup+xml MIME body received in the incoming SIP MESSAGE request into an application/vnd.3gpp.mcvideo-regroup+xml MIME body included in the outgoing SIP MESSAGE request; and

   e) shall copy the contents of the P-Asserted-Identity header field of the incoming SIP MESSAGE request to the P-Asserted-Identity header field of the outgoing SIP MESSAGE request; and

6) shall send the SIP MESSAGE request as specified in 3GPP TS 24.229 [11].

Upon receipt of a SIP 2xx response to the above SIP MESSAGE request, the originating participating MCVideo function:

1) shall generate a SIP 200 (OK) response as specified in the clause 6.3.2.1.5.2;

2) shall include Warning header field(s) that were received in the incoming SIP 200 (OK) response;

3) shall include the public service identity received in the P-Asserted-Identity header field of the incoming SIP 200 (OK) response into the P-Asserted-Identity header field of the outgoing SIP 200 (OK) response; and

4) shall send the SIP 200 (OK) response to the MCVideo client according to 3GPP TS 24.229 [11].

Upon receipt of a SIP 4xx, 5xx or 6xx response to the above SIP MESSAGE request, the originating participating MCVideo function:

1) shall generate a SIP response according to 3GPP TS 24.229 [11];

2) shall include Warning header field(s) that were received in the incoming SIP response; and

3) shall forward the SIP response to the MCVideo client according to 3GPP TS 24.229 [11].

21.2.2.4 Notification of creation of a regroup using preconfigured group

When receiving a "SIP MESSAGE request to the terminating participating MCVideo function to create a group regroup using preconfigured group", the terminating participating MCVideo function:

1) if unable to process the request due to a lack of resources or a risk of congestion exists, may reject the SIP MESSAGE request with a SIP 500 (Server Internal Error) response. The terminating participating MCVideo function may include a Retry-After header field to the SIP 500 (Server Internal Error) response as specified in IETF RFC 3261 [15]. The terminating participating MCVideo function shall skip the rest of the steps;

2) shall send a SIP 200 (OK) response as specified in 3GPP TS 24.229 [11];

3) for each MCVideo ID contained in the <users-for-regroup> element of the application/vnd.3gpp.mcvideo-regroup+xml MIME body, the terminating participating MCVideo function:

   a) shall generate a SIP MESSAGE request in accordance with 3GPP TS 24.229 [11] and IETF RFC 3428 [17]:

   b) shall include in the SIP MESSAGE request all Accept-Contact header fields and all Reject-Contact header fields, with their feature tags and their corresponding values along with parameters according to rules and procedures of IETF RFC 3841 [20] that were received (if any) in the incoming SIP MESSAGE request;

   c) shall set the Request-URI of the outgoing SIP MESSAGE request to the public service identity associated with the MCVideo ID;

   d) shall copy the contents of the application/vnd.3gpp.mcvideo-info+xml MIME body received in the incoming SIP MESSAGE request into an application/vnd.3gpp.mcvideo-info+xml MIME body included in the outgoing SIP MESSAGE request;

   e) shall copy the contents of the application/vnd.3gpp.mcvideo-regroup+xml MIME body received in the incoming SIP MESSAGE request into an application/vnd.3gpp.mcvideo-regroup+xml MIME body included in the outgoing SIP MESSAGE request;

   f) shall copy the contents of the P-Asserted-Identity header field of the incoming SIP MESSAGE request to the P-Asserted-Identity header field of the outgoing SIP MESSAGE request;

   g) shall send the SIP MESSAGE request as specified in 3GPP TS 24.229 [11]; and

   h) shall consider the MCVideo ID as affiliated with the temporary group identity representing the regroup identified in the <mcvideo-regroup-uri> element in the incoming SIP MESSAGE request; and

4) shall store:

   a) the value of the <mcvideo-regroup-uri> element as the identity of the regroup based on a preconfigured group;

   b) the value of the <preconfigured-group> element of the application/vnd.3gpp.mcvideo-regroup+xml MIME body as the identity of the preconfigured group; and

   c) the set of MCVideo IDs contained in the <users-for-regroup> element of the application/vnd.3gpp.mcvideo-regroup+xml MIME body as the list of the users that are members of the group regroup;

   until the regroup is removed.

21.2.2.5 Notification of removal of a regroup using preconfigured group

When receiving a "SIP MESSAGE request to the terminating participating MCVideo function to remove a regroup using preconfigured group", the terminating participating MCVideo function:

1) if unable to process the request due to a lack of resources or a risk of congestion exists, may reject the SIP MESSAGE request with a SIP 500 (Server Internal Error) response. The terminating participating MCVideo function may include a Retry-After header field to the SIP 500 (Server Internal Error) response as specified in IETF RFC 3261 [15]. The terminating participating MCVideo function shall skip the rest of the steps;

2) shall generate a SIP 200 (OK) response in accordance with 3GPP TS 24.229 [11] and IETF RFC 3428 [17] and shall send the SIP 200 (OK) response as specified in 3GPP TS 24.229 [11];

3) for each served MCVideo ID affiliated with the temporary group identity in the incoming SIP MESSAGE, the terminating participating MCVideo function:

   a) shall generate a SIP MESSAGE request in accordance with 3GPP TS 24.229 [11] and IETF RFC 3428 [17]:

   b) include in the SIP MESSAGE request all Accept-Contact header fields and all Reject-Contact header fields, with their feature tags and their corresponding values along with parameters according to rules and procedures of IETF RFC 3841 [20] that were received (if any) in the incoming SIP MESSAGE request;

   c) shall set the Request-URI of the outgoing SIP MESSAGE request to the public service identity associated with the MCVideo ID;

   d) shall copy the contents of the application/vnd.3gpp.mcvideo-info+xml MIME body received in the incoming SIP MESSAGE request into an application/vnd.3gpp.mcvideo-info+xml MIME body included in the outgoing SIP MESSAGE request;

   e) shall copy the contents of the application/vnd.3gpp.mcvideo-regroup+xml MIME body received in the incoming SIP MESSAGE request into an application/vnd.3gpp.mcvideo-regroup+xml MIME body included in the outgoing SIP MESSAGE request, with the exceptions that any <users-for-regroup> or <groups-for-regroup> elements shall not be copied;

   f) shall copy the contents of the P-Asserted-Identity header field of the incoming SIP MESSAGE request to the P-Asserted-Identity header field of the outgoing SIP MESSAGE request;

   g) shall send the SIP MESSAGE request as specified in 3GPP TS 24.229 [11]; and

   h) shall consider the MCVideo ID as deaffiliated from the regroup.

21.2.3 Controlling MCVideo function procedures

21.2.3.1 Request to create a group regroup using preconfigured group

When receiving a "SIP MESSAGE request to the controlling MCVideo function to request creation of a group regroup using preconfigured group" the controlling MCVideo function:

1) if unable to process the request due to a lack of resources or a risk of congestion exists, may reject the SIP MESSAGE request with a SIP 500 (Server Internal Error) response,may include a Retry-After header field to the SIP 500 (Server Internal Error) response as specified in IETF RFC 3261 [15], and shall skip the rest of the steps;

2) if the controlling MCVideo function is not able to handle the regroup based on the MCVideo group indicated in the <preconfigured-group> element in an application/vnd.3gpp.mcvideo-regroup+xml MIME body:

   a) shall generate a SIP 480 (Temporarily Unavailable) response to the incoming SIP MESSAGE request; and

   b) shall send the SIP 480 (Temporarily Unavailable) response as specified in 3GPP TS 24.229 [11] and skip the rest of the steps;

3) if the controlling MCVideo function determines that the proposed group ID for the regroup is already in use, shall reject the "SIP MESSAGE request to the controlling MCVideo function to request creation of a group regroup using preconfigured group" with a SIP 403 (Forbidden) response to the SIP MESSAGE request, with

warning text set to "165 group ID for regroup already in use" in a Warning header field as specified in clause 4.9, and shall skip the rest of the steps;

4) for each group identified in the <groups-for-regroup> element:

   a) shall determine the controlling MCVideo function serving that group;

NOTE 1: The controlling MCVideo function serving a consitituent group assumes the role of a non-controlling MCVideo function for the regroup.

   b) shall generate an outgoing SIP MESSAGE request in accordance with 3GPP TS 24.229 [11] and IETF RFC 3428 [17];

   c) shall include in the SIP MESSAGE request all Accept-Contact header fields and all Reject-Contact header fields, with their feature tags and their corresponding values along with parameters according to rules and procedures of IETF RFC 3841 [20] that were received (if any) in the incoming SIP MESSAGE request;

   d) shall set the Request-URI of the outgoing SIP MESSAGE request to the public service identity of the non-controlling MCVideo function;

NOTE 2: The public service identity can identify the non-controlling MCVideo function in the local MCVideo system or in an interconnected MCVideo system.

NOTE 3: If the non-controlling MCVideo function is in an interconnected MCVideo system in a different trust domain, then the public service identity can identify the MCVideo gateway server that acts as an entry point in the interconnected MCVideo system from the local MCVideo system.

NOTE 4: If the non-controlling MCVideo function is in an interconnected MCVideo system in a different trust domain, then the local MCVideo system can route the SIP request through an MCVideo gateway server that acts as an exit point from the local MCVideo system to the interconnected MCVideo system.

NOTE 5: How the controlling MCVideo function determines the public service identity of the non-controlling MCVideo function associated with the group identity or of the MCVideo gateway server in the interconnected MCVideo system is out of the scope of the present document.

NOTE 6: How the local MCVideo system routes the SIP request through an exit MCVideo gateway server is out of the scope of the present document.

   e) shall copy the contents of the application/vnd.3gpp.mcvideo-info+xml MIME body received in the incoming SIP MESSAGE request into an application/vnd.3gpp.mcvideo-info+xml MIME body included in the outgoing SIP MESSAGE request;

   f) shall copy the contents of the application/vnd.3gpp.mcvideo-regroup+xml MIME body received in the incoming SIP MESSAGE request into an application/vnd.3gpp.mcvideo-regroup+xml MIME body included in the outgoing SIP MESSAGE request;

   g) shall copy the contents of the P-Asserted-Identity header field of the incoming SIP MESSAGE request to the P-Asserted-Identity header field of the outgoing SIP MESSAGE request; and

   h) shall send the SIP MESSAGE request as specified in 3GPP TS 24.229 [11];

5) shall wait to receive SIP responses from all of the non-controlling MCVideo functions that were sent a SIP MESSAGE request above;

6) if all of the SIP responses received above are SIP 200 (OK) responses:

   a) shall send a SIP 200 (OK) response in accordance with 3GPP TS 24.229 [11] and IETF RFC 3428 [17];

   b) shall store the list of group identities contained in the <groups-for-regroup> element;

   c) shall store the value of the <mcvideo-regroup-uri> element as the identity of the group regroup based on a preconfigured group; and

   d) shall store the value of the preconfigured-group> element of the application/vnd.3gpp.mcvideo-regroup+xml MIME body as the identity of the preconfigured group; and

7) if at least one of the SIP responses received above is not a SIP 2xx response:

   a) shall send a SIP 480 (Temporarily Unavailable) response in accordance with 3GPP TS 24.229 [11] and IETF RFC 3428 [17];

   b) for each non-controlling MCVideo function that returned a SIP 200 (OK) response in step 4:

      i) shall generate a SIP MESSAGE request in accordance with 3GPP TS 24.229 [11] and IETF RFC 3428 [17];

      ii) shall set the Request-URI of the outgoing SIP MESSAGE request to the public service identity of the non-controlling MCVideo function;

      iii) shall include an application/vnd.3gpp.mcvideo-regroup+xml MIME body in the outgoing SIP MESSAGE request with;

         A) an <mcvideo-regroup-uri> element set to the identity of the regroup; and

         B) a <regroup-action> element set to "remove"; and

      iv) shall send the SIP MESSAGE request as specified in 3GPP TS 24.229 [11].

21.2.3.2 Request to remove a regroup using preconfigured group

When receiving a "SIP MESSAGE request to the controlling MCVideo function to remove a regroup using preconfigured group" the controlling MCVideo function:

1) if unable to process the request due to a lack of resources or a risk of congestion exists, may reject the SIP MESSAGE request with a SIP 500 (Server Internal Error) response. The controlling MCVideo function may include a Retry-After header field to the SIP 500 (Server Internal Error) response as specified in IETF RFC 3261 [15]. The controlling MCVideo function shall skip the rest of the steps;

2) if the controlling MCVideo function determines that the requested group ID for the regroup removal does not exist, shall reject the "SIP MESSAGE request to the controlling MCVideo function to remove a regroup using preconfigured group" with a SIP 403 (Forbidden) response to the SIP MESSAGE request, with warning text set to "163 the group identity indicated in the request does not exist" in a Warning header field as specified in clause 4.9, and shall skip the rest of the steps;

3) shall send a SIP 200 (OK) response in accordance with 3GPP TS 24.229 [11] and IETF RFC 3428 [17];

4) if the regroup is a group regroup based on preconfigured group, then:

   a) for each constituent group belonging to the regroup:

      i) shall determine the non-controlling MCVideo function serving that group;

      ii) shall generate an outgoing SIP MESSAGE request in accordance with 3GPP TS 24.229 [11] and IETF RFC 3428 [17];

      iii) shall include in the SIP MESSAGE request all Accept-Contact header fields and all Reject-Contact header fields, with their feature tags and their corresponding values along with parameters according to rules and procedures of IETF RFC 3841 [20] that were received (if any) in the incoming SIP MESSAGE request;

      iv) shall set the Request-URI of the outgoing SIP MESSAGE request to the public service identity of the non-controlling MCVideo function;

NOTE 1: The public service identity can identify the non-controlling MCVideo function in the local MCVideo system or in an interconnected MCVideo system.

NOTE 2: If the non-controlling MCVideo function is in an interconnected MCVideo system in a different trust domain, then the public service identity can identify the MCVideo gateway server that acts as an entry point in the interconnected MCVideo system from the local MCVideo system.

NOTE 3: If the non-controlling MCVideo function is in an interconnected MCVideo system in a different trust domain, then the local MCVideo system can route the SIP request through an MCVideo gateway server that acts as an exit point from the local MCVideo system to the interconnected MCVideo system.

NOTE 4: How the controlling MCVideo function determines the public service identity of the non-controlling MCVideo function associated with the group identity or of the MCVideo gateway server in the interconnected MCVideo system is out of the scope of the present document.

NOTE 5: How the local MCVideo system routes the SIP request through an exit MCVideo gateway server is out of the scope of the present document.

v) shall copy the contents of the application/vnd.3gpp.mcvideo-info+xml MIME body received in the incoming SIP MESSAGE request into an application/vnd.3gpp.mcvideo-info+xml MIME body included in the outgoing SIP MESSAGE request;

vi) shall copy the contents of the application/vnd.3gpp.mcvideo-regroup+xml MIME body received in the incoming SIP MESSAGE request into an application/vnd.3gpp.mcvideo-regroup+xml MIME body included in the outgoing SIP MESSAGE request;

vii) shall copy the contents of the P-Asserted-Identity header field of the incoming SIP MESSAGE request to the P-Asserted-Identity header field of the outgoing SIP MESSAGE request; and

viii) shall send the SIP MESSAGE request as specified in 3GPP TS 24.229 [11]; and

5) if the regroup is a user regroup based on preconfigured group, then for each user belonging to the regroup, the controlling MCVideo function shall create a separate list of MCVideo IDs for users belonging to and affiliated with the regroup who are served by the same terminating participating MCVideo function and for each terminating participating MCVideo function;

a) shall generate an outgoing SIP MESSAGE request in accordance with 3GPP TS 24.229 [11] and IETF RFC 3428 [17];

b) shall include in the SIP MESSAGE request all Accept-Contact header fields and all Reject-Contact header fields, with their feature tags and their corresponding values along with parameters according to rules and procedures of IETF RFC 3841 [20] that were received (if any) in the incoming SIP MESSAGE request;

c) shall set the Request-URI of the outgoing SIP MESSAGE request to the public service identity of the terminating participating MCVideo function;

NOTE 6: The public service identity can identify the terminating participating MCVideo function in the local MCVideo system or in an interconnected MCVideo system.

NOTE 7: If the terminating participating MCVideo function is in an interconnected MCVideo system in a different trust domain, then the public service identity can identify the MCVideo gateway server that acts as an entry point in the interconnected MCVideo system from the local MCVideo system.

NOTE 8: If the terminating participating MCVideo function is in an interconnected MCVideo system in a different trust domain, then the local MCVideo system can route the SIP request through an MCVideo gateway server that acts as an exit point from the local MCVideo system to the interconnected MCVideo system.

NOTE 9: How the controlling MCVideo function determines the public service identity of the terminating participating MCVideo function associated with the group identity or of the MCVideo gateway server in the interconnected MCVideo system is out of the scope of the present document.

NOTE 10: How the local MCVideo system routes the SIP request through an exit MCVideo gateway server is out of the scope of the present document.

d) shall copy the contents of the application/vnd.3gpp.mcvideo-info+xml MIME body received in the incoming SIP MESSAGE request into an application/vnd.3gpp.mcvideo-info+xml MIME body included in the outgoing SIP MESSAGE request;

e) shall copy the contents of the application/vnd.3gpp.mcvideo-regroup+xml MIME body received in the incoming SIP MESSAGE request into an application/vnd.3gpp.mcvideo-regroup+xml MIME body included in the outgoing SIP MESSAGE request;

f) shall use the list of affiliated MCVideo IDs for this terminating participating MCVideo function to create and include a <users-for-regroup> element contained in the application/vnd.3gpp.mcvideo-regroup+xml MIME body;

g) shall copy the contents of the P-Asserted-Identity header field of the incoming SIP MESSAGE request to the P-Asserted-Identity header field of the outgoing SIP MESSAGE request; and

h) shall send the SIP MESSAGE request as specified in 3GPP TS 24.229 [11].

21.2.3.3 Decision to remove a regroup using preconfigured group

When the controlling MCVideo function decides to remove a regroup using preconfigured group, the controlling MCVideo function:

1) if the regroup is a group regroup based on preconfigured group, then:

   a) for each constituent group belonging to the regroup:

      i) shall determine the non-controlling MCVideo function serving that group;

      ii) shall generate an outgoing SIP MESSAGE request in accordance with 3GPP TS 24.229 [11] and IETF RFC 3428 [17];

      iii) shall set the Request-URI of the outgoing SIP MESSAGE request to the public service identity of the non-controlling MCVideo function determined in step i);

NOTE 1: The public service identity can identify the non-controlling MCVideo function in the local MCVideo system or in an interconnected MCVideo system.

NOTE 2: If the non-controlling MCVideo function is in an interconnected MCVideo system in a different trust domain, then the public service identity can identify the MCVideo gateway server that acts as an entry point in the interconnected MCVideo system from the local MCVideo system.

NOTE 3: If the non-controlling MCVideo function is in an interconnected MCVideo system in a different trust domain, then the local MCVideo system can route the SIP request through an MCVideo gateway server that acts as an exit point from the local MCVideo system to the interconnected MCVideo system.

NOTE 4: How the controlling MCVideo function determines the public service identity of the non-controlling MCVideo function associated with the group identity or of the MCVideo gateway server in the interconnected MCVideo system is out of the scope of the present document.

NOTE 5: How the local MCVideo system routes the SIP request through an exit MCVideo gateway server is out of the scope of the present document.

      iv) shall create an application/vnd.3gpp.mcvideo-regroup+xml MIME body and include it in the outgoing SIP MESSAGE request with:

         A) an <mcvideo-regroup-uri> element set to the identity of the regroup;

         B) a <regroup-action> element set to "remove"; and

      v) shall send the SIP MESSAGE request as specified in 3GPP TS 24.229 [11]; and

2) if the regroup is a user regroup based on preconfigured group, then the controlling MCVideo function shall create a list of terminating participating MCVideo functions serving users belonging to and affiliated with the regroup and shall create a list of MCVideo IDs that are affiliated to the regroup and served by the same terminating partificpating MCVideo function for each of the members of the list of terminating participating MCVideo functions, and for each terminating participating MCVideo function in the list:

   a) shall generate an outgoing SIP MESSAGE request in accordance with 3GPP TS 24.229 [11] and IETF RFC 3428 [17];

   b) shall set the Request-URI of the outgoing SIP MESSAGE request to the public service identity of the terminating participating MCVideo function;

NOTE 6: The public service identity can identify the terminating participating MCVideo function in the local MCVideo system or in an interconnected MCVideo system.

NOTE 7: If the terminating participating MCVideo function is in an interconnected MCVideo system in a different trust domain, then the public service identity can identify the MCVideo gateway server that acts as an entry point in the interconnected MCVideo system from the local MCVideo system.

NOTE 8: If the terminating participating MCVideo function is in an interconnected MCVideo system in a different trust domain, then the local MCVideo system can route the SIP request through an MCVideo gateway server that acts as an exit point from the local MCVideo system to the interconnected MCVideo system.

NOTE 9: How the controlling MCVideo function determines the public service identity of the terminating participating MCVideo function associated with the group identity or of the MCVideo gateway server in the interconnected MCVideo system is out of the scope of the present document.

NOTE 10: How the local MCVideo system routes the SIP request through an exit MCVideo gateway server is out of the scope of the present document.

c) shall create an application/vnd.3gpp.mcvideo-regroup+xml MIME body and include it in the outgoing SIP MESSAGE request with:

   i) an <mcvideo-regroup-uri> element set to the identity of the regroup;

   ii) a <regroup-action> element set to "remove"; and

   iii) a <users-for-regroup> element set to the list of MCVideo IDs served by this terminating participating MCVideo function that are affiliated to the regroup; and

d) shall send the SIP MESSAGE request as specified in 3GPP TS 24.229 [11].

21.2.4 Non-controlling MCVideo function procedures

21.2.4.1 Notification of creation of a group regroup using preconfigured group

When receiving a "SIP MESSAGE request to a non-controlling MCVideo function to request creation of a group regroup using preconfigured group" the non-controlling MCVideo function:

1) if unable to process the request due to a lack of resources or a risk of congestion exists, may reject the SIP MESSAGE request with a SIP 500 (Server Internal Error) response, may include a Retry-After header field to the SIP 500 (Server Internal Error) response as specified in IETF RFC 3261 [15], and shall skip the rest of the steps;

2) or each group identified in the <groups-for-regroup> element of an application/vnd.3gpp.mcvideo-regroup+xml MIME body in the incoming SIP MESSAGE request for which the MCVideo function is the non-controlling MCVideo function:

   a) shall determine if the group is already regrouped, and if the group is already regrouped:

      i) shall reject the SIP request with a SIP 403 (Forbidden) response including warning text set to "148 group is regrouped" in a Warning header field as specified in clause 4.9; and

      ii) shall not process the remaining steps;

3) shall store:

   a) the list of group identities contained in the <groups-for-regroup> element;

   b) the value of the <mcvideo-regroup-uri> element as the identity of the group regroup;

   c) the value of the <preconfigured-group> element of the application/vnd.3gpp.mcvideo-regroup+xml MIME body as the identity of the preconfigured group; and

   d) information that each of the groups identified in the <groups-for-regroup> element has been regrouped using a preconfigured group;

4) shall send a SIP 200 (OK) response in accordance with 3GPP TS 24.229 [11] and IETF RFC 3428 [17]:

5) for each group identified in the <groups-for-regroup> element of an application/vnd.3gpp.mcvideo-regroup+xml MIME body in the incoming SIP MESSAGE request for which the MCVideo function is the non-controlling MCVideo function shall create a separate list of MCVideo IDs for users belonging to and affiliated with the identified group who are served by the same terminating participating MCVideo function;

6) shall merge the lists of MCVideo IDs associated with each terminating participating MCVideo function such that the resulting list associated with a terminating participating MCVideo function contains the MCVideo IDs of all users served by the participating MCVideo function that belong to and are affiliated with any of the groups identified in the <groups-for-regroup> element; and

7) for each terminating participating MCVideo function identified above:

   a) shall generate an outgoing SIP MESSAGE request in accordance with 3GPP TS 24.229 [11] and IETF RFC 3428 [17];

   b) shall include in the SIP MESSAGE request all Accept-Contact header fields and all Reject-Contact header fields, with their feature tags and their corresponding values along with parameters according to rules and procedures of IETF RFC 3841 [20] that were received (if any) in the incoming SIP MESSAGE request;

   c) shall set the Request-URI of the outgoing SIP MESSAGE request to the public service identity of the terminating participating MCVideo function;

NOTE 1: The public service identity can identify the terminating participating MCVideo function in the local MCVideo system or in an interconnected MCVideo system.

NOTE 2: If the terminating participating MCVideo function is in an interconnected MCVideo system in a different trust domain, then the public service identity can identify the MCVideo gateway server that acts as an entry point in the interconnected MCVideo system from the local MCVideo system.

NOTE 3: If the terminating participating MCVideo function is in an interconnected MCVideo system in a different trust domain, then the local MCVideo system can route the SIP request through an MCVideo gateway server that acts as an exit point from the local MCVideo system to the interconnected MCVideo system.

NOTE 4: How the non-controlling MCVideo function determines the public service identity of the terminating participating MCVideo function associated with the group identity or of the MCVideo gateway server in the interconnected MCVideo system is out of the scope of the present document.

NOTE 5: How the local MCVideo system routes the SIP request through an exit MCVideo gateway server is out of the scope of the present document.

   d) shall copy the contents of the application/vnd.3gpp.mcvideo-info+xml MIME body received in the incoming SIP MESSAGE request into an application/vnd.3gpp.mcvideo-info+xml MIME body included in the outgoing SIP MESSAGE request;

   e) shall copy the contents of the application/vnd.3gpp.mcvideo-regroup+xml MIME body received in the incoming SIP MESSAGE request into an application/vnd.3gpp.mcvideo-regroup+xml MIME body included in the outgoing SIP MESSAGE request;

   f) shall use the list of MCVideo IDs for this terminating participating MCVideo function as generated in step 6) to create and include the <users-for-regroup> element in the application/vnd.3gpp.mcvideo-regroup+xml MIME body;

   g) shall copy the contents of the P-Asserted-Identity header field of the incoming SIP MESSAGE request to the P-Asserted-Identity header field of the outgoing SIP MESSAGE request; and

   h) shall send the SIP MESSAGE request as specified in 3GPP TS 24.229 [11].

21.2.4.2 Notification of removal of a group regroup using preconfigured group

When receiving a "SIP MESSAGE request to the non-controlling MCVideo function to remove a group regroup using preconfigured group" the non-controlling MCVideo function:

1) if unable to process the request due to a lack of resources or a risk of congestion exists, may reject the SIP MESSAGE request with a SIP 500 (Server Internal Error) response. The non-controlling MCVideo function may include a Retry-After header field to the SIP 500 (Server Internal Error) response as specified in IETF RFC 3261 [15]. The non-controlling MCVideo function shall skip the rest of the steps;

2) shall send a SIP 200 (OK) response in accordance with 3GPP TS 24.229 [11] and IETF RFC 3428 [17]:

3) shall identify the constituent groups belonging to the regroup identified in the <mcvideo-regroup-uri> in the application/vnd.3gpp.mcvideo-regroup+xml MIME body contained in the incoming SIP MESSAGE for which this MCVideo function is the non-controlling MCVideo function and shall create a list of terminating participating MCVideo functions serving MCVideo IDs belonging to the identified constituent groups and for each member of the list of terminating participating MCVideo functions in the list shall create a list of MCVideo IDs affiuliated to the regroup and served by that terminating participating MCVideo function;

4) for each terminating participating MCVideo function identified in step 3):

   a) shall generate an outgoing SIP MESSAGE request in accordance with 3GPP TS 24.229 [11] and IETF RFC 3428 [17];

   b) shall include in the SIP MESSAGE request all Accept-Contact header fields and all Reject-Contact header fields, with their feature tags and their corresponding values along with parameters according to rules and procedures of IETF RFC 3841 [20] that were received (if any) in the incoming SIP MESSAGE request;

   c) shall set the Request-URI of the outgoing SIP MESSAGE request to the public service identity of the terminating participating MCVideo function;

NOTE 1: The public service identity can identify the terminating participating MCVideo function in the local MCVideo system or in an interconnected MCVideo system.

NOTE 2: If the terminating participating MCVideo function is in an interconnected MCVideo system in a different trust domain, then the public service identity can identify the MCVideo gateway server that acts as an entry point in the interconnected MCVideo system from the local MCVideo system.

NOTE 3: If the terminating participating MCVideo function is in an interconnected MCVideo system in a different trust domain, then the local MCVideo system can route the SIP request through an MCVideo gateway server that acts as an exit point from the local MCVideo system to the interconnected MCVideo system.

NOTE 4: How the non-controlling MCVideo function determines the public service identity of the terminating participating MCVideo function associated with the group identity or of the MCVideo gateway server in the interconnected MCVideo system is out of the scope of the present document.

NOTE 5: How the local MCVideo system routes the SIP request through an exit MCVideo gateway server is out of the scope of the present document.

   d) shall copy the contents of the application/vnd.3gpp.mcvideo-info+xml MIME body received in the incoming SIP MESSAGE request into an application/vnd.3gpp.mcvideo-info+xml MIME body included in the outgoing SIP MESSAGE request;

   e) shall copy the contents of the application/vnd.3gpp.mcvideo-regroup+xml MIME body received in the incoming SIP MESSAGE request into an application/vnd.3gpp.mcvideo-regroup+xml MIME body included in the outgoing SIP MESSAGE request;

      i) shall create and include a <users-for-regroup> element containing the list of MCVideo IDs affiliated to the regroup that are served by this terminating participating MCVideo function as determined in step 3); and

   f) shall copy the contents of the P-Asserted-Identity header field of the incoming SIP MESSAGE request to the P-Asserted-Identity header field of the outgoing SIP MESSAGE request; and

   g) shall send the SIP MESSAGE request as specified in 3GPP TS 24.229 [11].

21.2.4.3 Notification of additional members of a group regroup using preconfigured group

When a non-controlling MCVideo function becomes aware of an MCVideo client affiliating with a group that it controls, where that group is a constituent group of a group regroup using preconfigured group, the non-controlling MCVideo function:

1) shall create a list of MCVideo IDs for users belonging to and affiliated with the identified constituent group who are served by the same terminating participating MCVideo function as the MCVideo client affiliating with the constituent group;

2) shall generate an outgoing SIP MESSAGE request in accordance with 3GPP TS 24.229 [11] and IETF RFC 3428 [17];

3) shall create in the SIP MESSAGE request copies of all Accept-Contact header fields and all Reject-Contact header fields, with their feature tags and their corresponding values along with parameters according to rules and procedures of IETF RFC 3841 [20] that were received (if any) in the SIP MESSAGE request received from the controlling MCVideo function for the group regroup to notify creation of the group regroup using preconfigured group;

4) shall set the Request-URI of the outgoing SIP MESSAGE request to the public service identity of the terminating participating MCVideo function;

NOTE 1: The public service identity can identify the terminating participating MCVideo function in the local MCVideo system or in an interconnected MCVideo system.

NOTE 2: If the terminating participating MCVideo function is in an interconnected MCVideo system in a different trust domain, then the public service identity can identify the MCVideo gateway server that acts as an entry point in the interconnected MCVideo system from the local MCVideo system.

NOTE 3: If the terminating participating MCVideo function is in an interconnected MCVideo system in a different trust domain, then the local MCVideo system can route the SIP request through an MCVideo gateway server that acts as an exit point from the local MCVideo system to the interconnected MCVideo system.

NOTE 4: How the non-controlling MCVideo function determines the public service identity of the terminating participating MCVideo function associated with the group identity or of the MCVideo gateway server in the interconnected MCVideo system is out of the scope of the present document.

NOTE 5: How the local MCVideo system routes the SIP request through an exit MCVideo gateway server is out of the scope of the present document.

5) shall create an application/vnd.3gpp.mcvideo-info+xml MIME body in the outgoing SIP MESSAGE request using the information from the application/vnd.3gpp.mcvideo-info+xml MIME body originally included in the SIP MESSAGE request received from the controlling MCVideo function for the group regroup to notify creation of the group regroup using preconfigured group;

6) shall create an application/vnd.3gpp.mcvideo-regroup+xml MIME body in the outgoing SIP MESSAGE request using the information from the application/vnd.3gpp.mcvideo-regroup+xml MIME body originally included in the SIP MESSAGE request received from the controlling MCVideo function for the group regroup to notify creation of the group regroup using preconfigured group;

7) shall use the list of MCVideo IDs as generated in step 1) to create and include the <users-for-regroup> element in the application/vnd.3gpp.mcvideo-regroup+xml MIME body;

8) shall copy the P-Asserted-Identity header field included in the received SIP MESSAGE request into the outgoing SIP MESSAGE request; and

9) shall send the SIP MESSAGE request as specified in 3GPP TS 24.229 [11].

21.3 User regroup using a preconfigured group

21.3.1 Client procedures

21.3.1.1 Requesting a user regroup using a preconfigured group

Upon receiving a request from an MCVideo user to establish an MCVideo user regroup using a preconfigured group, the MCVideo client shall generate a SIP MESSAGE request in accordance with 3GPP TS 24.229 [11] and IETF RFC 3428 [17] and:

1) shall include an Accept-Contact header field containing the g.3gpp.mcvideo media feature tag along with the "require" and "explicit" header field parameters according to IETF RFC 3841 [20];

2) shall include an Accept-Contact header field with the media feature tag g.3gpp.icsi-ref with the value of "urn:urn-7:3gpp-service.ims.icsi.mcvideo" along with parameters "require" and "explicit" according to IETF RFC 3841 [20];

3) shall set the Request-URI to the public service identity identifying the originating participating MCVideo function serving the MCVideo user;

4) may include a P-Preferred-Identity header field in the SIP MESSAGE request containing a public user identity as specified in 3GPP TS 24.229 [11];

5) shall include the ICSI value "urn:urn-7:3gpp-service.ims.icsi.mcvideo" (coded as specified in 3GPP TS 24.229 [11]), in a P-Asserted-Service-Id header field according to IETF RFC 6050 [14];

6) shall contain an application/vnd.3gpp.mcvideo-info+xml MIME body with the <mcvideoinfo> element containing the <mcvideo-Params> element with:

   a) the <mcvideo-client-id> element set to the MCVideo client ID of the originating MCVideo client; and

   b) if the MCVideo client is aware of active functional aliases, and an active functional alias is to be included in the SIP MESSAGE request, the <functional-alias-URI> set to the URI of the used functional alias;

7) shall contain an application/vnd.3gpp.mcvideo-regroup+xml MIME body with:

   a) the <mcvideo-regroup-uri> element set to a unique temporary group identity URI;

NOTE: How the unique temporary group identity URI is formed is an implementation decision.

   b) the <preconfigured-group> element set to the group identity of the preconfigured group;

   c) the <regroup-action> element set to "create"; and

   d) the <users-for-regroup> element set to the list of MCVideo IDs of users that are to be included in the regroup; and

8) shall send the SIP MESSAGE request according to 3GPP TS 24.229 [11].

On receiving a SIP 2xx response to the SIP MESSAGE request, the MCVideo client:

1) should notify the MCVideo user of the successful creation of the user regroup using preconfigured group.

On receiving a SIP 4xx response, a SIP 5xx response or a SIP 6xx response to the SIP INVITE request:

1) should notify the MCVideo user of the failure to create the user regroup using preconfigured group.

21.3.1.2 Removing a regroup using preconfigured group

When the user requests the MCVideo client to remove a user regroup, the MCVideo client uses the procedure in clause 21.2.1.2.

21.3.1.3 Creating a user regroup using preconfigured group

The procedure in clause 21.2.1.3 is used by the MCVideo client when the MCVideo server notifies the MCVideo client of the creation of a user regroup using preconfigured group.

21.3.1.4 Removing a user regroup using preconfigured group

The procedure in clause 21.2.1.4 is used by the MCVideo client when the MCVideo server notifies the MCVideo client of the removal of a user regroup using preconfigured group.

21.3.2 Participating MCVideo function procedures

21.3.2.1 General

In the procedures in this clause:

1) temporary group identity in an incoming SIP MESSAGE request refers to the temporary group identity from the <mcvideo-regroup-uri> element of the application/vnd.3gpp.mcvideo-regroup+xml MIME body of the incoming SIP MESSAGE request; and

2) preconfigured group identity in an incoming SIP MESSAGE request refers to the the group identity from the <preconfigured-group> element of the application/vnd.3gpp.mcvideo-regroup+xml MIME body of the incoming SIP MESSAGE request.

21.3.2.2 Requesting a user regroup using a preconfigured group

Upon receipt of a "SIP MESSAGE request to the originating participating MCVideo function to request creation of a user regroup using preconfigured group", the originating participating MCVideo function:

1) if unable to process the request due to a lack of resources or a risk of congestion exists, may reject the SIP MESSAGE request with a SIP 500 (Server Internal Error) response. The originating participating MCVideo function may include a Retry-After header field to the SIP 500 (Server Internal Error) response as specified in IETF RFC 3261 [15]. The originating participating MCVideo function shall skip the rest of the steps;

2) shall determine the MCVideo ID of the user from the public user identity in the P-Asserted-Identity header field of the SIP MESSAGE request;

3) shall authorise the user. If the user profile identified by the MCVideo ID does not contain an <allow-regroup> element set to "true", the originating participating MCVideo function shall reject the "SIP MESSAGE request to the originating participating MCVideo function to request creation of a user regroup using preconfigured group" with a SIP 403 (Forbidden) response to the SIP MESSAGE request, with warning text set to "160 user not authorised to request creation of a regroup" in a Warning header field as specified in clause 4.9, and shall not continue with the rest of these steps;

4) shall select a controlling MCVideo function to manage the regroup and determine the public service identity of the controlling MCVideo function;

NOTE 1: How the originating participating MCVideo function selects a controlling MCVideo function to manage the regroup is a deployment decision.

NOTE 2: The public service identity can identify the controlling MCVideo function in the local MCVideo system or in an interconnected MCVideo system.

NOTE 3: If the controlling MCVideo function is in an interconnected MCVideo system in a different trust domain, then the public service identity can identify the MCVideo gateway server that acts as an entry point in the interconnected MCVideo system from the local MCVideo system.

NOTE 4: If the controlling MCVideo function is in an interconnected MCVideo system in a different trust domain, then the local MCVideo system can route the SIP request through an MCVideo gateway server that acts as an exit point from the local MCVideo system to the interconnected MCVideo system.

NOTE 5: How the originating participating MCVideo function determines the public service identity of the controlling MCVideo function associated with the group identity or of the MCVideo gateway server in the interconnected MCVideo system is out of the scope of the present document.

NOTE 6: How the local MCVideo system routes the SIP request through an exit MCVideo gateway server is out of the scope of the present document.

5) shall generate an outgoing SIP MESSAGE request in accordance with 3GPP TS 24.229 [11] and IETF RFC 3428 [17] and:

   a) shall include in the SIP MESSAGE request all Accept-Contact header fields and all Reject-Contact header fields, with their feature tags and their corresponding values along with parameters according to rules and procedures of IETF RFC 3841 [20] that were received (if any) in the incoming SIP MESSAGE request;

   b) shall set the Request-URI of the outgoing SIP MESSAGE request to the public service identity of the controlling MCVideo function associated with the preconfigured group identity in the incoming SIP MESSAGE request;

   c) shall copy the contents of the application/vnd.3gpp.mcvideo-info+xml MIME body received in the incoming SIP MESSAGE request into an application/vnd.3gpp.mcvideo-info+xml MIME body included in the outgoing SIP MESSAGE request; and

   d) shall copy the contents of the application/vnd.3gpp.mcvideo-regroup+xml MIME body received in the incoming SIP MESSAGE request into an application/vnd.3gpp.mcvideo-regroup+xml MIME body included in the outgoing SIP MESSAGE request; and

   e) shall copy the contents of the P-Asserted-Identity header field of the incoming SIP MESSAGE request to the P-Asserted-Identity header field of the outgoing SIP MESSAGE request; and

6) shall send the SIP MESSAGE request as specified in 3GPP TS 24.229 [11].

Upon receipt of a SIP 480 (Temporarily Unavailable) response to the above SIP MESSAGE request, the originating participating MCVideo function:

1) shall select a different controlling MCVideo function to manage the regroup and determine the public service identity of that controlling MCVideo function;

2) shall generate a SIP MESSAGE request as specified in this clause with the Request-URI of the outgoing SIP MESSAGE request set to the public service identity of the controlling MCVideo function selected in step 1); and

3) shall forward the SIP MESSAGE request according to 3GPP TS 24.229 [11].

Upon receipt of a SIP 2xx response to the above SIP MESSAGE request, the originating participating MCVideo function:

1) shall generate a SIP 200 (OK) response as specified in the clause 6.3.2.1.5.2;

2) shall include Warning header field(s) that were received in the incoming SIP 200 (OK) response;

3) shall include the public service identity received in the P-Asserted-Identity header field of the incoming SIP 200 (OK) response into the P-Asserted-Identity header field of the outgoing SIP 200 (OK) response; and

4) shall send the SIP 200 (OK) response to the MCVideo client according to 3GPP TS 24.229 [11].

Upon receipt of a SIP 4xx response that is not a 480 response, or a SIP 5xx or 6xx response to the above SIP MESSAGE request, the originating participating MCVideo function:

1) shall generate a SIP response according to 3GPP TS 24.229 [11];

2) shall include Warning header field(s) that were received in the incoming SIP response; and

3) shall forward the SIP response to the MCVideo client according to 3GPP TS 24.229 [11].

21.3.2.3 Removing a regroup using preconfigured group

When the originating participating MCVideo function needs to remove a user regroup, the originating participating MCVideo function uses the procedure in clause 21.2.2.3.

21.3.2.4 Notification of creation of a user regroup using preconfigured group

When receiving a "SIP MESSAGE request to the terminating participating MCVideo function to create a user regroup using preconfigured group", the terminating participating MCVideo function:

1) if unable to process the request due to a lack of resources or a risk of congestion exists, may reject the SIP MESSAGE request with a SIP 500 (Server Internal Error) response. The MCVideo function may include a Retry-After header field to the SIP 500 (Server Internal Error) response as specified in IETF RFC 3261 [15]. The terminating participating MCVideo function shall skip the rest of the steps;

2) shall send a SIP 200 (OK) response in accordance with 3GPP TS 24.229 [11] and IETF RFC 3428 [17];

3) for each MCVideo ID contained in the <users-for-regroup> element of the application/vnd.3gpp.mcvideo-regroup+xml MIME body, the terminating participating MCVideo function is aware from stored information that the MCVideo client has not previously been notified of the creation of the user regroup:

   a) shall generate a SIP MESSAGE request in accordance with 3GPP TS 24.229 [11] and IETF RFC 3428 [17]:

   b) include in the SIP MESSAGE request all Accept-Contact header fields and all Reject-Contact header fields, with their feature tags and their corresponding values along with parameters according to rules and procedures of IETF RFC 3841 [20] that were received (if any) in the incoming SIP MESSAGE request;

   c) shall set the Request-URI of the outgoing SIP MESSAGE request to the public service identity associated with the MCVideo ID;

   d) shall copy the contents of the application/vnd.3gpp.mcvideo-info+xml MIME body received in the incoming SIP MESSAGE request into an application/vnd.3gpp.mcvideo-info+xml MIME body included in the outgoing SIP MESSAGE request;

   e) shall copy the contents of the application/vnd.3gpp.mcvideo-regroup+xml MIME body received in the incoming SIP MESSAGE request into an application/vnd.3gpp.mcvideo-regroup+xml MIME body included in the outgoing SIP MESSAGE request, with the exceptions that any <users-for-regroup> elements shall not be copied;

   f) shall copy the contents of the P-Asserted-Identity header field of the incoming SIP MESSAGE request to the P-Asserted-Identity header field of the outgoing SIP MESSAGE request;

   g) shall send the SIP MESSAGE request as specified in 3GPP TS 24.229 [11];

   h) shall consider the MCVideo ID as affiliated with the temporary group identity representing the regroup identified in the <mcvideo-regroup-uri> element in the incoming SIP MESSAGE request; and

4) shall store:

   a) the value of the <mcvideo-regroup-uri> element as the identity of the regroup based on a preconfigured group;

   b) the value of the preconfigured-group> element of the application/vnd.3gpp.mcvideo-regroup+xml MIME body as the identity of the preconfigured group; and

   c) the list of the users that are members of the user regroup;

   until the regroup is removed.

21.3.2.5 Notification of removal of a user regroup using preconfigured group

When the terminating participating MCVideo function receives a request to remove a user regroup it uses the procedure in clause 21.2.2.5.

21.3.3 Controlling MCVideo function procedures

21.3.3.1 Request to create a user regroup using preconfigured group

When receiving a "SIP MESSAGE request to the controlling MCVideo function to request creation of a user regroup using preconfigured group" the controlling MCVideo function:

1) if unable to process the request due to a lack of resources or a risk of congestion exists, may reject the SIP MESSAGE request with a SIP 500 (Server Internal Error) response. The controlling MCVideo function may include a Retry-After header field to the SIP 500 (Server Internal Error) response as specified in IETF RFC 3261 [15]. The controlling MCVideo function shall skip the rest of the steps;

2) if the controlling MCVideo function is unable to handle the user regroup it shall send a SIP 480 (Temporarily Unavailable) response to the incoming SIP MESSAGE request and shall skip the rest of the steps;

3) if the controlling MCVideo function determines that the proposed group ID for the regroup is already in use, shall reject the "SIP MESSAGE request to the controlling MCVideo function to request creation of a user regroup using preconfigured group" with a SIP 403 (Forbidden) response to the SIP MESSAGE request, with warning text set to "165 group ID for regroup already in use" in a Warning header field as specified in clause 4.9, and shall skip the rest of the steps;

4) shall create a separate list of MCVideo IDs containing all users identified in the <users-for-regroup> element in the application/vnd.3gpp.mcvideo-regroup+xml MIME body who are served by the same terminating participating MCVideo function;

5) for each terminating participating MCVideo function identified in step 3):

   a) shall generate an outgoing SIP MESSAGE request in accordance with 3GPP TS 24.229 [11] and IETF RFC 3428 [17];

   b) shall include in the SIP MESSAGE request all Accept-Contact header fields and all Reject-Contact header fields, with their feature tags and their corresponding values along with parameters according to rules and procedures of IETF RFC 3841 [20] that were received (if any) in the incoming SIP MESSAGE request;

   c) shall set the Request-URI of the outgoing SIP MESSAGE request to the public service identity of the terminating participating MCVideo function;

NOTE 1: The public service identity can identify the terminating participating MCVideo function in the local MCVideo system or in an interconnected MCVideo system.

NOTE 2: If the terminating participating MCVideo function is in an interconnected MCVideo system in a different trust domain, then the public service identity can identify the MCVideo gateway server that acts as an entry point in the interconnected MCVideo system from the local MCVideo system.

NOTE 3: If the terminating participating MCVideo function is in an interconnected MCVideo system in a different trust domain, then the local MCVideo system can route the SIP request through an MCVideo gateway server that acts as an exit point from the local MCVideo system to the interconnected MCVideo system.

NOTE 4: How the controlling MCVideo function determines the public service identity of the terminating participating MCVideo function associated with the group identity or of the MCVideo gateway server in the interconnected MCVideo system is out of the scope of the present document.

NOTE 5: How the local MCVideo system routes the SIP request through an exit MCVideo gateway server is out of the scope of the present document.

   d) shall copy the contents of the application/vnd.3gpp.mcvideo-info+xml MIME body received in the incoming SIP MESSAGE request into an application/vnd.3gpp.mcvideo-info+xml MIME body included in the outgoing SIP MESSAGE request;

   e) shall copy the contents of the application/vnd.3gpp.mcvideo-regroup+xml MIME body received in the incoming SIP MESSAGE request into an application/vnd.3gpp.mcvideo-regroup+xml MIME body included in the outgoing SIP MESSAGE request;

f) shall use the list of MCVideo IDs for this participating MCVideo function as generated in step 3) to create and include a <users-for-regroup> element contained in the application/vnd.3gpp.mcvideo-regroup+xml MIME body;

g) shall copy the contents of the P-Asserted-Identity header field of the incoming SIP MESSAGE request to the P-Asserted-Identity header field of the outgoing SIP MESSAGE request; and

h) shall send the SIP MESSAGE request as specified in 3GPP TS 24.229 [11];

6) when the controlling MCVideo function receives a SIP 200 (OK) response from any of the terminating participating MCVideo functions that were sent a SIP MESSAGE request in step 4) the controlling MCVideo function shall:

a) send a SIP 200 (OK) response to the incoming SIP MESSAGE request; and

b) store the the value of the <mcvideo-regroup-uri> element as the identity of the user regroup based on a preconfigured group;

c) the value of the preconfigured-group> element of the application/vnd.3gpp.mcvideo-regroup+xml MIME body as the identity of the preconfigured group; and

d) store the set of MCVideo IDs contained in the <users-for-regroup> element of the application/vnd.3gpp.mcvideo-regroup+xml MIME body as the the list of the users that are members of the user regroup; and

7) if no SIP 200 (OK) response is received for a SIP MESSAGE sent in step 4), the controlling MCVideo function shall send a SIP 480 (Temporarily Unavailable) response to the incoming SIP MESSAGE request in accordance with 3GPP TS 24.229 [11] and IETF RFC 3428 [17].

21.3.3.2 Request to remove a user regroup using preconfigured group

When the controlling MCVideo function receives a request to remove a user regroup it uses the procedure in clause 21.2.3.2.

21.3.3.3 Decision to remove a regroup using preconfigured group

When the controlling MCVideo function decides to remove a user regroup it uses the procedure in clause 21.2.3.3.

Annex A (informative): Signalling flows

NOTE: the current version of this specification does not include example signalling flows.

Annex B (informative): Timers

B.1 General

The following tables give a brief description of the timers used in the present document.

For the on-network timers described in the present document, the following timer families are used:

- TNGx: Timer oN-network Group call x

For the off-network timers described in the present document, the following timer families are used:

- TFGx: Timer oFf-network Group call x
- TFPy: Timer oFf-network Private call y
- TFBz: Timer oFf-network Broadcast group call z

where x, y and z represent numbers.

B.2 On-network timers

B.2.1 Timers in the controlling MCVideo function

The table B.2.1-1 provides a description of the timers used by the controlling MCVideo function, specifies the timer values, describes the reason for starting of the timer, normal stop and the action on expiry.

Table B.2.1-1: controlling MCVideo function timers

Timer	Timer value	Cause of start	Normal stop	On expiry
TNG1 (acknowledged call setup timer) (NOTE 1)	Obtained from the group document in the <on-network-timeout-for-acknowledgement-of-required-members> element as specified in 3GPP TS 24.481 [24].	On reception of a SIP INVITE request to start a group session where the group document contains <on-network-required> group members as specified in 3GPP TS 24.481 [24].	On receipt of all SIP 200 (OK) responses to all SIP INVITE requests for <on-network-required> group members as specified in 3GPP TS 24.481 [24].	Either proceed with the set-up of the call or abandon the call.
TNG2 (in-progress emergency group call timer) (NOTE 2)	Obtained from the <group-time-limit> element of the <emergency-call> element of the <on-network> element of the service configuration document as specified in 3GPP TS 24.484 [25].	On reception of a SIP INVITE request or SIP re-INVITE request that initiates an MCVideo emergency group call.	On acceptance of a request to cancel the in-progress emergency state of a group.	Cancels the in-progress emergency state of the group and return the session and/or call to normal priority level.
TNG3 (group call timer). (NOTE 1).	Set to the value of the <on-network-maximum-duration> element from the group document.	On reception of a SIP INVITE request to start a group session after retrieval of the group document from the group management server. For a temporary group call, when merging active group calls into a temporary group call. When splitting a temporary group all into independent active calls	When the last MCVideo client has left the session. When a temporary group call is split into independent active calls. For active group calls, when merging them into a temporary group call.	Release the group call.
NOTE 1: More than one instance of this timer can be running in the controlling MCVideo function, each instance associated with a specific group call. NOTE 2: More than one instance of this timer can be running in the controlling MCVideo function, each instance associated with a specific in-progress emergency state of a single group				

B.3 Off-network timers

B.3.1 Timers in off-network group call

B.3.1.1 Basic call control

The table B.3.1.1-1 lists the timers used in basic call control, their start values, their limits, describes the cause of the start, and the action to take on normal stop and on expiry.

Table B.3.1.1-1: Timers in basic call control

Timer	Timer value	Cause of start	Normal stop	On expiry
TFG1 (wait for call announcement)	Default value: 150 millisecond Configurable. Set to the value of "/<x>/OffNetwork/Timers/TFG1" leaf node present in the UE initial configuration as specified in 3GPP TS 24.483 [4].	When the client sends a CALL PROBE message.	Reception of a CALL ANNOUNCEMENT message.	Send a CALL ANNOUNCEMENT message.
TFG2 (call announcement)	Calculated. Refer to section 9.3.2.4.1.1.	Commencement of group call. Restarted every time a CALL PROBE message is received OR CALL ANNOUNCEMENT message is sent or received.	Termination of group call. When the client Receives a CALL PROBE message or CALL ANNOUNCEMENT message, Re-calculate timer value and restart.	Send a CALL ANNOUNCEMENT message. Re-calculate timer value and restart.
TFG3 (call probe retransmission)	Default value: 40 millisecond Depends on the characteristic of the D2D (D2D Sidelink period) Configurable. Set to the value of "/<x>/OffNetwork/Timers/TFG3" leaf node present in the UE initial configuration as specified in 3GPP TS 24.483 [4].	When the client sends a CALL PROBE message.	Reception of a CALL ANNOUNCEMENT message. Or TFG1 Expires. Or User releases the call.	Send a CALL PROBE message.
TFG4 (waiting for the user)	Default value: 30 seconds Maximum value: 60 seconds Configurable. Set to the value of "/<x>/OffNetwork/Timers/TFG4" leaf node present in the UE initial configuration as specified in 3GPP TS 24.483 [4].	Reception of CALL ANNOUNCEMENT message when not participating in the ongoing call.	Reception of User action (Accept or Reject).	Stop incoming call notification.
TFG5 (not present incoming call announcements)	Default value: 30 seconds Configurable. Set to the value of "/<x>/OffNetwork/Timers/TFG5" leaf node present in the UE initial configuration as specified in 3GPP TS 24.483 [4].	Expiration of TFG4 Or User rejects the call. Or User releases the call.	-	Reset group call state machine.
TFG6 (Max duration)	Calculated. Refer to section 9.3.2.4.1.2.	Commencement of group call	Termination of group call	Release the group call

B.3.1.2 Call type control

The table B.3.1.2-1 lists the timers used in call type control, their star values, describes the cause of start, and the action to take on normal stop and on expiry.

Table B.3.1.2-1: Call type control

Timer	Timer value	Cause of start	Normal stop	On expiry
TFG11 (emergency end retransmission)	Default value: 1 second Configurable. Set to the value of "/<x>/OffNetwork/Timers/TFG11" leaf node present in the UE initial configuration as specified in 3GPP TS 24.483 [4].	When the client sends a GROUP CALL EMERGENCY END message.	-	Send a GROUP CALL EMERGENCY END message Increment associated counter by 1. If counter has reached limit, stop the timer.
TFG12 (imminent peril end retransmission)	Default value: 1 second Configurable. Set to the value of "/<x>/OffNetwork/Timers/TFG12" leaf node present in the UE initial configuration as specified in 3GPP TS 24.483 [4].	When the client sends a GROUP CALL IMMINENT PERIL END message.	-	Send a GROUP CALL IMMINENT PERIL END message Increment associated counter by 1. If counter has reached limit, stop the timer.
TFG13 (implicit downgrade emergency)	Calculated. Refer to clause 9.3.3.4.1.1.	Upgrade of the call to emergency group call.	Downgrade of the call.	Downgrade the call.
TFG14 (implicit downgrade imminent peril)	Calculated. Refer to clause 9.3.3.4.1.2.	Upgrade of the call to imminent peril call.	Downgrade of the call.	Downgrade the call.

B.3.2 Timers in off-network private call

The table B.3.2-1 lists the timers used in off-network private call, their start values, their limits, describes the cause of start, and the action to take on normal stop and on expiry.

Table B.3.2-1: Timers in off-network private call

Timer	Timer value	Cause of start	Normal stop	On expiry
TFP1 (private call request retransmission)	Default value: 40 millisecond Depends on the characteristic of the D2D (D2D Sidelink period) Configurable. Set to the value of "/<x>/OffNetwork/Timers/TFP1" leaf node present in the UE initial configuration as specified in 3GPP TS 24.483 [4].	When the client sends a PRIVATE CALL SETUP REQUEST message.	Reception of a PRIVATE CALL ACCEPT or PRIVATE CALL REJECT message.	Resend PRIVATE CALL SETUP REQUEST message. Increment associated counter by 1. If counter has reached limit, assume the called client is not available. Terminate call setup.
TFP2 (waiting for call response message)	Default value: 30 seconds Maximum value: 60 seconds Configurable. Set to the value of "/<x>/OffNetwork/Timers/TFP2" leaf node present in the UE initial configuration as specified in 3GPP TS 24.483 [4].	Reception of a PRIVATE CALL SETUP REQUEST message.	User responds to the incoming call notification.	Start TFP7 timer. Send a PRIVATE CALL REJECT message
TFP3 (private call release retransmission)	Default value: 40 millisecond Depends on the characteristic of the D2D (D2D Sidelink period) Configurable. Set to the value of "/<x>/OffNetwork/Timers/TFP3" leaf node present in the UE initial configuration as specified in 3GPP TS 24.483 [4].	When the client sends a PRIVATE CALL RELEASE message.	Reception of PRIVATE CALL RELEASE ACK message.	Resend PRIVATE CALL RELEASE message. Increment associated counter by 1. If counter has reached limit, assume the receiving client is not available anymore. Release the call.
TFP4 (private call accept retransmission)	Default value: 40 millisecond Depends on the characteristic of the D2D (D2D Sidelink period) Configurable. Set to the value of "/<x>/OffNetwork/Timers/TFP4" leaf node present in the UE initial configuration as specified in 3GPP TS 24.483 [4].	When the client sends a PRIVATE CALL ACCEPT message.	Reception of a PRIVATE CALL ACCEPT ACK message or RTP media.	Resend PRIVATE CALL ACCEPT message. Increment associated counter by 1. If counter has reached limit, assume the receiving client is not available anymore Notify call setup failure.
TFP5 (max duration)	Configurable. Set to the value of "/<x>/OffNetwork/PrivateCall/MaxDuration" leaf node present in the service configuration as specified in 3GPP TS 24.483 [4].	Call establishment.	Call termination.	Terminate the call.

Timer	Timer value	Cause of start	Normal stop	On expiry
TFP7 (waiting for any message with same call identifier)	Default value: 1 second Configurable. Set to the value of "/<x>/OffNetwork/Timers/TFP7" leaf node present in the UE initial configuration as specified in 3GPP TS 24.483 [4].	Rejection of a call OR Termination of a call OR Call Failure.	-	Reset the call control state machine.

B.3.3 Timers in off-network broadcast call

The table B.3.3-1 lists the timers used in off-network broadcast call, their start values, their limits, describes the cause of start, and the action to take on normal stop and on expiry.

Table B.3.3-1: Timers in off-network broadcast call

Timer	Timer value	Cause of start	Normal stop	On expiry
TFB1 (max duration)	Default value: 300 seconds Maximum value: 600 seconds Configurable. Set to the value of "/<x>/OffNetwork/Timers/TFB1" leaf node present in the UE initial configuration as specified in 3GPP TS 24.483 [4].	Start of the broadcast call.	-	Terminate the broadcast call.
TFB2 (broadcast retransmission)	Default value: 3 seconds Maximum value: 10 seconds Configurable. Set to the value of "/<x>/OffNetwork/Timers/TFB2" leaf node present in the UE initial configuration as specified in 3GPP TS 24.483 [4].	Start of the broadcast call.	Broadcast call termination.	Send GROUP CALL BROADCAST message.
TFB3 (waiting for the user)	Default value: 30 seconds Maximum value: 60 seconds Configurable. Set to the value of "/<x>/OffNetwork/Timers/TFB3" leaf node present in the UE initial configuration as specified in 3GPP TS 24.483 [4].	Receipt of GROUP CALL BROADCAST message when user response is required.	Response from user.	Terminate incoming call notification.

B.3.4 Timers in off-network emergency alert

The table B.3.4-1 lists the timers used in off-network emergency alert, their start values, their limits, describes the cause of start, and the action to take on normal stop and on expiry.

Table B.3.4-1: Timers in off-network emergency alert

Timer	Timer value	Cause of start	Normal stop	On expiry
TFE1 (Emergency Alert)	Default value: 30 seconds Maximum value: 60 seconds Configurable. Set to the value of "/<x>/OffNetwork/Timers/TFE1" leaf node present in the UE initial configuration as specified in 3GPP TS 24.483 [4].	Receipt of GROUP EMERGENCY ALERT.	Receipt of GROUP EMERGENCY ALERT CANCEL.	Assume end of emergency state, remove associated user from the list.
TFE2 (emergency alert retransmission)	Default value: 5 seconds Maximum value: 10 seconds Configurable. Set to the value of "/<x>/OffNetwork/Timers/TFE2" leaf node present in the UE initial configuration as specified in 3GPP TS 24.483 [4].	Transmission of GROUP EMERGENCY ALERT.	Transmission of GROUP EMERGENCY ALERT CANCEL.	Transmit GROUP EMERGENCY ALERT.

Annex C (normative): Counters

C.1 General

The following tables give a brief description of the counters used in the present document.

C.2 Off-network counters

C.2.1 Counters in off-network group call

The table C.2.1-1 lists the counters used in off-network group call, their default upper limits and the action to take upon reaching the upper limit. The counters start at 1.

Table C.2.1-1: Counters in off-network group call

Counter	Upper Limit	Associated timer	Upon reaching the upper limit
CFG11 (emergency end retransmission)	Default value: 5 Configurable. Set to the value of "/<x>/OffNetwork/Counters/CFG11" leaf node present in the UE initial configuration as specified in 3GPP TS 24.483 [4].	TFG11	Stop timer TFG11.
CFG12 (imminent peril end retransmission)	Default value: 5 Configurable. Set to the value of "/<x>/OffNetwork/Counters/CFG12" leaf node present in the UE initial configuration as specified in 3GPP TS 24.483 [4].	TFG12	Stop timer TFG12.

C.2.2 Counters in off-network private call

The table C.2.2-1 lists the counters used in off-network private call, their default upper limits and the action to take upon reaching the upper limit. The counters start at 1.

Table C.2.2-1: Counters in off-network private call

Counter	Upper Limit	Associated timer	Upon reaching the upper limit
CFP1 (private call request retransmission)	Default value: 3 Configurable. Set to the value of "/<x>/OffNetwork/Counters/CFP1" leaf node present in the UE initial configuration as specified in 3GPP TS 24.483 [4].	TFP1	Assume the called client is not available. Terminate call setup.
CFP3 (private call release retransmission)	Default value: 3 Configurable. Set to the value of "/<x>/OffNetwork/Counters/CFP3" leaf node present in the UE initial configuration as specified in 3GPP TS 24.483 [4].	TFP3	Assume the receiving client is not available anymore. Release the call.
CFP4 (private call accept retransmission)	Default value: 3 Configurable. Set to the value of "/<x>/OffNetwork/Counters/CFP4" leaf node present in the UE initial configuration as specified in 3GPP TS 24.483 [4].	TFP4	Notify call setup failure.

Annex D (normative): Media feature tags and feature-capability indicators used within the current document

D.1 General

This clause describes the media feature tag definitions that are applicable for the 3GPP IM CN Subsystem for the realisation of the Mission Critical Video (MCVideo) service.

D.2 Definition of media feature tag g.3gpp.mcvideo

Media feature tag name: g.3gpp.mcvideo

ASN.1 Identifier: 1.3.6.1.8.2.31

Summary of the media feature indicated by this media feature tag: This media feature tag when used in a SIP request or a SIP response indicates that the function sending the SIP message supports Mission Critical Video (MCVideo) communication.

Values appropriate for use with this media feature tag: Boolean

The media feature tag is intended primarily for use in the following applications, protocols, services, or negotiation mechanisms: This media feature tag is most useful in a communications application, for describing the capabilities of a device, such as a phone or PDA.

Examples of typical use: Indicating that a mobile phone supports the Mission Critical Video (MCVideo) communication.

Related standards or documents: 3GPP TS 24.281: "Mission Critical Video (MCVideo) signalling control; Protocol specification"

Security Considerations: Security considerations for this media feature tag are discussed in clause 11.1 of IETF RFC 3840 [22].

D.3 Definition of feature-capability indicator g.3gpp.mcvideo.ambient-viewing-call-release

Feature-capability indicator name: g.3gpp.mcvideo.ambient-viewing-call-release

Summary of the feature indicated by this feature-capability indicator:

This feature-capability indicator when included in a Feature-Caps header field as specified in IETF RFC 6809 [63] in a SIP INVITE request or a SIP 200 (OK) response to a SIP INVITE request indicates that the MCVideo server is capable of receiving a SIP BYE from an MCVideo client to release an ambient-viewing call.

Feature-capability indicator specification reference:

3GPP TS 24.281, http://www.3gpp.org/ftp/Specs/archive/24_series/24.281/

Values appropriate for use with this feature-capability indicator: None

Examples of typical use: Indicating that the MCVideo server can support receiving a SIP BYE from an MCVideo client to release an ambient viewing call.

Security Considerations: Security considerations for this feature-capability indicator are discussed in clause 9 of IETF RFC 6809 [63].

Annex E (normative): ICSI values defined within the current document

E.1 General

This clause describes the IMS communications service identifier definitions that are applicable for the 3GPP IM CN subsystem for the realisation of the Mission Critical Video (MCVideo) service.

NOTE: The template has been created using the headers of the table in http://www.3gpp.org/specifications-groups/34-uniform-resource-name-urn-list

E.2 Definition of ICSI value for MCVideo service

E.2.1 URN

urn:urn-7:3gpp-service.ims.icsi.mcvideo

E.2.2 Description

This URN indicates that the device has the capabilities to support the mission critical video (MCVideo) service.

E.2.3 Reference

3GPP TS 24.281: "Mission Critical Video (MCVideo) call control Protocol specification"

E.2.3 Contact

Name: <MCC name>

Email: <MCC email address>

E.2.4 Registration of subtype

Yes

E.2.5 Remarks

None

Annex F (normative): XML schemas

F.1 XML schema for MCVideo Information

F.1.1 General

This clause defines XML schema and MIME type for MCVideo information.

F.1.2 XML schema

```
<?xml version="1.0" encoding="UTF-8"?>
<xs:schema
  xmlns:xs="http://www.w3.org/2001/XMLSchema"
  targetNamespace="urn:3gpp:ns:mcvideoInfo:1.0"
  xmlns:mcvideoinfo="urn:3gpp:ns:mcvideoInfo:1.0"
  elementFormDefault="qualified"
  attributeFormDefault="unqualified"
  xmlns:xenc="http://www.w3.org/2001/04/xmlenc#"
  xmlns:mvgktp="urn:3gpp:ns:mcvideoGKTP:1.0">

  <xs:import namespace="http://www.w3.org/2001/04/xmlenc#"/>
  <xs:import namespace="urn:3gpp:ns:mcvideoGKTP:1.0"/>

  <!-- root XML element -->
  <xs:element name="mcvideoinfo" type="mcvideoinfo:mcvideoinfo-Type" id="info"/>

  <xs:complexType name="mcvideoinfo-Type">
    <xs:sequence>
      <xs:element name="mcvideo-Params" type="mcvideoinfo:mcvideo-ParamsType"/>
      <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded"/>
      <xs:element name="anyExt" type="mcvideoinfo:anyExtType" minOccurs="0"/>
    </xs:sequence>
    <xs:anyAttribute namespace="##any" processContents="lax"/>
  </xs:complexType>


  <xs:complexType name="mcvideo-ParamsType">
    <xs:sequence>
      <xs:element name="mcvideo-access-token" type="mcvideoinfo:contentType" minOccurs="0"/>
      <xs:element name="session-type" type="xs:string" minOccurs="0"/>
      <xs:element name="mcvideo-request-uri" type="mcvideoinfo:contentType" minOccurs="0"/>
      <xs:element name="mcvideo-calling-user-id" type="mcvideoinfo:contentType" minOccurs="0"/>
      <xs:element name="mcvideo-called-party-id" type="mcvideoinfo:contentType" minOccurs="0"/>
      <xs:element name="mcvideo-calling-group-id" type="mcvideoinfo:contentType" minOccurs="0"/>
      <xs:element name="required" type="mcvideoinfo:contentType" minOccurs="0"/>
      <xs:element name="emergency-ind" type="mcvideoinfo:contentType" minOccurs="0"/>
      <xs:element name="alert-ind" type="mcvideoinfo:contentType" minOccurs="0"/>
      <xs:element name="imminentperil-ind" type="mcvideoinfo:contentType" minOccurs="0"/>
      <xs:element name="broadcast-ind" type="xs:boolean" minOccurs="0"/>
      <xs:element name="mc-org" type="xs:string" minOccurs="0"/>
      <xs:element name="associated-group-id" type="xs:string" minOccurs="0"/>
      <xs:element name="originated-by" type="mcvideoinfo:contentType" minOccurs="0"/>
      <xs:element name="MKFC-GKTPs" type="mvgktp:singleTypeGKTPsType" minOccurs="0"/>
      <xs:element name="mcvideo-client-id" type="mcvideoinfo:contentType" minOccurs="0"/>
      <xs:element name="alert-ind-rcvd" type="mcvideoinfo:contentType" minOccurs="0"/>
      <xs:element name="multiple-devices-ind" type="mcvideoinfo:contentType" minOccurs="0"/>
      <xs:element name="video-pull-url" type="mcvideoinfo:contentType" minOccurs="0"/>
      <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded"/>
      <xs:element name="anyExt" type="mcvideoinfo:anyExtType" minOccurs="0"/>
    </xs:sequence>
    <xs:anyAttribute namespace="##any" processContents="lax"/>
  </xs:complexType>

  <!--    anyExt elements for MCVideo-Params-->
  <xs:element name="release-reason" type="mcvideoinfo:releaseReasonType"/>
  <xs:simpleType name="releaseReasonType">
    <xs:restriction base="xs:string">
```

```
      <xs:enumeration value="private-call-expiry"/>
      <xs:enumeration value="administrator-action"/>
      <xs:enumeration value="not selected for call"/>
      <xs:enumeration value="call-request-for-viewed-to-client"/>
      <xs:enumeration value="call-request-initiated-by-viewed-to-client"/>
      <xs:enumeration value="authentication of the MIKEY-SAKE I_MESSAGE failed"/>
    </xs:restriction>
  </xs:simpleType>

  <xs:element name="request-type" type="mcvideoinfo:requestTypeType"/>
  <xs:simpleType name="requestTypeType">
    <xs:restriction base="xs:string">
      <xs:enumeration value="group-selection-change-request"/>
      <xs:enumeration value="fa-group- binding-req"/>
    </xs:restriction>
  </xs:simpleType>

  <xs:element name="response-type" type="mcvideoinfo:responseTypeType"/>
  <xs:simpleType name="responseTypeType">
    <xs:restriction base="xs:string">
      <xs:enumeration value="group-selection-change-response"/>
    </xs:restriction>
  </xs:simpleType>

  <xs:element name="selected-group-change-outcome"
type="mcvideoinfo:selectedGroupChangeOutcomeType"/>
  <xs:simpleType name="selectedGroupChangeOutcomeType">
    <xs:restriction base="xs:string">
      <xs:enumeration value="success"/>
      <xs:enumeration value="fail"/>
    </xs:restriction>
  </xs:simpleType>

  <xs:element name="affiliation-required" type="xs:boolean"/>

  <xs:element name="ambient-viewing-type" type="mcvideoinfo:ambientViewingType"/>
  <xs:simpleType name="ambientViewingType">
    <xs:restriction base="xs:string">
      <xs:enumeration value="remote-init"/>
      <xs:enumeration value="local-init"/>
    </xs:restriction>
  </xs:simpleType>

  <xs:element name="video-push-url" type="xs:anyURI"/>

  <xs:element name="functional-alias-URI" type="mcvideoinfo:contentType"/>

  <xs:element name="emergency-alert-area-ind" type="xs:boolean"/>

  <xs:element name="group-geo-area-ind" type="xs:boolean"/>
  <xs:element name="binding-ind" type="xs:boolean"/>
  <xs:element name="binding-fa-uri" type="xs:anyURI"/>
  <xs:element name="unbinding-fa-uri" type="xs:anyURI"/>

<xs:simpleType name="protectionType">
    <xs:restriction base="xs:string">
      <xs:enumeration value="Normal"/>
      <xs:enumeration value="Encrypted"/>
    </xs:restriction>
  </xs:simpleType>

  <xs:complexType name="contentType">
    <xs:choice>
      <xs:element name="mcvideoURI" type="xs:anyURI"/>
      <xs:element name="mcvideoString" type="xs:string"/>
      <xs:element name="mcvideoBoolean" type="xs:boolean"/>
      <xs:any namespace="##other" processContents="lax"/>
      <xs:element name="anyExt" type="mcvideoinfo:anyExtType" minOccurs="0"/>
    </xs:choice>
    <xs:attribute name="type" type="mcvideoinfo:protectionType"/>
    <xs:anyAttribute namespace="##any" processContents="lax"/>
  </xs:complexType>

  <xs:complexType name="anyExtType">
    <xs:sequence>
      <xs:any namespace="##any" processContents="lax" minOccurs="0" maxOccurs="unbounded"/>
    </xs:sequence>
  </xs:complexType>
```

```
</xs:schema>
```

F.1.3 Semantic

The <mcvideoinfo> element is the root element of the XML document. The <mcvideoinfo> element can contain subelements.

NOTE 1: The subelements of the <mcvideo-info> are validated by the <xs:any namespace="##any" processContents="lax" minOccurs="0" maxOccurs="unbounded"/> particle of the <mcvideo-info> element

If the <mcvideoinfo> contains the <mcvideo-Params> element then:

1) the <mcvideo-access-token>, <mcvideo-request-uri>, <mcvideo-calling-user-id>, <mcvideo-called-party-id>, <mcvideo-calling-group-id>, <emergency-ind>, <alert-ind>, <imminentperil-ind>, <originated-by> and <mcvideo-client-id>, <functional-alias-URI> and <multiple-devices-ind> elements can be included with encrypted content;

2) for each element in 1) that is included with content that is not encrypted:

   a) the element has the "type" attribute set to "Normal";

   b) if the element is the <mcvideo-request-uri>, <mcvideo-calling-user-id>, <mcvideo-called-party-id> or <mcvideo-calling-group-id>, <originated-by> or <functional-alias-URI> then the <mcvideoURI> element is included;

   c) if the element is <mcvideo-access-token> or <mcvideo-client-id>, then the <mcvideoString> element is included; and

   d) if the element is <emergency-ind>, <alert-ind>, <imminentperil-ind> or <multiple-devices-ind> then the <mcvideoBoolean> element is included;

3) for each element in 1) that is included with content that is encrypted:

   a) the element has the "type" attribute set to "Encrypted";

   b) the <xenc:EncryptedData> element from the "http://www.w3.org/2001/04/xmlenc#" namespace is included and:

      i) can have a "Type" attribute can be included with a value of "http://www.w3.org/2001/04/xmlenc#Content";

      ii) can include an <EncryptionMethod> element with the "Algorithm" attribute set to value of "http://www.w3.org/2009/xmlenc11#aes128-gcm";

      iii) can include a <KeyInfo> element with a <KeyName> element containing the base 64 encoded XPK-ID; and

      iv) includes a <CipherData> element with a <CipherValue> element containing the encrypted data.

NOTE 2: When the optional attributes and elements are not included within the <xenc:EncryptedData> element, the information they contain is known to sender and the receiver by other means.

If the <mcvideoinfo> contains the <mcvideo-Params> element then:

1) the <mcvideo-access-token> element can be included with the access token received during authentication procedure as described in 3GPP TS 24.482 [52];

2) the <session-type> element can be included and set to:

   a) "chat" to indicate that the MCVideo client wants to join a chat group call

   b) "prearranged" to indicate the MCVideo client wants to make a prearranged group call;

   c) "private" to indicate the MCVideo client wants to make a private call;

d) "ambient-viewing" to indicate the MCVideo client wants to make an ambient viewing call;

e) "pull-from-server" to indicate the MCVideo client wants to pull video file from MCVideo server;

f) "pull-from-user" to indicate the MCVideo client wants to to pull video media from another MCVideo client;

g) "push-to-server" to indicate the MCVideo client wants to push video media to MCVideo server, save as a file;

h) "one-to-one video push" to indicate the MCVideo client wants to push video media to another MCVideo client; or

i) "one-to-server video push" to indicate the MCVideo client wants to push video media to a MCVideogroup;

3) the <mcvideo-request-uri> element can be included with:

a) the value set to an MCVideo group ID or temporary MCVideo group ID when the <session-type> element is set to a value of "prearranged" or "chat"; and

b) the value set to the MCVideo ID of the called MCVideo user when the <session-type> element is set to a value of "private";

4) the <mcvideo-calling-user-id> element can be included, set to the MCVideo ID of the originating user;

5) the <mcvideo-called-party-id> element can be included, set to the MCVideo ID of the terminating user;

6) the <mcvideo-calling-group-id> element can be included to indicate the MCVideo group identity to the terminating user;

7) the <required> element can be included in a SIP 183 (Session Progress) from a non-controlling MCVideo function of an MCVideo group to inform the controlling MCVideo function that the group on the non-controlling MCVideo function has group members in the group document which are marked as <on-network-required>, as specified in 3GPP TS 24.481 [24];

8) the <emergency-ind> element can be set to:

a) "true" to indicate that the call that the MCVideo client is initiating is an emergency MCVideo call; or

b) "false" to indicate that the MCVideo client is cancelling an emergency MCVideo call (i.e. converting it back to a non-emergency call)

9) the <alert-ind> element can be set to:

a) "true" in an emergency call initiation to indicate that an alert to be sent; or

b) "false" when cancelling an emergency call which requires an alert to be cancelled also

10) if the <session-type> element is set to "chat" or "prearranged":

a) the <imminentperil-ind> element can be set to "true" to indicate that the call that the MCVideo client is initiating is an imminent peril group MCVideo call;

11) the <broadcast-ind> element can be set to:

a) "true" indicates that the MCVideo client is initiating a broadcast group call; or

b) "false" indicates that the MCVideo client is initiating a non-broadcast group call;

12) the <mc-org> element can be:

a) set to the MCVideo user's Mission Critical Organization in an emergency alert sent by the MCVideo server to terminating MCVideo clients;

13) Void;

14) the <associated-group-id> element:

a) if the <mcvideo-request-uri> element contains a group identity then this element can include an MCVideo group ID associated with the group identity in the <mcvideo-request-uri> element. E.g. if the <mcvideo-request-uri> element contains a temporary group identity (TGI), then the <associated-group-id> element can contain the constituent MCVideo group ID;

15) the <originated-by> element:

a) can be included, set to the MCVideo ID of the originating user of an MCVideo emergency alert when being cancelled by another authorised MCVideo user;

16) the <MKFC-GKTPs> element:

a) contains a group key transport payload carrying one or more MKFC(s) and MKFC-ID(s) as described in3GPP TS 24.481 [24] clause 7.4, to be used for protection of multicast transmission control signalling when the UE operates on the network;

NOTE 3: A GMS (Group Management Server) compliant to Release 14 of the present document does not send a group key transport payload carrying MKFC and MKFC-ID. A GMC (Group Management Client) can receive MKFC and MKFC-ID from a GMS compliant only to Release 13 of the present document.

17) the <mcvideo-client-id> element:

a) can be included, set to the MCVideo client ID of the MCVideo client that originated a SIP INVITE request, SIP REFER request, SIP REGISTER request, SIP PUBLISH request or SIP MESSAGE request.

18) the <alert-ind-rcvd> element:

a) can be set to true and included in a SIP MESSAGE to indicate that the emergency alert or cancellation was received successfully;

18a) the <multiple-devices-ind> element set to:

a) "true" to indicate to the client that multiple clients are registered for the MCVideo user; or

b) "false" to indicate to the client that no other clients are registered for the MCVideo user;

18b) the <video-pull-url> element:

a) can be set to the URL of the video file located in the MCVideo server; and

19) the <anyExt> can be included with the following elements:

a) a <release-reason> element set to:

i) "authentication of the MIKEY-SAKE I_MESSAGE failed" by a MCVideo client when the signature cannot be verified;

ii) "private-call-expiry" when the ambient viewing call is release due to the expiry of the private call timer;

iii) "administrator-action" when the ambient viewing call is released by an MCVideo administrator;

iv) "call-request-for-viewed-to-client" when there is a call request targeted to the viewed-to client; or

v) "call-request-initiated-by-viewed-to-client" when there is a call request initiated by the viewed-to client;

b) a <request-type> element set to:

i) "group-selection-change-request" when a client initiates a group selection change request; or

ii) "functional-alias-status-determination" when a client initiates a subscription to FA status request;

iii) "fa-group-binding-req" when a client initiates a request for binding of a functional alias with the MCVideo group(s) for the MCVideo user;

c) a <response-type> element set to:

i) "group-selection-change-response" when a client responds to a group selection change request;

d) a <selected-group-change-outcome> element set to:

   i) "success" when a client reports that it has successfully changed its selected group as requested by a received group selection change request; or

   ii) "fail" when a client reports that it has failed to change its selected group as requested by a received group selection change request;

e) an<affiliation-required> element set to:

   i) "true" when received by a client in a group-selection-change-request indicates that the client needs to affiliate to the specified group;

f) an <ambient-viewing-type> element set to:

   i) "remote-init" when the viewing MCVideo user of an ambient viewing call initiates the call; or

   ii) "local-init" when the viewed-to MCVideo user of an ambient viewing call initiates the call;

g) an <video-push-url> element:

   i) set to the URL of the video file located in the MCVideo server; and

h) a <functional-alias-URI> element set to the value of the functional alias that is used together with the "mcvideo-calling-user-id";

i) an <emergency-alert-area-ind> element set to:

   i) "true" when the MCVideo client has entered an emergency alert area; or

   ii) "false" when the MCVideo client has exited an emergency alert area;

j) a <group-geo-area-ind> element set to:

   i) "true" when the MCVideo client has entered a group geographic area; or

   ii) "false" when the MCVideo client has exited a group geographic area:

k) a <binding-ind> element set to:

   i) "true" when the user wants to create a binding of a particular functional alias with the specified list of MCVideo groups for the MCVideo client; or

   ii) "false" when the user wants to remove a binding of a particular functional alias from the specified list of MCVideo groups for the MCVideo client;

l) a <binding-fa-uri> element set to:

   i) a URI of a functional alias that shall be bound with the specified list of MCVideo groups for the MCVideo client; and

m) a <unbinding-fa-uri> element set to:

   i) a URI of a functional alias that shall be unbound from the specified list of MCVideo groups for the MCVideo client.

Absence of the <emergency-ind>, <alert-ind> and <imminentperil-ind> elements in a SIP INVITE request indicates that the MCVideo client is initiating a non-emergency private call or non-emergency group call.

Absence of the <broadcast-ind> element in a SIP INVITE request indicates that the MCVideo client is initiating a non-broadcast group call.

The recipient of the XML ignores any unknown element and any unknown attribute.

F.1.4 IANA registration template

Your Name:

<MCC name>

Your Email Address:

<MCC email address>

Media Type Name:

Application

Subtype name:

vnd.3gpp.mcvideo-info+xml

Required parameters:

None

Optional parameters:

"charset" the parameter has identical semantics to the charset parameter of the "application/xml" media type as specified in section 9.1 of IETF RFC 7303.

Encoding considerations:

binary.

Security considerations:

Same as general security considerations for application/xml media type as specified in section 9.1 of IETF RFC 7303. In addition, this media type provides a format for exchanging information in SIP, so the security considerations from IETF RFC 3261 apply.

The information transported in this media type does not include active or executable content.

Mechanisms for privacy and integrity protection of protocol parameters exist. Those mechanisms as well as authentication and further security mechanisms are described in 3GPP TS 24.229.

This media type does not include provisions for directives that institute actions on a recipient's files or other resources.

This media type does not include provisions for directives that institute actions that, while not directly harmful to the recipient, may result in disclosure of information that either facilitates a subsequent attack or else violates a recipient's privacy in any way.

This media type does not employ compression.

Interoperability considerations:

Same as general interoperability considerations for application/xml media type as specified in section 9.1 of IETF RFC 7303. Any unknown XML elements and any unknown XML attributes are to be ignored by recipient of the MIME body.

Published specification:

3GPP TS 24.281 "Mission Critical Video (MCVideo) signalling control" version 14.0.0, available via http://www.3gpp.org/specs/numbering.htm.

Applications which use this media type:

Applications supporting the service continuity as described in the published specification.

Fragment identifier considerations:

The handling in section 5 of IETF RFC 7303 applies.

Restrictions on usage:

None

Provisional registration? (standards tree only):

N/A

Additional information:

1. Deprecated alias names for this type: none
2. Magic number(s): none
3. File extension(s): none
4. Macintosh File Type Code(s): none
5. Object Identifier(s) or OID(s): none

Intended usage:

Common

Person to contact for further information:

- Name: <MCC name>
- Email: <MCC email address>
- Author/Change controller:
  i) Author: 3GPP CT1 Working Group/3GPP_TSG_CT_WG1@LIST.ETSI.ORG
  ii) Change controller: <MCC name>/<MCC email address>

F.2 XML schema for MBMS usage information

F.2.1 General

This clause defines XML schema and MIME type for application/vnd.3gpp.mcvideo-mbms-usage-info+xml.

F.2.2 XML schema

```
<?xml version="1.0" encoding="UTF-8"?>
<xs:schema attributeFormDefault="unqualified" elementFormDefault="qualified"
xmlns:xs="http://www.w3.org/2001/XMLSchema"
targetNamespace="urn:3gpp:ns:mcvideoMbmsUsage:1.0"
xmlns:mcvidmbms="urn:3gpp:ns:mcvideoMbmsUsage:1.0">
    <!-- the root element -->
    <xs:element name="mcvideo-mbms-usage-info" type="mcvidmbms:mcvideo-mbms-usage-info-Type"
id="mbms"/>
    <xs:complexType name="mcvideo-mbms-usage-info-Type">
    <xs:sequence>
    <xs:element name="mbms-listening-status" type="mcvidmbms:mbms-listening-statusType"
    minOccurs="0"/>
    <xs:element name="mbms-suspension-status" type="mcvidmbms:mbms-suspension-statusType"
    minOccurs="0"/>
    <xs:element name="announcement" type="mcvidmbms:announcementTypeParams" minOccurs="0"/>
    <xs:element name="version" type="xs:integer"/>
    <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded"/>
    <xs:element name="anyExt" type="mcvidmbms:anyExtType" minOccurs="0"/>
```

```
    </xs:sequence>
    <xs:anyAttribute namespace="##any" processContents="lax"/>
    </xs:complexType>
    <xs:complexType name="mbms-listening-statusType">
    <xs:sequence>
    <xs:element name="mbms-listening-status" type="xs:string"/>
    <xs:element name="session-id" type="xs:anyURI" minOccurs="0"/>
    <xs:element name="general-purpose" type="xs:boolean" minOccurs="0"/>
    <xs:element name="TMGI" type="xs:hexBinary" maxOccurs="unbounded"/>
    <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded"/>
    <xs:element name="anyExt" type="mcvidmbms:anyExtType" minOccurs="0"/>
    </xs:sequence>
    <xs:anyAttribute namespace="##any" processContents="lax"/>
    </xs:complexType>
    <xs:complexType name="mbms-suspension-statusType">
    <xs:sequence>
    <xs:element name="mbms-suspension-status" type="xs:string" minOccurs="0" maxOccurs="1"/>
    <xs:element name="number-of-reported-bearers" type="xs:integer" minOccurs="0" maxOccurs="1"/>
    <xs:element name="suspended-TMGI" type="xs:hexBinary" minOccurs="0"/>
    <xs:element name="other-TMGI" type="xs:hexBinary" minOccurs="0" maxOccurs="unbounded"/>
    <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded"/>
    <xs:element name="anyExt" type="mcvidmbms:anyExtType" minOccurs="0"/>
    </xs:sequence>
    <xs:anyAttribute namespace="##any" processContents="lax"/>
    </xs:complexType>

    <xs:complexType name="announcementTypeParams">
    <xs:sequence>
    <xs:element name="TMGI" type="xs:hexBinary" minOccurs="1"/>
    <xs:element name="QCI" type="xs:integer" minOccurs="0"/>
    <xs:element name="frequency" type="xs:unsignedLong" minOccurs="0"/>
    <xs:element name="mbms-service-areas" type="mcvidmbms:mbms-service-areasType"  minOccurs="0"/>
    <xs:element name="GPMS" type="xs:positiveInteger" minOccurs="0"/>
    <xs:element name="report-suspension" type="xs:boolean" minOccurs="0" maxOccurs="1"/>
    <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded"/>
    <xs:element name="anyExt" type="mcvidmbms:anyExtType" minOccurs="0"/>
    </xs:sequence>
    <xs:anyAttribute namespace="##any" processContents="lax"/>
    </xs:complexType>
    <!-- anyEXT elements for the announcement element – begin -->
    <xs:element name="mcvid-mbms-rohc" type="mcvidmbms:emptyType"/>
    <!-- empty complex type -->
    <xs:complexType name="emptyType"/>
    <xs:element name="max-cid" type="mcvidmbms:max-cidType"/>
    <xs:simpleType name="max-cidType">
    <xs:restriction base="xs:integer">
    <xs:minInclusive value="1"/>
    <xs:maxInclusive value="16383"/>
    </xs:restriction>
    </xs:simpleType>
    <!-- anyEXT elements for the announcement element – end -->

    <xs:complexType name="mbms-service-areasType">
    <xs:sequence>
    <xs:element name="mbms-service-area-id" type="xs:hexBinary"
    minOccurs="1" maxOccurs="unbounded"/>
    <xs:element name="anyExt" type="mcvidmbms:anyExtType" minOccurs="0"/>
    </xs:sequence>
    <xs:anyAttribute/>
    </xs:complexType>

    <xs:complexType name="anyExtType">
    <xs:sequence>
    <xs:any namespace="##any" processContents="lax" minOccurs="0" maxOccurs="unbounded"/>
    </xs:sequence>
    </xs:complexType>
    <!-- anyEXT element for the mcvideo-mbms-usage-info element – begin -->
    <xs:element name="mbms-defaultMuSiK-download" type="mcvidmbms:mbms-default-ctrlkey-
downloadType"/>
<xs:complexType name="mbms-default-ctrlkey-downloadType">
    <xs:sequence>
    <xs:element type="xs:anyURI" name="group" minOccurs="0" maxOccurs="unbounded"/>
    <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded"/>
    <xs:element name="anyExt" type="mcvidmbms:anyExtType" minOccurs="0"/>
    </xs:sequence>
    <xs:anyAttribute namespace="##any" processContents="lax"/>
    </xs:complexType>
```

```
    <xs:element name="mbms-explicitMuSiK-download" type="mcvidmbms:mbms-explicit-ctrlkey-
downloadType"/>
    <xs:complexType name="mbms-explicit-ctrlkey-downloadType">
    <xs:sequence>
    <xs:element type="xs:anyURI" name="group" minOccurs="1" maxOccurs="unbounded"/>
    <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded"/>
    <xs:element name="anyExt" type="mcvidmbms:anyExtType" minOccurs="0"/>
    </xs:sequence>
    <xs:anyAttribute namespace="##any" processContents="lax"/>
    </xs:complexType>
    <!-- anyEXT element for the mcvideo-mbms-usage-info element – end -->
</xs:schema>
```

F.2.3 Semantic

This clause describes the elements of the MBMS usage information XML Schema.

<mbms-listening-status>: The <mbms-listening-status> element is used to indicate the MCVideo listening status.

- The value "listening" indicates that the MCVideo client now is receiving RTP media packets and transmission control messages over the MBMS subchannel in the session identified by the <session-id> element or if the <general-purpose> element is set to "true", that the MCVideo client is now listening to the general purpose MBMS subchannel.
- The value "not-listening" indicates that the MCVideo client has stopped listening to the MBMS subchannel in the session identified by the <session-id> element or, if the <general-purpose> element is set to "false", that the MCVideo client no longer listens to the general purpose MBMS subchannel.

Table F.2.3-1 shows the ABNF of the <mbms-listening-status> element.

Table F.2.3-1: ABNF syntax of values of the <mbms-listening-status> element

```
mbms-listening-status = listening-value / not-listening-value
listening-value = %x6c.69.73.74.65.6e.69.6e.67 ; "listening"
not-listening-value = %x6e.6f.74.2d.6c.69.73.74.65.6e.69.6e.67 ; "not-listening"
```

<session-id>: contains the value of the URI received in the Contact header field received from the controlling MCVideo function when an on-demand session was established, or from the participating MCVideo function in the Connect message when the session was established over a pre-established session. This element is mandatory if the <general-purpose> element is not present in the application/vnd.3gpp.mcvideo-mbms-usage-info+xml MIME body.

<TMGI>: Contains the TMGI. The <TMGI> element is coded as described in 3GPP TS 24.008 [68] clause 10.5.6.13 excluding the Temporary Mobile Group Identity IEI and Length of Temporary Mobile Group Identity contents (octet 1 and octet 2 in 3GPP TS 24.008 [68] clause 10.5.6.13).

<QCI>: QCI information used by the ProSe UE-Network Relay to determine the ProSe Per-Packet Priority value to be applied for the multicast packets relayed to Remote UE over PC5. QCI values are defined in 3GPP TS 23.203 [69].

<mbms-service-areas>: A list of MBMS service area IDs for the applicable MBMS broadcast area as specified in 3GPP TS 23.003 [47] for Service Area Identifier (SAI), and with the encoding as specified in 3GPP TS 29.061 [70] for the MBMS-Service-Area AVP.

<Frequency>: Identification of frequency in case of multi carrier support. The <Frequency> element is coded as specified in 3GPP TS 29.468 [44].

<SDP-ref>: A URL with a cid url as specified in IETF RFC 5368 [71] referring to a SDP MIME body in the SIP MESSAGE request.

<general-purpose> True indicates that the MCVideo client is listening to the general purpose MBMS subchannel associated to the TMGI(s) in the <TMGI> element(s) but have not yet received a Map Group To bearer message for any session that the MCVideo client is involved in. False indicates that the MCVideo client is not listening to the general purpose MBMS subchannel any longer. Absence of the element requires that the <session-id> element is present in the application/vnd.3gpp.mcvideo-mbms-usage-info+xml.

<GPMS> A positive integer that gives the number of the media line containing the general purpose MBMS subchannel in the application/sdp MIME body attached to the SIP MESSAGE request containing the MBMS announcements.

<version> this element indicates the version of the application/vnd.3gpp.mbms-usage-info MIME body. In this version the <version element> indicates "1".

<report-suspension>:True indicates that the MCVideo client is instructed to notify the MCVideo server when it becomes aware of an intended change in the suspension status of a listened MBMS bearer. False indicates that the MCVideo client is instructed not to notify the MCVideo server if it becomes aware of an intended change in the suspension status of a listened MBMS bearer.

<mbms-suspension-status>: The <mbms-suspension-status> element is used to indicate the MBMS bearers intended suspension status.

- The value "suspending" indicates that the RAN has decided to suspend the referenced MBMS bearer(s) at the beginning of the next MCCH modification period.
- The value "not-suspending" indicates that the RAN has decided to revoke its decision to suspend the referenced MBMS bearer(s) before the beginning of the next MCCH modification period.

Table F.2.3-2 shows the ABNF of the <mbms-suspension-status> element.

Table F.2.3-2: ABNF syntax of values of the <mbms-suspension-status> element

```
mbms-suspension-status = suspending-value / not-suspending-value
suspending-value = %x73.75.73.70.65.6e.64.69.6e.67 ; "suspending"
not-suspending-value = %x6e.6f.74.2d.73.75.73.70.65.6e.64.69.6e.67 ; "not-suspending"
```

<number-of-reported-bearers>: the total number of occurrences of the <suspended-TMGI> and <other-TMGI> elements reported as part of the MBMS bearer suspension status.

<suspended-TMGI>:Contains a TMGI that is being reported as about to be suspended or as no longer about to be suspended.

<other-TMGI>: Contains a TMGI that is not being reported as about to be suspended or as no longer about to be suspended, but which shares the same MCH with MBMS bearers reported in the <suspended-TMGI> elements.

<mbms-defaultMuSiK-download> is included in <anyExt> element of the <mcvideo-mbms-usage-info-Type> element and provides information for default MuSiK download.

NOTE 2: When included, the <mbms-defaultMuSiK-download> element is validated by the <xs:any namespace="##any" processContents="lax" minOccurs="0" maxOccurs="unbounded"/> particle of the <anyExt> element.

<mbms-explicitMuSiK-download>is included in <anyExt> element of the < mcvideo -mbms-usage-info-Type> element and provides information for explicit MuSiK download.

NOTE 3: When included, the <mbms-explicitMuSiK-download> element is validated by the <xs:any namespace="##any" processContents="lax" minOccurs="0" maxOccurs="unbounded"/> particle of the <anyExt> element.

<group>: Contains the identity, in the form of a URI, of a group for which the MuSiK download is performed.

The recipient of the XML ignores any unknown element and any unknown attribute.

F.2.4 IANA registration template

Your Name:

<MCC name>

Your Email Address:

<MCC email address>

Media Type Name:

Application

Subtype name:

vnd.3gpp.mcvideo-mbms-usage-info+xml

Required parameters:

None

Optional parameters:

"charset" the parameter has identical semantics to the charset parameter of the "application/xml" media type as specified in section 9.1 of IETF RFC 7303.

Encoding considerations:

binary.

Security considerations:

Same as general security considerations for application/xml media type as specified in section 9.1 of IETF RFC 7303. In addition, this media type provides a format for exchanging information in SIP, so the security considerations from IETF RFC 3261 apply.

The information transported in this media type does not include active or executable content.

Mechanisms for privacy and integrity protection of protocol parameters exist. Those mechanisms as well as authentication and further security mechanisms are described in 3GPP TS 24.229.

This media type does not include provisions for directives that institute actions on a recipient's files or other resources.

This media type does not include provisions for directives that institute actions that, while not directly harmful to the recipient, may result in disclosure of information that either facilitates a subsequent attack or else violates a recipient's privacy in any way.

This media type does not employ compression.

Interoperability considerations:

Same as general interoperability considerations for application/xml media type as specified in section 9.1 of IETF RFC 7303. Any unknown XML elements and any unknown XML attributes are to be ignored by recipient of the MIME body.

Published specification:

3GPP TS 24.281 " Mission Critical Video (MCVideo) signalling control;

Protocol specification" version 15.1.0, available via http://www.3gpp.org/specs/numbering.htm.

Applications which use this media type:

Applications supporting the mission critical video as described in the published specification.

Fragment identifier considerations:

The handling in section 5 of IETF RFC 7303 applies.

Restrictions on usage:

None

Provisional registration? (standards tree only):

N/A

Additional information:

1. Deprecated alias names for this type: none
2. Magic number(s): none
3. File extension(s): none
4. Macintosh File Type Code(s): none
5. Object Identifier(s) or OID(s): none

Intended usage:

Common

Person to contact for further information:

- Name: <MCC name>
- Email: <MCC email address>
- Author/Change controller:

  i) Author: 3GPP CT1 Working Group/3GPP_TSG_CT_WG1@LIST.ETSI.ORG

  ii) Change controller: <MCC name>/<MCC email address>

F.3 XML schema for MCVideo location information

F.3.1 General

This clause defines the XML schema and the MIME type for location information.

F.3.2 XML schema

```
<?xml version="1.0" encoding="UTF-8"?>
<xs:schema xmlns:xs="http://www.w3.org/2001/XMLSchema"
xmlns:mcvideoloc="urn:3gpp:ns:mcvideoLocationInfo:1.0"
targetNamespace="urn:3gpp:ns:mcvideoLocationInfo:1.0" elementFormDefault="qualified"
attributeFormDefault="unqualified"
xmlns:xenc="http://www.w3.org/2001/04/xmlenc#">

    <xs:import namespace="http://www.w3.org/2001/04/xmlenc#"/>

    <xs:element name="location-info" id="loc">
    <xs:annotation>
    <xs:documentation>Root element, contains all information related to location configuration,
location request and location reporting for the MCVideo service</xs:documentation>
    </xs:annotation>
    <xs:complexType>
    <xs:choice>
    <xs:element name="Configuration" type="mcvideoloc:tConfigurationType"/>
    <xs:element name="Request" type="mcvideoloc:tRequestType"/>
    <xs:element name="Report" type="mcvideoloc:tReportType"/>
    <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded"/>
    <xs:element name="anyExt" type="mcvideoloc:anyExtType" minOccurs="0"/>
    </xs:choice>
    <xs:anyAttribute namespace="##any" processContents="lax"/>
    </xs:complexType>
    </xs:element>
    <xs:complexType name="tConfigurationType">
    <xs:sequence>
```

```
    <xs:element name="NonEmergencyLocationInformation" type="mcvideoloc:tRequestedLocationType"
minOccurs="0"/>
    <xs:element name="EmergencyLocationInformation" type="mcvideoloc:tRequestedLocationType"
minOccurs="0"/>
    <xs:element name="TriggeringCriteria" type="mcvideoloc:TriggeringCriteriaType"/>
    <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded"/>
    <xs:element name="anyExt" type="mcvideoloc:anyExtType" minOccurs="0"/>
    </xs:sequence>
    <xs:attribute name="ConfigScope">
    <xs:simpleType>
    <xs:restriction base="xs:string">
        <xs:enumeration value="Full"/>
        <xs:enumeration value="Update"/>
    </xs:restriction>
    </xs:simpleType>
    </xs:attribute>
    <xs:anyAttribute namespace="##any" processContents="lax"/>
    </xs:complexType>
    <xs:complexType name="tRequestType">
    <xs:complexContent>
    <xs:extension base="mcvideoloc:tEmptyType">
    <xs:attribute name="RequestId" type="xs:string" use="required"/>
    </xs:extension>
    </xs:complexContent>
    </xs:complexType>
    <xs:complexType name="tReportType">
    <xs:sequence>
    <xs:element name="TriggerId" type="xs:string" minOccurs="0" maxOccurs="unbounded"/>
    <xs:element name="CurrentLocation" type="mcvideoloc:tCurrentLocationType"/>
    <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded"/>
    <xs:element name="anyExt" type="mcvideoloc:anyExtType" minOccurs="0"/>
    </xs:sequence>
    <xs:attribute name="ReportID" type="xs:string" use="optional"/>
    <xs:attribute name="ReportType" use="required">
    <xs:simpleType>
    <xs:restriction base="xs:string">
        <xs:enumeration value="Emergency"/>
        <xs:enumeration value="NonEmergency"/>
    </xs:restriction>
    </xs:simpleType>
    </xs:attribute>
    <xs:anyAttribute namespace="##any" processContents="lax"/>
    </xs:complexType>
    <xs:complexType name="TriggeringCriteriaType">
    <xs:sequence>
    <xs:element name="CellChange" type="mcvideoloc:tCellChange" minOccurs="0"/>
    <xs:element name="TrackingAreaChange" type="mcvideoloc:tTrackingAreaChangeType" minOccurs="0"/>
    <xs:element name="PlmnChange" type="mcvideoloc:tPlmnChangeType" minOccurs="0"/>
    <xs:element name="MbmsSaChange" type="mcvideoloc:tMbmsSaChangeType" minOccurs="0"/>
    <xs:element name="MbsfnAreaChange" type="mcvideoloc:tMbsfnAreaChangeType" minOccurs="0"/>
    <xs:element name="PeriodicReport" type="mcvideoloc:tIntegerAttributeType" minOccurs="0"/>
    <xs:element name="TravelledDistance" type="mcvideoloc:tIntegerAttributeType" minOccurs="0"/>
    <xs:element name="McvideoSignallingEvent" type="mcvideoloc:tSignallingEventType" minOccurs="0"/>
    <xs:element name="GeographicalAreaChange" type="mcvideoloc:tGeographicalAreaChange"/>
    <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded"/>
    <xs:element name="anyExt" type="mcvideoloc:anyExtType" minOccurs="0"/>
    </xs:sequence>
    <xs:anyAttribute namespace="##any" processContents="lax"/>
    </xs:complexType>
    <xs:complexType name="tCellChange">
    <xs:sequence>
    <xs:element name="AnyCellChange" type="mcvideoloc:tEmptyTypeAttribute" minOccurs="0"/>
    <xs:element name="EnterSpecificCell" type="mcvideoloc:tSpecificCellType" minOccurs="0"
maxOccurs="unbounded"/>
    <xs:element name="ExitSpecificCell" type="mcvideoloc:tSpecificCellType" minOccurs="0"
maxOccurs="unbounded"/>
    <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded"/>
    <xs:element name="anyExt" type="mcvideoloc:anyExtType" minOccurs="0"/>
    </xs:sequence>
    <xs:anyAttribute namespace="##any" processContents="lax"/>
    </xs:complexType>
    <xs:complexType name="tEmptyType"/>
    <xs:simpleType name="tEcgi">
    <xs:restriction base="xs:string">
    <xs:pattern value="\d{3}\d{3}[0-1]{28}"/>
    </xs:restriction>
    </xs:simpleType>
    <xs:complexType name="tSpecificCellType">
```

```
    <xs:simpleContent>
    <xs:extension base="mcvideoloc:tEcgi">
    <xs:attribute name="TriggerId" type="xs:string" use="required"/>
    </xs:extension>
    </xs:simpleContent>
    </xs:complexType>
    <xs:complexType name="tEmptyTypeAttribute">
    <xs:complexContent>
    <xs:extension base="mcvideoloc:tEmptyType">
    <xs:attribute name="TriggerId" type="xs:string" use="required"/>
    </xs:extension>
    </xs:complexContent>
    </xs:complexType>
    <xs:complexType name="tTrackingAreaChangeType">
    <xs:sequence>
    <xs:element name="AnyTrackingAreaChange" type="mcvideoloc:tEmptyTypeAttribute" minOccurs="0"/>
    <xs:element name="EnterSpecificTrackingArea" type="mcvideoloc:tTrackingAreaIdentity"
minOccurs="0" maxOccurs="unbounded"/>
    <xs:element name="ExitSpecificTrackingArea" type="mcvideoloc:tTrackingAreaIdentity"
minOccurs="0" maxOccurs="unbounded"/>
    <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded"/>
    <xs:element name="anyExt" type="mcvideoloc:anyExtType" minOccurs="0"/>
    </xs:sequence>
    <xs:anyAttribute namespace="##any" processContents="lax"/>
    </xs:complexType>
    <xs:simpleType name="tTrackingAreaIdentityFormat">
    <xs:restriction base="xs:string">
    <xs:pattern value="\d{3}\d{3}[0-1]{16}"/>
    </xs:restriction>
    </xs:simpleType>
    <xs:complexType name="tTrackingAreaIdentity">
    <xs:simpleContent>
    <xs:extension base="mcvideoloc:tTrackingAreaIdentityFormat">
    <xs:attribute name="TriggerId" type="xs:string" use="required"/>
    </xs:extension>
    </xs:simpleContent>
    </xs:complexType>
    <xs:complexType name="tPlmnChangeType">
    <xs:sequence>
    <xs:element name="AnyPlmnChange" type="mcvideoloc:tEmptyTypeAttribute" minOccurs="0"/>
    <xs:element name="EnterSpecificPlmn" type="mcvideoloc:tPlmnIdentity" minOccurs="0"
maxOccurs="unbounded"/>
    <xs:element name="ExitSpecificPlmn" type="mcvideoloc:tPlmnIdentity" minOccurs="0"
maxOccurs="unbounded"/>
    <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded"/>
    <xs:element name="anyExt" type="mcvideoloc:anyExtType" minOccurs="0"/>
    </xs:sequence>
    <xs:anyAttribute namespace="##any" processContents="lax"/>
    </xs:complexType>
    <xs:simpleType name="tPlmnIdentityFormat">
    <xs:restriction base="xs:string">
    <xs:pattern value="\d{3}\d{3}"/>
    </xs:restriction>
    </xs:simpleType>
    <xs:complexType name="tPlmnIdentity">
    <xs:simpleContent>
    <xs:extension base="mcvideoloc:tPlmnIdentityFormat">
    <xs:attribute name="TriggerId" type="xs:string" use="required"/>
    </xs:extension>
    </xs:simpleContent>
    </xs:complexType>
    <xs:complexType name="tMbmsSaChangeType">
    <xs:sequence>
    <xs:element name="AnyMbmsSaChange" type="mcvideoloc:tEmptyTypeAttribute" minOccurs="0"/>
    <xs:element name="EnterSpecificMbmsSa" type="mcvideoloc:tMbmsSaIdentity" minOccurs="0"/>
    <xs:element name="ExitSpecificMbmsSa" type="mcvideoloc:tMbmsSaIdentity" minOccurs="0"/>
    <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded"/>
    <xs:element name="anyExt" type="mcvideoloc:anyExtType" minOccurs="0"/>
    </xs:sequence>
    <xs:anyAttribute namespace="##any" processContents="lax"/>
    </xs:complexType>
    <xs:simpleType name="tMbmsSaIdentityFormat">
    <xs:restriction base="xs:integer">
    <xs:minInclusive value="0"/>
    <xs:maxInclusive value="65535"/>
    </xs:restriction>
    </xs:simpleType>
    <xs:complexType name="tMbmsSaIdentity">
```

```
    <xs:simpleContent>
    <xs:extension base="mcvideoloc:tMbmsSaIdentityFormat">
    <xs:attribute name="TriggerId" type="xs:string" use="required"/>
    </xs:extension>
    </xs:simpleContent>
    </xs:complexType>
    <xs:complexType name="tMbsfnAreaChangeType">
    <xs:sequence>
    <xs:element name="EnterSpecificMbsfnArea" type="mcvideoloc:tMbsfnAreaIdentity" minOccurs="0"/>
    <xs:element name="ExitSpecificMbsfnArea" type="mcvideoloc:tMbsfnAreaIdentity" minOccurs="0"/>
    <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded"/>
    <xs:element name="anyExt" type="mcvideoloc:anyExtType" minOccurs="0"/>
    </xs:sequence>
    <xs:anyAttribute namespace="##any" processContents="lax"/>
    </xs:complexType>
    <xs:simpleType name="tMbsfnAreaIdentityFormat">
    <xs:restriction base="xs:integer">
    <xs:minInclusive value="0"/>
    <xs:maxInclusive value="255"/>
    </xs:restriction>
    </xs:simpleType>
    <xs:complexType name="tMbsfnAreaIdentity">
    <xs:simpleContent>
    <xs:extension base="mcvideoloc:tMbsfnAreaIdentityFormat">
    <xs:attribute name="TriggerId" type="xs:string" use="required"/>
    </xs:extension>
    </xs:simpleContent>
    </xs:complexType>
    <xs:complexType name="tIntegerAttributeType">
    <xs:simpleContent>
    <xs:extension base="xs:integer">
    <xs:attribute name="TriggerId" type="xs:string" use="required"/>
    </xs:extension>
    </xs:simpleContent>
    </xs:complexType>
    <xs:complexType name="tTravelledDistanceType">
    <xs:sequence>
    <xs:element name="TravelledDistance" type="xs:positiveInteger"/>
    <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded"/>
    <xs:element name="anyExt" type="mcvideoloc:anyExtType" minOccurs="0"/>
    </xs:sequence>
    <xs:anyAttribute namespace="##any" processContents="lax"/>
    </xs:complexType>
    <xs:complexType name="tSignallingEventType">
    <xs:sequence>
    <xs:element name="InitialLogOn" type="mcvideoloc:tEmptyTypeAttribute" minOccurs="0"/>
    <xs:element name="GroupCallNonEmergency" type="mcvideoloc:tEmptyTypeAttribute" minOccurs="0"/>
    <xs:element name="PrivateCallNonEmergency" type="mcvideoloc:tEmptyTypeAttribute" minOccurs="0"/>
    <xs:element name="LocationConfigurationReceived" type="mcvideoloc:tEmptyTypeAttribute"
minOccurs="0"/>
    <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded"/>
    <xs:element name="anyExt" type="mcvideoloc:anyExtType" minOccurs="0"/>
    </xs:sequence>
    <xs:anyAttribute namespace="##any" processContents="lax"/>
    </xs:complexType>
    <xs:complexType name="tEmergencyEventType">
    <xs:sequence>
    <xs:element name="GroupCallEmergency" type="mcvideoloc:tEmptyTypeAttribute" minOccurs="0"/>
    <xs:element name="GroupCallImminentPeril" type="mcvideoloc:tEmptyTypeAttribute" minOccurs="0"/>
    <xs:element name="PrivateCallEmergency" type="mcvideoloc:tEmptyTypeAttribute" minOccurs="0"/>
    <xs:element name="InitiateEmergencyAlert" type="mcvideoloc:tEmptyTypeAttribute" minOccurs="0"/>
    <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded"/>
    <xs:element name="anyExt" type="mcvideoloc:anyExtType" minOccurs="0"/>
    </xs:sequence>
    <xs:anyAttribute namespace="##any" processContents="lax"/>
    </xs:complexType>
    <xs:complexType name="tRequestedLocationType">
    <xs:sequence>
    <xs:element name="ServingEcgi" type="mcvideoloc:tEmptyType" minOccurs="0"/>
    <xs:element name="NeighbouringEcgi" type="mcvideoloc:tEmptyType" minOccurs="0"
maxOccurs="unbounded"/>
    <xs:element name="MbmsSaId" type="mcvideoloc:tEmptyType" minOccurs="0"/>
    <xs:element name="MbsfnArea" type="mcvideoloc:tEmptyType" minOccurs="0"/>
    <xs:element name="GeographicalCoordinate" type="mcvideoloc:tEmptyType" minOccurs="0"/>
    <xs:element name="minimumIntervalLength" type="xs:positiveInteger"/>
    <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded"/>
    <xs:element name="anyExt" type="mcvideoloc:anyExtType" minOccurs="0"/>
    </xs:sequence>
```

```
    <xs:anyAttribute namespace="##any" processContents="lax"/>
    </xs:complexType>

    <xs:complexType name="tCurrentLocationType">
    <xs:sequence>
    <xs:element name="CurrentServingEcgi" type="mcvideoloc:tLocationType" minOccurs="0"/>
    <xs:element name="NeighbouringEcgi" type="mcvideoloc:tLocationType" minOccurs="0"
maxOccurs="unbounded"/>
    <xs:element name="MbmsSaId" type="mcvideoloc:tLocationType" minOccurs="0"/>
    <xs:element name="MbsfnArea" type="mcvideoloc:tLocationType" minOccurs="0"/>
    <xs:element name="CurrentCoordinate" type="mcvideoloc:tPointCoordinate" minOccurs="0"/>
    <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded"/>
    <xs:element name="anyExt" type="mcvideoloc:anyExtType" minOccurs="0"/>
    </xs:sequence>
    <xs:anyAttribute namespace="##any" processContents="lax"/>
    </xs:complexType>

    <!-- anyExt elements for "tCurrentLocationType" -->
    <xs:element name="locTimestamp" type="xs:dateTime"/>

    <xs:simpleType name="protectionType">
    <xs:restriction base="xs:string">
    <xs:enumeration value="Normal"/>
    <xs:enumeration value="Encrypted"/>
    </xs:restriction>
    </xs:simpleType>

    <xs:complexType name="tLocationType">
    <xs:choice minOccurs="1" maxOccurs="1">
    <xs:element name="Ecgi" type="mcvideoloc:tEcgi" minOccurs="0"/>
    <xs:element name="SaId" type="mcvideoloc:tMbmsSaIdentity" minOccurs="0"/>
    <xs:element name="MbsfnAreaId" type="mcvideoloc:tMbsfnAreaIdentity" minOccurs="0"/>
    <xs:any namespace="##other" processContents="lax"/>
    <xs:element name="anyExt" type="mcvideoloc:anyExtType" minOccurs="0"/>
    </xs:choice>
    <xs:attribute name="type" type="mcvideoloc:protectionType"/>
    <xs:anyAttribute namespace="##any" processContents="lax"/>
    </xs:complexType>

    <xs:complexType name="tGeographicalAreaChange">
    <xs:sequence>
    <xs:element name="AnyAreaChange" type="mcvideoloc:tEmptyTypeAttribute" minOccurs="0"/>
    <xs:element name="EnterSpecificAreaType" type="mcvideoloc:tSpecificAreaType" minOccurs="0"/>
    <xs:element name="ExitSpecificAreaType" type="mcvideoloc:tSpecificAreaType" minOccurs="0"/>
    <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded"/>
    <xs:element name="anyExt" type="mcvideoloc:anyExtType" minOccurs="0"/>
    </xs:sequence>
    <xs:anyAttribute namespace="##any" processContents="lax"/>
    </xs:complexType>
    <xs:complexType name="tSpecificAreaType">
    <xs:sequence>
    <xs:element name="GeographicalArea" type="mcvideoloc:tGeographicalAreaDef"/>
    <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded"/>
    <xs:element name="anyExt" type="mcvideoloc:anyExtType" minOccurs="0"/>
    </xs:sequence>
    <xs:attribute name="TriggerId" type="xs:string" use="required"/>
    <xs:anyAttribute namespace="##any" processContents="lax"/>
    </xs:complexType>

    <xs:complexType name="tPointCoordinate">
    <xs:sequence>
    <xs:element name="longitude" type="mcvideoloc:tCoordinateType"/>
    <xs:element name="latitude" type="mcvideoloc:tCoordinateType"/>
    <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded"/>
    <xs:element name="anyExt" type="mcvideoloc:anyExtType" minOccurs="0"/>
    </xs:sequence>
    <xs:anyAttribute namespace="##any" processContents="lax"/>
    </xs:complexType>

    <!-- anyExt elements for "tPointCoordinate" -->
    <xs:element name="altitude" type="mcvideoloc:tCoordinateType2Bytes"/>
    <xs:element name="horizontalaccuracy" type="mcvideoloc:tCoordinateType1Byte"/>
    <xs:element name="verticalaccuracy" type="mcvideoloc:tCoordinateType1Byte"/>

    <xs:complexType name="tCoordinateType">
    <xs:choice minOccurs="1" maxOccurs="1">
    <xs:element name="threebytes" type="mcvideoloc:tThreeByteType" minOccurs="0"/>
    <xs:any namespace="##other" processContents="lax"/>
```

```
    <xs:element name="anyExt" type="mcvideoloc:anyExtType" minOccurs="0"/>
    </xs:choice>
    <xs:attribute name="type" type="mcvideoloc:protectionType"/>
    <xs:anyAttribute namespace="##any" processContents="lax"/>
    </xs:complexType>

    <xs:complexType name="tCoordinateType2Bytes">
    <xs:choice minOccurs="1" maxOccurs="1">
    <xs:element name="twobytes" type="mcvideoloc:tTwoByteType" minOccurs="0"/>
    <xs:any namespace="##other" processContents="lax"/>
    <xs:element name="anyExt" type="mcvideoloc:anyExtType" minOccurs="0"/>
    </xs:choice>
    <xs:attribute name="type" type="mcvideoloc:protectionType"/>
    <xs:anyAttribute namespace="##any" processContents="lax"/>
    </xs:complexType>

    <xs:complexType name="tCoordinateType1Byte">
    <xs:choice minOccurs="1" maxOccurs="1">
    <xs:element name="onebyteunsignedhalfrange" type="mcvideoloc:tOneByteUnsignedHalfRangeType"
minOccurs="0"/>
    <xs:any namespace="##other" processContents="lax"/>
    <xs:element name="anyExt" type="mcvideoloc:anyExtType" minOccurs="0"/>
    </xs:choice>
    <xs:attribute name="type" type="mcvideoloc:protectionType"/>
    <xs:anyAttribute namespace="##any" processContents="lax"/>
    </xs:complexType>

    <xs:simpleType name="tThreeByteType">
    <xs:restriction base="xs:integer">
    <xs:minInclusive value="0"/>
    <xs:maxInclusive value="16777215"/>
    </xs:restriction>
    </xs:simpleType>

    <xs:simpleType name="tTwoByteType">
    <xs:restriction base="xs:integer">
    <xs:minInclusive value="-32768"/>
    <xs:maxInclusive value="32767"/>
    </xs:restriction>
    </xs:simpleType>

    <xs:simpleType name="tOneByteUnsignedHalfRangeType">
    <xs:restriction base="xs:integer">
    <xs:minInclusive value="0"/>
    <xs:maxInclusive value="127"/>
    </xs:restriction>
    </xs:simpleType>

    <xs:complexType name="tGeographicalAreaDef">
    <xs:sequence>
    <xs:element name="PolygonArea" type="mcvideoloc:tPolygonAreaType" minOccurs="0"/>
    <xs:element name="EllipsoidArcArea" type="mcvideoloc:tEllipsoidArcType" minOccurs="0"/>
    <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded"/>
    <xs:element name="anyExt" type="mcvideoloc:anyExtType" minOccurs="0"/>
    </xs:sequence>
    <xs:anyAttribute namespace="##any" processContents="lax"/>
    </xs:complexType>
    <xs:complexType name="tPolygonAreaType">
    <xs:sequence>
    <xs:element name="Corner" type="mcvideoloc:tPointCoordinate" minOccurs="3" maxOccurs="15"/>
    <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded"/>
    <xs:element name="anyExt" type="mcvideoloc:anyExtType" minOccurs="0"/>
    </xs:sequence>
    <xs:anyAttribute namespace="##any" processContents="lax"/>
    </xs:complexType>
    <xs:complexType name="tEllipsoidArcType">
    <xs:sequence>
    <xs:element name="Center" type="mcvideoloc:tPointCoordinate"/>
    <xs:element name="Radius" type="xs:nonNegativeInteger"/>
    <xs:element name="OffsetAngle" type="xs:unsignedByte"/>
    <xs:element name="IncludedAngle" type="xs:unsignedByte"/>
    <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded"/>
    <xs:element name="anyExt" type="mcvideoloc:anyExtType" minOccurs="0"/>
    </xs:sequence>
    <xs:anyAttribute namespace="##any" processContents="lax"/>
    </xs:complexType>
    <xs:complexType name="anyExtType">
    <xs:sequence>
```

```
    <xs:any namespace="##any" processContents="lax" minOccurs="0" maxOccurs="unbounded"/>
    </xs:sequence>
    </xs:complexType>
    <!-- anyEXT elements for the Configuration element – begin -->
    <xs:element name="EmergencyTriggeringCriteria" type="mcvideoloc:TriggeringCriteriaType"/>
    <!-- anyEXT elements for the Configuration element – end -->
</xs:schema>
```

F.3.3 Semantic

The <location-info> element is the root element of the XML document. The <location-info> element contains the <Configuration>, <Request> and <Report> subelements, of which only one can be present.

<Configuration> element has a <ConfigScope> attribute that can assume the values "Full" and "Update". The value "Full" means that the Configuration> element contains the full location configuration which replaces any previous location configuration. The value "Update" means that the location configuration is in addition to any previous location configuration. To remove configuration elements a "Full" configuration is needed. The <Configuration> element contains the following child elements:

1) <NonEmergencyLocationInformation>, an optional element that specifies the location information requested in non-emergency situations. The <NonEmergencyLocationInformation> has the subelements:

   a) <ServingEcgi>, an optional element specifying that the serving E-UTRAN Cell Global Identity (ECGI) needs to be reported;

   b) <NeighbouringEcgi>, an optional element that can occur multiple times, specifying that neighbouring ECGIs need to be reported;

   c) <MbmsSaId>, an optional element specifying that the serving MBMS Service Area Id needs to be reported;

   d) <MbsfnArea>, an optional element specifying that the MBSFN area Id needs to be reported;

   e) <GeographicalCoordinate>, an optional element specifying that the geographical coordinate specified in clause 6.1 in 3GPP TS 23.032 [39] needs to be reported; and

   f) <minimumIntervalLength>, a mandatory element specifying the minimum time the MCVideo client needs to wait between sending location reports. The value is given in seconds;

2) <EmergencyLocationInformation>, an optional element that specifies the location information requested in emergency situations. The <EmergencyLocationInformation> has the subelements:

   a) <ServingEcgi>, an optional element specifying that the serving ECGI needs to be reported;

   b) <NeighbouringEcgi>, an optional element that can occur multiple times, specifying that neighbouring ECGIs need to be reported;

   c) <MbmsSaId>, an optional element specifying that the serving MBMS Service Area Id needs to be reported;

   d) <MbsfnArea>, an optional element specifying that the MBSFN area Id needs to be reported;

   e) <GeographicalCoordinate>, an optional element specifying that the geographical coordinate specified in clause 6.1 in 3GPP TS 23.032 [39] needs to be reported; and

   f) <minimumIntervalLength>, a mandatory element specifying the minimum time the MCVideo client needs to wait between sending location reports. The value is given in seconds; and

3) <TriggeringCriteria>, a mandatory element specifying the triggers for the MCVideo client to perform reporting in non emergency status. The <TriggeringCriteria> element contains the following sub-elements:

   a) <CellChange>, an optional element specifying what cell changes trigger location reporting. Consists of the following sub-elements:

      I) <AnyCellChange>, an optional element. The presence of this element specifies that any cell change is a trigger. Contains a mandatory <TriggerId> attribute that shall be set to a unique string;

      II) <EnterSpecificCell>, an optional element specifying an ECGI which when entered triggers a location report. Contains a mandatory <TriggerId> attribute that shall be set to a unique string; and

III) <ExitSpecificCell>, an optional element specifying an ECGI which when exited triggers a location report. Contains a mandatory <TriggerId> attribute that shall be set to a unique string;

b) <TrackingAreaChange>, an optional element specifying what tracking area changes trigger location reporting. Consists of the following sub-elements:

I) <AnyTrackingAreaChange>, an optional element. The presence of this element specifies that any tracking area change is a trigger. Contains a mandatory <TriggerId> attribute that shall be set to a unique string;

II) <EnterSpecificTrackingArea>, an optional element specifying a Tracking Area Id which when entered triggers a location report. Contains a mandatory <TriggerId> attribute that shall be set to a unique string; and

III) <ExitSpecificTrackingArea>, an optional element specifying a Tracking Area Id which when exited triggers a location report. Contains a mandatory <TriggerId> attribute that shall be set to a unique string;

c) <PlmnChange>, an optional element specifying what PLMN changes trigger location reporting. Consists of the following sub-elements:

I) <AnyPlmnChange>, an optional element. The presence of this element specifies that any PLMN change is a trigger. Contains a mandatory <TriggerId> attribute that shall be set to a unique string;

II) <EnterSpecificPlmn>, an optional element specifying a PLMN Id which when entered triggers a location report. Contains a mandatory <TriggerId> attribute that shall be set to a unique string; and

III) <ExitSpecificPlmn>, an optional element specifying a PLMN Id which when exited triggers a location report. Contains a mandatory <TriggerId> attribute that shall be set to a unique string;

d) <MbmsSaChange>, an optional element specifying what MBMS changes trigger location reporting. Consists of the following sub-elements:

I) <AnyMbmsSaChange>, an optional element. The presence of this element specifies that any MBMS SA change is a trigger. Contains a mandatory <TriggerId> attribute that shall be set to a unique string;

II) <EnterSpecificMbmsSa>, an optional element specifying an MBMS Service Area Id which when entered triggers a location report. Contains a mandatory <TriggerId> attribute that shall be set to a unique string; and

III) <ExitSpecificMbmsSa>, an optional element specifying an MBMS Service Area Id which when exited triggers a location report. Contains a mandatory <TriggerId> attribute that shall be set to a unique string;

e) <MbsfnAreaChange>, an optional element specifying what MBSFN changes trigger location reporting. Consists of the following sub-elements:

I) <AnyMbsfnAreaChange>, an optional element. The presence of this element specifies that any MBSFN area change is a trigger. Contains a mandatory <TriggerId> attribute that shall be set to a unique string;

II) <EnterSpecificMbsfnArea>, an optional element specifying an MBSFN area which when entered triggers a location report. Contains a mandatory <TriggerId> attribute that shall be set to a unique string; and

III) <ExitSpecificMbsfnArea>, an optional element specifying an MBSFN area which when exited triggers a location report. Contains a mandatory <TriggerId> attribute that shall be set to a unique string;

f) <PeriodicReport>, an optional element specifying that periodic location reports shall be sent. The value in seconds specifies the reporting interval. Contains a mandatory <TriggerId> attribute that shall be set to a unique string;

g) <TravelledDistance>, an optional element specifying that the travelled distance shall trigger a report. The value in metres specified the travelled distance. Contains a mandatory <TriggerId> attribute that shall be set to a unique string;

h) <McvideoSignallingEvent>, an optional element specifying what signalling events triggers a location report. The <McvideoSignallingEvent> element has the following sub-elements:

I) <InitialLogOn>, an optional element specifying that an initial log on triggers a location report. Contains a mandatory <TriggerId> attribute that shall be set to a unique string;

II) <GroupCallNonEmergency>, an optional element specifying that a non-emergency group call triggers a location report. Contains a mandatory <TriggerId> attribute that shall be set to a unique string;

III) <PrivateCallNonEmergency>, an optional element specifying that a non-emergency private call triggers a location report. Contains a mandatory <TriggerId> attribute that shall be set to a unique string; and

IV) <LocationConfigurationReceived>, an optional element specifying that a received location configuration triggers a location report. Contains a mandatory <TriggerId> attribute that shall be set to a unique string; and

i) <GeographicalAreaChange>, an optional element specifying what geographical are changes trigger location reporting. Consists of the following sub-elements:

I) <AnyAreaChange>, an optional element. The presence of this element specifies that any geographical area change is a trigger. Contains a mandatory <TriggerId> attribute that shall be set to a unique string;

II) <EnterSpecificArea>, an optional element specifying a geographical area which when entered triggers a location report. Contains a mandatory <TriggerId> attribute that shall be set to a unique string. The <EnterSpecificArea> element has the following sub-elements:

A) <GeographicalArea>, an optional element containing a <TriggerId> attribute and the following two subelements:

x1) <PolygonArea>, an optional element specifying the area as a polygon specified in clause 5.2 in 3GPP TS 23.032 [39]; and

x2) <EllipsoidArcArea>, an optional element specifying the area as an Ellipsoid Arc specified in clause 5.7 in 3GPP TS 23.032 [39]; and

III) <ExitSpecificAreaType>, an optional element specifying a geographical area which when exited triggers a location report. Contains a mandatory <TriggerId> attribute that shall be set to a unique string.

4) the <anyExt> shall be included with the following element not declared in the XML schema:

a) <EmergencyTriggeringCriteria>, a mandatory element specifying the triggers for the MCVideo client to perform reporting in emergency status. The <TriggeringCriteria> element contains the following sub-elements:

I) <CellChange>, an optional element specifying what cell changes trigger location reporting. Consists of the following sub-elements:

A) <AnyCellChange>, an optional element. The presence of this element specifies that any cell change is a trigger. Contains a mandatory <TriggerId> attribute that shall be set to a unique string;

B) <EnterSpecificCell>, an optional element specifying an ECGI which when entered triggers a location report. Contains a mandatory <TriggerId> attribute that shall be set to a unique string; and

C) <ExitSpecificCell>, an optional element specifying an ECGI which when exited triggers a location report. Contains a mandatory <TriggerId> attribute that shall be set to a unique string;

II) <TrackingAreaChange>, an optional element specifying what tracking area changes trigger location reporting. Consists of the following sub-elements:

A) <AnyTrackingAreaChange>, an optional element. The presence of this element specifies that any tracking area change is a trigger. Contains a mandatory <TriggerId> attribute that shall be set to a unique string;

B) <EnterSpecificTrackingArea>, an optional element specifying a Tracking Area Id which when entered triggers a location report. Contains a mandatory <TriggerId> attribute that shall be set to a unique string; and

C) <ExitSpecificTrackingArea>, an optional element specifying a Tracking Area Id which when exited triggers a location report. Contains a mandatory <TriggerId> attribute that shall be set to a unique string;

III) <PlmnChange>, an optional element specifying what PLMN changes trigger location reporting. Consists of the following sub-elements:

A) <AnyPlmnChange>, an optional element. The presence of this element specifies that any PLMN change is a trigger. Contains a mandatory <TriggerId> attribute that shall be set to a unique string;

B) <EnterSpecificPlmn>, an optional element specifying a PLMN Id which when entered triggers a location report. Contains a mandatory <TriggerId> attribute that shall be set to a unique string; and

C) <ExitSpecificPlmn>, an optional element specifying a PLMN Id which when exited triggers a location report. Contains a mandatory <TriggerId> attribute that shall be set to a unique string;

IV) <MbmsSaChange>, an optional element specifying what MBMS changes trigger location reporting. Consists of the following sub-elements:

A) <AnyMbmsSaChange>, an optional element. The presence of this element specifies that any MBMS SA change is a trigger. Contains a mandatory <TriggerId> attribute that shall be set to a unique string;

B) <EnterSpecificMbmsSa>, an optional element specifying an MBMS Service Area Id which when entered triggers a location report. Contains a mandatory <TriggerId> attribute that shall be set to a unique string; and

C <ExitSpecificMbmsSa>, an optional element specifying an MBMS Service Area Id which when exited triggers a location report. Contains a mandatory <TriggerId> attribute that shall be set to a unique string;

V) <MbsfnAreaChange>, an optional element specifying what MBSFN changes trigger location reporting. Consists of the following sub-elements:

A) <AnyMbsfnAreaChange>, an optional element. The presence of this element specifies that any MBSFN area change is a trigger. Contains a mandatory <TriggerId> attribute that shall be set to a unique string;

B) <EnterSpecificMbsfnArea>, an optional element specifying an MBSFN area which when entered triggers a location report. Contains a mandatory <TriggerId> attribute that shall be set to a unique string; and

C) <ExitSpecificMbsfnArea>, an optional element specifying an MBSFN area which when exited triggers a location report. Contains a mandatory <TriggerId> attribute that shall be set to a unique string;

VI) <PeriodicReport>, an optional element specifying that periodic location reports shall be sent. The value in seconds specifies the reporting interval. Contains a mandatory <TriggerId> attribute that shall be set to a unique string;

VII) <TravelledDistance>, an optional element specifying that the travelled distance shall trigger a report. The value in metres specified the travelled distance. Contains a mandatory <TriggerId> attribute that shall be set to a unique string;

VIII) <McvideoSignallingEvent>, an optional element specifying what signalling events triggers a location report. The <McvideoSignallingEvent> element has the following sub-elements:

A) <InitialLogOn>, an optional element specifying that an initial log on triggers a location report. Contains a mandatory <TriggerId> attribute that shall be set to a unique string;

B) <GroupCallNonEmergency>, an optional element specifying that a non-emergency group call triggers a location report. Contains a mandatory <TriggerId> attribute that shall be set to a unique string;

C) <PrivateCallNonEmergency>, an optional element specifying that a non-emergency private call triggers a location report. Contains a mandatory <TriggerId> attribute that shall be set to a unique string; and

D) <LocationConfigurationReceived>, an optional element specifying that a received location configuration triggers a location report. Contains a mandatory <TriggerId> attribute that shall be set to a unique string; and

IX)<GeographicalAreaChange>, an optional element specifying what geographical are changes trigger location reporting. Consists of the following sub-elements:

A) <AnyAreaChange>, an optional element. The presence of this element specifies that any geographical area change is a trigger. Contains a mandatory <TriggerId> attribute that shall be set to a unique string;

B) <EnterSpecificArea>, an optional element specifying a geographical area which when entered triggers a location report. Contains a mandatory <TriggerId> attribute that shall be set to a unique string. The <EnterSpecificArea> element has the following sub-elements:

x1)<GeographicalArea>, an optional element containing a <TriggerId> attribute and the following two subelements:

i1) <PolygonArea>, an optional element specifying the area as a polygon specified in clause 5.2 in 3GPP TS 23.032 [39]; and

i2) <EllipsoidArcArea>, an optional element specifying the area as an Ellipsoid Arc specified in clause 5.7 in 3GPP TS 23.032 [39]; and

C) <ExitSpecificAreaType>, an optional element specifying a geographical area which when exited triggers a location report. Contains a mandatory <TriggerId> attribute that shall be set to a unique string.

<Request> is an element with a <RequestId> attribute. The <Request> element is used to request a location report. The value of the <RequestId> attribute is returned in the corresponding <ReportId> attribute in order to correlate the request and the report.

<Report> is an element used to include the location report. It contains a <ReportId> attribute and a <ReportType> attribute. The <ReportId> attribute is used to return the value in the <RequestId> attribute in the <Request> element. The <ReportType> attribute has two values "Emergency" and "NonEmergency" used to inform whether the client is sending the report in an emergency situation or not. The <Report> element contains the following sub-elements:

1) <TriggerId>, an optional element which can occur multiple times that contain the value of the <TriggerId> attribute associated with a trigger that has fired; and

2) <CurrentLocation>, a mandatory element that contains the location information. The <CurrentLocation> element contains the following sub-elements:

a) <CurrentServingEcgi>, an optional element containing the ECGI of the serving cell;

b) <NeighbouringEcgi>, an optional element that can occur multiple times. It contains the ECGI of any neighbouring cell the MCVideo client can detect;

c) <MbmsSaId>, an optional element containing the MBMS Service Area Id the MCVideo client is using;

d) <MbsfnArea>, an optional element containing the MBSFN area the MCVideo is located in;

e) <CurrentCoordinate>, an optional element containing:

i) the longitude and latitude coded as in clause 6.1 in 3GPP TS 23.032 [39]; and

ii) an optional <anyExt> element containing:

A) an <altitude> element coded as in clause 6.3 in 3GPP TS 23.032 [39];

B) an optional <horizontalaccuracy> element where the <onebyteunsignedhalfrange> subelement is coded as in clause 6.2 in 3GPP TS 23.032 [39], which describes the uncertainty for latitude and longitude; and

C) an optional <verticalaccuracy> element where the <onebyteunsignedhalfrange> subelement is coded as in clause 6.2 in 3GPP TS 23.032 [39], which describes the uncertainty for altitude; and

f) <anyExt>, an optional element containing:

i) an optional <locTimestamp> element containing the date and time the location measurement was made.

The contents of the subelements in the <CurrentLocation> subelement of the <Report> element can be encrypted. The following rules are applied when any of these elements are included:

1) if confidentiality protection is not required, then:

a) the "type" attributes associated with the <CurrentServingEcgi>, <NeighbouringEcgi>, <MbmsSaId>, and <MbsfnArea> elements of the <Report> element have the value "Normal" and

i) the <Ecgi> subelement of the <CurrentServingEcgi> element contains the unencrypted value of the ECGI of the serving cell;

ii) the <Ecgi> subelement of the <NeighbouringEcgi> element contains the unencrypted value of the ECGI of any neighbouring cell;

iii) the <SaId> subelement of the <MbmsSaId> element contains the unencrypted value of the MBMS Service Area Id the MCVideo client is using; and

iv) the <MbsfnAreaId> subelement of the <MbsfnArea>, element contains the unencrypted value of the MBSFN area the MCVideo is located in;

b) the "type" attributes associated with the <longitude>, <latitude>, <altitude>, <horizontalaccuracy>, and <verticalaccuracy> subelements of the <CurrentCoordinate> element have the value "Normal" and the <three-bytes> subelements of <longitude> and <latitude> subelements, the <twobytes> subelement of the <altitude> subelement, the <onebyteunsignedhalfrange> subelement of the <horizontalaccuracy>, and the <onebyteunsignedhalfrange> subelement of the <verticalaccuracy> subelement contain the unencrypted value of longitude, latitude, altitude, horizontalaccuracy, and verticalaccuracy respectively; and

2) if confidentiality protection is required, then:

a) the "type" attributes associated with the <CurrentServingEcgi>, <NeighbouringEcgi>, <MbmsSaId>, and <MbsfnArea> elements have the value "Encrypted";

b) the "type" attributes associated with the <longitude>, <latitude>, <altitude>, <horizontalaccuracy>, and <verticalaccuracy> subelements of the <CurrentCoordinate> element have the value "Encrypted";

c) for each of the elements described in 2a) and subelements described in 2b) above, the <xenc:EncryptedData> element from the "http://www.w3.org/2001/04/xmlenc#" namespace is included and:

i) can have a "Type" attribute can be included with a value of "http://www.w3.org/2001/04/xmlenc#Content";

ii) can include an <EncryptionMethod> element with the "Algorithm" attribute set to value of "http://www.w3.org/2009/xmlenc11#aes128-gcm";

iii) can include a <KeyInfo> element with a <KeyName> element containing the base 64 encoded XPK-ID; and

iv) includes a <CipherData> element with a <CipherValue> element containing the encrypted data.

NOTE: When the optional attributes and elements are not included within the <xenc:EncryptedData> element, the information they contain is known to sender and the receiver by other means.

The recipient of the XML ignores any unknown element and any unknown attribute.

F.3.4 IANA registration template

Your Name:

<MCC name>

Your Email Address:

<MCC email address>

Media Type Name:

Application

Subtype name:

vnd.3gpp. mcvideo-location-info+xml

Required parameters:

None

Optional parameters:

"charset" the parameter has identical semantics to the charset parameter of the "application/xml" media type as specified in section 9.1 of IETF RFC 7303.

Encoding considerations:

binary.

Security considerations:

Same as general security considerations for application/xml media type as specified in section 9.1 of IETF RFC 7303. In addition, this media type provides a format for exchanging information in SIP, so the security considerations from IETF RFC 3261 apply.

The information transported in this media type does not include active or executable content.

Mechanisms for privacy and integrity protection of protocol parameters exist. Those mechanisms as well as authentication and further security mechanisms are described in 3GPP TS 24.229.

This media type does not include provisions for directives that institute actions on a recipient's files or other resources.

This media type does not include provisions for directives that institute actions that, while not directly harmful to the recipient, may result in disclosure of information that either facilitates a subsequent attack or else violates a recipient's privacy in any way.

This media type does not employ compression.

Interoperability considerations:

Same as general interoperability considerations for application/xml media type as specified in section 9.1 of IETF RFC 7303. Any unknown XML elements and any unknown XML attributes are to be ignored by recipient of the MIME body.

Published specification:

3GPP TS 24.281 "Mission Critical Video (MCVideo) signalling control; Protocol specification" version 14.0.0, available via http://www.3gpp.org/specs/numbering.htm.

Applications which use this media type:

Applications supporting the mission critical video as described in the published specification.

Fragment identifier considerations:

The handling in section 5 of IETF RFC 7303 applies.

Restrictions on usage:

None

Provisional registration? (standards tree only):

N/A

Additional information:

1. Deprecated alias names for this type: none
2. Magic number(s): none
3. File extension(s): none
4. Macintosh File Type Code(s): none
5. Object Identifier(s) or OID(s): none

Intended usage:

Common

Person to contact for further information:

- Name: <MCC name>
- Email: <MCC email address>
- Author/Change controller:

  i) Author: 3GPP CT1 Working Group/3GPP_TSG_CT_WG1@LIST.ETSI.ORG

  ii) Change controller: <MCC name>/<MCC email address>

F.4 XML schema for MCVideo (de)-affiliation requests

F.4.1 General

This clause defines XML schema and MIME type for MCVideo (de)-affiliation requests.

F.4.2 XML schema

```
<?xml version="1.0" encoding="UTF-8"?>
<xs:schema xmlns:xs="http://www.w3.org/2001/XMLSchema"
targetNamespace="urn:3gpp:ns:affiliationCommand:1.0"
xmlns:mcvideoaff="urn:3gpp:ns:affiliationCommand:1.0"
attributeFormDefault="unqualified" elementFormDefault="qualified">
  <xs:complexType name="affiliate-command" id="affil">
    <xs:sequence>
      <xs:element type="xs:anyURI" name="group" minOccurs="1" maxOccurs="unbounded"/>
      <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded"/>
      <xs:element name="anyExt" type="mcvideoaff:anyExtType" minOccurs="0"/>
    </xs:sequence>
    <xs:anyAttribute namespace="##any" processContents="lax"/>
  </xs:complexType>
  <xs:complexType name="de-affiliate-command">
    <xs:sequence>
      <xs:element type="xs:anyURI" name="group" minOccurs="1" maxOccurs="unbounded"/>
      <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded"/>
      <xs:element name="anyExt" type="mcvideoaff:anyExtType" minOccurs="0"/>
    </xs:sequence>
    <xs:anyAttribute namespace="##any" processContents="lax"/>
  </xs:complexType>
  <xs:element name="command-list">
    <xs:complexType>
      <xs:sequence>
        <xs:element name="affiliate" type="mcvideoaff:affiliate-command" minOccurs="0"
maxOccurs="1"/>
        <xs:element name="de-affiliate" type="mcvideoaff:de-affiliate-command" minOccurs="0"
maxOccurs="1"/>
        <xs:element name="anyExt" type="mcvideoaff:anyExtType" minOccurs="0"/>
```

```
        <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded"/>
      </xs:sequence>
    </xs:complexType>
  </xs:element>
  <xs:complexType name="anyExtType">
    <xs:sequence>
      <xs:any namespace="##any" processContents="lax" minOccurs="0" maxOccurs="unbounded"/>
    </xs:sequence>
  </xs:complexType>
</xs:schema>
```

F.4.3 Semantic

The <command-list> element is the root element of the XML document. The <command-list> element may contain <affiliate-command>, or <de-affiliate-command> subelements or both.

If the <command-list> contains the <affiliate-command> element then:

1) the <affiliate-command> element contains a list of <group> subelements having at least one subelement. The recipient shall perform an affiliation for all the MCVideo groups contained in the list for the clients for which the <command-list> applies.

If the <command-list> contains the <de-affiliate-command> element then:

1) the <de-affiliate-command> element contains a list of <group> subelements having at least one subelement. The recipient shall perform a de-affiliation for all the MCVideo groups contained in the list for the clients for which the <command-list> applies.

The recipient of the XML ignores any unknown element and any unknown attribute.

F.4.4 IANA registration template

Your Name:

<MCC name>

Your Email Address:

<MCC email address>

Media Type Name:

Application

Subtype name:

vnd.3gpp.mcvideo-affiliation-command+xml

Required parameters:

None

Optional parameters:

"charset" the parameter has identical semantics to the charset parameter of the "application/xml" media type as specified in section 9.1 of IETF RFC 7303.

Encoding considerations:

binary.

Security considerations:

Same as general security considerations for application/xml media type as specified in section 9.1 of IETF RFC 7303. In addition, this media type provides a format for exchanging information in SIP, so the security considerations from IETF RFC 3261 apply.

The information transported in this media type does not include active or executable content.

Mechanisms for privacy and integrity protection of protocol parameters exist. Those mechanisms as well as authentication and further security mechanisms are described in 3GPP TS 24.229.

This media type does not include provisions for directives that institute actions on a recipient's files or other resources.

This media type does not include provisions for directives that institute actions that, while not directly harmful to the recipient, may result in disclosure of information that either facilitates a subsequent attack or else violates a recipient's privacy in any way.

This media type does not employ compression.

Interoperability considerations:

Same as general interoperability considerations for application/xml media type as specified in section 9.1 of IETF RFC 7303. Any unknown XML elements and any unknown XML attributes are to be ignored by recipient of the MIME body.

Published specification:

3GPP TS 24.281 "Mission Critical Video (MCVideo) signalling control; Protocol specification" version 15.0.0, available via http://www.3gpp.org/specs/numbering.htm.

Applications which use this media type:

Applications supporting the mission critical video as described in the published specification.

Fragment identifier considerations:

The handling in section 5 of IETF RFC 7303 applies.

Restrictions on usage:

None

Provisional registration? (standards tree only):

N/A

Additional information:

1. Deprecated alias names for this type: none
2. Magic number(s): none
3. File extension(s): none
4. Macintosh File Type Code(s): none
5. Object Identifier(s) or OID(s): none

Intended usage:

Common

Person to contact for further information:

- Name: <MCC name>
- Email: <MCC email address>
- Author/Change controller:
  i) Author: 3GPP CT1 Working Group/3GPP_TSG_CT_WG1@LIST.ETSI.ORG
  ii) Change controller: <MCC name>/<MCC email address>

F.5 XML schema for the transmission request

F.5.1 General

This clause defines XML schema and MIME type for application/vnd.3gpp.transmission-request+xml.

F.5.2 XML schema

```
<?xml version="1.0" encoding="UTF-8"?>
<xs:schema attributeFormDefault="unqualified" elementFormDefault="qualified"
xmlns:xs="http://www.w3.org/2001/XMLSchema" targetNamespace="urn:3gpp:ns:transmissionRequest:1.0"
xmlns:mcvideotransmission="urn:3gpp:ns:transmissionRequest:1.0">
    <!-- the root element -->
    <xs:element name="transmission-request" type="mcvideotransmission:transmission-request-Type"
minOccurs="1" maxOccurs="2"/>
    <xs:complexType name=" transmission-request-Type">
    <xs:sequence>
    <xs:element name="ssrc" type="xs:unsignedLong"/>
    <xs:element name="transmission-priority" type="xs:unsignedByte"/>
    <xs:element name="user-id" type="xs:anyURI"/>
    <xs:element name="track-info" type="mcvideotransmission:track-info-Type"/>
    <xs:element name="transmission-indicator" type="xs:unsignedLong"/>
    <xs:element name="anyExt" type="mcvideotransmission:anyExtType" minOccurs="0"/>
    <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded"/>
    </xs:sequence>
    <xs:anyAttribute namespace="##any" processContents="lax"/>
    </xs:complexType>
    <xs:complexType name="anyExtType">
    <xs:sequence>
    <xs:any namespace="##any" processContents="lax" minOccurs="0" maxOccurs="unbounded"/>
    </xs:sequence>
    </xs:complexType>
    <xs:complexType name="track-info-Type">
    <xs:sequence>
    <xs:element name="queueing-capability" type="xs:byte"/>
    <xs:element name="participant-type" type="xs:string"/>
    <xs:element name="transmission-participant-reference" type="xs:unsignedLong" minOccurs="1"
maxOccurs="unbounded"/>
    <xs:element name="anyExt" type="mcvideotransmission:anyExtType" minOccurs="0"/>
    </xs:sequence>
    <xs:anyAttribute namespace="##any" processContents="lax"/>
    </xs:complexType>
</xs:schema>
```

F.5.3 Semantic

This clause describes the elements of the transmission request XML Schema.

<ssrc>: Contains the SSRC of the transmission participant. The content of the SSRC field shall be coded as specified in IETF RFC 3550 [10].

<transmission-priority>: Contains the level of priority of the transmission request. The <transmission-priority> element is coded as specified in 3GPP TS 24.380 [5].

<user-id>: Contains the MCVideo ID of the MCVideo user requesting the permission to send media.

<track-info>: Contains the <queueing-capability> element, the <participant-type> element and the <transmission-participant-reference>.

<transmission-indicator>: Contains additional information. The <transmission-indicator> element is coded as specified in 3GPP TS 24.581 [5].

<participant-type>: Contains the participant type assigned to the MCVideo user identified by the <user-id> element. The <participant-type> element is coded as specified in3GPP TS 24.581 [5].

NOTE: The reference to the transmission participant is a value only understandable by the transmission control server interface in the non-Controlling function of an MCVideo group.

<queueing-capability>: Contains the queueing capability of the MCVideo client. The <queueing-capability> element is coded as specified in 3GPP TS 24.581 [5].

The recipient of the XML ignores any unknown element and any unknown attribute.

F.5.4 IANA registration template

Your Name:

<MCC name>

Your Email Address:

<MCC email address>

Media Type Name:

Application

Subtype name:

vnd.3gpp.mcvideo-transmission-request+xml

Required parameters:

None

Optional parameters:

"charset" the parameter has identical semantics to the charset parameter of the "application/xml" media type as specified in section 9.1 of IETF RFC 7303.

Encoding considerations:

binary.

Security considerations:

Same as general security considerations for application/xml media type as specified in section 9.1 of IETF RFC 7303. In addition, this media type provides a format for exchanging information in SIP, so the security considerations from IETF RFC 3261 apply.

The information transported in this media type does not include active or executable content.

Mechanisms for privacy and integrity protection of protocol parameters exist. Those mechanisms as well as authentication and further security mechanisms are described in 3GPP TS 24.229.

This media type does not include provisions for directives that institute actions on a recipient's files or other resources.

This media type does not include provisions for directives that institute actions that, while not directly harmful to the recipient, may result in disclosure of information that either facilitates a subsequent attack or else violates a recipient's privacy in any way.

This media type does not employ compression.

Interoperability considerations:

Same as general interoperability considerations for application/xml media type as specified in section 9.1 of IETF RFC 7303. Any unknown XML elements and any unknown XML attributes are to be ignored by recipient of the MIME body.

Published specification:

3GPP TS 24.281 "Mission Critical Video (MCVideo) call control" version 14.1.0, available via http://www.3gpp.org/specs/numbering.htm.

Applications which use this media type:

Applications supporting the mission critical video as described in the published specification.

Fragment identifier considerations:

The handling in section 5 of IETF RFC 7303 applies.

Restrictions on usage:

None

Provisional registration? (standards tree only):

N/A

Additional information:

1. Deprecated alias names for this type: none
2. Magic number(s): none
3. File extension(s): none
4. Macintosh File Type Code(s): none
5. Object Identifier(s) or OID(s): none

Intended usage:

Common

Person to contact for further information:

- Name: <MCC name>
- Email: <MCC email address>
- Author/Change controller:
  i) Author: 3GPP CT1 Working Group/3GPP_TSG_CT_WG1@LIST.ETSI.ORG
  ii) Change controller: <MCC name>/<MCC email address>

F.6 XML schema for regroup using preconfigured group

F.6.1 General

This clause defines the XML schema and MIME type for regroup using preconfigured group.

F.6.2 XML schema

```
<?xml version="1.0" encoding="UTF-8"?>
<xs:schema xmlns:xs="http://www.w3.org/2001/XMLSchema"
targetNamespace="urn:3gpp:ns:preconfiguredRegroup:1.0"
xmlns:mcvideorgrp="urn:3gpp:ns:preconfiguredRegroup:1.0"
attributeFormDefault="unqualified" elementFormDefault="qualified">

  <!-- root XML element -->
  <xs:element name="mcvideoregroup" type="mcvideorgrp:mcvideoregroup-Type" id="info"/>

  <xs:complexType name="mcvideoregroup-Type">
    <xs:sequence>
      <xs:element name="mcvideoregroup-Params" type="mcvideorgrp:mcvideoregroup-ParamsType"
minOccurs="0"/>
```

```
      <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded"/>
      <xs:element name="anyExt" type="mcvideorgrp:anyExtType" minOccurs="0"/>
    </xs:sequence>
    <xs:anyAttribute namespace="##any" processContents="lax"/>
  </xs:complexType>

  <xs:complexType name="mcvideoregroup-ParamsType">
    <xs:sequence>
      <xs:element name="preconfig-group-id" type="mcvideorgrp:preconfig-group-Type"/>
      <xs:element name="mcvideo-regroup-uri" type="mcvideorgrp:mcvideo-regroup-uri-Type"/>
      <xs:element name="groups-for-regroup" type="mcvideorgrp:groups-for-regroup-Type"
minOccurs="0"/>
      <xs:element name="users-for-regroup" type="mcvideorgrp:users-for-regroup-Type" minOccurs="0"/>
      <xs:element name="regroup-action" type="xs:string"/>
      <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded"/>
      <xs:element name="anyExt" type="mcvideorgrp:anyExtType" minOccurs="0"/>
    </xs:sequence>
    <xs:anyAttribute namespace="##any" processContents="lax"/>
  </xs:complexType>

  <xs:complexType name="preconfig-group-Type">
    <xs:sequence>
     <xs:element type="xs:anyURI" name="preconfigured-group" minOccurs="0"/>
      <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded"/>
      <xs:element name="anyExt" type="mcvideorgrp:anyExtType" minOccurs="0"/>
    </xs:sequence>
    <xs:anyAttribute namespace="##any" processContents="lax"/>
  </xs:complexType>

  <xs:complexType name="mcvideo-regroup-uri-Type">
    <xs:sequence>
      <xs:element type="xs:anyURI" name="mcvideo-regroup-uri"/>
      <xs:any namespace="##other" processContents="lax"/>
      <xs:element name="anyExt" type="mcvideorgrp:anyExtType" minOccurs="0"/>
    </xs:sequence>
    <xs:anyAttribute namespace="##any" processContents="lax"/>
  </xs:complexType>

  <xs:complexType name="groups-for-regroup-Type">
    <xs:sequence>
      <xs:element type="xs:anyURI" name="group" maxOccurs="unbounded"/>
      <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded"/>
      <xs:element name="anyExt" type="mcvideorgrp:anyExtType" minOccurs="0"/>
    </xs:sequence>
    <xs:anyAttribute namespace="##any" processContents="lax"/>
  </xs:complexType>

  <xs:complexType name="users-for-regroup-Type">
    <xs:sequence>
      <xs:element type="xs:anyURI" name="user" maxOccurs="unbounded"/>
      <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded"/>
      <xs:element name="anyExt" type="mcvideorgrp:anyExtType" minOccurs="0"/>
    </xs:sequence>
    <xs:anyAttribute namespace="##any" processContents="lax"/>
  </xs:complexType>

  <xs:complexType name="anyExtType">
    <xs:sequence>
      <xs:any namespace="##any" processContents="lax" minOccurs="0" maxOccurs="unbounded"/>
    </xs:sequence>
  </xs:complexType>

</xs:schema>
```

F.6.3 Semantic

The <preconfigured-group> element shall contain a URI identifying the preconfigured MCVideo group.

The <mcvideo-regroup-uri> element shall contain a URI containing the temporary group identity identifying the regroup.

The < groups-for-regroup> element shall contain one or more <group> elements that shall each contain a URI of a group that is to be a constituent group of the regroup.

The <users-for-regroup> element shall contain one or more <user> elements that shall each contain an MCVideo ID of a user that is to be affiliated to the regroup.

The XML document shall have either one <groups-for-regroup> element or one <users-for-regroup> element, but not both.

If the <regroup-action> element contains the string "create" then:

1) if a <groups-for-regroup> element exists in the received XML, then:

   a) if the recipient is the controlling MCVideo function for the MCVideo group identified in the <preconfigured-group> element the recipient shall follow the procedures to create a group regroup with identity equal to the value contained in the <mcvideo-regroup-uri> element based on the configuration of the preconfigured MCVideo group identified in the <preconfigured-group> element;

   b) if the recipient is a non-controlling MCVideo function, the recipient shall follow the procedures to affiliate users belonging to any constituent groups of the group regroup with identity equal to the value contained in the <mcvideo-regroup-uri> element based on the configuration of the preconfigured MCVideo group identified in the <preconfigured-group> element; and

   c) if the recipient is the terminating participating MCVideo function for one or more MCVideo users affiliated to a constituent group of the group regroup, the recipient shall follow the procedures to notify each MCVideo user in the list of users in the <users-for-regroup> element that it serves of the group regroup and affiliate those users to the group regroup; and

2) if a <users-for-regroup> element exists in the received XML, then:

   a) if the recipient is the controlling MCVideo function for the MCVideo group identified in the <preconfigured-group> element, the recipient shall follow the procedures to create a user regroup with identity equal to the value contained in the <mcvideo-regroup-uri> element based on the configuration of the preconfigured MCVideo group identified in the <preconfigured-group> element; and

   b) if the recipient is the terminating participating MCVideo function for one or more MCVideo users identified in the <users-for-regroup> element, the recipient shall follow the procedures to notify each MCVideo user in the list of users in the <users-for-regroup> element that it serves of the user regroup and affiliate those users to the user regroup.

If the <regroup-action> element contains the string "remove" then:

1) the recipient shall follow the procedures to remove the regroup identified in the <mcvideo-regroup-uri> element.

The recipient of the XML ignores any unknown element and any unknown attribute.

F.6.4 IANA registration template

Editor's Note: [enh3MCPTT-CT, CR 0096] MCC is requested to submit the IANA registration.

Your Name:

<MCC name>

Your Email Address:

<MCC email address>

Media Type Name:

Application

Subtype name:

vnd.3gpp.mcvideo-regroup+xml

Required parameters:

None

Optional parameters:

"charset" the parameter has identical semantics to the charset parameter of the "application/xml" media type as specified in section 9.1 of IETF RFC 7303.

Encoding considerations:

binary.

Security considerations:

Same as general security considerations for application/xml media type as specified in section 9.1 of IETF RFC 7303. In addition, this media type provides a format for exchanging information in SIP, so the security considerations from IETF RFC 3261 apply.

The information transported in this media type does not include active or executable content.

Mechanisms for privacy and integrity protection of protocol parameters exist. Those mechanisms as well as authentication and further security mechanisms are described in 3GPP TS 24.229.

This media type does not include provisions for directives that institute actions on a recipient's files or other resources.

This media type does not include provisions for directives that institute actions that, while not directly harmful to the recipient, may result in disclosure of information that either facilitates a subsequent attack or else violates a recipient's privacy in any way.

This media type does not employ compression.

Interoperability considerations:

Same as general interoperability considerations for application/xml media type as specified in section 9.1 of IETF RFC 7303. Any unknown XML elements and any unknown XML attributes are to be ignored by recipient of the MIME body.

Published specification:

3GPP TS 24.282 "Mission Critical Data (MCVideo) signalling control" version 17.0.0, available via http://www.3gpp.org/specs/numbering.htm.

Applications which use this media type:

Applications supporting the mission critical push to talk as described in the published specification.

Fragment identifier considerations:

The handling in section 5 of IETF RFC 7303 applies.

Restrictions on usage:

None

Provisional registration? (standards tree only):

N/A

Additional information:

1. Deprecated alias names for this type: none
2. Magic number(s): none
3. File extension(s): none
4. Macintosh File Type Code(s): none
5. Object Identifier(s) or OID(s): none

Intended usage:

Common

Person to contact for further information:

- Name: <MCC name>
- Email: <MCC email address>
- Author/Change controller:
  i) Author: 3GPP CT1 Working Group/3GPP_TSG_CT_WG1@LIST.ETSI.ORG
  ii) Change controller: <MCC name>/<MCC email address>

Annex G (informative): On-network emergency and imminent peril related states

G.1 MCVideo emergency state

The MCVideo emergency state is managed by the MCVideo client and MCVideo user. High-level characteristics of this state are captured in table G-1.1.

Table G.1-1: MCVideo emergency state

MCVideo emergency state	State-setting events	State-clearing events	Comments
Values: "set": MCVideo user is in a life-threatening situation "clear": MCVideo user is not in a life-threatening situation **Managed by:** MCVideo client and MCVideo user	MCVideo emergency alert initiated MCVideo emergency group call initiated MCVideo emergency private call initiated	MCVideo emergency alert cancelled (by initiator) MCVideo emergency alert cancelled (by authorised-user) MCVideo emergency call cancelled by initiator (if there is no outstanding MCVideo emergency alert) MCVideo user manually clears the state	While the MCVideo client is in the MCVideo emergency state, all group calls it makes will be MCVideo emergency group calls, providing the group is authorised for MCVideo emergency group calls. While in an emergency group call while in the MCVideo emergency state, the MCVideo user is an "emergency talker" and will have pre-emptive priority over non-emergency talkers in the emergency group call.

G.2 In-progress emergency group state

This state is described in both 3GPP TS 22.281 [36] and 3GPP TS 23.281 [26]. It is managed by the controlling MCVideo function. High-level characteristics of this state are captured in table G.2-1.

Table G.2-1: in-progress emergency group state

In-progress emergency group state values	State-entering events	Comments
"true"	acceptance by the controlling MCVideo function of an MCVideo emergency group call request (as per clause 7.1.2.5.1.1 of 3GPP TS 23.281 [26]).	
"false"	initial state prior to any call activity acceptance by the controlling MCVideo function of an MCVideo emergency group cancel request (as per clause 7.1.2.5.1.3 of 3GPP TS 23.281 [26]).	

G.3 MCVideo emergency group state

The MCVideo emergency group state is the MCVideo client's perspective of the in-progress emergency group state which is managed by the controlling MCVideo function. The MCVideo emergency group (MVEG) state is managed by the MCVideo client to enable the requesting of MCVideo emergency-level priority as early as possible in the origination of an MCVideo emergency group call. High-level characteristics of this state are captured in table G.3-1.

Table G.3-1: MCVideo emergency group state

MCVideo emergency group state values	State-entering events	Comments
MVEG 1: no-emergency	initial state prior to any call activity Emergency group call cancel request received on behalf of another user from the MCVideo server Emergency group call cancel response (success) in response to initiator's request	
MVEG 2: in-progress	Emergency group call response received (confirm) to initiator's emergency group call request Emergency group call request received (on behalf of another user)	In this state, all participants in calls on this group will receive emergency level priority whether or not they are in the MCVideo emergency state themselves.
MVEG 3: cancel-pending	Emergency group call cancel request sent by initiator	The controlling MCVideo server may not grant the cancel request for various reasons, e.g., other users in an MCVideo emergency state remain in the call.
MVEG 4: confirm-pending	Emergency group call request sent by initiator	The controlling MCVideo server may not grant the call request for various reasons, e.g., the MCVideo group is not configured as being emergency-capable so it can't be assumed that the group will enter the in-progress state.

G.4 MCVideo emergency group call state

Table G.4-1 provides the semantics of the MCVideo emergency group call (MVEGC) state values. This internal state of the MCVideo client and is managed by the MCVideo client. These states aid in the managing of the information elements of MCVideo emergency group calls and MCVideo emergency alerts and their cancellations.

Table G.4-1: MCVideo emergency group call state

MCVideo emergency group call state values	Semantics	Comments
MVEGC 1: emergency-gc-capable	MCVideo client emergency-capable client is not currently in an MCVideo emergency group call that it has originated, nor is it in the process of initiating one.	**MCVideo emergency state:** may or may not be set in this state, depending upon the MCVideo client's MVEA state
MVEGC 2: emergency-call-requested	MCVideo client has initiated an MCVideo emergency group call request.	**MCVideo emergency state:** is set
MVEGC 3: emergency-call-granted	MCVideo client has received an MCVideo emergency group call grant.	If the MCVideo user initiates a call while the MCVideo emergency state is still set, that call will be an MCVideo emergency group call, assuming that group is authorised for the client to initiate emergency group calls on. **MCVideo emergency state:** is set

G.5 MCVideo emergency alert state

Table G.5-1provides the semantics of the MCVideo emergency alert (MVEA) state values. This is an internal state of the MCVideo client and is managed by the MCVideo client. These states aid in the managing of the information elements of MCVideo emergency group calls and MCVideo emergency alerts and their cancellations.

Table G.5-1: MCVideo emergency alert state

MCVideo emergency alert state values	State-entering events	Comments
MVEA 1: no-alert	initial state emergency alert cancelled emergency alert request denied	emergency alerts can be cancelled in several ways: MCVideo emergency alert cancel request with <alert-ind> set to "false" (by initiator) MCVideo emergency alert cancel request with <alert-ind> set to "false" (by authorised user) MCVideo emergency group call cancel request with <alert-ind> set to "false" **MCVideo emergency state:** may be set or clear, depending on MCVideo emergency call status
MVEA 2: emergency-alert-confirm-pending	emergency alert request sent	emergency alerts can be requested in several ways: MCVideo emergency alert request with <alert-ind> set to "true" MCVideo emergency group call request with <alert-ind> set to "true" **MCVideo emergency state:** is set
MVEA 3: emergency-alert - initiated	emergency alert response (success) received	**MCVideo emergency state:** is set
MVEA 4: emergency-alert-cancel-pending	emergency alert cancellation request sent by alert originator	**MCVideo emergency state:** is clear

G.6 In-progress imminent peril group state

This state is described in both 3GPP TS 22.281 [36] and 3GPP TS 23.281 [26]. It is managed by the controlling MCVideo function. High-level characteristics of this state are captured in table G.6-1.

Table G.6-1: in-progress imminent peril group state

In-progress imminent peril group state values	State-entering events	Comments
"true"	acceptance by the controlling MCVideo function of an MCVideo imminent peril group call request (as per clause 7.1.2.5.2.1 and clause 7.1.2.5.2.2 of 3GPP TS 23.281 [26]).	
"false"	initial state prior to any call activity acceptance by the controlling MCVideo function of an MCVideo imminent peril group cancel request (as per clause 7.1.2.5.2.3 of 3GPP TS 23.281 [26]).	

G.7 MCVideo imminent peril group state

The MCVideo imminent peril group state is the MCVideo client's perspective of the in-progress imminent peril group state which is managed by the controlling MCVideo function. The MCVideo imminent peril group (MVIG) state is managed by the MCVideo client to enable the requesting of MCVideo imminent peril-level priority as early as possible in the origination of an MCVideo imminent peril group call. High-level characteristics of this state are captured in table G.7-1.

Table G.7-1: MCVideo imminent peril group state

MCVideo imminent peril group state values	State-entering events	Comments
MVIG 1: no-imminent peril	initial state prior to any call activity Imminent peril group call cancel request received on behalf of another user from the MCVideo server Imminent peril group call cancel response (success) in response to initiator's request	
MVIG 2: in-progress	Imminent peril group call response received (confirm) to initiator's imminent peril group call request Imminent peril group call request received (on behalf of another user)	In this state, all participants in calls on this group will receive imminent peril level priority whether or not they initiated an MCVideo imminent peril group call themselves.
MVIG 3: cancel-pending	Imminent peril group call cancel request sent by initiator	The controlling MCVideo server may not grant the cancel request for various reasons, e.g., other users in an MCVideo imminent peril state remain in the call.
MVIG 4: confirm-pending	Imminent peril group call request sent by initiator	The controlling MCVideo server may not grant the call request for various reasons, e.g., the MCVideo group is not configured as being imminent peril-capable so it can't be assumed that the group will enter the in-progress state.

G.8 MCVideo imminent peril group call state

Table G.8-1 provides the semantics of the MCVideo imminent peril group call (MVIGC) state values. This internal state of the MCVideo client and is managed by the MCVideo client. These states aid in the managing of the information elements of MCVideo imminent peril group calls and their cancellations.

Table G.8-1: MCVideo imminent peril group call state

MCVideo imminent peril group call state values	Semantics	Comments
MVIGC 1: imminent peril-gc-capable	MCVideo client imminent peril-capable client is not currently in an MCVideo imminent peril group call that it has originated, nor is it in the process of initiating one.	In this state, the MCVideo imminent peril group state will be set to either "MVIG 1: no-imminent-peril" or "MVIG 2 in-progress" state.
MVIGC 2: imminent peril-call-requested	MCVideo client has initiated an MCVideo imminent peril group call request.	In this state, the MCVideo imminent peril group state will be set to "MVIG 4: confirm-pending" if not already in the "MVIG 2 in-progress" state.
MVIGC 3: imminent peril-call-granted	MCVideo client has received an MCVideo imminent peril group call grant.	In this state, the MCVideo imminent peril group state will be set to "MVIG 2 in-progress".

G.9 In-progress emergency private call state

This state is managed by the controlling MCVideo function. All private calls originated between an initiator and the target MCVideo user when they are in an in-progress emergency private call state are MCVideo emergency private calls until this state is cancelled, whether or not the originator of the private call is in an MCVideo emergency state.

Table G.9-1: in-progress emergency private call state

In-progress emergency private call state values	State-entering events	Comments
"true"	acceptance by the controlling MCVideo function of an MCVideo emergency private call request	The in-progress emergency private call state applies to the call and the two MCVideo users in the call.
"false"	initial state prior to any private call activity acceptance by the controlling MCVideo function of the cancellation of an MCVideo emergency private call.	

G.10 MCVideo emergency private priority state

The MCVideo emergency private priority state is the MCVideo client's perspective of the in-progress emergency private call state which is managed by the controlling MCVideo function. The MCVideo emergency private priority (MVEPP) state is managed by the MCVideo client to enable the requesting of MCVideo emergency-level priority as early as possible in the origination of an MCVideo emergency private call. High-level characteristics of this state are captured in table G.10-1.

Table G.10-1: MCVideo emergency private priority state

MCVideo emergency private priority state values	State-entering events	Comments
MVEPP 1: no-emergency	initial state prior to any call activity Emergency private call cancel request received on behalf of another user from the MCVideo server Emergency private call cancel response (success) in response to initiator's request	
MVEPP 2: in-progress	Emergency private call response received (confirm) to initiator's emergency private call request Emergency private call request received (on behalf of another user)	In this state, both participants in calls to each other will request emergency level priority whether or not they are in the MCVideo emergency state themselves.
MVEPP 3: cancel-pending	Emergency private call cancel request sent by initiator	The controlling MCVideo server may not grant the cancel request for various reasons, e.g., the other user in the call is in an MCVideo emergency state.
MVEPP 4: confirm-pending	Emergency private call request sent by initiator	The controlling MCVideo server may not grant the call request for various reasons, e.g., the MCVideo user is not configured as being authorised to originate an emergency private call so it can't be assumed that the call (originator and target users) will enter the in-progress state.

G.11 MCVideo emergency private call state

Table G.11-1 provides the semantics of the MCVideo emergency private call (MEPC) state values. This is an internal state of the MCVideo client and is managed by the MCVideo client. This state aids in the managing of the information elements of MCVideo emergency private calls and MCVideo emergency alerts and their cancellations.

Table G.11-1: MCVideo emergency private call state

MCVideo emergency private call state values	Semantics	Comments
MVEPC 1: emergency-pc-capable	MCVideo client emergency-capable client is not currently in an MCVideo emergency private call that it has originated, nor is it in the process of initiating one.	**MCVideo emergency state:** may or may not be set in this state, depending upon the MCVideo client's MVPEA state and the emergency states related to MCVideo emergency group calls.
MVEPC 2: emergency-pc-requested	MCVideo client has initiated an MCVideo emergency private call request.	**MCVideo emergency state:** is set
MVEPC 3: emergency-pc-granted	MCVideo client has received an MCVideo emergency private call grant.	If the MCVideo user initiates a call while the MCVideo emergency state is still set, that call will be an MCVideo emergency private call, assuming that the initiating MCVideo user is authorised to initiate an MCVideo emergency private call to the targeted MCVideo user. **MCVideo emergency state:** is set

G.12 MCVideo private emergency alert state

Table G.5-1provides the semantics of the MCVideo private emergency alert (MVPEA) state values. This is an internal state of the MCVideo client and is managed by the MCVideo client. These states aid in the managing of the information elements of MCVideo emergency private calls and MCVideo emergency alerts and their cancellations. MCVideo private emergency alerts are targeted to an MCVideo user.

Table G.12-1: MCVideo private emergency alert state

MCVideo emergency alert state values	State-entering events	Comments
MVPEA 1: no-alert	initial state emergency alert cancelled emergency alert request denied	emergency alerts targeted to an MCVideo user can be cancelled in several ways: MCVideo emergency private call cancel request with <alert-ind> set to "false" timeout of private call inactivity timer end of call (if system policy) **MCVideo emergency state:** may be set or clear, depending on MCVideo emergency call status
MVPEA 2: emergency-alert-confirm-pending	emergency alert request sent	emergency alerts can be requested as an optional part of a MCVideo client's request to initiate an MCVideo emergency private call, in which case the request has an <alert-ind> element set to "true". **MCVideo emergency state:** is set
MVPEA 3: emergency-alert - initiated	emergency alert response (success) received	**MCVideo emergency state:** is set
MVPEA 4: emergency-alert-cancel-pending	emergency alert cancellation request sent by alert originator	**MCVideo emergency state:** is clear

Annex H (informative): On-network routing considerations

H.1 General

The following clauses summarise the identities placed into SIP headers and SIP bodies during session establishment.

H.2 Group Call

Table H.2-1 describes the contents of the SIP headers and SIP bodies inserted by MCVideo clients and MCVideo servers involved in a group call.

Table H.2-1: Routing considerations for group call

Interface	Content of SIP headers	Content of "mcvideo-info" MIME body	Notes
originating MCVideo client to originating participating MCVideo function (O-PF).	Request-URI contains PSI of O-PF. P-Preferred-Identity may contain IMPU of originating user.	"mcvideo-request-uri" contains the group identity.	PSI of O-PF configured for each client. MCVideo-id of each client is never sent in session initiation.
O-PF to controlling MCVideo function (CF).	Request-URI contains PSI of CF. P-Asserted-Identity contains IMPU of originating user.	"mcvideo-request-uri" contains the group identity. "mcvideo-calling-user-id" contains MCVideo ID of originating user.	CF finds the MCVideo ID of the originating user from the stored IMPU-MCVideo ID binding and locates the PSI of the controller that serves the group identity. O-PF contains configuration of the PSIs of the CFs.
CF to terminating participating MCVideo function (T-PF).	Request-URI contains the address of the T-PF. P-Asserted-Identity contains the address of the CF.	"mcvideo-request-uri" contains the MCVideo ID of the terminating user. "mcvideo-calling-user-id" contains MCVideo ID of originating user. "mcvideo-calling-group-id" contains the group identity.	For each client in the group, CF maps the MCVideo-ID of the terminator to the address of the T-PF. If the terminator is in another domain, the CF can map the MCVideo ID of the terminator to a PSI identifying a interrogating function in the partner network that is able to find the T-PF using the MCVideo ID.
CF to non-controlling MCVideo function of an MCVideo group (NCF).	Request-URI contains the PSI of the NCF. P-Asserted-Identity contains the PSI of the CF.	"mcvideo-request-uri" contains the group identity. "mcvideo-calling-user-id" contains MCVideo ID of originating user.	-
T-PF to terminating MCVideo client.	Request-URI contains the IMPU of the terminating user. P-Asserted-Identity contains the address of the CF.	"mcvideo-request-uri" contains the MCVideo ID of the terminating user. "mcvideo-calling-user-id" contains MCVideo ID of originating user. "mcvideo-calling-group-id" contains the group identity.	T-PF finds the IMPU of the terminating user from the stored IMPU-MCVideo ID binding at the time of registration.
terminating MCVideo client to T-PF (response).	as in TS 24.229.	"mcvideo-called-party-id" contains contacted client's MCVideo ID.	-
T-PF to NCF (response)	as in TS 24.229	"mcvideo-called-party-id" contains contacted client's MCVideo ID.	-
T-PF to CF (response).	as in TS 24.229.	"mcvideo-called-user" contains contacted client's MCVideo ID.	-
NCF to CF (response)	as in TS 24.229.	-	In the case of trusted mutual aid, the NCF returns the identities of the group in a "resource-lists" MIME body.
CF to O-PF (response)	as in TS 24.229.	-	-
O-PF to originating MCVideo client (response)	as in TS 24.229.	-	-

H.3 Private Call

Table H.3-1 describes the contents of the SIP headers and SIP bodies inserted by MCVideo clients and MCVideo servers involved in a private call.

Table H.3-1: Routing considerations for private call

Interface	Content of SIP headers	Content of SIP bodies (body in brackets)	Notes
originating MCVideo client to originating participating MCVideo function (O-PF)	Request-URI contains the PSI for the private call service. P-Preferred-Identity may contain IMPU of originating user	MCVideo ID of called user (resource-lists)	PSI for private call is configured on the client.
O-PF to controlling MCVideo function (CF)	Request-URI contains the PSI for the private call service. P-Asserted-Identity contains IMPU of originating user.	MCVideo ID of called user (resource-lists) MCVideo ID of calling user contained in "mcvideo-calling-user-id" (mcvideo-info)	-
CF to terminating participating MCVideo function (T-PF)	Request-URI contains the address of the T-PF. P-Asserted-Identity contains IMPU of originating user.	MCVideo ID of calling user contained in "mcvideo-calling-user-id" (mcvideo-info). MCVideo ID of called user contained in "mcvideo-called-party-id" (mcvideo-info).	If the terminator is in another domain, the CF can map the MCVideo ID of the terminator to a PSI identifying an interrogating function in the partner network that is able to find the T-PF using the MCVideo ID.
T-PF to terminating MCVideo client	Request-URI contains the IMPU of the terminating user. P-Asserted-Identity contains IMPU of originating user.	MCVideo ID of calling user contained in "mcvideo-calling-user-id" (mcvideo-info). MCVideo ID of called user contained in "mcvideo-called-party-id" (mcvideo-info).	-
terminating MCVideo client to T-PF (response)	as in TS 24.229	"mcvideo-called-party-id" contains contacted client's MCVideo ID (mcvideo-info).	-
T-PF to CF (response)	as in TS 24.229	"mcvideo-called-user" contains contacted client's MCVideo ID (mcvideo-info).	-
CF to O-PF (response)	as in TS 24.229	"mcvideo-called-party-id" contains contacted client's MCVideo ID (mcvideo-info).	-
O-PF to originating MCVideo client (response)	as in TS 24.229	"mcvideo-called-party-id" contains contacted client's MCVideo ID (mcvideo-info).	-

Annex I (informative): INFO packages defined in the present document

I.1 Info package for transfer of transmission participants requests

Editor's note: [CT1#133-e, C1-217178, CR0146 rev 1]: The info package type "application/vnd.3gpp.mcvideo-transmission-request+xml" as defined in this clause is to be registered in the IANA registry for Application Media Types based upon the following template. The registration is to be started at the completion of 3GPP release 17.

I.1.1 Scope

This clause contains the information required for the IANA registration of info package g.3gpp.mcvideo-transmission-request in accordance with IETF RFC 6086 [21].

I.1.2 g.3gpp.mcvideo-transmission-request info package

I.1.2.1 Overall description

When a temporary group call includes constituent MCVideo groups in partner systems where an MCVideo call is ongoing and if there is a participant with permission to transmit, the non-controlling MCVideo function of an MCVideo group needs to transfer information of the currently transmitting user(s) to the controlling MCVideo function hosting the temporary group. The information is transferred in the form of a transmission request.The controlling MCVideo function will then determine if the participant will be permitted to continue to transmit or if the permission to transmit is revoked.

I.1.2.2 Applicability

This package is used to transport a transmission request from the non-controlling MCVideo function of an MCVideo group to the controlling MCVideo function hosting the temporary group.

I.1.2.3 Appropriateness of INFO Package Usage

A number of solutions were discussed for the transportation of the transmission request to the controlling MCVideo function hosting the temporary MCVideo group. The solutions were:

1) Use of the session related methods (e.g. SIP 200 (OK) response to the SIP INVITE request).

2) Use of the SIP MESSAGE method.

3) Use of the SIP INFO method as described in IETF RFC 6086 [21], by defining a new info package.

The result of the evaluation of the above solutions were:

1) To include such a large amount of data in a SIP 200 (OK) response to an SIP INVITE request could cause problems with the size of the SIP 200 (OK) response resulting in packet fragmentation.

2) The use of the SIP MESSAGE request would result in that the recommended value of size of the information transferred by the SIP MESSAGE request would be exceeded.

3) The use of SIP INFO request was found as the most appropriate solution since the SIP INFO request could be sent in the existing SIP session.

I.1.2.4 Info package name

g.3gpp.mcvideo-transmission-request

I.1.2.5 Info package parameters

None defined

I.1.2.6 SIP options tags

None defined

I.1.2.7 INFO message body parts

The MIME type of the message body carrying participant identities is application/vnd.3gpp.mvideo-transmission-request+xml. The application/vnd.3gpp.mcvideo-transmission-request+xml MIME type is defined in 3GPP TS 24.281.

When associated with the g.3gpp.mcvideo-transmission-request info package, the Content-Disposition value of the message body carrying the floor request is "info-package".

I.1.2.8 Info package usage restrictions

None defined.

I.1.2.9 Rate of INFO Requests

Single INFO request generated after session set up.

I.1.2.10 Info package security considerations

The security is based on the generic security mechanism provided for the underlying SIP signalling. No additional security mechanism is defined.

I.1.2.11 Implementation details and examples

UAC generation of INFO requests: See 3GPP TS 24.281: "Mission Critical Video (MCVideo) signalling control; Protocol specification".

UAS processing of INFO requests: See 3GPP TS 24.281: "Mission Critical Video (MCVideo) signalling control; Protocol specification".

EXAMPLE: A controlling MCVideo function hosting a temporary MCVideo group inviting a constituent MCVideo group hosted by a non-controlling MCVideo function of an MCVideo group in a partner system where an MCVideo call is ongoing with one or two of the participants granted to transmit. Then the non-controlling MCVideo function of the constituent MCVideo group sends a SIP INFO request carrying a transmission request in an application/vnd.3gpp.mcvideo-transmission-request+xml MIME body using the g.3gpp.mcvideo-transmission-request info package.

I.2 Info package for transfer of MCVideo information

I.2.1 Scope

This clause contains the information required for the IANA registration of info package g.3gpp.mcvideo-info in accordance with IETF RFC 6086 [64].

I.2.2 g.3gpp.mcvideo-info info package

I.2.2.1 Overall description

The MCVideo client request for MCVideo emergency call origination can also optionally request the origination of an MCVideo emergency alert. Similarly, the MCVideo client request for MCVideo emergency call cancellation can also optionally request the cancellation of an MCVideo emergency alert. A mechanism to inform the MCVideo client that one of the requested actions has been rejected by the controlling MCVideo function is needed to both inform the MCVideo user that one of their requested actions has been rejected and to keep the emergency and imminent peril related state machines maintained by the MCVideo client updated appropriately. Note that a SIP 200 OK has to be sent in the case where the MCVideo emergency call origination request or cancellation request is accepted by the controller to allow the MCVideo user to initiate the MCVideo emergency call and receive updated priority even if the accompanying MCVideo alert request is rejected.

An MCVideo client request for an MCVideo imminent peril call when the targeted MCVideo group is in an in-progress emergency state also needs special handling, as in this case, the call request will be accepted but the MCVideo client needs to be informed that the MCVideo user will be joined to an in-progress MCVideo emergency group call instead of the requested MCVideo imminent peril group call to keep the emergency and imminent peril related state machines maintained by the MCVideo client updated appropriately.

I.2.2.2 Applicability

This package is used to transport emergency call, imminent peril and emergency alert indications from the controlling function to the MCVideo client

I.2.2.3 Appropriateness of INFO Package Usage

A number of solutions were discussed for the transportation of the emergency call, imminent peril and emergency alert indications from the controlling function to the MCVideo client. The solutions were:

1) Use of the session related methods (e.g. SIP 200 (OK) response to the SIP INVITE request).

2) Use of the SIP MESSAGE method.

3) Use of the SIP INFO method as described in IETF RFC 6086, by defining a new info package.

The result of the evaluation of the above solutions were:

1) To include such a large amount of data in a SIP 200 (OK) response to an SIP INVITE request could cause problems with the size of the SIP 200 (OK) response resulting in packet fragmentation.

2) The use of the SIP MESSAGE request would result in that the recommended value of size of the information transferred by the SIP MESSAGE request would be exceeded.

3) The use of SIP INFO request was found as the most appropriate solution since the SIP INFO request could be sent in the existing SIP session.

I.2.2.4 Info package name

g.3gpp.mcvideo-info

I.2.2.5 Info package parameters

None defined

I.2.2.6 SIP options tags

None defined

I.2.2.7 INFO message body parts

The MIME type of the message body carrying participant identities is application/vnd.3gpp.mcvideo-info+xml. The application/vnd.3gpp.mcvideo-info+xml MIME type is defined in 3GPP TS 24.379.

When associated with the g.3gpp.mcvideo-info info package, the Content-Disposition value of the message body carrying mcvideo information is "info-package".

I.2.2.8 Info package usage restrictions

None defined.

I.2.2.9 Rate of INFO Requests

Single INFO request generated after session set up.

I.2.2.10 Info package security considerations

The security is based on the generic security mechanism provided for the underlying SIP signalling. No additional security mechanism is defined.

I.2.2.11 Implementation details and examples

UAC generation of INFO requests: See 3GPP TS 24.281: "Mission Critical Video (MCVideo) call control; Protocol specification".

UAS processing of INFO requests: See 3GPP TS 24.281: "Mission Critical Video (MCVideo) call control; Protocol specification"

EXAMPLE: A controlling MCVideo function will receive a SIP INVITE request or SIP (re-)INVITE request containing a request for an emergency call (with or without an alert) or an imminent peril call. When an emergency call has been authorised but an optional request for an emergency alert has been determined to be unauthorised, the controller will respond with a SIP 200 (OK) response to indicate acceptance of the call request and return an indication of the rejection of the emergency alert request in a SIP INFO request carrying the application/vnd.3gpp.mcvideo-info+xml MIME body using the g.3gpp.mcvideo-info info package.

Annex J (normative): MCVideo session control specific concepts for the support of mission critical services over 5GS

J.1 General

The present document applies to both EPS and 5GS. This annex lists the aspects of MCVideo session control protocols which are different in 5GS from EPS. Certain aspects that are only applicable to EPS are described in clause J.2.

J.2 Aspects not applicable to 5GS

The following aspects of EPS mentioned in the present document are not applicable to 5GS:

- Proximity-services (ProSe) and the corresponding procedures; and
- Multimedia Broadcast and Multicast Service (MBMS) and the corresponding procedures.

Annex K (informative): Change history

Change history							
Date	Meeting	TDoc	CR	Rev	Cat	Subject/Comment	New version
2017-01						Initial version.	0.0.0
2017-01						Implementing the following agred P-CRs after CT1#101bis: C1-170280	0.1.0
2017-03						Implementing the following agreed P-CRs after CT1#102: C1-170816, C1-170817, C1-170818, C1-170819, C1-170820, C1-170821, C1-171047, C1-171049, C1-171050, C1-171053, C1-171054, C1-171120, C1-171121, C1-171122, C1-171124.	0.2.0
2017-04						Implementing the following agreed P-CRs after CT1#103: C1-171453, C1-171458, C1-171459, C1-171460, C1-171723, C1-171724, C1-171813.	0.3.0
2017-05						Implementing the following agreed P-CRs after CT1#104: C1-172055, C1-172333, C1-172336, C1-172520, C1-172522, C1-172523, C1-172526, C1-172528, C1-172754	0.4.0
2017-06	CT-76	CP-171108				Version 1.0.0 created for presentation for information at CT76	1.0.0
2017-06	CT-76					Version 14.0.0 created after approval at CT76	14.0.0
2017-09	CT-77	CP-172103	0001	1	F	Proposal for Clause 4.1 on MCVideo overview description	14.1.0
2017-09	CT-77	CP-172103	0002	1	F	Proposal for clause 4.3 on MCVideo media description	14.1.0
2017-09	CT-77	CP-172103	0003	1	F	Proposal for clause 5 on MCVideo functional entities description	14.1.0
2017-09	CT-77	CP-172103	0004	1	F	Proposal for clause 7 on service authorisation	14.1.0
2017-09	CT-77	CP-172103	0005	1	F	Proposal for clause 8 on affliation	14.1.0
2017-09	CT-77	CP-172103	0006	1	F	Proposal for clause 9 on Group call	14.1.0
2017-09	CT-77	CP-172103	0007	1	F	Proposal for clause 10 on private call	14.1.0
2017-09	CT-77	CP-172103	0008	1	F	Proposal for clause 11 on emergency alert	14.1.0
2017-09	CT-77	CP-172103	0010	1	F	Proposal for clause B.2 on MCVideo timers	14.1.0
2017-09	CT-77	CP-172103	0011	1	F	Proposal on clause 4.7 on Communication security description	14.1.0
2017-09	CT-77	CP-172103	0012	1	F	Proposal on clause 6 on common procedures	14.1.0
2017-09	CT-77	CP-172103	0013	1	F	Off-network clean-up	14.1.0
2017-09	CT-77	CP-172103	0014	1	F	Proposal for MCVideo XSD documents	14.1.0
2017-12	CT-78	CP-173065	0016		F	Corrections to clause 4 on MCVideo general description	14.2.0
2017-12	CT-78	CP-173065	0017		F	Corrections to clause 5.2 on MCVideo client supported features	14.2.0
2017-12	CT-78	CP-173065	0018		F	Corrections to clause 6 on Common procedures	14.2.0
2017-12	CT-78	CP-173065	0019	1	F	Corrections to clause 7 on MCVideo registration and service authorization	14.2.0
2017-12	CT-78	CP-173065	0020	1	F	Corrections to clause 8 on MCVideo affiliation	14.2.0
2017-12	CT-78	CP-173065	0021	1	F	Corrections to clause 9 on group call	14.2.0
2017-12	CT-78	CP-173065	0022	1	F	Corrections to clause 10 on MCVideo private call	14.2.0
2017-12	CT-78	CP-173065	0023	2	F	Corrections to Annex F MCVideo XML schemas	14.2.0
2017-12	CT-78	CP-173065	0025		F	Corrections to Annex G on emergency states	14.2.0
2017-12	CT-78	CP-173065	0026		F	Corrections to Annex H on routing considerations for private call	14.2.0
2017-12	CT-78	CP-173065	0027	1	F	Proposal for MCVideo Info package	14.2.0
2017-12	CT-78	CP-173065	0028	1	F	Corrections of group call state names for MCVideo	14.2.0
2017-12	CT-78	CP-173065	0029		F	Corrections related to the use of MCVideo video media	14.2.0
2017-12	CT-78	CP-173065	0030		F	Addition of MCVideo Definitions and Abbreviations	14.2.0
2017-12	CT-78	CP-173065	0031		F	Four most significant bits of PCK-ID	14.2.0
2017-12	CT-78	CP-173065	0032		F	Off-network MCVideo configurations	14.2.0
2018-03	CT-79	CP-180074	0036		F	Reference and implementation corrections	14.3.0
2018-03	CT-79	CP-180083	0033	2	B	MCVideo ambient viewing client procedures	15.0.0
2018-03	CT-79	CP-180083	0034	4	B	MCVideo ambient viewing participating MCVideo function procedures and controlling MCVideo function procedures	15.0.0
2018-03	CT-79	CP-180083	0035	1	B	MCVideo ambient viewing general description	15.0.0
2018-06	CT-80	CP-181065	0037	2	B	Usage of MBMS for MCVideo - signaling control	15.1.0
2018-06	CT-80	CP-181065	0038	2	B	Off network video push	15.1.0
2018-06	CT-80	CP-181065	0039	1	F	Correction to session-type in XML schema for MCVideo Information	15.1.0
2018-06	CT-80	CP-181065	0040	1	B	Off network video pull	15.1.0
2018-06	CT-80	CP-181065	0041		F	IANA registration template	15.1.0
2018-06	CT-80	CP-181065	0042	1	B	Location procedures	15.1.0
2018-06	CT-80	CP-181065	0043	1	B	On network video pull	15.1.0
2018-06	CT-80	CP-181065	0044	1	B	Support for multiple devices	15.1.0
2018-06	CT-80	CP-181065	0045		B	Use of UE-to-network relay and Service continuity	15.1.0
2018-09	CT-81	CP-182148	0046		F	Fix issues with encoding of IEs in MONP messages for MCVideo	15.2.0
2018-09	CT-81	CP-182148	0047		F	Reason IE needs to be better clarified as being optional in NOTIFY VIDEO PUSH	15.2.0
2018-09	CT-81	CP-182148	0049	1	F	Corrections on on-network video pull	15.2.0
2018-09	CT-81	CP-182148	0052	7	B	On-network video push	15.2.0
2018-12	CT-82	CP-183060	0056		A	Correct root element in presence event package	15.3.0
2018-12	CT-82	CP-183060	0058		A	Correction of the "prefix" attribute handling	15.3.0
2018-12	CT-82	CP-183060	0060		A	Completed IANA registrations for MCVideo	15.3.0
2018-12	CT-82	CP-183046	0061	1	B	Subscription to group dynamic data	15.3.0
2019-03	CT-83	CP-190080	0063	1	A	Completed IANA registrations for MCVideo	15.4.0

2019-03	CT-83	CP-190095	0064		F	Completed IANA registration for MCVideo MBMS info	15.4.0
2019-03	CT-83	CP-190080	0066	1	A	Correction on IANA registration form	15.4.0
2019-03	CT-83	CP-190080	0068	2	A	Correction to XML schema for MCVideo Information	15.4.0
2019-03	CT-83	CP-190095	0069	1	F	Implicit transmission request when joining an MCVideo chat group	15.4.0
2019-03	CT-83	CP-190095	0070	1	F	MCVideo Emergency location triggering criteria	15.4.0
2019-06	CT-84	CP-191119	0072	1	A	Adding audio media level section in SDP body for offnetwork MCVideo group and private call	15.5.0
2019-06	CT-84	CP-191127	0074	2	F	Handling Implicit transmit media request and media interaction in MCVideo calls	15.5.0
2019-06	CT-84	CP-191142	0073	2	F	Correction on MCVideo Parameter	16.0.0
2019-09	CT-85	CP-192065	0075	1	F	Emergency upgrade fix for MCVideo	16.1.0
2019-09	CT-85	CP-192065	0076		F	Fix for alert element for MCVideo	16.1.0
2019-09	CT-85	CP-192043	0079	1	A	Completed IANA registration for MCVideo info	16.1.0
2019-12	CT-86	CP-193109	0080	1	F	TS 24.281 Misspelled element	16.2.0
2019-12	CT-86	CP-193109	0083	1	F	Correct target of error response	16.2.0
2019-12	CT-86	CP-193109	0084		F	Correct some errors in 24.281	16.2.0
2019-12	CT-86	CP-193086	0086		A	Error in MBMS service area element	16.2.0
2019-12	CT-86	CP-193109	0087	1	F	Correct MCVideo location schema	16.2.0
2019-12	CT-86	CP-193109	0088		F	Remove references to 3rd party registration for location reporting	16.2.0
2020-03	CT-87e	CP-200121	0089		F	Correcting SIP related terminology	16.3.0
2020-06	CT-88e	CP-201089	0092		A	Off-network MCVideo support	16.4.0
2020-09	CT-89e	CP-202176	0093	1	B	Functional Alias usage in MCVideo Call	17.0.0
2020-12	CT-90e	CP-203197	0094	1	F	De-affiliation upon logoff – MCVideo	17.1.0
2020-12	CT-90e	CP-203185	0095	2	B	Add altitude, timestamp to MCVideo location XML schema	17.1.0
2020-12	CT-90e	CP-203185	0096	4	B	Add preconfigured regroup to MCVideo	17.1.0
2020-12	CT-90e	CP-203197	0097		F	Clarify setting of p-id and p-id-fa entries	17.1.0
2020-12	CT-90e	CP-203184	0100	1	B	Control per service authorizations limit for MCVideo service	17.1.0
2020-12	CT-90e	CP-203197	0101	1	F	Clarifications in clause 9.2.1.2.1.2	17.1.0
2020-12	CT-90e	CP-203197	0102		F	Clarifications in clause 20.2.1.3	17.1.0
2020-12	CT-90e	CP-203184	0103	1	F	Reject the unauthorized user request for functional alias activation	17.1.0
2021-03	CT-91e	CP-210126	0104	1	B	Check for Preconfigured Group Use Only	17.2.0
2021-03	CT-91e	CP-210125	0105	1	B	Call control - Restricting MCVideo private communications	17.2.0
2021-03	CT-91e	CP-210126	0106	1	B	Emergency alert area notification functionalities handling for MCVideo	17.2.0
2021-03	CT-91e	CP-210126	0107	3	B	Entry into or exit from a group geographic area functionality handling for MCVideo	17.2.0
2021-03	CT-91e	CP-210126	0108		F	Spelling correction of altitude element of the location	17.2.0
2021-03	CT-91e	CP-210127	0109		F	Clarify the use of the term N2 for MCVideo	17.2.0
2021-03	CT-91e	CP-210127	0110	2	F	Correct naming of SIP SUBSCRIBE for conference event - MCVideo	17.2.0
2021-03	CT-91e	CP-210127	0111		F	Incorrect use of p-id-fa	17.2.0
2021-03	CT-91e	CP-210126	0112	1	B	Emergency alert area notification handling at client side for MCVideo	17.2.0
2021-06	CT-92e	CP-211125	0123	1	A	Corrections for MONP	17.3.0
2021-06	CT-92e	CP-211157	0117	1	F	Correct reference to "MCPTT client" in 7.2.4	17.3.0
2021-06	CT-92e	CP-211157	0116	2	D	Correct bullet numbering in 7.2.5	17.3.0
2021-06	CT-92e	CP-211157	0118	2	F	Description of keys for floor and media control	17.3.0
2021-06	CT-92e	CP-211157	0119	2	F	Integrity protection of pidf+xml and xcap-diff+xml MIME bodies	17.3.0
2021-06	CT-92e	CP-211161	0115	1	B	Add accuracy to MCVideo location XML schema	17.3.0
2021-09	CT-93e	CP-212148	0125	1	F	Correct spelling of deaffiliation boolean	17.4.0
2021-09	CT-93e	CP-212122	0127	1	F	MCVideo service binding	17.4.0
2021-09	CT-93e	CP-212115	0131	1	A	Private call alignment	17.4.0
2021-09	CT-93e	CP-212122	0133	1	F	Define undeclared XML elements of location & mbms usage in XML schema	17.4.0
2021-09	CT-93e	CP-212151	0134	1	F	Corrections to Request-URI and <mcvideo-request-uri> for group geo and emergency alert area notification	17.4.0
2021-09	CT-93e	CP-212145	0135	1	F	FA indication in subscription request	17.4.0
2021-09	CT-93e	CP-212145	0136	2	F	MCVideo correction on Functional Alias activation procedures	17.4.0
2021-09	CT-93e	CP-212148	0137		F	MCVideo Plugtest Corrections on Functional Alias take-over procedures	17.4.0
2021-12	CT-94e	CP-213023	0146	1	A	Non-controlling MCVideo function	17.5.0
2021-12	CT-94e	CP-213029	0140	1	B	Inclusion of functional alias in conference event package notification - mcvideo	17.5.0
2021-12	CT-94e	CP-213029	0141	1	B	Functional alias association with MCVideo group - protocol implementation	17.5.0
2021-12	CT-94e	CP-213029	0142	1	B	MCVideo control of limit of the number of simultaneous logins	17.5.0
2022-03	CT-95e	CP-220220	0163	1	A	Non-controlling MCVideo function corrections	17.6.0
2022-03	CT-95e	CP-220271	0166	1	B	5GS/EPS alignment in MCVideo procedures	17.6.0

2022-03	CT-95e	CP-220276	0149	-	F	Corrections and clarifications routing to a PSI	17.6.0
2022-03	CT-95e	CP-220276	0164	-	F	Removal of Warning header field from INVITE	17.6.0
2022-03	CT-95e	CP-220280	0150	1	B	Interconnect - MCVideo Affiliation procedures	17.6.0
2022-03	CT-95e	CP-220280	0151	1	B	Interconnect - MCVideo Ambient Viewing Call procedures	17.6.0
2022-03	CT-95e	CP-220280	0152	1	B	Interconnect - MCVideo Common procedures	17.6.0
2022-03	CT-95e	CP-220280	0153	1	B	Interconnect - MCVideo Emergency Alert procedures	17.6.0
2022-03	CT-95e	CP-220280	0154	1	B	Interconnect - MCVideo Functional Alias procedures	17.6.0
2022-03	CT-95e	CP-220280	0155	1	B	Interconnect - MCVideo Gateway Server procedures	17.6.0
2022-03	CT-95e	CP-220280	0156	1	B	Interconnect - MCVideo group call procedures	17.6.0
2022-03	CT-95e	CP-220280	0157	1	B	Interconnect - MCVideo Private call procedures	17.6.0
2022-03	CT-95e	CP-220280	0159	1	B	Interconnect - MCVideo Remote change of selected group procedures	17.6.0
2022-03	CT-95e	CP-220280	0158	1	B	Interconnect - MCVideo Regroup procedures	17.6.0

History

Document history		
V17.6.0	May 2022	Publication